FINAL

ENVIRONMENTAL ASSESSMENT
ADDRESSING AERIAL APPLICATION OF HERBICIDES
AT
JOINT BASE CHARLESTON-WEAPONS STATION
CHARLESTON, SOUTH CAROLINA

FEBRUARY 2013

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The purpose of the Proposed Action is to control nonnative invasive plants in wetlands and spoil areas of JB CHS-WS and undesirable vegetation competing with longleaf pine seedlings, through annual aerial herbicide applications in support of the USAF mission. Under the No Action Alternative, herbicide applications would not be conducted, which would result in an increase of invasive and undesirable plant species. There would be an adverse change from existing conditions at the installation. The EA has been prepared to evaluate the Proposed Action and the No Action Alternative. Resource areas considered in the impacts analysis include air quality, noise, geology and soils, water resources biological resources, hazardous materials and waste, and safety. Resources and impact topics dismissed from detailed analysis include air space management, land use, cultural resources, socioeconomics environmental justice, and infrastructure. The Final EA will be made available to the public upon completion. Written comments and inquiries regarding this document should be directed to Mr. Joe Camp, 628 CES/CEAO, 100 W. Stewart Ave.; Joint Base Charleston, SC 29404-4827.

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ABBREVIATIONS AND ACRONYMS

ABW	Air Base Wing
AFI	Air Force Instruction
AFOSH	Air Force Occupational and Environmental Safety, Fire Protection, and Health
AMC	Air Mobility Command
AOC	Area of Concern
AQCR	Air Quality Control Region
BMP	best management practice
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CES/CEOIE	Civil Engineering Squadron/ Pest Management Element
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
dBA	A-weighted decibel
DOD	Department of Defense
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FONPA	Finding of No Practicable Alternative
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
GHG	greenhouse gas
HAP	Hazardous Air Pollutant
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
JB CHS	Joint Base Charleston
JB CHS-WS	Joint Base Charleston-Weapons Station
mg/m^3	milligram per cubic meter
MMRP	Military Munitions Response Program
MSDS	Material Safety Data Sheets
MSL	mean sea level
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NO_x	nitrogen oxide
NOA	Notice of Availability
NOAA	National Oceanic and Atmospheric Association
NPDES	National Pollutant Discharge Elimination System
NPTU	Nuclear Power Training Unit
NRCS	Natural Resources Conservation Service
NSR	New Source Review
O_3	ozone
OSHA	Occupational Safety and Health Administration
Pb	lead
$PM_{2.5}$	particulate Matter equal to or less than 2.5 microns in diameter
PM_{10}	particulate Matter equal to or less than 10 microns in diameter
ppb	parts per billion
ppm	parts per million
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act
SAAQS	State Ambient Air Quality Standards
SAFMC	South Atlantic Fishery Management Council
SCDHEC	South Carolina Department of Health and Environmental Control
SCDNR	South Carolina Department of Natural Resources
SIP	State Implementation Plan
SO_2	sulfur dioxide
SPCC	Spill Prevention, Control, and Countermeasure
SSPP	Strategic Sustainability Performance Plan
SWMU	Solid Waste Management Unit
TMDL	Total Maximum Daily Load
tpy	tons per year
U.S.C.	United States Code
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
$\mu g/m^3$	microgram per cubic meter
VOC	volatile organic compound

FINDING OF NO SIGNIFICANT IMPACT

ENVIRONMENTAL ASSESSMENT ADDRESSING AERIAL APPLICATION OF HERBICIDES AT JOINT BASE CHARLESTON - WEAPONS STATION CHARLESTON, SOUTH CAROLINA

Introduction

Under the Proposed Action, Joint Base Charleston-Weapons Station (JB CHS-WS) will control nonnative invasive plants in wetlands and spoil areas of JB CHS-WS and undesirable vegetation competing with longleaf pine seedlings, through annual aerial herbicide applications in support of the USAF mission.

The Proposed Action is in part for authorization to continue previous efforts to control nonnative invasive plant species in freshwater impoundments and spoil areas on JB CHS-WS in cooperation with the South Carolina Department of Natural Resources (SCDNR). Under the Proposed Action, SCDNR will oversee annual application of herbicides from a helicopter or spray boat on approximately 400 acres of wetlands and spoil areas found on JB CHS-WS, including 300 acres at Pier Charlie dredge spoil pond and 100 acres at Brown's Pond, George's Pond, Matthew's Pond, Paul's Pond, Big David's Pond, and Little David's Pond, with spot treatments in additional ponds as needed. Targeted invasive plant species in these areas include giant reed (*Phragmites* spp.), alligator weed (*Althernathera philoxeroides*), water primrose (*Lugwigia* spp.), water hyacinth (*Eichhornia crassipes*), and purple loosestrife (*Lythrum salicaria*).

Additionally, the Proposed Action will involve aerial application of herbicides to control competitive vegetation to native pine stands, with a goal to reestablish stands of longleaf pine (*Pinus palustris*). Vegetation competing with native pine stands on JB CHS-WS includes deciduous species such as live oak (*Quercus virginiana*), laurel oak (*Q. hemispaerica*), sweetgum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), gallberry (*Ilex coriacea*), wax myrtle (*Morella cerifera*), coniferous plants, and grasses. The amount of forest acreage selected to be treated aerially with herbicides will vary from year to year, between no acreage and a maximum of approximately 300 acres. In 2013, 156 acres will be treated, representing an average year. The long-term forestry plan at JB CHS includes the eventual planting and restoration of longleaf pine in all forested areas of the installation, where practicable. This includes approximately 10,000 acres of forested areas on JB CHS-WS.

The need for the Proposed Action is to maintain and, in some cases, restore habitat for native species while minimizing ecosystem disturbance. The spread of invasive nonnative plants around the base perimeter impedes drainage of storm water in ditches, attracts flocking birds, and creates base safety concerns along shorelines. Without herbicide applications, invasive vegetation is predicted to overtake wetland areas, reducing drainage, and may lead to potential safety problems associated with installation security. Additionally, if vegetation competitive to native pine stands is not suppressed with herbicide application, the mortality of pine seedlings would likely increase, which would, in turn, decrease merchantable timber sales (Federal revenue), native wildlife habitat, erosion control, and recreational opportunities on the installation.

The attached Environmental Assessment (EA) was prepared to evaluate alternatives addressing aerial application of herbicides at JB CHS-WS.

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Finding of No Significant Impact

After a review of the attached EA prepared in accordance with the requirements of the National Environmental Policy Act, the Council on Environmental Quality regulations, and the USAF's Environmental Impact Analysis Process (32 Code of Federal Regulations 989, as amended), and the completion of the public review period, I have determined that the Proposed Action will not have a significant impact on the quality of the human or natural environment; therefore, an Environmental Impact Statement does not need to be prepared.

2/3/2013

X Richard D. McComb

RICHARD D. MCCOMB, Colonel, USAF
Commander
Signed by: MCCOMB.RICHARD.D.1065471015

COVER SHEET
FINAL
ENVIRONMENTAL ASSESSMENT
ADDRESSING AERIAL APPLICATION OF HERBICIDES AT
JOINT BASE CHARLESTON-WEAPONS STATION
CHARLESTON, SOUTH CAROLINA

Responsible Agencies: U.S. Air Force (USAF), Joint Base Charleston-Weapons Station (JB CHS-WS).

Affected Location: JB CHS-WS, Charleston, South Carolina.

Proposed Action: Control of invasive and competing plant species through aerial herbicide application on JB CHS-WS.

Report Designation: Final Environmental Assessment (EA).

Abstract: The purpose of the Proposed Action is to control nonnative invasive plants in wetlands and spoil areas of JB CHS-WS and undesirable vegetation competing with longleaf pine seedlings, through annual aerial herbicide applications in support of the USAF mission.

Under the No Action Alternative, herbicide applications would not be conducted, which would result in an increase of invasive and undesirable plant species. There would be an adverse change from existing conditions at the installation.

The EA has been prepared to evaluate the Proposed Action and the No Action Alternative. Resource areas considered in the impacts analysis include air quality, noise, geology and soils, water resources, biological resources, hazardous materials and waste, and safety. Resources and impact topics dismissed from detailed analysis include air space management, land use, cultural resources, socioeconomics, environmental justice, and infrastructure. The Final EA will be made available to the public upon completion. Written comments and inquiries regarding this document should be directed to Mr. Joe Camp, 628 CES/CEAO, 100 W. Stewart Ave.; Joint Base Charleston, SC 29404-4827.

FINAL

ENVIRONMENTAL ASSESSMENT

ADDRESSING AERIAL APPLICATION OF HERBICIDES

AT

JOINT BASE CHARLESTON-WEAPONS STATION

CHARLESTON, SOUTH CAROLINA

628TH AIR BASE WING
CIVIL ENGINEERING SQUADRON ASSET MANAGEMENT FLIGHT
100 W. Stewart Avenue
Joint Base Charleston, South Carolina 29404-4827

FEBRUARY 2013

FINAL
ENVIRONMENTAL ASSESSMENT
ADDRESSING AERIAL APPLICATION OF HERBICIDES AT
JOINT BASE CHARLESTON-WEAPONS STATION
CHARLESTON, SOUTH CAROLINA

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1. Purpose of and Need for Proposed Action

1.1 Introduction

The U.S. Air Force (USAF) 628th Air Base Wing (ABW) has prepared this Environmental Assessment (EA) to address the potential environmental impacts of proposed annual herbicide applications at Joint Base Charleston-Weapons Station (JB CHS-WS) and any reasonable alternatives to this action. This EA analyzes the Proposed Action of controlling nonnative invasive and competing plant species through annual herbicide applications and the No Action Alternative, where herbicide applications would not occur.

When the analyses presented in our EA indicate that implementation of a Proposed Action would not result in significant environmental impacts, a Finding of No Significant Impact (FONSI) would be prepared. If significant environmental issues are identified that cannot be mitigated to insignificance, an Environmental Impact Statement (EIS) would be required before the Proposed Action can proceed.

Prior to joint basing, the Naval Weapons Station Charleston (currently known as JB CHS-WS) worked cooperatively with the South Carolina Department of Natural Resources (SCDNR) Aquatic Nuisance Program to control nonnative invasive vegetative species in freshwater impoundments and spoil areas on the installation.

Air Force Instruction (AFI) 32-1074 requires that an EA or EIS be prepared to address aerial application of herbicides and pesticides on Air Force property. Since joint basing, JB CHS-WS has had to cease aerial applications of herbicides until corresponding proper National Environmental Policy Act (NEPA) documentation has been completed.

Past cooperation involved funding the state's existing program to conduct the annual application of aquatic herbicide from helicopters and spray boats targeting a variety of invasive plants on the installation, including the following:

- Giant reed (*Phragmites* spp.)
- Alligatorweed *(Althernathera philoxeroides)*
- Water primrose (*Lugwigia* spp.)
- Water hyacinth (*Eichhornia crassipes*).

JB CHS-WS has 17 freshwater impoundments totaling 244 acres and 2 large spoil areas totaling 472 acres. These wetlands are routinely surveyed for the presence of with nonnative invasive species. *Phragmites* is currently found in two impoundments, Brown's Pond and George's Pond, and the Pier Charlie spoil site. Other target species are confined to freshwater areas and are most prevalent in the Marrington Impoundments of Big David's Pond, Little David's Pond, Paul's Pond, and Matthew's Pond.

Additionally, throughout the Department of Defense (DOD), there is a goal to reestablish stands of longleaf pine (*Pinus palustris*), which was once the dominant forest type along coastal areas from eastern Texas to southern Virginia. Successional development of undesirable vegetation has naturally outcompeted pine seedlings on JB CHS-WS. Vegetation competing with native pine stands on JB CHS-WS includes species such as live oak (*Quercus virginiana*), laurel oak (*Q. hemispaerica*), sweetgum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), gallberry (*Ilex coriacea*), wax myrtle (*Morella cerifera*), coniferous plants, and grasses.

1.2 Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to control nonnative invasive plant species in wetland areas and competitive vegetation to native pine stands on JB CHS-WS. Nonnative invasive plant species in wetland areas would be controlled by working cooperatively with the SCDNR Aquatic Nuisance Species Program to apply annual herbicides, as needed. *Phragmites* is currently found at the Brown's Pond and George's Pond impoundments and the Pier Charlie spoil site. The Marrington Impoundments of Big David's Pond, Little David's Pond, Paul's Pond, and Matthew's Pond have other target species; however, spot treatments may occur for invasive plant species control in additional impoundments. Competitive vegetation to native pine stands would be controlled by aerial application of herbicides with the goal to reestablish longleaf pine stands. The long-term forestry plan at Joint Base Charleston (JB CHS) includes the eventual planting and restoration of longleaf pine in all forested areas of the installation, where practicable.

The need for the action is to maintain and, in some cases, restore habitat for native species while minimizing ecosystem disturbance. The spread of invasive nonnative plants around the base perimeter impedes drainage of storm water in ditches, attracts flocking birds, and creates "base safety" concerns along shorelines. Without herbicide applications, invasive vegetation is predicted to overtake wetland areas, reducing drainage, and could lead to potential safety problems associated with installation security. Additionally, if vegetation competing with native pine stands is not suppressed with herbicide application, the mortality of pine seedlings would likely increase, which would, in turn, decrease merchantable timber sales (Federal revenue), native wildlife habitat, erosion control, and recreational opportunities on the installation.

1.3 Location of the Proposed Action

JB CHS-WS is located primarily in lower Berkeley County, South Carolina, with a small portion in upper Charleston County, as shown in **Figure 1-1**. JB CHS-Air is also shown in **Figure 1-1** for information purposes only.

JB CHS-WS consists of approximately 16,750 acres and is naturally divided into three areas of land by Foster Creek and Goose Creek, as shown in **Figure 1-2**. Both Foster Creek and Goose Creek drain into the Cooper River, which flows east of JB CHS-WS. Vehicular access to JB CHS-WS is provided through one of eight gates. The main gate (Post/Gate 1), at the end of Red Bank Road, is staffed by guards 24 hours a day.

JB CHS-WS contains more than 40 tenant commands, including many training commands and units such as the Naval Nuclear Power Training Unit (NPTU); Naval Consolidated Brig, Charleston; Mobile Mine Assembly Unit; Explosive Ordnance Detachments; Marine Corps Reserve Center; and the Space and Naval Warfare Systems Center. JB CHS-WS also serves as a U.S. Army logistics hub, and is the busiest surface port in the defense transportation system within the continental United States.

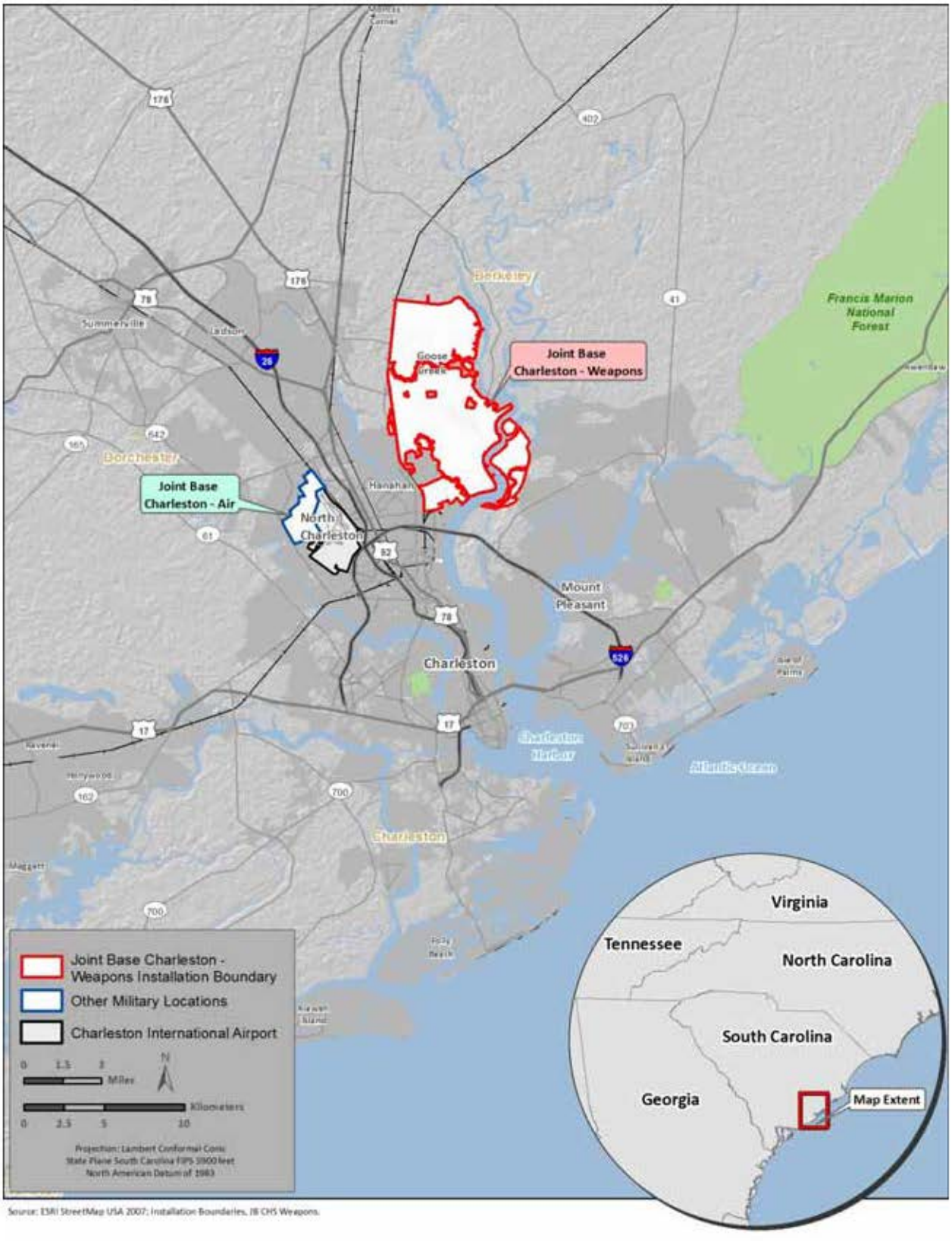

Figure 1-1. JB CHS Vicinity Map

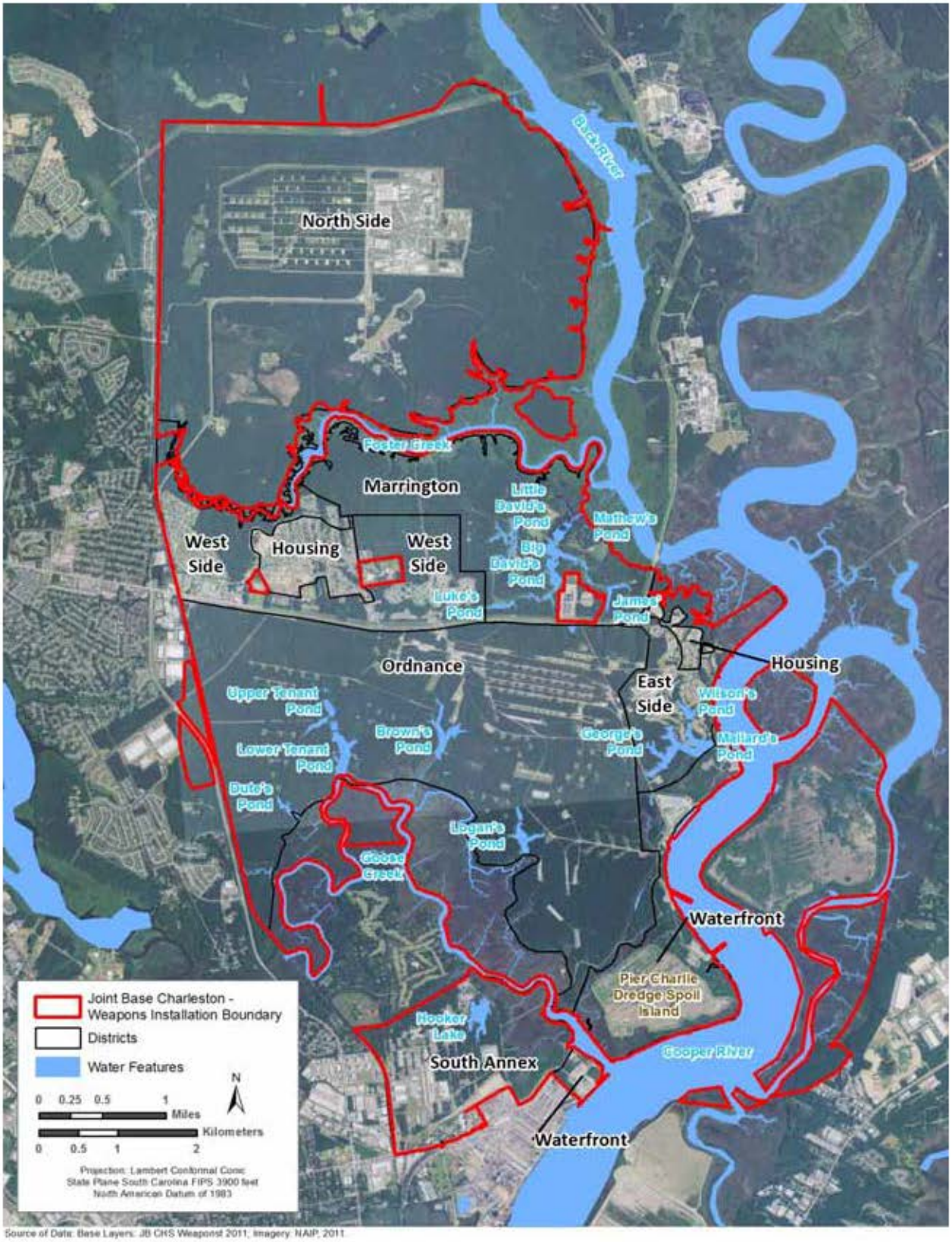

Figure 1-2. JB CHS-WS Installation Map

1.4 Compliance with the National Environmental Policy Act

NEPA (42 United States Code [U.S.C.] Section 4321–4347) is a Federal statute requiring the identification and analysis of potential environmental impacts associated with proposed Federal actions before those actions are taken. The intent of NEPA is to help Federal agency officials make well-informed decisions based on an understanding of the potential environmental consequences and take actions to protect, restore, or enhance the environment. NEPA established the Council on Environmental Quality (CEQ) that was charged with the development of implementing regulations and ensuring Federal agency compliance with NEPA. The CEQ regulations mandate that all Federal agencies use a prescribed, structured approach to environmental impact analysis. This approach also requires Federal agencies to use an interdisciplinary and systematic approach in their decision making process. This process evaluates potential environmental consequences associated with a Proposed Action and considers alternative courses of action.

CEQ regulations specify that an EA be prepared to provide evidence and analysis for determining whether to prepare a FONSI, a FONSI/Finding of No Practicable Alternative (FONPA), or whether the preparation of an EIS is necessary. This EA supports the USAF decision making process associated with the Proposed Action.

This EA examines potential effects of the Proposed Action and No Action Alternative on seven resource areas: air quality, noise, geology and soils, water resources, biological resources, hazardous materials and waste, and safety. These resource areas were identified as being potentially affected by the Proposed Action or its alternatives, and include applicable critical elements of the human environment whose review is mandated by Executive Order (EO), regulation, or policy. **Appendix A** contains examples of relevant laws, regulations, and other requirements that are often considered as a part of the analysis.

1.5 Public Involvement

The Intergovernmental Coordination Act and EO 12372, *Intergovernmental Review of Federal Programs*, require Federal agencies to cooperate with and consider state and local views in implementing a Federal proposal. AFI 32-7060 requires the USAF to implement a process known as Interagency and Intergovernmental Coordination for Environmental Planning (IICEP), which is used for the purpose of agency coordination and implements scoping requirements. Through the IICEP process, the 628 ABW notified relevant Federal, state, and local agencies and the surrounding communities of the action proposed, and provided them sufficient time to make known their environmental concerns specific to the action.

