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A. ACRONYMS

AFB	Air Force Base
AR	Army Regulation
ARNG-ILE	Army National Guard Environmental Branch
BASH	Bird Aircraft/Wildlife Strike Hazard
BGEPA	Bald and Golden Eagle Protection Act
BMPs	Best Management Practices
CAA	Conservation Action Area
CHTC	Clarks Hill Training Center
C-Tracker	Conservation Tracker Database
COWASEE Basin	Congaree, Wateree, and Santee Rivers
DA	Department of the Army
DoD	Department of Defense
EA	Environmental Assessment
EO	Executive Order
FJMR	Fort Jackson Military Reservation
FY	Fiscal Year
GIS	Geographic Information System
HUC	Hydrologic Unit Code
ICRMP	Integrated Cultural Resources Management Plan
INRMP	Integrated Natural Resources Management Plan
JRSOI	Joint Reception, Staging, Onward Movement and Integration
ITAM	Integrated Training Area Management
IPMP	Integrated Pest Management Plan
ISR	Installation Status Report
JCUB	Joint Compatible Use Buffer
JLUS	Joint Land Use Study
MAB	Man and Biosphere
MAJIC	Midlands Area Joint Installation Consortium
MAPS	Migratory Avian Productivity and Survivorship
MBTA	Migratory Bird Treaty Act
MTC	McCrary Training Center
NCO	Non-Commissioned Officer
NEPA	National Environmental Policy Act
NGB	National Guard Bureau
NGO	Non-governmental Organization
NRCS	Natural Resources Conservation Service

NWI	National Wetlands Inventory
OMS	Organizational Maintenance Shop
RCW	Red-cockaded Woodpecker
REC	Record of Environmental Consideration
REPI	Readiness and Environmental Protection Integration
ROE	Review of Operation and Effect
SCARNG	South Carolina Army National Guard
SCMD	South Carolina Military Department
SCEMD	State Emergency and Management Assistance Compact
SCDNR	South Carolina Department of Natural Resources
SMPI	Soil Management Implementation Plan and Inventory
SSS	Special Status Species
SWAP	State Wildlife Action Plan
SWPPP	Stormwater Pollution Prevention Plan
T&E	Threatened and Endangered
UNESCO	United Nations Educational, Scientific and Cultural Organization
USACE	US Army Corps of Engineers
USC	United States Code
USC	University of South Carolina
USEPA	US Environmental Protection Agency
USFS	US Forest Service
USFWS	US Fish and Wildlife Service
UXO	Unexploded Ordinance
VRT	Vehicle Recovery Team

B. MAPS

Figure 1. General Location and Layout

Figure 2. Soils

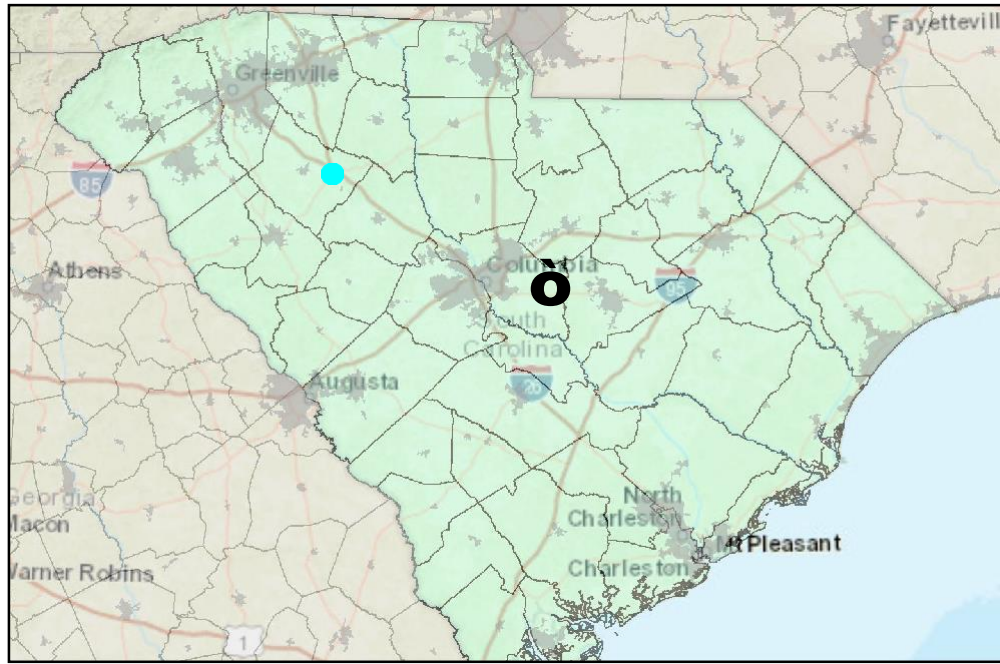
Figure 3. Water and Wetlands

Figure 4. Vegetation Communities

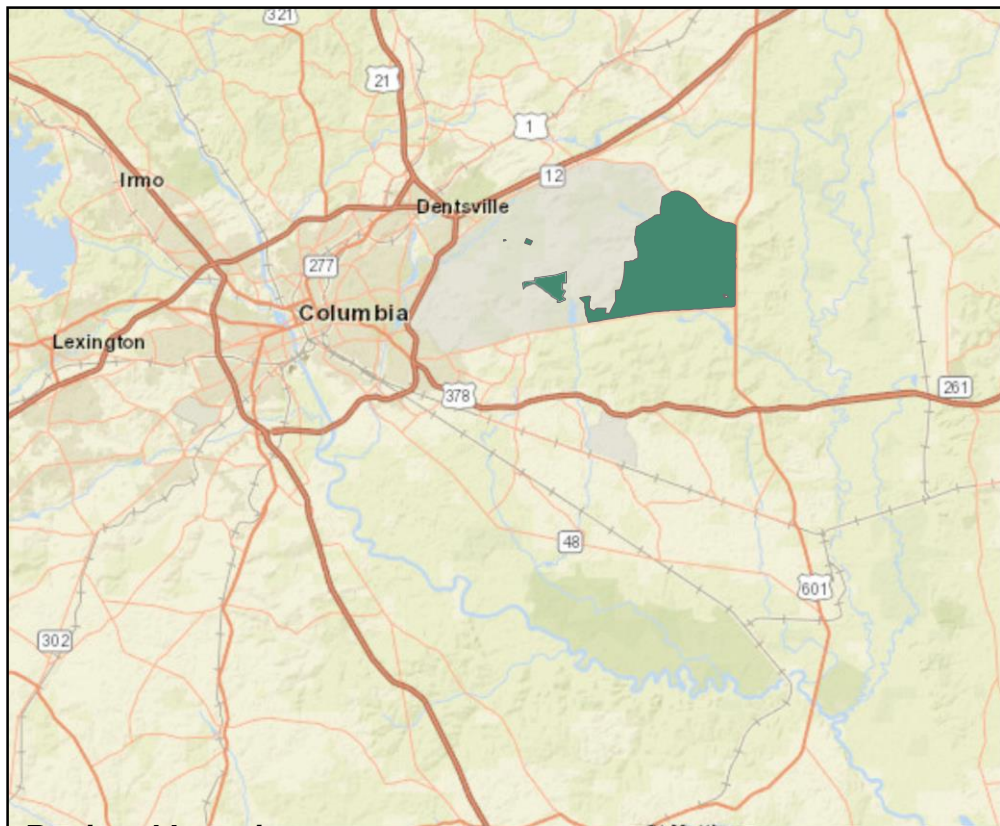
Figure 5. Caution Areas

Figure 6. Fauna Special Status Species

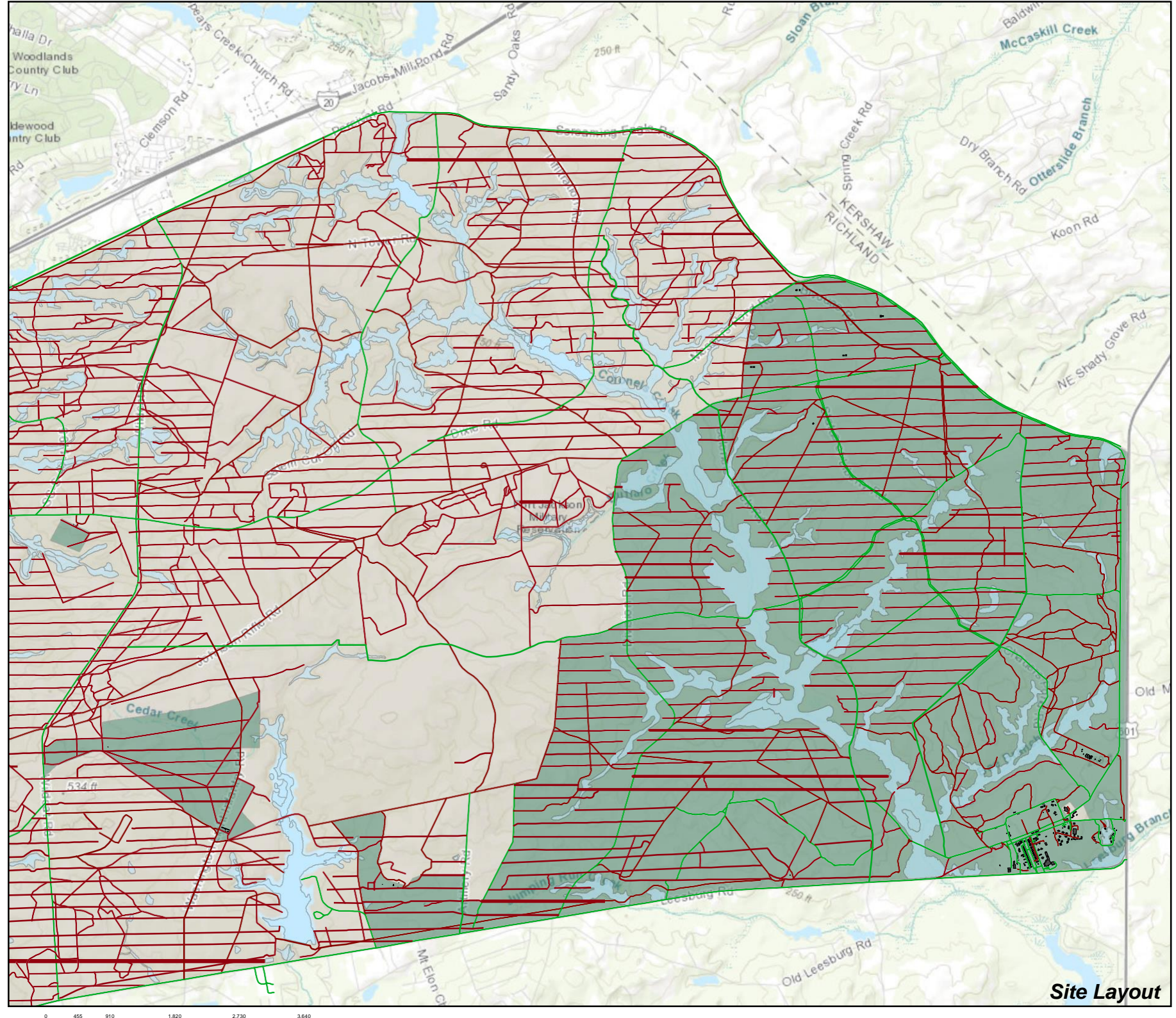
Figure 7. Floral Special Status Species



General Location



Regional Location



Site Layout

McCrady Training Center

General Location and Layout

Legend

Structures Installation

- Structures
- McCrady Training Center
- Wetlands



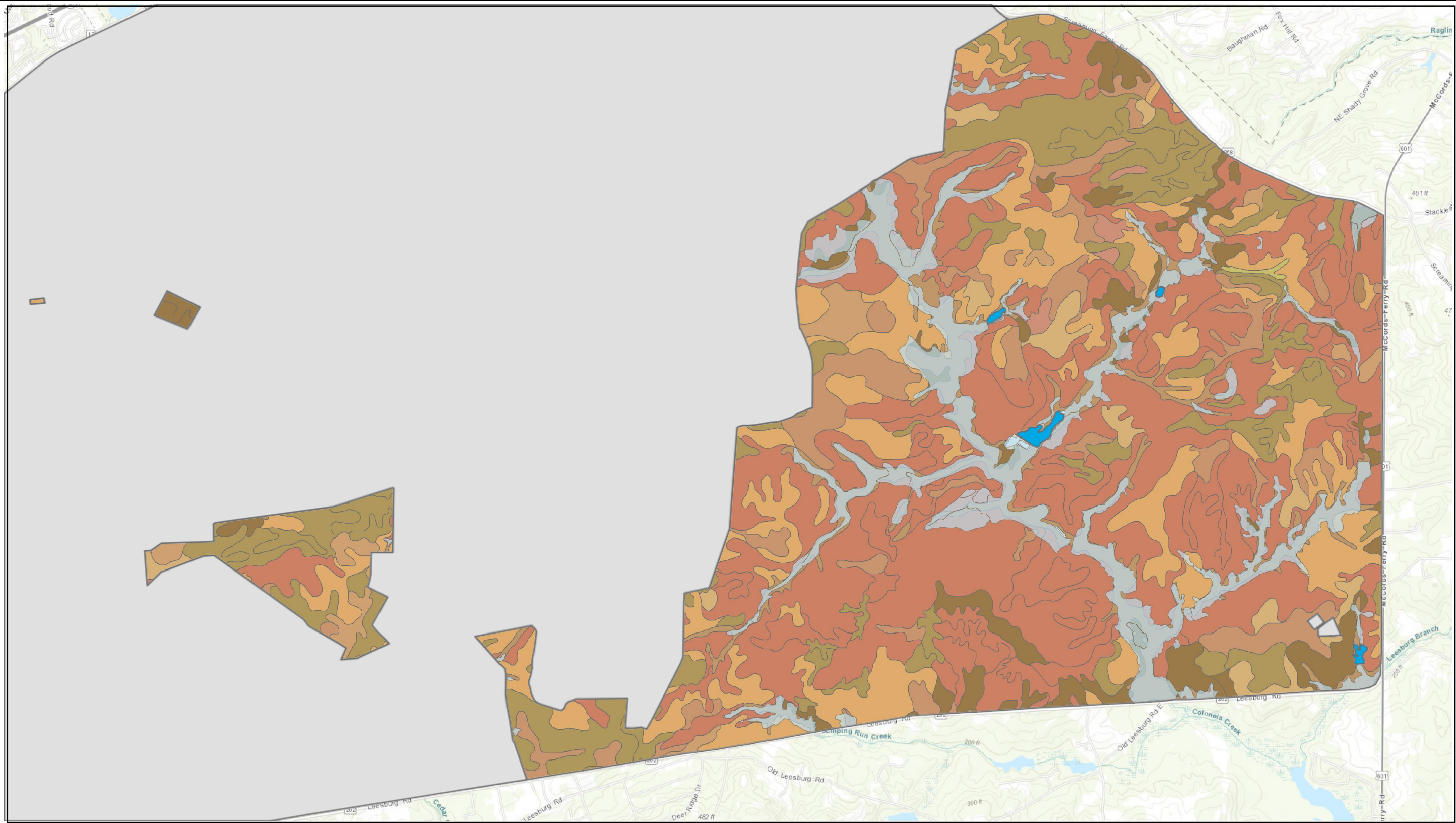
Figure Number
1

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Checked by: SCARNG Conservation

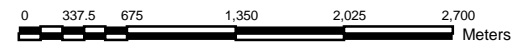
Date: 4/5/2019

McCRADY



Legend

- | | | | | | |
|-------------------------------|-------------------|--------------------------|--------------------|---------------------------|---------------------|
| Open Water on SCARNG Property | Unit Name | Dothan loamy sand | Lakeland sand | Pelion-Urban land complex | Vaucluse loamy sand |
| Wetlands | Ailey coarse sand | Fuquay sand | Lucy loamy sand | Rains loamy fine sand | |
| | Blanton sand | Johnston fine sandy loam | Pelion coarse sand | Troup sand | |



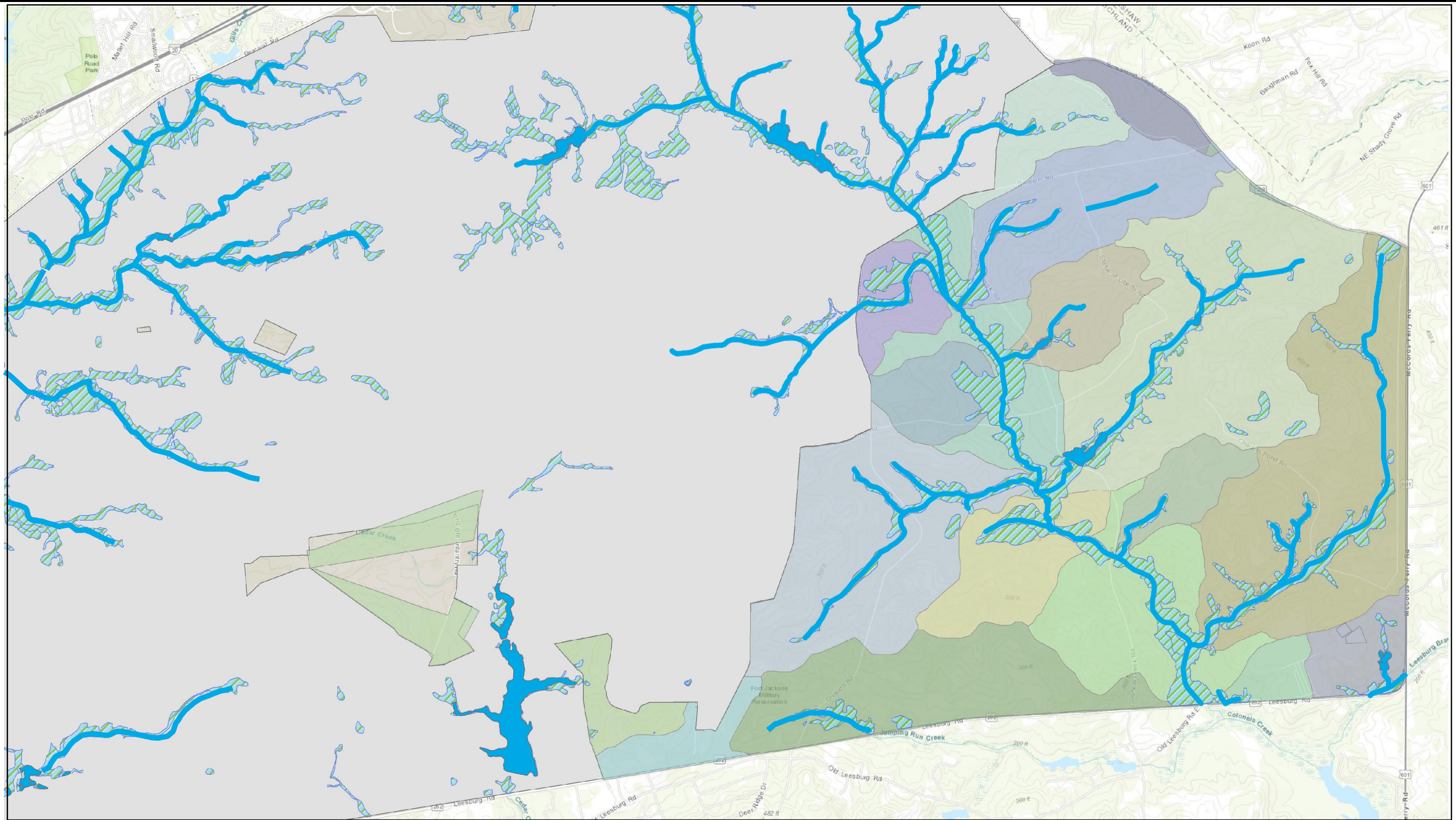
Soils

Figure Number
2

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Date: 4/23/2019

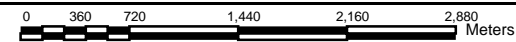


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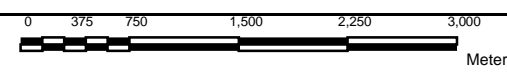
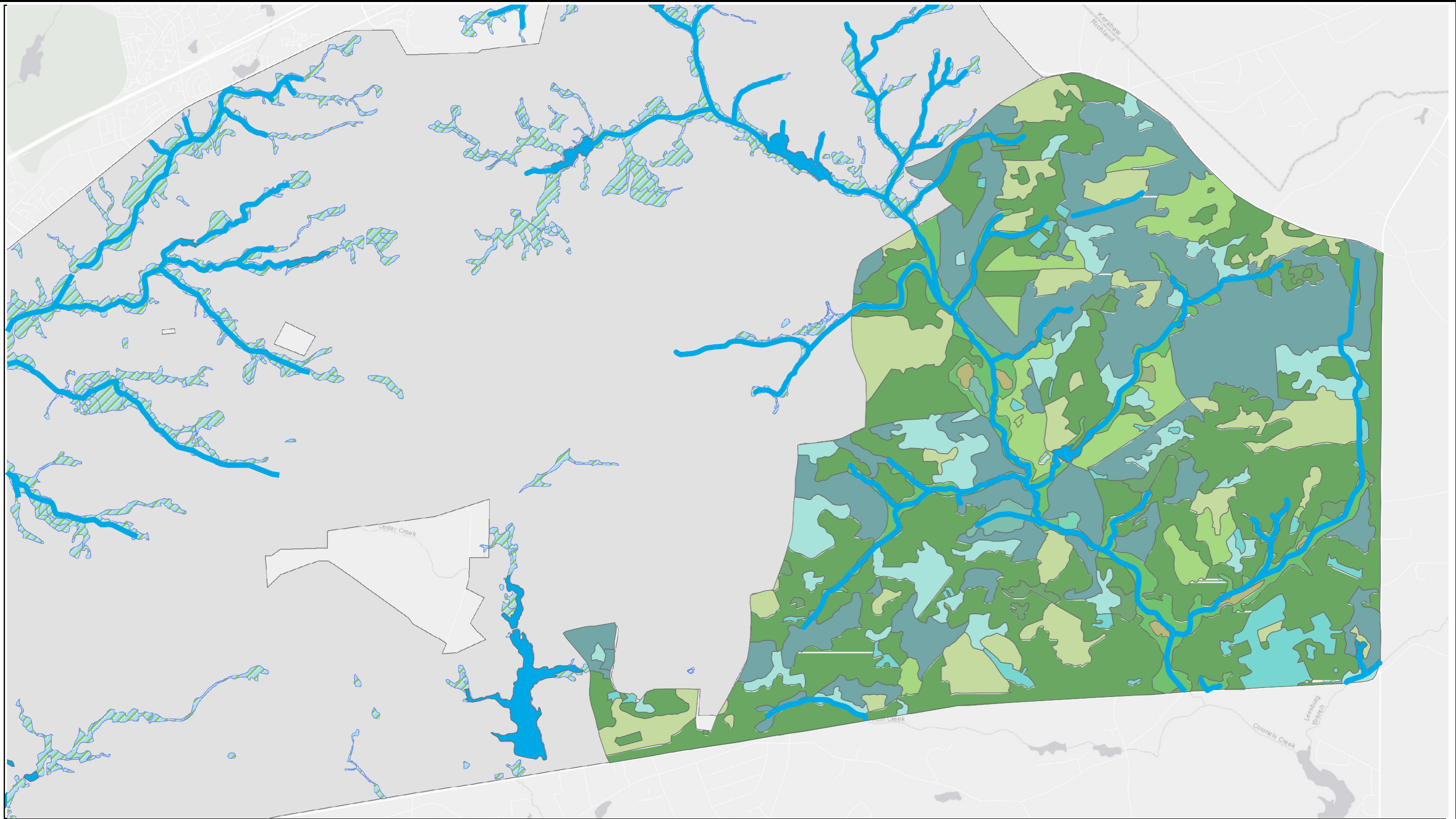
- Streams
- Open Water on SCARNG Property
- Wetlands

Drainage

- | | | | |
|--|---|---|---|
| Compound-Colonel's Creek | Jumping Run Creek | North Division | Training 31 A & B |
| Bee Branch | Lower Colonel's Creek | Odom Pond | Upper Colonel's Creek |
| Buffalo Creek | Davis Pond | South Division | West Red Diamond |
| Cedar Creek | English Pond | Training 28 B & C | Weston Lake |
| | Noah's Marsh | | |



Water & Wetlands		Created For MTC INRMP	
Figure Number		Checked by: SCARNG Conservation	
3		Date: 4/23/2019	

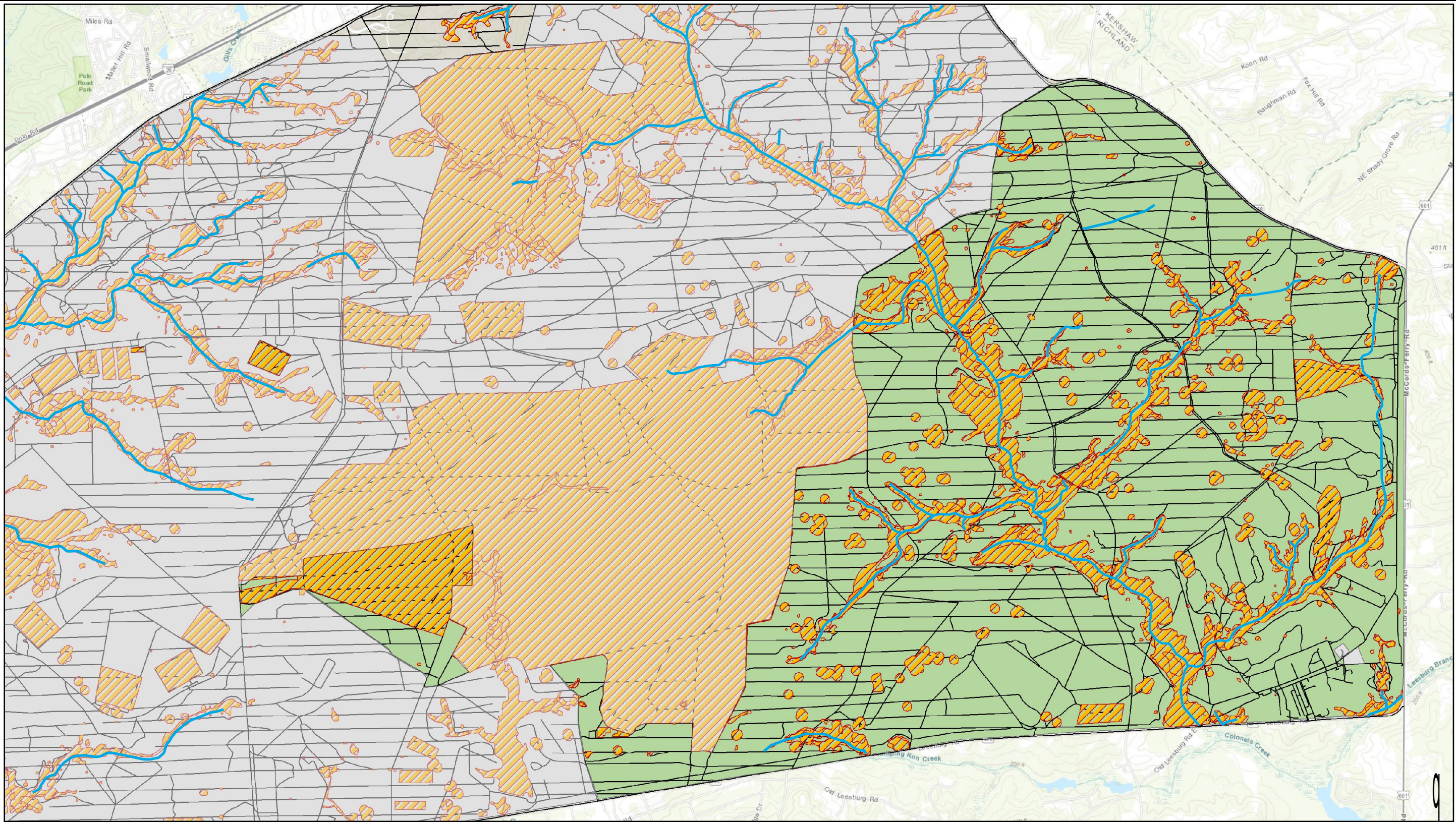


Legend

Community Type

- Emergent Non-Forested Wetlands
- Mixed Hardwood-Pine
- Pine Dominated Canopy- Dense, Young Crowns
- Pine Dominated Canopy- Moderately Dense, Middle-Ag
- Pine Dominated Canopy- Open, Mature Crowns
- Pine Evergreen Shrub
- Pine-Mixed Hardwoods
- Pine-Wetland Mixed Hardwoods
- Upland Mixed Hardwoods
- Upland Non-Forested
- Wetland Mixed Hardwood- Shrub
- Wetland Mixed Hardwoods
- Wetland Mixed Hardwoods - Pine

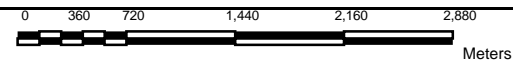
Vegetation Community	Created For MTC INRMP
Figure Number	Checked by: SCARNG Conservation
4	Date: 4/23/2019



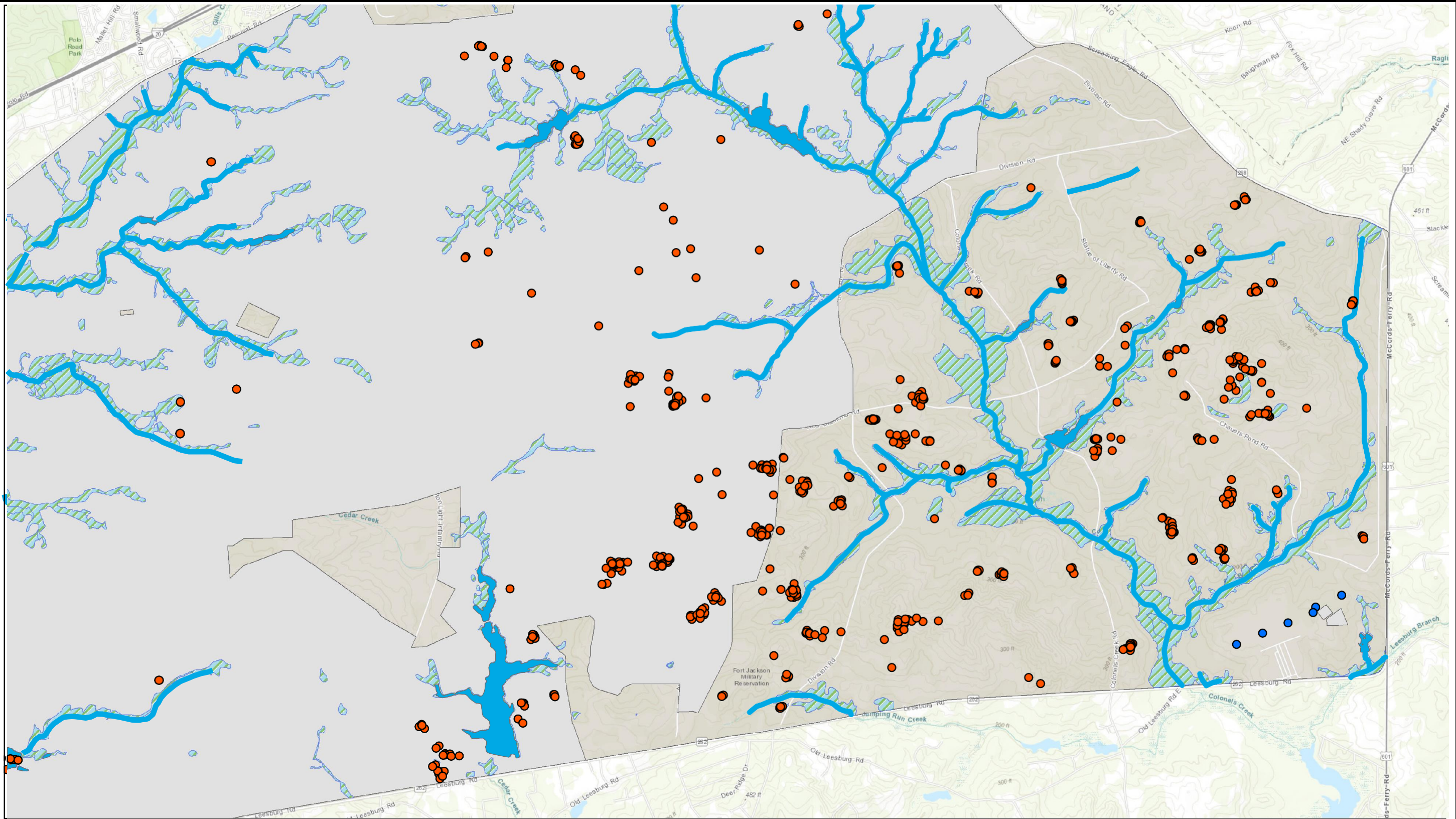
Legend

- Installation
- Caution Areas
- Streams
- Road
- McC Crady Training Center
- Fort Jackson

Note: Caution Areas are a conglomeration of limited use areas that training and access restrictions



Caution Areas	Created For MTC INRMP
Figure Number	Checked by: SCARNG Conservation
5	Date: 4/23/2019

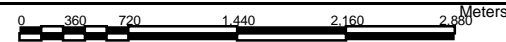


Legend

Fauna Special Status Species

Status

- Federal Listed
- State Listed



Fauna Special Status Species

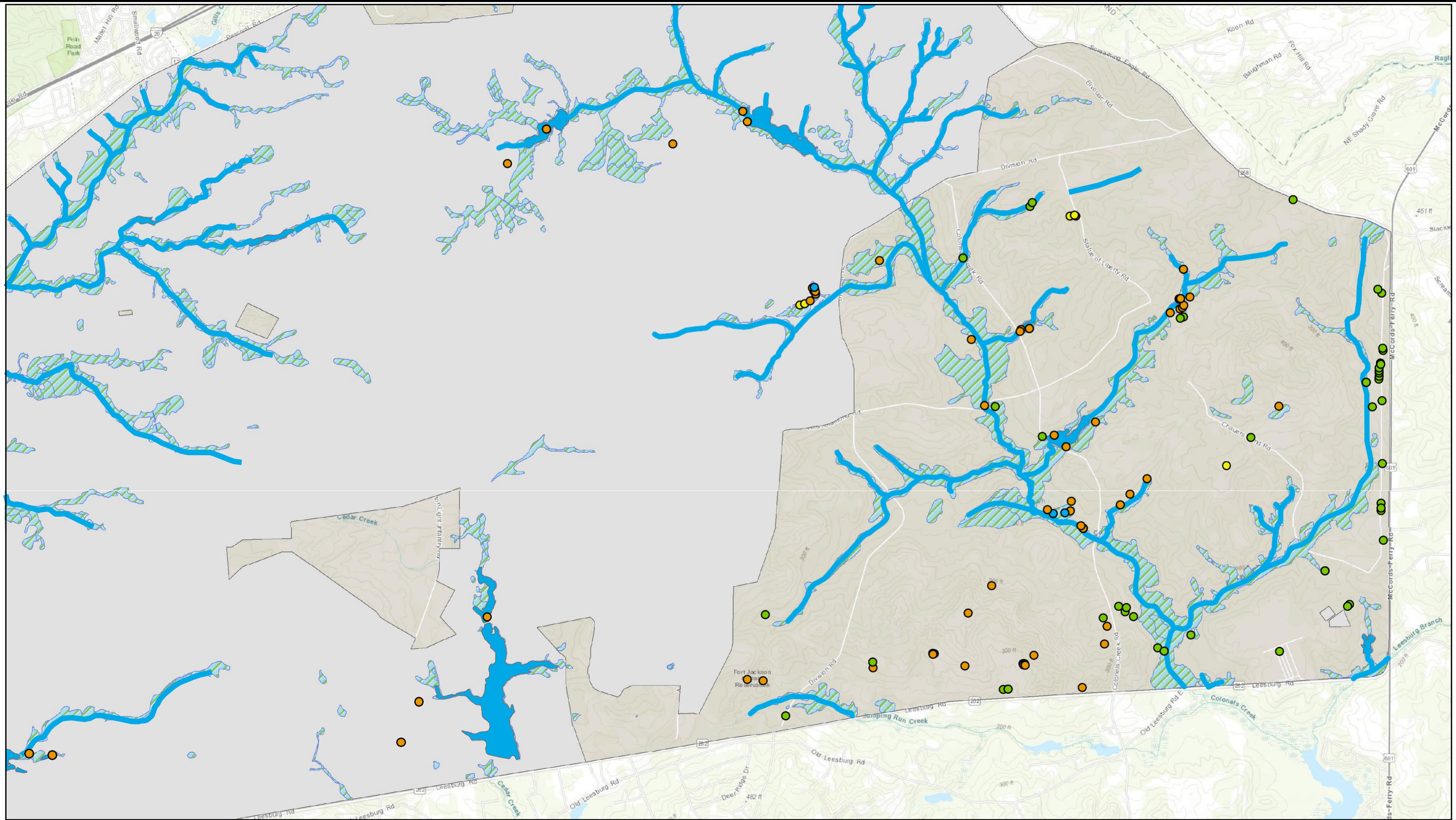
Created For MTC INRMP

Figure Number

Checked by: SCARNG Conservation

6

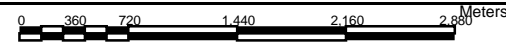
Date: 4/25/2019



Legend

Flora Special Status Species

- Status**
- Endangered.
 - Invasive
 - Rare.
 - Sensitive.



