SRNS-J2210-2017-00093
Rev. 1

Floodplain and Wetland Assessment of the Effects of Proposed Herbicide Application to Utility Rights-of-Way on the Savannah River Site

Prepared for

U.S. Department of Energy
Savannah River Operations Office
Aiken, South Carolina

January 2018

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1.0 Introduction

Executive Order 11988-Floodplain Management (May 24, 1977) and Executive Order 11990-Protection of Wetlands (May 24, 1977) require federal agencies to evaluate, and to the extent possible minimize, the impacts of their projects on floodplains and wetlands. The U.S. Department of Energy (DOE) established policy and procedures to consider impacts on floodplains and wetlands as part of its decision-making process in 10 CFR 1022 - *Compliance with Floodplain and Wetland Environmental Review Requirements*. Under this DOE regulation, a floodplain or wetland assessment is required for any activity involving floodplains or wetlands, per 10 CFR 1022(d)(1) – (2). Furthermore, 10 CFR 1022.11(a) requires DOE to determine the applicability of the floodplain management and wetlands protection requirements in 10 CFR 1022, Subpart B concurrent with its review of a proposed action to determine appropriate National Environmental Policy Act (NEPA) or Comprehensive Environmental Response, Liability and Compensation Act (CERCLA) process requirements. Determination of the appropriate NEPA process is discussed in Section 3.0, Project Description.

This assessment has been prepared by DOE-Savannah River (DOE-SR) in accordance with the requirements of 10 CFR 1022.13 in order to evaluate potential impacts to floodplains and wetlands from the application of herbicide treatments at certain utility rights-of-way (r/w's) crossings on the Savannah River Site (SRS) to effectively control tree growth. The provisions of 10 CFR 1022.13(c) permit an assessment to be prepared separately for those floodplain and wetlands actions for which neither an Environmental Assessment (EA) nor Environmental Impact Statement (EIS) is required.

DOE-SR has determined the need for this floodplain and wetland assessment per 10 CFR 1022.5(e) since the proposed action changes current site practice for controlling vegetation as part of its utility r/w maintenance operations and has the potential to produce permanent vegetative changes in floodplains and wetlands that have not been treated previously with herbicides, and are undeveloped except for management as utility r/w's.

2.0 Background

SRS contains approximately 275 miles of managed utility r/w's (electricity transmission and distribution, river water distribution, domestic water distribution, and steam distribution) outside of industrial facility boundaries. Electricity transmission and distribution lines are required to meet North American Electric Reliability Corporation's Electric Reliability Standard FAC-003-2, which requires vegetation management in and adjacent to electrical r/w's to prevent outages caused by vegetation contact with a transmission/distribution conductor. River water, domestic water, and steam distribution r/w's require vegetation management to prevent damage by tree roots (river water and domestic water) and tree trunks and limbs (steam), and to provide low-growing vegetation that facilitates visual inspection of and maintenance on r/w infrastructure.

DOE-SR previously managed r/w vegetation by mowing or similar mechanical methods. As a cost-saving measure, DOE-SR is transitioning to r/w vegetation management using herbicides. Locations where r/w's cross floodplains and wetlands are difficult to manage because the plant species composition and water and nutrient availability combine to promote rapid vegetation growth.

Many of the wetland crossings are vegetated with fast-growing tree species. Periodic mowing does not kill these trees; regrowth from rootstock occurs after mowing. The rootstock continues to grow, and the stem regrowth after mowing becomes more robust over time and requires increasingly frequent mowing.

3.0 Project Description

Herbicide application is proposed where 13.8-kV electrical distribution, river water distribution, domestic water distribution, and steam distribution r/w's cross floodplains and wetlands (Figure 1) to effectively control tree growth. Herbicide application will be by hand using backpack sprayers to conduct spot treatments of tree species growing in the sapling and shrub strata. The herbicide used will be foliar active only (not soil active), systemic, and will be specific for control of broadleaf plants.

