PUBLIC NOTICE

Public Notice No. SAC 2019-01427 **June 8, 2021**

The South Carolina Department of Health and Environmental Control has received an application for an individual State Water Quality Certification (WQC) of a Department of the Army Corps of Engineers Nationwide Permit **(NWP 12)** pursuant to Section 401 of the Clean Water Act (33 U.S.C. 1341). The project also affects State navigable waters and the WQC review will consider issues of R.19-450, *Permits for Construction in Navigable Waters*, in accordance with the procedures of R.61-101, *Water Quality Certification.*

APPLICANT: Dominion Energy

WATERBODIES: Waters of the U.S. on the project site, including wetlands, drain east through Jefferies Creek, Mills Branch, Bigham Branch, Briar Branch, Barfield Mill Creek, Bullock Branch, and unnamed tributaries to the Great Pee Dee River. The Great Pee Dee River and Jeffries Creek are State navigable waters subject to the permitting jurisdiction of R.19-450.

ACTIVITY: The project is a gas main installation known as the River Neck to Kingsburg 16-inch Gas Main. The project consists of the installation of a 16-inch gas main within an approximately 40-foot-wide existing easement and a 10-footwide expansion of the easement to the west. The gas main will be installed through a combination of horizontal directional drilling (HDD) and open trench excavations. The crossing under Jeffries Creek will be installed by HDD. The proposed project will result in temporary clearing impacts to 6.326 acres of wetlands and 53 linear feet of stream, temporary excavation impacts to 8.35 acres of wetlands and 119 linear feet of stream, permanent fill impacts to 0.0041 acres of wetlands and 22 linear feet (0.0045 acre) of stream, and permanent clearing impacts to 2.986 acres of wetlands and 21 linear feet of stream. Following the initial clearing and placement of the gas main, native material will be placed to match preexisting grade and allowed to revegetate naturally. A smaller portion of the cleared areas within the ROW will be maintained as cleared land for future maintenance. The applicant is not proposing mitigation because the project will result in less than 0.01 acre of permanent fill impact in wetlands and less than 0.005 acre of permanent fill impact in streams. Dominion Energy stated the basic purpose of the proposed project is to install a gas main to support the growth in the area by providing the additional capacity and flexibility to meet the current and anticipated customer demands for natural gas. They stated that the overall purpose is to provide natural gas utilities in Florence County, South Carolina for developments requiring natural gas as an energy supply. The U.S. Army Corps of Engineers is processing the application for authorization under Nationwide Permit 12, Utility Line Activities (SAC 2019-01427). See also application materials, including supporting documentation, figures, and a frac-out plan appended to the DHEC public notice on the DHEC Environmental Public Notice webpage here: https://scdhec.gov/permits-regulations/public-notices.

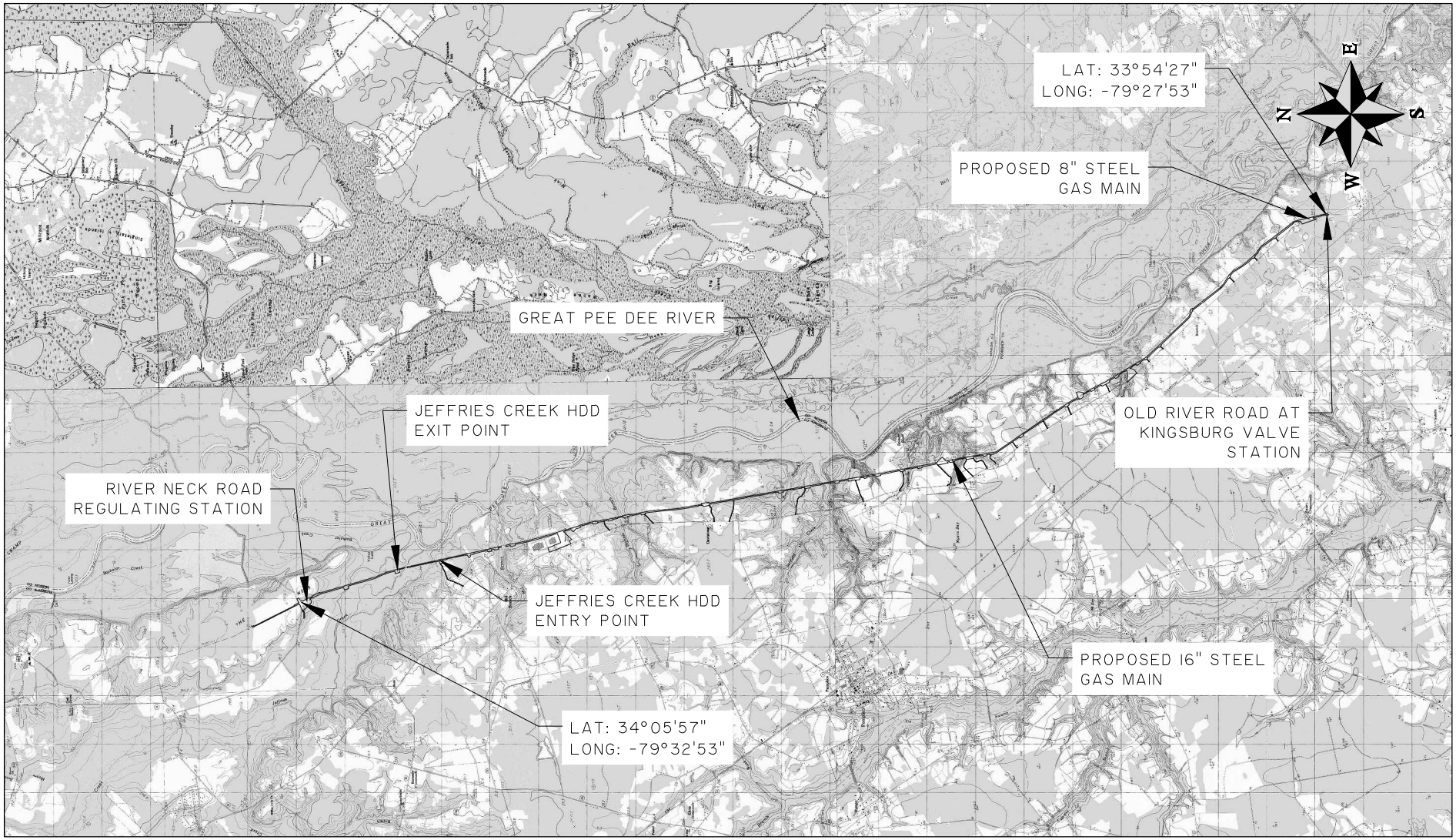
LOCATION: The proposed project corridor is located south of the Kingsburg Valve Station located near 2187 Old River Road in Johnsonville, Florence County South Carolina. The

proposed project corridor is an approximately 14.5 mile, 50-foot-wide corridor (40 feet of which is within an existing Dominion Energy right-of-way or ROW as described previously) located east of North Old River Road and South Old River Road starting near the intersection of River Neck Road and Wross Lane. The proposed pipeline will parallel an existing Dominion Energy 8-inch gas pipeline within an existing ROW. The proposed project corridor is located on the Pamplico North, Pamplico South, and Gres Ham United States Geological Survey (USGS) Topographic Map. The approximate center of the project corridor is located at 34.004307°N, -79.523488°W. See also attached map showing project corridor.

This public notice is being distributed to interested persons and agencies to gain comments, which will aid the South Carolina Department of Health and Environmental Control in making a final decision regarding the proposed work. All comments and data in support or opposition to the proposed work and related to compliance with water quality standards, protection of classified uses, and related water quality impacts should be submitted in writing to:

SC Department of Health and Environmental Control
Division of Water Quality
Attn: Rusty Wenerick
2600 Bull St
Columbia SC 29201-1708

Comments will be received at the above address until **June 23, 2021.**



RIVER NECK TO KINGSBURG 16" GAS MAIN

WETLAND IMPACT SITE MAP

CLIENT:

DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC

DATE: 5/27/2020 DRAWN BY: DNF SHEET: 1

JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: 1" = 10000'

THOMAS & HUTTON

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Mt. Pleasant, SC 29464 • 843.849.0200
www.thomasandhutton.com

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Section 404 Individual Permit Application
Supporting Documentation

River Neck to Kingsburg 16” Gas Main
Florence County, South Carolina

Terracon Project No. EN197161

June 2, 2021

Prepared for:
United States Army Corps of Engineers
1949 Industrial Park Road, Room 140
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South Carolina Department of Health and Environmental Control
Section 401 Water Quality Certification
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EXECUTIVE SUMMARY

Dominion Energy South Carolina is requesting a Section 404 Individual Permit to support the development of a gas main installation referred to as River Neck to Kingsburg 16" Gas Main. The proposed 212.2-acre project corridor (site) is located south of the Kingsburg Valve Station located near 2187 Old River Road in Johnsonville, Florence County South Carolina. The proposed site is an approximately 14.5 mile, 50-feet wide corridor with 40-feet within an existing Dominion Energy right-of-way (ROW) located east of North Old River Road and South Old River Road starting near the intersection of River Neck Road and Wross Lane. The proposed pipeline would parallel an existing Dominion Energy 8-inch gas pipeline within an existing ROW. The proposed site is located on the Pamplico North, Pamplico South, and Gres Ham United States Geological Survey (USGS) Topographic Map. The approximate center of the site is located at 34.004307°N, -79.523488°W. The project site contains 20.84 acres of jurisdictional aquatic resources.

There is an increasing demand for natural gas in eastern South Carolina due to residential, commercial and industrial growth. Dominion Energy has determined the basic purpose of the proposed project is to install a gas main to support the growth in the area by providing the additional capacity and flexibility to meet the current and anticipated customer demands for natural gas. The overall purpose of the proposed project is to provide natural gas utilities in Florence County, South Carolina for developments requiring natural gas as an energy supply.

The application complies with the conditions for Nationwide Permit (NWP) 12 - Utility Line Activities. NWP 12 was vacated on April 15, 2020 by the US District Court for the District of Montana based on a decision in the case of Northern Plains Resource Council v. U.S. Army Corps of Engineers. Due to NWP 12 being vacated this application includes a practicable alternatives analysis, which demonstrates compliance with CFR 40 Part 230 Section 404(b)(1) in order to obtain an Individual Permit. Based on the evaluation of the alternative sites, the only site determined to meet the objectives of the project purpose and need while minimizing impacts to aquatic resources to the maximum extent is utilization of an existing Dominion Energy ROW. The proposed project will result in 6.337 acres of temporary clearing impacts, 8.378 acres of temporary excavation impacts, 0.009 acres of permanent fill impacts, and 2.990 acres of permanent clearing impacts within jurisdictional freshwater wetlands and non-wetlands waters. The proposed wetland impacts associated with the project are depicted in the permit drawings in Appendix A.

The proposed impacts associated with the project do not conflict with Section 23(c) of the 2017 Nationwide Permit General Conditions or the Final Regional Conditions for 16 Nationwide Permits in Charleston District, dated March 15, 2021. No mitigation is proposed because the project will not result in more than 1/10-acre of discharge of dredged or fill material into WOTUS, including wetlands at the proposed impact locations. Additionally, the project will not result in more than 0.005-acre loss of intermittent and/or perennial stream bed for a single crossing. Clearing impacts are the only permanent impacts associated with the project over 1/10-acre.

1.0 INTRODUCTION

The River Neck to Kingsburg 16" Gas Main project would result in unavoidable impacts to wetlands. This submittal includes a "Joint Federal and State Application Form for Activities Affecting Waters of the United States (WOTUS)". This application and supporting documentation:

- Provides documentation for Unites States Army Corps of Engineers (USACE) demonstrating compliance with CFR 40 Part 230 Section 404(b)(1) Clean Water Act (CWA);
- Presents applicable environmental documentation to support USACE in making a decision with regard to 42 USC § 4321 et seq. National Environmental Policy Act (NEPA);
- Demonstrates compliance with the requirements of 33 USC §§ 403, 407, 1341, and 1344 CWA;
- Demonstrates compliance with the regulatory requirements set forth in the USACE's regulations at 33 CFR Parts 320-332.