Flora Special Status Species	Created For MTC INRMP
Figure Number	Checked by: SCARNG Conservation
7	Date: 08/04/2020

C. IMPLEMENTATION TABLES

The Goals and Objectives Summary and the Project List include program-wide, as well as items specific to MTC and Clarks Hill Training Center (CHTC).

C.1 GOALS AND OBJECTIVES SUMMARY

Climate Change and Regional Growth

Goal: Protect the Mission capability of the SCARNG through planning, adaptive management, and proactive innovative solutions.

Objective: Ensure climate resiliency adaption and mitigation of adverse impacts.

This Objective will be accomplished through the scientifically and data driven decision making, the establishment of achievable targets, collaborative planning, and adaptive management.

Objective: Integrate climate resiliency into the SCARNG planning process.

Our primary goal is to protect the mission capability of the SCARNG. The first step in doing that is to identify and plan for potential impacts.

Objective: Develop and maintain partnerships

The Department of Defense's presence in the Midlands of South Carolina is significant. There are five military installations; three active duties and two National Guard. Active and reserve components of the Army, Navy, Air Force and Marines utilize these bases. To reduce development related pressure, the installations are working together to leverage our presence in regional decision-making. Specifically, the South Carolina Military Department, Fort Jackson, and Shaw Air Force Base have joined together with local governments and Non-Governmental Organizations (NGO) to form the Midlands Area Joint Installation Consortium. The purpose of the Consortium is to facilitate collaboration on projects including a region-wide Joint Land Use Study (JLUS) or the implementation of Joint Compatible Use Buffers (JCUB) program. To further leverage our local partnership, we are also pursuing a Sentential Landscape designation.

Cultural Resources Management

Goal: Our goal is to protect and preserve the cultural and historic resources entrusted to us, while maintaining and supporting the mission of the National Guard.

Objective: ICRMP update and revision

Five-year update and revision of the Integrated Cultural Resource Management Plan to ensure the SCARNG CRM continues to operate under provisions conducive to mission goals.

Objective: Public engagement

Develop and participate in community engagement initiatives to foster public understanding of the SCARNG's commitment to cultural preservation.

Objective: ARPA compliance

Conduct annual review of eligible sites and all cemeteries located on the McCrady Training Center. Ensure appropriate preservation measures are enforced at eligible sites and cemeteries.

Objective: Protect cultural resources

Routinely assess the condition of all eligible sites located on the McCrady Training Center. Ensure appropriate signage and protection of all cultural sites.

Objective: Comply with section 106 of the NHPA

Ensure that all SCARNG undertakings are reviewed by the SHPO, THPOs, and all interested parties in compliance with Section 106 of the National Historic Preservation Act.

Fish and Wildlife

Goal: Conserve and enhance wildlife populations and their associated habitat for optimum levels of biodiversity and ecosystem health, while maintaining a realistic training environment.

Objective: Manage wildland habitat to promote species diversity

Modification of existing wildland habitat to increase biodiversity of native flora and fauna.

Objective: Long term monitoring of fish and wildlife

Initiate PLS and continue ongoing PLS to develop trend data of fish and wildlife.

Forest and Vegetation

Goal: A forest that supports the military mission and maintains ecosystem integrity. This is a forest that is characterized by high habitat diversity and managed for targeted training opportunities. Targeted Training Opportunities refers to matching training missions to land management practices.

Objective: Maintain diversity of forest habitats

Historically, the forested lands at CHTS ranged from open areas of southern yellow pines with little midstory but a high diversity of plant life in the ground layer, as well as, open upland hardwoods to hardwood drainage ways with healthy midstory/ground layer of vegetation. The intent of this objective is to accelerate habitat restoration in targeted areas, assist in the fire management program and have beneficial conditions for both the training community and the overall health of the eco- system.

Objective: Maintain open forest midstory

All historic accounts of long-leaf pine forests described them as “open and park like” with a conspicuous lack of midstory trees and shrubs. They were also described with a high diversity plant in the ground layer. This sub-climax condition is the result of a well-established fire regime. This open park-like condition is beneficial to both the training community and the overall health of the eco- system. The intent of this objective is to aid the wild land fire management program, to accelerate habitat restoration in targeted areas, and provide a more usable training space to meet the military mission.

Objective: Long term monitoring of vegetative communities

Monitor condition and species composition of vegetative communities across SCARNG Training Centers.

GIS Data

Goal: Support the mission of the South Carolina Military Department, and specifically the SCMD Environmental division, through the development and maintenance of an integrated GIS program.

Objective: Provide spatial analysis and GIS services for decision-making.

The power of GIS comes from its ability to analyze diverse and complicated datasets through a spatial lens. This analysis then enables decision makers to make more an informed choice. Improved analytical capability increases our return on our GIS investment.

Objective: GIS model creation

The power of GIS comes from its ability to analyze diverse and complicated datasets through a spatial lens. This analysis then enables decision makers to make more an informed choice. The development and use of models aids in this analysis. Improved analytical capability increases our return on our GIS investment.

Objective: Develop a data maintenance/update strategy

The SCMD has an extensive collection of training and natural resources data. It is vital that a strategy is in place to continually update and maintain these holdings, keeping them as current and accurate as possible.

Grounds

Goal: To maintain the grounds at the McCrady Training Center in a safe, attractive and professional state, while incorporating sustainable principals.

Objective: Develop a sustainable ground maintenance program.

In accordance to the requirements in EO 13693: to establish a method for reducing water, energy, and vehicle fuel usages each FY via developing a comprehensive Sustainable Grounds Management Strategy.

Outreach, Awareness and Education

Goal: Protect the Training Mission of the South Carolina Army National Guard, by fostering a public understanding of the Guards efforts at conservation stewardship, and the critical nature of the Guards mission.

Objective: Develop and maintain partnerships

The Department of Defense's presence in the Midlands of South Carolina is significant. There are five military installations; three active duties and two National Guard. Active and reserve components of the Army, Navy, Air Force and Marines utilize these bases. To reduce development related pressure, the installations are working together to leverage our presence in regional decision-making. Specifically, the South Carolina Military Department, Fort Jackson, and Shaw Air Force Base have joined together with local governments and Non-Governmental Organizations (NGO) to form the Midlands Area Joint Installation Consortium. The purpose of the Consortium is to facilitate collaboration on projects including a region-wide Joint Land Use Study (JLUS) or the implementation of Joint Compatible Use Buffers (JCUB) program. To further leverage our local partnership, we are also pursuing a Sentential Landscape designation.

Objective: Raise community awareness

In order to maintain the current favorable opinion that the public holds for the military mission, the SCARNG needs to actively work to inform the public of our efforts to maintain the resources that have been entrusted to us.

Objective: Continue education & training program

Continue the implementation of the State-Wide Environmental Education & Training program

Pest

Goal: Ensure compliance with DoD Instruction 4150.07, "DoD Pest Management Program"

Objective: Reduction of pesticide use

This objective is intended to meet the Presidential Executive Order and the DOD Measure of Merit #2: to reduce the total amount of pesticide applied each year to federal military installments.

Objective: Reduce impacts to training and the environment from nuisance wildlife.

Reduce impacts of nuisance wildlife on training activities.

Objective: Manage invasive/ noxious plant species

This objective is to develop a proactive program in accordance to EO 13112, to facilitate the management and control of Invasive/Noxious plants and animals. This program is managed as part of our Integrated Pest Management Plan. SCARNG will monitor both the overall health of the system as well as the success or failure of individual projects as part of this objective.

Program Management

Goal: Our Goal is to be a proactive program that anticipates and meets the needs of the National Guard. We strive to be a national leader in efficiency, innovation and diversity, while providing our staff an environment that empowers and supports their creativity and initiative.

Objective: Facilitate program implementation through the use of seasonal staff.

The Columbia Metro Area has a large population of students seeking under graduate and post graduate degrees in conservation related fields. This provides us with a unique opportunity to supplement our staff to work on seasonal projects.

Objective: Maintain current and accurate species lists

The purpose of this objective is to have an accurate species information that is both current and in easily accessible and usable format. In the past individual surveys were in different formats and stored in multiple locations making it difficult to access the information. Our species data has been transferred to central species tracking database. This database contains both individual occurrences recorded from Planning Level Surveys, and general presence/ absence for each of our installations. This includes both verified records and potential occurrences.

Objective: Maintain easy and up to date access to all relevant documents.

Maintain easy and up to date access to all records, surveys, reports, reviews and other relevant documents. This accomplished through the use of both a document tracking database and our file management system.

Objective: Contribute to the National Guard Environmental Program at a national level

The success of the local Environmental Program is directly linked to the success of the National Program. To facilitate that success SCARNG Conservation staff will participate in Committees, review policy documents and reports, and provide general feedback and support to NGB to facilitate a strong overall environmental program.

Objective: Ensure fiscal sustainability for the Conservation Program

In order for the SCARNG Conservation Program to be successful, it requires sound and sustainable fiscal management. This includes program out year requirements, managing budgets and tracking procurements.

Objective: To employ a staff of subject matter experts that are innovative leaders and current in their field.

To employ a staff of subject matter experts that are innovative leaders and current in their field. That are able to use their knowledge and experience to implement program management plans and support the mission of the SCARNG

Objective: Facilitate program support and implementation through state-of-the-art technology
Conservation Management requires the analysis of complex and diverse systems. Understanding these systems is often a very data intensive undertaking that then require repackaging to communicate the information. As a result, Conservation projects often require and utilize the most current technology.

Objective: Ensure that all planning documents are relevant & current

Keep all planning documents current though annual reviews, and updates. This project also includes document revisions, and other administrative task to improve document management and document relevance in day to day business practices.

Objective: Support program implementation through providing staff the tools, equipment, and supplies needed to perform their day to day work activities.

In order to effectively perform their duties, the staff needs the proper supplies and equipment. This objective is to ensure that they are provided these materials.

Soil and Water

Goal: To maintain training lands, while protecting and enhancing soil and water quality, and ensuring compliance with all applicable laws and regulations.

Objective: Erosion repair site monitoring & evaluation

The intent of this objective is to determine if the activities in Section 2.3.2 Objective 2 of the McCrady INRMP produce the desired results. Monitoring and project evaluation helps:

- Identify what works, what did not work, and what should continue
- Improves actions where they are less effective
- Change actions if they are ineffective

Objective: Facilitate the coordination, repair and identification of eroded areas across the training site.

The purpose of this objective is to aid in the execution of the Soil Management Implementation Plan & Inventory (SMPI) developed under Objective ID #6 in this database. This is done through coordination of interested parties to develop budgets, identify resourcing and aid in planning and execution.

Objective: Develop a systematic approach for Soil & Water Management

The three biggest obstacles to a successful Soil and Water Management program are; communication, coordination, and resourcing (funding). The intent of this objective is to provide a structured system to facilitate coordination and communication. This in turn would allow for more targeted use of available resources. The intent is to hold a quarterly meeting between all stakeholders (Facilities Management

Office, Training/ ITAM, Natural Resources and pertinent Training Site Staff). The 1st and 4th Quarter meeting would focus on review of completed work, identification and prioritization of work still needed, and the development of available budget and resourcing to execute the work. The 2nd and 3rd Quarter meeting would be to track on going work and note any problems or changes in the execution plan.

Objective: Repair identified erosion sites

The purpose of this objective is to implement the Soil Management Implementation Plan & Inventory (SMPI) developed under Objective ID #6 in this database

Special Status Species

Goal: Conserve and enhance Threatened, Endangered and Special Status Species (SSS) populations and their associated habitat for optimum levels of biodiversity and ecosystem health.

Objective: Special status species monitoring

Develop a protocol for monitoring SSS, which will create a species list and monitoring period.

Objective: Special status species habitat management

Maintain and/or modify existing habitat to increase biodiversity of SSS.

Objective: Threatened and endangered ecosystem management

Manage ecosystems level factors that support threatened and endangered (T&E) species population health and survivorship.

Wetlands

Goal: A Wetlands Management Program that protects and enhances all wetland systems and ensures compliance with all applicable laws and regulations.

Objective: Collection of data to support planning and monitoring initiatives.

This objective supports the planning and check stages of our adaptive management strategy.

Objective: Sustain or enhance wetland systems at MTC & CHT

This objective addresses the action and the analysis phases of our adaptive management strategy. It focuses on implementing projects derived from our planning process and analyzing the success of the implemented projects.

C.2 CURRENT PROJECT LIST

Climate Change and Regional Growth: Develop and Maintain Partnerships**Update and Maintain JCUB Program (Project # 96)**

The SCARNG, in cooperation with several partners was successful in obtaining funding for a Joint Compatible Use Buffer plan in FY 08. Updating and managing this plan is an ongoing effort. This includes updating GIS data layers, developing annual funding requests, and reports. Refining parcel scoring models, attending public meetings and meeting and coordinating with our partners.

Facility:	MTC
Status:	Active
Frequency:	C-Annual
STEP Project Number:	SCONG10001
Estimated Cost:	\$15,000.00/year
Proponent:	Joint
Year Proposed:	Current

SERPPAS Steering Committee (Project # 294)

Participate in the SERPPAS Steering Committee.

Facility:	Statewide / Program-wide
Status:	Active
Frequency:	C-Annual
STEP Project Number:	SCONG150001
Estimated Cost:	\$2,500.00/year
Proponent:	-
Year Proposed:	Current

Sentinel Landscape Program (Project # 319)

Development and implementation of a MAJIC Sentinel Landscape.

Facility:	Statewide / Program-wide
Status:	Active
Frequency:	C-Annual
STEP Project Number:	TBD
Estimated Cost:	\$0
Proponent:	ENV
Year Proposed:	Current

Implement Climate Resiliency Plan (Project # 350)

Implement a strategy to review existing plans for climate resiliency integration and identify opportunities.

Facility:	Statewide / Program-wide
Status:	Planning
Frequency:	D-Annual
STEP Project Number:	SCC70060010

Estimated Cost: \$10,000.00/year
 Proponent: -
 Year Proposed: 20

Climate Change and Regional Growth: Integrate climate resiliency into the SCARNG planning process

Develop a Climate Resiliency Integration Plan (Project # 349)

Develop a strategy to review existing plans for climate resiliency integration and identify opportunities.

Facility: Statewide / Program-wide
 Status: Planning
 Frequency: Defined
 STEP Project Number: SCC70060010
 Estimated Cost: \$10,000.00/year
 Proponent: -
 Year Proposed: 20

Native American Consultation (Project # 134)

Conduct Consultation with Native American Tribes.

Facility: Statewide / Program-wide
 Status: Active
 Frequency: C-Annual
 STEP Project Number: SC000060008
 Estimated Cost: \$ 25,750.00/year
 Proponent: ENV
 Year Proposed: 20

Cultural Resources Management: Comply with Section 106 of the NHPA

Mitigation for Armories (Project # 146)

Develop a program for armory mitigation that will address future adverse effects. This mitigation for an adverse effect is outlined in the signed NHPA Nationwide PA for armories, and the follow-on letter to the SHPO notifying them of the adverse effect & the proposed mitigation, as prescribed by the PA.

The SCARNG is planning a federal undertaking funded with Sustainment, Restoration and Modernization (SRM) funds. The SCARNG has determined that the project will affect historic properties and buildings that are eligible for listing in the National Register of Historic Places and that the affects will be adverse as defined in 36 CFR 800.5(a)(1). The SCARNG has developed agreement document (i.e. a Memorandum of Agreement or Programmatic Agreement) in consultation with the SHPO and other consulting parties to mitigate this adverse effect.

Facility: Statewide / Program-wide
 Status: Active
 Frequency: Defined
 STEP Project Number: SC000060014
 Estimated Cost: \$ 20,000.00/year

Proponent: ENV
Year Proposed: Current

Historic Armory Research Project (Project # 244)

This project is designed to identify and scan relevant materials on historic armories and other SCARNG facilities. This research will include blueprints, construction documents, photographs and unit histories.

Facility: Statewide / Program-wide
Status: Active
Frequency: Multi-year
STEP Project Number: SC000060014
Estimated Cost: \$15,000.00/year
Proponent: -
Year Proposed: Current

NEPA and Section 106 Review (Project # 307)

This project is for regular reoccurring aspects of NHPA and Section 106 and NEPA Review.

Facility: Statewide / Program-wide
Status: Active
Frequency: C-Annual
STEP Project Number: SCONG160001
Estimated Cost: \$300.00/year
Proponent: -
Year Proposed: Current

Cultural Resources Management: Protect Cultural Resources

Monitor Cultural Sites (Project # 166)

Bringing the Integrated Cultural Resource Management Plan (ICRMP) up to date for 2014-2019.

Facility: Statewide / Program-wide
Status: Active
Frequency: D-Annual
STEP Project Number: SCC70140002
Estimated Cost: \$ 5,000.00/year
Proponent: ENV
Year Proposed: Current

Cultural Resource Historic GIS Mapping Project (Project # 227)

This GIS project is a long-term project designed to acquire, digitize, analyze historic cartographic sources to locate previously unidentified archaeological resources, identify the history of the various military disturbances at the MTC. Also related to this idea, is the possibility of using this locational model as part of the development of a PA with the SC SHPO that uses location of a project as one variable to determine whether the project would require external review.

Facility:	Statewide / Program-wide
Status:	Active
Frequency:	Multi-year
STEP Project Number:	SC000060014
Estimated Cost:	\$ 5,000.00/year
Proponent:	-
Year Proposed:	Current

Cultural Program Management (Project # 317)

This project provides overarching support to the Cultural resources program. It supports tasks that cross project lines within the Cultural program.

Facility:	Statewide / Program-wide
Status:	Active
Frequency:	C-Annual
STEP Project Number:	SCC70140002
Estimated Cost:	\$ 35,000.00/year
Proponent:	ENV
Year Proposed:	Current

Fish and Wildlife: Long-term Monitoring of Fish and Wildlife

Herpetological Monitoring (Project # 76)

Herpetological Monitoring project assess the distribution, ecology and habitat of the herpetofauna associated at MTC and CHT. Also provides table showing habitat preferences of all species native to the base. This project also generates an on-going reptile/amphibian species list.

Facility:	Statewide / Program-wide
Status:	Active
Frequency:	C-Annual
STEP Project Number:	SCC70060014
Estimated Cost:	\$ 7,500.00/year
Proponent:	ENV
Year Proposed:	Current

Monitoring Neotropical Migrants (Project # 74)

The Monitoring Avian Productivity and Survivorship (MAPS) Program is a national program created by The Institute for Bird Populations to assess and monitor the vital rates and population dynamics of over 120 species of North American land birds in order to provide critical conservation and management information on their populations. The SCARNG is partnered with the SC Department of Natural Resources (SCDNR) to conduct surveys of neo-tropical migratory birds on the training lands in order to make sound biological management decisions. Other bird surveys on MTC provided by SCDNR are: The Breeding Bird Survey and Fall Bird Banding Event.

Facility:	MTC
Status:	Active

Frequency: D-Annual
STEP Project Number: SCC70140001
Estimated Cost: \$ 10,000.00/year
Proponent: ENV
Year Proposed: Current

Analyze and Plan for Pollinator Survey (Project # 78)

During this phase, the survey will be reviewed, and current status of the pollinator population discussed. If it is decided that the population requires management strategies to be implemented, then a plan will be developed.

Facility: Statewide / Program-wide
Status: Planning
Frequency: Multi-year
STEP Project Number: SCC70060014
Estimated Cost: \$ 7,500.00/total
Proponent: ENV
Year Proposed: 21

Study on Propagation of Listed Plant Species (Project # 79)

Some state and federally listed plant species that occur on MTC do not have thriving population. This study will check on the feasibility of propagating state and federally listed plant species as well as species of cultural interest to federally recognized Native American populations.

Facility: Statewide / Program-wide
Status: Planning
Frequency: Defined
STEP Project Number: SCC70060008
Estimated Cost: \$ 20,000.00/total
Proponent: ENV
Year Proposed: 21

PLS Birds at Clarks Hill (Project # 111)

Planning Level Survey for Birds at Clarks Hill Training Center. Includes breeding Bird Surveys and point counts. This is a multiyear project that will run from FY12-FY14.

Facility: Clarks Hill Training Center
Status: Active
Frequency: Multi-year
STEP Project Number: SC96A060003
Estimated Cost: \$ 10,433.00/Annually
Proponent: ENV
Year Proposed: Current

Bat Population Monitoring (Project # 129)

This project is for the long-term monitoring of Chiropteran on SCARNG managed property. This project will primarily use acoustic means to collect information about bat populations. This data will be shared with SCDNR and DoD Bat population specialists.

Facility:	Statewide / Program-wide
Status:	Active
Frequency:	D-Annual
STEP Project Number:	SCC70060008
Estimated Cost:	\$ 30,000.00/Annually
Proponent:	ENV
Year Proposed:	Current

Weather Station (Project # 162)

Maintain and collect data from FTS weather station as part of the MTC Wetland Monitoring program.

Facility:	MTC
Status:	Active
Frequency:	C-Annual
STEP Project Number:	SCC70060005
Estimated Cost:	\$ 1,000.00/Annually
Proponent:	ENV
Year Proposed:	Current

Large and Medium Wildlife PLS (Project # 348)

Provide baseline information concerning the abundance and diversity of medium and large mammals at the Clarks Hill Training Center near Plum Branch, SC, that will be used for management purposes at this site. Of particular interest is the presence and abundance of medium and large mammal species across the site and how these are influenced by human activities.

Facility:	Statewide / Program-wide
Status:	Active
Frequency:	Defined
STEP Project Number:	SC96A160001
Estimated Cost:	\$ 55,000.00 Total
Proponent:	ENV
Year Proposed:	Current

Food Plots (Project # 139)

Planting of Food Plots to help enhance wildlife habitat.

Facility:	Statewide / Program-wide
Status:	Active
Frequency:	D-Annual
STEP Project Number:	SC96A160001
Estimated Cost:	\$ 40,000.00/Year
Proponent:	ENV

Year Proposed: Current

Fish and Wildlife: Manage Wildlife Habitat to Promote Species Diversity

Herpetological PLS at CHTC (Project # 309)

This project is to conduct a PLS at CHTC in accordance with the SIKES requirements. The PLS will look at both reptile and amphibian populations across the installation. To include both terrestrial and aquatic habitats with the CHTC.

Facility: Clarks Hill Training Center
Status: Active
Frequency: Defined
STEP Project Number: SC96A160001
Estimated Cost: \$ 25,000.00 Total
Proponent: ENV -Conservation
Year Proposed: Current

Develop a Fire Management Plan (Project # 157)

Create a comprehensive plan that will establish firebreaks and burning regimes for the forested areas at CHTC. This will be accomplished by using data from the forest management plan and consulting with the USACE.

Facility: Statewide / Program-wide
Status: Planning
Frequency: Defined
STEP Project Number: SC96A060002
Estimated Cost: \$ 20,000.00 Total
Proponent: ENV
Year Proposed: 21

Forest and Vegetation: Maintain Diversity of Forest Habitats

CHTC Floral PLS and Monitoring (Project # 340)

The purpose of this project is monitor and catalog floral species of concern at CHTC. This includes, wetlands species, at risk species, invasive, and threatened and endangered species. This is accomplished through the use of seasonal staff and contracted surveys.

Facility: Clarks Hill Training Center
Status: Planning
Frequency: Multi-year
STEP Project Number: SC96A060004
Estimated Cost: \$ 15,000.00/Year
Proponent: -
Year Proposed: 21

Scrub Oak Management Plan (Project # 91)

Through use of data collected in the Hardwoods mapping project, a plan for the removal and maintenance of dense hardwood areas will be developed. This plan will describe specific stands in need of treatment and determine proponent and cost of each activity. This plan should be coordinated with Ft Jackson Forestry and the USACE Strom Thurmond Project to ensure management objectives follow their forestry objectives and should be updated every 5 years.

Facility:	Statewide / Program-wide
Status:	Planning
Frequency:	Multi-year
STEP Project Number:	SCC70060008
Estimated Cost:	\$ 20,000.00 Total
Proponent:	TBD
Year Proposed:	21

Forest and Vegetation: Maintain Open Forest Inventory**Mid Story Removal (Project # 92)**

Implementation of the Scrub oak management plan will consist of putting into practice the management practices described in the SOMP. This work will include mechanical thinning of sites, prescribed burning assistance, and chemical control in accordance with the recommendations of the Ft Jackson forest management plan and the USACE at the Strom Thurmond Project on Lake Clarks Hill.

Facility:	Statewide / Program-wide
Status:	Planning
Frequency:	C-Annual
STEP Project Number:	SCC70060008
Estimated Cost:	\$ 10,000.00/Year
Proponent:	TBD
Year Proposed:	Current

CHT Forestry Management Plan implementation (Project # 329)

Execute projects/ task from the CHT Forestry Management Plan.

Facility:	Clarks Hill Training Center
Status:	Active
Frequency:	Multi-year
STEP Project Number:	SC96A060007
Estimated Cost:	\$ 25,000.00/Year
Proponent:	ENV
Year Proposed:	Current

GIS Data: Develop a Data Maintenance/Update Strategy

Create a 5-year Data Management Plan (Project # 6)

Develop a management plan that will address the following areas plan to keep track of and schedule updates for existing data, and creation of new data. All environmental GIS data layers will have a specified schedule for updates and routine maintenance.

Facility:	Statewide / Program-wide
Status:	Active
Frequency:	Multi-year
STEP Project Number:	SC000060010
Estimated Cost:	\$ 5,000.00 Total
Proponent:	ENV
Year Proposed:	21

Implement 5-year Data Plan (Project # 7)

Implement and update 5-year Data plan. This includes performing both managerial/ administrative task and actual data creation, updating and maintenance.

Facility:	Statewide / Program-wide
Status:	Active
Frequency:	Multi-year
STEP Project Number:	SC000060010
Estimated Cost:	\$ 15,000.00/Year
Proponent:	ENV
Year Proposed:	22

Create SOPs for data handling (Project # 8)

Develop and implement standard operating procedures for the organization, maintenance, sharing, distribution and updating of all environmental GIS data, and ensure that all environmental staff follows these procedures.

Facility:	Statewide / Program-wide
Status:	Active
Frequency:	Multi-year
STEP Project Number:	SC000060010
Estimated Cost:	\$ 5,000.00 Total
Proponent:	ENV
Year Proposed:	21

Update 5-year IT equipment plan (Project # 9)

Create and implement a plan to specify hardware and equipment maintenance and updates.

Facility:	Statewide / Program-wide
Status:	Active
Frequency:	Multi-year
STEP Project Number:	SC000060012
Estimated Cost:	\$ 5,000.00 Total
Proponent:	ENV

Year Proposed: Current

SDE Management & Maintenance (Project # 257)

Create and implement a plan to specify hardware and equipment maintenance and update Manage the SCARNG enterprise GIS. Includes any common/routine/needed management of data layers, database schema/design, SQL server, services etc....

Facility: Statewide / Program-wide
Status: Active
Frequency: C-Annual
STEP Project Number: SC000060010
Estimated Cost: \$ 20,000.00/Year
Proponent: ENV
Year Proposed: Current

Create & Manage a Document Management GIS Layer (Project # 259)

Create, manage, and maintain a GIS Document Management layer linking important environmental documentation to a physical/geographic area viewable in GIS.

Facility: Statewide / Program-wide
Status: Active
Frequency: C-Annual
STEP Project Number: SC000060010
Estimated Cost: \$ 5,000.00/Year
Proponent: ENV
Year Proposed: Current

Manage SCARNG ArcGIS Online Account (Project # 260)

Facility: Statewide / Program-wide
Status: Active
Frequency: C-Annual
STEP Project Number: SC000060010
Estimated Cost: \$ 0
Proponent: -
Year Proposed: Current

Update and improve JCUB parcel priority model (Project # 10)

Continue to develop and fine-tune the suitability model created for the JCUB (Joint Compatible Use Buffer) program. Find new and relevant data layers to incorporate into the model.

Facility: Statewide / Program-wide
Status: Active
Frequency: Multi-year
STEP Project Number: SCONG10001
Estimated Cost: \$ 10,000.00 Total
Proponent: ENV
Year Proposed: Current

Update and improve JCUB parcel priority model (Project # 10)

Continue to develop and fine-tune the suitability model created for the JCUB (Joint Compatible Use Buffer) program. Find new and relevant data layers to incorporate into the model.

Facility:	Statewide / Program-wide
Status:	Active
Frequency:	Multi-year
STEP Project Number:	SCONG10001
Estimated Cost:	\$ 10,000.00 Total
Proponent:	ENV
Year Proposed:	Current

GIS Data: GIS Model Creation**Create and maintain soil erosion models (Project #11)**

Create models of soil erosion for the training areas of McCrady Training center, to highlight areas that are current concerns, as well as to predict future areas of interest.

Facility:	Statewide/ Program Wide
Status:	Active
Frequency:	Multi-Year
STEP Project Number:	SCC70060009
Estimated Cost:	\$10,000.00 Total
Proponent:	ENV
Year Proposed:	21

Provide cartographic products as needed (Project # 28)

Provide access to the environmental GIS data holdings in the form of maps, aerial photography, and other cartographic products, in order to assist soldiers and staff in project development, resource management, training, and decision making.

Facility:	Statewide/ Program Wide
Status:	Active
Frequency:	Multi-Year
STEP Project Number:	SCB18060001
Estimated Cost:	\$5,000.00 Annual
Proponent:	ENV
Year Proposed:	Current

GIS Data: Provide Spatial Analysis and GIS Services for Decision-Making**Provide spatial analysis (Project #29)**

Utilize GIS and ancillary data in spatial analysis to assist with resource management, project development, and decision making.

Facility:	Statewide/ Program Wide
Status:	Active

Frequency: Multi-Year
 STEP Project Number: SC000060010
 Estimated Cost: \$10,000.00 Annual
 Proponent: ENV
 Year Proposed: Current

Migrate Species data to GIS (Project #241)

Incorporate data from the Species Database into GIS.

Facility: Statewide/ Program Wide
 Status: Planning
 Frequency: C-Annual
 STEP Project Number: SC000060010
 Estimated Cost: \$5,000.00
 Proponent:
 Year Proposed: 21

GI-STAR Support (Project # 261)

General management and maintenance for GI-STAR. Includes managing, updating, and maintaining services for GI-STAR; creating Help documentation for using GI-STAR; assisting with GI-STAR design, layout, etc....

