Floodplain and Wetland Assessment for the Installation of a Fiber Optic Cable from U.S. Forest Service-Savannah River Headquarters to the Advanced Tactical Training Area at the Savannah River Site

Prepared for

U.S. Department of Energy
Savannah River Operations Office
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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 1022.11 (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 was prepared by DOE-Savannah River (DOE-SR) in accordance with the requirements of 10 CFR 1022.13 to evaluate potential impacts to floodplains and wetlands from the installation of a fiber optic cable at the Savannah River Site (SRS) from U.S. Forest Service - Savannah River (USFS-SR) Headquarters (HQ) to the Advanced Tactical Training Area (ATTA). The provisions of 10 CFR 1022.13 (c) permit an assessment to be prepared separately for those floodplain and wetland 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) because the proposed action will occur in floodplains associated with Upper Three Runs (UTR) and Tinker Creek (TC). This assessment also addresses requirements of Executive Order 13690[1] restoring the Federal Flood Risk Management Standard (FFRMS) that expanded flood elevation and flood hazard area determinations (refer to Section 3.2 for details).

[1] Executive Order 14030, "Climate-Related Financial Risk (May2021), reinstated Executive Order 13690.

2.0 Background

SRS is upgrading their technological infrastructure by installing underground fiber optic cable at multiple site locations. The current project installs fiber optic cable from USFS-SR HQ to ATTA.

3.0 Project Description

The proposed action is the installation of fiber optic cable from USFS-SR HQ to ATTA (Figure 1). The installation will occur in shoulders of existing road fills approximately six feet from the road edge using a bulldozer-mounted mole plow (Figure 2) to create a narrow slit in the soil. The fiber optic cable reel is attached to the bulldozer; the cable feeds into the mole plow which places the cable in the bottom of the slit. Another piece of heavy equipment (*e.g.*, backhoe) trailing the bulldozer runs over the slit to close it. Minimum installation depth below the ground surface will be approximately 48 inches. The project does not meet the definition of a critical action under 10 CFR 1022.4.

The fiber optic cable installation will begin in the equipment room at 760-1G at USFS-SR HQ to connect to an existing fiber optic network. From USFS-SR, the new fiber optic cable will be installed in the south shoulder of Craig Road to UTR. Directional boring (Figure 3) will be used to bore under UTR at the Craig Road bridge to avoid impacts to the UTR streambed. From UTR, the installation will continue along Craig Road until turning left on Eubanks Road (install on east shoulder), then turning right on Cox Bridge Road (install on south shoulder). The route will continue on Cox Bridge Road to TC. Directional boring will be used to bore under TC at the Cox Bridge Road bridge to avoid impacts to the TC streambed. From TC, the installation will continue along Cox Bridge Road, terminating at the ATTA Central Office telecommunications exchange. The length of the installation is approximately 8.5 miles.

Directional boring equipment will be set up on the road shoulder for one to two days at each location, then moved off-site or to an upland laydown yard. The bulldozer, plow, and fiber optic cable reel will remain in place on the road shoulder at the end of each workday, then removed from the site at the completion of the project. Materials and ancillary support equipment will be stored at an upland laydown yard or remain on the road shoulder at the end of the workday.

DOE-SR plans to conduct the proposed action under its provisions for application of a categorical exclusion 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 B1.7, Electronic Equipment. An SRS Environmental Evaluation Checklist (EEC) was prepared for the proposed action (EEC OBU-G-2020-0049, Rev. 3).
- No extraordinary circumstances exist that may affect the significance of the environmental effects of the proposed action.
- 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 at 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 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 negative impacts on the floodplains. The proposed action will not result in a loss of floodplain function or storage volume, will avoid impacts to streams and wetlands, and therefore does not require mitigation.

3.1 Description of Wetlands

Installation of the fiber optic cable will occur in the shoulder of existing road fill. The shoulders of the existing road fills do not meet the definition of waters of the U.S. as defined by the U.S. Army Corps of Engineers (33 CFR 328). Although forested wetlands associated with UTR and TC are present adjacent to the road fill near the stream crossings, these wetlands will not be impacted by the proposed action.

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. Where floodplains of SRS streams are mapped by FEMA, they are classified as Special Flood Hazard Areas (SFHA) subject to inundation by

the one percent annual chance flood (100-year flood); the 100-year flood is the flood hazard. The SFHAs are further defined as Zone A [no Base Flood Elevation (BFE) determined] and Zone AE (BFE determined). The SFHAs meet the definitions of base floodplain and critical action floodplain defined by 10 CFR 1022.4.