The proposed project is expected to commence upon the approval of the Individual Permit by USACE and SCDHEC.

1.1 Project Location

The proposed 212.2-acre project corridor (site) is located northeast of the Kingsburg Valve Station located near 2187 Old River Road in Johnsonville, Florence County South Carolina. The proposed site is an approximately 14.5 mile, 50-feet wide corridor with 40-feet within an existing Dominion Energy right-of-way (ROW) located east of North Old River Road and South Old River Road starting near the intersection of River Neck Road and Wross Lane. The proposed pipeline would parallel an existing Dominion Energy 8-inch gas pipeline within an existing ROW. The proposed site is located on the Pamplico North, Pamplico South, and Gres Ham United States Geological Survey (USGS) Topographic Map. The approximate center of the site is located at 34.004307°N, -79.523488°W.

1.1.1 Watershed

The site is located in the Middle Pee Dee River Watershed [Hydrological Unit Code (HUC) 03040201]. WOTUS, including wetlands on the site drain east through Jefferies Creek, Mills Branch, Bigham Branch, Briar Branch, Barfield Mill Creek, Bullock Branch, and Unnamed Tributaries to the Great Pee Dee River. Jeffries Creek and Great Pee Dee River are listed on the 2016 South Carolina List of Impaired Waters by 12-Digit HUC.

1.1 Description of Proposed Project

The project consists of the installation of a 16" gas main within an approximately 40 feet wide easement and including a 10 feet expansion of the easement to the west, all which is 212.2 acres. The gas main will be installed through a combination of horizontal directional drilling (HDD) and open trench excavations. The proposed project will result in 6.337 acres of temporary clearing impacts, 8.378 acres of temporary excavation impacts, 0.009 acres of permanent fill impacts, and 2.990 acres of permanent clearing impacts within jurisdictional freshwater wetlands and non-wetlands waters. Following the initial clearing and placement of the gas main native material will be placed to match preexisting grade and allowed to revegetate naturally. A smaller portion of the cleared areas within the ROW will be maintained as cleared land for future maintenance.

1.2 Site History

Readily available historic USGS topographic maps and selected historical aerial photographs were reviewed to obtain information concerning the history of the site. The site has historically consisted of cleared ROW, agricultural land, and wooded land.

1.3 Existing Site Conditions

Undeveloped portions of the site consist of cleared land and wooded land. The majority of the site consists of cleared and maintained ROW, agricultural land, and undeveloped wooded land. The wooded land on the site consists of a combination of mixed pine-hardwood forest and forested wetlands. Figure 1 is a 2018 aerial view of site depicting general existing conditions.

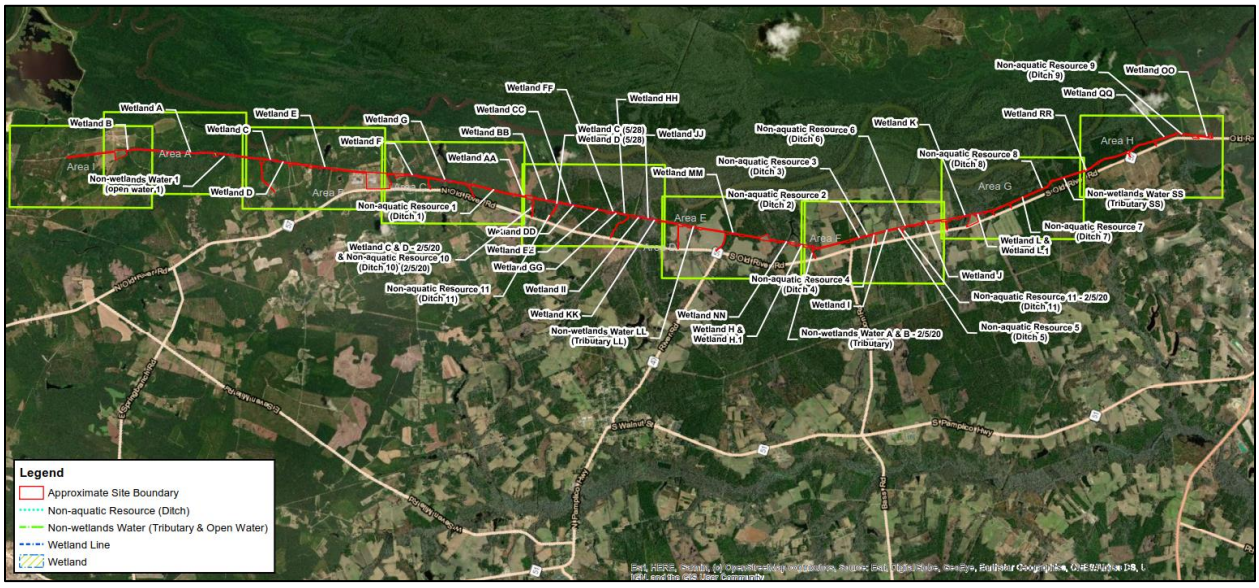

Figure 1: 2018 Aerial view of site depicting general existing conditions

Terracon delineated the wetlands within the project boundary on June 4, 2019 through June 6, 2019 and December 19, 2019. A Jurisdictional Determination (JD) Request package (SAC-2019-01427), dated August 21, 2019 was submitted to the U.S. Army Corps of Engineers (USACE). The USACE completed a JD letter, dated May 27, 2020, which is included in Appendix B.

Terracon visited the site and delineated wetlands within portions of a revised boundary on May 28, 2020. The revised boundary and delineation is depicted in the Depiction of Aquatic Resources Map included in Appendix B. The WOTUS identified during the Jurisdictional Determination process are depicted in Figure 1.

The proposed wetland impacts are non-Section 10 freshwater wetlands. The overstory in the wetland areas primarily consists of loblolly pine (*Pinus taeda*), blackgum (*Nyssa sylvatica*), swamp tupelo (*Nyssa biflora*), bald cypress (*Taxodium distichum*), sweetgum (*Liquidambar styraciflua* L.), water oak (*Quercus nigra*), and red maple (*Acer rubrum*). The understory primarily consists of sweetgum (*Liquidambar styraciflua* L.), dogfennel (*Eupatorium capillifolium*), redbay (*Persea borbonia*), wax myrtle (*Morella cerifera*), smooth blackberry (*Rubus Canadensis*) and switchcane (*Arundinaria tecta*). The majority of the overstory is outside of the predominantly cleared ROW and outside of the proposed wetland impact areas.

The upland vegetation that is not cleared or planted agricultural land predominantly consists of loblolly pine (*Pinus taeda*), southern red oak (*Quercus falcata*), sweetgum (*Liquidambar styraciflua L.*), and water oak (*Quercus nigra*). Saplings and shrubs consist of sweetgum (*Liquidambar styraciflua L.*) and southern dewberry (*Rubus trivialis*).

2.0 PRACTICABLE ALTERNATIVES ANALYSIS

As a component of the permit applications to discharge dredged or fill material into WOTUS, the USACE is required to analyze and evaluate alternatives to the proposed project that could achieve its purpose and need. The USACE conducts this analysis pursuant to two main requirements:

- The 404(b)(1) Guidelines (Guidelines) associated with the CWA of 1972, Federal Register, 40 CFR Part 230, and

- The USACE Implementation Procedures for the NEPA of 1969, Federal Register, 33 CFR Part 325, Appendix B.

The USACE must evaluate reasonable and practicable alternatives that accomplish the overall project purpose. As stated in the Guidelines, no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences. The Guidelines include two rebuttable presumptions.

The first presumption states that if a project does not need to be in a special aquatic site, such as a wetland, to meet its basic purpose, the project is not "water-dependent", and it is presumed that alternatives that do not affect special aquatic sites are available. The second presumption states that if a project involves a discharge of dredged or fill material into a special aquatic site, a practicable alternative located in uplands is presumed to have less adverse impact on the aquatic ecosystem.

The applicant must identify and analyze alternatives that would support a rebuttal of the aforementioned presumptions in order for the USACE to determine the project has passed the alternatives portion of the Guidelines. The alternatives analysis must include several key parameters, which are briefly described below and explored in greater detail in the document. Generally, the parameters are broken down into the following steps:

- **Define Purpose and Need:** The applicant's purpose and need should clearly state the overall project purpose and need without being so restrictive to exclude other alternatives. Correspondingly, the purpose and need should not be too general in nature so that it does not take the applicant's real needs into consideration.

- **Identification of Alternatives:** The applicant must identify the alternatives that would meet the overall project purpose.

- **Evaluation of Alternatives for Practicability:** The applicant must demonstrate which alternatives that are practicable and/or non-practicable with respect to the overall project purpose.

- **Identification of the Least Environmentally Damaging Practical Alternative:** The Guidelines require that the Least Environmentally Damaging Practicable Alternative (LEDPA) be selected.

2.1 Project Purpose and Need

The identification of the purpose and need is the first step for USACE to evaluate the proposed project in accordance with the Guidelines. Similarly, the NEPA process also requires development of a purpose and need for the project. The project purpose forms the groundwork for the USACE to evaluate compliance with the Guidelines and NEPA.

Dominion Energy has determined the basic purpose of the proposed project is to install a gas main to support the growth in the area. The overall purpose of the proposed project is to provide natural gas utilities in Florence County, South Carolina for developments requiring natural gas as an energy supply.

2.1.1 Considerations in Development of Purpose and Need

Florence County has experienced significant business and job growth in recent years and last year (2019) the County secured $89 million in industry investment and 403 arriving jobs. With Florence County Economic Development Partnerships, the momentum in growth is expected to continue and city leaders plan to increase partnerships with universities and technical colleges to provide training and the education of employers coming to the area. Announcements of new industry to locate in Florence County is expected. In addition to Florence County economics, job growth has occurred in Horry County which is spreading west toward Florence County. Based on these predictions, the energy supply demand will rapidly increase in the corridor between Florence and Horry County[1].

Dominion Energy's primary mission is to serve their customers safely and reliably; strengthen their communities; reward their shareholders; minimize environmental impacts and live their values. Due to the energy demand in the area Dominion Energy's goal is to fulfill and serve their customers while meeting all aspects of their primary mission.

[1] *http://www.fcedp.com/press2020/article466987c9508523.htm*

2.1.2 Rebuttal of Water Dependency

The proposed project is not water dependent. According to the USACE, examples of water dependent projects may include, but are not limited to certain boat launching facilities, mooring facilities and docks[2].

2.2 Development of Alternatives

Based on the CWA 404(b)(1) Guidelines associated with the CWA of 1972, (40 CFR Part 230), there is a presumption that alternatives exist which do not affect special aquatic sites. Therefore, the applicant explored multiple alternatives, which included identifying alternative sites addressing this presumption, while meeting the project purpose.

In preparation for the proposed project, Dominion Energy developed a team of in-house representatives and external consultants to assist in the planning, permitting, and mitigation efforts associated with the project.

The alternatives for the proposed project were developed based on the purpose and need and in support of the rebuttal of the aforementioned presumptions. The proposed project would result in unavoidable impacts to wetlands during development. The planning included consideration of off-site and on-site alternatives. The goal during project master planning was to conceptually identify initial and future needs of a development and the effects to natural environment to the maximum extent practicable so permitting and mitigation can be identified and addressed appropriately in the early stages of a project.

The goal of the alternatives analysis development process is to evaluate a reasonable range of alternatives[3] that meet the project purpose and project specific criteria, while resulting in the LEDPA. The range of alternatives considered may have varying degrees of impacts to environmental quality.