Facility: Statewide/ Program Wide
 Status: Active
 Frequency: C-Annual
 STEP Project Number: SC000060010
 Estimated Cost: \$5,000.00 Annual
 Proponent: -
 Year Proposed: Current

Outreach, Awareness and Education: Continue Education and Training Program

Develop ECO Training Materials (Project # 103)

Currently the SCARNG has limited materials for unit ECO's to use in their training programs. This project is for the development of a DVD that ECO's could use to train Unit Personnel

Facility: Statewide/ Program Wide Status Planning
 Frequency: C-Annual
 STEP Project Number: SC000060018
 Estimated Cost: \$15,000.00 Annual
 Proponent: ENV
 Year Proposed: Current

Conduct ECO Training Statewide (Project# 104)

Currently the SCARNG has limited materials for unit ECO's to use in their training programs. This project is for the development of a DVD that ECO's could use to train Unit Personnel

Facility: Statewide/ Program Wide

Status: Active
 Frequency: C-Annual
 STEP Project Number: SC000060018
 Estimated Cost: \$5,000.00 Annual
 Proponent: ENV
 Year Proposed: Current

Develop Awareness Materials (Project #135)

Develop awareness materials, to include soldier cards, maps, and other handouts.

Facility: Statewide/ Program Wide
 Status: Planning
 Frequency: C-Annual
 STEP Project Number: SCC70060007
 Estimated Cost: \$13,000.00 Total
 Proponent: ENV
 Year Proposed: Current

Develop Training Aids and Materials (Project # 226)

Facility Statewide/ Program Wide
 Status: Active
 Frequency: C-Annual
 STEP Project Number: SCB18060001
 Estimated Cost: \$2,000.00 Total
 Proponent: ENV
 Year Proposed: 21

Develop an Integrated Training Plan/Curriculum (Project #102)

Currently the SCARNG has no integrated curriculum for environmental training. This leads to an inconsistent message and gaps in the quality and the type of information that is disseminated. This project will develop a standard set of courses along with tools & materials to be used during training.

Facility: Statewide/ Program Wide
 Status: Planning
 Frequency: Defined
 STEP Project Number: SC000060018
 Estimated Cost: \$5,000.00 Total
 Proponent: ENV/ITAM
 Year Proposed: 21

Outreach and Education: Raise Community Awareness

Maintain and Upgrade Interpretive Nature and Fitness Trail System (Project # 99)

Working under a National Public Lands Day grant from the NTF SCARNG constructed an interpretive nature trail and outdoor class room on the McCrady Training Center. The trail is a spur off of the

Palmetto Trail, a trail that runs across the breadth of South Carolina, connecting the mountains to the coast. The trail has become a center piece of our current outreach program. This project is to maintain and expand the existing trail system. This will facilitate our outreach efforts and provide increased outreach opportunities. In the past volunteers have been used to help construct and maintain the trail, this is a practice that will continue.

Facility:	MTC
Status:	Active
Frequency:	C-Annual
STEP Project Number:	GRANT
Estimated Cost:	\$1,000.00 Annual
Proponent:	ENV
Year Proposed:	Current

Conduct Requested Outreach Programs (Project # 100)

The Conservation office is periodically asked throughout each year to give talks & lectures or to set up a booth. These present excellent opportunities to educate the community about the mission and activities of the South Carolina Army National Guard. At a minimum the objective of this project is to meet the current demand. The ultimate goal of the project is to increase the number of Public Outreach Opportunities.

Facility:	Statewide/ Program Wide
Status:	Active
Frequency:	C-Annual
STEP Project Number:	SC000060018
Estimated Cost:	\$5,000.00 Annual
Proponent:	ENV
Year Proposed:	Current

Develop Outreach Curriculum & Materials (Project # 101)

Currently the SCARNG has no standard or base curriculum or materials for outreach programs. They are developed as needed before each opportunity. This leads to an inconsistent message and gaps in the quality and the type of information that is disseminated. The creation of unique materials and curriculum for each opportunity also increases the staff's workload. This project will develop a standard set of tools & materials to be used during outreach opportunities. This project will be completed with in-house staff and equipment.

Facility:	Statewide/ Program Wide
Status:	Active
Frequency:	C-Annual
STEP Project Number:	SC000060018
Estimated Cost:	\$10,000.00 Annual
Proponent:	ENV/ITAM
Year Proposed:	21

National Public Lands Day (Project # 150)

National Public Lands Day is the nation's largest hands-on volunteer effort to improve and enhance public lands and military lands open to the public for recreation.

Facility:	Statewide/ Program Wide
Status:	Planning
Frequency:	D-Annual
STEP Project Number:	GRANT
Estimated Cost:	\$6,085.00 Total
Proponent:	ENV
Year Proposed:	Current

Pest: Manage Invasive/Noxious Plant Species**Implement Management activities from Invasive and Noxious Plant Management Plan (Project # 95)**

Implement management activities through use of mechanical, chemical and biological control methods to reduce or eliminate invasive and noxious plant species.

Facility:	Statewide/ Program Wide
Status:	Active
Frequency:	C-Annual
STEP Project Number:	SCC70060019
Estimated Cost:	\$30,000.00 Annual
Proponent:	ENV/ITAM/ Facilities
Year Proposed:	Current

Develop an Early Detection Rapid Response Plan for Invasive Species (Project # 158)

Develop an EDRR program in accordance with the National Invasive Species Councils guidelines that allows for immediate reaction to specific invasive species that have the potential to cause significant long-term impacts if not dealt with in a much-expedited timeline from when discovered.

Facility:	Statewide/ Program Wide
Status:	Planning
Frequency:	Defined
STEP Project Number:	SCC70060019
Estimated Cost:	\$10,000.00 Total
Proponent:	-
Year Proposed:	22

Invasive Species Control MTC (Project # 308)

This project is for the control and eradication of invasives.

Facility:	Statewide/ Program Wide
Status:	Active
Frequency:	C-Annual
STEP Project Number:	SCC70060019
Estimated Cost:	\$20,000.00 Annual

Proponent: ENV
Year Proposed: Current

Treatment of Invasive Species at the Donaldson Center (Project # 332)

Eradication of invasive/noxious species by chemical and/or manual methods.

Facility: Statewide/ Program Wide
Status: Planning
Frequency: D-Annual
STEP Project Number: SCC70060019
Estimated Cost: \$5,000.00 Annual
Proponent: ENV
Year Proposed: 21

Treatment of Invasive Species at Fountain Inn (Project # 334)

Eradication of invasive/noxious species by chemical and/or manual methods.

Facility: Statewide/ Program Wide
Status: Planning
Frequency: D-Annual
STEP Project Number: SCC70060019
Estimated Cost: \$1,000.00 Annual
Proponent: ENV
Year Proposed: 21

Nuisance Wildlife Pest Control (Project # 125)

Reduce Impacts from nuisance wildlife through activities such as trapping and/or relocating.

Facility: Statewide/ Program Wide
Status: Active
Frequency: C-Annual
STEP Project Number: SCC70060019
Estimated Cost: \$500.00 Annual
Proponent: ENV
Year Proposed: Current

Pests: Reduce the Quantity of Pesticides Applied

Tracking Pesticide usage through the IPMP (Project # 152)

Tracking the pounds of active pesticide ingredients applied on Army National Guard Land through the IPMP.

Facility: Statewide/ Program Wide
Status: Active
Frequency: C-Annual
STEP Project Number: SCC70060019
Estimated Cost: \$0.00 Total
Proponent:

Year Proposed	Current
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Environmental Advisory Council (Project # 201)

Participation on the EAC

Facility	Statewide/ Program Wide
Status	Active
Frequency	C-Annual
STEP Project Number:	SCB18060003
Estimated Cost	\$5,000.00 Annual
Proponent	ENV
Year Proposed	Current

Program Management: Contribute to the National Guard Environmental Program at a National Level

National Awards Program (Project # 320)

Participate in the NGB & Army National Awards program

Facility	Statewide/ Program Wide
Status	Active
Frequency	D-Annual
STEP Project Number:	SCC70160002
Estimated Cost	\$0.00
Proponent	Env
Year Proposed	Current

EAC Meetings (Project # 328)

Facility	Statewide/ Program Wide
Status	Active
Frequency	C-Annual
STEP Project Number:	SCONG150001
Estimated Cost	\$5,000.00 Annual
Proponent	-
Year Proposed	Current

Program Management: Ensure Fiscal Sustainability for the Conservation Program

NGB Data Calls (Project # 318)

Facility	Statewide/ Program Wide
Status	Active
Frequency	C-Annual
STEP Project Number:	SCC70060010
Estimated Cost	\$0.00
Proponent	ENV
Year Proposed	Current

Program Management: Ensure That All Planning Documents are Relevant & Current

CHTS INRMP Review for Operation and Effect (Project # 117)

This project is for the update and revision of the Clarks Hill Training Site INRMP.

Facility	Clarks Hill Training Center
Status	Active
Frequency	Multi-Year
STEP Project Number:	SC96A060002
Estimated Cost	\$20,000.00 Total
Proponent	ENV
Year Proposed	24

MTC INRMP Review for Operation and Effect (Project # 109)

This project is for the revision and update of the SCARNG INRMPs (McCrary & CHT).

Facility	Statewide/ Program Wide
Status	Active
Frequency	Multi-Year
STEP Project Number:	SC96A060002
Estimated Cost	\$20,000.00 Total
Proponent	ENV
Year Proposed	25

Update ICRMP (Project # 140)

Maintain and update ICRMP.

Facility	Statewide/ Program Wide
Status	Planning
Frequency	C-Annual
STEP Project Number:	SCONG160001
Estimated Cost	\$7,500.00 Annual
Proponent	ENV
Year Proposed	24

Maintain and Update Tracking Database (Project # 143)

Maintain and Update Tracking Database. This includes database administration, report and query development, as well as data entry.

Facility	Statewide/ Program Wide
Status	Active
Frequency	C-Annual
STEP Project Number:	SCC70060010
Estimated Cost	\$3,000.00 Annual
Proponent	ENV

Year Proposed	Current
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Update INRMPS (Project # 338)

Conduct Annual Updates and 5-year Reviews for Operation and Effect.

Facility	Statewide/ Program Wide
Status	Active
Frequency	C-Annual
STEP Project Number:	SCC70060010
Estimated Cost	\$27,000.00 Annual
Proponent	ENV
Year Proposed	25

Program Management: Maintain Current and Accurate Species Lists

Species Database (Project # 124)

Develop and maintain a species database. The database should be capable of housing a running species list as well as storing results from planning level surveys, monitoring activities, and incidental captures and observations.

Facility	Statewide/ Program Wide
Status	Active
Frequency	C-Annual
STEP Project Number:	SCC70060014
Estimated Cost	\$7,500.00 Annual
Proponent	ENV
Year Proposed	Current

Program Management: Maintain Easy and Up-to-Date Access to All Relevant Documents

Maintain IT Systems (Project # 237)

Maintain and Upkeep of IT Systems within the Conservation office.

Facility	Statewide/ Program Wide
Status	Active
Frequency	C-Annual
STEP Project Number:	SCB18060001
Estimated Cost	\$10,000.00 Annual
Proponent	-
Year Proposed	Current

State Property Inventory Tracking (Project # 274)

Facility	Statewide/ Program Wide
Status	Active
Frequency	C-Annual
STEP Project Number:	SCC70160002
Estimated Cost	\$0.00
Proponent	-

Year Proposed	Current
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Program Management: Maintain State-of-the-Art Technology

Implement IT maintenance & replacement plan (Project # 292)

The SCARNG Conservation Section operates under an IT replacement and maintenance plan. This plan details the distribution of IT assets and replacement schedules.

Facility	Statewide/ Program Wide
Status	Active
Frequency	C-Annual
STEP Project Number:	SCC70160002
Estimated Cost	\$8,000.00 Annual
Proponent	ENV
Year Proposed	Current

Database Development and testing (Project # 169)

Facility	Statewide/ Program Wide
Status	Active
Frequency	C-Annual
STEP Project Number:	SCC70160002
Estimated Cost	\$7,500.00 Annual
Proponent	ENV
Year Proposed	Current

Project Management: Provide staff the tools, equipment, and supplies needed to perform their day to day work activities.

Maintain and Repair Equipment (Project # 303)

This project is for the repair, maintenance, and general upkeep of the Conservation Teams equipment.

Facility	Statewide/ Program Wide
Status	Active
Frequency	C-Annual
STEP Project Number:	SCC70060019
Estimated Cost	\$5,000.00 Annual
Proponent	ENV
Year Proposed	Current

Procurement of routine office supplies (Project # 242)

This project is for the procurement of day-to-day office supplies and equipment that the staff need to successfully complete their job.

Facility	Statewide/ Program Wide
Status	Active
Frequency	C-Annual

STEP Project Number:	SCB18060001
Estimated Cost	\$5,000.00
Proponent	-
Year Proposed	Current

Routine Admin (Project # 322)

Provide tools, equipment and supplies for routine administrative functions in support of the Conservation Program

Facility	Statewide/ Program Wide
Status	Active
Frequency	C-Annual
STEP Project Number:	SCC70160002
Estimated Cost	\$5,000.00 Annual
Proponent	ENV
Year Proposed	Current

Program Management: To employ a staff of subject matter experts that are innovative leaders

Staff Training (Project # 233)

This project ensures that our staff has the opportunity to receive subject matter specific training to stay current in their field and to expand their knowledge base.

Facility	Statewide/ Program Wide
Status	Active
Frequency	C-Annual
STEP Project Number:	SCB18060015
Estimated Cost	\$40,000.00 Annual
Proponent	ENV
Year Proposed	Current

Staff Development Training Plan (Project # 236)

The development and maintenance of individual staff development and training plans. The intent is to link these training plans to measurable objectives that can/ will lead to salary increases.

Facility	Statewide/ Program Wide
Status	Planning
Frequency	C-Annual
STEP Project Number:	SCB18060002
Estimated Cost	\$0.00
Proponent	Conservation
Year Proposed	20

Mission Travel (Project # 250)

This project supports Mission related travel. This project supports other projects with the INRMP & ICRMP with travel expenses.

Facility	Statewide/ Program Wide
Status	Active
Frequency	C-Annual
STEP Project Number:	SCB18060003
Estimated Cost	\$35,000.00 Annual
Proponent	ENV
Year Proposed	Current

Yearly Performance Planning and Evaluation Reviews (Project # 252)

Conduct yearly performance planning and evaluation reviews as required by agency policy.

Facility	Statewide/ Program Wide
Status	Active
Frequency	D-Annual
STEP Project Number:	TBD
Estimated Cost	\$0.00
Proponent	ENV
Year Proposed	Current

Soil and Water: Develop a Systemic Approach for Soil & Water Management**Develop and Update Soil Management Plan and Inventory (SMPI) (Project # 30)**

This plan serves as the database of record for unimproved road condition and erosion sights on MTC. The plan contains site locations, descriptions, impact/ priority, root cause/ triggering impact, construction grade site designs with complete specs and cost estimates. Sites identified in the plan will be divide into three categories; Major, Moderate, and Routine. Once sights have been identified they will be added to INRMP Project List. The status of the site will be monitored in the INRMP. The plan is updated annually with subwatershed surveys for new problem areas. Sights in the inventory that have not been repaired are assessed annually for changes in condition. Sights that have been repaired are monitored annually for three years with recommendations for site maintenance.

Facility	Statewide/ Program-Wide
Status	Planning
Frequency	Multi-Year
STEP Project Number:	SCC70060009
Estimated Cost	\$60,000.00 Annual
Proponent	ENV
Year Proposed	20

Conduct SMPI Planning & Coordination Meetings (Project # 32)

Stakeholders will meet bi-annually at a minimum. The purpose of the first meeting is twofold; first determine which sites from plan will be remediated and determine who will be the project proponent,

second to determine design prepotency for newly identified sites. This determination will be based on actual current year available dollars, not on projected out year budgets. The second and proceeding meetings in a given year will be to track progress and to apprise other stakeholders of any changes from the first meeting. After individual projects are selected for remediation by the stakeholders those projects will be updated in the INRMP. Based on these selections from the yearly planning meeting stakeholders will remediate the agreed to sites in accordance with the SMPI design. Stakeholders will track all remediation cost and report them back to the Environmental Conservation Office for inclusion into the yearly SMPI and INRMP updates. Implementation of the designs in the SMPI is crucial to meeting the stated goal of reduced soil loss.

Facility	Statewide/ Program Wide
Status	Active
Frequency	Multi-Year
STEP Project Number:	SCC70060009
Estimated Cost	\$0.00
Proponent	Facilities, ITAM, ENV
Year Proposed	Current

Open Area Stabilization and Maintenance (Project # 247)

Stabilize and maintain open areas that area susceptible to erosion and runoff ex: right of way, fields, logging deck, etc.

Facility	Statewide/ Program Wide
Status	Active
Frequency	C-Annual
STEP Project Number:	SCC70060009
Estimated Cost	\$5,000.00 Annual
Proponent	-
Year Proposed	Current

Follow up surveys for all remediated erosion sites (Project # 71)

This survey is to assess and monitor the condition of remediated erosion sites as it pertains to soil erosion and stormwater management.

Facility	Statewide/ Program Wide
Status	Active
Frequency	D-Annual
STEP Project Number:	SCC70060009
Estimated Cost	\$6,500.00 Annual
Proponent	ENV
Year Proposed	Current

Soil & Water: Erosion Repair Site Monitoring & Evaluation

Soil Management Site Cataloging at CHT (Project # 339)

This plan serves as the database of record for unimproved road condition and erosion sites. The plan contains site locations, descriptions, impact/ priority, annual estimated soil loss, root cause/ triggering

impact, and cost estimates for repair. Sites identified in the plan will be divide into three categories; major, Moderate, and Routine. Once sights have been identified they will be added to INRMP Project List. The status of the site will be tracked monitored in the INRMP. The plan is updated annually with sub-watershed surveys for new problem areas. Sights in the inventory that have not been repaired are assessed annually for changes in condition. Sights that have been repaired are monitored annually for three years with recommendations.

Facility	Statewide/ Program Wide
Status	Active
Frequency	Multi-Year
STEP Project Number:	SC96A060001
Estimated Cost	\$15,000.00 Annual
Proponent	ENV
Year Proposed	21

Special Status Species: Special Status Species (SSS) Habitat Management

Monitoring Interaction between Military training and T&E habitat types (Project # 82)

Develop procedure to evaluate training activities occurring in each T&E habitat type that may have an impact on protected species.

Facility	Statewide/ Program Wide
Status	Active
Frequency	Defined
STEP Project Number:	SCC70060008
Estimated Cost	\$7,500.00 Annual
Proponent	ENV/ITAM
Year Proposed	Current

T & E Habitat Mapping (Project # 80)

Develop habitat maps outlining areas of potential Threatened and Endangered species occurring on MTC. This data will be used to focus future T&E surveys, and as a guide to make biologically sound management decisions. This will be part of a larger state-wide effort for SCARNG to develop habitat potential maps.

Facility	Statewide/ Program Wide
Status	Planning
Frequency	Defined
STEP Project Number:	SC000060010
Estimated Cost	\$7,500.00 Total
Proponent	ENV
Year Proposed	21

T&E Species Awareness (Project # 83)

Develop training material for trainers and soldiers to educate them on the importance and the penalties associated with T&E laws and regulations as they affect MTC and the military mission.

Facility	Statewide/ Program Wide
Status	Active
Frequency	C-Annual
STEP Project Number:	SCC70060008
Estimated Cost	\$20,000.00 Annual
Proponent	ENV
Year Proposed	Current

Special Status Species Habitat Mapping (Project # 85)

Develop habitat maps outlining areas of potential Special Status Species occurring on MTC. This data will be used to focus future surveys, and as a guide to make biologically sound management decisions. This will be part of a larger state-wide effort for SCARNG to develop habitat potential maps and will be incorporated into the T&E habitat mapping project if possible.

Facility	Statewide/ Program Wide
Status	Planning
Frequency	Defined
STEP Project Number:	SC000060010
Estimated Cost	\$7,500.00 Total
Proponent	ENV
Year Proposed	21

Special Status Species PL Surveys (Project # 86)

Completion of Planning Surveys that identify locations of Special Status Species at the MTC. This data will be used to focus future studies, and as a guide to make biologically sound management decisions.

Facility	Statewide/ Program Wide
Status	Active
Frequency	Multi-Year
STEP Project Number:	SCC70060014
Estimated Cost	\$10,700.00 Annual
Proponent	ENV
Year Proposed	Current

Special Species Habitat Management (Project # 304)

This project is for the active and adaptive management of special status species.

Facility	Statewide/ Program Wide
Status	Active
Frequency	C-Annual
STEP Project Number:	SCC70060008
Estimated Cost	\$50,000.00 Annual
Proponent	Env

Year Proposed	Current
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Honey Bee Management (Project # 105)

Honey bee projects on MTC are in support of two main goals. One is the support of the SCARNG Agrobusiness Unit who has a specific training task of managing honey bee populations and instructing individuals on honey bees and their use in the agricultural community. The second Goal honey bees are helping to meet is the requirements to promote biodiversity and increase the survivorship of the native vegetation in the area.

Facility	McCrady Training Center
Status	Active
Frequency	C-Annual
STEP Project Number:	SCC70060008
Estimated Cost	\$1,000.00 Annual
Proponent	ENV
Year Proposed	Current

Special Status Species: Special Status Species Monitoring

Special Species Planning Level Survey Update (Project # 269)

Update of the Special Status Species at SCARNG Training Centers. This includes T&E, Candidate, state listed and invasives.

Facility	Statewide/ Program Wide
Status	Planning
Frequency	Multi-Year
STEP Project Number:	SCC70060015
Estimated Cost	\$20,000.00 Total
Proponent	ENV
Year Proposed	21

Special Status Species PL Surveys CHT (Project # 311)

Completion of Planning Surveys that identify locations of Special Status Species at the CHT. This data will be used to focus future studies, and as a guide to make biologically sound management decisions.

Facility	Clarks Hill Training Center
Status	Planning
Frequency	Multi-Year
STEP Project Number:	SC96A160001
Estimated Cost	\$25,000.00 Total
Proponent	ENV-Conservation
Year Proposed	21

PLS for T&E at CHT (Project # 312)

Conduct PLS at CHT for "Special Status" species to include T&E and candidate species.

Facility	Clarks Hill Training Center
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Status	Planning
Frequency	Multi-Year
STEP Project Number:	SC96A160001
Estimated Cost	\$25,000.00 Total
Proponent	ENV-Conservation
Year Proposed	21

Wetlands: Sustain or Enhance Wetland Systems at MTC

Develop a Wetlands Monitoring Protocol (Project # 3)

Design a monitoring protocol that will measure and track the relative health of the wetland systems on MTC. The final design will need to be one that can be implemented cost effectively and maintained with in-house staff.

Facility	Statewide/ Program Wide
Status	Planning
Frequency	Multi-Year
STEP Project Number:	SCC70060005
Estimated Cost	\$15,000.00 Total
Proponent	ENV
Year Proposed	21

Routine Wetlands Management CHT (Project # 343)

Implementation of routine wetlands management projects at CHTC

Facility	Clarks Hill Training Center
Status	Planning
Frequency	C-Annual
STEP Project Number:	SC96A060006
Estimated Cost	\$15,000.00 Annual
Proponent	-
Year Proposed	Current

Wetlands Flora and Fauna Guidelines (Project # 5)

Develop guidelines for management of sensitive species, including protection, propagation and research on the health and stability of the species.

Facility	Statewide/ Program Wide
Status	Planning
Frequency	Multi-Year
STEP Project Number:	SCC70060005
Estimated Cost	\$15,000.00 Total
Proponent	ENV
Year Proposed	21

Colonels Creek drainage monitoring program (Project # 73)

Monitor and assess the health and biodiversity of the stream system on McCrady Training Center to aid in developing sound management decisions for military training, and to comply with all State and Federal regulation. Specific actions will include water quality monitoring, macroinvertebrate sampling, and monitoring physiographic stream characteristics.

Facility	McCrady Training Center
Status	Active
Frequency	D-Annual
STEP Project Number:	SCC70160004
Estimated Cost	\$15,000.00 Annual
Proponent	ENV
Year Proposed	Current

Implementation a Wetlands Monitoring Protocol (Project # 115)

Implement the monitoring protocol developing project 3.

Facility	Statewide/ Program Wide
Status	Planning
Frequency	C-Annual
STEP Project Number:	SCC70060017
Estimated Cost	\$13,000.00 Annual
Proponent	ENV
Year Proposed	22

Wetlands Flora and Fauna PLS (Project # 205)

Collect macro-invertebrates at predesignated sites in streams on McCrady Training Center. Use findings to scientifically conclude the health of the streams.

Facility	McCrady Training Center
Status	Planning
Frequency	Multi-Year
STEP Project Number:	SCC70060015
Estimated Cost	\$10,000.00 Total
Proponent	ENV
Year Proposed	22

Erosion Project Design MTC (Project # 235)

Assist in funding erosion project design that help sustain or enhance MTC Wetlands.

Facility	McCrady Training Center
Status	Planning
Frequency	D-Annual
STEP Project Number:	SCC70060018
Estimated Cost	\$5,000.00 Annual
Proponent	ENV
Year Proposed	22

Wetland and Wetland Plant Community Survey and Mapping (Project # 323)

All wetlands (as defined by the USACE) present on SCARNG Training Centers will be inventoried in the field and geolocated using GPS. Maps will be made of all wetland communities and an accompanying text will discuss the botanical, ecological, hydrological, and strategic value of each wetland and wetland community type. The rarity of each wetland type and the management of wetlands on the site will also be discussed in the text.

Facility	Statewide/ Program Wide
Status	Planning
Frequency	Defined
STEP Project Number:	SCC70060016
Estimated Cost	\$25,000.00 Total
Proponent	Env
Year Proposed	22

Monitor Wetland Conditions (Project # 327)

Facility	Statewide/ Program Wide
Status	Active
Frequency	Multi-Year
STEP Project Number:	SCC70060005
Estimated Cost	\$10,000.00
Proponent	ENV
Year Proposed	Current

D. SPECIES LISTS

The following tables present the species documented on MTC through 2018, based on multiple surveys and reports (see Appendix H for a full list of relevant reports and data). The SCARNG maintains all observations in a database and updates observations as needed.

Table D-1. Plant Species Documented on McCrady Training Center.			
GENUS	SPECIES	COMMON	NOTES
<i>Acanthospermum</i>	<i>australe</i>	paraguayan starburr	
<i>Acer</i>	<i>rubrum</i>	red maple	
<i>Agalinis</i>	<i>fasciculata</i>	beach false foxglove	
<i>Agrostis</i>	<i>hyemalis</i>	winter bentgrass	
<i>Ailanthus</i>	<i>altissima</i>	tree-of-heaven	non-native
<i>Albizia</i>	<i>julibrissin</i>	silktree/ mimosa	non-native
<i>Alchemilla</i>	<i>microcarpa</i>	cockleburr	
<i>Alnus</i>	<i>serrulata</i>	hazel alder	
<i>Amelanchier</i>	<i>arborea</i> var. <i>arborea</i>	common serviceberry	
<i>Amelanchier</i>	<i>canadensis</i>	canadian serviceberry	
<i>Amorpha</i>	<i>fruticosa</i>	Indigo bush	
<i>Amorpha</i>	<i>herbacea</i> var. <i>herbacea</i>	clusterspike indigobush	
<i>Andropogon</i>	<i>gyrans</i> var. <i>stenophyllus</i>	Elliott's bluestem	state species of concern
<i>Andropogon</i>	<i>ternarius</i>	splitbeard bluestem	
<i>Andropogon</i>	<i>virginicus</i>	broomsedge bluestem	
<i>Antennaria</i>	<i>plantaginifolia</i>	woman's tobacco	
<i>Anthoxanthum</i>	<i>aristatum</i>	annual vernalgrass	
<i>Anthoxanthum</i>	<i>odoratum</i>	sweet vernalgrass	
<i>Aphanes</i>	<i>microcarpa</i>	slender parsley piert	
<i>Apios</i>	<i>americana</i>	groundnut	
<i>Apocynum</i>	<i>cannabinum</i>	indianhemp	
<i>Arabidopsis</i>	<i>thaliana</i>	thalecress	
<i>Arabidopsis</i>	<i>thaliana</i>	mouseear cress	
<i>Aralia</i>	<i>spinosa</i>	devil's walkingstick	
<i>Arenaria</i>	<i>caroliniana</i>	Carolina sandwort	
<i>Arenaria</i>	<i>serpyllifolia</i>	thymeleaf sandwort	
<i>Aristida</i>	<i>condensata</i>	Piedmont three-awned grass	state species of concern
<i>Aristida</i>	<i>lanosa</i>	woollysheath threeawn	
<i>Aristida</i>	<i>oligantha</i>	prairie threeawn	
<i>Aristida</i>	<i>tuberculosa</i>	seaside threeawn	
<i>Aristolochia</i>	<i>serpentaria</i>	virginia snakeroot	
<i>Arundo</i>	<i>donax</i>	giantreed	
<i>Asclepias</i>	<i>amplexicaulis</i>	clasping milkweed	
<i>Asclepias</i>	<i>tuberosa</i>	butterfly milkweed	
<i>Aster</i>	<i>dumosus</i>	rice button aster	
<i>Aster</i>	<i>ericoides</i>	heath aster	
<i>Aster</i>	<i>lateriflorus</i>	calico aster	

Table D-1. Plant Species Documented on McCrady Training Center.			
GENUS	SPECIES	COMMON	NOTES
<i>Aster</i>	<i>linariifolius</i>	flax-leaf white-top aster	
<i>Aster</i>	<i>paternus</i>	toothed white-top aster	
<i>Aster</i>	<i>solidagineus</i>	narrow-leaf white-top aster	
<i>Aster</i>	<i>solidagineus</i>	narrowleaf aster	
<i>Aster</i>	<i>tortifolius</i>	dixie aster	
Astragalus	michauxii	sandhills milkvetch	state species of concern
<i>Athyrium</i>	<i>filix-femina ssp. asplenioides</i>	ladyfern	
<i>Aureolaria</i>	<i>pectinata</i>	combleaf yellow false foxglove	
<i>Axonopus</i>	<i>fissifolius</i>	common carpetgrass	
<i>Baccharis</i>	<i>halimifolia</i>	groundseltree	
<i>Baptisia</i>	<i>alba</i>	white wild indigo	
<i>Baptisia</i>	<i>bracteata</i>	longbract wild indigo	
<i>Baptisia</i>	<i>cinerea</i>	grayhairy wild indigo	
<i>Baptisia</i>	<i>tinctoria</i>	horseflyweed	
<i>Berchemia</i>	<i>scandens</i>	alabama supplejack	
<i>Berlandiera</i>	<i>pumila</i>	soft greeneyes	
<i>Betula</i>	<i>nigra</i>	river birch	
<i>Bidens</i>	<i>polylepis</i>	Beggarticks	
<i>Bignonia</i>	<i>capreolata</i>	crossvine	
<i>Brachiaria</i>	<i>ramosa</i>	dixie signalgrass	
<i>Brickellia</i>	<i>eupatorioides</i>	false boneset	
<i>Briza</i>	<i>minor</i>	little quakinggrass	
Buddleia	dauidii	butterfly bush	non-native
<i>Bulbostylis</i>	<i>capillaris</i>	threadleaf beakseed	
<i>Bulbostylis</i>	<i>stenophylla</i>	sandy field hairsedge	
Burmanna	biflora	northern bluethread	state species of concern
<i>Calamagrostis</i>	<i>coarctata</i>	arctic reedgrass	
Calamovilfa	brevipilis	pine-barrens reed-grass	state species of concern
<i>Callicarpa</i>	<i>americana</i>	american beautyberry	
<i>Calopogon</i>	<i>barbatus</i>	bearded grasspink	
<i>Calopogon</i>	<i>tuberosus</i>	tuberous grass-pink	
<i>Calopogon</i>	<i>tuberosus</i>	tuberous grasspink	
Camellia	spp.	Camellia	non-native
<i>Campsis</i>	<i>radicans</i>	trumpet creeper	
<i>Capsella</i>	<i>bursa-pastoris</i>	shepherd's purse	
<i>Carex</i>	<i>alata</i>	broadwing sedge	
<i>Carex</i>	<i>albolutescens</i>	greenwhite sedge	
<i>Carex</i>	<i>debilis var. debilis</i>	white-edge sedge	
Carex	elliottii	Elliot's sedge	state species of concern
<i>Carex</i>	<i>glaucescens</i>	southern waxy sedge	
<i>Carex</i>	<i>leptalea</i>	bristlystalk sedge	
<i>Carex</i>	<i>venusta</i>	darkgreen sedge	
<i>Carphephorus</i>	<i>bellidifolius</i>	sandywoods chaffhead	