A surfactant will be mixed with the herbicide to increase its effectiveness. Surfactant use will be limited to those that are known to exhibit low or no ecological toxicity. Polyethoxylated tallow amine, a commonly used surfactant, is not used on SRS because of its recognized high toxicity to amphibian larvae. Further mention of herbicide in this assessment references the herbicide-surfactant mixture.

The herbicide treatment will be applied in 66 wetland locations totaling approximately 76 acres. Selection and application of herbicide(s) to be used for this proposed action will be compliant with the U.S. Environmental Protection Agency (EPA) and the South Carolina Department of Health and Environmental Control (SCDHEC) Pesticide National Pollutant Discharge and Elimination System (NPDES) Group Permit for wetland and over water applications, herbicide label directions, and internal site pesticide management procedures. A Notice of Intent will be submitted to SCDHEC if the Pesticide NPDES Group Permit thresholds are anticipated to be exceeded by the proposed action. Additionally, herbicide applications will comply with the requirements in the SRS Pesticide Discharge Management Plan, as appropriate when taking place in locations on SRS that have the potential to discharge to and impact waters of the state.

Herbicide application will occur during the middle and later portions of the growing season, typically July through September, but could begin earlier or extend later in the growing season. More than one herbicide application may be necessary in certain locations to obtain adequate vegetation control. After initial control, periodic herbicide application is anticipated in a maintenance capacity. The necessity of repeat applications in subsequent years after the initial treatment will be determined based on visual r/w inspections. Appropriate site environmental staff may be consulted as needed to assist with such determinations.

DOE-SR plans to conduct the proposed action under its provisions for application of categorical exclusions pursuant to 10 CFR 1021.410. DOE-SR has deemed that the proposed action is categorically excluded as it satisfies all the requirements under 10 CFR 1021.410(b)(1)-(3):

- The proposed action fits within the class of actions listed in 10 CFR 1021, Subpart D, Appendix B, specifically Categorical Exclusion B1.3, Routine Maintenance;
- No extraordinary circumstances exist that may affect the significance of the environmental effects of the proposed action, and;
- The proposed action is not being segmented (i.e., is not connected to or otherwise related to other proposed actions with potentially significant or cumulatively significant impacts) to meet the definition of a categorical exclusion. The proposed action is a stand-alone activity and not part of a larger project being evaluated with an EA or EIS.

Furthermore, none of the conditions that are integral elements for Class B actions listed 10 CFR 1021, Subpart D, Appendix B (1) – (5) exist for the proposed action that would otherwise negate qualification for categorical exclusion. While the proposed action will take place in wetlands and floodplains which are

considered an environmentally sensitive resource per 10 CFR 1021, Subpart D, Appendix B(4)(iii), it is not anticipated that the proposed action has the potential to cause significant impacts on these resources.

3.1 Description of Wetlands

Wetland areas were identified and marked in the field, located and recorded using a Global Positioning System (GPS), and mapped using the SRS Geographic Information System (GIS). Wetlands were identified using criteria specified in the U.S. Army Corps of Engineers (USACE) 1987 Wetland Delineation manual and current USACE supplemental guidance. Wetland crossing locations are depicted in Figure 1.

To be considered a wetland under Section 404 of the Clean Water Act requires positive evidence of three criteria: 1) hydrophytic vegetation, 2) hydric soils, and 3) wetland hydrology. The proposed action negatively affects a small amount of the biomass (tree species growing in the sapling and shrub strata) that comprises the hydrophytic vegetation component of the wetlands. The proposed action is not anticipated to affect hydric soils, and may minimally and insignificantly affect wetland hydrology. The proposed action does not require the deposition of fill material in wetlands, thus there is no loss of wetland acreage.