The public involvement process also provided the USAF with the opportunity to cooperate with and consider state and local views in implementing this Federal proposal. The 628th ABW consulted with agencies such as U.S. Environmental Protection Agency (USEPA); U.S. Fish and Wildlife Service (USFWS); National Oceanic and Atmospheric Association (NOAA); the South Carolina State Historic Preservation Office; and other Federal, state, and local agencies. **Appendix B** includes a copy of consultation letters that were mailed to agencies regarding the EA and the distribution list for the letters. A copy of the Draft EA and Draft FONSI were sent as an attachment to each person receiving the letter and made available in community libraries to enhance the opportunity for public involvement. **Appendix B** also includes agency responses.

A Notice of Availability (NOA) for the Draft EA and Draft FONSI was published in *The Post and Courier* newspaper on 21 December 2013 to solicit comments on the Proposed Action and involve the local community in the decision making process (see **Appendix B**).

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2. Description of Proposed Action and Alternatives

This section describes the Proposed Action and the alternatives considered. As discussed in **Section 1.5.1**, the NEPA process evaluates potential environmental consequences associated with a proposed action and considers alternative courses of action. Reasonable alternatives must satisfy the purpose of and need for a proposed action, which are defined in **Section 1.3**. CEQ regulations specify the inclusion of a No Action Alternative against which potential effects can be compared. While the No Action Alternative would not satisfy the purpose of or need for the Proposed Action, it is analyzed in detail in accordance with CEQ regulations and provides a baseline against which an action alternative can be compared.

2.1 Proposed Action

The Proposed Action would essentially continue previous efforts to control nonnative invasive plant species in freshwater impoundments and spoil areas on JB CHS-WS in cooperation with SCDNR. Under the Proposed Action, SCDNR would oversee annual application of herbicides from a helicopter or spray boat on approximately 400 acres of wetlands and spoil areas found on JB CHS-WS, as detailed in **Section 1.1**, with spot treatments occurring in additional ponds as needed.

The Pier Charlie dredge spoil consists of dredge materials generated from maintenance of the Cooper River channel by the U.S. Army Corps of Engineers (USACE). The spoil area has a weir that is maintained by the USACE, and water overflowing the weir flows into and out of the river. The remaining freshwater impoundments on JB CHS-WS where invasive plant species occur are also man-made. Targeted invasive plant species in these areas include giant reed (*Phragmites* spp.), alligatorweed, water primrose (*Lugwigia* spp.), water hyacinth (*Eichhornia crassipes*), and purple loosestrife (*Lythrum salicaria*).

Additionally, the Proposed Action would involve aerial application of herbicides to control competitive vegetation to native pine stands, with a goal to reestablish stands of longleaf pine (*Pinus palustris*). Vegetation competing with native pine stands on JB CHS-WS includes deciduous species such as live oak, laurel oak, sweetgum, red maple, gallberry, wax myrtle, coniferous plants, and grasses.

The amount of forest acreage selected to be treated aerially with herbicides would vary from year to year, between no acreage and a maximum of approximately 300 acres. In 2013, 156 acres would be treated, representing an average year. The 156 acres proposed for treatment in 2013 would include two stands of 67 acres each and one stand of 22 acres (please see **Figure 2-1**). The long-term forestry plan at JB CHS includes the eventual planting and restoration of longleaf pine in all forested areas of the installation, where practicable. This includes a total of approximately 10,000 acres of forested areas on JB CHS-WS.

2.1.1 Invasive Plant Species

Nonnative invasive plant species are frequently not vulnerable to the same natural population controls as native species, and, as a result, invasive species can very quickly become abundant. Invasive populations of nonnative plants in South Carolina interfere with virtually every withdrawal and instream use of the state's surface waters. They can obstruct navigable waterways, restrict water flow, clog water intakes, degrade water quality, provide breeding habitat for mosquitoes and other pests, interfere with recreation, and upset the balance of desirable fish populations (SCDNR 2011a). Nuisance plant populations and associated water use problems have been most prevalent in the coastal plain region of South Carolina. Large areas of the Santee Cooper Lakes, Cooper River, Back River Reservoir, Edisto River, and other low country streams and lakes are infested with aquatic weeds (SCDNR 2011a).

The South Carolina Aquatic Plant Management Program is administered by the Land, Water, and Conservation Division of the SCDNR. The department is responsible for developing an annual Aquatic Plant Management Plan that describes the procedures for problem site identification and analysis, selection of control methods, operation program development, and implementation of operational strategies. The Plan also identifies problem areas, prescribes management practices, and sets management priorities. The Aquatic Plant Management Council includes representatives from SCDNR, the South Carolina Department of Health and Environmental Control (SCDHEC), and numerous other state agencies. The Council establishes management policies and approves all management plans (SCDNR 2011a).

SCDNR identifies and prioritizes aquatic plant problem areas throughout the state each year in its Annual Management Plan. In recent years, JB CHS-WS in Charleston and Berkeley counties has been included in SCDNR's Annual Management Plan as a high-priority aquatic plant problem area due to the prevalence of *Phragmites*. SCDNR's management objectives at JB CHS-WS are to reduce *Phragmites* populations to the greatest extent possible in spoil areas and control invasives through a comprehensive, multiyear approach; manage the distribution and abundance of nuisance aquatic plant populations at levels that minimize adverse impacts on water use activities and the environment through the use of Federal- and state-approved control methods; and maintain or enhance native aquatic plant populations at levels beneficial to water use, water quality, and fish and wildlife populations (SCDNR 2011a).

Phragmites is the primary invasive species of concern in freshwater impoundments and spoil areas at JB CHS-WS. *Phragmites* is an introduced plant species with no natural enemies in the United States. It is found throughout the coastal regions of the nation and continues to spread at a rapid rate. The spread of *Phragmites* around the base perimeter of rivers, streams, and ponds crowds out native plant species, disrupts the natural shoreline, and impedes drainage of storm water. Fish, mollusks, crustaceans, and other aquatic organisms are also negatively impacted by the disruption of their habitat (USAF 2011).

Phragmites is a tall (4.5 meters), coarse perennial grass, deep seated in the substrate. Once established, *Phragmites* spreads by rhizomes and stolons and often forms dense, monospecific colonies along shorelines and shallow water areas. *Phragmites* is typically the dominant species in environments where it occurs, to the extent that it can form dense monocultures in excess of 300 culms per square meter (USACE 2005).

2.1.2 Competitive Plant Species

Native longleaf pine ecosystems are considered among the most species-rich plant communities outside the tropics. Some of the priority species found in South Carolina's longleaf pine habitats include the federally endangered redcockaded woodpecker (*Picoides borealis*), brown-headed nuthatch (*Sitta pusilla*), southern fox squirrel (*Sciurus niger*), northern bobwhite (*Colinus virginianus*), mimic glass lizard (*Ophisaurus mimicus*), southern hognose snake (*Heterodon simus*), and northern pine snake (*Pituophis melanoleucus*) (USFWS 2007). Longleaf pine habitat in South Carolina has greatly declined, as it has throughout its historical range in the Southeast (USFWS 2007).

Longleaf pine is intolerant of competition during its grass stage, when it appears like a clump of grass. Historically, fire and moisture have been the principal factors controlling longleaf distribution within its natural range. Longleaf habitat requires frequent fire to hold back competition from hardwoods and to maintain the soil structure and nutrients to which longleaf pine is adapted. Fire removes competing vegetation, exposing the bare soil necessary for successful seedling establishment. Encroaching development and air quality regulations restrict the ability to conduct prescribed fires to maintain the remaining longleaf pine stands (USDA 2012).

The USFWS works cooperatively with private landowners throughout South Carolina to restore longleaf pine forest habitats to their historic condition. Where prescribed burning is not feasible, herbicide application is relied upon (USFWS 2007).

On JB CHS-WS, the Forestry Department is charged with managing healthy forests for multiple uses, including a healthy wildlife population, clean water, recreation, and timber production. Species competitive with longleaf pine on JB CHS-WS include live oak, laurel oak, sweetgum, red maple, gallberry, wax myrtle, coniferous plants, and grasses. The Forestry Department's objectives include restoring longleaf pine stands wherever practicable within forested areas of JB CHS-WS. However, loblolly pine (*Pinus taeda*) will be planted where soil conditions are not conducive to sustain longleaf pine populations.

Longleaf and loblolly pine seedlings will be planted from late-November until mid-March. Planted longleaf pines can stay in the grass stage for 2 to 8 years before they grow out of this stage and are able to compete more successfully against other species.

2.1.3 Herbicide Application

The Proposed Action would consist of applying DOD-approved herbicides (AFPMB 2012) to control (1) nonnative invasive plant species in freshwater impoundments and spoil areas, and (2) competitive plant species in forest restoration areas, on JB CHS-WS.

The application timing would be scheduled for the spring through fall months, while the plants are actively growing. The application of all approved aquatic herbicides would be in accordance with label requirements and Material Safety Data Sheets (MSDS).

Figure 2-1 shows the impoundments and spoil areas that would receive herbicide treatment as "invasive plant areas." **Figure 2-1** also shows the forested "longleaf pine restoration areas," which are those forested areas proposed for herbicide treatment in 2013. The invasive plant areas and longleaf pine restoration areas depicted in **Figure 2-1** are representative of an average acreage on JB CHS-WS that would be targeted for herbicide treatment each year.

For the herbicide applications targeting invasive species in installation impoundments and spoil areas, all applicators must be certified in Category 5 (Aquatic Pest Control) by the State of South Carolina or the DOD. All applications must conform to SCDHEC-National Pollutant Discharge Elimination System (NPDES) general permit requirements (SCDNR 2011a).

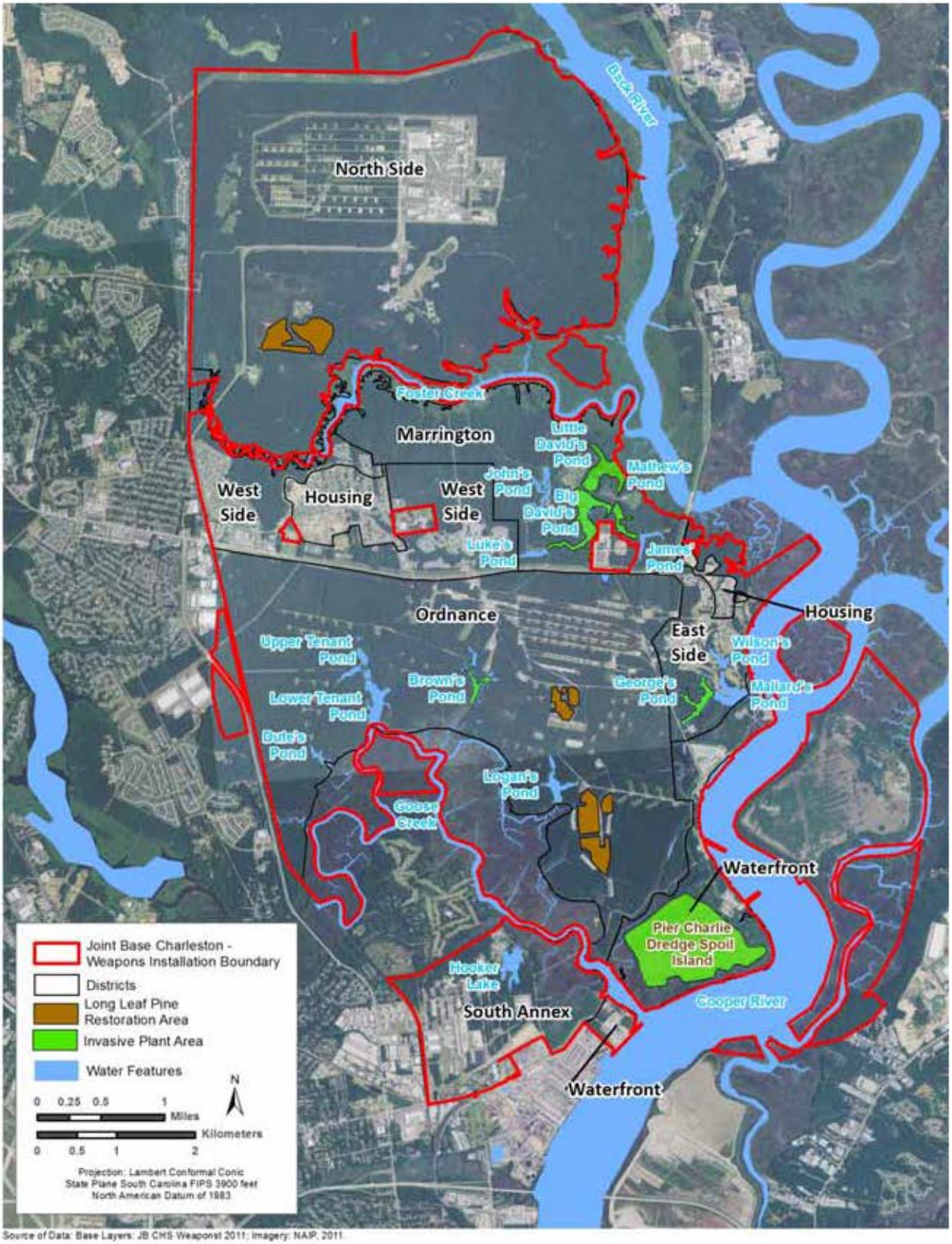

Figure 2-1. Proposed Action Map

The Proposed Action would be conducted without interruption to installation services. Any waste generated as part of the Proposed Action (e.g., used protective clothing, empty containers, and rinse water) would be disposed of by the commercial contractor responsible for herbicide application in accordance with all applicable state and Federal regulations. The Proposed Action would result in no change to JB CHS staffing.

The herbicides used would be consistent with those previously used at the installation. Habitat®, as analyzed in the *Environmental Assessment for Control of Phragmites australis in South Carolina*, would be the most frequently used herbicide followed by Glyphosphates as described in the *2011 South Carolina Aquatic Plant Management Plan* (USACE 2005, SCDNR 2011a). Refer to **Table 2-1** for a list of all herbicides applied and authorized by SCDNR at JB CHS-WS between the years 2006 and 2010.

Table 2-1. Past Applications of Herbicides at JB CHS-WS Impoundments

Date	Target Plants	Acres	Herbicide	Concentration (gallons per acre)
8/3/2006	Phragmites	242.00	Habitat	0.375
8/4/2006	Frog's bit, cutgrass, primrose, alligatorweed	70.00	Habitat/Glyphosate	0.125/0.937
8/2/2007	Cattails, phragmites	2.00	Habitat	0.375
8/2/2007	Cattails, spike rush	10.00	Habitat/Glyphosate	0.375/0.250
8/2/2007	Water primrose, pad plants	6.00	Renovate 3	0.500
8/24/2007	Phragmites, cattails, spike rush	150.00	Habitat	0.500
9/15/2008	Phragmites, cattails	15.00	Clearcast	0.250
10/16/2008	Phragmites	100.00	Habitat	0.500
6/23/2009	Cattails	6.00	Habitat	0.375
6/23/2009	Phragmites	1.00	Habitat/Clearcast	0.500/0.500
6/23/2009	Cattails	4.00	Habitat	0.250
6/23/2009	Cattails	4.00	Habitat	0.250
6/23/2009	Cattails	6.00	Habitat	0.375
6/23/2009	Cattails	4.00	Habitat	0.250
6/23/2009	Cattails	4.00	Habitat	0.250
6/23/2009	Phragmites	1.00	Habitat/Clearcast	0.500/0.500
9/11/2009	Phragmites	6.00	Habitat	0.500
9/11/2009	Phragmites	6.00	Habitat	0.500
10/23/2009	Phragmites	65.00	Habitat	0.750
10/23/2009	Phragmites	65.00	Habitat	0.750
9/17/2010	Phragmites	65.000	Habitat/Glyphosate	0.750/0.750
9/24/2010	Phragmites	10.000	Habitat	0.500

Source: SCDNR 2011b

Safety. The commercial herbicide contractor(s) for the impoundments, spoil areas, and the forested areas, would be responsible for following ground safety, USEPA and Occupational Safety and Health Administration (OSHA) regulations, and MSDS recommendations. The contractor would be required to

conduct work activities in a manner that does not pose any risk to workers or personnel at JB-CHS-WS. Proper coordination with air traffic control personnel would also be prearranged to ensure flight safety.

The herbicides proposed for use at JB CHS-WS would provide nonselective control of vegetation and are labeled for aquatic and terrestrial sites. Personal protective equipment (e.g., coveralls, waterproof gloves, shoes, and socks) must be worn as stated on the MSDS. Contact with skin or eyes, or breathing spray mist, would need to be avoided.

Herbicide Mixing. No facility exists on-installation where the mixing of herbicides would occur. A licensed commercial contractor would be responsible for all storage, mixing, and loading of herbicides off installation. A spill kit capable of containing and preventing release of herbicides must be available during mixing and loading operations. Applying a tank mixture of herbicides, or a mixture herbicide and a liquid fertilizer, reduces time, labor, energy, and equipment costs. All applicable directions, restrictions, and label precautions would be followed. The use of a combination of herbicides also enables a broader spectrum of invasive plant species to be targeted with each application. The percent of each herbicide used in the mixture would be established in accordance with USEPA recommendations, MSDS information, and manufacturer labels.

Application. All herbicides would be applied during the growing season in accordance with SCDNR's and manufacturer's recommendations. The annual treatment area at impoundments and spoil areas would be approximately 400 acres, though the actual number of acres could be slightly more or less depending on need. **Figure 2-2** presents an example of a freshwater impoundment on JB CHS-WS and **Figure 2-3** presents the Pier Charlie dredge spoil site that would, respectively, be treated under the Proposed Action. The annual treatment area at forested sites would be approximately 150 acres, though the actual number of acres could be more or less depending on need.

Figure 2-2. Brown's Pond

Figure 2-3. Pier Charlie Dredge Spoil Area

All aerial applicators of herbicides at JB CHS-WS would be certified in USEPA Category 11 through the State of South Carolina. The contractor selected to perform the herbicide application would follow all DOD instructions, AFIs, and all Federal and state laws and regulations governing the aerial application of herbicides (USAF 2011).

The contractor would ensure that the following forms are on hand with the Installation Pest Management Coordinator: DOD Form 2400, *Civil Aircraft Certificate of Insurance;* DOD Form 2401, *Civil Aircraft Landing Permit;* and DOD Form 2402, *Civil Aircraft Hold Harmless Agreement.* Specific information during the herbicide application would be recorded and forwarded to 628 Civil Engineering Squadron/Pest Management Element (CES/CEOIE) within 1 week of application. Records would include date of application, acres treated, target vegetation, application method, name of applicator, South Carolina certification number, herbicide name (trade and active ingredient), percent concentration, total volume applied, wind speed, and direction (USAF 2011).

A list of the herbicides that could be applied at the installation under the Proposed Action is provided in **Table 2-2** and a description of their uses is provided in the following paragraphs.

- ***Isopropylamine Salt of Imazapyr (Habitat®, Chopper®, Arsenal®)*** The active ingredient in Habitat, Chopper, and Arsenal is isopropylamine salt of imazapyr, which controls susceptible weeds by being absorbed through emergent leaves, stems, bark, and roots. After being transported throughout the plant, the herbicide accumulates in meristematic regions. Growth in treated plants is stopped soon after application and, in perennials, the herbicide is translocated to submerged storage organs, which prevents regrowth. Applications of the herbicide can be made to control undesirable wetland, riparian, and terrestrial vegetation. This herbicide will control most annual and perennial grasses, broadleaf weeds, and many brush and vine species that germinate above the waterline. The herbicide can be applied to a variety of water bodies and the minimum spray volume during aerial application would be determined by the type of equipment

used. Additionally, Chopper and Arsenal are used to control undesirable vegetation in forested sites.

Table 2-2. Herbicides which May be Used at JB CHS-WS

Herbicide	Active Ingredient	Potential Target Area
Habitat®	Isopropylamine salt of imazapyr	Impoundments and Spoil Areas Forested Areas
Chopper®	Isopropylamine salt of imazapyr	Forested Areas
Arsenal®	Isopropylamine salt of imazapyr	Forested Areas
Rodeo®	Glyphosate	Forested Areas
AquaNeat®	Glyphosate	Impoundments and Spoil Areas
Renovate® 3	Triclopyr	Impoundments and Spoil Areas
Garlon® 3	Triclopyr	Forested Areas
Accord®	Triclopyr	Forested Areas
Milestone®	Aminopyralid	Forested Areas
Oust XP®	Sulfometuron-methyl	Forested Areas

- ***Glyphosates (Rodeo®, AquaNeat®).*** Each of these products is designed to control or destroy many herbaceous and woody plants. These products can be used in a variety of habitats, including forested areas and in and around aquatic sites. Glyphosate is the main active ingredient for both Rodeo and AquaNeat and is a nonselective herbicide used on many food and nonfood crops, and along noncrop areas. Glyphosate moves through plant foliage and is stored in the root system. Plants will gradually wilt above ground as the underground plant parts deteriorate. When applied on aquatic sites, there are no restrictions on the use of treated water for irrigation, recreation, or domestic purposes; however, the herbicides cannot be placed directly into water within 0.5 miles of an active potable water intake. If aquatic applications would be made within the 0.5-mile range, water intake from the potable source must be turned off for a minimum of 48 hours.

- ***Triclopyr (Renovate® 3, Garlon® 3, Accord®).*** Triclopyr attacks plants through the leaves and stems and penetrates down to the roots. The herbicide should be applied with low spray pressures and large droplet-producing nozzles. Spray drift must be avoided and cannot be used through any type of irrigation system. Renovate is an aquatic herbicide used for the control of submerged, emergent, and floating aquatic plants in a variety of waterbodies which have little or no continuous outflow. Water treated with triclopyr cannot be used for crop or food-crop irrigation purposes until 120 days after application. Accord and Garlon are both used to control woody brush, herbaceous weeds, and vines while leaving grasses and conifers unaffected.

- ***Aminopyralid (Milestone®).*** Aminopyralid is a pyridine carboxylic acid herbicide intended for use in non-cropland areas (rights-of-way, roadsides, and non-irrigation ditch banks) and natural areas (wildlife management areas, natural recreation areas, campgrounds, trailheads, and trails). Aminopyralid provides systemic postemergence broad-spectrum control of a number of key noxious and invasive annual, biennial, and perennial weed species; and agronomic broadleaf weeds. Once applied, the herbicide translocates into foliage and enters into the root system.

- ***Sulfomethron-methyl (Oust XP®).*** Oust XP® is an herbicide with sulfometuron-methyl as its active ingredient. The herbicide controls grasses, vines, woody plants and broadleaved weeds in conifer plantations and non-crop sites. The herbicide is absorbed by both the foliage and roots of plants. Application of this herbicide should not be made to water bodies, including drainage ditches, ponds, and streams.

Cleanup. Cleanup after herbicide application would involve rinsing tools and equipment, and rinsing and disposing of empty herbicide containers. Tools, vehicles, and equipment would be cleaned using detergent and the appropriate decontamination solution, as specified by state and USEPA standards. Rinsate would be added to the spray mix or disposed of on the application site at a rate that does not exceed amounts addressed on the label. Empty and rinsed herbicide containers would be punctured and disposed of in accordance with all Federal and state pesticide and hazardous material laws.

2.2 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented, and there would be no comprehensive management of nonnative invasive and competitive plant species at JB CHS-WS. Herbicides would not be applied through aerial means, and invasive plants would be predicted to spread in freshwater impoundments and spoil areas. Ubiquitous weed growth in impoundments and spoil areas on the installation would decrease the aesthetic value; seriously degrade the native habitat and species; and may cause safety issues in areas where plant growth inhibits water flow through drainages, where growth attracts flocking birds, and where growth creates "base safety" concerns along shorelines. Native pine stands would continue to diminish because the mortality of pine seedlings would likely increase, which would, in turn, decrease merchantable timber sales (Federal revenue), native wildlife habitat, erosion control, and recreational opportunities on the installation.