Table D-1. Plant Species Documented on McCrady Training Center.			
GENUS	SPECIES	COMMON	NOTES
<i>Carya</i>	<i>aquatica</i>	Water Hickory	
<i>Carya</i>	<i>carolinae-septentrionalis</i>	Southern Shagbark	
<i>Carya</i>	<i>ovata</i>	shag-bark hickory	
<i>Carya</i>	<i>ovata</i>	shagbark hickory	
<i>Cassia</i>	<i>nictitans</i>	Wild sensitive plant	
<i>Castanea</i>	<i>pumila</i>	Chinkapin	
<i>Castanea</i>	<i>pumila ashe</i>	Coastal chinquapin	
<i>Catalpa</i>	<i>bignonioides</i>	southern catalpa	
<i>Ceanothus</i>	<i>americanus</i>	new jersey tea	
<i>Celtis</i>	<i>laevigata</i>	sugarberry	
<i>Cenchrus</i>	<i>longispinus</i>	innocent-weed	
<i>Centrosema</i>	<i>virginianum</i>	spurred butterfly pea	
<i>Cephalanthus</i>	<i>occidentalis</i>	Button brush	
<i>Cerastium</i>	<i>glomeratum</i>	sticky mouse-ear chickweed	
<i>Cerastium</i>	<i>semidecandrum</i>	fivestamen chickweed	
<i>Ceratiola</i>	<i>ericoides</i>	sand heath	
<i>Cercis</i>	<i>canadensis</i>	eastern redbud	
<i>Chaerophyllum</i>	<i>tainturieri</i>	hairyfruit chervil	
<i>Chamaecrista</i>	<i>nictitans</i>	partridge pea	
<i>Chamaecyparis</i>	<i>thyoides</i>	atlantic white cedar	
<i>Chamaedaphne</i>	<i>calyculata var. angustifolia</i>	leatherleaf	
<i>Chenopodium</i>	<i>album</i>	lamb's quarters	
<i>Chimaphila</i>	<i>maculata</i>	striped prince's pine	
<i>Chrysopsis</i>	<i>gossypina</i>	cottony goldenaster	
<i>Chrysopsis</i>	<i>graminifolia</i>	Grass-leaved Golded Aster	
<i>Chrysopsis</i>	<i>mariana</i>	maryland goldenaster	
<i>Cirsium</i>	<i>repandum</i>	sandhill thistle	
<i>Clethra</i>	<i>alnifolia</i>	coastal sweetpepperbush	
<i>Clitoria</i>	<i>mariana</i>	atlantic pigeonwings	
<i>Cnidocolus</i>	<i>stimulosus</i>	finger rot	
<i>Collinsonia</i>	<i>serotina</i>	southern horse-balm	state species of concern
<i>Commelina</i>	<i>erecta</i>	whitemouth dayflower	
<i>Coreopsis</i>	<i>gladiata</i>	coastalplain tickseed	
<i>Coreopsis</i>	<i>lanceolata</i>	lance-leaf tickseed	
<i>Coreopsis</i>	<i>major</i>	greater tickseed	
<i>Coreopsis</i>	<i>verticillata</i>	Tickseed	
<i>Coreopsis</i>	<i>X delphiniifolia</i>	larkspurleaf tickseed	
<i>Cornus</i>	<i>florida</i>	flowering dogwood	
<i>Crataegus</i>	<i>flava</i>	yellow-leaf hawthorn	
<i>Crataegus</i>	<i>flava</i>	yellowleaf hawthorn	
<i>Crataegus</i>	<i>phaenopyrum</i>	hawthorn	
<i>Croptilon</i>	<i>divaricatum</i>	slender scratchdaisy	
<i>Crotalaria</i>	<i>angulata</i>	Rattlebox	
<i>Crotalaria</i>	<i>spectabilis</i>	showy rattlebox	

Table D-1. Plant Species Documented on McCrady Training Center.			
GENUS	SPECIES	COMMON	NOTES
<i>Croton</i>	<i>glandulosus</i>	vente conmigo	
<i>Cynodon</i>	<i>dactylon</i>	bermudagrass	
<i>Cyperus</i>	<i>compressus</i>	poorland flatsedge	
<i>Cyperus</i>	<i>croceus</i>	baldwin's flatsedge	
<i>Cyperus</i>	<i>erythrorhizos</i>	redroot flatsedge	
<i>Cyperus</i>	<i>iria</i>	ricefield flatsedge	
<i>Cyperus</i>	<i>plukenetii</i>	plukenet's flatsedge	
<i>Cyperus</i>	<i>polystachyos</i>	manyspike flatsedge	
<i>Cyperus</i>	<i>retrofractus</i>	rough flatsedge	
<i>Cyperus</i>	<i>retrosus</i>	pine barren flatsedge	
<i>Cyperus</i>	<i>strigosus</i>	strawcolored flatsedge	
<i>Cyrilla</i>	<i>racemiflora</i>	swamp titi	
<i>Dactyloctenium</i>	<i>aegyptium</i>	durban crowsfoot grass	
<i>Danthonia</i>	<i>sericea</i>	downy danthonia	
<i>Danthonia</i>	<i>spicata</i>	poverty oatgrass	
<i>Desmodium</i>	<i>ciliare</i>	hairy smallleaf ticktrefoil	
<i>Desmodium</i>	<i>floridanum</i>	florida ticktrefoil	
<i>Desmodium</i>	<i>laevigatum</i>	smooth ticktrefoil	
<i>Desmodium</i>	<i>lineatum</i>	sand ticktrefoil	
<i>Desmodium</i>	<i>paniculatum</i>	panicledleaf ticktrefoil	
<i>Desmodium</i>	<i>strictum</i>	Pine barren ticktrefoil	
<i>Dichantherium</i>	<i>acuminatum</i> var. <i>fasciculatum</i>	western panicgrass	
<i>Dichantherium</i>	<i>commutatum</i>	variable panicgrass	
<i>Dichantherium</i>	<i>erectifolium</i>	erectleaf panicgrass	
<i>Dichantherium</i>	<i>oligosanthes</i> var. <i>scribner</i>	scribner's rosette grass	
<i>Dichantherium</i>	<i>scoparium</i>	velvet panicum	
<i>Dichondra</i>	<i>carolinensis</i>	carolina ponysfoot	
<i>Digitaria</i>	<i>ischaemum</i>	smooth crabgrass	
<i>Diodia</i>	<i>teres</i>	poorjoe	
<i>Diospyros</i>	<i>virginiana</i>	common persimmon	
<i>Draba</i>	<i>brachycarpa</i>	shortpod whitlowgrass	
<i>Drosera</i>	<i>capillaris</i>	Sundew	
<i>Drosera</i>	<i>intermedia</i>	spoon-leaf sundew	
<i>Drosera</i>	<i>intermedia</i>	spoonleaf sundew	
<i>Duchesnea</i>	<i>indica</i>	indian strawberry	
<i>Dulichium</i>	<i>arundinaceum</i>	threeway sedge	
<i>Echinacea</i>	<i>laevigata</i>	smooth purple coneflower	federal endangered, state endangered
<i>Echinochloa</i>	<i>crus-galli</i>	barnyardgrass	
<i>Eleagnus</i>	<i>pungens</i>	silverthorn	non-native
<i>Eleocharis</i>	<i>baldwinii</i>	baldwin's spikerush	
<i>Eleocharis</i>	<i>compressa</i>	flat-stem spikerush	
<i>Eleocharis</i>	<i>equisetoides</i>	jointed spikesedge	
<i>Eleocharis</i>	<i>melanocarpa</i>	black-fruit spikerush	

Table D-1. Plant Species Documented on McCrady Training Center.			
GENUS	SPECIES	COMMON	NOTES
<i>Eleocharis</i>	<i>microcarpa</i>	small-fruit spike-rush	
<i>Eleocharis</i>	<i>olivacea</i>	bright green spikerush	
<i>Eleocharis</i>	<i>robbinsii</i>	Robbin's spicebush	state species of concern
<i>Eleocharis</i>	<i>tenuis</i>	slender spikerush	
<i>Eleocharis</i>	<i>tortilis</i>	twisted spikerush	
<i>Eleocharis</i>	<i>tricostata</i>	three-angle spikerush	
<i>Eleocharis</i>	<i>tuberosa</i>	cone-cup spikerush	
<i>Elephantopus</i>	<i>nudatus</i>	smooth elephantsfoot	
<i>Elephantopus</i>	<i>tomentosus</i>	devil's grandmother	
<i>Elymus</i>	<i>virginicus</i>	virginia wildrye	
<i>Epigaea</i>	<i>repens</i>	trailing arbutus	
<i>Eragrostis</i>	<i>curvula</i>	weeping lovegrass	
<i>Eragrostis</i>	<i>refracta</i>	coastal lovegrass	
<i>Eragrostis</i>	<i>spectabilis</i>	purple lovegrass	
<i>Erigeron</i>	<i>strigosus</i>	prairie fleabane	
<i>Erigeron</i>	<i>strigosus</i> var. <i>beyrichii</i>	beyrich's fleabane	
<i>Eriocaulon</i>	<i>compressum</i>	flattened pipewort	
<i>Eriocaulon</i>	<i>decangulare</i>	tenangle pipewort	
<i>Eriogonum</i>	<i>tomentosum</i>	dog-tongue wild buckwheat	
<i>Eupatorium</i>	<i>capillifolium</i>	dog-fennel	
<i>Eupatorium</i>	<i>hyssopifolium</i>	hyssop-leaf thoroughwort	
<i>Eupatorium</i>	<i>purpureum</i>	sweet-scented joe-pye-weed	
<i>Eupatorium</i>	<i>rotundifolium</i>	round-leaf thoroughwort	
<i>Eupatorium</i>	<i>X pinnatifidum</i>	common eupatorium	
<i>Euphorbia</i>	<i>curtisii</i>	curtis' spurge	
<i>Euphorbia</i>	<i>ipecacuanhae</i>	american-ipecac	
<i>Fothergilla</i>	<i>gardenii</i>	dwarf witch-alder	
<i>Fraxinus</i>	<i>americana</i>	white ash	
<i>Froelichia</i>	<i>floridana</i>	plains snake-cotton	
<i>Galactia</i>	<i>erecta</i>	erect milk-pea	
<i>Galactia</i>	<i>regularis</i>	eastern milk-pea	
<i>Galactia</i>	<i>volubilis</i>	downy milk-pea	
<i>Galium</i>	<i>aparine</i>	sticky-willy	
<i>Gamochaeta</i>	<i>purpurea</i>	spoon-leaf purple everlasting	
<i>Gaura</i>	<i>filipes</i>	slender-stalk beeblossom	
<i>Gaylussacia</i>	<i>dumosa</i>	dwarf huckleberry	
<i>Gelsemium</i>	<i>sempervirens</i>	evening trumpet-flower	
<i>Geranium</i>	<i>carolinianum</i>	carolina crane's-bill	
<i>Glottidium</i>	<i>vesicarium</i>	Bladderpod	
<i>Gnaphalium</i>	<i>obtusifolium</i>	rabbit-tobacco	
<i>Goodyera</i>	<i>pubescens</i>	downy rattlesnake plantain	
<i>Gratiola</i>	<i>aurea</i>	golden hedge-hyssop	
<i>Gratiola</i>	<i>pilosa</i>	shaggy hedge-hyssop	
<i>Gratiola</i>	<i>virginiana</i>	round-fruit hedge-hyssop	

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GENUS	SPECIES	COMMON	NOTES
<i>Gymnopogon</i>	<i>brevifolius</i>	short-leaf skeleton grass	
<i>Habenaria</i>	<i>repens</i>	water-spider false rein orchid	
<i>Helenium</i>	<i>amarum</i>	yellow sneezeweed	
<i>Helianthemum</i>	<i>canadense</i>	long-branch frostweed	
<i>Helianthus</i>	<i>angustifolius</i>	swamp sunflower	
<i>Helianthus</i>	<i>atrorubens</i>	purpledisk sunflower	
<i>Helianthus</i>	<i>tuberosus</i>	Jerusalem artichoke	
<i>Heliotropium</i>	<i>amplexicaule</i>	clasping heliotrope	
<i>Heliotropium</i>	<i>indicum</i>	Turnsole	
<i>Heterotheca</i>	<i>gossypina</i>	Wooly Golden Aster	
<i>Hexastylis</i>	<i>arifolia</i>	little-brown-jug	
<i>Hibiscus</i>	<i>moscheutos</i>	rose mallow or wild cotton	
<i>Holosteum</i>	<i>umbellatum</i>	jagged-chickweed	
<i>Houstonia</i>	<i>caerulea</i>	Bluets	
<i>Houstonia</i>	<i>longifolia</i>	long-leaf summer bluet	
<i>Hydrocotyle</i>	<i>umbellata</i>	many-flower marsh-pennywort	
<i>Hypericum</i>	<i>canadense</i>	lesser canadian st. john's-wort	
<i>Hypericum</i>	<i>crux-andreae</i>	st. peter's-wort	
<i>Hypericum</i>	<i>denticulatum</i>	coppery st. john's-wort	
<i>Hypericum</i>	<i>drummondii</i>	nits-and-lice	
<i>Hypericum</i>	<i>fasciculatum</i>	peelback St. johnswort	
<i>Hypericum</i>	<i>galioides</i>	bedstraw st. john's-wort	
<i>Hypericum</i>	<i>gentianoides</i>	orange-grass	
<i>Hypericum</i>	<i>hypericoides</i>	st. andrew's-cross	
<i>Hypericum</i>	<i>lloydii</i>	sandhill st. john's-wort	
<i>Hypericum</i>	<i>mutilum</i>	dwarf st. john's-wort	
Hypericum	nitidum	Carolina st. john's-wort	state species of concern
<i>Hypericum</i>	<i>setosum</i>	hairy st. john's-wort	
<i>Hypericum</i>	<i>virginicum</i>	Virginia marsh st. johnswort	
<i>Hypericum</i>	<i>walteri</i>	walter's marsh St. johnswort	
<i>Hypochoeris</i>	<i>glabra</i>	smooth cat's-ear	
<i>Hypochoeris</i>	<i>radicata</i>	spotted cat's-ear	
<i>Hypoxis</i>	<i>hirsuta</i>	eastern yellow star-grass	
<i>Hypoxis</i>	<i>sessilis</i>	glossy-seed yellow star-grass	
Ilex	amelanchier	sarvis holly	state species of concern
Ilex	aquifolium	spiny holly	non-native
<i>Ilex</i>	<i>coriacea</i>	large gallberry	
Ilex	cornuta	single-spine holly	non-native
<i>Ilex</i>	<i>glabra</i>	inkberry	
<i>Ilex</i>	<i>opaca</i>	american holly	
<i>Ipomoea</i>	<i>pandurata</i>	man-of-the-earth	
<i>Iris</i>	<i>cristata</i>	Dwarf Wild Iris	
<i>Iris</i>	<i>virginica</i>	virginia iris	
Juncus	abortivus	pine barren rush	state species of concern

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GENUS	SPECIES	COMMON	NOTES
<i>Juncus</i>	<i>acuminatus</i>	knotty-leaf rush	
<i>Juncus</i>	<i>diffusissimus</i>	slim-pod rush	
<i>Juncus</i>	<i>marginatus</i>	grass-leaf rush	
<i>Juncus</i>	<i>polycephalus</i>	many-head rush	
<i>Juncus</i>	<i>scirpoides</i>	needle-pod rush	
Juniperus	sp.	creeping virginia	non-native
<i>Juniperus</i>	<i>virginiana</i>	eastern redcedar	
<i>Kalmia</i>	<i>latifolia</i>	mountain-laurel	
<i>Krigia</i>	<i>cespitosa</i>	weedy dwarf-dandelion	
<i>Krigia</i>	<i>virginica</i>	virginia dwarf-dandelion	
<i>Lachnocaulon</i>	<i>anceps</i>	white-head bogbutton	
<i>Lactuca</i>	<i>graminifolia</i>	grass leaf lettuce	
Lagerstroema	indica	Crape myrtle	non-native
<i>Lamium</i>	<i>amplexicaule</i>	giraffehead	
<i>Lechea</i>	<i>minor</i>	thyme-leaf pinweed	
Lechea	torreyi	pedmont pinweed	state species of concern
<i>Leersia</i>	<i>hexandra</i>	southern cutgrass	
<i>Leiophyllum</i>	<i>buxifolium</i>	sand-myrtle	
<i>Lepidium</i>	<i>virginicum</i>	poorman's-pepperwort	
<i>Lespedeza</i>	<i>angustifolia</i>	narrow-leaf bush-clover	
Lespedeza	bicolor	shrubby bush-clover	non-native
Lespedeza	cuneata	chinese bush-clover	non-native
<i>Lespedeza</i>	<i>hirta</i>	hairy bush-clover	
<i>Lespedeza</i>	<i>procumbens</i>	trailing lespedeza	
<i>Lespedeza</i>	<i>repens</i>	creeping bush-clover	
<i>Lespedeza</i>	<i>stuevei</i>	tall bush-clover	
<i>Liatris</i>	<i>gramnifolia</i>	blazing star	
Liatris	microcenphala	small flowered blazing star	state species of concern
<i>Liatris</i>	<i>secunda</i>	pedmont gayfeather	
<i>Liatris</i>	<i>tenuifolia</i>	short-leaf gayfeather	
Ligustrum	vulgare	privet	non-native
Lilium	pyrophilum	sandhills lily	state species of concern
<i>Linaria</i>	<i>canadensis</i>	toad flax	
Lindera	subcoriacea	bog spicebush	federal at-risk-species
<i>Lindernia</i>	<i>dubia</i> var. <i>anagallidea</i>	yellow-seed false pimpernel	
<i>Liquidambar</i>	<i>styraciflua</i>	sweet-gum	
<i>Lobelia</i>	<i>elongata</i>	long-leaf lobelia	
<i>Lobelia</i>	<i>puberula</i>	downy lobelia	
<i>Lonicera</i>	<i>japonica</i>	japanese honeysuckle	
Loropetalum	sp.	Chinese witch hazel	non-native
<i>Ludwigia</i>	<i>alternifolia</i>	seedbox	
<i>Ludwigia</i>	<i>decurrens</i>	wing-leaf primrose-willow	
<i>Ludwigia</i>	<i>leptocarpa</i>	angle-stem primrose-willow	
<i>Ludwigia</i>	<i>linearis</i>	narrow-leaf primrose-willow	

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GENUS	SPECIES	COMMON	NOTES
<i>Ludwigia</i>	<i>palustris</i>	marsh primrose-willow	
<i>Ludwigia</i>	<i>uruguayensis</i>	uruguayan primrose-willow	
<i>Lycopodiella</i>	<i>alopecuroides</i>	fox-tail club-moss	
<i>Lycopodiella</i>	<i>appressa</i>	southern bog club-moss	
<i>Lycopodium</i>	<i>digitatum</i>	fan ground-pine	
Lycopus	cokeri	Carolina bugleweed	state species of concern
<i>Lycopus</i>	<i>rubellus</i>	taper-leaf water-horehound	
<i>Lycopus</i>	<i>uniflorus</i>	northern water-horehound	
<i>Lycopus</i>	<i>virginicus</i>	virginia water-horehound	
Lygodium	japonicum	Japanese climbing fern	non-native
Lysimachia	asperulifolia	rough-leaf yellow-loosestrife	federal endangered, state species of concern
<i>Lysimachia</i>	<i>quadrifolia</i>	whorled yellow-loosestrife	
Macbridea	caroliniana	Carolina's birds-in-a-nest	federal at-risk-species, state species of concern
<i>Magnolia</i>	<i>virginiana</i>	sweet-bay	
Malus	sp.	apple	non-native
<i>Marshallia</i>	<i>graminifolia</i>	grass-leaf barbara's-buttons	
<i>Marshallia</i>	<i>obovata</i>	spoon-shape barbara's-buttons	
<i>Mayaca</i>	<i>fluviatilis</i>	stream bog-moss	
<i>Mecardonia</i>	<i>acuminata</i>	axil-flower	
Melia	azedarach	chinaberry tree	non-native
<i>Melilotus</i>	<i>officinalis</i>	yellow sweetclover	
<i>Minuartia</i>	<i>caroliniana</i>	pine-barren stitchwort	
<i>Modiola</i>	<i>caroliniana</i>	carolina bristle-mallow	
<i>Monarda</i>	<i>punctata</i>	spotted beebalm	
<i>Monotropa</i>	<i>hypopithys</i>	many-flower indian-pipe	
<i>Muhlenbergia</i>	<i>capillaris</i>	hairawn muhly	
<i>Murdannia</i>	<i>keisak</i>	wart-removing-herb	
<i>Myrica</i>	<i>heterophylla</i>	evergreen bayberry	
Myriophyllum	laxum	loose water-milfoil	state species of concern
<i>Myriophyllum</i>	<i>pinnatum</i>	cut-leaf water-milfoil	
Nandina	domestica	nandina	non-native
Nestronia	umbellula	leechbrush	state species of concern
<i>Nuphar</i>	<i>lutea</i>	yellow pondlily	
<i>Nuttallanthus</i>	<i>canadensis</i>	oldfield-toadflax	
<i>Nymphaea</i>	<i>odorata</i>	american white waterlily	
<i>Nyssa</i>	<i>biflora</i>	Black gum	
<i>Nyssa</i>	<i>sylvatica</i>	black tupelo	
<i>Oenothera</i>	<i>biennis</i>	Sundrops	
<i>Oenothera</i>	<i>fruticosa</i>	narrow-leaf evening-primrose	
<i>Oenothera</i>	<i>laciniata</i>	cut-leaf evening-primrose	
<i>Oldenlandia</i>	<i>uniflora</i>	clustered mille-graines	
<i>Onosmodium</i>	<i>virginianum</i>	wild job's-tears	

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GENUS	SPECIES	COMMON	NOTES
<i>Oplismenus</i>	<i>hirtellus</i>	long-leaf basket grass	
<i>Opuntia</i>	<i>humifusa</i> var. <i>humifusa</i> / <i>compressa</i>	eastern prickly pear	
<i>Orbexilum</i>	<i>pedunculatum</i> var. <i>psoralioides</i>	sampson's-snakeroot	
Osmathus	sp.	tea olive	non-native
<i>Osmunda</i>	<i>cinnamomea</i>	cinnamon fern	
<i>Oxalis</i>	<i>articulata</i> ssp. <i>rubra</i>	jointed wood-sorrel	
<i>Oxalis</i>	<i>corniculata</i>	creeping yellow wood-sorrel	
<i>Oxalis</i>	<i>dillenii</i>	slender yellow wood-sorrel	
<i>Oxalis</i>	<i>violacea</i>	Violet wood sorrel	
<i>Oxydendrum</i>	<i>arboreum</i>	sourwood	
<i>Packera</i>	<i>anonyma</i>	small's ragwort	
<i>Panicum</i>	<i>anceps</i>	beaked panicum	
<i>Panicum</i>	<i>dichotomiflorum</i>	fall panicgrass	
<i>Panicum</i>	<i>hemitomon</i>	maidencane	
<i>Panicum</i>	<i>verrucosum</i>	warty panicgrass	
<i>Panicum</i>	<i>virgatum</i>	switchgrass	
<i>Parthenocissus</i>	<i>quinquefolia</i>	virginia-creeper	
Paspalum	bifidum	bead-grass	state species of concern
<i>Paspalum</i>	<i>boscianum</i>	bull crowngrass	
<i>Paspalum</i>	<i>dilatatum</i>	dallasgrass	
<i>Paspalum</i>	<i>floridanum</i>	florida paspalum	
<i>Paspalum</i>	<i>laeve</i>	field paspalum	
<i>Paspalum</i>	<i>notatum</i> var. <i>saurae</i>	bahiagrass	
<i>Paspalum</i>	<i>setaceum</i>	thin paspalum	
<i>Passiflora</i>	<i>incarnata</i>	purple passion-flower	
<i>Peltandra</i>	<i>virginica</i>	green arrow-arum	
<i>Pennisetum</i>	<i>glaucum</i>	pearl millet	
<i>Penstemon</i>	<i>australis</i>	eustis lake beardtongue	
<i>Penstemon</i>	<i>laevigatus</i>	Beardtongue	
<i>Petunia</i>	<i>axillaris</i>	wild white petunia	
<i>Phalaris</i>	<i>caroliniana</i>	carolina canarygrass	
Photina	fraseri	red tip	non-native
<i>Physalis</i>	<i>virginiana</i>	virginia ground-cherry	
<i>Pinus</i>	<i>echinata</i>	shortleaf pine	
<i>Pinus</i>	<i>palustris</i>	longleaf pine	
<i>Pinus</i>	<i>taeda</i>	loblolly pine	
<i>Pinus</i>	<i>virginiana</i>	virginia pine	
<i>Piptochaetium</i>	<i>avenaceum</i>	black-seed spear grass	
Pittosporum	sp.	pittosporum	non-native
<i>Pityopsis</i>	<i>graminifolia</i> var. <i>graminifolia</i>	narrow-leaf silk-grass	
Pityopsis	pinifolia	pine-leaved golden aster	state species of concern
<i>Plantago</i>	<i>aristata</i>	large-bract plantain	

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GENUS	SPECIES	COMMON	NOTES
<i>Platanthera</i>	<i>ciliaris</i>	yellow fringed orchid	
<i>Pluchea</i>	<i>camphorata</i>	plowman's-wort	
<i>Poa</i>	<i>annua</i>	annual bluegrass	
<i>Poa</i>	<i>chapmaniana</i>	chapman's bluegrass	
<i>Pogonia</i>	<i>ophioglossoides</i>	snake-mouth orchid	
<i>Polygala</i>	<i>grandiflora</i>	showy milkwort	
<i>Polygala</i>	<i>lutea</i>	orange milkwort	
<i>Polygonella</i>	<i>americana</i>	southern jointweed	
<i>Polygonella</i>	<i>polygama</i>	october-flower	
<i>Polygonum</i>	<i>aviculare</i>	White knotweed	
<i>Polygonum</i>	<i>sagittatum</i>	arrow-leaf tearthumb	
<i>Polypremum</i>	<i>procumbens</i>	juniper-leaf	
<i>Polystichum</i>	<i>acrostichoides</i>	christmas fern	
Potamogeton	confervoides	algae-like pondweed	state species of concern
<i>Potentilla</i>	<i>canadensis</i>	dwarf cinquefoil	
<i>Prenanthes</i>	<i>autumnalis</i>	slender rattlesnake-root	
<i>Proserpinaca</i>	<i>pectinata</i>	comb-leaf mermaidweed	
Prunus	alabamensis	Alabama black cherry	state species of concern
<i>Prunus</i>	<i>angustifolia</i>	chickasaw plum	
<i>Prunus</i>	<i>caroliniana</i>	carolina laurel cherry	
<i>Pseudognaphalium</i>	<i>obtusifolium</i>	rabbit tobacco	
<i>Pteridium</i>	<i>aquilinum</i>	western brackenfern	
Pueraria	montana	kudzu	non-native
<i>Pycnanthemum</i>	<i>flexuosum</i>	appalachian mountain-mint	
<i>Pycnanthemum</i>	<i>incanum</i>	hoary mountain-mint	
<i>Pycnanthemum</i>	<i>setosum</i>	awned mountain-mint	
<i>Pycnanthemum</i>	<i>tenuifolium</i>	narrow-leaf mountain-mint	
<i>Pyrrhopappus</i>	<i>carolinianus</i>	carolina desert-chicory	
Pyrus	calleryana	Bradford pear	non-native
<i>Quercus</i>	<i>alba</i>	white oak	
<i>Quercus</i>	<i>margaretta</i>	sand post oak	
<i>Quercus</i>	<i>phellos</i>	willow oak	
<i>Ranunculus</i>	<i>abortivus</i>	littleleaf buttercup	
<i>Rhexia</i>	<i>alifanus</i>	savannah meadow-beauty	
<i>Rhexia</i>	<i>mariana</i>	maryland meadow-beauty	
<i>Rhexia</i>	<i>petiolata</i>	fringed meadow-beauty	
<i>Rhexia</i>	<i>virginica</i>	handsome-harry	
<i>Rhododendron</i>	<i>viscosum</i>	clammy azalea	
<i>Rhus</i>	<i>glabra</i>	smooth sumac	
<i>Rhynchosia</i>	<i>tomentosa</i>	twining snout-bean	
<i>Rhynchospora</i>	<i>chalarocephala</i>	loose-head beak sedge	
Rhynchospora	inundata	drowned hornedrush	state species of concern
Rhynchospora	macra	beak rush	state species of concern
<i>Rhynchospora</i>	<i>nitens</i>	short-beak beak sedge	

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GENUS	SPECIES	COMMON	NOTES
<i>Rhynchospora</i>	<i>oligantha</i>	feather-bristle beak sedge	state species of concern
<i>Rhynchospora</i>	<i>pallida</i>	pale beak sedge	state species of concern
<i>Rhynchospora</i>	<i>rariflora</i>	few-flower beak sedge	
<i>Rhynchospora</i>	<i>stenophylla</i>	coastal-plain beak sedge	state species of concern
<i>Richardia</i>	<i>brasiliensis</i>	tropical mexican-clover	
<i>Richardia</i>	<i>scabra</i>	rough mexican clover	
<i>Robinia</i>	<i>hispida</i>	bristly locust	
<i>Robinia</i>	<i>viscosa</i>	clammy locust	
<i>Rosa</i>	<i>wichuraiana</i>	memorial rose	
<i>Rubus</i>	<i>argutus</i>	saw-tooth blackberry	
<i>Rudbeckia</i>	<i>hirta</i> var. <i>pulcherrima</i>	black-eyed-susan	
<i>Rumex</i>	<i>acetosella</i>	common sheep sorrel	
<i>Rumex</i>	<i>hastatulus</i>	heartwing sorrel	
<i>Sabal</i>	<i>palmetto</i>	palmetto	
<i>Sabal</i>	<i>minor</i>	Dwarf Palmetto	
<i>Sabatia</i>	<i>brachiata</i>	narrow-leaf rose-gentian	
<i>Sabatia</i>	<i>difformis</i>	lance-leaf rose-gentian	
<i>Sabatia</i>	<i>quadrangula</i>	four-angle rose-gentian	
<i>Saccharum</i>	<i>alopecuroides</i>	silver plumegrass	
<i>Saccharum</i>	<i>giganteum</i>	sugarcane plumegrass	
<i>Sagittaria</i>	<i>latifolia</i>	duck-potato	
<i>Salvia</i>	<i>azurea</i>	azure-blue sage	
<i>Salvia</i>	<i>lyrata</i>	lyre-leaf sage	
<i>Sambucus</i>	<i>canadensis</i>	american elder	
<i>Sanicula</i>	<i>canadensis</i>	canadian black-snakeroot	
<i>Sarracenia</i>	<i>flava</i>	yellow pitcherplant	
<i>Sarracenia</i>	<i>purpurea</i>	purple pitcherplant	
<i>Sarracenia</i>	<i>rubra</i>	sweet pitcherplant	state species of concern
<i>Saururus</i>	<i>cernuus</i>	lizard's-tail	
<i>Schizachyrium</i>	<i>scoparium</i>	little bluestem	
<i>Schizachyrium</i>	<i>tenerum</i>	slender bluestem	
<i>Schrankia</i>	<i>microphylla</i> var. <i>microphylla</i>	little-leaf sensitive-briar	
<i>Scirpus</i>	<i>cyperinus</i>	woolgrass	
<i>Scirpus</i>	<i>etuberculatus</i>	canby bulrush	state species of concern
<i>Scleria</i>	<i>ciliata</i>	fringed nut-rush	
<i>Scleria</i>	<i>pauciflora</i>	few-flower nut-rush	
<i>Scleria</i>	<i>reticularis</i>	netted nut-rush	
<i>Scleria</i>	<i>triglomerata</i>	whip nut-rush	
<i>Scutellaria</i>	<i>integrifolia</i>	helmet-flower	
<i>Scutellaria</i>	<i>lateriflora</i>	Blue skullcap	
<i>Selaginella</i>	<i>arenicola</i>	sand spike-moss	
<i>Setaria</i>	<i>glauca</i>	yellow foxtail	
<i>Setaria</i>	<i>pumila</i>	yellow bristlegrass	
<i>Setaria</i>	<i>viridis</i>	green bristlegrass	

Table D-1. Plant Species Documented on McCrady Training Center.			
GENUS	SPECIES	COMMON	NOTES
<i>Seymeria</i>	<i>cassioides</i>	yaupon black-senna	
<i>Sibara</i>	<i>virginica</i>	virginia winged-rockcress	
<i>Sisyrinchium</i>	<i>angustifolium</i>	narrow-leaf blue-eyed-grass	
<i>Sisyrinchium</i>	<i>atlanticum</i>	eastern blue-eyed-grass	
<i>Sisyrinchium</i>	<i>rosulatum</i>	annual blue-eyed-grass	
<i>Smilax</i>	<i>herbacea</i>	smooth carrionflower	
<i>Smilax</i>	<i>laurifolia</i>	laurel greenbrier	
<i>Smilax</i>	<i>rotundifolia</i>	roundleaf greenbrier	
<i>Smilax</i>	<i>smallii</i>	lanceleaf greenbrier	
<i>Smilax</i>	<i>walteri</i>	coral greenbrier	
<i>Solanum</i>	<i>carolinense</i>	carolina horse-nettle	
<i>Solanum</i>	<i>ptychanthum</i>	west indian nightshade	
<i>Solidago</i>	<i>leavenworthii</i>	Goldenrod	
<i>Solidago</i>	<i>nemoralis</i>	gray goldenrod	
<i>Solidago</i>	<i>odora</i>	anise-scented goldenrod	
<i>Solidago</i>	<i>rugosa</i>	wrinkle-leaf goldenrod	
<i>Solidago</i>	<i>tortifolia</i>	twist-leaf goldenrod	
<i>Sonchus</i>	<i>oleraceus</i>	common sow-thistle	
<i>Sorghastrum</i>	<i>elliottii</i>	slender indiagrass	
<i>Sorghastrum</i>	<i>nutans</i>	yellow indiagrass	
Sorghum	halepense	Johnson grass	non-native
<i>Spermolepis</i>	<i>divaricata</i>	rough-fruit scalesseed	
<i>Spiranthes</i>	<i>praecox</i>	grass-leaved Ladies' tresses	
<i>Spiranthes</i>	<i>vernalis</i>	spring ladies'-tresses	
<i>Sporobolus</i>	<i>junceus</i>	pineywoods dropseed	
Sporobolus	teretifolius	wire-leaved dropseed	federal at-risk-species, state species of concern
<i>Stillingia</i>	<i>sylvatica</i>	queen's-delight	
<i>Stipulicida</i>	<i>setacea</i>	pineland scaly-pink	
<i>Strophostyles</i>	<i>umbellata</i>	pink fuzzy-bean	
<i>Stylisma</i>	<i>patens</i>	coastal-plain dawnflower	
<i>Stylosanthes</i>	<i>biflora</i>	side-beak pencil-flower	
<i>Styrax</i>	<i>americanus</i>	american snowbell	
<i>Symplocus</i>	<i>tinctoria</i>	Horse sugar	
<i>Tamarix</i>	<i>gallica</i>	Salt Cedar	
<i>Tephrosia</i>	<i>spicata</i>	spiked hoary-pea	
<i>Tephrosia</i>	<i>virginiana</i>	goat's-rue	
<i>Tetragonotheca</i>	<i>helianthoides</i>	pineland nerveray	
<i>Thaspium</i>	<i>trifoliatum</i>	purple meadow-parsnip	
Thuja	occidentalis	arborvitae	non-native
<i>Tilia</i>	<i>americana</i>	basswood	
<i>Tillandsia</i>	<i>usneoides</i>	spanish-moss	
Tofieldia	glabra	white false-asphodel	state species of concern
<i>Toxicodendron</i>	<i>pubescens</i>	atlantic poison-oak	