The Federal Flood Risk Management Standard (FFRMS) identifies three approaches for establishing the FFRMS elevation and flood hazard area:

1. Utilizing the best-available, actionable hydrologic and hydraulic data and methods that integrate current and future changes in flooding based on climate science (heretofore referred to as the "climate-informed science approach);

2. Freeboard (BFE + 2 feet) for non-critical actions; and

3. 500-year flood elevation.

Both the Craig Road crossing of UTR and the Cox Bridge Road crossing of TC are in FEMA-mapped floodplains. Both floodplain areas are characterized as Special Flood Hazard Areas subject to inundation by the one percent annual chance flood (100-year flood). The base flood elevation for UTR at the Craig Road bridge is 167 feet above mean sea level (asl) (Figure 4); TC at the Cox Bridge Road bridge is 184 feet asl (Figure 5). Utilizing the FFRMS Freeboard approach, the FFRMS 100-year flood elevations for the UTR and TC crossings would be 169 and 186 feet asl, respectively.

4.0 Effects of the Proposed Action on Floodplains and Wetlands

The proposed activity will not result in the placement of fill material in the floodplains of UTR and TC; there will be no loss of floodplain function or storage volume. The proposed action will have no effect on floodplain services. Fiber optic cable installation will not occur in wetlands and will have no effect on wetland services or functions. As mentioned above in 3.0 Project Description, equipment and materials will be staged in an upland laydown yard or on the road shoulder, not in floodplains or wetlands.

There will be no positive or negative, no direct or indirect, and no long- or short-term measurable effects of the proposed action on floodplains or wetlands. The project will occur on DOE property and will not affect lives or property at or downstream of the project sites.

The effects of the proposed fiber optic cable installation on floodplain and wetland values were considered for conservation of existing flora and fauna, cultural resources, cultivated resources, aesthetic values, and public interest. The proposed action will have no effect on conservation of existing flora and fauna because the activity will occur in existing road fill. The proposed activity will not impact cultural resources because it will occur in existing road fill. The proposed action will not impact cultivated resources because they do not exist on SRS. The proposed activity is not considered to negatively impact aesthetic values because there will be nothing above ground resulting from the proposed action except buried cable markers placed every 1,000 feet over the buried fiber optic cable. The proposed action will not affect existing public interest associated with the locations of the proposed action. The survival, function, and quality of the wetlands associated with UTR and TC adjacent to a small portion of the fiber optic cable installation route will not be affected by the proposed activity.

5.0 Alternatives Evaluated

The purpose of the proposed action is to install fiber optic cable from USFS-SR HQ to ATTA. The preferred alternative is to install the cable using a bulldozer-mounted mole plow in the shoulder of existing road fill. The no-action alternative is to not install the fiber optic cable. The no-action alternative is infeasible because it fails to meet project objectives. A third alternative consisting of using a trenching machine to excavate a trench for fiber optic cable installation was considered economically infeasible. The trenching machine alternative is slower, thus more expensive. The preferred alternative using the bulldozer-mounted mole plow is at least three times faster than a trenching machine.

The preferred alternative has no effect on floodplains and wetlands. The no-action alternative of not installing the fiber optic cable also has no effect on wetlands but does not meet project objectives. The third alternative, using a trenching machine instead of a bulldozer-mounted mole plow, also would have no effect on floodplains and wetlands. However, the trenching machine alternative was determined to be economically infeasible because it would increase costs by at least a factor of three.

6.0 Mitigation

The proposed action will not negatively impact floodplains or wetlands and does not require mitigation.

7.0 Summary and Conclusions

DOE-SR proposes the installation of a fiber optic cable at SRS from USFS–SR HQ to ATTA. A bulldozer-mounted mole plow will be used to bury the fiber optic cable at least 48 inches below the ground surface. The installation route crosses Upper Three Runs (UTR) and Tinker Creek (TC); floodplains and wetlands are associated with both streams. The proposed action will not result in a loss of floodplain function or storage volume. The installation will occur in the shoulder of existing road fill, avoiding impacts to UTR and TC wetlands. Directional boring will be used to install the fiber optic cable under UTR and TC, avoiding impacts to the streambeds. The no-action alternative fails to meet project objectives. The trenching machine alternative also avoids floodplain and wetland impacts but increases project costs by at least a factor of three.