2.3 Alternatives

As part of the NEPA process, reasonable alternatives to the Proposed Action must be considered. The development of reasonable alternatives for the Proposed Action involved discussions with JB CHS-WS installation personnel to identify the purpose of and need for the Proposed Action, possible alternative courses of action, locations under consideration for herbicide applications, and management practices for achieving the purpose and need. Consistent with the intent of NEPA, this screening process focused on identifying a potential range of reasonable operations-specific alternatives and, from that, developing a proposed action that could be implemented in the foreseeable future. The best solutions for controlling invasive and competitive plant species at JB-CHS-WS were identified based on the following selection standards:

- Control of invasive and competitive vegetation throughout wetland and pine stand areas
- Maintenance and restoration of habitat for native species while minimizing ecosystem disturbance
- Sufficient, practical reduction of target vegetation annually
- Economic feasibility
- Consistency with state, regional, and local plans
- Consistency with DOD and USAF policies, guidance, and directives
- Effectiveness in protecting human health and alleviating effects on the environment
- Compatibility with local and installation flight activities, other ongoing activities, and regional pest-control efforts.

2.3.1 Alternatives Considered But Eliminated from Further Analysis

Three alternatives were considered but eliminated from further detailed analysis during the assessment process because they did not support mission activities, did not meet objectives, or were not feasible for other reasons. Eliminated alternatives include the following:

- JB CHS-WS could provide herbicide applications entirely through non-aerial methods (e.g., from impoundment banks, by airboat, on foot). However, significant portions of the freshwater impoundments and some forested areas are inaccessible and would be omitted from herbicide applications. The large size, soft substrate, and extensive ditching in the spoil areas preclude access by foot or all-terrain vehicle. Therefore, using non-aerial methods of application would not meet the selection standards described in **Section 2.3**, particularly providing control of vegetation throughout the installation.
- JB CHS-WS could attempt to combat invasive plant species through biological-control measures. Grass carp (*Ctenopharyngodon idella*) have been periodically stocked in impoundments to mitigate the spread of invasive species; however, they are not active enough to control the problem without the implementation of other means. Alligatorweed flea beetles (*Agasicles hygrophila*) have also been used to slow the growth of the alligatorweed; however, the beetles cannot survive the winters in South Carolina. Therefore, this alternative would not meet the selection standards described in **Section 2.3**, because target vegetation would not be sufficiently controlled annually.
- JB CHS-WS could use mechanical means (e.g., chopping shearing, raking, disking, plowing) to remove invasive and competitive plant species. These methods have been proven to be effective in areas where it was possible; however, these methods cannot be implemented in a number of the impoundments and forested areas in need of attention and would be cost-prohibitive. Additionally, mechanical site preparation tends to involve excessive movement of valuable topsoil, causing a treated site to be more subject to soil erosion. Once forested areas have been planted with seedlings, further reduction of competitive vegetation through mechanical control would be highly labor-intensive. Therefore, this alternative would not meet the selection standards described in **Section 2.3**, because vegetation control could not occur throughout the installation and this alternative would incur a significant economic burden.

2.3.2 Preferred Alternative

Implementation of the Proposed Action as described in **Section 2.1** is the Preferred Alternative. This alternative would be consistent with the requirements associated with Public Law 104-332, the National Invasive Species Act of 1996; EO 13112, which established the Invasive Species Council; and the installation's Integrated Natural Resources Management Plan.

3. Affected Environment

All potentially relevant resource areas were initially considered for analysis in this EA. In compliance with NEPA, CEQ, and Environmental Impact Analysis Process 32 Code of Federal Regulations (CFR) Part 989 guidelines, this EA focuses only on those resource areas considered potentially subject to impacts and with potentially significant environmental issues. This section includes air quality, noise, geology and soils, water resources, biological resources, hazardous materials and waste, and safety. Some environmental resources that are often analyzed in an EA have been excluded from this analysis. The basis for such exclusions is given in the following section.

3.1 Resource Topics Eliminated From Further Analysis

Air Installation Compatible Use Zones and Airspace Management. The Proposed Action does not involve any activities that would impact designated airspace. Due to the limited number of flights, and their short-nature, no impact on the Air Installation Compatible Use Zones at JB CHS-WS is anticipated. Accordingly, the USAF has omitted detailed examination of Air Installation Compatible Use Zones and airspace management in this EA.

Land Use. The term "land use" refers to real property classifications that indicate either natural conditions or the types of human activity occurring on a parcel. In many cases, land use descriptions are codified in local zoning laws. Natural conditions of property can be described or categorized as unimproved, undeveloped, conservation or preservation area, and natural or scenic area. The foremost factor affecting a proposed action in terms of land use is its compliance with any applicable land use or zoning regulations. Other relevant factors include existing land use at the project site, the types of land uses on adjacent properties and their proximity to a proposed action, the duration of a proposed action, and its "permanence." Due to the temporal nature of the Proposed Action, land use at project sites where herbicides are applied or adjacent land uses would not be impacted. Therefore, this potential impact topic is dismissed from further consideration.

Socioeconomics. Socioeconomics is defined as the basic attributes and resources associated with the human environment, particularly demographic characteristics of the population and economic activity (employment, income, and industrial or commercial growth). Changes in these two fundamental socioeconomic indicators are typically accompanied by changes in other components, such as housing availability and the provision of public services.

The significance of socioeconomic impacts is assessed in terms of direct impacts on the local economy and related impacts on other socioeconomic resources (e.g., income, housing, employment). JB CHS-WS provides 19,920 direct jobs to active-duty, Reserve, civilian, and contractor personnel. The economic impact of the installation exceeded $2.3 billion in fiscal year 2006, which represents roughly two-thirds of all economic activity generated by the regional military installations (JB CHS-WS 2009). No impacts would be expected on socioeconomic resources, as neither the Proposed Action nor its alternative would cause a measurable change in revenue for local businesses or government agencies; displace numbers of people or existing housing; cause a substantial change in the local employment or labor force; or cause a change in property values. Therefore, this potential impact topic is dismissed from further consideration.

Environmental Justice. Environmental justice concerns are associated with disproportionately high and adverse effects on minority or low-income populations as defined in EO 12898. This includes consideration of (a) whether there is or will be an impact on the natural or physical environment that significantly and adversely affects a minority or low-income population, (b) whether environmental effects are significant and are or might be having an adverse impact on minority populations or low-

income populations that appreciably exceeds or is likely to appreciably exceed those on the general population or other appropriate comparison group, and (c) whether the environmental effects occur or would occur in a minority or low-income population affected by cumulative or multiple adverse exposures from environmental hazards.

The proposed project alternatives would take place entirely within the boundaries of JB CHS-WS and would have minimal impact on populations outside of the installation. No environmental effects associated with the Proposed Action or No Action alternatives are either potentially significant or would have an adverse impact on any population, including minority or low-income populations; therefore, this potential impact topic is dismissed from further consideration.

Cultural Resources. Cultural resources is an umbrella term for many heritage-related resources, including prehistoric and historic sites, buildings, structures, districts, or any other physical evidence of human activity considered important to a culture, a subculture, or a community for a scientific, traditional, religious, or any other reason. Typically, cultural resources are subdivided into archaeological resources (prehistoric or historic sites, where human activity has left physical evidence of that activity but no structures remain standing); architectural resources (buildings or other structures or groups of structures, or designed landscapes that are of historic or aesthetic significance); or resources of traditional, religious, or cultural significance to Native American tribes.

There are no historic architectural properties within the proposed project's Area of Potential Effect, which is defined as the geographic area(s) "within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist." There are no Native American traditional cultural places or sacred places currently identified on JB CHS-WS (JB CHS-WS 2009). Any archaeological resources or unidentified Traditional Cultural Properties of significance to Native Americans present within the Area of Potential Affect would not be impacted due to the temporal nature of the proposed surface application of herbicides on nonnative or otherwise undesirable vegetation. Under Section 106 of the National Historic Preservation Act, the Proposed Action would be categorized as having no historic properties affected. Accordingly, the USAF has eliminated detailed examination of cultural resources from further consideration.

Infrastructure. Infrastructure consists of the systems and physical structures that enable a population in a specified area to function. Infrastructure is wholly human-made, with a high correlation between the type and extent of infrastructure and the degree to which an area is characterized as "urban" or developed. The proposed application of herbicides associated with the Proposed Action would take place entirely on undeveloped land and would have no impact on infrastructure systems or physical structures. Therefore, this potential impact topic is dismissed from further consideration.

3.2 Air Quality

3.2.1 Definition of the Resource

In accordance with Federal Clean Air Act (CAA) requirements, the air quality in a given region or area is measured by the concentration of criteria pollutants in the atmosphere. The air quality in a region is a result of not only the types and quantities of atmospheric pollutants and pollutant sources in an area, but also surface topography, the size of the topological "air basin," and the prevailing meteorological conditions.

Ambient Air Quality Standards. Under the CAA, the USEPA developed numerical concentration-based standards, or National Ambient Air Quality Standards (NAAQS), for pollutants that have been determined to affect human health and the environment. The NAAQS represent the maximum allowable

concentrations for ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter (including particulate matter equal to or less than 10 microns in diameter [PM_{10}] and particulate matter equal to or less than 2.5 microns in diameter [$PM_{2.5}$]), and lead (Pb) (40 CFR Part 50). The CAA also gives the authority to states to establish air quality rules and regulations. The State of South Carolina has adopted the NAAQS and promulgated additional State Ambient Air Quality Standards (SAAQS) for criteria pollutants. **Table 3-1** presents the NAAQS and SAAQS.

Although O_3 is considered a criteria pollutant and is measureable in the atmosphere, it is not often considered a regulated pollutant when calculating emissions because O_3 is typically not emitted directly from most emissions sources. Ozone is formed in the atmosphere by photochemical reactions involving sunlight and previously emitted pollutants or O_3 precursors. The O_3 precursors consist primarily of nitrogen oxides (NO_x) and volatile organic compounds (VOCs) that are directly emitted from a wide range of emissions sources. For this reason, regulatory agencies attempt to limit atmospheric O_3 concentrations by controlling NO_x and VOC pollutants.

Attainment Versus Nonattainment and General Conformity. The USEPA classifies the air quality in an air quality control region (AQCR), or in subareas of an AQCR, according to whether the concentrations of criteria pollutants in ambient air exceed the NAAQS. Areas within each AQCR are therefore designated as either "attainment," "nonattainment," "maintenance," or "unclassified" for each of the six criteria pollutants. Attainment means that the air quality within an AQCR is better than the NAAQS, nonattainment indicates that criteria pollutant levels exceed NAAQS, maintenance indicates that an area was previously designated nonattainment but is now attainment, and an unclassified air quality designation by USEPA means that there is not enough information to classify an AQCR appropriately so the area is considered attainment. The USEPA has delegated the authority for ensuring compliance with the NAAQS in South Carolina to the SCDHEC. In accordance with the CAA, each state must develop a State Implementation Plan (SIP), which is a compilation of regulations, strategies, schedules, and enforcement actions designed to move the state into compliance with all NAAQS.

The General Conformity Rule applies only to significant actions in nonattainment or maintenance areas. This rule requires that any Federal action meet the requirements of a SIP or Federal Implementation Plan. More specifically, CAA conformity is ensured when a Federal action does not cause a new violation of the NAAQS; contribute to an increase in the frequency or severity of violations of NAAQS; or delay the timely attainment of any NAAQS, interim progress milestones, or other milestones toward achieving compliance with the NAAQS.

Federal Prevention of Significant Deterioration. Federal Prevention of Significant Deterioration (PSD) regulations apply in attainment areas to a major stationary source, (i.e., source with the potential to emit 250 tons per year [tpy] of any regulated pollutants), and a significant modification to a major stationary source, (i.e., change that adds 15 to 40 tpy to the facility's potential to emit depending on the pollutant). Additional PSD major source and significant modification thresholds apply for greenhouse gases (GHGs). PSD permitting can also apply to a proposed project if all three of the following conditions exist: (1) the proposed project is a modification with a net emissions increase to an existing PSD major source, (2) the proposed project is within 10 kilometers of national parks or wilderness areas (i.e., Class I Areas), and (3) regulated stationary source pollutant emissions would cause an increase in the 24-hour average concentration of any regulated pollutant in the Class I area of 1 milligram per cubic meter (mg/m^3) or more (40 CFR 52.21[b][23][iii]). A Class I area includes national parks larger than 6,000 acres, national wilderness areas and national memorial parks larger than 5,000 acres, and international parks. PSD regulations also define ambient air increments, limiting the allowable increases to any area's baseline air contaminant concentrations, based on the area's Class designation (40 CFR 52.21[c]).

Table 3-1. National and State Ambient Air Quality Standards

Pollutant	Averaging Time	Primary Standard		Secondary Standard
		Federal	State	
CO	8-hour [a]	9 ppm (10 mg/m^3)	Same as Federal	None
	1-hour [a]	35 ppm (40 mg/m^3)	Same as Federal	None
Pb	Rolling 3-Month Average [b]	0.15 $\mu g/m^3$ [c]	Same as Federal	Same as Primary
	Quarterly Average	1.5 $\mu g/m^3$ [c]	Same as Federal	Same as Primary
NO_2	Annual [d]	53 ppb [e]	Same as Federal	Same as Primary
	1-hour [f]	100 ppb	Same as Federal	None
PM_{10}	24-hour [g]	150 $\mu g/m^3$	Same as Federal	Same as Primary
$PM_{2.5}$	Annual [h]	15 $\mu g/m^3$	Same as Federal	Same as Primary
	24-hour [(6)]	35 $\mu g/m^3$	Same as Federal	Same as Primary
O_3	8-hour [i]	0.075 ppm [j]	Same as Federal	Same as Primary
SO_2	1-hour [k]	75 ppb [l]	Same as Federal	None
	Annual (Arithmetic Average)	0.03 ppm	Same as Federal	None
	24-hour	0.14 ppm	Same as Federal	None
	3-hour [a]	None	Same as Federal	0.5 ppm (1300 $\mu g/m^3$)
Gaseous Fluorides (as HF)	12-hour	None	3.7 $\mu g/m^3$	None
	24-hour	None	2.9 $\mu g/m^3$	None
	1-week	None	1.6 $\mu g/m^3$	None
	1-month	None	0.8 $\mu g/m^3$	None

Sources: USEPA 2012b, SCDHEC 2012

Notes: Parenthetical values are approximate equivalent concentrations.

a. Not to be exceeded more than once per year.
b. Not to be exceeded.
c. Final rule signed 15 October 2008. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved. The USEPA designated areas for the new 2008 standard on 8 November 2011.
d. Annual mean.
e. The official level of the annual NO_2 standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of cleaner comparison to the 1-hour standard.
f. 98th percentile, averaged over 3 years.
g. Not to be exceeded more than once per year on average over 3 years.
h. Annual mean, averaged over 3 years.
i. Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years.
j. Final rule signed 12 March 2008. The 1997 ozone standard (0.08 ppm, annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years) and related implementation rules remain in place. In 1997, the USEPA revoked the 1-hour ozone standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continued obligations under that standard ("anti-backsliding"). The 1-hour ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than or equal to 1.
k. 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years.
l. Final rule signed 2 June 2010. The 1971 annual (0.3 ppm) and 24-hour (0.14 ppm) SO_2 standards were revoked in that same rulemaking. However, these standards remain in effect until one year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved. The USEPA expects to designate areas for the new 2010 standard by 2 June 2012.

Key: ppm = parts per million; ppb = parts per billion; mg/m^3 = milligrams per cubic meter; $\mu g/m^3$ = micrograms per cubic meter

Greenhouse Gas Emissions. GHGs are gaseous emissions that trap heat in the atmosphere. These emissions occur from natural processes and human activities. The most common GHGs emitted from human activities include carbon dioxide (CO_2), methane, and nitrous oxide. GHGs are primarily produced by the burning of fossil fuels and through industrial and biological processes. On 22 September 2009, the USEPA issued a final rule for mandatory GHG reporting from large GHG emissions sources in the United States. The purpose of the rule is to collect comprehensive and accurate data on CO_2 and other GHG emissions that can be used to inform future policy decisions. In general, the threshold for reporting is 25,000 metric tons or more of CO_2 equivalent emissions per year but excludes mobile source emissions. The first emissions report was due in 2011 for 2010 emissions. CEQ issued draft NEPA guidance in February 2010 regarding the inclusion of analysis of GHG emissions in NEPA documents. The guidance indicates 25,000 metric tons of direct CO_2-equivalent GHG emissions could provide a useful, presumptive, threshold for discussion and disclosure of GHG emissions. However, the guidance does not propose this as an indicator of a threshold of significant effects, but rather as an indicator of a minimum level of GHG emissions that could warrant some description in the appropriate NEPA analysis involving direct emissions of GHGs.

EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, was signed in October 2009 and requires agencies to set goals for reducing GHG emissions. One requirement within EO 13514 is the development and implementation of an agency Strategic Sustainability Performance Plan (SSPP) that prioritizes agency actions based on lifecycle return on investment. The GHG goals in the DOD SSPP include reducing Scope 1 and Scope 2 GHG emissions by 34 percent by 2020, relative to FY 2008 emissions, and reducing Scope 3 GHG emissions by 13.5 percent by 2020, relative to FY 2008 emissions.

3.2.2 Affected Environment

JB CHS-WS is located in both Berkeley and Charleston counties, South Carolina, which are within the Charleston Interstate AQCR 199. The Charleston Interstate AQCR also includes Dorchester County in South Carolina (USEPA 2002). All portions of the Charleston AQCR are in attainment for all criteria pollutants (USEPA 2012a). According to 40 CFR Part 81, the nearest Class I area is the Cape Romain National Wildlife Refuge which is greater than 10 kilometers from JB CHS-WS (USEPA 2004).

The most recent emissions for Berkeley and Charleston counties and the Charleston Interstate AQCR are shown in **Table 3-2**. Berkeley and Charleston counties are considered the local area of influence, and the Charleston Interstate AQCR is considered the regional area of influence for this air quality analysis. O_3 is not a direct emission; rather, it is generated from reactions of VOCs and NO_x, which are precursors to O_3. Therefore, for the purposes of this air quality analysis, VOCs and NO_x emissions are used to represent O_3 generation.

Table 3-2. Local and Regional Air Emissions Inventory (2008)

	NO_x (tpy)	**VOC (tpy)**	**CO (tpy)**	**SO_2 (tpy)**	**PM_{10} (tpy)**	**$PM_{2.5}$ (tpy)**
Berkeley and Charleston counties	40,419	80,986	219,540	57,833	22,741	11,128
Charleston Interstate AQCR	46,346	104,027	255,058	59,398	27,955	12,822

Source: USEPA 2008

SCDHEC regulates air quality for the State of South Carolina. JB CHS-WS is classified as a conditional major air emissions source with the SCDHEC. There are various sources on-installation that emit criteria

pollutants and hazardous air pollutants (HAPs), including generators, boilers, hot water heaters, space heaters, and paint booths.

3.3 Noise

3.3.1 Definition of the Resource

Sound is defined as a particular auditory effect produced by a given source, for example the sound of rain on a rooftop. Noise and sound share the same physical aspects, but noise is considered a disturbance while sound is defined as an auditory effect. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Noise can be intermittent or continuous, steady or impulsive, and can involve any number of sources and frequencies. It can be readily identifiable or generally nondescript. Human response to increased sound levels varies according to the source type, characteristics of the sound source, distance between source and receptor, receptor sensitivity, and time of day. How an individual responds to the sound source will determine if the sound is viewed as music to one's ears or as annoying noise. Affected receptors are specific (e.g., schools, churches, or hospitals) or broad (e.g., nature preserves or designated districts) areas in which occasional or persistent sensitivity to noise above ambient levels exists.

Noise Metrics and Regulations. Although human response to noise varies, measurements can be calculated with instruments that record instantaneous sound levels in decibels. A-weighted decibel (dBA) is used to characterize sound levels that can be sensed by the human ear. "A-weighted" denotes the adjustment of the frequency range to what the average human ear can sense when experiencing an audible event. The threshold of audibility is generally within the range of 10 to 25 dBA for normal hearing. The threshold of pain occurs at the upper boundary of audibility, which is normally in the region of 135 dBA (USEPA 1981a). **Table 3-3** compares common sounds and shows how they rank in terms of the effects of hearing. As shown, a whisper is normally 30 dBA and considered to be very quiet while an air conditioning unit 20 feet away is considered an intrusive noise at 60 dBA. Noise levels can become annoying at 80 dBA and very annoying at 90 dBA. To the human ear, each 10 dBA increase seems twice as loud (USEPA 1981b).

Federal Regulations. Under the Noise Control Act of 1972, OSHA established workplace standards for noise. The minimum requirement states that constant noise exposure must not exceed 90 dBA over an 8-hour period. The highest allowable sound level to which workers can be constantly exposed to is 115 dBA and exposure to this level must not exceed 15 minutes within an 8-hour period. The standards limit instantaneous exposure, such as impact noise, to 140 dBA. If noise levels exceed these standards, employers are required to provide hearing protection equipment that will reduce sound levels to acceptable limits.

Local Regulations. Both Berkeley and Charleston counties have a Code of Ordinances with regulations regarding noise nuisances. Noise from heavy equipment in Berkeley County is allowed during normal business hours (6:00 a.m. to 10:00 p.m.). Noise is considered a nuisance if at any time it exceeds 75 dBA across a real property boundary in a non-residential area or 70 dBA in a residential area (Berkeley County 2005). However, noises generated by any aircraft or generated in connection with the operation of any airport are exempt from the ordinance (Berkeley County 2005). Similarly, Charleston County has an exemption from their noise ordinances for noise created by any government-sponsored event (Charleston County 2011).

Table 3-3. Sound Levels and Human Response

Noise Level (dBA)	Common Sounds	Effect
10	Just audible	Negligible*
30	Soft whisper (15 feet)	Very quiet
50	Light auto traffic (100 feet)	Quiet
60	Air conditioning unit (20 feet)	Intrusive
70	Noisy restaurant or freeway traffic	Telephone use difficult
80	Alarm clock (2 feet)	Annoying
90	Heavy truck (50 feet) or city traffic	Very annoying Hearing damage (8 hours)
100	Garbage truck	Very annoying*
110	Pile drivers	Strained vocal effort*
120	Jet takeoff (200 feet) or auto horn (3 feet)	Maximum vocal effort
140	Carrier deck jet operation	Painfully loud

Source: USEPA 1981b and *HDR extrapolation

3.3.2 Affected Environment

The ambient noise environment at JB CHS-WS is affected mainly by military operations, maintenance activities, and automobile traffic. Additionally, there is flight noise from aircraft because Charleston International Airport and JB CHS-Air are in close proximity (within a 15-mile radius).

3.4 Geology and Soil Resources

3.4.1 Definition of the Resource

Geology is the study of the Earth's processes and provides information on the structure and configuration of surface and subsurface features. Such information derives from field analysis based on observations of the surface and borings to identify subsurface composition. Geology and soil resources consist of the Earth's surface and subsurface materials. Within a given physiographic province, these resources typically are described in terms of topography and physiography, geology, soils, and, where applicable, geologic hazards and paleontology.

Topography and physiography pertain to the general shape and arrangement of a land surface, including its height and the position of its natural and human-made features.

Soils are the unconsolidated materials overlying bedrock or other parent material. Soils typically are described in terms of their complex type, slope, and physical characteristics. Differences among soil types in terms of their structure, elasticity, strength, shrink-swell potential, and erosion potential affect their abilities to support certain applications or uses. In appropriate cases, soil properties must be examined for their compatibility with particular construction activities or types of land use.

Prime farmland is protected under the Farmland Protection Policy Act (FPPA) of 1981. Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing

food, feed, forage, fiber, and oilseed crops, and is also available for these uses. The soil qualities, growing season, and moisture supply are needed for a well-managed soil to produce a sustained high yield of crops in an economic manner. The land could be cropland, pasture, rangeland, or other land, but not urban built-up land or water. The implementing procedures of the FPPA and Natural Resources Conservation Service (NRCS) require Federal agencies to evaluate the adverse effects (direct and indirect) of their activities on prime and unique farmland, and farmland of statewide and local importance, and to consider alternative actions that could avoid adverse effects.

3.4.2 Affected Environment

Regional Geology. JB CHS-WS lies in the southern portion of the Atlantic Coastal Plain Physiographic Province, which is characterized by marine terraces created during the higher sea level phases of the Pleistocene Period. At times, these terraces have been covered by Holocene Period deposits (JB CHS-WS 2003).