Table D-1. Plant Species Documented on McCrady Training Center.			
GENUS	SPECIES	COMMON	NOTES
<i>Toxicodendron</i>	<i>radicans</i>	eastern poison-ivy	
<i>Toxicodendron</i>	<i>vernix</i>	poison-sumac	
<i>Tradescantia</i>	<i>rosea</i>	Piedmont roseling	
<i>Tragia</i>	<i>urens</i>	wavy-leaf noseburn	
<i>Tragia</i>	<i>urticifolia</i>	nettle-leaf noseburn	
Trepocarpus	aethusae	aethusa-like trepocarpus	state species of concern
<i>Triadenum</i>	<i>virginicum</i>	virginia marsh-st. john's-wort	
<i>Trichostema</i>	<i>dichotomum</i>	forked bluecurls	
<i>Trichostema</i>	<i>setaceum</i>	narrow-leaf bluecurls	
Tridens	chapmanii	Chapman's redtop	state species of concern
<i>Tridens</i>	<i>flavus</i>	purpletop tridens	
<i>Trifolium</i>	<i>arvense</i>	rabbit-foot clover	
<i>Trifolium</i>	<i>campestre</i>	lesser hop clover	
<i>Triodanis</i>	<i>biflora</i>	clasping Venus' looking glass	
<i>Triodanis</i>	<i>perfoliata</i> var. <i>biflora</i>	clasping-leaf venus'-looking-glass	
<i>Typha</i>	<i>latifolia</i>	broadleaf cattail	
<i>Ulmus</i>	<i>alata</i>	winged elm	
<i>Utricularia</i>	<i>gibba</i>	humped bladderwort	
<i>Vaccinium</i>	<i>arboreum</i>	farkleberry	
<i>Vaccinium</i>	<i>corymbosum</i>	highbush blueberry	
Vaccinium	crassifolium ssp. sempervirens	Rayner's blueberry	state species of concern
<i>Vaccinium</i>	<i>tenellum</i>	small black blueberry	
<i>Vaccinium</i>	<i>virgatum</i>	small-flower blueberry	
<i>Valerianella</i>	<i>radiata</i>	beaked cornsalad	
<i>Verbascum</i>	<i>thapsus</i>	wooly mullein	
<i>Verbena</i>	<i>brasiliensis</i>	brazilian vervain	
<i>Verbena</i>	<i>carnea</i>	Mint	
<i>Vernonia</i>	<i>acaulis</i>	stemless ironweed	
<i>Vernonia</i>	<i>angustifolia</i>	tall ironweed	
<i>Vicia</i>	<i>angustifolia</i>	Vetch	
<i>Viola</i>	<i>pedata</i>	bird-foot violet	
<i>Viola</i>	<i>tricolor</i>	Johnny jumpup	
<i>Viola</i>	<i>X primulifolia</i>	primrose-leaved violet	
<i>Vitis</i>	<i>rotundifolia</i>	muscadine	
<i>Vulpia</i>	<i>myuros</i>	rattail fescue	
<i>Vulpia</i>	<i>octoflora</i>	sixweeks fescue	
<i>Wahlenbergia</i>	<i>marginata</i>	southern rockbell	
Warea	cuneifolia	carolina pinelandcress	state species of concern
<i>Wisteria</i>	<i>frutescens</i>	american wisteria	
<i>Wisteria</i>	<i>sinensis</i>	chinese wisteria	
<i>Woodwardia</i>	<i>areolata</i>	netted chain fern	
<i>Xylorhiza</i>	<i>tortifolia</i> var. <i>tortifolia</i>	mojave woody-aster	

Table D-1. Plant Species Documented on McCrady Training Center.			
GENUS	SPECIES	COMMON	NOTES
<i>Xyris</i>	<i>ambigua</i>	coastal-plain yellow-eyed-grass	
<i>Xyris</i>	<i>baldwiniana</i>	baldwin's yellow-eyed-grass	
<i>Xyris</i>	<i>caroliniana</i>	carolina yellow-eyed-grass	
<i>Xyris</i>	<i>elliottii</i>	elliott's yellow-eyed-grass	
<i>Xyris</i>	<i>fimbriata</i>	fringed yellow-eyed-grass	
<i>Xyris</i>	<i>jupicai</i>	richard's yellow-eyed-grass	
<i>Xyris</i>	<i>stricta</i>	pineland yellow-eyed-grass	
<i>Youngia</i>	<i>japonica</i>	oriental false hawk's-beard	
<i>Zigadenus</i>	<i>densus</i>	osceola's-plume	

Table D-2. Bird Species Documented on McCrady Training Center.			
GENUS	SPECIES	COMMON NAME	NOTE
<i>Accipiter</i>	<i>cooperii</i>	Cooper's Hawk	
<i>Accipiter</i>	<i>striatus</i>	Sharp-shinned Hawk	
<i>Aimophila</i>	<i>aestivalis</i>	Bachman's sparrow	
<i>Anas</i>	<i>platyrhynchos</i>	Mallard	
<i>Archilochus</i>	<i>colubris</i>	Ruby-throated hummingbird	
<i>Ardea</i>	<i>herodias</i>	Great Blue Heron	
<i>Bombycilla</i>	<i>cedrorum</i>	Cedar waxwing	
<i>Branta</i>	<i>canadensis</i>	Canada Goose	
<i>Buteo</i>	<i>jamaicensis</i>	Red-tailed hawk	
<i>Buteo</i>	<i>platypterus</i>	Broad-winged hawk	
<i>Caprimulgus</i>	<i>carolinensis</i>	Chuck-will's-widow	
<i>Caprimulgus</i>	<i>vociferus</i>	Whip-poor-will	
<i>Cardinalis</i>	<i>cardinalis</i>	Northern cardinal	
<i>Carduelis</i>	<i>tristis</i>	American goldfinch	
<i>Carpodacus</i>	<i>mexicanus</i>	House Finch	
<i>Cathartes</i>	<i>aura</i>	Turkey Vulture	
<i>Catharus</i>	<i>minimus</i>	Gray-cheeked thrush	
<i>Catharus</i>	<i>ustulatus</i>	Swainson's thrush	
<i>Chaetura</i>	<i>pelagica</i>	Chimney swift	
<i>Charadrius</i>	<i>vociferus</i>	Killdeer	
<i>Chordeiles</i>	<i>minor</i>	Common nighthawk	
<i>Circus</i>	<i>cyaneus</i>	Northern Harrier	
<i>Coccyzus</i>	<i>americanus</i>	Yellow-billed cuckoo	
<i>Colaptes</i>	<i>auratus</i>	Northern flicker	
<i>Colinus</i>	<i>virginianus</i>	Northern bobwhite	
<i>Contopus</i>	<i>virens</i>	Eastern wood-pewee	
<i>Corvus</i>	<i>brachyrhynchos</i>	American crow	
<i>Corvus</i>	<i>ossifragus</i>	Fish crow	
<i>Cyanocitta</i>	<i>cristata</i>	Blue jay	
<i>Dendroica</i>	<i>caerulescens</i>	Black-throated Blue Warbler	
<i>Dendroica</i>	<i>discolor</i>	Prairie warbler	

Table D-2. Bird Species Documented on McCrady Training Center.			
GENUS	SPECIES	COMMON NAME	NOTE
<i>Dendroica</i>	<i>dominica</i>	Yellow-throated warbler	
<i>Dendroica</i>	<i>pinus</i>	Pine warbler	
<i>Dolichonyx</i>	<i>oryzivorus</i>	Bobolink	
<i>Dryocopus</i>	<i>pileatus</i>	Pileated woodpecker	
<i>Dumetella</i>	<i>carolinensis</i>	Gray Catbird	
<i>Empidonax</i>	<i>minimus</i>	Least flycatcher	
<i>Empidonax</i>	<i>traillii</i>	Traill's flycatcher	
<i>Empidonax</i>	<i>virescens</i>	Acadian flycatcher	
<i>Falco</i>	<i>sparverius</i>	American kestrel	
<i>Geothlypis</i>	<i>trichas</i>	Common yellowthroat	
<i>Guiraca</i>	<i>caerulea</i>	Blue grosbeak	
<i>Hirundo</i>	<i>rustica</i>	Barn swallow	
<i>Hylocichla</i>	<i>mustelina</i>	Wood thrush	
<i>Icteria</i>	<i>virens</i>	Yellow-breasted chat	
<i>Icterus</i>	<i>spurius</i>	Orchard oriole	
<i>Ictinia</i>	<i>mississippiensis</i>	Mississippi Kite	
<i>Lanius</i>	<i>ludovicianus</i>	Loggerhead Shrike	
<i>Leiothlypus</i>	<i>peregrina</i>	Tennessee warbler	
<i>Limnothlypis</i>	<i>swainsonii</i>	Swainson's warbler	
<i>Melanerpes</i>	<i>carolinus</i>	Red-bellied woodpecker	
<i>Melanerpes</i>	<i>erythrocephalus</i>	Red-headed woodpecker	
<i>Meleagris</i>	<i>gallopavo</i>	Eastern wild turkey	
<i>Melospiza</i>	<i>georgiana</i>	Swamp sparrow	
<i>Mimus</i>	<i>polyglottos</i>	Northern mockingbird	
<i>Mniotilta</i>	<i>varia</i>	Black-and-white warbler	
<i>Molothrus</i>	<i>ater</i>	Brown-headed cowbird	
<i>Myiarchus</i>	<i>crinitus</i>	Great crested flycatcher	
<i>Oporornis</i>	<i>formosus</i>	Kentucky warbler	
<i>Otus</i>	<i>asio</i>	Eastern screech-owl	
<i>Pandion</i>	<i>haliaetus</i>	Osprey	
<i>Parus</i>	<i>bicolor</i>	Tufted titmouse	
<i>Parus</i>	<i>carolinensis</i>	Carolina chickadee	
Passer	domesticus	House Sparrow	non-native
<i>Passerina</i>	<i>ciris</i>	Painted Bunting	
<i>Passerina</i>	<i>cyanea</i>	Indigo bunting	
<i>Phalacrocorax</i>	<i>auritus</i>	Double-crested Cormorant	
<i>Pheucticus</i>	<i>ludovicianus</i>	Rose-breasted Grosbeak	
Picoides	borealis	Red-cockaded woodpecker	federal endangered, state endangered
<i>Picoides</i>	<i>pubescens</i>	Downy woodpecker	
<i>Picoides</i>	<i>villosus</i>	Hairy Woodpecker	
<i>Piranga</i>	<i>olivacea</i>	Scarlet Tanager	
<i>Piranga</i>	<i>rubra</i>	Summer tanager	
<i>Polioptila</i>	<i>caerulea</i>	Blue-gray gnatcatcher	

Table D-2. Bird Species Documented on McCrady Training Center.			
GENUS	SPECIES	COMMON NAME	NOTE
<i>Progne</i>	<i>subis</i>	Purple martin	
<i>Protonotaria</i>	<i>citrea</i>	Prothonotary warbler	
<i>Regulus</i>	<i>calendula</i>	Ruby-crowned kinglet	
<i>Regulus</i>	<i>satrapa</i>	Golden-crowned kinglet	
<i>Seiurus</i>	<i>aurocapillus</i>	Ovenbird	
<i>Seiurus</i>	<i>motacilla</i>	Louisiana waterthrush	
<i>Setophaga</i>	<i>americana</i>	Northern parula	
<i>Setophaga</i>	<i>magnolia</i>	Magnolia Warbler	
<i>Setophaga</i>	<i>ruticilla</i>	American redstart	
<i>Sialia</i>	<i>sialis</i>	Eastern bluebird	
<i>Sitta</i>	<i>carolinensis</i>	White-breasted nuthatch	
<i>Sitta</i>	<i>pusilla</i>	Brown-headed nuthatch	
<i>Sphyrapicus</i>	<i>varius</i>	Yellow-bellied Sapsucker	
<i>Spizella</i>	<i>passerina</i>	Chipping sparrow	
<i>Spizella</i>	<i>pusilla</i>	Field Sparrow	
<i>Thryothorus</i>	<i>ludovicianus</i>	Carolina wren	
<i>Toxostoma</i>	<i>rufum</i>	Brown thrasher	
<i>Troglodytes</i>	<i>aedon</i>	House wren	
<i>Turdus</i>	<i>migratorius</i>	American robin	
<i>Tyrannus</i>	<i>tyrannus</i>	Eastern kingbird	
<i>Vireo</i>	<i>flavifrons</i>	Yellow-throated vireo	
<i>Vireo</i>	<i>griseus</i>	White-eyed vireo	
<i>Vireo</i>	<i>olivaceus</i>	Red-eyed vireo	
<i>Wilsonia</i>	<i>citrina</i>	Hooded warbler	
<i>Zenaida</i>	<i>macroura</i>	Mourning dove	

Table D-3. Mammal Species Documented on McCrady Training Center.			
GENUS	SPECIES	COMMON NAME	NOTES
<i>Canis</i>	<i>latrans</i>	Coyote	
Canis	familiaris	Dog	non-native
<i>Castor</i>	<i>canadensis</i>	Beaver	
Corynorhinus	rafinesquii	Rafinesque's big-eared bat	state endangered
<i>Didelphis</i>	<i>marsupialis</i>	opposum	
<i>Eptesicus</i>	<i>fuscus</i>	Big brown bat	
Felis	catus	Feral cat	non-native
<i>Lasiurus</i>	<i>borealis</i>	Eastern red bat	
<i>Lasiurus</i>	<i>seminolus</i>	Seminole bat	
<i>Lynx</i>	<i>rufus</i>	Bobcat	
<i>Nycticeius</i>	<i>humeralis</i>	Evening bat	
<i>Odocoileus</i>	<i>virginianus</i>	White-tailed Deer	
Perimyotis	subflavus	Tri-colored bat	federal at-risk-species
<i>Procyon</i>	<i>lotor</i>	Raccoon	
<i>Sciurus</i>	<i>carolinensis</i>	Eastern Gray Squirrel	
<i>Sciurus</i>	<i>niger</i>	Fox Squirrel	
<i>Sylvilagus</i>	<i>floridanus</i>	Eastern Cottontail	

Table D-4. Amphibian and Reptile Species Documented on McCrady Training Center.			
GENUS	SPECIES	COMMON NAME	NOTES
<i>Acris</i>	<i>c. crepitans</i>	Northern Cricket frog	
<i>Acris</i>	<i>gryllus</i>	Southern Cricket frog	
<i>Agkistrodon</i>	<i>c. contortrix</i>	Copperhead	
<i>Agkistrodon</i>	<i>p. piscivorus</i>	Cottonmouth	
<i>Anaxyrus</i>	<i>terrestris</i>	Southern toad	
<i>Anolis</i>	<i>carolinensis</i>	Green anole	
<i>Bufo</i>	<i>terrestris</i>	Southern toad	
<i>Cnemidophorus</i>	<i>s. sexlineatus</i>	Six-lined Racerunner	
<i>Crotalus</i>	<i>horridus</i>	Timber/Canebrake Rattlesnake	
<i>Elaphe</i>	<i>o. obsoleta</i>	Black Rat Snake	
<i>Eumeces</i>	<i>fasciatus</i>	Five-lined skink	
<i>Eumeces</i>	<i>inexpectatus</i>	Southeastern Five-lined Skink	
<i>Gastrophryne</i>	<i>carolinensis</i>	Eastern narrow-mouthed toad	
<i>Heterodon</i>	<i>platirhinos</i>	Eastern Hognose Snake	
Heterodon	simus	Southern Hognose Snake	federal at-risk-species, state threatened
<i>Hyla</i>	<i>chrysoscelis</i>	Cope's gray treefrog	
<i>Hyla</i>	<i>cinerea</i>	Green Treefrog	
<i>Hyla</i>	<i>femoralis</i>	Pinewoods Treefrog	
<i>Kinosternon</i>	<i>subrubrum</i>	Eastern Mud Turtle	
<i>Lithobates</i>	<i>catesbeianus</i>	American Bullfrog	
<i>Lithobates</i>	<i>clamitans</i>	Green frog	
<i>Lithobates</i>	<i>utricularia</i>	Southern leopard frog	

Table D-4. Amphibian and Reptile Species Documented on McCrady Training Center.			
GENUS	SPECIES	COMMON NAME	NOTES
<i>Lithobates</i>	<i>virgatipes</i>	Carpenter frog	
<i>Scaphiopus</i>	<i>h. holbrooki</i>	Eastern spadefoot toad	
<i>Sceloporus</i>	<i>undulatus</i>	Eastern fence lizard	
<i>Scincella</i>	<i>lateralis</i>	Ground skink	
<i>Sistrurus</i>	<i>miliarius</i>	Carolina Pigmy Rattlesnake	
<i>Sternotherus</i>	<i>odoratus</i>	Eastern Musk Turtle	
<i>Terrapene</i>	<i>c. carolina</i>	Eastern box turtle	
<i>Trachemys</i>	<i>s. scripta</i>	Yellow Bellied slider	

Table D-5. Fish Species Documented on McCrady Training Center.			
GENUS	SPECIES	COMMON NAME	NOTES
<i>Acantharchus</i>	<i>pomotis</i>	Mud Sunfish	
<i>Ameiurus</i>	<i>catus</i>	White Catfish	
<i>Ameiurus</i>	<i>melas</i>	Black Bullhead	
<i>Ameiurus</i>	<i>natalis</i>	Yellow Bullhead	
<i>Aphredoderus</i>	<i>sayanus</i>	Pirate perch	
<i>Ctenopharyngodon</i>	<i>idellus</i>	Grass Carp	
<i>Enneacanthus</i>	<i>chaetodon</i>	Black-banded Sunfish	
<i>Enneacanthus</i>	<i>gloriosus</i>	Bluespotted Sunfish	
<i>Erimyzon</i>	<i>oblongus</i>	Eastern Creek Chubsucker	
<i>Erimyzon</i>	<i>sucetta</i>	Lake Chubsucker	
<i>Esox</i>	<i>a. americanus</i>	Redfin Pickerel	
<i>Esox</i>	<i>niger</i>	Chain Pickerel	
<i>Etheostoma</i>	<i>fusiforme</i>	Swamp Darter	
<i>Fundulus</i>	<i>lineolatus</i>	Lined Topminnow	
<i>Fundulus</i>	<i>nottii</i>	Starhead Topminnow	
Gambusia	affinis	Gambusia (mosquito fish)	non-native
Ictalurus	punctatus	Channel Catfish	non-native
<i>Lepomis</i>	<i>auritus</i>	Redbreast Sunfish	
<i>Lepomis</i>	<i>gibbosus</i>	Pumpkinseed	
<i>Lepomis</i>	<i>gulosus</i>	Warmouth	
<i>Lepomis</i>	<i>macrochirus</i>	Bluegill	
<i>Lepomis</i>	<i>marginatus</i>	Dollar Sunfish	
<i>Lepomis</i>	<i>microlophus</i>	Redear Sunfish	
<i>Micropterus</i>	<i>salmoides</i>	Largemouth Bass	
<i>Notemigonus</i>	<i>crysoleucas</i>	Golden Shiner	
<i>Notropis</i>	<i>chalybaeus</i>	Ironcolor Shiner	
<i>Notropis</i>	<i>cummingsae</i>	Dusky Shiner	

Table D-6. Terrestrial Invertebrate Species Documented on McCrady Training Center.			
GENUS	SPECIES	COMMON NAME	NOTES
<i>Achalarus</i>	<i>lyciades</i>	Hoary Edge	
<i>Agraulis</i>	<i>vanillae</i>	Gulf Fritillary	
<i>Amblyscirtes</i>	<i>alternata</i>	Least Florida/ Dusky Road-side Skipper	
<i>Ammophila</i>	<i>procera</i>	Common thread-waisted wasp	
<i>Ancyloxypha</i>	<i>numitor</i>	Least Skipper	
<i>Apis</i>	<i>mellifera</i>	European honeybee	
<i>Anthocharis</i>	<i>midea</i>	Falcate Orange Tip	
<i>Asterocampa</i>	<i>celtis</i>	Hackberry Emperor	
<i>Atlides</i>	<i>halesus</i>	Great Purple Hairstreak	
<i>Atrytone</i>	<i>arogos</i>	Arogos Skipper	
<i>Augochloropsis</i>	<i>metallica</i>	Sweat bee/Metalic green bee	
<i>Battus</i>	<i>philenor</i>	Pipevine Swallowtail	
<i>Bombus</i>	<i>impatiens</i>	Common Eastern Bumblebee	
<i>Bombus</i>	<i>pennsylvanicus</i>	Americian Bumblebee	
<i>Calycopis</i>	<i>cecrops</i>	Red-banded Hairstreak	
<i>Celastrina</i>	<i>argiolus</i>	Spring Azure	
<i>Colias</i>	<i>cesonia</i>	Dog Face	
<i>Cyllopsis</i>	<i>gemma</i>	Gemmed Satyr	
Danaus	plexippus	Monarch Butterfly	federal at-risk-species
<i>Enodia</i>	<i>creole</i>	Creole Pearly Eye	
<i>Enodia</i>	<i>portlandia</i>	Southern Pearly Eye	
<i>Epargyreus</i>	<i>clarus</i>	Silver-spotted Skipper	
<i>Erynnis</i>	<i>horatius</i>	Horace's Dusky Wing	
<i>Erynnis</i>	<i>juvenalis</i>	Juvenal's Dusky Wing	
<i>Erynnis</i>	<i>zarucco</i>	Zarucco Dusky Wing	
<i>Euptoieta</i>	<i>claudia</i>	Variegated Fritillary	
<i>Eurema</i>	<i>lisa</i>	Little Sulphur	
<i>Eurema</i>	<i>nicippe</i>	Sleepy Orange	
<i>Everes</i>	<i>comyntas</i>	Eastern Tailed Blue	
<i>Hermeuptychia</i>	<i>sosybius</i>	Carolina Satyr	
<i>Hesperia</i>	<i>meskei</i>	Meske's Skipper	
<i>Hylephila</i>	<i>phyleus</i>	Fiery Skipper	
<i>Junonia</i>	<i>coenia</i>	Buckeye	
<i>Lerema</i>	<i>accius</i>	Clouded Skipper	
<i>Libytheana</i>	<i>carinenta</i>	American Snout	
<i>Limenitis</i>	<i>a. astyanax</i>	Red-spotted Purple	
<i>Megisto</i>	<i>cymela</i>	Little Wood Satyr	
<i>Nastra</i>	<i>lherminier</i>	Swarthy Skipper	
<i>Neonympha</i>	<i>areolata</i>	Georgia Satyr	
<i>Pieris</i>	<i>rapae</i>	Cabbage White	
<i>Popilia</i>	<i>japonica</i>	Japanese beetle	
<i>Papilio</i>	<i>palamedes</i>	Palamedes Swallowtail	
<i>Papilio</i>	<i>troilus</i>	Spicebrush Swallowtail	

Table D-6. Terrestrial Invertebrate Species Documented on McCrady Training Center.			
GENUS	SPECIES	COMMON NAME	NOTES
<i>Papilio</i>	<i>glaucus</i>	Tiger Swallowtail	
<i>Phoebus</i>	<i>sennae</i>	Cloudless Sulphur	
<i>Phyciodes</i>	<i>tharos</i>	Pearl Crescent	
<i>Poanes</i>	<i>yehl</i>	Yehl Skipper	
<i>Poanes</i>	<i>Zabulon</i>	Zabulon Skipper	
<i>Polites</i>	<i>vibex</i>	Whirlabout	
<i>Polistes</i>	<i>carolina</i>	Red paper wasp	
<i>Polistes</i>	<i>exclamens</i>	Common paper wasp	
<i>Pyrgus</i>	<i>communis</i>	Common checkered skipper	
<i>Scolia</i>	<i>dubia</i>	Blue-winged wasp	
<i>Strymon</i>	<i>melinus</i>	Gray Hairstreak	
<i>Systoechus</i>	<i>spp</i>	Orange bee fly	
<i>Thorybes</i>	<i>bathyllus</i>	Southern Cloudy Wing	
<i>Vanessa</i>	<i>virginensis</i>	American Painted Lady	

Table D-7. Aquatic Invertebrate Species Documented on McCrady Training Center.			
GENUS	SPECIES	COMMON NAME	NOTES
<i>Ablabesmyia</i>	<i>aspera</i>		
<i>Ablabesmyia</i>	<i>mallochi</i>		
<i>Ablabesmyia</i>	<i>hauberi</i>		
<i>Ablabesmyia</i>	<i>rhamphe_grp.</i>		
<i>Acroneuria</i>	<i>lycorias</i>		
<i>Aedes/Ochlerotatus</i>	<i>sp.</i>		
<i>Agabus</i>	<i>gagetes</i>		
<i>Agabus</i>	<i>johannsi</i>		
<i>Agabus</i>	<i>seriatus</i>		
<i>Agarodes</i>	<i>sp.</i>		
<i>Alluaudomyia</i>	<i>sp.</i>		
<i>Amphinemoura</i>	<i>nigritta</i>		
<i>Anchytarsus</i>	<i>bicolor</i>		
<i>Ancyronyx</i>	<i>variegata</i>		
<i>Ancyronyx</i>	<i>variegata</i>		
<i>Anisocentropus</i>	<i>pyraloides</i>		
<i>Anopheles</i>	<i>sp.</i>		
<i>Apsectrotanypus</i>	<i>johnsoni</i>		
<i>Aquarius</i>	<i>sp.</i>		
<i>Argia</i>	<i>sp.</i>		
<i>Argia</i>	<i>bipunctulata</i>		
<i>Argia</i>	<i>fumipennis</i>		
<i>Argia</i>	<i>sedula</i>		
<i>Argia</i>	<i>tibialis</i>		
<i>Baetis</i>	<i>sp.</i>		

Table D-7. Aquatic Invertebrate Species Documented on McCrady Training Center.			
GENUS	SPECIES	COMMON NAME	NOTES
<i>Baetis</i>	<i>pluto</i>		
<i>Basiaeschna</i>	<i>janta</i>		
<i>Berosus</i>	<i>sp.</i>		
<i>Bezzia/Palpomyia</i>	<i>cmplx</i>		
<i>Bittacomorpha</i>	<i>clavipes</i>		
<i>Bittacomorphella</i>	<i>sp.</i>		
<i>Boyeria</i>	<i>vinosa</i>		
<i>Brachycentrus</i>	<i>chelatus</i>		
<i>Brillia</i>	<i>flavifrons</i>		
<i>Caeciodotea</i>	<i>sp.</i>		
<i>Caenis</i>	<i>sp.</i>		
<i>Callibaetis</i>	<i>pretiosus</i>		
<i>Calopteryx</i>	<i>dimidiata</i>		
<i>Calopteryx</i>	<i>maculata</i>		
<i>Cambarus</i>	<i>sp.</i>		
<i>Cambarus</i>	<i>latimanus</i>		
<i>Celina</i>	<i>sp.</i>		
<i>Celithemis</i>	<i>verna</i>		
<i>Centroptilum</i>	<i>sp.</i>		
<i>Cernotina</i>	<i>sp.</i>		
<i>Chaetocladius</i>	<i>sp.</i>		
<i>Chauliodes</i>	<i>pectinicornis</i>		
<i>Cheumatopsyche</i>	<i>sp.</i>		
<i>Chimarra</i>	<i>sp.</i>		
<i>Chironomus</i>	<i>sp.</i>		
<i>Chlorotabanus</i>	<i>crepuscularis</i>		
<i>Chrysops</i>	<i>sp.</i>		
<i>Cladotanytarsus</i>	<i>sp.</i>		
<i>Cladotanytarsus</i>	<i>aeiparthenus</i>		
<i>Cladotanytarsus</i>	<i>sp.</i>		
<i>Clinotanytus</i>	<i>sp.</i>		
<i>Corbicula</i>	<i>fluminea</i>	Asian clam	non-native
<i>Cordulegaster</i>	<i>sp.</i>		
<i>Cordulegaster</i>	<i>bilineata</i>		
<i>Corydalus</i>	<i>cornutus</i>		
<i>Corynoneura</i>	<i>sp.</i>		
<i>Crangonyx</i>	<i>sp.</i>		
<i>Cricotopus</i>	<i>bicinctus</i>		
<i>Cricotopus</i>	<i>fugax</i>		
<i>Cricotopus</i>	<i>politus</i>		
<i>Cricotopus</i>	<i>vierriensis</i>		
<i>Cricotopus</i>	<i>sp. "Santa Fe"</i>		
<i>Cryptochironomus</i>	<i>sp.</i>		
<i>Cryptotendipes</i>	<i>sp.</i>		

Table D-7. Aquatic Invertebrate Species Documented on McCrady Training Center.			
GENUS	SPECIES	COMMON NAME	NOTES
<i>Culex</i>	<i>sp.</i>		
<i>Culex</i>	<i>territans</i>		
<i>Culiciodes</i>	<i>sp.</i>		
<i>Cymbiodyta</i>	<i>sp.</i>		
<i>Cymbiodyta</i>	<i>chamberlaini</i>		
<i>Cyphon</i>	<i>sp.</i>		
<i>Demicryptochironomus</i>	<i>sp.</i>		
<i>Dicranota</i>	<i>sp.</i>		
<i>Dicrotendipes</i>	<i>modestus</i>		
<i>Dineutus</i>	<i>sp.</i>		
<i>Dineutus</i>	<i>ciliatus</i>		
<i>Dineutus</i>	<i>discolor</i>		
<i>Dineutus</i>	<i>emarginatus</i>		
<i>Diplectrona</i>	<i>modesta</i>		
<i>Djalmabatista</i>	<i>pulchra_variant</i>		
<i>Dromogomphus</i>	<i>armatus</i>		
<i>Dubiraphia</i>	<i>sp.</i>		
<i>Dubiraphia</i>	<i>vittata</i>		
<i>Enallagma</i>	<i>sp.</i>		
<i>Enallagma</i>	<i>divagens</i>		
<i>Enallagma</i>	<i>signatum</i>		
<i>Endochironomus</i>	<i>nigricans</i>		
<i>Eochrus</i>	<i>sp.</i>		
<i>Eochrus</i>	<i>ochraceus</i>		
<i>Epithea</i>	<i>princeps</i>		
<i>Erioptera</i>	<i>sp.</i>		
<i>Eristalis</i>	<i>sp.</i>		
<i>Erythemis</i>	<i>simplicicolis</i>		
<i>Eurylophella</i>	<i>sp.</i>		
<i>Eurylophella</i>	<i>doris</i>		
<i>Ferrissia</i>	<i>rivularis</i>		
<i>Fissimentum</i>	<i>sp.</i>		
<i>Genus</i>	<i>speceis</i>		
<i>Glyptotendipes</i>	<i>sp.</i>		
<i>Glyptotendipes</i>	<i>meridionalis</i>		
<i>Gomphus</i>	<i>sp.</i>		
<i>Gomphus</i>	<i>fraternus</i>		
<i>Gomphus</i>	<i>lividus</i>		
<i>Gomphus</i>	<i>minutus</i>		
<i>Gomphus</i>	<i>parvidens</i>		
<i>Gonielmis</i>	<i>dietrichi</i>		
<i>Gonielmis</i>	<i>dietrichi</i>		
<i>Gonomyia</i>	<i>sp.</i>		
<i>Gymnometriocnemus</i>	<i>sp.</i>		

Table D-7. Aquatic Invertebrate Species Documented on McCrady Training Center.			
GENUS	SPECIES	COMMON NAME	NOTES
<i>Gyrinus</i>	<i>sp.</i>		
<i>Gyrinus</i>	<i>pachysomus</i>		
<i>Gyrinus</i>	<i>woodruffi</i>		
<i>Hagenius</i>	<i>brevistylus</i>		
<i>Helocordulia</i>	<i>uhleri</i>		
<i>Helophorus</i>	<i>sp.</i>		
<i>Hemerodromia</i>	<i>sp.</i>		
<i>Hesperocorixa</i>	<i>brimleyi</i>		
<i>Hesperocorixa</i>	<i>nitida</i>		
<i>Heteroplectron</i>	<i>americanum</i>		
<i>Heterotrissocladius</i>	<i>marcidus</i>		
<i>Hexatoma</i>	<i>sp.</i>		
<i>Hyalell</i>	<i>azteca_cmplx</i>		
<i>Hydaticus</i>	<i>bimarginatus</i>		
<i>Hydrobius</i>	<i>sp.</i>		
<i>Hydrocanthus</i>	<i>iricolor</i>		
<i>Hydrochus</i>	<i>excavatus</i>		
<i>Hydrometra</i>	<i>sp.</i>		
<i>Hydroporus</i>	<i>sp.</i>		
<i>Hydroporus</i>	<i>signatus_youngi</i>		
<i>Hydroporus</i>	<i>sp.</i>		
<i>Hydropsyche</i>	<i>sp.</i>		
<i>Hydropsyche</i>	<i>betteni</i>		
<i>Hydropsyche</i>	<i>decalda</i>		
<i>Hydropsyche</i>	<i>elissoma</i>		
<i>Hydroptila</i>	<i>sp.</i>		
<i>Ischnura</i>	<i>sp.</i>		
<i>Ischnura</i>	<i>hastata</i>		
<i>Ischnura</i>	<i>posita</i>		
<i>Labrundinia</i>	<i>sp.</i>		
<i>Labrundinia</i>	<i>becki</i>		
<i>Labrundinia</i>	<i>johannseni</i>		
<i>Labrundinia</i>	<i>pilosella</i>		
<i>Laccophilus</i>	<i>f. rufus</i>		
<i>Ladona</i>	<i>deplanata</i>		
<i>Larsia</i>	<i>berneri</i>		
<i>Larsia</i>	<i>indistincta</i>		
<i>Lepidostoma</i>	<i>sp.</i>		
<i>Lestes</i>	<i>inaequalis</i>		
<i>Leuctra</i>	<i>sp.</i>		
<i>Libellula</i>	<i>vibrans</i>		
<i>Limnophila</i>	<i>sp.</i>		
<i>Limnophyes</i>	<i>sp.</i>		
<i>Limnopus</i>	<i>canaliculatus</i>		