DOE-SR will publish, in accordance with 10 CFR Part 1022.12, a Notice of Proposed Floodplain Action that will include a brief description of the proposed action and project location, based on the information in this document. The Notice of Proposed Floodplain Action will be sent to the FEMA regional office, appropriate Native American tribes, the South Carolina Department of Health and Environmental Control, as well as persons or groups known to be interested in or potentially affected by the Proposed Action. The Notice will be published so that it provides an opportunity for a 15-day public review and comment period pursuant to 10 CFR 1022.12(b). DOE-SR will consider substantive comments for reevaluating the practicability of alternatives and mitigation. DOE-SR will then issue a Floodplain Statement of Findings that incorporates substantive comments from the Notice of Proposed Floodplain Action. DOE-SR will allow at least 15 days for public review of the Floodplain Statement of Findings before implementing the proposed floodplain 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.*

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

Environmental Evaluation Checklist OBU-G-2020-0049, Install Underground Fiber Optic Cable at SRS, Rev. 3, January 11, 2023.

Executive Order 11988. *Floodplain Management.*

Executive Order 11990. *Protection of Wetlands.*

Executive Order 13690. *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input of Wetlands.*

Executive Order 14030. *Climate-Related Financial Risk.*

Federal Emergency Management Agency 2012. Flood Insurance Rate Map, Aiken County, SC. Panel 685 of 775, Map Number 45003C0685E.

Federal Emergency Management Agency 2012. Flood Insurance Rate Map, Aiken County, SC. Panel 705 of 775, Map Number 45003C0705E.