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[2] *Guidelines For Preparation of Analysis of Section 404 Permit Applications Pursuant To The Section 404(B)(1) Guidelines Of The Clean Water Act (40 CFR, Section 230), http://www.sas.usace.army.mil/Portals/61/docs/regulatory/IP_SAS_404_b_1_Guidelines.pdf*

[3] *"range of alternatives" refers to the alternatives discussed in environmental documents. It includes all reasonable alternatives, which must be rigorously explored and objectively evaluated, as well as those other alternatives, which are eliminated from detailed study with a brief discussion of the reasons for eliminating them. Section 1502.14. A decision maker must not consider alternatives beyond the range of alternatives discussed in the relevant environmental documents.*

The alternatives developed for this project include:

- alternative site locations, including those that might involve less adverse impacts to wetlands and/or WOTUS
- alternatives that would involve greater adverse impact to WOTUS
- alternatives that would result in no change to the project site

2.2.1 Site Selection Criteria

The alternatives evaluated are based on specific site selection criteria identified during development of the purpose and need of the proposed project. Dominion Energy developed the following site selection criteria as a measure of a successful gas main installation from River Neck Road Regulating Station to Kingsburg Valve Station, which are listed in order of priority and described below.

1. Location within an existing easement
2. Ability to acquire agreements for easements
3. Ability to avoid permanent clearing impacts
4. Distance from River Neck Road Regulating Station to Kingsburg Valve Station
5. Readily accessible

2.2.1.1 Location within an Existing Easement

Co-location of the proposed pipeline within an existing ROW is the primary site selection criteria identified by Dominion Energy. Conformance with this criterion would result in avoidance of new impacts to sensitive resources and other indirect environmental impacts associated with obtaining new easements.

2.2.1.2 Ability to Acquire Agreements for Easements

Alternative sites considered would be reasonably obtainable through easements. The applicant's site selection criteria includes the requirement for a site to be reasonably attainable through easement and must afford Dominion the ability to make limited use of another entity's real property. An attainable site was determined by the applicant to consist of land assumed to be available for easements. Constraints regarding owner agreements and easement terms were also a contributing factor for the applicant's section process.

2.2.1.3 Ability to Avoid Permanent Clearing Impacts

The applicant intends to minimize the amount of impacts to the WOTUS through selection of a site that allows avoidance and minimization of impacts to jurisdictional waters to the maximum extent practicable while achieving the project purpose and need. The amount of fill impacts for any given linear utility ROW design is negligible due to the nature of the installation of underground utilities. Most fill impacts are ancillary, such as rip rap for culverts or other minor stabilization measures. The primary permanent impact associated with utility ROWs is permeant clearing. Therefore, the efforts to minimize permanent clearing impacts to WOTUS and uplands was the focus.

2.2.1.4 Distance from River Neck Road Regulating Station to Kingsburg Valve Station

The shortest distance between two points is a straight line. The proposed site must be located in an area that will limit the length and horizontal distance of the proposed pipeline to the maximum extent practicable. Limiting the horizontal distance and variations with the proposed pipeline will also minimize the need to use angles and bends, which require field fabrication and result in stress and strain on the pipeline and delays in construction.

2.2.1.5 Readily Accessible

The site must be readily accessible from existing roadways that minimizes the need for creating temporary access roads during construction. Readily accessible also relates to the ability to access to the ROW for future maintenance.

2.3 Alternatives Considered

The alternatives considered for the proposed project include no-action, offsite, and onsite alternatives in accordance with the Guidelines.

2.3.1 No-action Alternative

NEPA requires the alternatives analysis to include the "no-action" alternative (40 CFR 1502.14(d)). There are two individual interpretations of "no action" alternative that must be considered depending on the nature of the proposal being evaluated. In some cases "no action" is "no change" from current use or management of the site. Therefore, the "no action" alternative may be thought of in terms of continuing with the present course of action.

The second interpretation of "no action" entails instances involving federal decisions on proposals for projects. "No action" in such cases would mean the proposed activity would not take place, and the resulting environmental effects from taking no action would be compared with the effects of permitting the proposed activity or an alternative activity to go forward. Where a choice of "no action" by the agency would result in predictable actions by others, this consequence of the "no action" alternative should be included in the analysis[4].

Neither interpretation of the no-action alternative meets the purpose and need of the proposed project.

2.3.2 Alternative Sites

Three alternative site locations were identified and evaluated based on the project purpose and the site selection criteria identified in Section 2.2. The alternative site locations evaluated are depicted below. A comparison of each alternative site relative to the project purpose and site selection criteria is also included.

As part of the site selection process, Terracon conducted a review of readily available resources to assist with identifying potential WOTUS on alternative sites. These resources include USGS Topographic Maps, United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) Map, United States Geological Survey (USGS) National Hydrography Dataset (NHD), USDA-NRCS Web Soil Survey data, topographic data, aerial photographs and other applicable information. Terracon in no way claims to have specialized knowledge of the aquatic features on the alternative sites evaluated. Each alternative site should be reviewed independently for potential aquatic resources and reviewed by applicable regulatory agencies to determine the presence and extent of aquatic resources as applicable and required by Section 404 of the Clean Water Act. Terracon's evaluation is based solely on desktop evaluation of readily available government resources unless specified otherwise.

Following review of each alternative sites using the site selection criteria, the alternative route with the fewest impacts to WOTUS was further evaluated for onsite alternatives analysis. While it is not reasonable to evaluate every potential alternative, the applicant has identified three alternatives sites that are generally representative of the various alternatives that could be implemented for this project. Figure 2 depicts the three alternative sites evaluated, which include the utilization an existing Dominion Energy ROW with an expanded footprint (Preferred Site), establishing a new easement along transportation ROWs, and establishing a new easement adjacent to the existing Dominion Energy ROW.

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[4] *Council On Environmental Quality, Executive Office of the President, Memorandum to Agencies: Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, 46 Fed. Reg. 18026 (March 23, 1981), As amended*

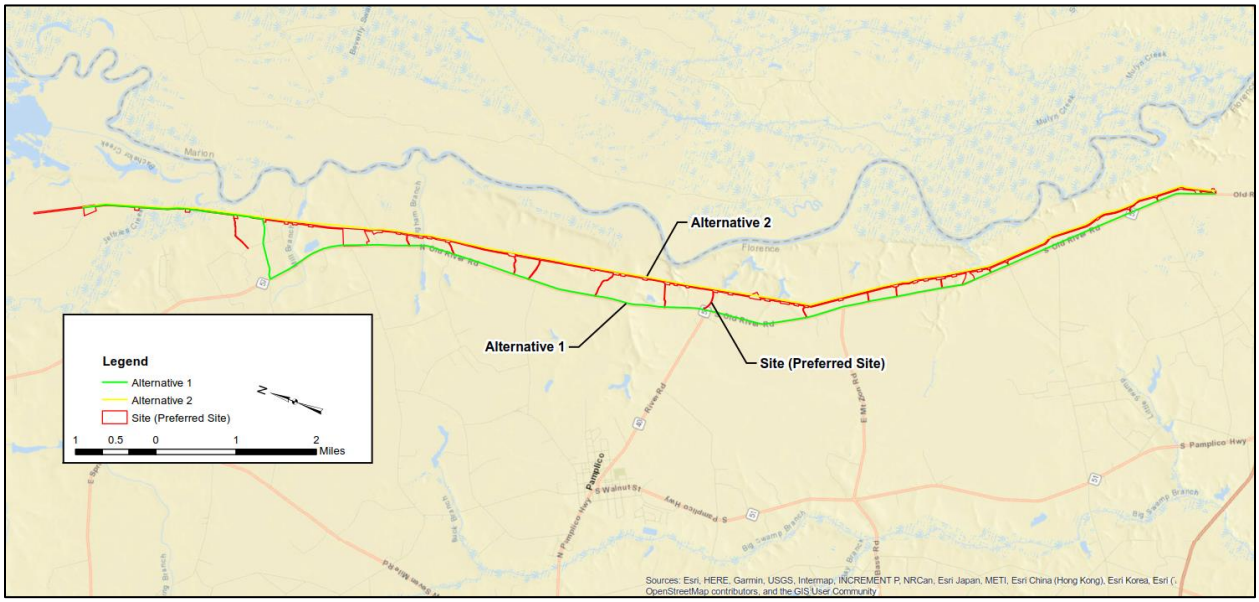


Figure 2: Alternative Sites

2.3.2.1 Existing ROW with Expanded Footprint (Preferred Site)

The approximately 212.2-acre site is 14.5 miles in length is located to the east of North Old River Road and South Old River Road starting near the intersection of River Neck Road and parallels the existing Dominion Energy 8-inch pipeline extending south of the Kingsburg Valve Station located near 2187 Old River Road in Johnsonville, Florence County South Carolina. The site boundary consists of an approximately 50-feet wide corridor with 40-feet within the existing Dominion Energy easement and an additional 10-feet expanded footprint to the west of the current easement. The existing easement predominantly consist of maintained cleared land.

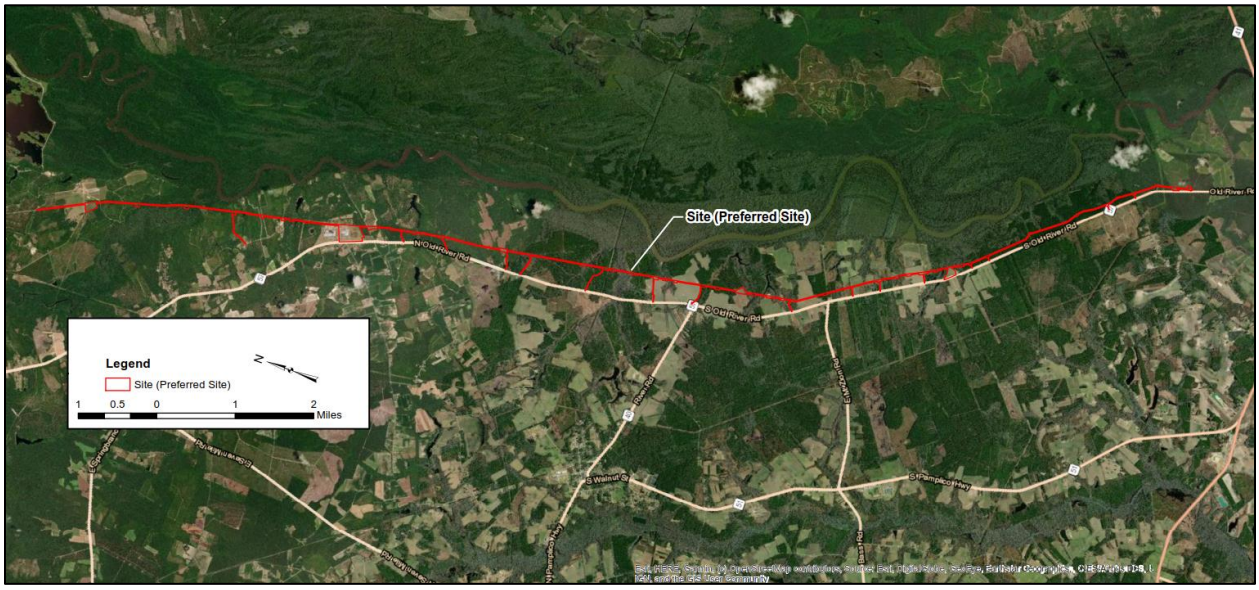


Figure 3: Exiting ROW with Expanded Footprint (2018 Aerial View)

Exiting ROW with Expanded Footprint - Site Selection Screening Criteria:

Location of existing easements: The majority of the preferred site is located with an existing Dominion Energy ROW located east of North Old River Road and South Old River Road starting at River Neck Road Regulating Station and ending at the Kingsburg Valve Station. The site predominantly contains cleared and actively maintained utility ROW.

Ability to acquire agreements for easements: The majority of the site is within the existing Dominion Energy's easement and acquisition of new easements is reduced to a minimal area.

Ability to avoid permanent clearing impacts: Due to the need to permanently clear the land within the expanded footprint west of the easement to maintain future access, locating the proposed site in an existing cleared utility ROW will result in the fewest impacts to WOTUS when compared to other alternatives requiring new easements. The total permanent clearing for this option is approximately 19.2 acres. The total permanent clearing impacts to WOTUS would be 2.99 acres using this option.

Distance from River Neck Road Regulating Station to Kingsburg Valve Station: Approximately 14.5 miles

Readily accessible: Site is readily accessible via multiple paved roads. Temporary access roads from North Old River Road and South Old River Road have been minimized to the maximum extent practicable.