Wetlands proposed for herbicide treatment have been impacted historically by mowing on a periodic basis, ranging from annual to every fifth-year treatments. The vegetative communities are therefore maintained in a relatively low growing and early successional stage. Wetlands proposed for treatment do not have an overstory stratum because of previous management activities. Red maple (*Acer rubrum*), river birch (*Betula nigra*), sweetgum (*Liquidambar styraciflua*), and black willow (*Salix nigra*) are dominant tree species occupying the sapling and shrub stratum. Other dominant shrub species include tag alder (*Alnus serrulata*), blackberry (*Rubus* spp.), and elderberry (*Sambucus canadensis*). Dominant herbaceous species include switch cane (*Arundinaria tecta*), milkweed (*Asclepias* spp.), sedges (*Carex* spp.), plumegrass (*Erianthus giganteus*), joe-pie weed (*Eupatorium fistulosum*), rushes (*Juncus* spp.), panic grasses (*Panicum* spp.), knotweed (*Polygonum* spp.), meadow-beauty (*Rhexia* spp.), lizard's tail (*Saururus cernuus*), bulrushes (*Scirpus* spp.), bur reed (*Sparganium americanum*), and yellow-eyed grass (*Xyris* spp.).

3.2 Description of Floodplains

Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) are the most authoritative information available for floodplains on SRS. However, these resources depict incomplete mapping of the UTR, FMB, and PB floodplains. Where the floodplains of these streams are mapped, they are classified as a Special Flood Hazard Area (SFHA) subject to inundation by the one percent annual chance flood (100-year flood). The SFHAs are further defined as Zone A (no base flood elevation determined) and Zone AE (base flood elevation determined). The SFHAs meet the definitions of base floodplain and critical action floodplain as defined by 10 CFR 1022.4.

The nature and extent of the flood hazard associated with the floodplains subject to the proposed action is potential temporary inundation associated with the 100-year flood. FEMA does not describe these floodplains as high hazard areas.

Some of the r/w wetland crossings proposed for herbicide treatment are associated with the 100-year floodplains of Upper Three Runs (UTR), Four Mile Branch (FMB), and Pen Branch (PB). Floodplain crossing locations are depicted in Figure 1. Eleven of the 66 wetland locations also are floodplain crossings totaling approximately 20 acres. The proposed action does not require floodplain modification that would result in a change in flood storage volume.

4.0 Effects of the Proposed Action on Wetlands and Floodplains

The primary positive and indirect effect of the proposed action is that the removal of tree species with herbicide will enhance the growth of herbaceous and shrub species. The absence of tree species increases the availability of water, nutrients, and sunlight for the remaining species.

The primary negative and direct effect of the proposed action is the loss of tree species occupying the sapling and shrub strata. There could be a minimal negative impact to non-target species by inadvertent overspray during herbicide application. Vegetation killed by herbicide may minimally and insignificantly impact wetland hydrology prior to decomposition (also considered a potential short-term effect).

The short-term and long-term effect of the proposed action is tree species removal from the sapling and shrub strata in r/w's crossing wetlands. Another long-term effect of the proposed action is that removing the tree species from the sapling and shrub strata will result in a conversion to a shrub-herbaceous

wetland that will require less maintenance than when tree species were present. The shrub-herbaceous wetland will be comprised of low-growing plants that pose no risk to the electrical conductor on the 13.8-kV electricity distribution r/w's, thus requiring minimal vegetative maintenance to achieve regulatory compliance.

The removal of tree species from the overall vegetative composition of the r/w wetland crossings is not expected to have a substantial impact on the functions or services provided by the subject wetlands. The areas historically were mowed on a one- to five-year interval, resulting in a fluctuation of wetland functions, the lowest being immediately after mowing and increasing after that in proportion to the growth and development of vegetative strata, peaking just before the next mowing. Wetland hydrology was likely minimally impacted with mowing debris and soil rutting by mowing equipment. Functions and services related to wetland soils are likely to be unaffected by mowing or herbicide application; the selected herbicide will be foliar active (not soil active). There will be no loss of wetland acreage, so most of the wetland function and services will be unaffected.