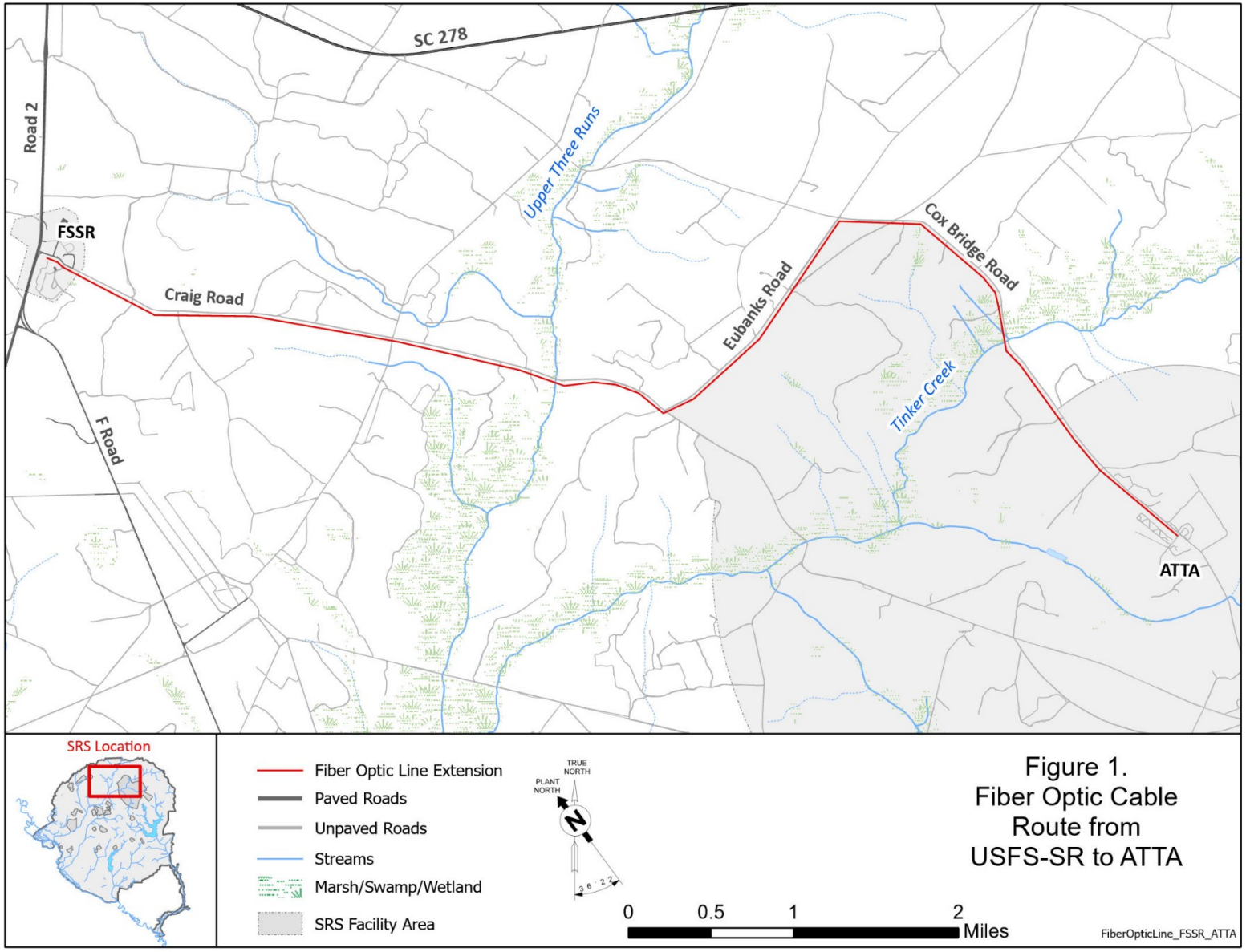

Figure 1. Fiber Optic Cable Route from USFS-SR to ATTA

Figure 2. Bulldozer, mole plow, and cable reel.

Figure 3. Directional boring machine.

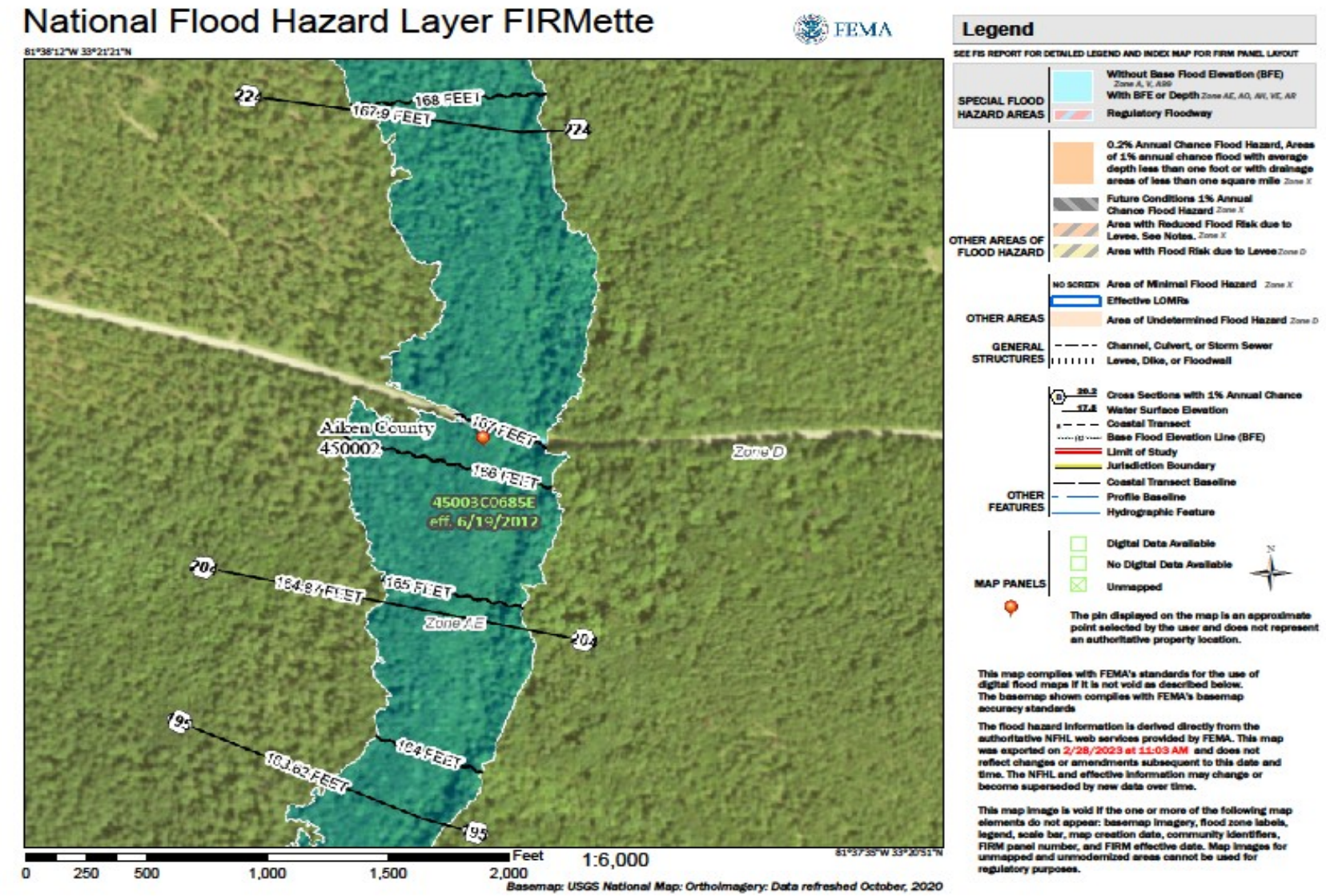

Figure 4. Upper Three Runs floodplain crossing.