2.3.2.2 Alternative 1- New Easement Along Transportation ROWs

Alternative 1 would extend 2.25 miles from the River Neck Road Regulating Station through the existing Dominion ROW. The alignment would be routed west along Pine Bluff Road for 0.3 miles and then south along North Old River Road and South Old River Road for approximately 12.3 miles and finally ending at the Kingsburg Valve Station.

Figure 4: Alternative 1- New Easement Along Highway (2018 Aerial View)

Alternative 1- New Easement Along Transportation ROWs- Site Selection Screening Criteria:

Location of existing easements: This alternative site is not located within a Dominion ROW and would require new easements to be negotiated along the transportation ROWs.
Ability to acquire agreements for easements: Based on review of the Florence County Parcel Search Map available on the Florence County SC Website, the North Old River Road and South Old River Road ROW is 70 feet in width. The road shoulders are 20 feet in width, therefore, an additional 30 feet of easement width would be required for this alternative, which translates to approximately 3.5 acres of wetland clearing impacts based on review of desktop resources. The ability to acquire easements along the transportation ROW is not known; however, based on past experience, property owners along the transportation ROW may not be amenable for easement negotiations, which could result in the need to bypass those properties by incorporating circuitous routes that may have greater impacts to aquatic resources.
Ability to avoid permanent clearing impacts: Due to the need to permanently clear the land within the additional easement to maintain future access, this alternative alignment would result in greater impacts to WOTUS, including wetlands compared to utilization of the preferred alternative. The total permanent clearing for this option is approximately 30 acres. The total permanent clearing impacts to WOTUS, including wetlands would be 3.5 acres using this option.
Distance from River Neck Road Regulating Station to Kingsburg Valve Station: Approximately 14.85 miles
Readily accessible: This alternative site would be readily accessible along North Old River Road and South Old River Road. The northern portion of this alignment, north of Pine Bluff Road, would be accessible through various improved roads.

2.3.2.3 Alternative 2 - Establishing a New Easement Adjacent to the Existing Dominion Energy ROW

Alternative 2 would result in establishing a new easement east of the existing Dominion Energy ROW along the current alignment to accommodate the proposed gas main.

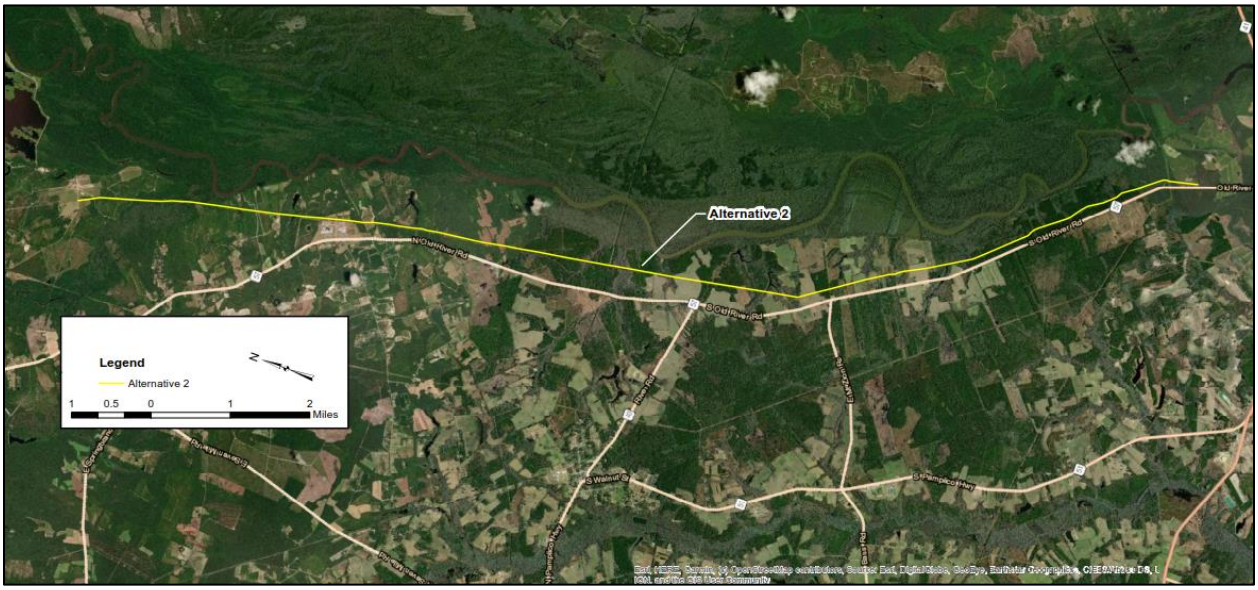


Figure 5: Alternative 2- Establishing a New Easement Adjacent to the Existing Dominion Energy ROW (2018 Aerial View)

Establishing a New Easement Adjacent to the Existing Dominion Energy ROW - Site Selection Screening Criteria:

Location of existing easements: This alternative alignment is not located within a Dominion ROW and would require new easements to be negotiated.

Ability to acquire agreements for easements: The ability to acquire 50-feet easements along the transportation ROW is not known; however, based on past experience, property owners may not be amenable for easement negotiations, which could result in the need to bypass those properties by incorporating circuitous routes that may have greater impacts to aquatic resources.

Ability to avoid permanent clearing impacts: Due to the need to permanently clear the land within the new easement to maintain future access, this alternative alignment would result in greater impacts to WOTUS, including wetlands than utilizing the preferred alternative. The total permanent clearing for this option is approximately 70 acres. The total permanent clearing impacts to WOTUS, including wetlands would be 14.6 acres using this option.

Distance from River Neck Road Regulating Station to Kingsburg Valve Station: Approximately 14.5 miles

Readily accessible: Site is readily accessible via multiple paved roads. Temporary access roads from North Old River Road and South Old River Road have been minimized to the maximum extent practicable and would match the temporary access roads depicted in the preferred route, which are depicted in Figure 3.

2.3.3 Summary of Alternative Sites - Site Selection Criteria

Multiple alternative sites were identified and evaluated based on the project purpose. The alternative sites were analyzed based on the site selection criteria listed in order of priority. A summary of the alternative sites evaluated is included in Table 1.

Table 1: Summary of Alternative Site Evaluation Based on Site Selection Criteria

Project Criteria	Utilize Existing ROW with Expanded Footprint (Preferred Site)*	Alternative 1- New Easement Along Transportation ROWs*	Alternative 2- Establishing a New Easement Adjacent to the Existing Dominion Energy ROW*
Location within an existing easement	40-feet located within a cleared and actively maintained utility easement	Not within an existing utility easement	Not within an existing utility easement
Ability to acquire agreements for easements	Minimal amount of new easement area required	Unknown	Unknown
Ability to avoid permanent clearing impacts	Total permanent clearing impacts: 19.2 Total Permanent Clearing WOTUS Impacts = 2.99 acres	Total permanent clearing impacts: 30 acres Total Permanent Clearing WOTUS Impacts = 3.5 acres	Total permanent clearing impacts: 70 acres Total Permanent Clearing WOTUS Impacts = 14.6 acres
Distance from River Neck Road Regulating Station to Kingsburg Valve Station	14.5 miles	14.85 miles	14.5 miles
Readily Accessible	Yes	Yes	Yes

*Acreages are approximate

Based on the evaluation of the alternative routes, the alignment resulting in the least impacts to WOTUS would be utilization of the existing Dominion Energy utility ROW with expanded footprint. Additionally, the utilization of the existing Dominion Energy ROW would prevent the need for obtaining 50-feet of new easements and clearing of upland forests. Therefore, the utilization of the existing Dominion Energy ROW was further evaluated to identify the LEDPA.

2.3.4 Onsite Design Alternatives

The use of the existing Dominion Energy ROW was chosen for further evaluation of alternative onsite designs based on the alternative resulting in the fewest environmental impacts and because minimal amount of new easement area would be required using this alternative. In an effort to identify reasonable practicable alternatives for the onsite design, multiple onsite installation methods were evaluated that coincide with the purpose and need. It is not practical to detail every variation of each onsite alternative evaluated; therefore, the various installation methods have been broken down into two alternatives that are representative of the variations. The amount of fill impacts required for the project is negligible; therefore, the main focus of the avoidance and minimization of aquatic resource impacts was reducing the permanent clearing needed to successfully complete the gas main installation.

2.3.4.1 Onsite Alternative A: Horizontal Directional Drilling

Horizontal directional drilling (HDD) was evaluated as an installation method for the entire length of the gas main. The cost to install the entire length of using HDD is substantially higher than open trench installation. Based on staging and future access requirements, the use of HDD would require the same amount of permanent clearing impacts as using alternative installation methods including open trench. Due to the large size of the proposed 16" gas main proposed, the temporary workspace needed to construct bore pits and set up appropriately sized drill rigs and associated equipment would require additional land clearing than what is needed for other installation methods. Using HDD installation next to the existing 8" gas main that parallels the proposed gas main creates a risk of damaging the existing utility. Additionally, the depth of pipelines installed using HDD prevents ready access for future repairs. The use of HDD for the entirety of the installation was not further evaluated based on the associated risks, the cost and because the wetland clearing impacts would still be required for HDD.

2.3.4.2 Alternative B: Open Trench Excavation and HDD (Preferred Alternative)

The location of the proposed gas main meets the project purpose while avoiding and minimizing impacts to aquatic resources to the maximum extent practicable. This alternative would incorporate a combination of open trench excavation and HDD installation. Open trench excavation is the preferred method because it allows the gas main to be installed only four to five feet in depth below the ground surface. Installing the gas main at a consistent shallow depth is a safer method and allows for the routine maintenance to be performed that is often required on transmission pipelines. Installation using open trench also significantly reduces the potential to impact the existing 8" gas pipeline in the ROW. The proposed temporary impacts to aquatic resources in areas containing emergent wetlands will be minimized by returning the excavated material to the open trench, re-grading to natural grade, and stabilizing immediately following installation of the utilities. Impacts to wetlands will be avoided in some areas using HDD as indicated on the permit drawings in Appendix A. An inadvertent release control plan associated with the HDD is included in Appendix F. The impacts to WOTUS, including wetlands will be minimized through the use of stormwater best management practices during construction

activities to minimize sedimentation. Also, mats will be used as applicable to prevent rutting associated with mechanized clearing. Impacts to wetlands will be further minimized by implementing temporary clearing instead of permanent clearing in moist areas of disturbance.

2.3.4.2.1 Avoidance and Minimization

The following avoidance and minimization has been incorporated into this project:

- The site proposed project would avoid impacts to 6.3 acres of jurisdictional aquatic resources.
- The negligible amount of fill impacts (0.009 acres) associated with the project prevents smothering of organisms and disruption of periodic water inundation patterns.
- Most of the proposed impacts will be temporary.
- Stormwater best management practices will be implemented during construction activities to minimize sedimentation and confine suspended particulate/turbidity to a small area where settling or removal can occur
- HDD will be used to cross under Section 10 waters.
- Mats will be used as applicable to prevent rutting associated with mechanized clearing.
- The applicant will employ appropriate maintenance and operation on equipment or machinery, including adequate training, staffing, and working procedures.
- The applicant will use machinery and techniques that are especially designed to reduce damage to wetlands. This may include machines with specially designed wheels or tracks, and the use of mats under heavy machines to reduce wetland surface compaction and rutting.
- The applicant has designed access roads and channel spanning structures using culverts, open channels, and diversions that will pass both low and high-water flows, accommodate fluctuating water levels, and maintain circulation and faunal movement where applicable.
- The project will avoid sites having unique habitat or other value, including habitat of threatened or endangered species.

2.4 Alternatives Conclusion and Finding of LEDPA

The alternatives analysis included evaluation of the no action alternative, alternative sites, and onsite alternatives to avoid and minimize impacts to WOTUS, including wetlands. Reasonable and practicable alternatives that accomplish the overall project purpose have been evaluated and discussed in accordance with the Guidelines. Additionally, the information included in the analysis supports the rebuttal of the practicable alternatives presumptions. In consideration of the project purpose and need, and the site selection criteria, the development of the site using the proposed site design within the existing Dominion Energy ROW with expanded footprint represents the LEDPA.