The proposed action will occur in the floodplains of UTR, FMB, and PB at specified locations. However, the proposed action will not require floodplain modification that would result in a change in flood storage volume.

The effects of the proposed action on floodplain and wetland values was considered for conservation of existing flora and fauna, cultural resources, cultivated resources, aesthetic values, and public interest. The proposed action is considered to benefit the conservation of existing flora and fauna by eliminating the need to mow which negatively impacted the flora and fauna over the entire r/w, a greater impact than herbicide spot treatment. The proposed action will not impact cultural resources because it does not involve ground disturbance and because it will occur on existing r/w's. The proposed action will not impact cultivated resources because cultivated resources do not exist in the locations of the proposed action. The proposed action is not considered to negatively impact aesthetic values because the proposed action will occur on existing r/w's with minimal aesthetic value. The proposed action will not affect existing public interest associated with the locations of the proposed action.

The floodplains associated with the proposed action are owned by DOE-SR, are uninhabited by people, and are undeveloped beyond the r/w infrastructure; therefore, the proposed action, which does not change base flood elevations, is not anticipated to affect lives and property. The survival, function, and quality of the wetlands subject to the proposed action are anticipated to improve by switching from mowing to

herbicide spot treatment applications because of less disturbance to the wetland soils, vegetation, and hydrology.

The herbicide proposed for use in the wetland and floodplain areas is a triclopyr salt product. The effects of the herbicide on biota are expected to be minimal, based on data presented in the triclopyr safety data sheet:

Fish Toxicity
96-hour LC50 for rainbow trout - 400 ppm
96-hour LC50 for bluegill - 600 ppm

Avian Toxicity
Dietary LC50 for bobwhite quail - > 10,000 ppm
Dietary LC50 for mallard duck - > 10,000 ppm

Bee Toxicity - > 100 µg / bee

These toxicity values fall in the "practically nontoxic" category as presented in U.S. Environmental Protection Agency ecological risk assessment data.

5.0 Alternatives Evaluated

Vegetative management on r/w's is required to meet federal standards. The preferred alternative is herbicide application by hand using backpack sprayers to spot treat tree species growing in the sapling and shrub strata. The herbicide used will be foliar active only (not soil active), and will be specific for control of broadleaf plants. The no-action alternative is to continue the previous and more costly management regime of mowing to achieve vegetation control adequate for regulatory compliance. A third alternative is the broadcast application of herbicide with mechanized equipment.

The preferred alternative has the least amount of wetland impact because only tree species growing in the sapling and shrub strata are adversely affected, and once control is achieved, r/w wetlands will require much less disturbance than when mowing was used to manage r/w vegetation. The no-action alternative, continuing to mow at one- to five-year intervals, resulted in substantial impacts to wetland vegetation at the time of mowing, and likely caused minor negative impacts to wetland hydrology from mowing debris and soil rutting by mowing equipment. The third alternative, broadcast application of herbicide with mechanized equipment, would cause far greater impacts to wetland vegetation than the preferred alternative by killing more plant species and more individual plants. These negative impacts also are

thought to be greater than those of the no-action alternative. None of the alternatives affect floodplain functions.

6.0 Mitigation

The proposed action is the application of a foliar active, systemic, broadleaf-specific herbicide by hand using backpack sprayers to spot treat tree species growing in the sapling and shrub strata. Remaining wetland vegetation will be unharmed and likely will be enhanced by the absence of tree species because of the increased availability of water, nutrients, and sunlight. The proposed action will not impact wetland soils or wetland hydrology.