Table D-7. Aquatic Invertebrate Species Documented on McCrady Training Center.			
GENUS	SPECIES	COMMON NAME	NOTES
<i>Liogma/Triogma</i>	<i>sp.</i>		
<i>Lype</i>	<i>diversa</i>		
<i>Maccaffertium</i>	<i>modestum</i>		
<i>Macromia</i>	<i>sp.</i>		
<i>Macromia</i>	<i>taeniolata</i>		
<i>Macronychus</i>	<i>glabratus</i>		
<i>Macrostemum</i>	<i>carolina</i>		
<i>Mayatruchia</i>	<i>ayama</i>		
<i>Menetus</i>	<i>dilatatus</i>		
<i>Meropelopia</i>	<i>americana</i>		
<i>Microcylloepus</i>	<i>pusillus</i>		
<i>Microcylloepus</i>	<i>p._lodingi</i>		
<i>Microcylloepus</i>	<i>p._pusillus</i>		
<i>Micropsectra</i>	<i>sp.</i>		
<i>Microtendipes</i>	<i>pedellus_grp.</i>		
<i>Microtendipes</i>	<i>rydalensis_grp.</i>		
<i>Microvelia</i>	<i>sp.</i>		
<i>Microvelia</i>	<i>paludicola</i>		
<i>Molanna</i>	<i>blenda</i>		
<i>Molanna</i>	<i>tryphena</i>		
<i>Molanna</i>	<i>ulmerina</i>		
<i>Mystacidae</i>	<i>sepulchralis</i>		
<i>Nanocladius</i>	<i>balticus_grp.</i>		
<i>Nanocladius</i>	<i>crassicornis/rectinervus</i>		
<i>Nasiaeschna</i>	<i>pentacantha</i>		
<i>Natarsia</i>	<i>sp.</i>		
<i>Neargyraticus</i>	<i>sp.</i>		
<i>Neoplea</i>	<i>sp.</i>		
<i>Neoporus</i>	<i>sp.</i>		
<i>Neoporus</i>	<i>blanchardi</i>		
<i>Neoporus</i>	<i>clypealis</i>		
<i>Neoporus</i>	<i>lynceus</i>		
<i>Neoporus</i>	<i>undulatus</i>		
<i>Neureclipsis</i>	<i>crepuscularis</i>		
<i>Neurocordulia</i>	<i>sp.</i>		
<i>Neurocordulia</i>	<i>alabamensis</i>		
<i>Nigronia</i>	<i>serricornis</i>		
<i>Nilotanypus</i>	<i>sp.</i>		
<i>Nilotanypus</i>	<i>fimbriatus</i>		
<i>Nilothauma</i>	<i>sp.</i>		
<i>Notonecta</i>	<i>sp.</i>		
<i>Notonecta</i>	<i>irrorata</i>		
<i>Notonecta</i>	<i>uhleri</i>		
<i>Nyctiophylax</i>	<i>moestus</i>		

Table D-7. Aquatic Invertebrate Species Documented on McCrady Training Center.			
GENUS	SPECIES	COMMON NAME	NOTES
<i>Ochterus</i>	<i>sp.</i>		
<i>Oecetis</i>	<i>sp.</i>		
<i>Oecetis</i>	<i>georgia</i>		
<i>Oecetis</i>	<i>nocturna</i>		
<i>Oecetis</i>	<i>persimilis</i>		
<i>Oecetis</i>	<i>scala</i>		
<i>Oecetis</i>	<i>sp.</i>		
<i>Omisus</i>	<i>sp.</i>		
<i>Orthocladius</i>	<i>annectens</i>		
<i>Orthocladius</i>	<i>dubiatus</i>		
<i>Orthocladius</i>	<i>lignicola</i>		
<i>Orthocladius</i>	<i>obumbratus</i>		
<i>Oxyethira</i>	<i>sp.</i>		
<i>Pachydiplax</i>	<i>longipennis</i>		
<i>Parachaetocladius</i>	<i>abnobaesus</i>		
<i>Parachironomus</i>	<i>pectinatellae</i>		
<i>Parachironomus</i>	<i>tenuicaudatus_complex</i>		
<i>Paracladopelma</i>	<i>sp.</i>		
<i>Paracloeodes</i>	<i>minutus</i>		
<i>Parakiefferiella</i>	<i>sp.</i>		
<i>Paralauterborniella</i>	<i>nigrohalteralis</i>		
<i>Paraleptophlebia</i>	<i>sp.</i>		
<i>Paramerina</i>	<i>anomala</i>		
<i>Parametriocnemus</i>	<i>sp.</i>		
<i>Paraphaenocladius</i>	<i>sp.</i>		
<i>Paratanytarsus</i>	<i>dissimilis</i>		
<i>Paratendipes</i>	<i>albimanus</i>		
<i>Paratendipes</i>	<i>subaequalis</i>		
<i>Pelocoris</i>	<i>sp.</i>		
<i>Pelocoris</i>	<i>femoratus</i>		
<i>Peltodytes</i>	<i>sp.</i>		
<i>Peltodytes</i>	<i>bradleyi</i>		
<i>Pentaneura</i>	<i>inconspicua</i>		
<i>Perithemis</i>	<i>lydia</i>		
<i>Perlesta</i>	<i>sp.</i>		
<i>Perlinella</i>	<i>ephyre/zwicki</i>		
<i>Phaenopsectra</i>	<i>sp.</i>		
<i>Phylocentropus</i>	<i>carolinus</i>		
<i>Phylocentropus</i>	<i>lucidus</i>		
<i>Phylocentropus</i>	<i>placidus</i>		
<i>Physa</i>	<i>sp.</i>		
<i>Pilaria</i>	<i>sp.</i>		
<i>Polycentropus</i>	<i>sp.</i>		
<i>Polypedilum</i>	<i>aviceps</i>		

Table D-7. Aquatic Invertebrate Species Documented on McCrady Training Center.			
GENUS	SPECIES	COMMON NAME	NOTES
<i>Polypedilum</i>	<i>fallax</i>		
<i>Polypedilum</i>	<i>flavum</i>		
<i>Polypedilum</i>	<i>halterale_grp.</i>		
<i>Polypedilum</i>	<i>illinoense_grp.</i>		
<i>Polypedilum</i>	<i>scalaenum_grp.</i>		
<i>Polypedilum</i>	<i>trigonus</i>		
<i>Polypedilum</i>	<i>tritum</i>		
<i>Polypedilum</i>	<i>sp.</i>		
<i>Potthastia</i>	<i>longimana</i>		
<i>Probezzia</i>	<i>sp.</i>		
<i>Procambarus</i>	<i>sp.</i>		
<i>Procambarus</i>	<i>ancylus</i>		
<i>Procladius</i>	<i>sp.</i>		
<i>Procloeon</i>	<i>sp.</i>		
<i>Progomphus</i>	<i>obscurus</i>		
<i>Psectrocladius</i>	<i>elatus</i>		
<i>Psectrotanytus</i>	<i>dyari</i>		
<i>Pseudochironomus</i>	<i>sp.</i>		
<i>Pseudocloeon</i>	<i>ephippiatum</i>		
<i>Pseudocloeon</i>	<i>frondale</i>		
<i>Pseudocloeon</i>	<i>propinquum</i>		
<i>Pseudolimnophila</i>	<i>sp.</i>		
<i>Pseudosmittia</i>	<i>sp.</i>		
<i>Psilotreta</i>	<i>frontalis</i>		
<i>Psorophora</i>	<i>sp.</i>		
<i>Psychoda</i>	<i>alternata</i>		
<i>Ptilostomus</i>	<i>sp.</i>		
<i>Pycnopsyche</i>	<i>guttifer</i>		
<i>Pycnopsyche</i>	<i>luculento/sonso</i>		
<i>Pycnopsyche</i>	<i>scabripennis</i>		
<i>Ranatra</i>	<i>sp.</i>		
<i>Ranatra</i>	<i>kirkaldyi</i>		
<i>Rhagovelia</i>	<i>obesa</i>		
<i>Rheocricotopus</i>	<i>robacki</i>		
<i>Rheocricotopus</i>	<i>tuberculatus</i>		
<i>Rheosmittia</i>	<i>arcuata</i>		
<i>Rheotanytarsus</i>	<i>exiguus_grp.</i>		
<i>Rheotanytarsus</i>	<i>pellucidus</i>		
<i>Robackia</i>	<i>demeijerei</i>		
<i>Saetheria</i>	<i>tylus</i>		
<i>Sciara</i>	<i>sp.</i>		
<i>Serratella</i>	<i>serratoides</i>		
<i>Sialis</i>	<i>sp.</i>		
<i>Sialis</i>	<i>aequalis</i>		

Table D-7. Aquatic Invertebrate Species Documented on McCrady Training Center.			
GENUS	SPECIES	COMMON NAME	NOTES
<i>Sialis</i>	<i>vagans</i>		
<i>Sigara</i>	<i>sp.</i>		
<i>Simulium</i>	<i>sp.</i>		
<i>Simulium</i>	<i>jonesi</i>		
<i>Simulium</i>	<i>krebsorum</i>		
<i>Simulium</i>	<i>slossonae</i>		
<i>Simulium</i>	<i>tuberosum</i>		
<i>Simulium</i>	<i>ubiquitum</i>		
<i>Simulium</i>	<i>venustum/verecundum</i>		
<i>Siphonurus</i>	<i>sp.</i>		
<i>Siumlium</i>	<i>dixiense</i>		
<i>Smittia</i>	<i>sp.</i>		
<i>Sperchopsis</i>	<i>tesselata</i>		
<i>Sphaeromyias</i>	<i>sp.</i>		
<i>Stelechomyia</i>	<i>perpulchra</i>		
<i>Stempellina</i>	<i>sp.</i>		
<i>Stempellinella</i>	<i>fimbriata</i>		
<i>Stempellinella</i>	<i>leptocelloides</i>		
<i>Stenelmis</i>	<i>sp.</i>		
<i>Stenelmis</i>	<i>sp.</i>		
<i>Stenelmis</i>	<i>bicarinata</i>		
<i>Stenelmis</i>	<i>convexula</i>		
<i>Stenelmis</i>	<i>lignicola</i>		
<i>Stenelmis</i>	<i>musgravei</i>		
<i>Stenelmis</i>	<i>xylonastis</i>		
<i>Stenochironomus</i>	<i>sp.</i>		
<i>Stenovelia</i>	<i>stagnalis</i>		
<i>Stictochironomus</i>	<i>devinctus</i>		
<i>Stylurus</i>	<i>sp.</i>		
<i>Stylurus</i>	<i>townesi</i>		
<i>Tabanus</i>	<i>sp.</i>		
<i>Taenioteryx</i>	<i>sp.</i>		
<i>Tanytarsus</i>	<i>sp.</i>		
<i>Telmatoscopus</i>	<i>superbus</i>		
<i>Thaumalea</i>	<i>sp.</i>		
<i>Thienemanniella</i>	<i>lobapodema</i>		
<i>Thienemanniella</i>	<i>xena</i>		
<i>Thienemannimyia_grp.</i>	<i>sp.</i>		
<i>Tipula</i>	<i>sp.</i>		
<i>Triaenodes</i>	<i>sp.</i>		
<i>Triaenodes</i>	<i>ignitus</i>		
<i>Triaenodes</i>	<i>perna</i>		
<i>Tribelos</i>	<i>jucundum</i>		
<i>Trichocorixa</i>	<i>macroceps</i>		

Table D-7. Aquatic Invertebrate Species Documented on McCrady Training Center.			
GENUS	SPECIES	COMMON NAME	NOTES
<i>Tvetenia</i>	<i>paucunca</i>		
<i>Tvetenia</i>	<i>vitracies</i>		
<i>Unniella</i>	<i>multivirga</i>		
<i>Wormaldia</i>	<i>sp.</i>		
<i>Xenochironomus</i>	<i>xenolabis</i>		
<i>Xylotopus</i>	<i>par</i>		
<i>Zalutschia</i>	<i>sp.</i>		
<i>Zavreliella</i>	<i>marmorata</i>		
<i>Zavreliomyia</i>	<i>thryptica_cmplx</i>		
<i>Zavreliomyia</i>	<i>sp.</i>		

E. SPECIAL STATUS SPECIES MANAGEMENT

E.1 SPECIAL STATUS ANIMALS

This section summarizes those special status animal species that are either documented to occur or have the potential to occur on MTC. There are one federally listed species, two state listed species, and two other rare species documented on MTC. Following the review of potential and documented species presented in **Table E-1**, the management recommendations for documented and potential species are provided. The SCARNG maintains species information and management recommendations for special status species within a database.

Table E-1. Potential Special Status Animals on McCrady Training Center.			
Species	Status	Comments/Habitat	Status on MTC
Mammals			
Star-nosed mole <i>Condylura cristata</i>	SC (S3)	Mesic mixed forest and mesic deciduous hardwood and bottomland or floodplain forests.	Potential-Suitable Habitat – multiple surveys have not found
Rafinesque's big-eared bat <i>Corynorhinus rafinesquii</i>	SE (S2)	In South Carolina, permanent residents of the coastal plain and hibernate in caves and similar habitats rather than move south in winter.	Documented
Tri-colored bat <i>Perimyotis subflavus</i>	ARS (S1S2)	Found state-wide and utilize T-beam bridges, buildings, mines, tunnels, caves, and hollow trees for roosts. First diagnosed case of white nose syndrome in South Carolina in this species was in 2013.	Documented
Southern fox squirrel <i>Sciurus niger</i>	SC (S3S4)	Strongly associated with mature pine forests and mature pine-hardwood forests and prefer open herbaceous understory and patchy shrub cover.	Documented
Eastern spotted skunk <i>Spilogale putorius</i>	SC (S3)	A variety of habitats but associated with preferring woodlands, semi-open farmland, and old abandoned fields.	Potential-Suitable Habitat – multiple surveys have not found
Swamp rabbit <i>Sylvilagus aquaticus</i>	SC (S2?)	Found in close proximity to water with down woody debris.	Potential-Suitable Habitat – multiple surveys have not found
Black bear <i>Ursus americanus</i>	SC (S5)		Unlikely – no habitat
Birds			
Bald eagle <i>Haliaeetus leucocephalus</i>	BGEPA ST (S2)	Wide variety of habitats that provide suitable nest sites close to open water. Nests may be placed in snags or large live trees as well as on constructed platforms or utility poles. They are	Potential – within habitat range

Table E-1. Potential Special Status Animals on McCrady Training Center.			
Species	Status	Comments/Habitat	Status on MTC
		resident (stay year round) as long as there is open water where they can forage. Bald eagles in South Carolina are smaller than their northern counterparts	
American wood stork <i>Mycteria americana</i>	FT SE (S1S2)	Often seen walking slowly through marshes while foraging. Nests are typically located on trees surrounded by water, such as in cypress swamps, shallow creeks, and impoundments.	Potential – suitable habitat
Red-cockaded woodpecker <i>Picoides borealis</i>	FE SE (S2)	Mature pine forests, with an age of 60 years or greater, that lack a hardwood understory. Reside in clans and dig nest cavity in living tree. Nesting occurs in spring, from late April through May.	Documented
Barn-owl <i>Tyto alba</i>	SC (S4)		Potential-Suitable Habitat – multiple surveys have not found
Herptiles			
American alligator <i>Alligator mississippiensis</i>	FE ST (S5)	Coastal marshlands and inland impoundments frequented by waterfowl.	Unlikely – no suitable habitat
Chamberlain's dwarf salamander <i>Eurycea chamberlaini</i>	ARS (SNR)	Found in seepages near small streams and other wet areas. Commonly discovered under leaf and pine straw litter or other vegetative cover. Occasionally observed at depths of 15 cm. or greater, leading to under sampling in some cases.	Potential-Suitable Habitat – multiple surveys have not found
Southern hognose snake <i>Heterodon simus</i>	ARS ST (SNR)	Sandhill, pine flatwood, and coastal dunes.	Documented
Pine barrens treefrog <i>Hyla andersonii</i>	ST (S2S3)		
Insects			
Monarch butterfly <i>Danaus plexippus</i>	ARS (SNR)	Open fields and meadows with milkweed.	Documented
Mollusks			
Gravel elimia <i>Elimia catenaria</i>	SC (SNR)	Found in freshwater rivers and streams with cobble bottoms.	Unlikely – no suitable habitat

Table E-1. Potential Special Status Animals on McCrady Training Center.			
Species	Status	Comments/Habitat	Status on MTC
Eastern floater <i>Pyganodon cataracta</i>	SC (SNR)		Potential-Suitable Habitat – insufficient surveys
Creeper <i>Strophitus undulatus</i>	SC (S2)	Shallow water in both small streams and large rivers in a variety of substrates.	Potential-Suitable Habitat – insufficient surveys
Eastern creekshell <i>Villosa delumbis</i>	SC (S4)	Found in deep muddy flock but can also be found in sand and boulder fields. It is most often close to the bank of streams and rivers among tree roots.	Potential-Suitable Habitat – insufficient surveys
Fish			
Shortnose sturgeon <i>Acipenser brevirostrum</i>	FE SE (S3)	Diadromous fish that inland prefer deep water. Often found in areas with soft substrate and a vegetated bottom.	Unlikely – no suitable habitat
Atlantic sturgeon <i>Acipenser oxyrinchus</i>	FE		Unlikely – no suitable habitat
Blueback herring <i>Alosa aestivalis</i>	ARS SC (S5)	Travels upstream in the Coastal Plain to spawn. In South Carolina it spawns on the Savannah River and Thurmond reservoir.	Unlikely – no suitable habitat
Carolina darter <i>Etheostoma collis</i>	SC (SNR)		Potential-Suitable Habitat – insufficient surveys
Banded killifish <i>Fundulus diaphanous</i>	SC (S1)		Potential-Suitable Habitat – insufficient surveys
Robust redhorse <i>Moxostoma robustum</i>	ARS SC (SNR)	Inhabit large rivers and are found from the rocky reaches of the mid-Piedmont to the coast. Gravel bars required for spawning (primarily in the transition zone between the piedmont and coastal plain).	Unlikely – no suitable habitat
Redlip shiner <i>Notropis chiliticus</i>	SC (S1?)		Potential-Suitable Habitat – insufficient surveys
Blacknose dace <i>Rhinichthys obtusus</i>	SC (S1)		Potential-Suitable Habitat – insufficient surveys
Crustacean			

Table E-1. Potential Special Status Animals on McCrady Training Center.			
Species	Status	Comments/Habitat	Status on MTC
Broad River spiny crayfish <i>Cambarus spicatus</i>	ARS SC (S3)	Restricted to the Broad River basin. Streams in basin exhibit signs of flash flooding including sand deposits and log jams. Usually found in or beneath debris.	Potential – insufficient survey effort
<p>Sources: USFWS Richardson County list; USFWS IPaC Report for McCrady Training Center; South Carolina Department of Natural Resources Rare, Threatened, and Endangered Species of South Carolina for Richardson County.</p> <p>FE=federally endangered, FT=federally threatened; ARS = USFWS has been petitioned to list the species and a positive 90-day finding has been issued (listing may be warranted); information provided only for conservation actions as no federal protections currently exist.</p> <p>SE=state endangered, ST=state threatened, SC = state species of special concern (S1, S2, S3 all indicate state Species of Conservation Concern)</p> <p>S RANK: The priority assigned by SCDNR based upon the element's status within the state. S1 = critically imperiled in the state because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extirpation in the state. S2 = imperiled in state because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extirpation from the state. S3 = rare or uncommon in state (on the order of 21 to 100 occurrences). S4 = apparently secure in state, with many occurrences. SNR = not ranked at state level</p>			

E.1.1 Documented Animal Species

The following are management recommendations for species confirmed as occurring on MTC. Species descriptions and background information is maintained by SCARNG in a centralized location.

Rafinesque's big-eared bat

1. Identify, protect, and provide new and/or existing roosts/colonies.
2. Continue population inventory and monitoring surveys.
3. Maintain and/or contribute to a bat database.
4. Monitor and mitigate threats such as WNS, pesticide contamination, anthropologic disturbance, invasive species, etc.
5. Identify, protect, and enhance bat habitat and drinking resources
6. Conduct further research into species.
7. Provide education and outreach.

Tri-colored bat

1. Identify, protect, and provide new and/or existing roosts/colonies.
2. Continue population inventory and monitoring surveys.
3. Maintain and/or contribute to a bat database.
4. Monitor and mitigate threats such as WNS, pesticide contamination, anthropologic disturbance, invasive species, etc.
5. Identify, protect, and enhance bat habitat and drinking resources
6. Conduct further research into species.
7. Provide education and outreach.

Red-Cockaded Woodpecker

1. Work in coordination with Fort Jackson to aid in the implementation of their RCW Management Plan, and follow the RCW management recommendations within the plan. (File Path: \\mtc-envsrvr5\Library\Conservation\Program Management\INRMP\FJ INRMP FY17\FTJK_RCW_ESMC.docx)
2. Manage to provide optimum foraging and nesting habitat that is contiguous with, and as close as possible to each cluster.
3. Develop and implement habitat management practices within the HMU to aid in the establishment of Good Quality Foraging Habitat (GQFH) as specified in the Recovery Plan.
4. Foraging stands should consist of no or sparse hardwood maintained below 7 feet in height.
5. Canopy hardwoods will be limited to no more than 10 square feet (ft²) of basal area (BA).
6. Pines which are large enough to provide foraging habitat or large/old enough for cavity trees within 50 feet of an existing cavity tree will only be removed if deemed necessary.
7. The quality of foraging stands should be maintained to control hardwood growth, eliminate dense midstory, and reduce fuel levels available to wildfires. This can be accomplished through the following methods;
 - a. Mechanical Mowers- These will be either tractor-drawn mowers or tracked or rubber-tired cutters with front or rear mounted rotary drum severe duty flail cutter heads or fixed tooth mulching/cutter heads.
 - b. Manual - Hand operated chainsaws and gas-powered line trimmers with saw blades.
 - c. Chemical - Registered herbicides applied by broadcast and single stem techniques.

Southern hognose snake

1. Protect and restore upland, longleaf pine and wiregrass habitat utilized by this species.
2. Manage longleaf and wiregrass habitat on long rotations and with large stumps remaining after harvest for underground refugia and hibernation sites.
3. Use prescribed fire to maintain open understory characteristics.
4. Continue inventory and research of known populations.
5. Continue outreach and education efforts.

Monarch butterfly

1. Habitat restoration, maintenance, and enhancement
2. Planting of milkweed host plants and wildflower nectar sources.
3. Public education
4. Research
5. Monitoring

E.1.2 Potential Animal Species

The following are management recommendations for species with some potential to occur on MTC, but not yet confirmed. See Table E-1 for more information about their likelihood on MTC. Species descriptions and background information is maintained by SCARNG in a centralized location.

Bald eagle

1. Maintaining current regulations/statutes
2. Protect nest/roost/foraging sites and communal areas
3. Limit disturbance: human development; construction; timber operations/ forestry; off-road vehicle use; motorized watercraft use; non-motorized recreation and human entry; helicopters and fixed-wing aircraft; blasting other loud, intermittent noise
4. Limit disturbance at foraging sites
5. Only use federal and state approved pesticides, herbicides, fertilizers, and other chemicals
6. Monitor and minimize contaminants/pollution/hazardous waste.

American wood stork

1. Conduct aerial surveys annually to locate new Wood Stork nesting colonies and to determine which colonies should be visited from the ground.
2. Conduct complete ground counts of Wood Stork nests at colony sites in South Carolina each year.
3. Provide permitting agencies with current information on Wood Stork colonies by updating distribution maps every year.
4. Monitor a sample of nests each year to quantify nesting success.
5. Determine survivorship of fledgling, immature, and adult Wood Storks using mark and recapture (band re-sighting) and satellite telemetry.
6. Document important habitat for Wood Storks during the nonbreeding season.
7. Determine if the amount of foraging habitat limits species recovery. Study foraging ecology and habitat use in South Carolina.
8. Participate in and contribute to the regional Wood Stork working group.
9. Integrate management for Wood Storks into traditional waterfowl management of currently impounded wetlands by timing draw downs during key feeding periods (post fledging).
10. Provide technical guidance and assistance to owners and managers of land where storks nest, feed, and roost.

Chamberlain's dwarf salamander

1. Maintaining current regulations/statutes protecting wetlands and streams
2. Protection of known populations
3. Furthering taxonomic study
4. Supporting survey efforts
5. Education.

Broad River spiny crayfish

Due to limited/deficient data on this species, additional surveys are recommended to determine further management decisions.

E.2 SPECIAL STATUS PLANTS

This section summarizes those special status plant species that are either documented to occur or have the potential to occur on MTC. There are currently two federally listed plant species and 35 state species of concern and/or federal at-at-risk plant species known to occur on MTC. Following the summary

presented in **Table E-2**, a summary by species is provided regarding management recommendations for these species, if found on MTC.

Table E-2. Potential Special Status Plants on McCrady Training Center.			
Species	Status	Comments/Habitat	Status on MTC
<u>Pennell's false foxglove</u> <i>Agalinis tenella</i>	SC (SNR)		
<u>Elliott's bluestem</u> <i>Andropogon gyrans</i> var. <i>stenophyllus</i>	SC (S1)		Documented
<u>Piedmont three-awned grass</u> <i>Aristida condensata</i>	SC (S2)		Documented
<u>Sandhills milkvetch</u> <i>Astragalus michauxii</i>	SC (S3)	Longleaf pine-wiregrass sandhills, pine woodlands, turkey oak-rosemary scrub.	Documented
<u>Purple balduina</u> <i>Balduina atropurpurea</i>	ARS (S1)		
<u>Northern burmannia or Northern blue threads</u> <i>Burmannia biflora</i>	SC (S2)		Documented
<u>Winter grape-fern</u> <i>Botrychium lunarioides</i>	SC (S1)		
<u>Pine-barrens reed-grass</u> <i>Calamovilfa brevipilis</i>	SC (S1)		Documented
<u>Cherokee sedge</u> <i>Carex cherokeensis</i>	SC (S2)		
<u>Colin's sedge</u> <i>Carex collinsii</i>	SC (S2)		
<u>Ravenfoot sedge</u> <i>Carex crus-corvi</i>	SC (S2)		
<u>Elliot's sedge</u> <i>Carex elliotii</i>	SC (S1)		Documented
<u>Social sedge</u> <i>Carex socialis</i>	SC (S1)		
<u>Cayaponia</u> <i>Cayaponia quinqueloba</i>	SC (S1?)		
<u>Southern horse-balm</u>	SC		Documented

Table E-2. Potential Special Status Plants on McCrady Training Center.			
Species	Status	Comments/Habitat	Status on MTC
<i>Collinsonia serotina</i>	(S1)		
<u>Whorled horse-balm</u> <i>Collinsonia verticillata</i>	SC (S3)		
<u>Southeastern tickseed</u> <i>Coreoposis gladiata</i>	SC (SNR)		
<u>Ciliate-leaf tickseed</u> <i>Coreopsis integrifolia</i>	ARS		
<u>Spinulose shield fern</u> <i>Dryopteris carthusiana</i>	SC (S1)		
<u>Smooth coneflower</u> <i>Echinacea laevigata</i>	FE SE (S3)	Typically found in open woods, glades, cedar barrens, roadsides, clearcuts, dry limestone bluffs, and power line rights-of-way with open areas and periodic disturbances.	Documented
<u>Robbin's spicebush</u> <i>Eleocharis robbinsii</i>	SC (S2)		Documented
<u>Shoals spider-lily</u> <i>Hymenocallis coronaria</i>	SC (S2)		
<u>Carolina St. John's-wort</u> <i>Hypericum nitidum</i>	SC (S1)		Documented
<u>Sarvis holly</u> <i>Ilex amelanchier</i>	SC (S3)		Documented
<u>Red standing-cypress</u> <i>Ipomopsis rubra</i>	SC (S2)		
<u>Pine barren rush</u> <i>Juncus abortivus</i>	SC (S2)		Documented
<u>Piedmont pinweed</u> <i>Lechea torreyi</i>	SC (SNR)		Documented
<u>Small-head gayfeather</u> <i>Liatris microcephala</i>	SC (S1)		Documented
<u>Sandhills lily</u> <i>Lilium pyrophilum</i>	SC (S1)		Documented
<u>Bog spicebush</u> <i>Lindera subcoriacea</i>	ARS		Documented

Table E-2. Potential Special Status Plants on McCrady Training Center.			
Species	Status	Comments/Habitat	Status on MTC
<u>Spatulate seedbox</u> <i>Ludwigia spathulate</i>	SC (S2)		
<u>Carolina bugleweed</u> <i>Lycopus cokeri</i>	SC (S2)		Documented
<u>Rough-leaved loosestrife</u> <i>Lysimachia asperulaefolia</i>	FE SC (S1)	Occurs in edges between longleaf pine uplands and pond pine pocosins (areas of dense shrub and vine growth usually on a wet, peaty, poorly drained soil) on moist to seasonally saturated sands and on shallow organic soils overlaying sand. Habitat is fire-maintained. Several populations are known from roadsides and power line rights of way where regular maintenance mimics fire and maintains vegetation so that herbaceous species are open to sunlight.	Documented
<u>Carolina's birds-in-a-nest</u> <i>Macbridea caroliniana</i>	ARS SC (S3)		Documented
<u>Bigleaf magnolia</u> <i>Magnolia macrophylla</i>	SC (S1)		
<u>Pyramid magnolia</u> <i>Magnolia pyramidata</i>	SC (S1)		
<u>Piedmont water-milfoil</u> <i>Myriophyllum laxum</i>	SC (S2)		Documented
<u>Nestronia or leechbush</u> <i>Nestronia umbellula</i>	SC (S3)	Habitat varies and includes upland mixed pine and hardwood stands, pine stands, and growing with upland oaks and hickories.	Documented
<u>Adder's-tongue</u> <i>Ophioglossum vulgatum</i>	SC (S2)	Shaded secondary and floodplain forests and forested bottomlands.	
<u>Canby's dropwort</u> <i>Oxypolis canbyi</i>	FE SC (S2)	Inhabits a variety of coastal plain communities, including pond cypress savannahs, the shallows and edges of cypress/pond pine ponds, sloughs, and wet pine savannahs.	
<u>Bead-grass</u> <i>Paspalum bifidum</i>	SC (S2)		Documented
<u>Pine-leaved golden aster</u>	SC		Documented

Table E-2. Potential Special Status Plants on McCrady Training Center.			
Species	Status	Comments/Habitat	Status on MTC
<i>Pityopsis pinifolia</i>	(S2)		
<u>Green-fringe orchis</u> <i>Platanthera lacera</i>	SC (S2)		
<u>Algae-like pondweed</u> <i>Potamogeton confervoides</i>	SC (S1)		Documented
<u>Alabama black cherry</u> <i>Prunus alabamensis</i>	SC (S1)		Documented
<u>Whisk fern</u> <i>Psilotum nudum</i>	SC (S1)		
<u>Crestless plume orchid</u> <i>Pteroglossaspis ecristata</i>	SC (S2)		
<u>Oglethorpe's oak</u> <i>Quercus oglethorpensis</i>	SC (S3)	Occurs marshes and stream bottoms.	
<u>Awned meadowbeauty</u> <i>Rhexia aristosa</i>	SC (S3)		
<u>May white</u> <i>Rhododendron eastmanii</i>	SC (S2)		
<u>Michaux's sumac</u> <i>Rhus michauxii</i>	FE SC (SX)	Grows in sandy or rocky open woods in association with basic soils. Sometimes occur on highway rights-of way, roadsides, or on the edges of artificially maintained clearings.	
<u>Drowned hornedrush</u> <i>Rhynchospora inundata</i>	SC (S2?)		Documented
<u>Beak rush</u> <i>Rhynchospora macra</i>	SC (S1)		Documented
<u>Few-flowered beaked-rush</u> <i>Rhynchospora oligantha</i>	SC (S2)		Documented
<u>Pale beakrush</u> <i>Rhynchospora pallida</i>	SC (S1)		Documented
<u>Chapman beakrush</u> <i>Rhynchospora stenophylla</i>	SC (S2)		Documented
<u>Sweet pitcher-plant</u> <i>Sarracenia rubra</i>	SC (S3S4)		Documented

Table E-2. Potential Special Status Plants on McCrady Training Center.			
Species	Status	Comments/Habitat	Status on MTC
<u>Canby bulrush</u> <i>Scirpus etuberculatus</i>	SC (SNR)		Documented
<u>Wire-leaved dropseed</u> <i>Sporobolus teretifolius</i>	ARS SC (S1)		Documented
<u>Elliott's aster</u> <i>Symphyotrichum elliotii</i>	SC (S3)		
<u>Georgia aster</u> <i>Symphyotrichum georgianum</i>	ARS (SNR)	Open, sunny areas, including edges and openings in rocky, upland oak-hickory-pine forests, and rights-of-way. Primary limiting factor is availability of sunlight.	
<u>White false-asphodel</u> <i>Tofieldia glabra</i>	SC (S1S2)		Documented
<u>Aethusa-like trepocarpus</u> <i>Trepocarpus aethusae</i>	SC (S1)		Documented
<u>Chapman's redtop</u> <i>Tridens chapmanii</i>	SC (S1)		Documented
<u>Wateree trillium</u> <i>Trillium oostingii</i>	SC (S1)		
<u>Weak nettle</u> <i>Urtica chamaedryoides</i>	SC (S2)		
<u>Rayner's blueberry</u> <i>Vaccinium crassifolium ssp. sempervirens</i>	SC (S1)		Documented
<u>Nuttall warea</u> <i>Warea cuneifolia</i>	SC (S1)		Documented
<p>Sources: USFWS Richardson County list; USFWS IPaC Report for McCrady Training Center; South Carolina Department of Natural Resources Rare, Threatened, and Endangered Species of South Carolina for Richardson County and SCARNG reports for MTC.</p> <p>FE=federally endangered, FT=federally threatened; ARS = USFWS has been petitioned to list the species and a positive 90-day finding has been issued (listing may be warranted); information provided only for conservation actions as no federal protections currently exist.</p> <p>SE=state endangered, ST=state threatened, SC = state species of special concern (S1, S2, S3 all indicate state Species of Conservation Concern)</p> <p>S RANK: The priority assigned by SCDNR based upon the element's status within the state.</p>			

Table E-2. Potential Special Status Plants on McCrady Training Center.			
Species	Status	Comments/Habitat	Status on MTC
<p>S1 = critically imperiled in the state because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extirpation in the state. S2 = imperiled in state because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extirpation from the state. S3 = rare or uncommon in state (on the order of 21 to 100 occurrences). S4 = apparently secure in state, with many occurrences. SNR = not ranked at state level</p>			

E.2.1 Documented Plant Species

The following are management recommendations for species confirmed as occurring on MTC. Species descriptions and background information is maintained by SCARNG in a centralized location.