Surficial geology of this province consists of thin sediment layers of fine sand and blue or gray clay, with shallow marine origins. The Cooper Marl geologic formation of the Oligocene Age underlies these surficial sediments approximately 60 feet below the surface and is composed of glauconite and foraminifera deposits with varying thicknesses between 30 and 200 feet. Santee Limestone of the Eocene age underlies the Cooper Marl with a thickness of approximately 250 feet (JB CHS-WS 2003).

Topography. JB CHS-WS is characterized by generally level land areas that gently slope downward from west to east. Ground elevations across the installation range from 30 feet above mean sea level (MSL) along its western edge to approximately 5 feet above MSL along the Cooper River and Back River to the east.

Soils. Soils at JB CHS-WS are derived from marine sediments deposited during periods of higher sea level. These soils were reworked by surface waters, winds, and floods as the sea level dropped. Streams and tidal creeks cut channels into the surface of these deposits. Soil series at the proposed sites are depicted in **Figure 3-1**. The predominant soil series found on the installation consist of Bethera, Bonneau, Duplin, Goldsboro, Meggett, Wahee, and Craven series. The tidal flats are composed primarily of Bohicket and Capers series (JB CHS-WS 2009).

These soil series are classified into nine soil associations, described in **Table 3-4**. The Cainhoy-Pickney associate is the only association suited for residential, industrial, or recreational development uses. The Bonneau-Norfolk-Pantego association is suited for recreational uses only. The remaining associations are poorly suited for development due to tidal inundation, high water tables, wetness, slow permeability, and poor drainage (JB CHS-WS 2009).

Prime Farmland. There are a variety of soils classified as prime farmland soils on JB CHS-WS. Craven loam, with 2 to 6 percent slopes, is the most prevalent, with Duplin fine sandy loam, Goldsboro loamy sand, and Caroline fine sandy loam also readily abundant. Bonneau loamy sand, with 2 to 6 percent slopes, Aquic Udifluvents, Bethera loam, Meggett loam, Ocilla loamy fine sand, and Wahee loam are the more common farmland soils of statewide importance found on the installation. However, these soils are not found in areas used for agriculture; thus, the land they underlie is not classified as prime farmland as per the definition of the FPPA (USDA 2011).

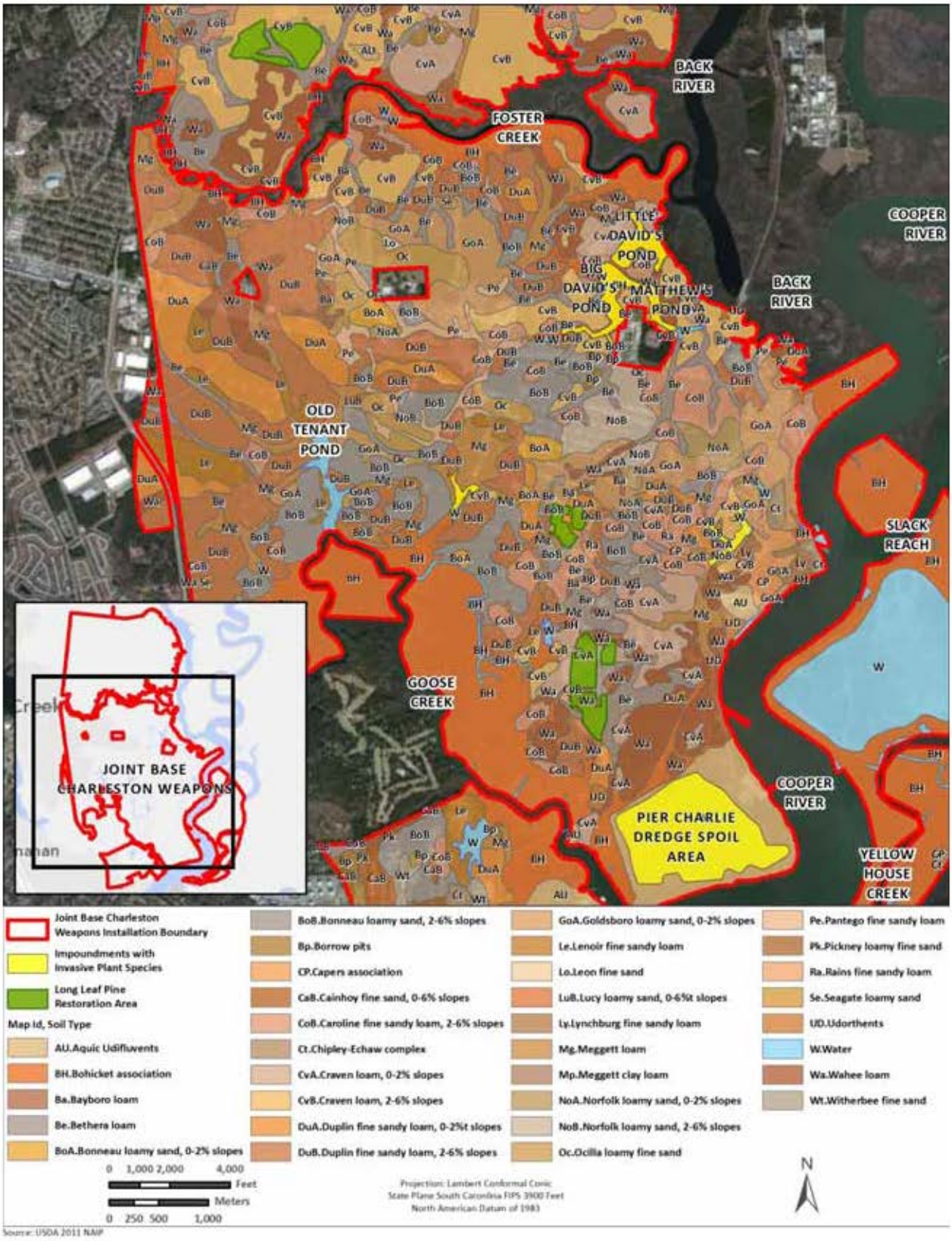

Figure 3-1. Soils Found at JB CHS-WS

Table 3-4. Soil Associations at JB CHS-WS

Soil Association	Soil Types	Slope and Drainage	Development Potential
Cainhoy-Pickney	Dark grayish-brown fine, sandy surface layer and a fine sand lower layer	Gently sloping, excessively drained soils	Moderately suited for residential, industrial, or recreational uses
Bonneau-Norfolk-Pantego	Loamy sand surface layer and a brownish-yellow sandy clay loam subsoil that is mottled with gray and yellowish brown	Level to gently sloping, moderately well-drained on ridges and poorly drained in drainageways	Suited for recreational use only
Goldsboro-Lynchburg-Rains	Very dark grayish-brown loam sand surface layer and a yellowish-brown sandy clay loam subsoil that has gray mottles below 24 inches	Moderately well-drained on ridges, somewhat poorly drained in flat areas, and poorly drained at lower elevations	Moderately to poorly suited for recreational development
Wahee-Duplin-Lenoir	Loamy surface layer and a clayey subsoil	Somewhat poorly drained and moderately well-drained soils	Poorly suited for development or recreational uses
Chipley-Echaw-Pickney	Sandy throughout with a very dark brown loamy sand subsurface with a yellowish-brown upper layer or a black fine sand surface layer and a yellowish-brown fine sand subsoil with gray mottles	Moderately well-drained to very poorly drained soils	Poorly suited for development or recreational uses
Bethera-Bayboro-Pantego	Loamy throughout with a very dark gray and dark green loam surface layer, and four dominantly gray clay subsoil layers	Poorly drained to very poorly drained soils	Poorly suited for development or recreational uses due to a seasonal high water table and slow permeability
Meggett	Loamy surface layer and clayey subsoil with a dark gray loam surface layer and a gray clay subsoil mottled with shades of brown, yellow, and red	Occur in lower, flat areas and in drainageways	Unsuited for development or recreational uses due to wetness and slow permeability
Bohicket-Capers	Loamy surface layer and clayey subsoil	Nearly level areas that are dissected by drainageways and flooded by tidewater with very poorly drained soils	Unsuited for development or recreational uses other than hunting or fishing due to frequent flooding by tidal water
Borrow Pits	Mostly loamy or clayey miscellaneous areas consisting of open excavations where the surface and subsoil have been removed	N/A	Low in organic matter and fertility

Source: JB CHS-WS 2003

3.5 Water Resources

3.5.1 Definition of the Resource

Hydrology consists of the redistribution of water through the processes of evapotranspiration, surface runoff, and subsurface flow. Hydrology results primarily from (1) temperature and total precipitation that determine evapotranspiration rates, (2) topography that determines rate and direction of surface flow, and (3) soil and geologic properties that determine rate of subsurface flow and recharge to the groundwater reservoir.

Groundwater consists of subsurface hydrologic resources. It is an essential resource that functions to recharge surface water and is used for drinking, irrigation, and industrial processes. Groundwater typically can be described in terms of depth from the surface, aquifer or well capacity, water quality, recharge rate, and surrounding geologic formations. Surface water resources generally consist of wetlands, lakes, rivers, and streams. Surface water is important for its contributions to the economic, ecological, recreational, and human health of a community or locale.

Waters of the United States are defined within the Clean Water Act (CWA), as amended, and jurisdiction is addressed by the USEPA and USACE. These agencies assert jurisdiction over (1) traditional navigable waters, (2) wetlands adjacent to navigable waters, (3) nonnavigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-around or have continuous flow at least seasonally (e.g., typically 3 months), and (4) wetlands that directly abut such tributaries. Section 404 of the CWA authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredge or fill into waters of the United States including wetlands. Encroachment into waters of the United States and wetlands requires a permit from the state and the Federal government. An encroachment into wetlands or other "waters of the United States" resulting in displacement or movement of soil or fill materials has the potential to be viewed as a violation of the CWA if an appropriate permit has not been issued by the USACE. In South Carolina, the USACE has primary jurisdictional authority to regulate wetlands and waters of the United States.

A water body can be deemed impaired if water quality analyses conclude that exceedances of water quality standards, established by the CWA, occur. The CWA requires that states establish a Section 303(d) list to identify impaired waters and establish Total Maximum Daily Loads (TMDLs) for the sources causing the impairment. A TMDL is the maximum amount of a substance that can be assimilated by a water body without causing impairment.

The Coastal Zone Management Act (CZMA) of 1972 declares a national policy to preserve, protect, and develop, and, where possible, restore or enhance the resources of the Nation's coastal zone. The coastal zone refers to the coastal waters and the adjacent shorelines, including islands, transitional and intertidal areas, salt marshes, wetlands, and beaches, and includes the Great Lakes. The CZMA encourages states to exercise their full authority over the coastal zone through the development of land and water use programs in cooperation with Federal and local governments. Development projects affecting land or water use or natural resources of a coastal zone must ensure the project is, to the maximum extent practicable, consistent with the state's coastal zone management program. The State of South Carolina established its Coastal Management Act in 1977 to protect its coastal environment, as implemented in the *South Carolina Coastal Management Program*, which is administered through the SCDHEC, Office of Ocean and Coastal Resource Management.

In accordance with CZMA 15 CFR Section 930.33 (a)(3)(i), a Federal agency may review their activities, other than development projects within the coastal zone, to identify *de minimis* activities, and request state agency concurrence that these *de minimis* activities should not be subject to further state review.

De minimis activities are activities that are expected to have insignificant direct or indirect (cumulative and secondary) coastal effects and which the state agency concurs are *de minimis*. The state agency is required to provide for public participation under Section 306(d)(14) of the CZMA when reviewing the Federal agency's *de minimis* activity request.

In addition, wetlands are protected under EO 11990, *Protection of Wetlands*, the purpose of which is to reduce adverse impacts associated with the destruction or modification of wetlands. This order directs Federal agencies to provide leadership in minimizing the destruction, loss, or degradation of wetlands. In furtherance of NEPA, agencies shall avoid undertaking or assisting in new construction in wetlands unless there is no practical alternative. The Deputy Assistant Secretary of the Air Force - Environment, Safety, and Occupational Health or another designated official must sign a FONPA before any action within a Federal wetland may proceed as specified in Secretary of the Air Force Order 780.1. The recently revised AFI 32-7064 grants approval authority to the chairperson of the Headquarters AFRC Environmental Protection Committee for wetlands encroachment FONPAs.

As a result of the above-mentioned state and Federal regulations, it is the responsibility of the USAF to identify jurisdictional waters of the United States (including wetlands) occurring on USAF installations that have the potential to be impacted by installation activities. Such impacts include construction of roads, buildings, runways, taxiways, navigation aids, and other appurtenant structures; or activities as simple as culvert crossings of small intermittent streams, rip-rap placement in stream channels to curb accelerated erosion, and incidental fill and grading of wet depressions.

Floodplains are areas of low-level ground along rivers, stream channels, or coastal waters. Floodplains provide a broad area to inundate and store floodwaters temporarily. This reduces flood peaks and velocities and the potential for erosion. In their natural vegetated state, floodplains slow the rate at which the incoming overland flow reaches the main water body. Floodplains are subject to periodic or infrequent inundation due to rain or melting snow. Risk of flooding typically hinges on local topography, the frequency of precipitation events, and the size of the watershed above the floodplain. Flood potential is evaluated by the Federal Emergency Management Agency (FEMA), which defines the 100-year floodplain. The 100-year floodplain is the area that has a 1 percent chance of inundation by a flood event in a given year. Federal, state, and local regulations often limit floodplain development to passive uses, such as recreational and preservation activities, to reduce the risks to human health and safety.

EO 11988, *Floodplain Management*, requires Federal agencies to determine whether a proposed action would occur within a floodplain. This determination typically involves consultation of FEMA Flood Insurance Rate Maps, which contain enough general information to determine the relationship of the project area to nearby floodplains.

3.5.2 Affected Environment

Surface water. JB CHS-WS is in the Atlantic Coast Drainage Basin and is part of the Cooper River Watershed, which contains tributary streams with a low gradient. The Cooper River borders the installation to the east and the Back River borders the installation to the northeast. Fosters Creek and Goose Creek, both easterly flowing tributaries of the Cooper River, transect the northern and southern portions of the installation, respectively. Surficial drainage on the installation is directed towards these water bodies (JB CHS-WS 2009). There are 17 freshwater ponds on the installation covering approximately 226 acres. **Figure 3-2** shows ponds near the project areas, including those that contain invasive plant species.

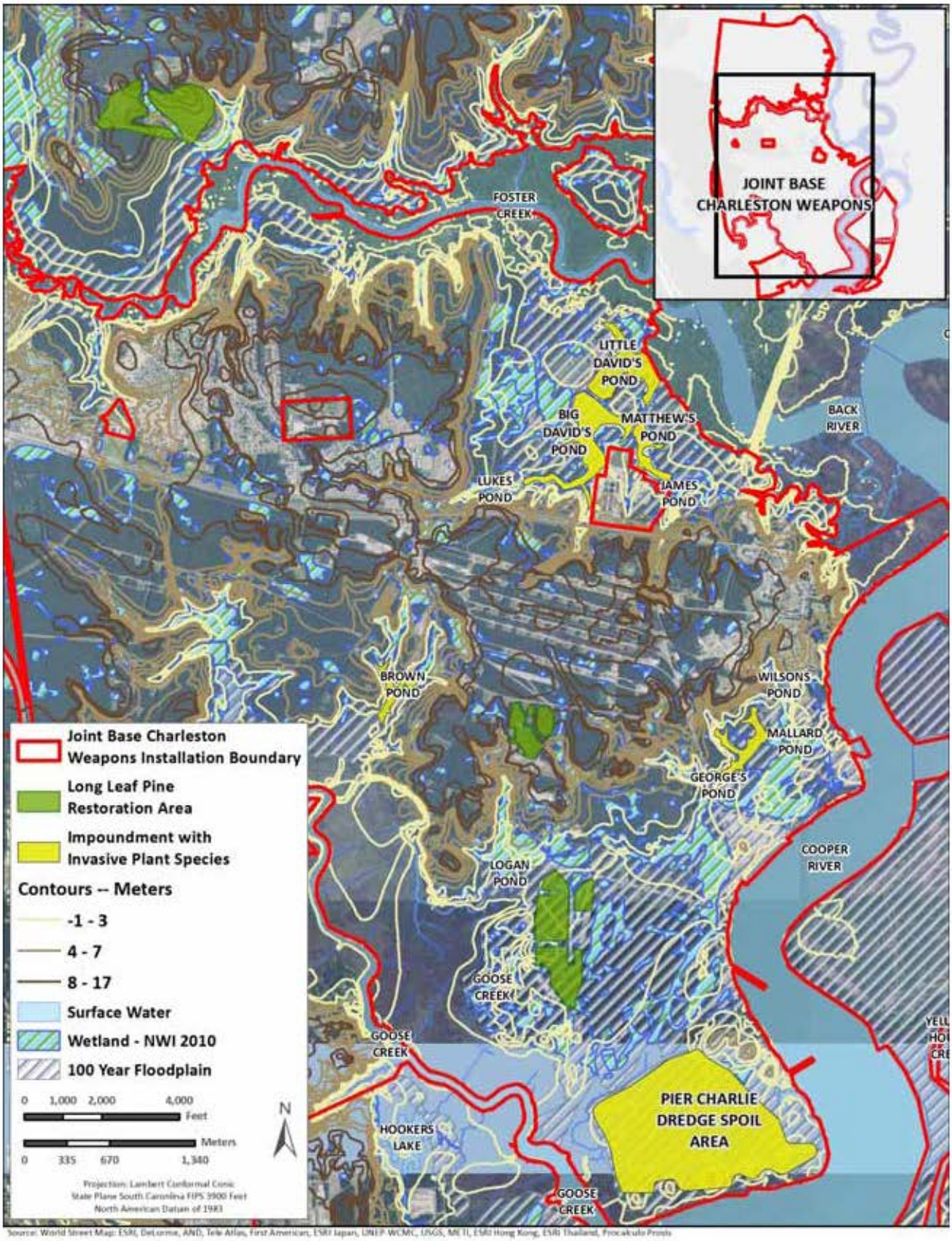

Figure 3-2. Hydrological Features at JB CHS-WS

Groundwater. All groundwater in South Carolina is classified as having the potential to serve as water supplies; however, the area is more dependent on surficial water supplies and groundwater is generally used for industrial and non-consumptive community uses (JB CHS-WS 2011). There are six aquifers systems in the vicinity of JB CHS-WS; they are, from deepest to shallowest, the Middendorf, Black Creek, Pee Dee, Black Mingo, Tertiary Limestone, and surficial aquifer systems (JB CHS-WS 2003). Groundwater flow in the unconsolidated deposits is generally from west to east towards the rivers and creeks throughout the facility. The Black Mingo aquifer serves as a potable water supply west of the installation, and is saline near coastal waters (JB CHS-WS 2009). JB CHS-WS does not operate public supply wells because potable water is provided by North Charleston Public Services Authority (JB CHS-WS 2003).

Wetlands/Floodplains/Coastal Resources. Wetlands are found throughout JB CHS-WS, with more than 3,000 acres of vegetated wetland, 259 acres of submerged aquatic beds, 71 acres of open water, and more than 10 miles of river shoreline. Approximately 20 percent of the land is designated as tidal marsh swamp, which is predominantly found adjacent to the major surface water bodies (JB CHS-WS 2009). Palustrine (marsh) wetlands are the predominant wetland type found on JB CHS-WS. Lacustrine (or lake) habitats are covered around Big David, Little David, and Hooker Lake. Riverine wetlands follow Black River, Foster Creek, Goose Creek, and sections of the Cooper River not influenced by estuarine waters. Salt marshes are along the southern portion of the Cooper River and the lower stretch of Goose Creek (JB CHS-WS 2009).

Tidal activities and seasonal flooding dominate JB CHS-WS because of the close proximity to various water sources, coastal zones, and its low topography (JB CHS-WS 2009). As a result, portions of the installation are within the 100-year floodplain (see **Figure 3-2**). Berkeley and Charleston counties are both within the coastal zone of South Carolina and contain coastal zone critical areas as defined by SCDEHC. JB CHS-WS borders these critical areas.

3.6 Biological Resources

3.6.1 Definition of the Resource

Biological resources include native or naturalized plants and animals and the habitats (e.g., wetlands, forests, and grasslands) in which they exist. Protected and sensitive biological resources include federally listed (endangered or threatened), proposed, and candidate species, and designated or proposed critical habitat; species protected under other Federal laws (see **Appendix A**); species of concern managed under Conservation Agreements or Management Plans; and state-listed species.

Under the Endangered Species Act (ESA) (16 U.S.C. 1536), an "endangered species" is defined as any species in danger of extinction throughout all or a significant portion of its range. A "threatened species" is defined as any species likely to become an endangered species in the foreseeable future. The USFWS also maintains a list of species considered to be candidates for possible listing under the ESA. The ESA also prohibits any action that causes a "take" of any listed species. "Take" is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct." Federal species of concern are not protected by law; however, these species could become listed, and, therefore, are given consideration when addressing impacts from a proposed action. Listed plants are not protected from take, although it is illegal to collect or maliciously harm them on Federal land. SCDNR oversees the protection and management of state-protected fauna under the 1976 Nongame and Endangered Species Conservation Act (South Carolina Statute 50.15. 10-90).

The Migratory Bird Treaty Act of 1918 (16 U.S.C. 703–712), as amended, and EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, require Federal agencies to minimize or

avoid impacts on migratory birds. Unless otherwise permitted by regulations, the Migratory Bird Treaty Act makes it unlawful to (or attempt to) pursue, hunt, take, capture, or kill any migratory bird, nest, or egg. If design and implementation of a Federal action cannot avoid measurable negative impacts on migratory birds, EO 13186 directs the responsible agency to develop and implement, within 2 years, a Memorandum of Understanding with the USFWS that shall promote the conservation of migratory bird populations.

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act, which prohibits the "take" of bald or golden eagles in the United States. In addition to immediate impacts, the definition of take also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death, or nest abandonment.

Pursuant to Section 303(a)(7) of the Magnuson-Stevens Fisheries Conservation and Management Act (16 U.S.C. 1801 et seq.), regional fishery management councils must identify essential fish habitat (EFH) used by all life history stages of each managed species in fishery management plans. EFH is defined as habitats that are necessary to the species for spawning, breeding, feeding, or growth to maturity. EFH that is particularly important to the long-term productivity of populations of one or more managed species, or is particularly vulnerable to degradation, is identified as habitat areas of particular concern to provide additional focus for conservation efforts.

3.6.2 Affected Environment

Vegetation. There are five upland vegetative habitats on JB CHS-WS as described by the South Carolina Heritage Trust Program (JB CHS-WS 2003). Pine flatwoods, found in upland and better drained areas, are dominated by loblolly pine and longleaf pine with occasional pond pine (*P. serotina*) where saturated or inundated soils occur. Other species such as sweetgum, red maple, water oak (*Quercus nigra*), and willow oak (*Q. phellos*) are the primary understory species, along with wax myrtle, dogwood (*Cornus florida*), and American holly (*Ilex opaca*). Ground cover species vary throughout JB CHS-WS and generally include honeysuckle (*Lonicera japonica*), swamp sweetbells (*Leucothoe racemosa*), privet (*Ligustrum sinense*), sweet pepper bush (*Clethra alnifolia*), bracken fern (*Pteridium aquilinum*), blackberry (*Rubus* spp.), and green briar (*Smilax* spp.). Pine savannah habitat on the installation was decimated by Hurricane Hugo and primarily contains species, such as loblolly and longleaf pine that survived the hurricane force winds. Saplings of these pine species are also prevalent. Mixed pine/hardwood forest cover is a variant of the pine communities described and is primarily defined by codominant pine and hardwood species. These stands are typically dominated by loblolly pine, sweetgum, water oak, red maple, and occasionally longleaf pine. Scattered live oak, southern red oak (*Q. falcata*), blackjack oak (*Q. marilandica*), and post oak (*Q. stellata*) are more prevalent on slightly drier sites. Understory and herbaceous species are essentially similar to pine flatwoods, with the addition of sweetleaf (*Symplocus tinctoria*) in the understory and switchcane (*Arundinaria gigantea*) in the herbaceous layer. Maintained/successional communities are characterized by perennial species including broomsage (*Andropogon virginicus*), goldenrod (*Solidago* spp.), aster (*Aster* spp.), ragweed (*Ambrosia artemisiifolia*), and a variety of grasses. Soft rush (*Juncus effusus*), bulrush (*Scirpus cyperinus*), common cattails (*Typha latifolia*), and other hydric species often occur in areas where substrate saturation or inundation occur. Urban/disturbed areas of the installation primarily have landscaped vegetation generally characterized by grasses and shrubs such as sea myrtle (*Baccharis anugustifolia*) and wax myrtle.