The effects of the proposed action on wetlands are considered to be insignificant and therefore do not require wetland mitigation. Furthermore, such insignificant wetland impacts cannot be appropriately quantified, which would be needed to determine potential mitigation measures. Existing tools used to quantify wetland impacts and mitigation requirements are based on loss of wetland acreage caused by the discharge of fill material into wetlands. The proposed action does not require the discharge of fill material into wetlands and does not result in the loss of wetland acreage. Similarly, the proposed action has no effect on floodplain functions, thus negating the need for floodplain mitigation. Herbicide will be applied according to herbicide label directions and in compliance with the SCDHEC NPDES Pesticide Group Permit and appropriate internal site pesticide management plans and procedures, thus preventing runoff of applied herbicides.

7.0 Summary and Conclusion

The proposed activity would result in no adverse impacts to the wetlands or floodplains. DOE-SR is proposing herbicide application at certain r/w wetland and floodplain crossings to effectively control tree growth. Herbicide application will be by hand using backpack sprayers to spot treat tree species growing in the sapling and shrub strata. The herbicide used will be foliar active only (not soil active) and will be specific for control of broadleaf plants. The proposed action is not anticipated to negatively affect floodplains. Effects on wetlands were determined to be minimal and insignificant. The no-action alternative of continuing to mow the r/w's does not reduce maintenance costs and was determined to have greater impact than the preferred alternative. The alternative of broadcast herbicide application with mechanized equipment also was determined to have a greater environmental impact than the preferred

alternative. Cumulative impacts to floodplains and wetlands are negligible to minor under the proposed action; therefore no floodplain/wetland mitigation is required.

DOE-SR will publish, in accordance with 10 CFR Part 1022.14, a Statement of Findings based on the information in this document. The Statement of Findings will include a brief description of the proposed action, an explanation of why it is located in a floodplain/wetland, the alternatives considered, a statement indicating if the action conforms to state and local floodplain requirements, an explanation of wetland mitigation steps, and a brief description of the steps to be taken to minimize potential harm within the floodplains and wetlands. After publication of its Statement of Findings, a 15-day public review period is required before implementing the proposed action.

8.0 References

10 CFR 1021, U.S. Department of Energy, *National Environmental Policy Act Implementing Procedures*, Subpart D, Appendix B.

10 CFR 1022, U.S. Department of Energy, *Compliance With Floodplain and Wetland Environmental Review Requirements.*

33 CFR 328, U.S. Army Corps of Engineers, *Definition of Waters of the United States.*

Executive Order 11988. *Floodplain Management.*

Executive Order 11990. *Protection of Wetlands.*

FEMA 2010. FIRM, Barnwell County, South Carolina (SC). Panel 275 of 500, Map Number 45011C0275D.

FEMA 2012. FIRM, Aiken County, SC. Panel 685 of 775, Map Number 45003C0685E; Panel 695 of 775, Map Number 45003C0695E; Panel 700 of 775, Map Number 45003C0700E.

SCDHEC NPDES General Permit for Discharges from the Application of Pesticides, Permit No. SCG160000.