3.0 WETLAND / WOTUS IMPACTS

Jurisdictional WOTUS, including wetlands are defined by 33 C.F.R. § 328.3(b) and are protected by Section 404 of the CWA (33 U.S.C.A. § 1344), which is enforced by the USACE, Charleston District in South Carolina. Terracon delineated the wetlands within the project boundary on June 4, 2019 through June 6, 2019 and December 19, 2019. A JD Request package (SAC-2019-01427), dated August 21, 2019 was submitted to the USACE. The USACE completed a JD letter, dated May 27, 2020 and is included in Appendix B. Terracon visited the site and delineated wetlands within portions of a revised boundary on May 28, 2020. The revised boundary and delineation is depicted in the Depiction of Aquatic Resources Map included in Appendix B. The WOTUS identified during the Jurisdictional Determination process are depicted in Figure 1.

The Joint State and Federal Application Form and associated permit drawings depicting the proposed wetland impacts on the site are included in Appendix A.

The wetlands on the site drain east through Jefferies Creek, Mills Branch, Bigham Branch, Briar Branch, Barfield Mill Creek, Bullock Branch, and Unnamed Tributaries to the Great Pee Dee River. The wetlands that will be impacted are non-Section 10 freshwater wetlands. The overstory in the wetland areas primarily consists of loblolly pine (*Pinus taeda*), blackgum (*Nyssa sylvatica*), swamp tupelo (*Nyssa biflora*), bald cypress (*Taxodium distichum*), sweetgum (*Liquidambar styraciflua* L.), water oak (*Quercus nigra*), and red maple (*Acer rubrum*). The understory primarily consists of sweetgum (*Liquidambar styraciflua* L.), dogfennel (*Eupatorium capillifolium*), redbay (*Persea borbonia*), wax myrtle (*Morella cerifera*), smooth blackberry (*Rubus Canadensis*) and switchcane (*Persea borbonia*). The majority of the overstory is outside of the current easement and out of the impacted areas.

The proposed wetland impacts within the project footprint are shown on the permit drawings in Appendix A and are summarized in Table 2.

Table 2: Table of Impacts

Impact No.	Wetland Type	Distance to Receiving Water body (LF)	Purpose of Impact (road crossing, impoundment, flooding, etc)	Impact Size (acres)
1A	Jurisdictional Freshwater Wetland	~6,000	Temporary Excavation - Install Gas Main	0.11
1B	Jurisdictional Freshwater Wetland	~6,000	Permanent Clearing - Install Gas Main	0.03
2A	Jurisdictional Freshwater Wetland	~400	Temporary Excavation - Install Gas Main	5.14
2B	Jurisdictional Freshwater Wetland	~25	Permanent Clearing - Install Gas Main	1.8
2C	Jurisdictional Freshwater Wetland	~400	Temporary Clearing - Install Gas Main	5.64

Impact No.	Wetland Type	Distance to Receiving Water body (LF)	Purpose of Impact (road crossing, impoundment, flooding, etc)	Impact Size (acres)
3B	Jurisdictional Freshwater Wetland	~900	Permanent Clearing - Install Gas Main	0.06
3C	Jurisdictional Freshwater Wetland	~900	Temporary Clearing - Install Gas Main	0.02
4B	Jurisdictional Freshwater Wetland	~1,700	Permanent Clearing - Install Gas Main	0.125
5	Jurisdictional Freshwater Wetland	~25	Permanent Clearing - Install Gas Main	0.089
6A	Jurisdictional Freshwater Wetland	~2,000	Temporary Excavation - Install Gas Main	0.49
6B	Jurisdictional Freshwater Wetland	~2,000	Permanent Clearing - Install Gas Main	0.12
6C	Jurisdictional Freshwater Wetland	~2,000	Temporary Clearing - Install Gas Main	0.31
7A	Jurisdictional Freshwater Wetland	~25	Temporary Excavation - Install Gas Main	0.27
7B	Jurisdictional Freshwater Wetland	~25	Permanent Clearing - Install Gas Main	0.094
7C	Jurisdictional Freshwater Wetland	~25	Temporary Clearing - Install Gas Main	0.140
8A	Jurisdictional Freshwater Wetland	~4,500	Temporary Excavation - Install Gas Main	0.18
8B	Jurisdictional Freshwater Wetland	~4,500	Permanent Clearing - Install Gas Main	0.042
9A	Jurisdictional Freshwater Wetland	~4,500	Temporary Excavation - Install Gas Main	0.013
9B	Jurisdictional Freshwater Wetland	~4,500	Permanent Clearing - Install Gas Main	0.017
10A	Jurisdictional Freshwater Wetland	~2,800	Temporary Excavation - Install Gas Main	0.007
10B	Jurisdictional Freshwater Wetland	~2,800	Permanent Clearing - Install Gas Main	0.014
11A	Jurisdictional Freshwater Wetland	~2,600	Temporary Excavation - Install Gas Main	0.02
11B	Jurisdictional Freshwater Wetland	~2,600	Permanent Clearing - Install Gas Main	0.036
12A	Jurisdictional Freshwater Wetland	~1,000	Temporary Excavation - Install Gas Main	0.011
12B	Jurisdictional Freshwater Wetland	~1,000	Permanent Clearing - Install Gas Main	0.015
13A	Jurisdictional Freshwater Wetland	~25	Temporary Excavation - Install Gas Main	0.16
13B	Jurisdictional Freshwater Wetland	~25	Permanent Clearing - Install Gas Main	0.04

Impact No.	Wetland Type	Distance to Receiving Water body (LF)	Purpose of Impact (road crossing, impoundment, flooding, etc)	Impact Size (acres)
14A	Jurisdictional Freshwater Wetland	~50	Temporary Excavation - Install Gas Main	0.008
14B	Jurisdictional Freshwater Wetland	~50	Permanent Clearing - Install Gas Main	0.005
15A	Jurisdictional Freshwater Wetland	~700	Temporary Excavation - Install Gas Main	0.13
15B	Jurisdictional Freshwater Wetland	~700	Permanent Clearing - Install Gas Main	0.014
16A	Jurisdictional Freshwater Wetland	~600	Temporary Excavation - Install Gas Main	0.017
16B	Jurisdictional Freshwater Wetland	~600	Permanent Clearing - Install Gas Main	0.005
16C	Jurisdictional Freshwater Wetland	~600	Temporary Clearing - Install Gas Main	0.016
17A	Jurisdictional Freshwater Wetland	~25	Temporary Excavation - Install Gas Main	0.41
17B	Jurisdictional Freshwater Wetland	~25	Permanent Clearing - Install Gas Main	0.10
18A	Jurisdictional Freshwater Wetland	~300	Temporary Excavation - Install Gas Main	0.04
18B	Jurisdictional Freshwater Wetland	~300	Permanent Clearing - Install Gas Main	0.007
19A	Non-wetlands Water (Freshwater Tributary)	~1,500	Temporary Excavation - Install Gas Main	0.019
19B	Non-wetlands Water (Freshwater Tributary)	~1,500	Permanent Clearing - Install Gas Main	0.002
19C	Non-wetlands Water (Freshwater Tributary)	~1,500	Permanent Fill - Install Rip Rap to stabilize bank	0.0045
19D	Non-wetlands Water (Freshwater Tributary)	~1,500	Temporary Clearing – Install Gas Main	0.008
20A	Jurisdictional Freshwater Wetland	~3,500	Temporary Excavation - Install Gas Main	0.14
20B	Jurisdictional Freshwater Wetland	~3,500	Permanent Clearing - Install Gas Main	0.03
21A	Jurisdictional Freshwater Wetland	~5,000	Temporary Excavation - Install Gas Main	0.17
21B	Jurisdictional Freshwater Wetland	~5,000	Permanent Clearing - Install Gas Main	0.05
22A	Jurisdictional Freshwater Wetland	~5,500	Temporary Excavation - Install Gas Main	0.19

Impact No.	Wetland Type	Distance to Receiving Water body (LF)	Purpose of Impact (road crossing, impoundment, flooding, etc)	Impact Size (acres)
22B	Jurisdictional Freshwater Wetland	~5,500	Permanent Clearing - Install Gas Main	0.05
22C	Jurisdictional Freshwater Wetland	~5,500	Temporary Clearing - Install Gas Main	0.12
23A	Jurisdictional Freshwater Wetland	~6,000	Temporary Excavation - Install Gas Main	0.12
23B	Jurisdictional Freshwater Wetland	~6,000	Permanent Clearing - Install Gas Main	0.04
24A	Jurisdictional Freshwater Wetland	~4,000	Temporary Excavation - Install Gas Main	0.06
24B	Jurisdictional Freshwater Wetland	~4,000	Permanent Clearing - Install Gas Main	0.02
25A	Jurisdictional Freshwater Wetland	~25	Temporary Excavation - Install Gas Main	0.25
25B	Jurisdictional Freshwater Wetland	~25	Permanent Clearing - Install Gas Main	0.07
26A	Jurisdictional Freshwater Wetland	~400	Temporary Excavation - Install Gas Main	0.15
26B	Jurisdictional Freshwater Wetland	~400	Permanent Clearing - Install Gas Main	0.05
26C	Jurisdictional Freshwater Wetland	~400	Temporary Clearing - Install Gas Main	0.08
27A	Non-wetlands Water (Freshwater Tributary)	~2,500	Temporary Excavation - Install Gas Main	0.009
27B	Non-wetlands Water (Freshwater Tributary)	~2,500	Permanent Clearing - Install Gas Main	0.002
27C	Non-wetlands Water (Freshwater Tributary)	~2,500	Temporary Clearing - Install Gas Main	0.003
28A	Jurisdictional Freshwater Wetland	~2,000	Temporary Excavation - Install Gas Main	0.044
28B	Jurisdictional Freshwater Wetland	~2,000	Permanent Clearing - Install Gas Main	0.013
29	Jurisdictional Freshwater Wetland	~3,200	Temporary Excavation - Install Gas Main	0.03
30A	Jurisdictional Freshwater Wetland	~5,000	Temporary Excavation - Install Gas Main	0.19
30B	Jurisdictional Freshwater Wetland	~5,000	Permanent Clearing - Install Gas Main	0.05
31	Jurisdictional Freshwater Wetland	~3,500	Permanent Fill - Install Road Crossing w/ Culvert & Rip Rap	0.0017

Impact No.	Wetland Type	Distance to Receiving Water body (LF)	Purpose of Impact (road crossing, impoundment, flooding, etc)	Impact Size (acres)
32	Jurisdictional Freshwater Wetland	~3,500	Permanent Fill - Install Road Crossing w/ Culvert & Rip Rap	0.0024
			Total Wetland Impacts (acres)	**17.714**

4.0 PROPOSED MITIGATION

Section 404 of the CWA requires permits for the discharge of dredged or fill material into WOTUS, including wetlands. Jurisdictional wetlands are defined by 33 C.F.R. § 328.3(b) and are protected by Section 404 of the CWA (33 U.S.C.A. § 1344), which is enforced by the USACE, Charleston District in South Carolina. In accordance with Section 404 of the Clean Water Act, compensatory mitigation is necessary to offset unavoidable impacts to aquatic resource functions and services and to meet the programmatic goal of "no overall net loss" of aquatic resource functions and services.

Based on the USACE 2017 NWP 12 Decision Document: "For utility line activities crossing a single waterbody more than one time at separate and distant locations, or multiple waterbodies at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization".

The proposed impacts associated with the project do not conflict with Section 23(c) of the 2017 Nationwide Permit General Conditions or the Final Regional Conditions for 16 Nationwide Permits in Charleston District, dated March 15, 2021. No mitigation is proposed because the project will not result in more than 1/10-acre of discharge of dredged or fill material into WOTUS, including wetlands at the proposed impact locations. Additionally, the project will not result in more than 0.005-acre loss of intermittent and/or perennial stream bed for a single crossing. Clearing impacts are the only permanent impacts associated with the project over 1/10-acre.