Wetland vegetative habitats are also prominent on JB CHS-WS. A mix of saltwater, brackish, and freshwater wetlands provide a wide variety of plant species (JB CHS-WS 2003). Estuarine habitats

primarily consist of smooth cordgrass (*Spartina alternaflora*), needle rush (*Juncus roemerianus*), narrow-leafed cattail (*Typha augustifolia*), rushes (primarily *Juncus roemerianus*), and bulrushes. Palustrine wetlands on JB CHS-WS have forested and emergent covered types. Bottomland hardwood communities dominate forested wetlands and have species similar to those described for mixed pine/hardwood forests. Yellow poplar (*Liriodendron tulipifera*), dogwood (*Cornus florida*), sweet bay (*Magnolia virginiana*), and red bay (*Persea* borbonia) are also found. Emergent wetlands are dominated by perennial, herbaceous vegetation and typically include cattails, bulrush, giant cordgrass, pickerel weed (*Pontederia cordata*), sawgrass, wool grass (*Scirpus cyperinus*), and common three-square (*S. americanus*). Lacustrine communities are composed of the 17 ponds larger than 20 acres. Typical species include giant cutgrass (*Zizaniopsis miliacea*), cattails, white water-lily (*Nymphaea odorata*), water pennywort (*Hydrocotyle* spp.), alligatorweed, and water primrose. *Phragmites*, as described in **Section 2.1**, is predominantly found in these communities. Riverine communities have similar plant species to lacustrine communities. Other diverse vegetative communities include palustrine wetlands in shallow ponds with dense aquatic plant growth (typically alligatorweed, and floating bladderwort (*Utricularia inflata*).

Wildlife. JB CHS-WS contains a diverse assemblage of wildlife primarily as a result of the wide range of habitats found on the installation. Typical mammal species include the gray squirrel (*Sciurus carolinensis*), white-tailed deer (*Odocoileus virginianus*), fox squirrel (*Sciurus niger*), eastern cottontail (*Sylvilagus floridanus*), red fox (*Vulpes vulpes*), and bobcat (*Lynx rufus*). A wide range of bird species, from resident to transient migratory birds, can be found on JB CHS-WS including the turkey (*Meleagris gallopavo*), Bachman's sparrow (*Peucaea aestivalis*), osprey (*Pandion haliaetus*), northern bobwhite (*Colinus virginianus*), various wading birds, shore birds, raptors, perching birds, and waterfowl (JB CHS-WS 2003).

Reptiles found on the installation include the Florida green watersnake (*Nerodia floridana*), black swamp snake (*Seminatrix pygaea*), eastern diamondback rattlesnake (*Crotalus adamanteus*), and eastern coral snake (*Micrurus fulvius*). The vast amount of lakes, streams, and rivers support various fish species, with most being members of the sunfish (*Centrarchidae*) and catfish (*Ictaluridae*) families. Since the waters along the Cooper River are a transition zone between salt and fresh water, saltwater species, including spotted seatrout (*Cynoscion nebulosus*), flounder (*Paralichthys* spp.), drum, and croaker (in the *Sciaenidae* Family), are also present (JB CHS-WS 2003).

Sensitive and Protected Species. Several Federal- and state-listed endangered and threatened species occur or have the potential to occur on JB CHS-WS (USFWS 2012, SCDNR 2012). These species are listed in **Table 3-5**. Species surveys for amphibians, reptiles, and mammals have not found any Federal- or state-listed species on the installation; however, a survey conducted in 2000 found one red-cockaded woodpecker, which is endangered. No nesting or mating activities were observed during the survey. The eastern woodrat (*Neotoma floridana*), eastern fox squirrel, and southeastern myotis (*Myotis austroriparius*), all state species of concern, have also been observed on the installation (JB CHS-WS 2003). No critical habitat has been designated for any threatened or endangered species on the installation.

There is no EFH within the potential treatment areas; however, EFH within the Cooper River is in the vicinity of JB CHS-WS (JB CHS-WS 2011). The Cooper River, tidal creeks connected to it, and the surrounding coastal marsh provide habitat for a wide variety of fish and invertebrate species dependent on coastal marshes and tidal inlets as part of their lifecycles. The South Atlantic Fishery Management Council (SAFMC) has identified EFH for white shrimp (*Litopenaeus setiferus*) and brown shrimp (*Farfantepenaeus aztecus*) within these marches and inlets because the shrimp maintain high growth and survival rates within these habitats. Species in the snapper-grouper complex (e.g., flounder, bluefish (*Pomatomus saltatrix*), black drum (*Pogonias cromis*), Atlantic menhaden (*Brevoortia tyrannus*), and blue crab (*Callinectes sapidus*)) provide prey to larger species (e.g., snapper, grouper) managed by the

SAFMC and migratory species (e.g., sharks, billfishes) managed by the National Marine Fisheries Service (NMFS). EFH for these prey species, identified for their ability to provide nursery and forage areas, includes estuarine-emergent vegetated wetlands, tidal creeks, estuarine scrub/shrub, oyster reefs and shell banks, and unconsolidated bottom (JB CHS-WS 2011).

Table 3-5. Protected and Sensitive Species with Potential to Occur on JB CHS-WS.

Common Name	Scientific Name	Federal Status	State Status
Mammals			
Rafinesque's big-eared bat	*Corynorhinus rafinesquii*	-	E
Southeastern myotis[2]	*Myotis austroriparius*	-	SSC
Eastern woodrat[2]	*Neotoma floridana*	-	SSC
Eastern fox squirrel[2]	*Sciurus niger*	-	SSC
Florida manatee (West Indian manatee)	*Trichechus manatus*	E	E
Bottlenose dolphin[1]	*Tursiops truncates*	-	-
Birds			
Wilson's plover	*Charadrius wilsonia*	-	T
American swallow-tailed kite	*Elanoides forficatus*	-	E
Bald eagle	*Haliaeetus leucocephalus*	-	T
Wood stork	*Mycteria americana*	E	E
Red-cockaded woodpecker[2]	*Picoides borealis*	E	E
Reptiles and Amphibians			
Flatwoods salamander	*Ambystoma cinqulatum*	T	E
Spotted turtle	*Clemmys guttata*	-	T
Gopher frog	*Rana capito*	-	E
Dwarf siren	*Pseudobranchus striatus*	-	T
Fish			
Shortnose sturgeon	*Acipenser brevirostrum*	E	E
Atlantic sturgeon	*Acipenser oxyrinchus oxyrinchus*	E	-
Plants			
Pondberry	*Lindera melissifolia*	E	-
Canby's dropwort	*Oxypolis canbyi*	E	-
American chaffseed	*Schwalbea americana*	E	-

Sources: USFWS 2012, SCDNR 2012, JB CHS-WS 2003
Key:
E = Endangered
SSC = State Species of Concern
T = Threatened
1 = Protected under the Marine Mammal Protection Act.
2 = Observed on JB CHS-WS

3.7 Hazardous Materials and Waste

3.7.1 Definition of the Resource

A hazardous substance, pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. §9601(14)), is defined as: "(A) any substance designated pursuant to section 1321(b)(2)(A) of Title 33; (B) any element, compound, mixture, solution, or substance designated pursuant to section 9602 of this title; (C) any hazardous waste having the characteristics identified under or listed pursuant to section 3001 of the Resource Conservation and Recovery Act (RCRA) of 1976, as amended, (42 U.S.C. §6921); (D) any toxic pollutant listed under section 1317(a) of Title 33; (E) any HAP listed under section 112 of the CAA (42 U.S.C. §7412); and (F) any imminently hazardous chemical substance or mixture with respect to which the Administrator of the USEPA has taken action pursuant to section 2606 of Title 15. The term does not include petroleum, including crude oil or any fraction thereof, which is not otherwise specifically listed or designated as a hazardous substance, and the term does not include natural gas, natural gas liquids, liquefied natural gas, or synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas)."

Hazardous materials are defined by 49 CFR 171.8 as "hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (49 CFR 172.101), and materials that meet the defining criteria for hazard classes and divisions" in 49 CFR Part 173. Transportation of hazardous materials is regulated by the U.S. Department of Transportation regulations within 49 CFR Parts 105–180.

RCRA defines a hazardous waste in 42 U.S.C. §6903, as "a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed."

3.7.2 Affected Environment

AFI 32-7086, *Hazardous Materials Management*, establishes procedures and standards governing procurement, issuance, use, or disposal of hazardous materials and tracking and record-keeping for public safety and for compliance with all laws and regulations. AFI 32-7080, *Pollution Prevention Program*, incorporates the requirements of all Federal regulations, AFIs, and DOD Directives for the reduction of hazardous material uses and purchases. The primary hazardous materials addressed by AFI 32-7080 are ozone-depleting substances and the 17 chemicals listed under the USEPA Industrial Toxics Program. EO 12088, *Federal Compliance with Pollution Control Standards*, ensures that necessary actions are taken for the prevention, management, and abatement of environmental pollution from hazardous materials or hazardous waste due to Federal facility activities. JB CHS-WS maintains a *Hazardous Material Emergency Planning and Response Plan* that provides guidance, information, and direction to ensure the proper oil, hazardous substance, and hazardous waste spill prevention actions are taken to minimize the chances of such materials entering the navigable waters of the United States.

Hazardous Waste. AFI 32-7042, *Solid and Hazardous Waste Compliance*, directs roles and responsibilities with waste stream management including planning, training, emergency response, and pollution prevention. The management of hazardous waste is governed by the RCRA Subtitle C (40 CFR Parts 260 through 270) regulations, which are administered by the USEPA. The USEPA has subsequently delegated regulatory authority to the State of South Carolina. The regulations require hazardous waste to be handled, stored, transported, disposed of, or recycled in compliance with applicable

regulations. JB CHS-WS maintains a *Hazardous Waste Management Plan*, as directed by AFI 32-7042, that provides guidance, information, and direction for the proper management of hazardous waste generated on the installation, in accordance with all applicable state and Federal regulations.

JB CHS-WS maintains a hazardous waste permit (#SC8 170 022 620), issued by SCDHEC. JB CHS-WS is a RCRA Treatment, Storage and Disposal Facility of hazardous waste and a RCRA-Large Quantity Generator of hazardous waste. JB CHS-WS holds a RCRA Part B permit for two active areas that store or dispose of hazardous waste and require permitting: the Container Storage Facility (Building 2332) and the Northside Open Burn/Open Detonation unit (JB CHS-WS 2009).

Hazardous waste at JB CHS-WS is primarily generated by facility maintenance and construction, vehicle maintenance, ship operations and maintenance, and munitions management associated with the NPTU, USA Field Support Battalion-Afloat Maintenance Facility, Public Works Department, and the Space and Naval Warfare facilities. Primary types of hazardous waste generated include paints, solvents, lubricants, corrosives, and refrigerants.

A Dredging Permit (99-1T-025) issued by the USACE allows JB CHS-WS to dredge portions of the Cooper River for navigation purposes and allows for the disposal of the dredged material on the installation. Dredge spoil is disposed of on the Pier Charlie Dredge Spoil Island, near the confluence of the Cooper River and Goose Creek and, periodically, along the east side of the Cooper River. Dredging occurs in a 2- to 3-year cycle and the amount of material that may be removed is dictated by the permit. The permit requires sampling of the sediment prior to dredging and placement of the material. The dredged material is not considered hazardous. No contamination has been detected in the materials. Therefore, the dredged materials have been able to be disposed of on site in accordance with the permit stipulations (JB CHS-WS 2009).

Aboveground and Underground Storage Tanks. AFI 32-7044, *Storage Tank Compliance*, identifies requirements for aboveground storage tanks, underground storage tanks, and associated piping that store petroleum products and hazardous substances at USAF facilities. JB CHS-WS maintains a Spill Prevention, Control, and Countermeasure (SPCC) Plan that was developed per 40 CFR Part 112, *Oil Pollution Prevention* and DOD Directive 5030.41, *Oil and Hazardous Substances Pollution Prevention Contingency Program*. The plan establishes the procedures, methods, equipment, and other criteria to prevent and respond to discharges of oil products from non transportation-related onshore and offshore facilities into or upon navigable waters of the United States or adjoining shorelines.

Environmental Restoration Program. The DOD developed the Environmental Restoration Program (ERP) to facilitate thorough investigation and cleanup of contaminated sites on military installations. The Installation Restoration Program and the Military Munitions Response Program (MMRP) are components of the ERP. The Installation Restoration Program requires each DOD installation to identify, investigate, and clean up hazardous waste disposal or release sites. The MMRP addresses nonoperational rangelands that are suspected or known to contain unexploded ordinances, discarded military munitions, or munitions constituent contamination.

The primary environmental investigations and clean-up activities at JB CHS-WS are related to addressing 101 Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) related to former activities, including waste tank/septic systems; industrial waste, drum, and munitions disposal areas; fuel storage vaults and sheds; former landfills; wastewater outfalls; burn areas; and, pesticide mixing and storage areas (JB CHS-WS 2009).

Forty-six SWMUs and 11 AOCs have received RCRA No Further Action status at JB CHS-WS (JB CHS-WS 2009). The remaining 38 SWMUs and 6 AOCs are in various stages of the RCRA Corrective Action

process. The SWMUs and AOCs are considered environmental concerns. Previous environmental studies have identified the limits of the contamination at some of the SWMUs and AOCs. At others, the RCRA Facility Investigation has yet to be performed, and the limits of contamination, if any, have yet to be determined. The MMRP addresses the potential explosives safety, health, and environmental issues caused by past DOD munitions-related activities. Nine of the 101 SWMUs and AOCs are related to the current and former use of munitions at the JB CHS-WS and have been transferred to the MMRP program due to the potential of unexploded ordinances (JB CHS-WS 2009).

Pesticides. JB CHS-WS's Pest Management Plan is based on AFI 32-1053, *Pest Management Program*, and DOD Instruction 4150.07, *DOD Pest Management Program*. The plan addresses the control of pest organisms in the context of their life cycle stage and their environment. Nonchemical approaches, which stress biological and mechanical control means (e.g., pruning, using groundcovers, increasing biodiversity), is favored over chemical control means.

Pesticides and herbicides are currently applied only to the golf course located on the Southside. Building 17, on the Southside, is used to store and mix pesticides and herbicides for the golf course applications. Appropriately certified golf course personnel perform the mixing at the building and apply the chemicals to the golf course. Building 17 and the surrounding area is part of the RCRA Corrective Action program (SWMU 39 and AOC F) (JB CHS-WS 2009).

Other materials managed at JB CHS-WS include asbestos, lead-based paint, radon, and polychlorinated biphenyls. These materials are all managed according to USAF policy and guidance (JB CHS-WS 2009).

3.8 Safety

3.8.1 Definition of the Resource

A safe environment is one in which the potential for serious bodily injury or illness, death, or property damage has been eliminated or reduced as much as possible. Safety addresses both workers' health and public safety during and following herbicide application.

Health and safety hazards can often be identified and reduced or eliminated. Elements that contribute to an accident-prone situation or environment include the presence of the hazard itself together with the exposed (and possibly susceptible) population. The degree of exposure depends primarily on the location of the hazard to the population. Activities that can be hazardous include transportation, maintenance and repair activities, and the creation of extremely noisy environments. Any facility or human-use area with a potential explosive or other rapid oxidation process creates unsafe environments for nearby populations. Extremely noisy environments can also mask verbal or mechanical warning signals such as sirens, bells, or horns.

EO 13045, Protection of Children from Environmental Health Risks and Safety Risks (April 23, 1997), directs Federal agencies to make it a high priority to identify and assess environmental health risks and safety risks that could disproportionately affect children. Federal agencies must also ensure that their policies, programs, activities, and standards address disproportionate risks to children that result from environmental health or safety risks.

A series of Air Force instructions have been issued relative to safety for USAF personnel. AFI 91-301, Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) Program, implements Air Force Policy Directive 91-3, Occupational Safety and Health. The purpose of the AFOSH Program is to minimize loss of USAF resources and to protect USAF personnel from occupational deaths, injuries, or illnesses by managing risks. In conjunction with the USAF Mishap

Prevention Program (AFI 91-202, which implements AFPD 91-2, Safety Programs), these standards ensure all USAF workplaces meet Federal safety and health requirements. These instructions apply to all USAF activities.

3.8.2 Affected Environment

Contractors working at JB CHS-WS are responsible for following OSHA safety regulations and conducting activities in a manner that does not pose risk to workers. Industrial hygiene programs address exposure to hazardous materials, use of personal protective equipment, and availability of MSDS. Contractor responsibilities are to review potentially hazardous workplace operations; to monitor exposure to workplace chemicals, physical hazards, and biological agents (e.g., infectious waste, wildlife, poisonous plants); to recommend and evaluate controls (e.g., prevention, administrative, engineering) to ensure personnel are properly protected or unexposed; and to ensure a medical surveillance program is in place to perform occupational health physicals for those workers subject to any accidental chemical exposures.

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4. Environmental Consequences

This section presents an analysis of the potential direct and indirect impacts that each alternative would have on the affected environment. Each alternative was evaluated for its potential to affect physical, biological, and socioeconomic resources in accordance with CEQ guidelines at 40 CFR 1508.8.

The following discussion describes how environmental impacts are categorized and described for the resource areas analyzed:

Short-term or long-term. These characteristics are determined on a case-by-case basis and do not refer to any rigid time period. In general, short-term effects are those that would occur only with respect to a particular activity or for a finite period or only during the time required for construction or installation activities. Long-term effects are those that are more likely to be persistent and chronic.

Direct or indirect. A direct effect is caused by and occurs contemporaneously at or near the location of the action. An indirect effect is caused by a proposed action and might occur later in time or be farther removed in distance but still be a reasonably foreseeable outcome of the action. For example, a direct effect of erosion on a stream might include sediment-laden waters in the vicinity of the action, whereas an indirect impact of the same erosion might lead to lack of spawning and result in lowered reproduction rates of indigenous fish downstream.

Negligible, minor, moderate, or major. These relative terms are used to characterize the magnitude or intensity of an impact. Negligible effects are generally those that might be perceptible but are at the lower level of detection. A minor effect is slight, but detectable. A moderate effect is readily apparent. A major effect is one that is severely adverse or exceptionally beneficial.

Adverse or beneficial. An adverse effect is one having adverse, unfavorable, or undesirable outcomes on the man-made or natural environment. A beneficial effect is one having positive outcomes on the man-made or natural environment. A single act might result in adverse effects on one environmental resource and beneficial effects on another resource.

Significance. Significant effects are those that, in their context and due to their intensity (severity), meet the thresholds for significance set forth in CEQ regulations (40 CFR 1508.27).

Context. The context of an effect can be localized or more widespread (e.g., regional).

Intensity. The intensity of an effect is determined through consideration of several factors, including whether an alternative might have an adverse impact on the unique characteristics of an area (e.g., historical resources, ecologically critical areas), public health or safety, or endangered or threatened species or designated critical habitat. Effects are also considered in terms of their potential for violation of Federal, state, or local environmental law; their controversial nature; the degree of uncertainty or unknown effects, or unique or unknown risks; if there are precedent-setting effects; and their cumulative effects (see **Section 5**).

Herbicide application rates would consistently be followed based on USEPA recommendations, MSDS information, and manufacturer labels. If an accidental spill occurs on the installation, the applicator would collect the material and dispose of it in accordance with manufacturer's specifications and the JB CHS-WS SPCC Plan.

4.1 Air Quality

4.1.1 Evaluation Criteria

The environmental consequences on local and regional air quality conditions near a proposed Federal action are determined based on the increases or decreases in regulated air pollutant emissions and existing conditions and ambient air quality. The evaluation criteria are dependent on whether the Proposed Action is located in an attainment, nonattainment, or maintenance area for criteria pollutants. Other evaluation criteria include whether major New Source Review (NSR) air quality construction permitting is triggered or Title V operating permitting is triggered. Major NSR air quality permitting is divided into nonattainment major NSR for nonattainment pollutants and PSD permitting for attainment pollutants. All of these evaluation criteria are discussed in the following paragraphs.

General Conformity. The portion of Berkeley and Charleston counties where JB CHS-WS is located has been designated as unclassified/attainment for all criteria pollutants. Therefore, the General Conformity Rule does not apply to the Proposed Action and a General Conformity determination is not required.

Nonattainment NSR, PSD, and Title V Air Permitting. JB CHS-WS is not located within a nonattainment area for any pollutant; therefore, nonattainment NSR permitting would not apply. Emissions associated with the Proposed Action would not be due to new stationary sources but would stem from intermittent use of aircraft for aerial dispersion. Therefore, the anticipated emissions were not evaluated for PSD and Title V permitting impacts at JB CHS-WS.

Greenhouse Gas Emissions. The Proposed Action would contribute directly to emissions of GHGs from the combustion of fossil fuels. Because CO_2 emissions account for approximately 92 percent of all GHG emissions in the United States, they are used for analyses of GHG emissions in this EA. The U.S. Department of Energy, Energy Information Administration estimates that in 2009 gross CO_2 emissions in the State of South Carolina were 80.9 million metric tons and in 2009 gross CO_2 emissions in the entire United States were 5,425.6 million metric tons (DOE/EIA 2011).

4.1.2 Proposed Action

The Proposed Action would result in short-term, minor, adverse effects on air quality. Primary emissions sources affecting air quality would include engine exhaust from aircraft operations and herbicide spray. It is anticipated that air quality impacts would be minimal as the proposed aerial dispersal of herbicides would not be a continuous source of emissions. In addition, the contractor selected would follow all DOD Instructions and AFIs and all Federal and South Carolina regulations governing the aerial application of herbicides to limit air quality impacts. While the specific aircraft would be determined by the contractor selected, it is anticipated that aircraft exhaust emissions would be minimal due to the limited number flights required to disperse the proposed herbicides.

Herbicides sprayed from aircrafts can remain suspended in the air; as a result, there would be a potential for minor, short-term, adverse impacts away from treatment areas caused by drift. However, best management practices (BMPs) would be used to minimize drift. Examples of BMPs include using drift-control additives that reduce evaporation, sizing nozzles to produce larger droplets (and reduce the time droplets are suspended), and orienting nozzles to reduce drift. In addition, spraying would be conducted when weather conditions are appropriate to minimize drift. The use of BMPs would significantly reduce any potential for indirect air quality effects from aerial spraying of herbicides. Most of the herbicides proposed are not volatile; that is they are unlikely to evaporate and be carried by wind (drift) to unintended locations (see **Table 4-1**).

Table 4-1. Volatility of Proposed Herbicides

Herbicide	Volatility
Habitat®	Imazapyr does not volatilize readily. The potential to volatize increases with increasing temperature, increasing soil moisture, and decreasing clay and organic matter content.
Chopper®	
Arsenal®	
Rodeo®	Glyphosate has a low vapor pressure and does not readily volatilize.
AquaNeat®	
Renovate® 3	Triclopyr salt formulation has a low vapor pressure and does not volatilize readily. Triclopyr ester formulations can be volatile, and care should be taken during application.
Garlon® 3	
Accord®	
Milestone®	Aminopyralid has a low vapor pressure and does not volatilize readily.
Oust XP®	Low vapor pressure and does not volatilize readily.

Sources: TNC 2001, USEPA 1997, Dow 2012, Clemson 2002, CDMS 2012

4.1.3 No Action Alternative

Under the No Action Alternative, JB CHS-WS would not implement the proposed comprehensive management of nonnative invasive and competitive plant species under the Proposed Action. There would be no change from existing conditions at the installation, as described in **Section 3.2.2**. No impacts on the local or regional air quality would be anticipated.