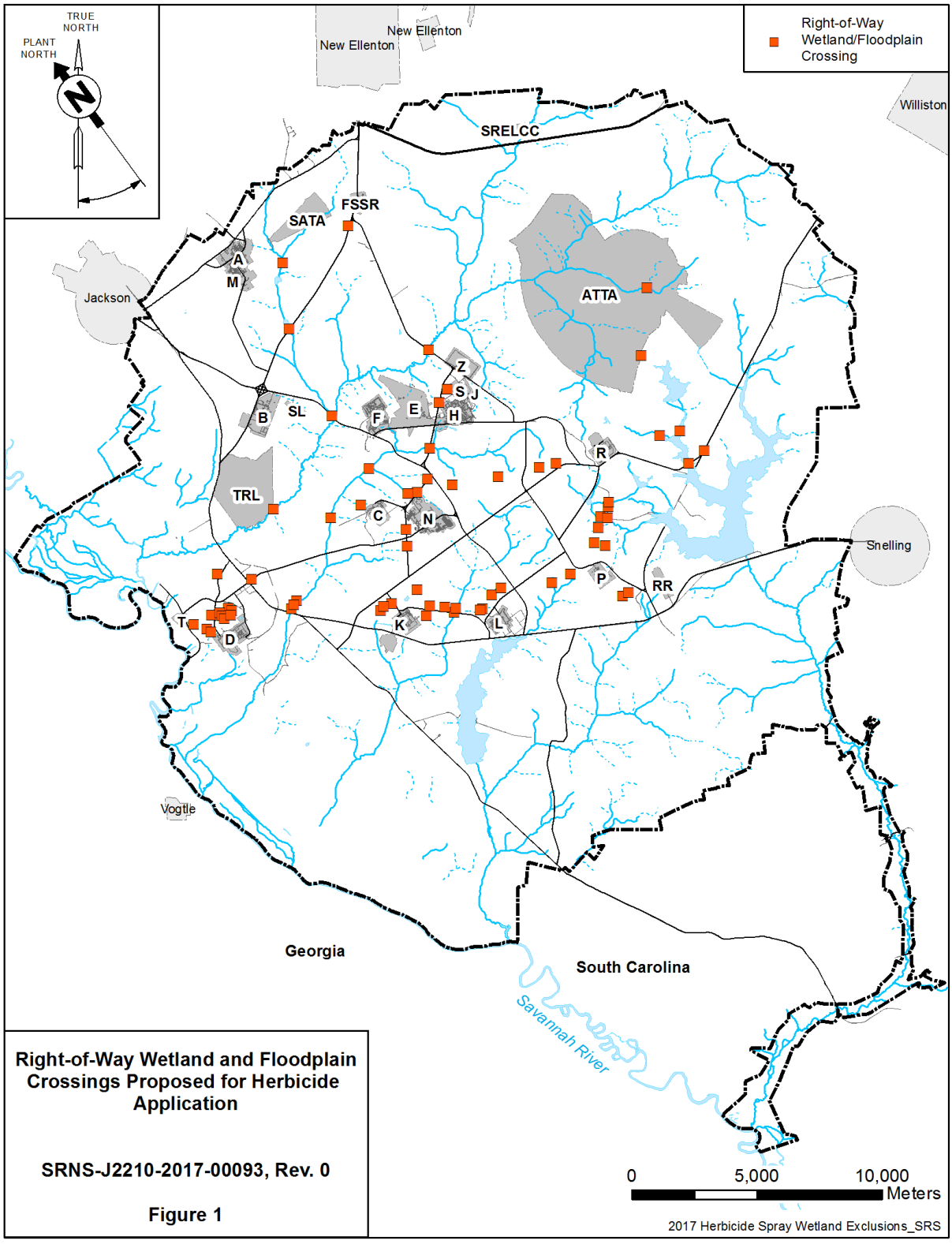
U.S. Army Corps of Engineers, Wetlands Research Program Technical Report Y-87-1, *Corps of Engineers Wetland Delineation Manual.*

U.S. Army Corps of Engineers, *Regional Supplemental to the Corps of Engineers Wetlands Delineation Manual: Atlantic and Gulf Coastal Plain Region.*

U.S. Department of Energy Categorical Exclusion Determination Form: *Vegetation control in 13.8kV Lines Rights of Way*, EEC No. OBU-G-2017-0056-0, Month 2017.

U.S. Department of Energy – Savannah River Site. Savannah River Site Pesticide Discharge Management Plan. EQMD-17-009.

U. S. Environmental Protection Agency. https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/technical-overview-ecological-risk-assessment-0



Right-of-Way Wetland and Floodplain Crossings Proposed for Herbicide Application

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Figure 1

Photograph 1. Typical small wetland crossing of a 13.8-kV distribution line; the length of the crossing is approximately 100 feet.

Photograph 2. Typical large wetland crossing of a 13.8-kV distribution line (right side of photograph); the length of the crossing is approximately 0.9 mile.