Elliott's bluestem

1. Conserve current populations.
2. Maintain moist, open habitat by protecting hydrology.
3. Spread seed to propagate new and strengthen current populations.
4. Avoid off-road vehicle use, as well as dredging, and filling activities,
5. Avoid/ limit chemical herbicide use.

Piedmont three-awned grass

1. Protect current populations and habitat.
2. Spread seed to propagate new and strengthen current populations.
3. Use prescribed burning and/or hand clearing to restore open habitats.
4. Avoid mechanical clearing and logging.
5. Avoid/ limit chemical herbicide use.

Sandhills milkvetch

1. Apply prescribed fire early in the growing season every 2-3 years, before plants flower.
2. Prevent pine straw raking and other ground disturbance.
3. Protect sandhills and scrub from development and conversion to pine plantation and agriculture.

Northern burmannia or Northern bluethread

1. Protect current populations and habitat.
2. Spread seed to propagate new and strengthen current populations.
3. Use prescribed burning and/or hand clearing to restore open habitats.
4. Avoid mechanical clearing and logging.
5. Avoid/ limit chemical herbicide use.

Pine-barrens reed-grass

1. Protect current populations and habitat.
2. Use prescribed burning and/or hand clearing to restore open habitats.
3. Avoid mechanical clearing and logging.
4. Avoid/ limit chemical herbicide use.

Elliott's sedge

5. Protect current populations and habitat.
6. Use prescribed burning and/or hand clearing to restore open habitats.
7. Avoid mechanical clearing and logging.
8. Avoid/ limit chemical herbicide use.

Southern horse-balm

1. Protect current populations and habitat.
2. Use prescribed burning and/or hand clearing to restore open habitats.
3. Avoid mechanical clearing and logging.
4. Avoid/ limit chemical herbicide use.

Smooth coneflower

1. See Ft. Jackson's Endangered Species Management Plan for Smooth Coneflower and Rough-leaved Loosestrife
2. File Path: \\mtc-envsvr5\Library\Conservation\Threatened and Endangered\ESMP coneflower loosestrife
3. Use prescribed burning and/or hand clearing to restore open habitats.
4. Avoid mechanical clearing and logging.
5. Protect roadside and right-of-way population from herbicides and poorly timed mowing.

Robin's spicebush

1. Avoid broadcast spraying of herbicides; use care with spot spraying.
2. Avoid known individual plant locations and conduct operations elsewhere when they are least likely to cause damage.
3. Minimize disturbance to hydrology, including soil disturbance from rutting.
4. Prescribed burns and/or brushing may be beneficial (dependent on local site conditions).
5. This species is likely sensitive to water quality. Following BMPs around streams and buffering associated drainages will reduce eutrophication and prevent water quality degradation.
6. Maintain and restore open habitat through selective clearing and brushing.

Carolina St. John's-wort

1. Protect current populations and habitat.
2. Use prescribed burning and/or hand clearing to restore open habitats.
3. Avoid mechanical clearing and logging.
4. Avoid/ limit chemical herbicide use.

Sarvis holly

5. Protect current populations and habitat.
1. Protect hydrology of swamp land habitat where Sarvis holly is found.
2. Avoid mechanical clearing and logging.
3. Avoid/ limit chemical herbicide use.

Pine barren rush

1. Protect current populations and habitat.
2. Use prescribed burning and/or hand clearing to restore open habitats.
3. Avoid mechanical clearing and logging.
4. Avoid/ limit chemical herbicide use.

Piedmont pinweed

1. Protect current populations and habitat.
2. Use prescribed burning and/or hand clearing to restore open habitats.
3. Avoid mechanical clearing and logging.
4. Avoid/ limit chemical herbicide use.

Small-head gayfeather

1. Protect current populations and roadside habitat.
2. Use prescribed burning and/or hand clearing to restore open habitats.
3. Avoid mechanical clearing and logging.
4. Avoid/ limit chemical herbicide use along roadsides and right-of-way.

Sandhills lily

1. Protect current populations and habitat.
4. Protect hydrology of swamp land habitat where it is/can be found.
5. Avoid mechanical clearing and logging.
6. Avoid/ limit chemical herbicide use.

Bog spicebush

1. Identify and protect current populations of bog spicebush.
2. Protect seepage wetlands from clearing, draining, and filling.
3. Following biofuel reduction in overgrown sites, allow fires in adjacent uplands to periodically burn into and across wetlands.

Carolina bugleweed

1. Protect current populations and habitat.
7. Protect hydrology of wetland habitat where it is found, such as damp meadows, ponds, and stream banks.
8. Avoid mechanical clearing and logging.
9. Avoid/ limit chemical herbicide use.

Rough-leaved loosestrife

1. See Ft. Jackson's Endangered Species Management Plan for Smooth Coneflower and Rough-leaved Loosestrife
2. File Path: [\\mtc-envsrvr5\Library\Conservation\Threatened and Endangered\ESMP coneflower loosestrife](#)
3. Protection of public and privately owned species population sites.
4. Maintenance by periodic prescribed burning.
5. Protection from adverse habitat alteration by ditching and drainage activities.
6. Collect and store seeds and plant material for propagation, research, and restoration projects.

Carolina's birds-in-a-nest

1. Identify, survey, monitor, and protect current populations.
2. Enhance, restore, and protect wetlands.
3. Work with landowners in/near key Carolina-birds-in-a-nest habitat to discourage indiscriminate use of herbicides for right-of-way maintenance.

Piedmont water-milfoil

1. Protect natural hydrology and water levels in ponds.
2. Prevent pollution runoff and sedimentation into ponds and streams.
3. Eradicate invasive water milfoil species.
4. Maintain historic water table levels.
5. Limit motorized boat use in ponds.

Nestronia or leechbush

1. Protect current populations and habitat.
2. Avoid logging and mechanical clearing.
3. Use fire or hand-clearing to create sunny openings in woodlands.

Bead-grass

1. Protect current populations and longleaf pine/ sandhill habitat.
2. Use prescribed burning and/or hand clearing to restore open habitats.
3. Avoid mechanical clearing and logging.
4. Avoid/ limit chemical herbicide use along roadsides and right-of-way

Pine-leaved golden aster

1. Apply prescribed fire every 2 - 3 years.
2. Avoid clearcutting, pine-straw raking, and other mechanical disturbances to the ground cover.

Algae-like pondweed

1. Conserve and monitor current populations.
2. Protect hydrology and wetland habitats where it is and can be found.
3. Remove vegetation where overcrowding occurs to reduce competition.

Alabama black cherry

1. Protect current populations and habitat

Drowned hornedrush

1. Protect current populations and habitat.
2. Protect hydrology of swamp land habitat where it is/can be found.
3. Avoid mechanical clearing and logging.
4. Avoid/ limit chemical herbicide use.

Beak rush

1. Protect current populations and habitat.
2. Use prescribed burning and/or hand clearing to restore open habitats.
3. Avoid mechanical clearing and logging.
4. Avoid/ limit chemical herbicide use.

Few-flowered beaked-rush

1. Protect current populations and habitat.
2. Use prescribed burning and/or hand clearing to restore open habitats.
3. Avoid mechanical clearing and logging.
4. Avoid/ limit chemical herbicide use.

Pale beakrush

1. Protect current populations and habitat.
2. Use prescribed burning and/or hand clearing to restore open habitats.
3. Avoid mechanical clearing and logging.
4. Avoid/ limit chemical herbicide use.

Chapman beakrush

1. Protect current populations and habitat.
2. Use prescribed burning and/or hand clearing to restore open habitats.
3. Avoid mechanical clearing and logging.
4. Avoid/ limit chemical herbicide use.

Sweet pitcher-plant

1. Protect current populations for destruction and illegal take.
2. Protect wetland habitat where it is/can be found.
3. Avoid mechanical clearing and logging.
4. Avoid/ limit chemical herbicide use.

Canby bulrush

1. Protect current populations.

2. Protect wetland habitat where it is/can be found.
3. Avoid mechanical clearing and logging.
4. Avoid/ limit chemical herbicide use.

Wire-leaved dropseed

1. Burn on a 2-3 year rotation during the growing season.
2. Avoid plowing fire lines, especially streamside transition zones.
3. Prevent pine straw raking and use of herbicides in longleaf pine habitats.
4. Protect pine communities from clearing and logging.
5. Avoid altering hydrology of seepage slopes and savannas.

White false-asphodel

1. Protect current populations.
2. Protect wetland habitat where it is/can be found.
3. Avoid mechanical clearing and logging.
4. Avoid/ limit chemical herbicide use.

Aethusa-like trepocarpus

1. Protect current populations.
2. Protect wetland habitat where it is/can be found such as floodplain forests, wet ditches, and disturbed sites.
3. Avoid mechanical clearing and logging.
4. Avoid/ limit chemical herbicide use.

Chapman's redtop

1. Protect current populations and habitat.
2. Use prescribed burning, mowing, and/or hand clearing to restore open habitats.
3. Avoid mechanical clearing and logging.
4. Avoid/ limit chemical herbicide use.

Rayner's blueberry

1. Protect current populations and habitat.
2. Use prescribed burning, mowing, and/or hand clearing to restore open habitats.
3. Avoid mechanical clearing and logging.
4. Avoid/ limit chemical herbicide use.

Nuttall warea

1. Protect current populations and habitat.
2. Use prescribed burning, mowing, and/or hand clearing to restore open habitats.
3. Avoid mechanical clearing and logging.
4. Avoid/ limit chemical herbicide use.

E.2.2 Potential Plant Species

The following are management recommendations for species with some potential to occur on MTC, but not yet confirmed. See Table E-2 for more information about their likelihood on MTC. Species descriptions and background information is maintained by SCARNG in a centralized location.

Purple baldina

1. Burn on a 2-3 year rotation during the growing season.
2. Avoid soil disturbance, ditching, draining, firebreak construction, bedding, and mechanical clearing in wetlands

Ciliate-leaf tickseed

1. Identify and protect current populations.
2. Avoid damming and polluting streams.
3. Avoid clearcutting of floodplains and other disturbances along riverbanks.
4. Avoid the use of pesticides near streams.
5. Exclude cattle from bottomlands and streambanks.

Canby's dropwort

1. Burn on a 2-3 year rotation and allow fire in uplands to burn into edges of ponds and Carolina Bays
2. Avoid placing firebreaks in transition zones between uplands and wetlands.
3. Avoid ditching, draining, or altering hydrology of ponds, sloughs, and bays.
4. Limit ground water withdrawal.

Michaux's sumac

1. Use prescribed burning and/or hand clearing to maintain sunny conditions.
2. Avoid mechanical clearing and the use of herbicides and heavy equipment.
3. Support efforts to introduce female plants to male-only sites and vice versa.
4. Artificially pollenate female plants.

F. PHYSICAL OVERVIEW

F.1 CLIMATE

MTC is located east of the state capital and second largest city in South Carolina, Columbia. The warm Gulf Stream current moves along the long coastline in the state of South Carolina, while the Appalachian Mountains to the north and west block or delay many cold air masses approaching from those directions. The climate at MTC is classified as humid continental. The predominant climatic factors are the location in the lower latitudes and its proximity to the Appalachian Mountains to the west, which block the approach of unseasonable cold weather in the winter. These factors result in a relatively narrow annual temperature range. The Bermuda high, a maritime tropical air mass brings warm, moist air inland from the ocean, which forms localized thunderstorms and high precipitation (South Carolina State 2019).

F.1.1 Climate Summary

The climate at CHTC is classified as humid continental. The predominant climatic factors are the location in the lower latitudes and its proximity to the Appalachian Mountains to the west, which block the approach of unseasonable cold weather in the winter. These factors result in a relatively narrow annual temperature range. The most rain in the region typically occurs in the summer months July (between 5 and 6 inches) (CPPP 2019). **Table F-1** summarizes the climate near MTC over a period of 19 years, from 1981 to 2010.

Table F-1. Climate Summary for McCrady Training Center, SC: 1981-2010				
Month	Temperature (°F) –Monthly Normal			Precipitation (Inches) - Average Monthly Normal
	Maximum	Minimum	Mean	
January	56.0	35.9	45.9	3.63
February	60.5	38.4	49.4	3.65
March	68.6	44.7	56.7	3.88
April	76.5	52.4	64.5	2.69
May	83.9	60.5	72.2	2.97
June	89.9	69.0	79.5	4.91
July	93.0	72.3	82.7	5.18
August	90.9	71.5	81.2	4.94
September	85.7	66.0	75.8	4.04
October	76.2	54.4	65.3	3.32
November	67.5	44.6	56.1	2.99
December	58.5	37.6	48.1	3.20

Source: (National Weather Service 2019)

MTC is located in a subtropical climate characterized by hot, humid summers and moderately cold winters. Summer temperatures are generally in the low 80°F Fahrenheit (F) range, with temperatures sometimes exceeding 100°F and falling below 50°F. Winter months average 56 F during daylight hours and 33°F at night. Average annual precipitation from 2000 to 2019 is 44.31 inches (National Weather Service 2019). With the exception of wet periods, climate conditions on MTC are ideal for training. It is

important to note that during wet periods, limitations on vehicle maneuvering will curtail training activities. About every five years an ice storm occurs, severe enough to cause some timber damage. Every few years a tropical storm will cause heavy rains for 2-3 days. In extremely rare instances, tropical storm winds come inland far enough to cause damage, such as occurred during Hurricane Hugo in 1989.

Thunderstorms during summer months can also limit training activities. Lightning strikes occur frequently at MTC from June through October. Fort Jackson Range Control is responsible for notifying all users of ranges and training areas of impending severe weather including electrical storm information in accordance with the Fort Jackson Severe Weather Emergency Action Plan. Once alerted, units are required to stop training and seek appropriate shelter for their personnel until the storm has passed. Lightning is and will continue to be a training distracter.

F.1.2 Regional Projections

It is expected that across the southwest, including South Carolina, warming will continue at an accelerated rate, with the largest temperature increases occurring in the summer months. The number of very hot days of > 100°F is projected to rise at a greater rate than the average temperature. Under the lower GHG emissions scenario, average temperatures are expected to rise by about 4.5°F over the next 70 years, while the higher scenario raises the temperature by about 9°F (SCDNR 2013). Summers by the 2080s are projected to be about 11°F hotter, with increased incidence of drought and more extreme precipitation events. Since the 1990s, changes in precipitation throughout the state have occurred, with increases in heavy downpours in many parts of the Southeast, even though much of the region has experienced moderate to severe droughts during the same period of time (SCDNR 2013). Additionally, impacts from sea level rise are anticipated to be more intense in coastal states such as South Carolina, with impacts reaching inland via streams, and lakes (SCDNR 2013).

F.2 GEOLOGY

Fort Jackson is on the northwestern edge of the Atlantic Coastal Plain Province, a region of low to moderate relief and gently rolling plains, known as the Sandhills. The Fall Line, a zone that mark the boundary between younger softer sediments of the province and ancient crystalline rocks the Piedmont Plateau Province, is about 4 miles west of the cantonment area (Gene Stout and Associates 2004).

The principal geologic formation in the Sandhills is the Tuscaloosa, which consists of marine deposits of light-colored sands and kaolin clays. Most soils at Fort Jackson are formed from Tuscaloosa sediment. A Quaternary sand terrace layer overlies the Tuscaloosa formation, which lies on a complex of old metamorphic and igneous rock. The Tuscaloosa complex general consists of clay strata overlying unconsolidated sands. The Upper Cretaceous-age Tuscaloosa formation outcrops over most of Fort Jackson and consists of unconsolidated, cross bedded, kaolinitic, and arkosic sands. It lies unconformably on the peneplained surface of crystalline rocks. Near the northern boundary of the installation, older crystalline rocks of the Carolina Slate Group outcrop at the surface. In the northwest portions of Fort Jackson, Pleistocene sands and gravel are at the ground surface (Gene Stout and Associates 2004).

The MTC is in the upper cretaceous geologic map unit of South Carolina (SCDNR 2018). The upper cretaceous is mostly coarse to fine-grained sands, with lenses of clay of variable thickness, representing fluvial or upper delta-plain environments (SCDNR 2018). The sandhills are often characterized by soils

that are highly permeable, and in upland, interfluvial; vegetation is often well adapted to dry, even arid, conditions. Soils are classed as Entisols, which are generally low in nutrients and organics due to rapid leaching. They include the excessively drained Lakeland soils, the Vacluse-Ailey-Pelion series, the Fuquay-Troup-Vacluse series, and the Pelion Johnston-Vacluse series (Lawrence 1978). Because of the areas shallow aquifers and high sand component, soil productivity tends to be low.

F.3 TOPOGRAPHY

Gently to moderately rolling, moderately dissected high plains occupy most of Fort Jackson. These high plains are interrupted by the nearly flat alluvial plains of Gills, Cedar, and Colonels creeks and their tributaries and an irregularly distributed, gently sloping, low relief area in the central portion of the installation near the headwaters of Cedar Creek. Local relief in the high plains is largely 165-250 feet. Slopes are predominately 3-8%; however, along narrow stream valleys, slopes commonly exceed 15%.

The landscape on MTC within Fort Jackson is made up of rolling coarse-grained, pine-dominated sand hills and lowlands, including three old Sandhill ponds, a large shrub-marsh complex (formerly a pond), and extensive black gum and mixed hardwood swamps along streams. The main ridges are mostly gentle slopes with elevations ranging from 350 to 500 feet above mean sea level. Intersecting side slopes and smaller ridges give rise to elevations of 300 to 400 feet. The majority of slopes are gentle and the few moderately steep slopes that do occur on the installation are short in length. Intermittent sandstone outcroppings can be found along various ridge tops. Elevations along streams range from 200 to 300 feet. The highest point is approximately 500 feet and is found near the center of the installation.

Colonel's Creek is the primary drainages on the installation (see Water Resources below). Colonel's Creek flows southeast across the installation. Colonel's Creek has a relatively deep valley.

F.4 SOILS

A description of the soils at MTC can be found in the Soil Survey of Richland County South Carolina (via the NRCS Soil Mapper and associated GIS data). Within the nine soils series (**Table F-2**), there are ten different soils located on MTC (**Appendix B, Figure 2**). Nine of these soils are sand or sand/loam combinations. The Colonel's Creek basin is dominated by well drained and semi well drained loamy sands.

The major soil association at the MTC is the Vacluse loamy sand is well drained and has high erodibility potential, especially on a steep slope with rainfall. The MTC's relatively small vehicle maneuver area severely limits its ability to rotate heavy maneuver areas for natural reclamation, contributing to soil erosion.

A number of physical and chemical factors contribute to the susceptibility of a soil to damage. These include texture, organic matter content, permeability, clay mineralogy, structure, and depth. There are several indices that incorporate the physical and chemical factors into numeric scales or broad categories that are more easily related to the potential effects of tracked vehicle training: K-factor, T-factor, hydrologic soil groups, and land use capability class. A listing of these indices and links to their descriptions can be found at

https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/office/ssr10/tr/?cid=nrcs144p2_074835 and an overview of soils and characteristics in South Carolina can be found at

<https://www.nrcs.usda.gov/wps/portal/nrcs/main/sc/soils/>. An in-depth review of these factors as they relate to each soil type can be found in the Soil Survey of Richland County, South Carolina (https://efotg.sc.egov.usda.gov/references/public/SC/Richland_Soils_eFOTG.pdf).

Interpretation of the data found in the soil survey reveals that soil erosion is a major management concern on steep slopes and heavily disturbed areas. Due to slopes and other soil conditions, 15 percent of the surveyed acres contain highly erodible soils if vegetation cover is removed. In total, approximately 1 to 2 percent of all soils on the training center would require special treatment and consideration when planning for land rehabilitation. Furthermore, the capability class/subclass from the soil survey reveal that 8 percent of all soils on the center require special conservation practices due to wetness.

Table F-2. Soils Information for McCrady Training Center, SC				
Soil Series	% Slope	Drainage	Erodibility (T-Factor)	Acres
Ailey loamy sand	2 to 10	Well-drained	Potentially high (4)	624
Blanton sand	0 to 6	Moderate	Not highly erodible (5)	300
Fuquay sand	2 to 6	Well-drained	Not highly erodible (5)	228
Johnston loam	N/A	Very poorly drained	Not highly erodible (5)	31
Lakeland sand	2 to 6	Excessive	Not highly erodible (5)	381
Lakeland sand	6 to 15	Excessive	High (5)	392
Pelion loamy sand	2 to 6	Moderately well-drained	Potentially high (4)	80
Pelion loamy sand	6 to 15	Moderately well-drained	Potentially high (4)	113
Vaucluse loamy sand	6 to 10	Well-drained	High (3)	2972
Vaucluse loamy sand	10 to 15	Well-drained	High (3)	871
Source: (NRCS 2019)				

F.5 WATER RESOURCES

F.5.1 Watersheds and Streams

MTC is located in the Catawba River Basin, which encompasses 11 sub-watersheds and 1,487,114 acres that flow from the Piedmont region of the state to the Sandhills and Upper Coastal Plain regions. The Catawba Basin includes the South Carolina portion of the Catawba River Basin (Hydrologic Unit Code (HUC) 03050101, 03050103) and the Wateree River Basin (HUC 03050104), where MTC is located. The Wateree River Basin is subdivided into 4 watersheds that include the Catawba River, Wateree River, and Lake Wateree. MTC is located in the Wateree River subwatershed (SCDHEC 2019).

The waters flowing near MTC include Bee Branch, a stream that drains the areas north of MTC in a southwesterly direction and which drains into Colonel's Creek east of MTC (USEPA 2019a). Colonel's Creek drains the eastern portion of MTC. Leesburg Branch drains the majority of MTC and flows southwest to its confluence with Colonel's Creek – downstream and off installation, Colonel's Creek follows an artificial path terminating at Murray's Pond (USEPA 2019a). Pertinent data relative to surface waters at MTC are given in **Table F-3** and in **Figure 4** in **Appendix B**.

Colonel's Creek (HUC# 030501040403) is the primary drainage on MTC. Colonel's Creek flows southeast across the installation. Colonel's Creek has a relatively deeper valley.

Watershed	Drainage Area (acres)	Stream Length (miles)	Lake/Pond Surface Area (acres)
Colonel's Creek	90,079	25	311
Bee Branch	54,303	30	37*
Leesburg Branch	2,979	0	0.1
Varn Lake	?	?	?
<i>Total</i>	<i>147,361</i>	<i>185</i>	<i>348</i>

Source: (USEPA 2019a, 2019b)

F.5.2 Water Quality

MTC has its own drinking water system that is fed through five underground wells. These wells are about 300 feet deep. The drinking water at the MTC is iron rich and is not in short supply.

Water quality management, water quality monitoring, drinking water and wastewater are monitored weekly and monthly as required by existing MTC and SCARNG permits. Currently, drinking water is treated with sodium hydroxide to neutralize the pH. An oil-water separator treats wastewater from the wash rack.

F.5.3 Wetlands

Wetlands usually occur in conjunction with the hydric soils along the surface drainage systems. Logging, clearing for firebreaks, vehicular traffic, and sedimentation resulting from erosion has historically impacted on-site wetlands through siltation.

By the definition of “jurisdictional wetland” under Section 404 of the Clean Water Act, an area must display three characteristics: (1) hydrophytic vegetation, (2) hydric soil, and (3) wetland hydrology. Areas that are periodically wet but do not meet all three criteria are not jurisdictional wetlands.

Wetlands were first mapped on MTC in 1998, when the USACE created a wetland map for Fort Jackson (Minikin et al. 1998). Vegetation studies on MTC occurred in 2003, 2016, and 2018, which provided some details on wetland plant communities but did not provide geospatial and wetland delineation details for wetlands or any other waters of the US (SCARNG 2003; Gaddy 2018). An even more detailed wetland vegetation study was completed in 2018, but did not include wetland delineation details. Six notable wetlands were identified as part of this project (Gaddy 2018) (see **Figure 4** in **Appendix B**). The installation has a total of 1,642 acres of potential waters of the US: 1,609 acres of seasonal wetlands, 33 acres of ponds, plus intermittent and perennial streams.

Wetland Description	Acres
Palustrine Forested/Broadleaf Deciduous Needle Leaf Evergreen	368.88
Palustrine Forested	1,162.16
Palustrine Scrub-Shrub	6.30
Palustrine Open Water	39.24
Palustrine Scrub-Shrub/Broadleaf Deciduous	2.18
Palustrine Forested/Broadleaf Deciduous/Scrub-Shrub	9.92
Palustrine Forested/Needle Leaf Evergreen/Scrub-Shrub	7.44
Palustrine Emergent	6.36
Palustrine Scrub-Shrub/Broadleaf Evergreen	33.46
Palustrine Scrub-Shrub Emergent	3.50

Palustrine Open Water/Scrub-Shrub/Broadleaf Deciduous	1.48
Palustrine Scrub-Shrub/Broadleaf Deciduous	0.78
Palustrine Forested/Needle Leaf Evergreen/Scrub-Shrub/Broadleaf Deciduous	0.30
Total	1,642.00
Source: McCrady GIS and NWI	

G. BIOLOGICAL OVERVIEW

G.1 ECOREGION

Following the USEPA ecoregion hierarchy, MTC is located in the Southeastern Plains (Level III Ecoregion) in the Upper Coastal Plain known as the Sandhills (Level IV Ecoregion) in central South Carolina. The Sand Hills are unique to the Southeast United States (Griffin et al. 2002). Major rivers include the Lynches, Wateree, Congaree and Savannah Rivers, and flow in streams is consistent due to the large infiltration capacity of the sandy soil and the great ground-water storage capability of the sand aquifer (Griffith et al. 2002). This area is rolling to hilly region composed primarily of Cretaceous-age marine sands and clays, capped in places with Tertiary sands, deposited over the crystalline and metamorphic rocks of the Piedmont with soils that are droughty, low-nutrient soils formed in thick beds of sand (Griffin et al. 2002). Many areas are in woodland, and some areas are used for pasture. Portions of the region are also known for its peach orchards, golf courses, and horse farms.

G.2 VEGETATIVE COMMUNITIES

On-site vegetation is primarily composed of long-leaf pine (*Pinus palustris*) and scrub oak (*Quercus laevis*) with other mixed hardwoods and pines. Geographic areas range from almost xeric barrens to permanent streams, saturated wetlands, mesophytic forests, and man-made impoundments. Most plant communities at MTC are forest communities. There have been several studies conducted at MTC over the years to assess vegetative communities, with recent studies in 2003, 2016 and 2018.

Plant community diversity at MTC has a high number of upland mixed hardwood communities, including 30 plant community types and 11 subtypes (SCARNG 2003). The community types are based on the US National Vegetation Classification (NVC) Associations and details about these are available at <http://usnvc.org>. This high diversity included the presence of several rare plant communities. A relatively rare plant community, the Sandstone Gravel Longleaf Pine Woodland, was found on the high ridges of MTC. This is a dry, open longleaf pine-turkey oak community that is only found in South Carolina. For a summary of vegetative communities, refer to **Table G-1**.

Table G-1. Vegetative Communities of McCrady Training Center, SC.			
DOMINANT SPECIES (Plot Number)	NVC ASSOCIATION(S)*	NVC CEGL CODE*	GLOBAL RANK
Wetland Mixed Hardwoods (and Pines and/or Shrubs)			
TULIP POPLAR (001, 013, 060)	Sandhills Black Gum-Pine Streamhead Swamp (Tulip Tree Phase);	4734b	G3
SWAMP TUPELO (003, 005, 006, 032, 054, 056, 065, 089; 031; 100, 103, 104)	Sandhills Black Gum-Pine Streamhead Swamp (Black Gum Phase); Sandhills Swamp Black Gum Hillside Seepage Forest; Sandhills Black Gum-Pine Streamhead Swamp (Pond Pine Phase)	4734a; 4645; 4734d	G4; G3; G4?
CAROLINA MAPLE (007, 081, 095)	Sandhills Swamp Black Gum Hillside Seepage Forest	4645	G3
SWEET GUM (038)	Loblolly Pine-Sweet Gum-Red Maple Saturated Forest	7560	G?

Table G-1. Vegetative Communities of McCrady Training Center, SC.

DOMINANT SPECIES (Plot Number)	NVC ASSOCIATION(S)*	NVC CEGL CODE*	GLOBAL RANK
TULIP POPLAR (051); SWAMP TUPELO (078), CAROLINA MAPLE (077)	Sandhills Black Gum-Pine Streamhead Swamp (Tulip Tree Phase); Sandhills Black Gum Hillside Seepage Forest	4734b; 4645	G3?; G3
POND PINE (083)	Pond Pine-Fetterbush-Pepperbush-Gallberry Woodland	4435	G?
LOBLOLLY PINE (042)	Loblolly Pine-Sweet Gum-Black Gum Successional Swamp Forest	4606	G4
Upland Mixed Hardwoods			
POST OAK (002, 029, 036)	Dry Acid Eastern Coastal Plain Oak-Hickory Forest (Post Oak Phase)	7246b	G4?
SAND POST OAK (057; 086)	Sandhill Ravine Oak Forest; Carolina Longleaf Pine-Mixed Shrub Oak Sandhills	7766; 3591	G2?; G3
SOUTHERN RED OAK (004, 066, 093)	Dry Acid Eastern Coastal Plain Oak-Hickory Forest (Southern Red Oak Phase)	7246a;	G4?
BLACKJACK OAK (025)	Dry Acid Eastern Coastal Plain Oak-Hickory Forest	7246c	G4
WHITE OAK (019, 024)	White Oak-Black Oak Inner Coastal Plain Mesic Slope Forest	7278	G3G4
MOCKERNUT HICKORY (012)	Fire Suppressed Longleaf Sandhills	7511	G4
BLACK OAK (017)	Sandhills Sandy Fire-Suppressed Black Oak-Sparkleberry Forest	8553	G3G4
Pine (and Shrubs)			
LONGLEAF PINE (008, 062; 015, 044; 018; 010, 034; 092)	Longleaf Pine-Turkey Oak-Dwarf Huckleberry-Carolina Wiregrass Woodland; Longleaf Pine Plantation; South Carolina Central Longleaf Woodland; Fire Suppressed Longleaf Sandhills; Atlantic Coastal Plain Mesic Longleaf Woodland	3586; 7176; 3593; 7511; 3569	G3?; G5; G2; G4; G2G3
LOBLOLLY PINE (009, 022; 027)	Loblolly Pine-Shortleaf Pine Forest; Loblolly Pine Plantation	8403; 7179	G4; G5
POND PINE (046, 079, 099)	Pond Pine-Fetterbush-Sweet Pepperbush-Gallberry Woodland	4435	G?
LOBLOLLY PINE (084)	Sandhills Black Gum-Pine Streamhead Swamp (Lobolly Pine Phase)	4734c	G4
Pine-Mixed Hardwoods			
LONGLEAF PINE (014, 033, 059, 067; 064; 070; 073, 091, 074)	Fire Suppressed Longleaf Sandhills; South Carolina Central Longleaf Woodland; Longleaf Pine-Turkey Oak-Dwarf Huckleberry-Carolina Wiregrass Woodland; Sandstone Gravel Longleaf Pine Woodland; Atlantic Coastal Plain Mesic Longleaf Woodland	7511; 3593; 3586; 7767; 3569	G4; G2; G3?; G1; G2G3
LOBOLLY PINE (011, 026, 049, 050, 053; 030; 035; 040; 063)	Loblolly Pine-Oak Forest (Southern Red Oak Phase); Loblolly Pine-Oak Forest (Blackjack Oak Phase); Loblolly Pine Oak Forest (Water Oak Phase); Loblolly Pine Plantation; Loblolly Pine-Oak Forest (Hickory Phase)	4766b; 4766d; 4766e; 7179; 4766f	G?; G4

Table G-1. Vegetative Communities of McCrady Training Center, SC.			
DOMINANT SPECIES (Plot Number)	NVC ASSOCIATION(S)*	NVC CEGL CODE*	GLOBAL RANK
SHORTLEAF PINE (048)	Coastal Plain Shortleaf-Loblolly Pine Mixed Oak Dry-Mesic Forest	4713	G2G3
Mixed Hardwoods-Pine			
PIGNOT HICKORY (094)	Loblolly Pine-Oak Forest (Southern Red Oak Phase)	4766b	G?
SOUTHERN RED OAK (058, 082, 090)	Loblolly Pine-Oak Forest (Southern Red Oak Phase)	4766b	G?
TURKEY OAK (043, 045, 061, 075, 076)	Longleaf Pine-Turkey Oak-Dwarf Huckleberry-Carolina Wiregrass Woodland	3586	G3?
BLACKJACK OAK (020)	Atlantic Longleaf Pine-Blackjack Oak Woodland	3595	G2G3
WATER OAK (021; 052)	Loblolly Pine-Water Oak Shrub Mixed Herbs; Coastal Plain Shortleaf-Loblolly Pine Mixed Oak Dry-Mesic Forest	7533; 4713	G2G3; G2G3
SOURWOOD (047)	Atlantic Coastal Plain Sweet Bay-Black Gum (Sourwood) Seepage Forest	8552	G3
BLUEJACK OAK (096)	Fire Suppressed Longleaf Sandhills	7511?	G4
Shrublands			
LONGLEAF PINE (016; 072)	Fire Suppressed Longleaf Sandhills; Longleaf Pine-Turkey Oak-Dwarf Huckleberry-Carolina Wiregrass Woodland	7511; 3586	G4; G3?
TURKEY OAK (069)	Longleaf Pine Plantation	7176	G5
POND PINE (079, 080)	Evergreen High Pocosin	3846	G3
BLUEJACK OAK (097)	Fire Suppressed Longleaf Sandhills	7511	G4
Marsh			
WOOLGRASS BULRUSH- (101)	Woolgrass Bulrush Seasonally Flooded Herbaceous Vegetation	3866	G4
Floating Aquatic			
WHITE WATERLILY (102)	White Waterlily-Broadleaf Pondlily Herbaceous Vegetation	4326	G3?
WATERSHIELD (108)	Watershield Pond	4527	G4?
WHITE WATERLILY (110)	Coastal Plain Pond	6086	G2
MIXED AQUATIC (109)	White Waterlily-Broadleaf Pondlily Herbaceous Vegetation	4326	G3?
Source: (SCARNG 2003)			
*NVC Associations listed here are the Colloquial Names. NVC CEGL Codes refer to the CEGL 00#### number that provides a stable connection to NVC Associations. For example, CEGL 004734 remains the same association regardless of name changes. See http://usnvc.org to find the Association descriptions.			
Global Ranks are defined at http://www.natureserve.org/conservation-tools/standards-methods and are similar to state ranks included in Tables E-1 and E-2 but at a global level.			