4.2 Noise

4.2.1 Evaluation Criteria

Noise impact analyses typically evaluate potential changes to the existing noise environment that would result from implementation of a proposed action. Potential changes in the acoustical environment can be beneficial (i.e., if they reduce the number of sensitive receptors exposed to unacceptable noise levels or reduce the ambient sound level), negligible (i.e., if the total number of sensitive receptors to unacceptable noise levels is essentially unchanged), or adverse (i.e., if they result in increased sound exposure to unacceptable noise levels or ultimately increase the ambient sound level). Projected noise effects were evaluated qualitatively for the alternatives considered. For this project, noise is considered a nuisance if it exceeds 80 dBA at a property boundary.

4.2.2 Proposed Action

Implementation of the Proposed Action would be expected to result in short-term, minor, adverse effects on the noise environment. The only source of noise associated with the Proposed Action would be that caused by the low-level flying of aircraft during herbicide application. The impact would be minimal due to the short duration of the noise exposure and the operation of the aircraft during normal working hours. Advance notice of the operation would be given to area personnel.

Air traffic is commonplace in the vicinity, as JB CHS-Air and Charleston International Airport are nearby; therefore, a certain degree of acclimation exists among the vicinity's human and faunal

populations. It is not anticipated that the short-term increase in noise levels resulting from the Proposed Action would cause significant adverse effects on the surrounding populations.

Given the proximity to residential areas, short-term, minor, adverse effects from aircraft noise to these areas during working hours could occur. However, it is not expected that the noise would exceed 80 dBA at the installation boundary. The noise levels would be exempt from regulation by both Berkeley and Charleston counties. In Berkeley County, the noise associated with the Proposed Action would be exempt because noises generated by any aircraft or generated in connection with the operation of any airport are exempt (Berkeley County 2005). In Charleston County, the noise associated with the Proposed Action would be exempt because the noise would be created by a government-sponsored event (Charleston County 2011).

4.2.3 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented. There would not be an increase in aircraft operations. Dominant noise sources in the general area consist of military aircraft operations, and railroad and vehicle traffic. The ambient noise environment would not change from existing conditions.

4.3 Geology and Soil Resources

4.3.1 Evaluation Criteria

Protection of unique geological features, minimization of soil erosion, and the siting of facilities in relation to potential geologic hazards are considered when evaluating potential effects of a proposed action on geology and soil resources. Generally, adverse effects can be avoided or minimized if proper erosion-control measures and BMPs are incorporated into project development. A proposed action could have a significant effect with respect to geology and soil resources if any the following were to occur:

- Alteration of the lithology, stratigraphy, and geological structure that control groundwater quality, distribution of aquifers and confining beds, and groundwater availability
- Changes to the soil composition, structure, or function within the environment.

4.3.2 Proposed Action

It is anticipated that short-term, negligible to minor, and long-term, negligible, adverse impacts on soil would occur from the Proposed Action. Short-term, negligible to minor, adverse impacts on soil would occur from chemical applications, as some chemicals adsorb strongly to soil, and soil chemistry could be altered temporarily until the chemicals have adequately degraded from microbial action. Short-term, negligible impacts could occur after weedy vegetation has died but before other vegetation has become established, causing soil to be more susceptible to erosion and sedimentation before vegetation is reestablished. Long-term, beneficial impacts on soil productivity could occur in areas where herbicides are broken down by microbial action, thereby providing additional nutrient sources to the microbial soil food web.

Short-term, negligible, adverse impacts on soil would occur from soil-disturbing activities associated with planting seedlings. Soil would be temporarily displaced during planting activities and excess soil would be removed, which would result in a disturbance to and modification of soil structure.

Long-term, negligible, indirect impacts would be expected from compaction of soils under the weight of vehicles and other equipment during vegetation-removal activities (e.g., clearing drainage ditches). Compaction of soils would result in a disturbance to and modification of soil structure. Soil productivity, which is the capacity of the soil to produce vegetative biomass, would decline in disturbed areas. Loss of soil structure due to compaction from foot and vehicle traffic could result in changes in drainage patterns. However, a variety of management techniques would be used under the Proposed Action, and many of the areas where vehicles would be used are previously disturbed. Additionally, impacts would only occur during application a few times a year over a brief period of time. Therefore, negligible impacts would occur under the Proposed Action due to soil compaction or changes in drainage patterns.

Although several soils mapped on the installation are considered to be prime farmland soils, implementation of the Proposed Action would not be expected to preclude these soils from current or future agricultural production. No farmland soils would be removed or converted as a result of the Proposed Action. Therefore, no impacts would be anticipated on prime farmland soils.

BMPs and the implementation of erosion-and-sediment-control plans would reduce the impact of the Proposed Action on geology and soil resources.

Herbicide Application in Freshwater Impoundments and Spoil Areas. Under the Proposed Action, impacts on soils from herbicide application in freshwater impoundments and spoil areas would be short-term, negligible to minor, and adverse because some chemicals adsorb strongly to soil, so the soil chemistry would be altered temporarily until the chemicals have adequately degraded from microbial action. No difference in impacts on soils would be expected. Imazapyr has a soil half-life ranging from 26 to 143 days depending on soil types and undergoes microbial degradation in aerobic conditions, becoming mineralized. Imazapyr can be highly mobile in soils and has the potential to leach into groundwater.

Triclopyr has a soil half-life between 1 and 90 days. Triclopyr has the potential to leach through soils and contaminate groundwater. Glyphosate can enter surface water through direct application to aquatic vegetation, binding to soil that washes off treated terrestrial sites, or through drift from treated areas near water. Glyphosate strongly absorbs to soils, with a soil half-life between 2 and 174 days, and would not be expected to pose any risk to groundwater.

Herbicide Application in Forested Areas. Under the Proposed Action, impacts on soils from herbicide application in forested areas would generally be short-term, negligible to minor, and adverse because these chemicals could bind to soil, altering its composition. Soil half-lives for aminopyralids vary from 32 to 533 days based on soil type (USEPA risk assessment half-life of 104 days). Aminopyralids are likely nonpersistent and immobile in the field and would not leach into soils beyond 12 inches deep (USEPA 2012c). Sulfometuron-methyl has a relatively short half-life in soils, ranging from 20 to 28 days and is broken down by microbes and chemical reactions in water and sunlight. Due to its rapid degradation, sulfometuron-methyl would not be expected to leach through soils into groundwater. No long-term impacts would be expected from using these chemicals.

4.3.3 No Action Alternative

Under the No Action Alternative, there would be no change from existing conditions at the installation, as described in **Section 3.4.2**. No impacts on geology or soil resources would be anticipated.

4.4 Water Resources

4.4.1 Evaluation Criteria

Evaluation criteria for effects on water resources are based on water availability, quality, and use; existence of floodplains; and associated regulations. A proposed action would have significant effects on water resources if it were to do one or more of the following:

- Substantially reduce water availability or supply to existing users
- Overdraft groundwater basins
- Exceed safe annual yield of water supply sources
- Substantially adversely affect water quality
- Endanger public health by creating or worsening health hazard conditions
- Threaten or damage unique hydrologic characteristics
- Violate established laws or regulations adopted to protect water resources.

4.4.2 Proposed Action

The application of herbicides under the Proposed Action has the potential to result in short-term, negligible to moderate, direct, adverse effects on groundwater if spills were to occur. Groundwater aquifers underneath JB CHS-WS could connect to aquifers used for potable water. However, because there are no potable water wells on the installation, no herbicides would be applied near drinking water sources, and no impact on drinking water would be anticipated. Herbicide application would occur only at designated areas on the installation using BMPs to lower the potential for runoff of herbicide residue into surface water bodies. No mixing or loading of herbicides would occur within the installation boundaries. Application methods, weather conditions, and timing are other important criteria to consider for reduction of water contamination. Impacts on wetland hydrology, floodplains, or coastal resources would generally not be expected to occur from the proposed herbicide application because the herbicides used would generally rapidly degrade in surface water.

Herbicide Application in Freshwater Impoundments and Spoil Areas. Short-term, minor, direct, adverse impacts would be expected from the use of aquatic herbicides due to a decrease in dissolved oxygen as deceased plants decomposed. Once decomposition was complete, oxygen levels would be expected to return to normal levels. No long-term adverse effects on wetlands would be expected from implementation of the Proposed Action. Wetland nutrient cycles could be altered during herbicide application; however, nutrient levels would be expected to return to normal cycles once application was complete.

Imazapyr applied on land could have a high potential to leach into groundwater, but contamination would not be a concern due to its rapid degradation in water and low toxicity. The majority of imazapyr applied in aquatic systems would not dissipate into the sediment. Imazapyr has a half-life in water of approximately 2 to 15 days. Degradation in water primarily occurs through photolysis, which could be slowed in deep and murky waters. Regardless, no significant bioaccumulation would be expected from the use of imazapyr.

Triclopyr has a half-life in water ranging from 1 to 10 days and breaks down through photolysis. Triclopyr does have the potential to move through soil and contaminate groundwater; however, bioaccumulation and toxicity are low. Glyphosate is strongly adsorbed onto soil particles, with low potential to move through soil to contaminate groundwater. When glyphosate applications come in contact with surface water, glyphosate is removed by binding to sediment and is then degraded by

microbes into natural substances such as carbon dioxide, with a half-life of less than 7 days. These natural substances are not anticipated to be in large enough quantities to result in negative impacts on water quality.

Herbicide Application in Forested Areas. Short-term, negligible to moderate, adverse impacts on water resources would be expected from the use of herbicides in forested areas on the installation. Contamination of groundwater would not be expected from aminopyralids used on the installation. Aminopyralids are relatively immobile on soils and leaching below 12 inches would be unlikely. Aminopyralids also rapidly degenerate in water through photolysis with a half-life of less than one day; however, in aerobic sediment-water systems, half-lives could be much higher, generally between 460 and 990 days. Sulfometuron-methyl is moderately mobile in the environment, but rapidly degrades, with a half-life in water of 14 to 60 days; therefore, it would not likely contaminate water resources on the installation.

4.4.3 No Action Alternative

Under the No Action Alternative, long-term, minor, direct, adverse impacts on water resources would be expected because herbicide applications would not be conducted to control invasive plant species. The invasive species currently found in wetlands and impoundments would continue to grow unimpeded, causing waterways and ditches to become clogged with vegetation, which could alter and degrade stream flow, sedimentation, and water quality in installation wetlands, impoundments, and adjacent waterways.

4.5 Biological Resources

4.5.1 Evaluation Criteria

The significance of effects on biological resources is based on (1) the importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource, (2) the proportion of the resource that would be affected relative to its occurrence in the region, (3) the sensitivity of the resource to proposed activities, and (4) the duration of ecological effects. A habitat perspective is used to provide a framework for analysis of general classes of effects (e.g., noise, human disturbance).

Herbicide application activities could directly or indirectly cause potential impacts on biological resources. Direct impacts were evaluated by identifying the types and locations of potential ground-disturbing activities in correlation to important biological resources. Indirect impacts were evaluated by identifying potential habitat damage or degradation of habitats which could be associated with herbicide application.

4.5.2 Proposed Action

The Proposed Action would have a long-term, direct, adverse impact on target vegetation (weedy species, grasses or competing tree species growing in undesired locations) by killing or slowing the growth of the target species. Some herbicides would have short-term, negligible to minor, adverse impacts on non-target plant species; however, all relevant Federal and state guidelines and label instructions would be followed to minimize impacts on non-target species. There would be long-term, indirect, minor, beneficial effects on non-target vegetation (e.g., increasing desired grasses within the improved grounds during broadleaf control) by allowing them to compete better with the target species. As a result, native vegetation, including aquatic plant communities and valuable longleaf pine stands, would be maintained and, in some cases, increased due to the removal of invasive plant species.

Spray drift from herbicide application could impact biological resources; however, potential impacts on non-target species from spray drift would be minimized through the use of BMPs. Herbicide application would not occur when conditions could increase the likelihood of spray drift (e.g., high or gusty winds, high temperatures, low humidity, or temperature inversions) and droplet size would also be controlled per specimen label instructions to minimize drift.

Impacts on wildlife would be short-term, negligible to minor, direct, and adverse. Noise from the application of herbicides via helicopter operations could cause wildlife to engage in escape or avoidance behaviors, resulting in short-term, minor, adverse effects. Most wildlife species on the installation would be expected to recover quickly once these activities have ceased and after the applications are complete. Oxygen depletion in aquatic ecosystems could occur temporarily as decaying plant material is being metabolized. Aquatic organisms would be expected to avoid low-oxygen areas and return to the area once oxygen levels have stabilized. A reduction in vegetation could also alter habitat availability and temporarily reduce food sources. A variety of bird and fish species use habitat created by invasive plant species for foraging, protection from predators, and as nesting sites. The abundance of this habitat would be decreased under the Proposed Action; however, any potential benefit given by invasive plant species would be mitigated by the revegetation of natural habitat and the return of organisms associated with the natural habitat (e.g., waterfowl).

Short-term, negligible, adverse impacts on sensitive and protected species would be expected from the Proposed Action. No threatened or endangered species are known to occur on the project areas under the Proposed Action; however, the potential exists for those species to be present. Impacts on sensitive and protected species would be expected to be similar to those described for wildlife. To minimize impacts on sensitive and protected species, care would be taken to minimize drift and avoid spills during herbicide application. If sensitive and protected species are identified within the project area, applications would be reduced to minimize potential impacts on these species.

Herbicide Application in Freshwater Impoundments and Spoil Areas. Short-term, direct, negligible to minor, adverse effects on biological resources would be expected under the Proposed Action. Since the majority of the herbicides used in aquatic environments on JB CHS-WS bind to the soil until they are degraded, the likelihood that they would harm nearby plants is negligible. Imazapyr is a non-selective plant killer; however, it does not impact completely submerged vegetation or vegetation that has the majority of its foliage underwater. Shore plants with roots extending into aquatic environments would not be impacted by application of imazapyr. Bioaccumulation in aquatic organisms from imazapyr would be low; therefore, based on USEPA guidelines, the potential for exposure to aquatic organisms is considered insignificant.

Triclopyr does not bind to soil as readily as the other herbicides, but it is a selective herbicide used to control *Phragmites* and would not likely impact non-target plant species. Triclopyr is slightly toxic to mammals and practically nontoxic to bird species. Toxicity in aquatic organisms varies widely from practically nontoxic to highly toxic based on the chemical form of the triclopyr. The installation would use triclopyr in its amine salt formulation (as in Renovate® 3) to avoid significant impacts on these organisms. Glyphosate could cause damage to non-target plants and is currently being evaluated by the USEPA to determine the extent of these effects. Any additional risk reduction methods proposed by the USEPA would be implemented under the Proposed Action, as applicable. Glyphosate is slightly toxic to birds and practically nontoxic to fish, aquatic invertebrates, and honeybees. Sensitive and protected animal species would not be expected to be impacted from the use of glyphosates; however, sensitive plant species could be at risk.

Herbicide Application in Forested Areas. Aminopyralids are only slightly toxic to algae, aquatic vascular plants, and eastern oysters (*Crassostrea virginica*). Bioaccumulation would not be expected

from aminopyralids and no acute or chronic risks to non-target sensitive or protected species would occur. Sulfometuron-methyl is non-selective and could damage non-target plants on land or water. Care would be taken, particularly around aquatic environments, to follow label instructions and minimize risks to non-target plant species. While sulfometuron-methyl would not bioaccumulate in wildlife, it is slightly toxic to fish, especially fish embryos. Impacts on fish embryos would be limited, given the relatively rapid degradation of the herbicide. Impacts would be further reduced by applying the herbicide at lower label rates and carefully avoiding contact with aquatic environments.

4.5.3 No Action Alternative

Under the No Action Alternative, long-term, direct, negligible to minor, beneficial and adverse impacts on biological resources would be expected. Long-term, minor, adverse impacts on the native plant community would occur. Herbicides would not be applied to control invasive species, and native vegetation would continue to decline. Longleaf pine stands would continue to be outcompeted at the grass stage, which would eventually result in a reduction of these forests. Long-term, negligible, beneficial impacts on migratory bird species and various fish species would be expected. A variety of bird and fish species use habitat created by invasive plant species for foraging, protection from predators, and as nesting sites. The abundance of this habitat would be increased under the No Action Alternative; however, any potential benefit given by invasive plant species would be mitigated by the revegetation of natural habitat and the return of organisms associated with the natural habitat (e.g., waterfowl). Additionally, long-term, minor, adverse impacts would be expected because of the reduction of native plant species over time, the clogging of waterways due to aquatic plant growth, and the unregulated growth by invasive species.

4.6 Hazardous Materials and Waste

4.6.1 Evaluation Criteria

Impacts on hazardous materials or hazardous waste would be considered significant if a proposed action resulted in noncompliance with applicable Federal or state regulations, or increased the amounts generated or procured beyond current JB CHS-WS waste management procedures and capacities. Impacts on the ERP would be considered significant if a proposed action disturbed or created contaminated sites resulting in negative effects on human health or the environment, or if a proposed action made it more difficult or costly to remediate existing contaminated sites.

4.6.2 Proposed Action

Implementation of the Proposed Action would result in negligible short- and long-term impacts on hazardous materials and waste. Cleanup after herbicide application would involve rinsing tools and equipment and rinsing and disposing of empty herbicide containers. Tools, vehicles, and equipment would be cleaned using detergent and the appropriate decontamination solution, as specified by state and USEPA standards. Rinsate would be added to the spray mix or disposed of on the application site at a rate that does not exceed amounts addressed on the label. Empty and rinsed herbicide containers would be punctured and disposed of in accordance with all Federal and South Carolina pesticide and hazardous material laws. Any containers disposed of at the installation would be disposed of in accordance with JB CHS-WS's *Hazardous Waste Management Plan* and covered under JB CHS-WS existing hazardous waste permit (#SC8 170 022 620), issued by SCDHEC.

Personnel would take precautions to protect the environment during mixing, loading, application, and disposal of herbicides to minimize any adverse impacts on safety. All mixing and loading would be

performed off JB CHS-WS by trained and certified personnel. A spill kit capable of containing and preventing release of this chemical would be available during mixing and loading operations. If a spill were to occur at JB CHS-WS during application, cleanup would occur according to the MSDS sheets and the installation's SPCC plan. No impacts on aboveground or underground storage tanks would occur from implementation of the Proposed Action.

Additionally, no impacts are anticipated to occur to the existing SWMUs and AOCs at JB CHS-WS, due to the nature and location of these sites. The application of herbicides is not anticipated to have an impact on unexploded ordinances.

4.6.3 No Action Alternative

Under the No Action Alternative, the USAF would not implement the Proposed Action. No new hazardous materials would be utilized, stored, or disposed of at the installation. The existing conditions, as described in **Section 3.7.2**, would remain the same. Therefore, no impacts on hazardous materials and waste would be expected from implementation of the No Action Alternative.

4.7 Safety

4.7.1 Evaluation Criteria

Any increase in health and safety risks would be considered an adverse impact on safety. An impact would be considered significant if the Proposed Action or alternatives to the Proposed Action would result in the following:

- Substantially increase risks associated with the safety of construction personnel, contractors, or the local community
- Substantially hinder the ability to respond to an emergency
- Introduce a new health or safety risk for which the installation is not prepared or does not have adequate management and response plans in place.

4.7.2 Proposed Action

By implementing all applicable safety precaution measures and BMPs, the impacts of the Proposed Action on safety would be negligible in both the short and long term. The commercial herbicide contractor(s) for the impoundments, spoil areas and the forested areas, would be responsible for following air and ground safety, USEPA and OSHA regulations, and MSDS recommendations. The contractor would be required to conduct work activities in a manner that does not pose any risk to workers or personnel. Proper coordination with air traffic control personnel would also be prearranged to ensure flight safety. The contractor would ensure that following forms are on hand with the Installation Pest Management Coordinator: DD Form 2400, *Civil Aircraft Certificate of Insurance*; DD Form 2401, *Civil Aircraft Landing Permit*; and DD Form 2402, *Civil Aircraft Hold Harmless Agreement* (USAF 2011).

Personal protective equipment (e.g., coverall, waterproof gloves, shoes, and socks) would be worn as stated on the MSDS. Contact with skin or eyes, or breathing spray mist, would be avoided. Personnel would take precautions to protect the environment during mixing, loading, application, and disposal of herbicides to minimize any adverse impacts on safety. A spill kit capable of containing and preventing release of this chemical would be available during mixing and loading operations.

All aerial herbicide applicators would be certified in USEPA Category 11 through the State of South Carolina. As per DOD Instruction 4150.07, *DOD Pest Management Program*, USEPA Category 11 includes individuals who have completed a training program and passed a written examination that covers the following areas: general principles, meteorological aspects, legal aspects, environmental aspects, DOD spray systems and aircraft, aerial spray math, aerial spray maps, contingency operations, spray system calibration, swath characterization, pesticides and pesticide safety, and aerial spray in the military. The contract would be approved by the Air Mobility Command (AMC) Command Entomologist, and would follow all applicable DOD Instructions, AFIs, and Federal and state regulations governing the aerial application of herbicides (USAF 2011).

Specific information during the herbicide application would be recorded and forwarded to 628 CES/CEOIE within 1 week of each application. Records would include date of application, acres treated, target vegetation, application method, name of applicator, South Carolina certification number, herbicide name (trade and active ingredient), percent concentration, total volume applied, wind speed, and direction (USAF 2011).

The quantities of herbicides proposed for application at JB CHS-WS via aerial dispersal are not considered to present a threat to human health at ground-level when applied at label recommended rates. Personnel in the areas proposed for herbicide application would be notified ahead of time and asked to avoid the areas during applications.

Herbicide application would not occur when conditions could increase the likelihood of spray drift (e.g., high or gusty winds, high temperatures, low humidity, or temperature inversions) and droplet size would also be controlled per specimen label instructions to minimize drift.

Flying activities would be coordinated with FAA and installation air controllers; consequently, their activities would be de-conflicted from other flying activities. Radio and electronic emissions from the aircraft would not impact operations on the installation.

4.7.3 No Action Alternative

Under the No Action Alternative, there would be no comprehensive management of nonnative invasive and competitive plant species at JB CHS-WS. Invasive plants would be predicted to spread in freshwater impoundments and spoil areas. Ubiquitous weed growth in impoundments and spoil areas on the installation may cause safety issues in areas where plant growth inhibits water flow through drainages, where growth attracts flocking birds, and where growth creates “base safety” concerns along shorelines. Therefore, negligible to minor, long-term, adverse impacts on safety would be expected from implementation of the No Action Alternative.

4.8 Cumulative Impacts

4.8.1 Definition of Cumulative Impacts

CEQ regulations stipulate that the cumulative effects analysis in an EA should consider the potential environmental effects resulting from “the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions” (40 CFR 1508.7). CEQ guidance in considering cumulative effects affirms this requirement, stating that the first steps in assessing cumulative effects involve defining the scope of the other actions and their interrelationship with a proposed action. The scope must consider other projects that coincide with the location and timetable of a proposed action and other actions. Cumulative effects analyses must also evaluate the nature of interactions among these actions.

To identify cumulative effects, the analysis needs to address two fundamental questions:

1. Does a relationship exist such that affected resource areas of the Proposed Action or alternatives might interact with the affected resource areas of past, present, or reasonably foreseeable actions?
2. If such a relationship exists, then does an EA or EIS reveal any potentially significant effects not identified when the Proposed Action is considered alone?

The scope of the cumulative effects analysis involves both timeframe and geographic extent in which effects could be expected to occur, and a description of what resources could be cumulatively affected. The geographic scope of analysis for cumulative effects varies by resource area. All planned and reasonably foreseeable future projects on JB CHS-WS were initially considered for potential cumulative effects, and projects that could have additive environmental effects on those identified associated with the Proposed Acton.

4.8.2 Projects Considered with Potential Cumulative Impacts

Surface vegetation is cut and removed by mechanical grinder at Big David Pond, Little David Pond, Brown's Pond, and Matthew's Pond by the USACE to preserve recreational interests in the pond. This began in the winter of 2009, occurred again in spring of 2010, and will be ongoing into the future.