5.0 OTHER CONSIDERATIONS

The USACE Charleston District bases the decision to issue a permit for WOTUS impacts on an evaluation of a variety of cumulative factors. These factors include: conservation, economics, aesthetics, wetlands, historic properties, fish and wildlife values, flood hazards, flood plain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, general environmental concerns, and the needs and welfare of the people. The above listed factors are discussed below. Factors in which the applicant believes to be more relevant to the project are discussed in more detail.

5.1.1 Conservation

It is well known that fully functional wetland systems contribute to the environment both directly and indirectly. The applicant acknowledges that wetland protection is imperative for a sustainable future. The clearing impacts proposed for the project will not result in a loss of wetlands. Instead the permanent clearing impacts will result in emergent wetland system with significant ecological value.

5.1.2 Economics

Based on the International Gas Union[5] the natural gas industry is a major contributor to the GDP of numerous countries. In 2008 natural gas production in the U.S. added $385 billion to the country's GDP. The industry is large-scale that employs thousands and generates millions of dollars. Natural gas also enables other industries, predominantly those that are energy exhaustive.

According to the International Gas Union a study by the Center for Global Development, discovered that the higher use of natural gas for electricity could help boost some countries out of poverty by providing greater access to affordable and reliable power.

The energy supply demand is expected to rapidly increase in the corridor between Florence and Conway in Florence County and the proposed project is anticipated to support this growth and have an overall positive impact to the economy.

5.1.3 Aesthetics

The majority of the project footprint will take place in a cleared maintained easement. The areas outside of the easement includes predominately undeveloped woodlands and agricultural land. The project footprint will also be buffered by woodlands and agriculture land ranging from 300 to 3,000 feet wide from most residents and Old River Road. The woodlands and agriculture land buffer will provide higher quality aesthetics.

5.1.4 Floodplain Values

According to the Federal Emergency Management Administration (FEMA) Flood Insurance Rate Map (FIRM), the site is located within a designated floodplain or a floodway. According to the FIRM 45041C0305E, 45041C0310E, 45041C0320E, 45041C0410E, 45041C0430E, and 45041C0440E, all dated 3/16/2014, the site is designated as Zone X and A. Zone X is defined as an area determined to be outside the 0.2% annual chance floodplain. Zone A is defined as an area determined to be subject to flooding by the 1% annual chance flood. Zone A does not have a base flood elevation determined. The proposed project will have a no effect on floodplain values.

[5] *https://www.igu.org/natural-gas-powers-economic-growth*

5.1.5 Flood Hazards

The applicant will implement best management practices that will minimize erosion and migration of sediments on and off the project site during and after construction. Additionally, land disturbance activity will comply with the South Carolina National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges from Large and Small Construction Activities (SCR100000) as applicable. These practices will include the use of appropriate grading and sloping techniques and erosion prevention and sediment control measures capable of preventing erosion, migration of sediments, and bank failure. Once the project is initiated, it will be carried to completion in an expeditious manner, minimizing the period of disturbance to the environment.

Temporary best management practices such as silt fence and/or other diversionary structures will be used during construction as applicable. Permanent stabilization of embankments will contain appropriately sized rip-rap over geotextile liner or other similar approved permanent erosion control features where applicable. Temporary and permanent stormwater controls may be used to minimize sedimentation and erosion and minimize impact to the wetland areas.

5.1.6 Land Use

Land use involves the management and modification of land into built environment. Zoning ordinances are established by municipalities to direct future growth and development in order to serve the general welfare, by keeping certain land uses in proximity to one another.

The alternative sites evaluated for the project contain land use designations such as agricultural lands, industrial, woodlands, wetlands, and other resources. These lands provide much of the character that makes Florence County an attractive place to live and work.

The proposed gas main installation is consistent with this zoning and its requirements. On this basis, the proposed project will have a positive long-term effect on land use.

5.1.7 Navigation

The proposed project would have no effect on navigation.

5.1.8 Shoreline Erosion and Accretion

The proposed project would have no effect on shoreline erosion or accretion.

5.1.9 Recreation

The proposed project will have a no effect on recreation. The gas main installation on the site will not create, destroy, or restrict access to any parks or recreational facilities on or near the project site.

5.1.10 Water Quality and Supply

The site is located in the Middle Pee Dee River Watershed [Hydrological Unit Code (HUC) 03040201]. The waters of the U.S. (WOTUS), including wetlands on the site drain east through Jefferies Creek, Mills Branch, Bigham Branch, Briar Branch, Barfield Mill Creek, Bullock Branch, and Unnamed Tributaries to the Great Pee Dee River. Based on a review of the SDHEC Final CWA Section 303(d) List of Water Quality Limited Segments[6] Jeffries Creek and Great Pee Dee River are listed on the 2016 South Carolina List of Impaired Waters by 12-Digit HUC.

The upper portion of the project site is located within Watershed 03040201-09. Jeffries Creek, Pye Branch, and Middle Swamp are classified as FW* (dissolved oxygen not less than 4 mg/l and pH between 5.0 and 8.5) and the remaining streams in the watershed are classified as FW (Freshwater). Jeffries Creek accepts drainage from Beaverdam Creek, Gulley Branch, Pye Branch, Middle Swamp, Eastman Branch, and Cane Branch. Next Polk Swamp enters the system, followed by Middle Branch, Long Branch, Boggy Branch, More Branch, and Willow Creek. The Jeffries Creek Watershed then drains into the Great Pee Dee River. There are a total of 229.5 stream miles and 353.2 acres of lake waters in this watershed. According to the SCDHEC Watershed Atlas[7] there are a total of five SCDHEC water quality monitoring stations along Jeffries Creek. The nearest water quality monitoring station from the site is PD-231 and is located approximately 4.5 river miles upstream from the site. At station PD-231, aquatic life and recreational uses are fully supported; however, there are trends in significant decrease in dissolved oxygen concentrations as well as trends in increasing five-day biological oxygen demands, turbidity, and fecal coliform bacteria.

The majority of the project site is located in the Great Pee Dee River Watershed (03040201-12). All waters are classified as FW in the watershed. This section of the Great Pee Dee River accepts drainage from its upper reaches, along with Mill Branch, Bigham Branch, Barfield Mill Creek, the Catfish Creek Watershed, Bull Swamp, and Mulyns Creek. Additionally, there are oxbow lakes draining into the river that include the Dead River, Graves Lake, and Honey Lake. There are a total of 100.4 stream miles and 115.5 acres of lake waters in this watershed. According to the SCDHEC Watershed Atlas[8] there are a total of three SCDHEC water quality monitoring stations along this section of the Great Pee Dee River. This section is a blackwater system which is characterized by naturally low dissolved oxygen conditions. Approximately 0.5 river miles downstream from the site water quality monitoring stations RS-10365 and RS-08237 fully support aquatic life and recreational uses. At water quality monitoring station PD-076 approximately 3 river miles downstream from the site aquatic life uses are fully supported. Dissolved oxygen excursions occurred; however, they are typical values seen in blackwater systems and were considered natural (not standard violations).

[6] *http://www.scdhec.gov/HomeAndEnvironment/Docs/tmdl_16-303d.pdf*
[7] *https://gis.dhec.sc.gov/watersheds/*
[8] *https://gis.dhec.sc.gov/watersheds/*

As previously discussed, the proposed project would result in unavoidable impacts to wetlands due to the proposed gas main installation on the site. Additional information regarding the impacts to wetlands and WOTUS and mitigation is documented in Section 3.0 and 4.0 of this document.

Construction activities will have temporary negative impacts on water quality when the project site is being cleared, graded, and prepared for development. However, potential impacts will be minimized through the use of Best Management Practices (BMPs) specified as conditions by SCDHEC in its Water Quality Certification issued to address water quality criteria specific to this project. The proposed project will have a negligible long-term effect on water quality and supply.

5.1.11 Energy Needs

There is an increasing demand for natural gas in eastern South Carolina due to residential, commercial and industrial growth. The proposed project would support the growth in the area by providing the additional capacity and flexibility to meet the current and anticipated customer demands for natural gas as an energy supply.

5.1.12 Safety

The proposed project would have no long-term effect on safety. The construction and operation of the project will be required to comply with the appropriate Occupational Safety and Health Administration (OSHA) guidelines regarding employee safety. The proposed project is not anticipated to cause safety issues.

5.1.13 Food and Fiber Production

The proposed project would have no effect on food and fiber production.

5.1.14 Mineral Needs

The proposed project will have no effect on mineral needs.

5.1.15 Consideration of Property Ownership

Based on a review of information obtained from the Florence County assessor's records, the majority of the project site is within a current Dominion Energy ROW that transects multiple parcels with multiple land owners. Dominion Energy (the applicant), is supportive of the proposed project. It is not anticipated that the adjoining property owners to the ROW would be opposed to the proposed project. Adjoining property owners who might be affected by the proposed project will have an opportunity to comment on the proposed project during the public notice period.

5.1.16 General Environmental Concerns

No environmental concerns have been identified.

5.1.17 The Needs and Welfare of the People

Dominion Energy's primary mission has always been, and continues to be, to serve their customers safely and reliably; strengthen their communities; reward their shareholders; minimize environmental impacts and live their values. The proposed gas main installation will have a positive effect on the needs and welfare of people.

5.1.18 Environmental Justice

Executive Order (EO) 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations) was issued in 1994. Its purpose is to focus federal attention on the environmental and human health effects of federal actions on minority and low-income populations with the goal of achieving environmental protection for all communities. The EO directs federal agencies to identify and address the disproportionately high and adverse human health or environmental effects of agency actions on minority and low-income populations, to the greatest extent practicable and permitted by law. The order also directs each agency to develop a strategy for implementing environmental justice. The order is also intended to promote nondiscrimination in federal programs that affect human health and the environment, as well as provide minority and low-income communities access to public information and public participation[9]. The proposed project is expected to have a positive impact on minority populations due to the creation of jobs.

5.1.19 Federally Protected Species

Terracon prepared a Threatened and Endangered Species report for the site dated, July 2019. A field survey was conducted within the site boundaries and immediate vicinity of the site on June 4, 2019 through June 6, 2019 by Terracon. The threatened and endangered species survey was completed to identify suitable habitat for federally threatened and endangered species protected by the Federal Endangered Species Act (ESA) of 1973.

Based on the "no effect" conclusions of this assessment, further coordination with USFWS is not required. The USFWS South Carolina Ecological Services Field Office maintains a "clearance letter", that applies to all projects in which a "no effect" determination has been made. This clearance letter serves as the USFWS concurrence with the conclusions of habitat assessments. A copy of the Threatened and Endangered Survey report for the site, which includes the clearance letter is included in Appendix D.

[9] *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 59 FR 7629; February 16, 1994*

5.1.20 Fish and Wildlife Values

The project site contains cleared land and wooded land. Portions of the cleared land consisted of agricultural land. The wooded land on the site consisted of palustrine shrub scrub wetlands, non-alluvial waters, and mixed pine hardwoods which all provide habitat for wildlife species. The construction of this project will have a minimal long-term adverse effect on wildlife that use the habitat.