G.2.1 Woodlands and Forests

The four major forest community types found at the installation are longleaf pine/turkey oak, scrub oak, upland hardwoods, and bottomland hardwoods. Longleaf pine/scrub oak forests are dominated by longleaf pine (*Pinus palustris*) and occur on the upper slopes and ridges of the installation, although loblolly pine (*Pinus taeda*) also occurs on MTC. Understories are predominantly scrub oak species such as turkey oak (*Quercus laevis*), bluejack oak (*Quercus incana*), blackjack oak (*Quercus marilandica*), and dwarf post oak (*Quercus stellata* var. *margaretta*) with scattered hawthorne (*Crataegus* spp).

Although scrub oak communities usually contain a scattering of longleaf pines, they are dominated by a variety of oak species, including turkey oak, bluejack oak and dwarf post oak. Blackgum (*Nyssa sylvatica*) and persimmon (*Diospyros virginiana*) are sometimes found in association with these scrub oaks. This community type has the lowest plant diversity on MTC.

Upland hardwood communities are generally found on sandy clay loam soils on mid to lower slopes and tend to be well developed. This zone is sometimes called Xeric Sandhill Scrub. A closed canopy with a mixture of deciduous and evergreen trees, shrubs, and pines typifies this upland forest. While these forest communities are dominated by hardwoods, longleaf pine are still present in substantial numbers. A recognizable component of turkey oak, southern red oak (*Quercus falcata*), water oak (*Quercus nigra*), black oak (*Quercus velutina*), post oak (*Quercus stellata*), and blackjack oak are dominant in upland hardwood communities. Dominant hickory species on these sites include pignut hickory (*Carya glabra*) and mockernut hickory (*Carya tomentosa*). Other commonly associated species are black gum, persimmon, flowering dogwood (*Cornus florida*) and black cherry (*Prunus serotina*). The upland hardwood community has the highest plant diversity of any of the major forest types on the installation.

Bottomland hardwood communities are found in wetland and riparian areas that are typified by poorly drained soils. Species encountered in these communities include swamp tupelo (*Nyssa sylvatica* var. *biflora*), red maple (*Acer rubrum*), scattered sweetgum (*Liquidambar styraciflua*), and yellow poplar (*Liriodendron tulipifera*). Other species found in the bottomland hardwood communities include red bay (*Persea borbonia*), American holly (*Ilex opaca*), sweetbay (*Magnolia virginiana*), and swamp azalea (*Rhododendron viscosum*). Bottomland forest ecosystems are very stable requiring one hundred or more years to mature. These areas tend to be well canopied with trees very often swollen or with “knees”. Because of the wet and humid conditions, they rarely burn except during times of drought and low water levels.

G.2.2 Wetland Communities

Out of the associations described above, most of them are wetland communities, with 20 different associations identified in and near wetlands on MTC. These are identified in Table G-1 in the categories wetland mixed hardwood, marsh, floating aquatic vegetation and the two pond pine cover types. So they may not represent the majority of acreage on MTC, but they do capture much of the plant biodiversity on MTC. A number of rare plants are associated with these wetland plant communities (see Appendix E).

The wetland communities tend to be in transition zones between bottomland forests and aquatic plant communities. Other than road crossings, bottomland and wetland communities tend have little or no disturbance. Wetland ecosystems include floodplain forest, swamp forest, and marsh.

G.2.3 Historic Vegetation

Since European settlement, extensive clearing for agriculture, grazing, logging, and urban development contributed to the alteration and introduction of many types of vegetation. Most notable is the increase in slash pine (*Pinus elliotii*).

G.3 FLORA

The flora found on MTC are typical of the sand hills of South Carolina's Upper Coastal Plain physiographic province. Forty-three tree species and twenty-six shrub and vine species (69 woody plant species) were recorded in the 2003 survey, and these included four rare species (state special concern – refer to **Table E-2 in Appendix E**) identified in and near vegetative community sampling sites. These include sweet pitcher plant (*Sarracenia rubra*; Noah's Marsh), Robbins' spikerush (*Eleocharis robbinsii*; shores of Odum Pond), drowned hornedrush (*Rhynchospora inundata*; Chavis Pond), and Canby's bulrush (*Scirpus etuberculatus*; Davis Pond).

Although surveys specific to invasive plants have not been conducted on MTC to date, some incidental notations of invasive plant species have been made during other surveys. These include *Aneilema keisak* (Asiatic dayflower), *Ligustrum sinense* (Chinese privet), *Lonicera japonica* (Japanese honeysuckle), *Microstegium vimineum* (Vietnam grass), and *Prunella vulgaris* (self-heal) (Gaddy 2018).

G.4 FAUNA

The fauna found on MTC are typical of the sand hills of South Carolina's Upper Coastal Plain physiographic province. The relatively unaltered state of this unique and dynamic Sandhill environment provides a wealth of biological and ecological research opportunities. Baseline and trend studies are available for several fish and wildlife communities. Both the USC and the SCDNR have been involved in several biological studies such as bat population surveys, herpetological surveys, a raptor survey, butterfly surveys, mammal surveys, and fish population surveys.

G.4.1 Neo-tropical Migratory Birds

Neo-tropical migratory birds include species with at least some populations breeding in the United States and/or Canada that spend their nonbreeding months south of the US. Examples include songbirds, shorebirds, water birds, and waterfowl. Fort Jackson and MTC have an abundant and varied breeding bird resource, including both permanent residents and neo-tropical migrants (Cely 1994). Efforts to monitor and manage neo-tropical migrant birds have been ongoing for several years. In 1992 and 1993, initial survey data was collected through LCTA. Since that time our neo-tropical migrant monitoring and management program has matured. Since 2002 we have been partnering with SCDNR to run a MAPS banding station at MTC. The MAPS station provides us dual benefits. It provides us a good data set on our neo-tropical population. The station also provides us an excellent outreach opportunity. Working with SCDNR we have hosted groups ranging from students, to zoo keepers, to US Park Service volunteers. The MAPS Station at MTC has also received media coverage over the years ranging from newspaper articles to episodes of ETV programs and field pieces. These outreach opportunities provide an impactful way to share both the mission and importance of the National Guard, and our stewardship and conservation. It is MTC's intention to continue to partner with SCDNR to run the MAPS Station and manage the neo-tropical bird populations at MTC.

G.4.2 Wildlife Game Species

All fishing, hunting, and game management is handled by the Environmental Office at Fort Jackson. The management includes licensing and permitting, as well as monitoring of population trends. Season dates and harvest quotas are aligned with those set each year by the State of South Carolina for Richland County. Variations to the state regulations apply to the harvest of white-tailed deer (*Odocoileus*

virginianus) and game fish on Fort Jackson. Fort Jackson regulations are more restrictive than the those for the state. There is no commercial trapping allowed on Fort Jackson.

Currently, Fort Jackson performs surveys to track game species. In cooperation with SCDNR, annual surveys are performed for bobwhite quail, fox squirrels, eastern wild turkey (*Meleagris gallopavo*) and furbearer species as part of state-wide survey efforts. The results of these surveys are not adequate to make site-specific recommendations for harvest quotas. The only census data used in making harvest recommendations is that collected on fish populations in the ponds managed intensively for game fish.

H. SUMMARY OF SUPPORTING REPORTS, DOCUMENTS, AND DATASETS

- CPPP. 2019. Average Monthly Precipitation by Climate Division. Carolinas Precipitation Patterns & Probabilities. Available from <https://cisa.sc.edu/atlas/regions-precip-average.html> [accessed 20 March 2019].
- Gaddy, L.L. 2018. Inventory of the Wetlands of McCrady Training Center, Fort Jackson, Richland County, South Carolina. Richland County, SC.
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- Griffith, G.E., Omernick, J.M., and Comstock, J. 2002. Ecoregions of South Carolina. Corvallis, OR.
- National Weather Service. 2019. Monthly Climate Normals for Columbia Owens Downtown AP, SC from 1981-2010. Available from <https://w2.weather.gov/climate/xmacis.php?wfo=cae> [accessed 13 March 2019].
- NRCS. 2019. Web Soil Survey for McCrady Training Center in Richland County, SC. Available from <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx> [accessed 13 March 2019].
- SCARNG. 2003. Vegetation Cover Types, Plant Community Diversity, and Species Dominance: McCrady National Guard Training Center. Richland County, SC.
- SCDHEC. 2019. Wateree River. Available from <http://wwwprod.dhec.sc.gov/HomeAndEnvironment/Water/Watersheds/WatershedMap/CatawbaWatershed/WatereeRiver/> [accessed 22 March 2019].
- SCDNR. 2013. Climate Change Impacts to Natural Resources in South Carolina. Available from <http://www.dnr.sc.gov/pubs/CCINatResReport.pdf> [accessed 11 March 2019].
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- USEPA. 2019b. Wetlands in McCrady Training Center, SC.

I. AGENCY COORDINATION AND REVIEWS

Document 1. 2001 FONSI

Document 2. REC and Check

FINDING OF NO SIGNIFICANT IMPACT
For
Implementation of an
Integrated Natural Resources Management Plan at
South Carolina Army National Guard's
Mccrady Training Center

Richland County, South Carolina

The South Carolina Army National Guard (SCARNG) has prepared an Integrated Natural Resources Management Plan (INRMP) and Environmental Assessment (EA) for Mccrady Training Center (MTC), a 15,200 -acre military training installation located within the boundaries of Fort Jackson in Richland County, South Carolina. The INRMP is a comprehensive management plan designed to guide natural resources management at the installation for fiscal years 2002 -2006 in support of the military training mission and in accordance with applicable environmental laws and regulations. The EA was prepared in accordance with the National Environmental Policy Act, the Council on Environmental Quality (CEQ) Regulations, and Army Regulation 200-2 *Environmental Effects of Army Actions*.

A. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

Proposed Action.-The SCARNG proposes to manage natural resources at the MTC (formerly known as the Leesburg Training Site) through the development and implementation of an INRMP. The purpose of the INRMP is to preserve, improve, and enhance natural resources system integrity and ensure that natural resources conservation measures and Army activities on mission lands are integrated and consistent with federal stewardship requirements. The INRMP ensures that the SCARNG can meet its mission needs at MTC now and into the future, and that the natural resources that provide the training environment are ecologically sustainable over the long-term.

The Sikes Act (Title 16, United States Code 670a *et seq.*) as amended, Department of Defense Instruction 4715.3 *Environmental Conservation Program* (03 May 96), and Army Regulation 200-3 *Natural Resources - Land, Forest and Wildlife Management* (28 Feb 95) require the development and implementation of an INRMP. The Sikes Act provides the primary legal basis for the Secretary of Defense to carry out a program that provides for the conservation and rehabilitation of natural resources on military installations.

Alternatives Considered.-In addition to the Proposed Action, two alternatives for implementing the INRMP at MTC were identified:

1. **No-Action**. In accordance with regulations promulgated by the CEQ 43 Code of Federal Regulations (CFR), Part 1500, Section 1502.14(d), a "No-Action" alternative must be evaluated. The No-Action alternative would not immediately change MTC's management direction or the level of management intensity. Although MTC would continue to operate under existing natural resources management programs, existing programs do not currently meet the requirements of the Sikes Act, AR 200-3, or DoD Instruction 4715.3. The No-Action alternative would not provide an integrated approach to natural resources management in the immediate future, but would, for the most part, continue traditional management of individual

components of natural resources that are designed to protect selected aspects of the ecosystem.

2. Limited Implementation of the INRMP: This alternative would develop an INRMP that meets requirements of the Sikes Act and Army policy, but does not provide an integrated approach to natural resources management. It would be implemented on an extended schedule. The Limited Implementation alternative did not meet the needs of natural resources management at MTC in a timely manner nor did it adopt an integrated approach to management; therefore, the Limited Implementation Alternative was not carried forth for analysis in the Environmental Assessment.

B. ENVIRONMENTAL IMPACT ANALYSIS

The EA indicates that implementation of the INRMP would result in beneficial effects or no significant adverse effects to the following resources: land use, air quality, noise, geology and soils, water resources, biological resources, cultural resources, facilities, socioeconomics, environmental justice, protection of children, and hazardous wastes/materials. Although no significant impacts are expected from implementing the No Action alternative, continuation of existing management procedures has the potential to result in adverse effects over the long-term from not establishing a comprehensive approach for natural resources management and evaluation. The No Action alternative would also result in violating the Sikes Act requirements.

C. MITIGATION

No mitigation measures will be required as a result of implementing the INRMP at the MTC. Implementation of the INRMP is predominantly a management decision that will not of itself cause any negative impacts to MTC's natural resources, and will result in better protective measures for those natural resources. Individual projects undertaken at a later date in compliance with the procedures outlined in the INRMP may result in actions that could require mitigation measures. Appropriate mitigation measures will be identified and implemented at that time, as warranted.

D. REGULATIONS

There are no indications that implementation of the proposal will violate any federal, state, or local environmental laws or regulations. The proposed action would not violate the National Environmental Policy Act (42 USC § 4321 to 4370e), its regulations as promulgated by the Council on Environmental Quality (40 CFR Parts 1500-1508), Army Regulation 200-2, *Environmental Effects of Army Actions* or any other federal, state, or local environmental laws or regulations. The EA documents the status of project compliance with applicable federal environmental statutes and executive orders.

E. PUBLIC REVIEW

The draft INRMP and EA were made available for public review from September 17-October 2, 2001. No public comments were received.

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The final INRMP, EA and FNSI are available for review at Richland County Public Library, 1431 Assembly Street, Columbia, South Carolina, 29201 [Tel. (803) 799-9084) during normal business hours.

Written comments on the final INRMP, EA and this Finding of No Significant Impact by any interested party may be submitted within 15 days of the Notice of Availability's publication. Send comments to: South Carolina Army National Guard, Adjutant General's Office (Attn: Bryan Hall), 1 National Guard Road, Columbia, South Carolina, 29210.

E. FINDING OF NO SIGNIFICANT IMPACT

Careful review of the EA has indicated that implementation of an INRMP at the MTC will not have any adverse significant impact on the quality of the existing natural or human environment. The Proposed Action will allow SCARNG to achieve its primary mission of maintaining military readiness while balancing the sustainability of desired military training area conditions and ecosystem viability at MTC. The requirements of the National Environmental Policy Act and the Council on Environmental Quality regulations have been satisfied, and an Environmental Impact Statement will not be prepared.

Date: 11/10/01

AVIO BARNO
Brigadier General, US ARMY
Commanding

Date: 30 11/10/01



R. O. MURPHY
Colonel, NGB
Chief, Environmental Programs
Division

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This ensures transparency and allows for easy verification of the data.

In the second section, the author details the various methods used to collect and analyze the data. This includes both manual data entry and the use of specialized software tools. The goal is to ensure that the data is both accurate and easy to interpret.

The final part of the document provides a summary of the findings and offers recommendations for future work. It suggests that regular audits and updates to the data collection process are essential for maintaining the integrity of the information.



REC and Check: To be inserted once scoping of draft is complete

J. RELEVANT LAWS, REGULATIONS, AND GUIDANCE

J.1 FEDERAL LAWS

American Indian Religious Freedom Act of 1978 (Public Law 95-341; 42 United States Code [USC] §1196)

– requires the US, where appropriate, to protect and preserve religious rights of the American Indian, Eskimo, Aleut, and Native Hawaiians, including but not limited to access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites.

Animal Damage Control Act of 1931 (7 USC §426 *et seq.*) – provides broad authority for investigation, demonstrations and control of mammalian predators, rodents and birds.

Anti-Deficiency Act of 1982 (31 USC §1341 *et seq.*) - provides that no federal official or employee may obligate the government for the expenditure of funds before funds have been authorized and appropriated by Congress for that purpose.

American Antiquities Act of 1906 (Public Law 59-209; 16 USC §431-433) – authorizes the President to designate historic and natural resources of national significance, located on federal lands, as National Monuments for the purpose of protecting items of archeological significance.

Archeological and Historical Preservation Act of 1974 (Public Law 95-96; 16 USC §469 *et seq.*) – provides for the preservation of historical and archeological data, including relics and specimens, threatened by federally funded or assisted construction projects.

Archeological Resources Protection Act of 1979 (16 USC §470 *et seq.*) – prohibits the excavation or removal from federal or Indian lands any archeological resources without a permit.

Bald Eagle Protection Act of 1940 (Public Law 87-884; 16 USC §668a-d) – prohibits the taking or harming (i.e. harassment, sale, or transportation) of bald eagles or golden eagles, including their eggs, nests, or young, without appropriate permit.

Clean Air Act of 1970 (42 USC §7401 *et seq.*) – regulates air emissions from stationary, area, and mobile sources. This law authorizes the US Environmental Protection Agency (USEPA) to establish National Ambient Air Quality Standards (NAAQS) to protect public health and the environment.

Clean Water Act of 1972 (Public Law 92-500; 33 USC §1251 *et seq.*) – aims to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters. Under Section 401, states have authority to review federal permits that may result in a discharge to wetlands or water bodies under state jurisdiction. Under section 404, a program is established to regulate the discharge of dredged or fill material into the Nation’s waters, including wetlands.

Coastal Zone Management Act of 1972 (Public Law 92-583; 16 USC §1451 *et seq.*) – provides incentives for coastal states to develop coastal zone management programs. Federal actions that impact the coastal zone must be consistent to the maximum extent practicable with the state program.

Conservation and Rehabilitation Program on Military and Public Lands (Public Law 93-452; 16 USC §670 *et seq.*) – provides for fish and wildlife habitat improvements, range rehabilitation, and control of off-road vehicles on federal lands.

Conservation Programs on Military Reservations (Public Law 90-465; 16 USC §670 *et seq.*) – Requires each military department to manage natural resources and to ensure that services are provided which are necessary for management of fish and wildlife resources on each installation; to provide their personnel

with professional training in fish and wildlife management; and to give priority to contracting work with federal and state agencies that have responsibility for conservation or management of fish and wildlife. In addition, it authorizes cooperative agreements (with states, local governments, non-governmental organizations, and individuals) which call for each party to provide matching funds or services to carry out natural resources projects or initiatives.

Defense Appropriations Act of 1991 (Legacy Program) – establishes the “Legacy Resource Management Program” for natural and cultural resources with emphasis is on inventory and stewardship responsibilities.

Emergency Wetlands Resources Act of 1986 (16 USC §3901-3932) – requires reporting of wetland loss by the Secretary to Congress; authorizes the purchase of wetlands; requires the Secretary to establish a National Wetlands Priority Conservation Plan; and requires states to include wetlands in their Comprehensive Outdoor Recreation Plans, among others.

Endangered Species Act of 1973, as amended (16 USC §1531 *et seq.*) – provides for the identification and protection of threatened and endangered plants and animals, including their critical habitats. Requires federal agencies to conserve threatened and endangered species and cooperate with state and local authorities to resolve water resources issues in concert with the conservation of threatened and endangered species. This law establishes a consultation process involving federal agencies to facilitate avoidance of agency action that would adversely affect species or habitat. Further, it prohibits all persons subject to US jurisdiction from taking, including any harm or harassment, endangered species.

Federal Insecticide, Fungicide, and Rodenticide Act of 1947 (Public Law 92-516; 7 USC §136 *et seq.*) – governs the use and application of pesticides in natural resource management programs. This law provides the principal means for preventing environmental pollution from pesticides through product registration and applicator certification.

Federal Land Policy and Management Act of 1976 (43 USC §1701) – establishes public land policy and guidelines for its administration and provides for the management, protection, development, and enhancement of the public lands.

Fish and Wildlife Conservation Act of 1980 (Public Law 96-366; 16 USC §2901 *et seq.*) – encourages management of non-game species and provides for conservation, protection, restoration, and propagation of certain species, including migratory birds threatened with extinction.

Fish and Wildlife Coordination Act of 1934 (16 USC §661 *et seq.*) – provides a mechanism for wildlife conservation to receive equal consideration and coordinate with water-resource development programs.

Military Reservations and Facilities: Hunting, Fishing and Trapping (an update to the Military Construction Authorization Act; 10 USC §2671) – dictates that the Secretary of Defense require that all hunting, fishing, and trapping on military installations be in accordance with the fish and game laws of the State in which it is located, that license be obtained (except with respect to members of the armed forces), and that safety protocols be enacted.

Land and Water Conservation Act of 1965 (16 USC §4601 *et seq.*) – assists in preserving, developing, and assuring accessibility to outdoor recreation resources.

Migratory Bird Conservation Act of 1929 (16 USC §715 *et seq.*) – establishes a Migratory Bird Conservation Commission to approve areas recommended by the Secretary of the Interior for acquisition with Migratory Bird Conservation Funds.

Migratory Bird Treaty Act of 1918 (Public Law 65-186; 16 USC §703 *et seq.*) – provides for regulations to control taking of migratory birds, their nests, eggs, parts, or products without the appropriate permit and provides enforcement authority and penalties for violations.

National Environmental Policy Act of 1969 (Public Law 91-190; 42 USC §4321 *et seq.*) – mandates federal agencies to consider and document environmental impacts of proposed actions and legislation. In addition, it mandates preparation of comprehensive environmental impact statements where proposed action is “major” and significantly affects the quality of the human environment.

National Historic Preservation Act of 1966, as amended (PL 89-665; 16 USC §470 *et seq.*) – directs federal agencies to take into account the effect of any undertaking (a federally funded or assisted project) on historic properties.

Native American Graves Protection and Repatriation Act of 1990 (Public Law 101-601; 25 USC §3001-3013) – addresses the recovery, treatment, and repatriation of Native American and Native Hawaiian cultural items by federal agencies and museums. It includes provisions for data gathering, reporting, consultation, and issuance of permits.

Non-Indigenous Aquatic Nuisance Prevention and Control Act of 1990 – created the Aquatic Nuisance Species Task Force which is committed to preventing and controlling aquatic nuisance species and implementing the act.

Noxious Plant Control Act (PL 90-583) – provides for the control and management of nonindigenous weeds that injure or have the potential to injure the interests of agriculture and commerce, wildlife resources, or the public health.

Plant Protection Act of 2000¹ (7 USC §7701 *et seq.*) (replaces Federal Noxious Weed Act of 1973 [PL 93-629]) – authorizes the USDA to prohibit or restrict the importation or interstate movement of any plant, plant product, biological control organism, noxious weed, article, or means of conveyance if the Secretary of Agriculture determines it is necessary to prevent introduction or spread of plant pests or noxious weeds.

Plant Quarantine Act (7 USC §151-167) – regulates the importation and interstate movement of nursery stock and other plants that may carry pests and diseases that are harmful to agriculture.

Readiness and Environmental Protection Initiative (within Section 2811, FY 2003 National Defense Authorization Act) (10 USC §2684a) – outlines agreements to limit encroachments and other constraints on military training, testing, and operations.

Resource Conservation and Recovery Act of 1976 (42 USC §6901 *et seq.*) – establishes a comprehensive program which manages solid and hazardous waste. Subtitle C, Hazardous Waste Management, sets up a framework for managing hazardous waste from its initial generation to its final disposal. Waste pesticides and equipment/containers contaminated by pesticides are included under hazardous waste management requirements.

Sikes Act Improvement Act of 1997 (Public Law 105-85; 16 USC §670a *et seq.*) – amends the Sikes Act of 1960 to mandate the development of an integrated natural resources management plan through cooperation with the Department of the Interior (through the US Fish and Wildlife Service [USFWS]),

¹ Replaces Federal Noxious Weed Act of 1974 (Public Law 93-629; 7 USC §2801).

Department of Defense, and each state fish and wildlife agency for each military installation supporting natural resources.

Soil Conservation Act of 1935 (16 USC §590a *et seq.*) – provides for soil conservation practices on federal lands.

Watershed Protection and Flood Prevention Act (PL 84-566; 16 USC §1001-1009) – the Soil Conservation Service at the Department of Agriculture provides planning assistance and construction funding for projects constructed by local sponsors, often in the form of flood control districts.

J.2 FEDERAL REGULATIONS

15 Code of Federal Regulations [CFR] 930 – Federal Consistency with Approved Coastal Management Programs

32 CFR 190 – Natural Resources Management Program

40 CFR 6 – USEPA Regulations on Implementation of NEPA Procedures

40 CFR 162 – USEPA Regulations on Insecticide, Fungicide, and Rodenticide Use

40 CFR 1500-1508 – Council on Environmental Quality (CEQ) Regulations on Implementing National Environmental Policy Act (NEPA) Procedures

50 CFR 17 – USFWS list of Endangered and Threatened Wildlife

50 CFR 10.13 – List of Migratory Birds

32 CFR 651 – Environmental Effects of Army Actions

J.3 FEDERAL EXECUTIVE ORDERS (EOs)

Environmental Safeguard for Activities for Animal Damage Control on Federal Lands (EO 11870) - restricts the use of chemical toxicants for mammal and bird control.

Exotic Organisms (EO 11987) – restricts federal agencies in the use of exotic plant species in any landscape and erosion control measures.

Floodplain Management (EO 11988) – specifies that agencies shall encourage and provide appropriate guidance to applicant to evaluate the effects of their proposals in floodplains prior to submitting applications. This includes wetlands that are within the 100-year floodplain and especially discourages filling.

Off-Road Vehicles on Public Lands (EO 11989²) – establishes criteria for designating public lands as open, limited or closed to the use of off-road vehicles (ORVs) and establishes rules for use and operation of ORVs in order to protect the resources of the public lands, to promote safety, and to minimize conflicts among various users.

Protection of Wetlands: Amends Executive Order 11990 (EO 12608) – directs all federal agencies to take action to minimize the destruction loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. This applies to the acquisition, management, and disposal of federal lands and facilities; to construction or improvements undertaken, financed, or assisted by the

² Amends Executive Order 11644.

federal government; and to the conduct of federal activities and programs which affect land use.

Protection and Enhancement of Environmental Quality: Amends Executive Order 11514 (EO 11991) – provides for environmental protection of federal lands and enforces requirements of NEPA.

Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (EO 12898) – requires environmental protection for all communities by focusing federal attention on the environmental and human health effects of federal actions on minority and low-income populations.

Energy Efficiencies and Water Conservation at Federal Facilities (EO 12902) – federal agency use of energy and water resources is directed towards the goals of increased conservation and efficiency.

Indian Sacred Sites (EO 13007) – provides for the protection of and access to Indian sacred sites.

Protection of Children from Environmental Health Risks and Safety Risks (EO 13045) – requires that the USEPA evaluate the effects of a planned regulation on children and explain why the regulation is preferable to potentially effective and reasonably feasible alternatives.

Invasive Species (EO 13112) – directs federal agencies to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.

Greening the Government through Leadership in Environmental Management (EO 13148) – requires the head of each federal agency to be responsible for ensuring that all necessary actions are taken to integrate environmental accountability into agency day-to-day decision making and long-term planning processes across all agency missions, activities, and functions.

Consultation and Coordination with Indian Tribal Governments (EO 13175) – ensures that all federal departments and agencies consult with Indian tribes and respect tribal sovereignty as they develop policy on issues that impact Indian communities.

Responsibilities of Federal Entities to Protect Migratory Birds (EO 13186) – directs all federal agencies taking actions that have a potential to negatively affect migratory bird populations to develop and implement a Memorandum of Understanding with the USFWS by January 2003 that shall promote the conservation of migratory bird populations.

Strengthening Federal Environmental, Energy, and Transportation Management (EO 13423) – requires federal agencies to lead by example in advancing the nation’s energy security and environmental performance by establishing new and updated goals, practices, and reporting requirements for environmental, energy, and transportation performance and accountability.

Facilitation of Hunting Heritage and Wildlife Conservation (EO 13443) – directs the Department of the Interior and its component agencies, bureaus and offices facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat.

Executive Order 13148: Greening the Government Through Leadership in Environmental Management (2000). – requires federal laboratories, testing facilities, maintenance facilities, hospitals, and others with operations that interact with the environment across all federal departments and agencies to implement an Environmental Management System (EMS) by December 31, 2005.

Presidential Memorandum, Government-to-Government Relations with Native American Tribal Governments (1994)– outlines principles that federal executive departments and agencies must follow in their interactions with Native American tribal governments such that the federal government operates within a government-to-government relationship with federally-recognized Native American Tribes.

J.4 DEPARTMENT OF DEFENSE DIRECTIVE (DODD), DEPARTMENT OF DEFENSE INSTRUCTION (DoDI), ARMY REGULATION (AR), & ARMY NATIONAL GUARD REGULATION (ARNG)

DoDD 4150.7, DoD Pest Management Program

DoDD 4700.4, Natural Resources Management Program³

DoDD 4710.1, Archaeological and Historic Resources Management

DoDD 4715.1E, Environment, Safety, and Occupational Health

DoDD 6050.1, Environmental Effects in the US of DoD Actions

DoDD 6050.2, Use of Off-Road Vehicles on DID Lands

DoDI 4150.07, Pest Management Program

DoDI 4165.57, Air Installations Compatible Use Zones

DoDI 4715.03, Natural Resources Conservation Program

DoDI 4715.1, Environmental Security

DoDI 4715.9, Environmental Planning and Analysis

DoDI 6055.06, Fire and Emergency Services Program

Department of Defense, American Indian and Alaska Native Policy

AR 200-1 Environmental Protection and Enhancement dated 13 December 2007

AR 210-9 – Use of Off-Road Vehicles on Army Lands

AR 215-1 – Morale, Welfare, and Recreation Activities and Non-Appropriated Fund Instrumentalities

AR 315-19 – The Army Sustainable Range Program

AR 405-80 – Management of Title and Granting Use of Real Estate

AR 420-40 – Historic Preservation

AR 420-90 – Fire and Emergency Services

ARNG Guidance for the Creation, Implementation, Review, and Revision and Update of INRMPS dated 9 April 2012

J.5 DEPARTMENT OF DEFENSE MEMORANDA

Memorandum, Assistant Deputy Under Secretary of Defense (Environment, Safety and Occupational Health), 20 Sept 11, Subject: *Interim Policy on Management of White Nose Syndrome in Bats.*

³ Cancels DoD Directive 4700.1. Replaced by 32 CFR 190 – Natural Resources Management Program.

Memorandum, Assistant Deputy Under Secretary of Defense (Environment, Safety and Occupational Health), 3 Apr 07, Subject: *Guidance to Implement the Memorandum of Understanding to Promote the Conservation of Migratory Birds.*

Memorandum, Assistant Deputy Under Secretary of Defense (Environment, Safety and Occupational Health), 14 Aug 06, Subject: *Integrated Natural Resource Management Plan (INRMP) Template*

Memorandum, Assistant Deputy Under Secretary of Defense (Environment, Safety and Occupational Health), 17 May 05, Subject: *Implementation of Sikes Act Improvement Amendments: Supplemental Guidance concerning Leased Lands*

Memorandum, Assistant Deputy Under Secretary of Defense (Environment, Safety and Occupational Health), 1 Nov 04, Subject: *Implementation of Sikes Act Improvement Amendments: Supplemental Guidance concerning INRMP Reviews*

Memorandum, Deputy Under Secretary of Defense (Installations and Environment), 10 Oct 02, Subject: *Implementation of Sikes Act Improvement Act: Updated Guidance*

Memorandum, Assistant Deputy Under Secretary of Defense (Environment), 5 Aug 02, Subject: *Access to Outdoor Recreation Programs on Military Installations for Persons with Disabilities.*

Memorandum, Assistant Secretary of Army (Environment, Safety and Occupational Health), Deputy Assistant Secretary of the Navy (Environment), Deputy Assistant Secretary of the Air Force (Environment, Safety and Occupational Health), 20 Sep 11, Subject: *Interim Policy on Management of White Nose Syndrome in Bats.*

Memorandum, DAIM-ED Guidance for Implementation of the Sikes Act Improvement Act (SAIA) (Updated), 25 May 2006, Subject: *USFWS and State involvement in developing INRMPs; defining “mutual agreement” with the USFWS and the appropriate State agency; and coordinating INRMPs with other planning statutes.*

Memorandum, DAIM-ZA (200-3), 04 September 2002, Subject: *Army Wildland Fire Policy Guidance.*

Memorandum, US Army, 21 March 1997, Subject: *Army Goals and Implementing Guidance for Natural Resources Planning Level Surveys (PLS) and INRMP (“Army INRMP Policy”).*

Memorandum, Army National Guard Directorate, Environmental Programs Division (ARNG-ILE), 9 April 2012, Subject: *Guidance for the Creation, Implementation, Review, and Revision and Update of INRMPs.*

J.6 U.S. FISH AND WILDLIFE SERVICE (USFWS) GUIDANCE

USFWS Guidelines for Coordination on Integrated Natural Resource Management Plans (June 2015).

Provides updated guidance to USFWS personnel for implementing the requirements of the Sikes Act. It replaces the following memorandum: *Guidance for Coordination of Department of Defense Sikes Act Integrated Natural Resource Management Plans (June 8, 2001).*