Pier Charlie, which is located near the Pier Charlie Dredge Soil site, has been partially demolished. Full demolition of the pier is scheduled to occur in the future.

Prescribed burning occurs on approximately 4,000 acres on JB CHS-WS property each year as a hazard- and fuel-reduction measure. Each area is burned once every 3 years during the mid-November and mid-May timeframes. The primary reason for this prescribed burning is to control the sweet gum (*Liquidambar styraciflua*) population.

The NPTU may continue to be developed between 2013 and 2020, which would involve an increase in student staff and new nuclear training buildings.

Chinese tallow tree (*Triadica sebifera)* and kudzu (*Pueraria montana*) are currently managed on JB CHS-WS through chemical treatments of herbicide and granular soil sterilizer placed around gates and poles.

JB CHS-WS, like most other major DOD installations, experiences occasional new construction, facility improvements, and infrastructure upgrades. Some of these activities include the planned construction of warehouses by the U.S. Army for storage of 4,500 vehicles currently deployed overseas, construction of a new service station and the demolition of the existing service station, and other small construction and demolition jobs around the JB CHS-WS property. Shipping volumes to and from JB CHS-WS are also anticipated to increase in the future.

4.8.3 Cumulative Impacts Analysis

The following analysis examines how the impacts of other actions might be affected by the Proposed Action and whether such a relationship would result in potentially significant impacts not identified when the Proposed Action is considered alone. Based on the findings of this EA, implementation of the Proposed Action would not result in significant direct or indirect impacts on any environmental, physical, cultural, or socioeconomic resource. The use of BMPs and protective measures during project implementation minimizes the potential of the Proposed Action combined with the projects identified in **Section 4.8.2** to impact the environment in a cumulatively significant way.

The annual timing of the Proposed Action would need to be coordinated in association with the mechanical treatment of surface vegetation in the previously mentioned ponds and any further demolition of Pier Charlie. If the Proposed Action were to occur at the same time as either of these actions, the safety of the individuals on the ground at each site could be a concern. Proper buffer requirements outlined on the herbicide labels must be followed to ensure safe working conditions.

The annual timing of the Proposed Action would also need to be coordinated with the annual prescribed burning occurring at JB CHS-WS. Otherwise, lack of visibility for the helicopter pilot may cause a flight safety concern. Also, the altered air composition during burning could impact the effectiveness of the aerial application of the herbicides.

No other projects, either ongoing or in planning, have been identified that would pose cumulative impact concerns. Potential cumulative impacts on regional air quality would be short-term and insignificant. Given the limited scope of the project and that all label requirements of the herbicides would be followed, no cumulative impacts on aquatic species or surface water or groundwater quality would be anticipated.

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APPENDIX A

APPLICABLE LAWS, REGULATIONS, POLICIES, AND PLANNING CRITERIA

Appendix A
Applicable Laws, Regulations, Policies, and Planning Criteria

When considering the affected environment, the various physical, biological, economic, and social environmental factors must be considered. In addition to the National Environmental Policy Act (NEPA), there are other environmental laws as well as Executive Orders (EOs) to be considered when preparing environmental analyses. These laws are summarized below.

NOTE: This is not a complete list of all applicable laws, regulations, policies, and planning criteria potentially applicable to documents; however, it does provide a general summary for use as a reference.

Noise

Federal and local governments have established noise guidelines and regulations for the purpose of protecting citizens from potential hearing damage and from various other adverse physiological, psychological, and social effects associated with noise. The U.S. Department of Housing and Urban Development (HUD), in coordination with the Department of Defense (DOD) and the FAA, has established criteria for acceptable noise levels for aircraft operations relative to various types of land use.

The USAF's Air Installation Compatible Use Zone (AICUZ) Program, (AFI 32-7063), provides guidance to air bases and local communities in planning land uses compatible with airfield operations. The AICUZ program describes existing aircraft noise and flight safety zones on and near USAF installations.

Land Use

The term "land use" refers to real property classifications that indicate either natural conditions or the types of human activities occurring on a defined parcel of land. In many cases, land use descriptions are codified in local zoning laws. However, there is no nationally recognized convention or uniform terminology for describing land use categories.

Land use planning in the USAF is guided by *Land Use Planning Bulletin, Base Comprehensive Planning* (HQ USAF/LEEVX, August 1, 1986). This document provides for the use of 12 basic land use types found on a USAF installation. In addition, land use guidelines established by the HUD and based on findings of the Federal Interagency Committee on Noise (FICON) are used to recommend acceptable levels of noise exposure for land use.

Air Quality

The Clean Air Act (CAA) of 1970, and Amendments of 1977 and 1990, recognizes that increases in air pollution result in danger to public health and welfare. To protect and enhance the quality of the Nation's air resources, the CAA authorizes the U.S. Environmental Protection Agency (USEPA) to set six National Ambient Air Quality Standards (NAAQSs) which regulate carbon monoxide, lead, nitrogen dioxide, ozone, sulfur dioxide, and particulate matter pollution emissions. The CAA seeks to reduce or eliminate the creation of pollutants at their source and designates this responsibility to state and local governments. States are directed to utilize financial and technical assistance as well as leadership from the Federal government to develop implementation plans to achieve NAAQS. Geographic areas are officially designated by the USEPA as being in attainment or nonattainment to pollutants in relation to their compliance with NAAQS. Geographic regions established for air quality planning purposes are designated as Air Quality Control Regions (AQCR). Pollutant concentration levels are measured at

designated monitoring stations within the AQCR. An area with insufficient monitoring data is designated as unclassifiable. Section 309 of the CAA authorizes USEPA to review and comment on impact statements prepared by other agencies.

An agency should consider what effect an action might have on NAAQS due to short-term increases in air pollution during construction as well as long-term increases resulting from changes in traffic patterns. For actions in attainment areas, a Federal agency could also be subject to USEPA's Prevention of Significant Deterioration (PSD) regulations. These regulations apply to new major stationary sources and modifications to such sources. Although few agency facilities will actually emit pollutants, increases in pollution can result from a change in traffic patterns or volume. Section 118 of the CAA waives Federal immunity from complying with the CAA and states all Federal agencies will comply with all Federal- and state-approved requirements.

The General Conformity Rule requires that any Federal action meet the requirements of a SIP or Federal Implementation Plan. More specifically, CAA conformity is ensured when a Federal action does not cause a new violation of the NAAQS, contribute to an increase in the frequency or severity of violations of NAAQS, or delay the timely attainment of any NAAQS, interim progress milestones, or other milestones toward achieving compliance with the NAAQS.

The General Conformity Rule applies to Federal actions in nonattainment or maintenance areas. The rule applies only to actions where the total direct and indirect emissions from the action meet or exceed the *de minimis* thresholds presented in 40 CFR 93.153. If total emissions do not meet or exceed the *de minimis* thresholds, then a full Conformity Determination would not be required.

EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance* (October 5, 2009) established an integrated strategy towards sustainability in Federal Government and to make reduction of greenhouse gas emissions a priority for the Federal agencies. Federal agencies are required to increase energy efficiency; measure, report, and reduce their greenhouse gas emissions; conserve and protect water resources through efficiency, reuse, and storm water management; and eliminate waste, recycle, and prevent pollution. This EO requires all Federal agencies to establish and report a percentage reduction target for agency wide reductions of scope 1 to 3 greenhouse gas emissions by fiscal year 2020, using fiscal year 2008 as the baseline year. Each agency shall consider reductions associated with reducing energy intensity in agency buildings; increasing agency use of renewable energy and implementing renewable energy generation projects on agency property; and reducing the use of fossil fuels by using low greenhouse gas emitting vehicles including alternative fuel vehicles; optimizing the number of vehicles in the agency fleet; and reducing, if the agency operates a fleet of at least 20 motor vehicles, the agency fleet's total consumption of petroleum products by a minimum of 2 percent annually through the end of fiscal year 2020, relative to a baseline of fiscal year 2005.

Water Resources

The Clean Water Act (CWA) of 1977 is an amendment to the Federal Water Pollution Control Act of 1972, is administered by USEPA, and sets the basic structure for regulating discharges of pollutants into U.S. waters. The CWA requires USEPA to establish water quality standards for specified contaminants in surface waters and forbids the discharge of pollutants from a point source into navigable waters without a National Pollutant Discharge Elimination System (NPDES) permit. NPDES permits are issued by USEPA or the appropriate state if it has assumed responsibility. Section 404 of the CWA establishes a Federal program to regulate the discharge of dredge and fill material into waters of the United States. Section 404 permits are issued by the U.S. Army Corps of Engineers (USACE). Waters of the United States include interstate and intrastate lakes, rivers, streams, and wetlands that are used for commerce, recreation, industry, sources of fish, and other purposes. The objective of the CWA is to restore and

maintain the chemical, physical, and biological integrity of the Nation's waters. Each agency should consider the impact on water quality from actions such as the discharge of dredge or fill material into U.S. waters from construction, or the discharge of pollutants as a result of facility occupation.

Section 303(d) of the CWA requires states and USEPA to identify waters not meeting state water quality standards and to develop Total Maximum Daily Loads (TMDLs). A TMDL is the maximum amount of a pollutant that a waterbody can receive and still be in compliance with state water quality standards. After determining TMDLs for impaired waters, states are required to identify all point and nonpoint sources of pollution in a watershed that are contributing to the impairment and to develop an implementation plan that will allocate reductions to each source to meet the state standards. The TMDL program is currently the Nation's most comprehensive attempt to restore and improve water quality. The TMDL program does not explicitly require the protection of riparian areas. However, implementation of the TMDL plans typically calls for restoration of riparian areas as one of the required management measures for achieving reductions in nonpoint source pollutant loadings.

The USEPA issued a Final Rule for the CWA concerning technology-based Effluent Limitations Guidelines and New Source Performance Standards for the Construction and Development point source category. All NPDES storm water permits issued by the USEPA or states must incorporate requirements established in the Final Rule. As of February 1, 2010, all new construction sites are required to meet the non-numeric effluent limitations and design, install, and maintain effective erosion and sedimentation controls. In addition, construction site owners and operators that disturb 1 or more acres of land are required to use best management practices (BMPs) to ensure that soil disturbed during construction activities does not pollute nearby water bodies. Effective August 1, 2011, construction activities disturbing 20 or more acres must comply with the numeric effluent limitation for turbidity in addition to the non-numeric effluent limitations. The maximum daily turbidity limitation is 280 nephelometric turbidity units (ntu). On February 2, 2014, construction site owners and operators that disturb 10 or more acres of land are required to monitor discharges to ensure compliance with effluent limitations as specified by the permitting authority. Construction site owners are encouraged to phase ground-disturbing activities to limit the applicability of the monitoring requirements and the turbidity limitation. The USEPA's limitations are based on its assessment of what specific technologies can reliably achieve. Permittees can select management practices or technologies that are best suited for site-specific conditions.

The Coastal Zone Management Act (CZMA) of 1972 declares a national policy to preserve, protect, and develop, and, where possible, restore or enhance the resources of the Nation's coastal zone. The coastal zone refers to the coastal waters and the adjacent shorelines, including islands, transitional and intertidal areas, salt marshes, wetlands, and beaches, and includes the Great Lakes. The CZMA encourages states to exercise their full authority over the coastal zone through the development of land and water use programs in cooperation with Federal and local governments. States may apply for grants to help develop and implement management programs to achieve wise use of the land and water resources of the coastal zone. Development projects affecting land or water use or natural resources of a coastal zone must ensure the project is, to the maximum extent practicable, consistent with the state's coastal zone management program.

The Safe Drinking Water Act (SDWA) of 1974 establishes a Federal program to monitor and increase the safety of all commercially and publicly supplied drinking water. Congress amended the SDWA in 1986, mandating dramatic changes in nationwide safeguards for drinking water and establishing new Federal enforcement responsibility on the part of USEPA. The 1986 amendments to the SDWA require USEPA to establish Maximum Contaminant Levels (MCLs), Maximum Contaminant Level Goals (MCLGs), and Best Available Technology (BAT) treatment techniques for organic, inorganic, radioactive, and microbial contaminants; and turbidity. MCLGs are maximum concentrations below which no negative human

health effects are known to exist. The 1996 amendments set current Federal MCLs, MCLGs, and BATs for organic, inorganic, microbiological, and radiological contaminants in public drinking water supplies.

The Wild and Scenic Rivers Act of 1968 provides for a wild and scenic river system by recognizing the remarkable values of specific rivers of the Nation. These selected rivers and their immediate environment are preserved in a free-flowing condition, without dams or other construction. The policy not only protects the water quality of the selected rivers but also provides for the enjoyment of present and future generations. Any river in a free-flowing condition is eligible for inclusion, and can be authorized as such by an Act of Congress, an act of state legislature, or by the Secretary of the Interior upon the recommendation of the governor of the state(s) through which the river flows.

EO 11988, *Floodplain Management* (May 24, 1977), directs agencies to consider alternatives to avoid adverse effects and incompatible development in floodplains. An agency may locate a facility in a floodplain if the head of the agency finds there is no practicable alternative. If it is found there is no practicable alternative, the agency must minimize potential harm to the floodplain, and circulate a notice explaining why the action is to be located in the floodplain prior to taking action. Finally, new construction in a floodplain must apply accepted floodproofing and flood protection to include elevating structures above the base flood level rather than filling in land.

EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance* (October 5, 2009), directed the USEPA to issue guidance on Section 438 of the EISA. The EISA establishes into law new storm water design requirements for Federal construction projects that disturb a footprint of greater than 5,000 square feet of land. Under these requirements, predevelopment site hydrology must be maintained or restored to the maximum extent technically feasible with respect to temperature, rate, volume, and duration of flow. Predevelopment hydrology would be calculated and site design would incorporate storm water retention and reuse technologies to the maximum extent technically feasible. Post-construction analyses will be conducted to evaluate the effectiveness of the as-built storm water reduction features. These regulations are applicable to DOD Unified Facilities Criteria. Additional guidance is provided in the USEPA's *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act*.

Biological Resources

The Endangered Species Act (ESA) of 1973 establishes a Federal program to conserve, protect, and restore threatened and endangered plants and animals and their habitats. The ESA specifically charges Federal agencies with the responsibility of using their authority to conserve threatened and endangered species. All Federal agencies must ensure any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of an endangered or threatened species or result in the destruction of critical habitat for these species, unless the agency has been granted an exemption. The Secretary of the Interior, using the best available scientific data, determines which species are officially endangered or threatened, and the U.S. Fish and Wildlife Service (USFWS) maintains the list. A list of Federal endangered species can be obtained from the Endangered Species Division, USFWS (703-358-2171). States might also have their own lists of threatened and endangered species which can be obtained by calling the appropriate State Fish and Wildlife office. Some species also have laws specifically for their protection (e.g., Bald Eagle Protection Act).

The Migratory Bird Treaty Act (MBTA) of 1918, as amended, implements treaties and conventions between the United States, Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Unless otherwise permitted by regulations, the MBTA makes it unlawful to pursue, hunt, take, capture, or kill; attempt to take, capture, or kill; possess; offer to or sell, barter, purchase, or deliver; or cause to be shipped, exported, imported, transported, carried, or received any migratory bird,

part, nest, egg, or product, manufactured or not. The MBTA also makes it unlawful to ship, transport, or carry from one state, territory, or district to another; or through a foreign country, any bird, part, nest, or egg that was captured, killed, taken, shipped, transported, or carried contrary to the laws from where it was obtained; and import from Canada any bird, part, nest, or egg obtained contrary to the laws of the province from which it was obtained. The U.S. Department of the Interior has authority to arrest, with or without a warrant, a person violating the MBTA.

EO 11514, *Protection and Enhancement of Environmental Quality* (March 5, 1970), states that the President, with assistance from the Council on Environmental Quality (CEQ), will lead a national effort to provide leadership in protecting and enhancing the environment for the purpose of sustaining and enriching human life. Federal agencies are directed to meet national environmental goals through their policies, programs, and plans. Agencies should also continually monitor and evaluate their activities to protect and enhance the quality of the environment. Consistent with NEPA, agencies are directed to share information about existing or potential environmental problems with all interested parties, including the public, in order to obtain their views.

EO 11990, *Protection of Wetlands* (May 24, 1977), directs agencies to consider alternatives to avoid adverse effects and incompatible development in wetlands. Federal agencies are to avoid new construction in wetlands, unless the agency finds there is no practicable alternative to construction in the wetland, and the proposed construction incorporates all possible measures to limit harm to the wetland. Agencies should use economic and environmental data, agency mission statements, and any other pertinent information when deciding whether or not to build in wetlands. EO 11990 directs each agency to provide for early public review of plans for construction in wetlands.

EO 13186, *Conservation of Migratory Birds* (January 10, 2001), creates a more comprehensive strategy for the conservation of migratory birds by the Federal government. EO 13186 provides a specific framework for the Federal government's compliance with its treaty obligations to Canada, Mexico, Russia, and Japan. EO 13186 provides broad guidelines on conservation responsibilities and requires the development of more detailed guidance in a Memorandum of Understanding (MOU). EO 13186 will be coordinated and implemented by the USFWS. The MOU will outline how Federal agencies will promote conservation of migratory birds. EO 13186 requires the support of various conservation planning efforts already in progress; incorporation of bird conservation considerations into agency planning, including NEPA analyses; and reporting annually on the level of take of migratory birds. The Federal Noxious Weed Act (Public Law 93-629) of 1975, as amended in 1990, established a Federal program to control the spread of noxious weeds. The Secretary of Agriculture was given the authority to designate plants as noxious weeds by regulation and the movement of such weeds in interstate or foreign commerce was prohibited except under permit. The Secretary was also given authority to inspect, seize, and destroy products and quarantine areas, if necessary, to prevent the spread of such weeds. The Secretary was also authorized to cooperate with Federal, state, and local agencies; farmer associations, and private individuals in measures to control, eradicate, prevent, or retard the spread of noxious weeds. This law also requires that any environmental assessments or impact statements that are required to implement plant control agreements must be completed within 1 year of the time the need for the document is established.

EO 13112, *Invasive Species* (February 3, 1999), provides direction to use relevant programs and authorities to prevent introduction of invasive species, detect and respond rapidly to control populations of invasive species, monitor invasive species populations, provide restoration of native species and habitat conditions in ecosystems that have been invaded, conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species, and promote public education on invasive species with means to address them. EO 13112 was created to minimize the economic, ecological, and human health impacts that invasive species cause.

Hazardous Materials and Waste

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 authorizes USEPA to respond to spills and other releases of hazardous substances to the environment, and authorizes the National Oil and Hazardous Substances Pollution Contingency Plan. CERCLA also provides a Federal "Superfund" to respond to emergencies immediately. Although the "Superfund" provides funds for cleanup of sites where potentially responsible parties cannot be identified, USEPA is authorized to recover funds through damages collected from responsible parties. This funding process places the economic burden for cleanup on polluters.

The Pollution Prevention Act (PPA) of 1990 encourages manufacturers to avoid the generation of pollution by modifying equipment and processes, redesigning products, substituting raw materials, and making improvements in management techniques, training, and inventory control. Consistent with pollution prevention principles, EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management* (January 24, 2007 [revoking EO 13148]) sets a goal for all Federal agencies that promotes environmental practices, including acquisition of biobased, environmentally preferable, energy-efficient, water-efficient, and recycled-content products, and use of paper of at least 30 percent post-consumer fiber content. In addition, EO 13423 sets a goal that requires Federal agencies to ensure that they reduce the quantity of toxic and hazardous chemicals and materials acquired, used, or disposed of, increase diversion of solid waste as appropriate, and maintain cost effective waste prevention and recycling programs in their facilities. Additionally, in *Federal Register* Volume 58 Number 18 (January 29, 1993), CEQ provides guidance to Federal agencies on how to "incorporate pollution prevention principles, techniques, and mechanisms into their planning and decision making processes and to evaluate and report those efforts, as appropriate, in documents pursuant to NEPA."

The Resource Conservation and Recovery Act (RCRA) of 1976 is an amendment to the Solid Waste Disposal Act. RCRA authorizes USEPA to provide for "cradle-to-grave" management of hazardous waste and sets a framework for the management of nonhazardous municipal solid waste. Under RCRA, hazardous waste is controlled from generation to disposal through tracking and permitting systems, and restrictions and controls on the placement of waste on or into the land. Under RCRA, a waste is defined as hazardous if it is ignitable, corrosive, reactive, toxic, or listed by USEPA as being hazardous. With the Hazardous and Solid Waste Amendments (HSWA) of 1984, Congress targeted stricter standards for waste disposal and encouraged pollution prevention by prohibiting the land disposal of particular wastes. The HSWA amendments strengthen control of both hazardous and nonhazardous waste and emphasize the prevention of pollution of groundwater.

The Superfund Amendments and Reauthorization Act (SARA) of 1986 mandates strong clean-up standards and authorizes USEPA to use a variety of incentives to encourage settlements. Title III of SARA authorizes the Emergency Planning and Community Right to Know Act (EPCRA), which requires facility operators with "hazardous substances" or "extremely hazardous substances" to prepare comprehensive emergency plans and to report accidental releases. If a Federal agency acquires a contaminated site, it can be held liable for cleanup as the property owner/operator. A Federal agency can also incur liability if it leases a property, as the courts have found lessees liable as "owners." However, if the agency exercises due diligence by conducting a Phase I Environmental Site Assessment, it can claim the "innocent purchaser" defense under CERCLA. According to Title 42 United States Code (U.S.C.) 9601(35), the current owner/operator must show it undertook "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice" before buying the property to use this defense.

The Toxic Substance Control Act (TSCA) of 1976 consists of four titles. Title I established requirements and authorities to identify and control toxic chemical hazards to human health and the environment.

TSCA authorized USEPA to gather information on chemical risks, require companies to test chemicals for toxic effects, and regulate chemicals with unreasonable risk. TSCA also singled out polychlorinated biphenyls (PCBs) for regulation, and, as a result, PCBs are being phased out. PCBs are persistent when released into the environment and accumulate in the tissues of living organisms. They have been shown to cause adverse health effects on laboratory animals and could cause adverse health effects in humans. TSCA and its regulations govern the manufacture, processing, distribution, use, marking, storage, disposal, clean-up, and release reporting requirements for numerous chemicals like PCBs. TSCA Title II provides statutory framework for "Asbestos Hazard Emergency Response," which applies only to schools. TSCA Title III, "Indoor Radon Abatement," states indoor air in buildings of the United States should be as free of radon as the outside ambient air. Federal agencies are required to conduct studies on the extent of radon contamination in buildings they own. TSCA Title IV, "Lead Exposure Reduction," directs Federal agencies to "conduct a comprehensive program to promote safe, effective, and affordable monitoring, detection, and abatement of lead-based paint and other lead exposure hazards." Further, any Federal agency having jurisdiction over a property or facility must comply with all Federal, state, interstate, and local requirements concerning lead-based paint.

Health and Safety

Human health and safety relates to workers' health and safety during demolition or construction of facilities, or applies to work conditions during operations of a facility that could expose workers to conditions that pose a health or safety risk. The Federal Occupational Safety and Health Administration (OSHA) issues standards to protect persons from such risks, and the DOD and state and local jurisdictions issue guidance to comply with these OSHA standards. Safety also can refer to safe operations of aircraft or other equipment.

AFI 91-202, *USAF Mishap Prevention Program*, implements AFPD 91-2, *Safety Programs*. It establishes mishap prevention program requirements (including the Bird/Wildlife Aircraft Strike Hazard [BASH] Program), assigns responsibilities for program elements, and contains program management information. This instruction implements North Atlantic Treaty Organization (NATO) Standardization Agreements (STANAGs) 3101, *Exchange of Safety Information Concerning Aircraft and Missile*s, 3102, *Flight Safety Cooperation in Common Ground/Air Space*, 3531, *Safety Investigation and Reporting of Accident /Incidents Involving Military Aircraft and/or Missile*s, and 3750, *Reporting and Investigation of Air Traffic Incident*s. Its purpose is to minimize loss of Air Force resources and protect Air Force people from death, injuries or illnesses by managing risks on- and off-duty.