5.1.21 Cultural Resources

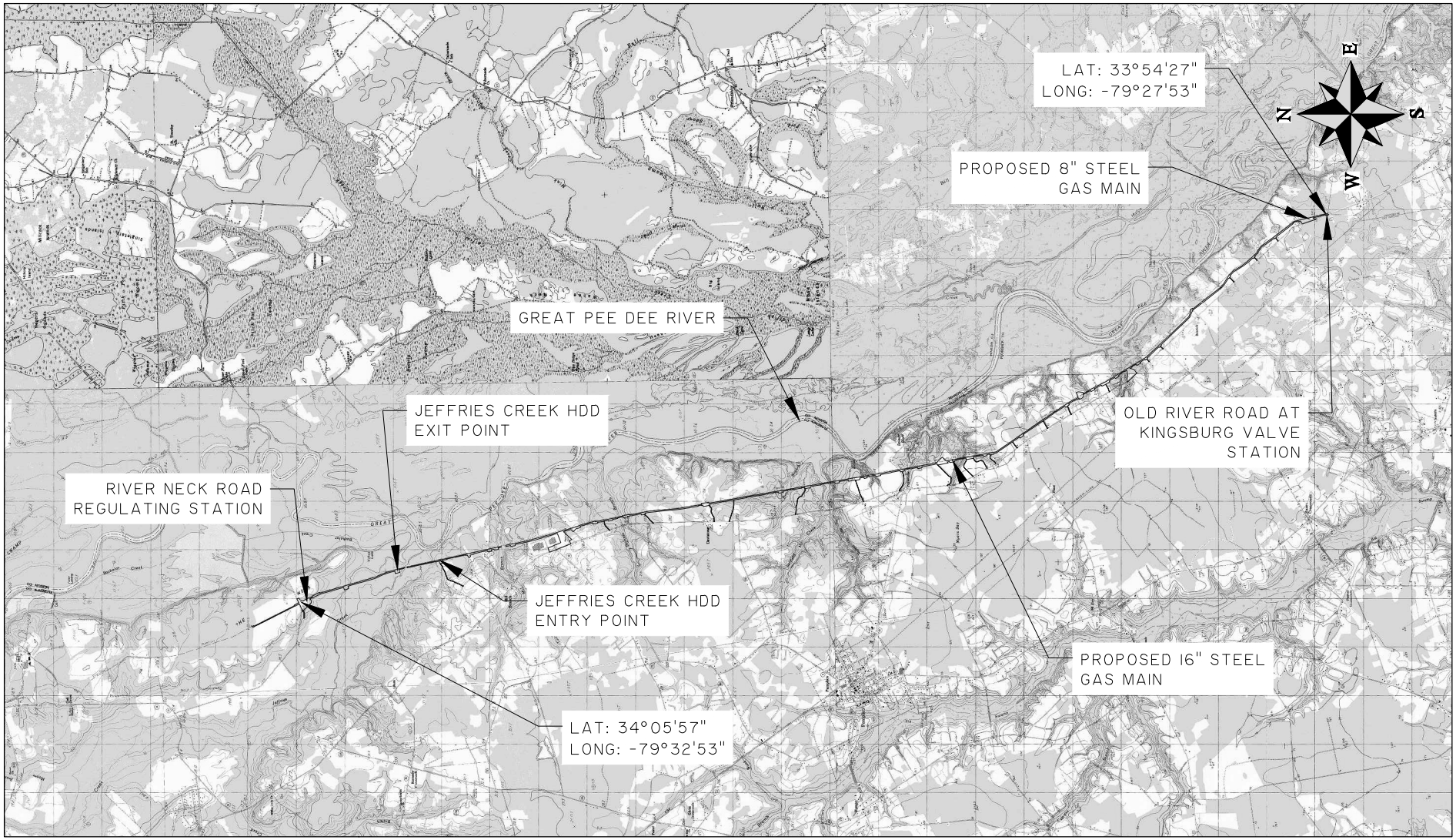
See Appendix E for a copy of the report and the SHPO coordination.

Terracon has completed Phase I and II investigations at the River Neck to Kingsburg Line in Florence County, South Carolina. As a result of the Phase I investigations Terracon identified 16 new archaeological sites (FC-1 through FC 16) along approximately 11.61 miles of the proposed gas line. Of these resources, two sites, FC-3 and FC-10 (Figures 2 and 3), were believed to be potentially significant and Terracon recommended Phase II testing at these two sites to Thomas & Hutton. The work was authorized and based on the results of the Phase II testing sites FC-3 and FC-10 will both be recommended as being eligible for inclusion in the National Register of Historic Places (NRHP).

In addition to the 11.61 miles of Phase I survey, Terracon conducted Phase I/II investigations of nine previously recorded sites along 2.89 miles of the proposed gas line that had been previously surveyed in 1984 and 2006. To help relocate these sites, Terracon excavated shovel tests at 30-meter intervals across the reported areas containing the sites. However, only two sites, 38FL116/124/191 and 38FL148/155, could be relocated (Figures 4 and 5). Based on the Phase II testing and previous work conducted at these sites, site 38FL116/124/191 is considered to be eligible for the NRHP. Site 38FL148/155 was previously determined to be eligible for the NRHP; however, it is Terracon's opinion that the portion of the site within the ROW does not contribute to the site's significance.

The architectural survey identified five historic structures and one cemetery (the Epheseus Cemetery) within the proposed Area of Potential Effects (APE). All of these resources will be recommended as ineligible for the NRHP.

Based on these results, Terracon recommends avoiding sites 38FL116/124/191, FC-3, and FC-10. If this is not possible, then Dominion Energy South Carolina should begin consultation with the State Historic Preservation Office (SHPO) and other consulting parties on ways to minimize or mitigate the potential adverse effects to these sites.



RIVER NECK TO KINGSBURG 16" GAS MAIN

WETLAND IMPACT SITE MAP

CLIENT:

DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC

DATE: 5/27/2020 DRAWN BY: DNF SHEET: 1

JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: 1" = 10000'

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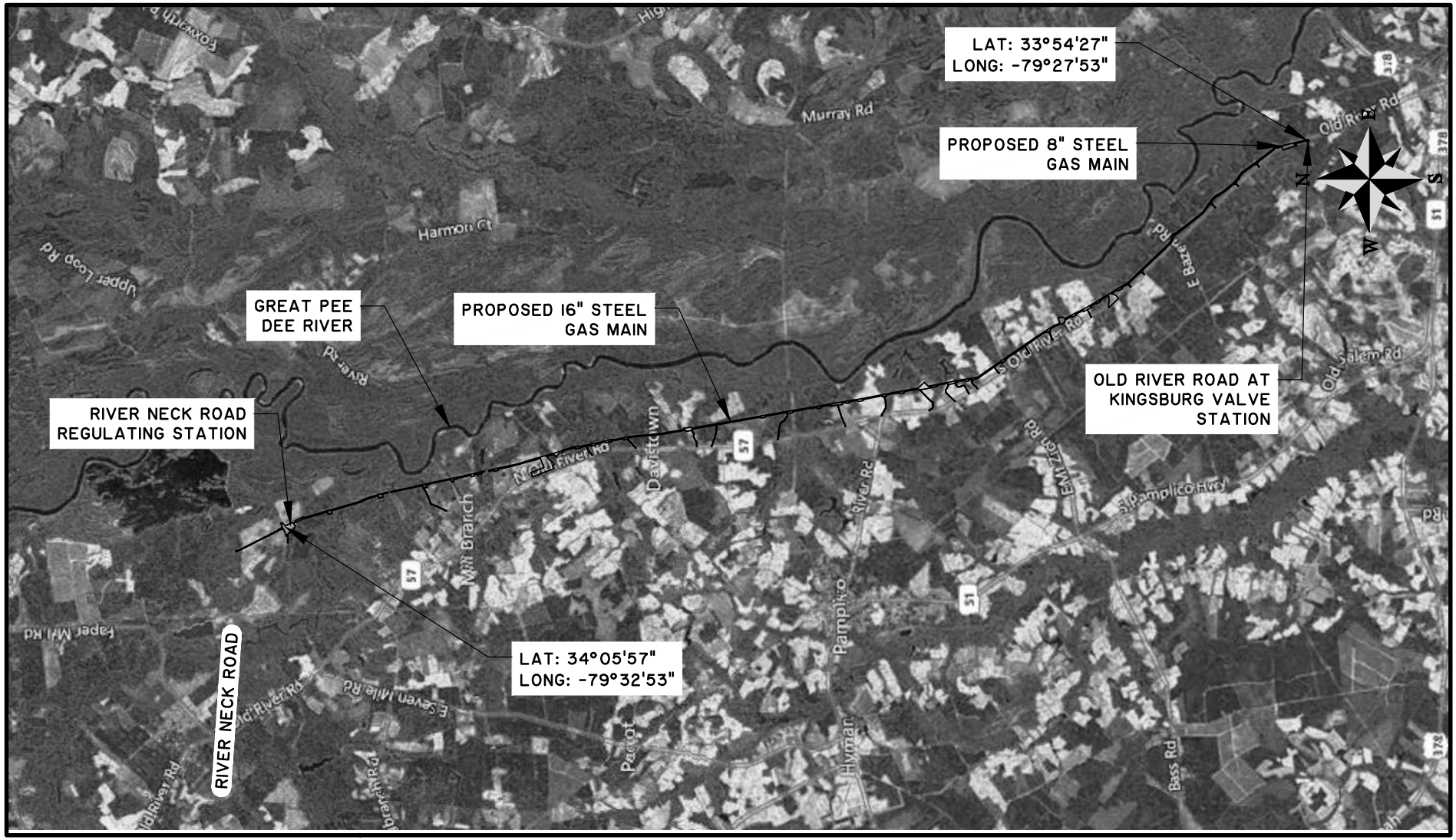
Z:\27886\27886.0000\Engineering\Drawings\Exhibits\Wetland Exhibits\27886.0000 Wetland Site Map.dwg - May 13, 2021 - 3:39:52 PM



RIVER NECK TO KINGSBURG 16" GAS MAIN

SHEET NAME:

WETLAND IMPACT LOCATION MAP

CLIENT:

DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC

DATE: 04/21/21 | DRAWN BY: DNF | SHEET: 2

JOB NUMBER: J-27886.0000 | REVIEWED BY: JRS | SCALE: 1" = 10000'

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RIVER NECK TO KINGSBURG 16" GAS MAIN

SHEET INDEX

CLIENT:

DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC

DATE: 5/18/2021 DRAWN BY: DNF SHEET: 3

JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: 1" = 800'

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RIVER NECK TO KINGSBURG 16" GAS MAIN

SHEET INDEX

CLIENT:

DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC

DATE: 04/21/21 DRAWN BY: DNF SHEET: 4

JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: 1" = 800'

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RIVER NECK TO KINGSBURG 16" GAS MAIN

SHEET INDEX

CLIENT:

DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC

DATE: 04/21/21 DRAWN BY: DNF SHEET: 5

JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: 1" = 800'

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RIVER NECK TO KINGSBURG 16" GAS MAIN

SHEET INDEX

CLIENT:

DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC

DATE: 04/21/21 | DRAWN BY: DNF | SHEET: 6

JOB NUMBER: J-27886.0000 | REVIEWED BY: JRS | SCALE: 1" = 800'

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RIVER NECK TO KINGSBURG 16" GAS MAIN

SHEET INDEX

CLIENT:

DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC

DATE: 04/21/21 | DRAWN BY: DNF | SHEET: 7

JOB NUMBER: J-27886.0000 | REVIEWED BY: JRS | SCALE: 1" = 800'

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RIVER NECK TO KINGSBURG 16" GAS MAIN

SHEET INDEX

CLIENT:

DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC

DATE: 04/21/21 DRAWN BY: DNF SHEET: 8

JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: 1" = 800'