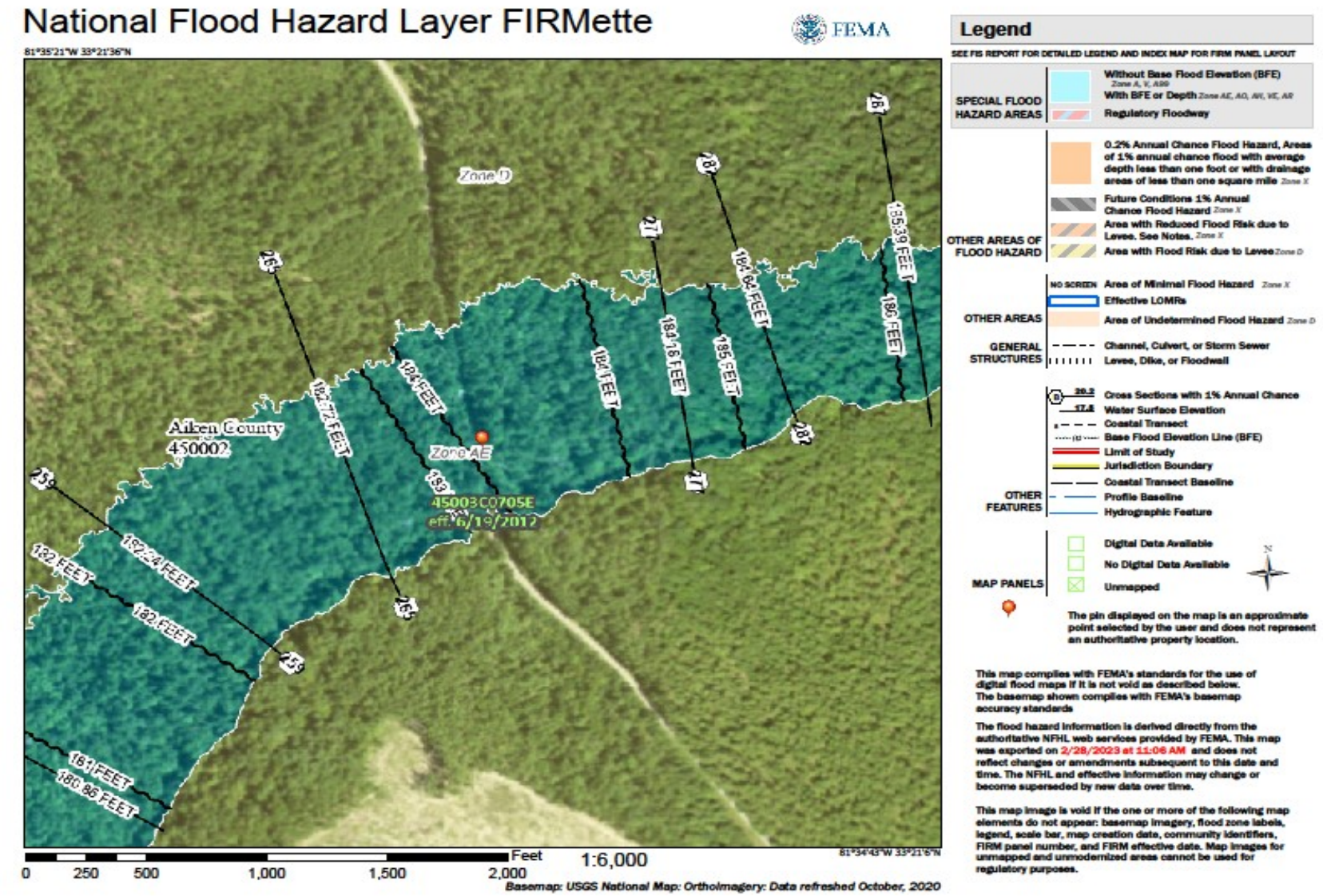

Figure 5. Tinker Creek floodplain crossing.