Energy

EO 13514, *Federal Leadership In Environmental, Energy, And Economic Performance* (dated October 5, 2009), directs Federal agencies to improve water use efficiency and management; implement high performance sustainable Federal building design, construction, operation and management; and advance regional and local integrated planning by identifying and analyzing impacts from energy usage and alternative energy sources. EO 13514 also directs Federal agencies to prepare and implement a Strategic Sustainability Performance Plan to manage its greenhouse gas emissions, water use, pollution prevention, regional development and transportation planning, sustainable building design and promote sustainability in its acquisition of goods and services. Section 2(g) requires new construction, major renovation, or repair and alteration of buildings to comply with the Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings. The CEQ regulations at 40 CFR 1502.16(e) directs agencies to consider the energy requirements and conservation potential of various alternatives and mitigation measures.

Section 503(b) of EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, instructs Federal agencies to conduct their environmental, transportation, and energy-related activities under the law in support of their respective missions in an environmentally, economically, and fiscally sound, integrated, continuously improving, efficient, and sustainable manner. EO 13423 sets goals in energy efficiency, acquisition, renewable energy, toxic chemical reduction, recycling, sustainable buildings, electronics stewardship, fleets, and water conservation. Sustainable design measures such as the use of "green" technology (e.g., photovoltaic panels, solar collection, heat recovery systems, wind turbines, green roofs, and habitat-oriented storm water management) would be incorporated where practicable.

APPENDIX B

INTERAGENCY AND INTERGOVERNMENTAL COORDINATION FOR ENVIRONMENTAL PLANNING /TRIBAL CORRESPONDENCE LETTER AND LIST

IICEP DISTRIBUTION LIST

Federal Agency Contacts

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Mr. Les Boles
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Ms. Elizabeth Johnson
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Mayor R. Keith Summey
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North Charleston, SC 29406

Mayor Michael J. Heitzler
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Glenna Wallace, Chief
Eastern Shawnee Tribe of Oklahoma
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Governor George Blanchard
Absentee-Shawnee Tribe of Oklahoma
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Shawnee, OK 74801

Joseph Blanchard, THPO
Absentee-Shawnee Tribe of Oklahoma
2025 S. Gordon Cooper Drive
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Michell Hicks, Principal Chief
Eastern Band of Cherokee Indians
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Principal George Tiger
Muscogee (Creek) Nation of Oklahoma
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Eddie Postoak
Director of Cultural Resources
The Chickasaw Nation
867 Cooper Memorial Road
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Gregory Pyle, Chief
Choctaw Nation of Oklahoma
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George Wickliffe, Chief
United Keetoowah Band of Cherokee Indians in Oklahoma
PO Box 746
Tahlequah, OK 74465

IICEP DISTRIBUTION LETTER

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 628TH AIR BASE WING (AMC)
CHARLESTON AIR FORCE BASE, SC

21 December 2012

MEMORANDUM FOR SEE DISTRIBUTION LIST

FROM: 628 CES/CEA
100 W. Stewart Ave.
Joint Base Charleston, SC 29404-4827

SUBJECT: Draft Environmental Assessment Addressing Aerial Application of Herbicides at Joint Base Charleston-Weapons Station (JB CHS-WS)

As stated in the Description of Proposed Action and Alternatives letter sent on 30 November 2012, JB CHS has prepared a draft environmental assessment to analyze the potential impacts of conducting aerial spraying of herbicides at the 16,750–acre JB CHS-WS. In accordance with Executive Order 12372 (Intergovernmental Review of Federal Programs), we respectfully request your input during our 30 day review and comment period which ends on 20 Jan 2013. If you have any questions or concerns about this action, please contact:

Joe Camp
628 CES/CEAO
100 W. Stewart Ave.
Joint Base Charleston, SC 29404-4827
Phone: 843-963-4125
Email: joe.camp@us.af.mil

Sincerely,

JEFFREY P. GARRETT, DAFC
Chief, Asset Management Flight

Attachments:
Draft EA
Distribution List

Provide Globally Ready Forces and Installation Support to Joint Base Charleston!

TRIBAL DISTRIBUTION LETTERS

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HEADQUARTERS 628TH AIR BASE WING (AMC)
CHARLESTON AIR FORCE BASE, SC

21 December 2012

628 CES/CEA
100 W. Stewart Ave.
Joint Base Charleston, SC 29404-4827

Joseph Blanchard, THPO
Absentee-Shawnee Tribe of Oklahoma
2025 S. Gordon Cooper Drive
Shawnee, OK 74801

SUBJECT: Draft Environmental Assessment Addressing Aerial Application of Herbicides at Joint Base Charleston-Weapons Station (JB CHS-WS)

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Email: joe.camp@us.af.mil

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Chief, Asset Management Flight

Attachment: Draft EA

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DEPARTMENT OF THE AIR FORCE
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21 December 2012

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2025 S. Gordon Cooper Drive
Shawnee, OK 74801

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628 CES/CEA
100 W. Stewart Ave.
Joint Base Charleston, SC 29404-4827

Caitlin Totherow
Catawba Indian Nation, THPO
1536 Tom Stevens Road
Rock Hill, SC 29730

SUBJECT: Draft Environmental Assessment Addressing Aerial Application of Herbicides at Joint Base Charleston-Weapons Station (JB CHS-WS)

Dear Ms. Totherow,

As stated in the Description of Proposed Action and Alternatives letter sent on 30 November 2012, JB CHS has prepared a draft environmental assessment to analyze the potential impacts of conducting aerial spraying of herbicides at the 16,750–acre JB CHS-WS. In accordance with Executive Order 12372 (Intergovernmental Review of Federal Programs), we respectfully request your input during our 30 day review and comment period which ends on 20 Jan 2013. If you have any questions or concerns about this action, please contact:

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21 December 2012

628 CES/CEA
100 W. Stewart Ave.
Joint Base Charleston, SC 29404-4827

Cherokee First
P.O. Box 948
Tahlequah, OK 74465

SUBJECT: Draft Environmental Assessment Addressing Aerial Application of Herbicides at Joint Base Charleston-Weapons Station (JB CHS-WS)

Dear Members of Cherokee First,

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Joint Base Charleston, SC 29404-4827
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21 December 2012

628 CES/CEA
100 W. Stewart Ave.
Joint Base Charleston, SC 29404-4827

Gregory Pyle, Chief
Choctaw Nation of Oklahoma
P.O. Box 1210
Durant, OK 74702

SUBJECT: Draft Environmental Assessment Addressing Aerial Application of Herbicides at Joint Base Charleston-Weapons Station (JB CHS-WS)

Dear Chief Pyle,

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21 December 2012

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100 W. Stewart Ave.
Joint Base Charleston, SC 29404-4827

Michell Hicks, Principal Chief
Eastern Band of Cherokee Indians
P.O. Box 455
Cherokee, NC 28719

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21 November 2012

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100 W. Stewart Ave.
Joint Base Charleston, SC 29404-4827

Glenna Wallace
Eastern Shawnee Tribe of Oklahoma
P.O. Box 350
Seneca, MO 64865

SUBJECT: Draft Environmental Assessment Addressing Aerial Application of Herbicides at Joint Base Charleston-Weapons Station (JB CHS-WS)

Dear Chief Wallace,

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JEFFREY P. GARRETT, DAFC
Chief, Asset Management Flight

Attachment: Draft EA

Provide Globally Ready Forces and Installation Support to Joint Base Charleston!

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 628TH AIR BASE WING (AMC)
CHARLESTON AIR FORCE BASE, SC

21 December 2012

628 CES/CEA
100 W. Stewart Ave.
Joint Base Charleston, SC 29404-4827

George Wickliffe, Chief
United Keetoowah Band of Cherokee Indians in Oklahoma
P.O. Box 746
Tahlequah, OK 74465

SUBJECT: Draft Environmental Assessment Addressing Aerial Application of Herbicides at Joint Base Charleston-Weapons Station (JB CHS-WS)

Dear Chief Wickliffe,

As stated in the Description of Proposed Action and Alternatives letter sent on 30 November 2012, JB CHS has prepared a draft environmental assessment to analyze the potential impacts of conducting aerial spraying of herbicides at the 16,750–acre JB CHS-WS. In accordance with Executive Order 12372 (Intergovernmental Review of Federal Programs), we respectfully request your input during our 30 day review and comment period which ends on 20 Jan 2013. If you have any questions or concerns about this action, please contact:

Joe Camp
628 CES/CEAO
100 W. Stewart Ave.
Joint Base Charleston, SC 29404-4827
Phone: 843-963-4125
Email: joe.camp@us.af.mil

Sincerely,

JEFFREY P. GARRETT, DAFC
Chief, Asset Management Flight

Attachment: Draft EA

Provide Globally Ready Forces and Installation Support to Joint Base Charleston!

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 628TH AIR BASE WING (AMC)
CHARLESTON AIR FORCE BASE, SC

21 December 2012

628 CES/CEA
100 W. Stewart Ave.
Joint Base Charleston, SC 29404-4827

Principal George Tiger
Muscogee (Creek) Nation of Oklahoma
P.O. Box 580
Okmulgee, OK 74447

SUBJECT: Draft Environmental Assessment Addressing Aerial Application of Herbicides at Joint Base Charleston-Weapons Station (JB CHS-WS)

Dear Principal Tiger,

As stated in the Description of Proposed Action and Alternatives letter sent on 30 November 2012, JB CHS has prepared a draft environmental assessment to analyze the potential impacts of conducting aerial spraying of herbicides at the 16,750–acre JB CHS-WS. In accordance with Executive Order 12372 (Intergovernmental Review of Federal Programs), we respectfully request your input during our 30 day review and comment period which ends on 20 Jan 2013. If you have any questions or concerns about this action, please contact:

Joe Camp
628 CES/CEAO
100 W. Stewart Ave.
Joint Base Charleston, SC 29404-4827
Phone: 843-963-4125
Email: joe.camp@us.af.mil

Sincerely,

JEFFREY P. GARRETT, DAFC
Chief, Asset Management Flight

Attachment: Draft EA

Provide Globally Ready Forces and Installation Support to Joint Base Charleston!

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 628TH AIR BASE WING (AMC)
CHARLESTON AIR FORCE BASE, SC

21 December 2012

628 CES/CEA
100 W. Stewart Ave.
Joint Base Charleston, SC 29404-4827

Kirk Perry
The Chickasaw Nation
P.O. Box 1548
Ada, OK 74821

SUBJECT: Draft Environmental Assessment Addressing Aerial Application of Herbicides at Joint Base Charleston-Weapons Station (JB CHS-WS)

Dear Mr. Perry,

As stated in the Description of Proposed Action and Alternatives letter sent on 30 November 2012, JB CHS has prepared a draft environmental assessment to analyze the potential impacts of conducting aerial spraying of herbicides at the 16,750–acre JB CHS-WS. In accordance with Executive Order 12372 (Intergovernmental Review of Federal Programs), we respectfully request your input during our 30 day review and comment period which ends on 20 Jan 2013. If you have any questions or concerns about this action, please contact:

Joe Camp
628 CES/CEAO
100 W. Stewart Ave.
Joint Base Charleston, SC 29404-4827
Phone: 843-963-4125
Email: joe.camp@us.af.mil

Sincerely,

JEFFREY P. GARRETT, DAFC
Chief, Asset Management Flight

Attachment: Draft EA

Provide Globally Ready Forces and Installation Support to Joint Base Charleston!

CONSULTATION LETTERS

D H E C

PROMOTE PROTECT PROSPER

Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment

December 28, 2012

Joe Camp
628 CES/CEAO
100 West Stewart Avenue
Joint Base Charleston, S. C. 29404-4827

Re: Federal Consistency for Aerial Application of Herbicides – Joint Base Charleston Weapons Station
ID #CZC-12-0692

Dear Mr. Camp:

This is in response to your December 4, 2012, request for Federal Consistency certification for Aerial Application of Herbicides at Joint Base Charleston – Weapons Station, Goose Creek, S. C. The purpose of the request is to employ SCDNR to better address nonnative invasive plant species (*phragmites*) in existing freshwater impoundments at the Station.

After a review of the Wildlife and Fisheries Management policies contained within South Carolina's Coastal Zone Management Program (CZMP), Coastal Zone Consistency staff (CZC) staff has determined the application of herbicides in the impoundments is consistent to the maximum extent practible as required by 15 CFR § 930, Subpart C.

Please do not hesitiate to contact me at 843-953-0205 or joynercm@dhec.sc.gov should you have any questions.

Sincerely,

Curtis M. Joyner
Manager, Coastal Zone Consistency Section
Regulatory Division
DHEC-OCRM

Cc: Rheta DiNovo, DHEC OCRM

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL
Ocean and Coastal Resource Management
Charleston Office • 1362 McMillan Avenue • Suite 400 • Charleston, SC 29405 • Phone: (843) 953-0200 • Fax: (843) 953-0201 • www.scdhec.gov

December 17, 2012

Mr. Joe Camp
628 CES/CEAO
100 W. Stewart Ave.
Joint Base Charleston, SC 29404-4827

Re: Aerial Application of Herbicides
Joint Base Charleston, Naval Weapons Station, Berkeley County, South Carolina
SHPO Project No. 12-RD0350

Dear Mr. Camp:

Thank you for your letter of November 30, which we received on December 4, regarding the above-referenced undertaking. The State Historic Preservation Office is providing comments to the Department of the Air Force pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations, 36 CFR 800. Consultation with the SHPO is not a substitution for consultation with Tribal Historic Preservation Offices, other Native American tribes, local governments, or the public.

Based on the description of the Area of Potential Effect (APE) and the identification of historic properties within the APE, our office concurs with the assessment that no properties listed in or eligible for listing in the National Register of Historic Places will be affected by this project. We do not require a copy of the Environmental Assessment (EA) or the Finding of No Significant Impact (FONSI).

If you have any questions, please contact me at (803) 896-6183 or dobrasko@scdah.state.sc.us.

Sincerely,

Rebekah Dobrasko

Rebekah Dobrasko
Supervisor of Compliance, Tax Incentives, and Survey
State Historic Preservation Office

S. C. Department of Archives & History • 8301 Parklane Road • Columbia • South Carolina • 29223-4905 • (803) 896-6100 • http://scdah.sc.gov

DEPARTMENT OF THE ARMY
CHARLESTON DISTRICT, CORPS OF ENGINEERS
69-A HAGOOD AVENUE
CHARLESTON, SOUTH CAROLINA 29403-5107

REPLY TO
ATTENTION OF

January 8, 2013

Regulatory Division

Mr. Joe Camp
628 CES/CEAO
100 W. Stewart Ave.
Joint Base Charleston, SC 29404-4827

Dear Mr. Camp:

This is in response to your request for comments on the proposed project to perform aerial application of herbicides at Joint Base Charleston-Weapons Station (JB CHS-WS) located in Berkeley and Charleston Counties, South Carolina. The project area is depicted in the Environmental Assessment, provided by your office as part of the early coordination for this project.

Based upon review of the submitted information, the proposed activity does not require authorization from this office. However, should the project be revised to include any work in waters or wetlands of the United States, please contact this office for further review.

If you have further questions concerning this matter, please feel free to contact Robin Coller-Socha at 843-329-8044. In future correspondence concerning this matter, please refer to SAC# 2013-00054-2JR.

Sincerely,

Charles R. Crosby
Chief, South Branch

From: CAMP, JOE V JR GS-11 USAF AMC 628 CES/CEAO
To: Frederick, Nicolas
Cc: LARIMER, TERRENCE C GS-12 USAF AMC 628 CES/CEAN; THOMPSON, KEITH M JR GS-11 USAF AMC 628 CES/CEAN
Subject: FW: Aerial Herbicides Joint Base Charleston-Weapons Station, SC
Date: Wednesday, January 09, 2013 7:55:29 AM

Good morning Nic.

FYI, please see below correspondence from United Keetoowah Band of Cherokee Indians in Oklahoma.

V/r, Bo

-----Original Message-----
From: Lisa LaRue-Baker - UKB THPO [mailto:ukbthpo-larue@yahoo.com]
Sent: Tuesday, January 08, 2013 5:28 PM
To: CAMP, JOE V JR GS-11 USAF AMC 628 CES/CEAO
Cc: lstapleton@unitedkeetoowahband.org
Subject: Aerial Herbicides Joint Base Charleston-Weapons Station, SC

The United Keetoowah Band of Cherokee Indians in Oklahoma has reviewed your project (s) under Section 106 of the NHPA, and at this time has no comments or objections. If any human remains are inadvertently discovered, please cease all work and contact us immediately.

Lisa LaRue-Baker
Acting THPO
United Keetoowah Band of Cherokee Indians in Oklahoma
PO Box 746
Tahlequah, OK 74465

c 918.822.1952 f 918.458.6889
ukbthpo-larue@yahoo.com

Catawba Indian Nation
Tribal Historic Preservation Office
1536 Tom Steven Road
Rock Hill, South Carolina 29730

Office 803-328-2427
Fax 803-328-5791

January 14, 2013

Attention: Joe Camp
628 CES/CEAO
100 W. Stewart Avenue
Joint Base Charleston, SC 29404-4827

Re. THPO #	TCNS#	Project Description
2013-285-3		Draft EA Addressing Aerial Application of Herbicides at JB CHS-WS

Dear Mr. Camp,

The Catawba have no immediate concerns with regard to traditional cultural properties, sacred sites or Native American archaeological sites within the boundaries of the proposed project areas. **However, the Catawba are to be notified if Native American artifacts and / or human remains are located during the ground disturbance phase of this project.**

If you have questions please contact Caitlin Totherow at 803-328-2427 ext. 226, or e-mail caitlinh@ccppcrafts.com.

Sincerely,

Caitlin Totherow for

Wenonah G. Haire
Tribal Historic Preservation Officer

From: CAMP, JOE V JR GS-11 USAF AMC 628 CES/CEAO
To: Frederick, Nicolas
Subject: FW: NMFS comments on the Draft EA for the aerial application of herbicides at Joint Base Charleston-Weapons Station
Date: Tuesday, January 22, 2013 3:02:14 PM

More from NOAA's NMFS.

V/r, Bo

-----Original Message-----
From: Pace Wilber - NOAA Federal [mailto:pace.wilber@noaa.gov]
Sent: Tuesday, January 22, 2013 2:55 PM
To: CAMP, JOE V JR GS-11 USAF AMC 628 CES/CEAO
Subject: NMFS comments on the Draft EA for the aerial application of herbicides at Joint Base Charleston-Weapons Station

Mr. Joe Camp:

NOAA's National Marine Fisheries Service (NMFS) has reviewed the Draft Environmental Assessment (EA), dated December 2012, for the aerial application of herbicides at Joint Base Charleston-Weapons Station, Charleston, South Carolina. The EA was provided to us via a letter dated December 21, 2012. On December 11, 2012, NMFS provided the US Air Force with comments on the essential fish habitat (EFH) assessment for this herbicide control program as well as the Description of Proposed Action and Alternatives (DOPAA) for the EA. The herbicide application procedures described in the EA are the same as those in the EFH assessment and DOPAA. Accordingly, NMFS has no additional comments to offer on the EA. NMFS agrees with the U.S. Air Force that applying the herbicides identified in the manner described in the EFH assessment, DOPAA, and EA would not adversely impact EFH at Joint Base Charleston-Weapons. Thank you for the opportunity to review the EA.

--
Pace Wilber, Ph.D.
HCD Atlantic Branch Supervisor
NOAA Fisheries Service
219 Ft Johnson Road
Charleston, SC 29412

Voice: 843-762-8601
FAX: 843-953-7205
Pace.Wilber@noaa.gov

From: CAMP, JOE V JR GS-11 USAF AMC 628 CES/CEAO
To: Rainwater, Thomas
Cc: Frederick, Nicolas
Subject: RE: Proposed Aerial Application of Herbicides at Joint Base Charleston (ref. FWS Log No. 2013-CPA-0051)
Date: Tuesday, January 29, 2013 1:51:02 PM

Thank you very much for your reply!

V/r, Bo

Joe Camp, DAFC
Environmental Impact Analysis
Process Program Manager
628 CES/CEAO
100 W. Stewart Ave.
Joint Base Charleston SC 29404-4827
tel. 843-963-4125, DSN 673-4125

-----Original Message-----
From: Rainwater, Thomas [mailto:thomas_rainwater@fws.gov]
Sent: Tuesday, January 29, 2013 1:44 PM
To: CAMP, JOE V JR GS-11 USAF AMC 628 CES/CEAO
Subject: Proposed Aerial Application of Herbicides at Joint Base Charleston (ref. FWS Log No. 2013-CPA-0051)

Dear Mr. Camp,

I apologize for the delay in responding.

We did indeed review the Environmental Assessment for Aerial Application of Herbicides on JB-CHS-WS and had no comments or concerns.

Please contact me if you have any other questions.

Best regards,

Thomas

Thomas Rainwater
Wildlife Toxicologist
U.S. Fish and Wildlife Service
Ecological Services Field Office
176 Croghan Spur Rd., Suite 200
Charleston, SC 29407
Phone - 843-727-4707 x 218
Fax - 843-727-4218
email - thomas_rainwater@fws.gov

-----Original Message-----
From: CAMP, JOE V JR GS-11 USAF AMC 628 CES/CEAO
[mailto:joe.camp@us.af.mil]

Affidavit of Publication

AFFIDAVIT
OF
PUBLICATION

The Post and Courier

State of South Carolina
County of Charleston

Personally appeared before me the undersigned advertising Clerk of the above indicated newspaper published in the City of Charleston, County and State aforesaid, who, being duly sworn, says that the advertisement of

(copy attached)

appeared in the issues of said newspaper

on the following day(s): December 21, 2012

Subscribed and sworn to before me this 3rd day of January A.D. 2013

(Advertising clerk)

SHELLY DUBERRY NOTARY My Comm. Exp. 10-10-2013 PUBLIC SOUTH CAROLINA

NOTARY PUBLIC, SC
My Commission expires October 10, 2013

Form t3030

DEPARTMENT OF DEFENSE
DEPARTMENT OF THE AIR FORCE

NOTICE OF AVAILABILITY OF A DRAFT ENVIRONMENTAL ASSESSMENT ADDRESSING AERIAL APPLICATION OF HERBICIDES AT JOINT BASE CHARLESTON-WEAPONS STATION, CHARLESTON, SOUTH CAROLINA

Pursuant to the National Environmental Policy Act and its implementing regulations, the United States Air Force gives notice that a draft Environmental Assessment (EA) has been prepared addressing aerial application of herbicides at Joint Base Charleston-Weapons Station (JB CHS-WS) to control nonnative invasive plants in wetlands and spoil areas of JB CHS-WS and undesirable vegetation competing with longleaf pine seedlings.

The purpose and need for the Proposed Action is to maintain and, in some cases restore, habitat for native species while minimizing ecosystem disturbance. Under the Proposed Action, the South Carolina Department of Natural Resources would oversee annual application of herbicides from a helicopter or spray boat on approximately 400 acres of wetlands and spoil areas on JB CHS-WS. Additionally, the Proposed Action would involve aerial application of herbicides to control competitive vegetation on native pine stands to reestablish stands of longleaf pine. The forest acreage on JB CHS-WS to be treated aerially with herbicides would vary annually between zero and approximately 300 acres.

Under the No-Action alternative, there would be no comprehensive management of nonnative invasive and competitive plant species at JB CHS-WS.

The analysis of impacts in the EA show that the Proposed Action would not have a significant impact on the environment, indicating that a Finding of No Significant Impact (FONSI) would be appropriate. The unsigned draft FONSI and a copy of the draft EA are available for a 30 day public review and comment period at the Dorchester Road Branch of the Charleston County Public Library in North Charleston and at the Naval Support Activity Branch Library in Goose Creek. These documents can also be accessed online at:

http://www.charleston.af.mil/shared/media/document/AFD-121219-021.pdf

Comments should be submitted in writing on or before 20 January 2012. To submit comments or questions regarding the EA, please contact:

Joe Camp
628 CES/CEAO
100 W. Stewart Avenue
Joint Base Charleston, SC 29404-4827
Email: joe.camp@us.af.mil

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