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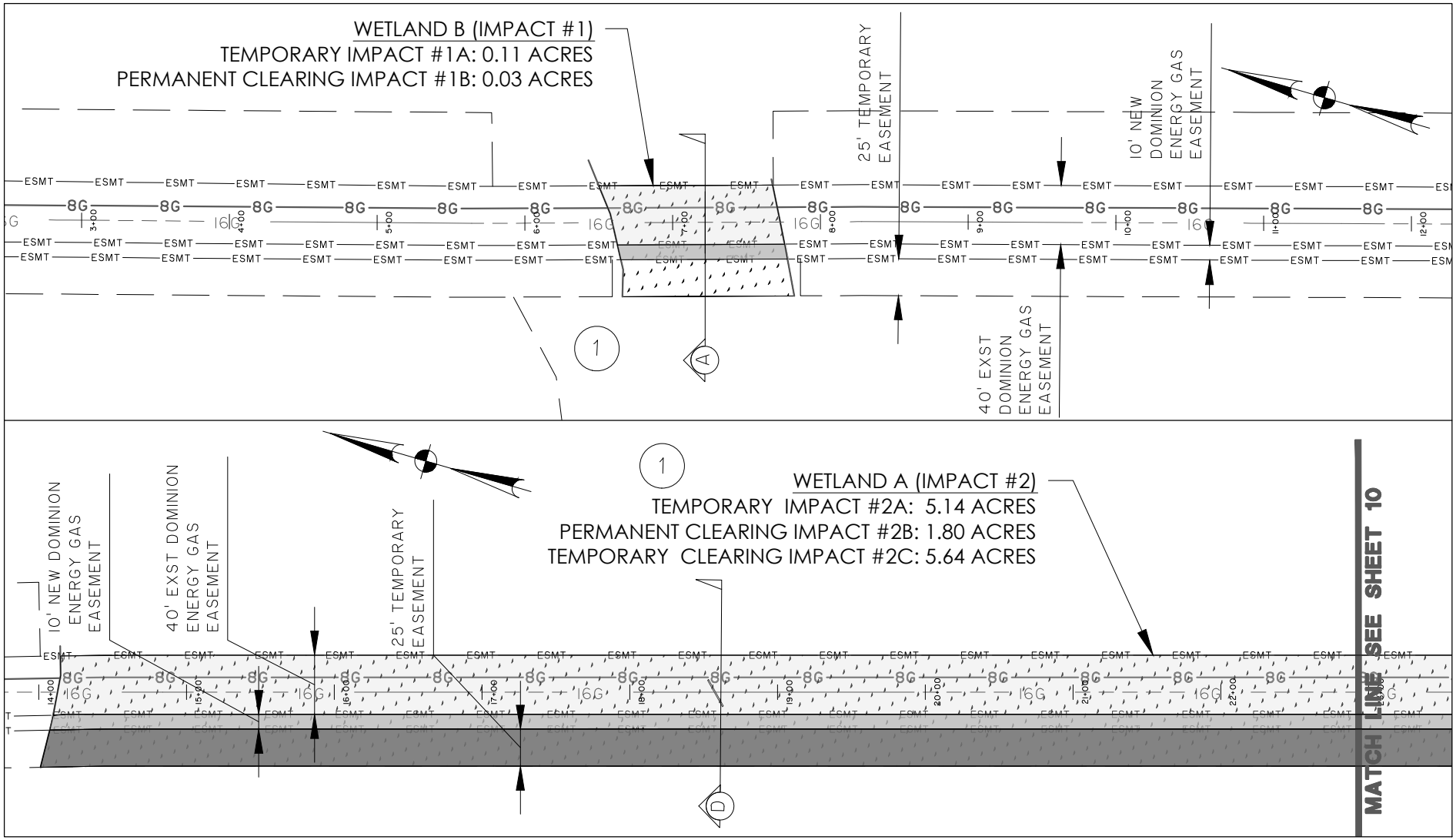

LEGEND

- TEMPORARY IMPACT
- PERMANENT CLEARING IMPACT
- TEMPORARY CLEARING IMPACT
- PROPOSED 16" GAS LINE (OPEN-CUT)
- PROPOSED 16" GAS LINE (HDD)
- WETLAND
- DOMINION ENERGY PERMANENT EASEMENT

RIVER NECK TO KINGSBURG 16" GAS MAIN

WETLAND IMPACT AREAS 1 AND 2

CLIENT:
DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC
DATE: 5/27/2020 DRAWN BY: DNF SHEET: 9
JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: 1" = 100'

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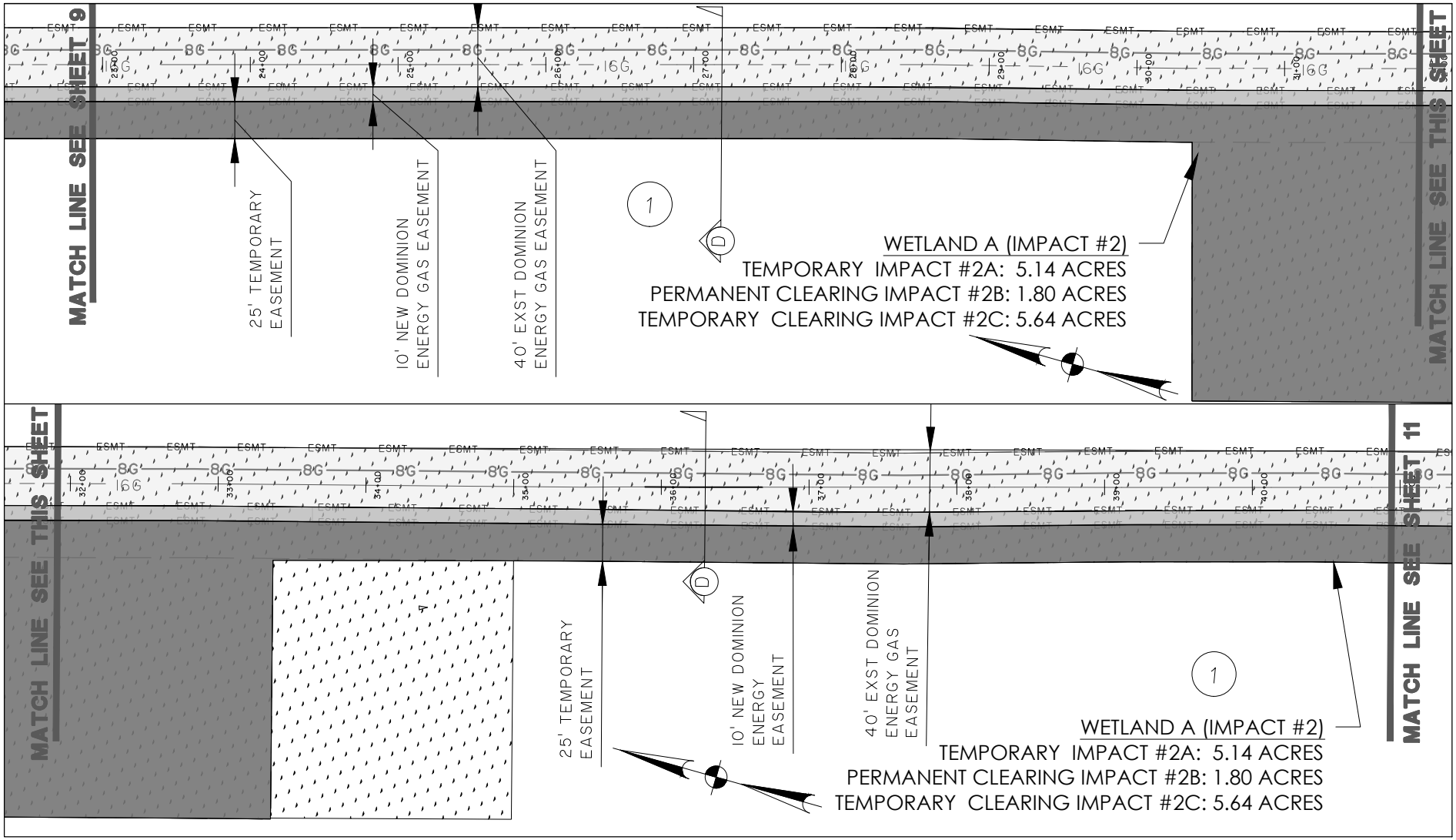

LEGEND

- TEMPORARY IMPACT
- PERMANENT CLEARING IMPACT
- TEMPORARY CLEARING IMPACT
- PROPOSED 16" GAS LINE (OPEN-CUT)
- PROPOSED 16" GAS LINE (HDD)
- WETLAND
- DOMINION ENERGY PERMANENT EASEMENT

RIVER NECK TO KINGSBURG 16" GAS MAIN

WETLAND IMPACT AREAS 2

CLIENT:
DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC
DATE: 5/27/2020 DRAWN BY: DNF SHEET: 10
JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: 1"=100'

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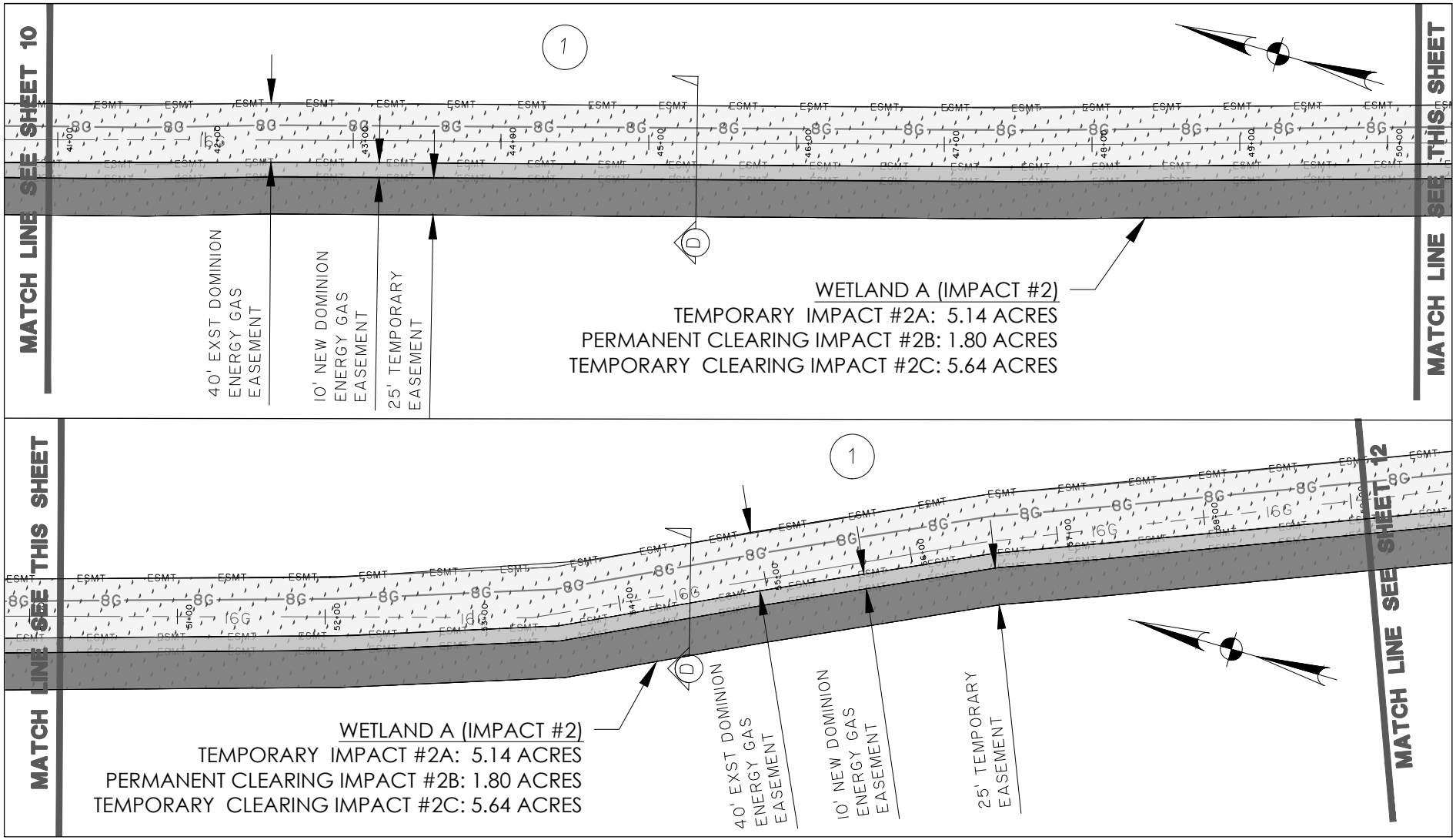

LEGEND

- TEMPORARY IMPACT
- PERMANENT CLEARING IMPACT
- TEMPORARY CLEARING IMPACT
- PROPOSED 16" GAS LINE (OPEN-CUT)
- PROPOSED 16" GAS LINE (HDD)
- WETLAND
- DOMINION ENERGY PERMANENT EASEMENT

RIVER NECK TO KINGSBURG 16" GAS MAIN

WETLAND IMPACT AREA 2

CLIENT:
DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC
DATE: 5/27/2020
JOB NUMBER: J-27886.0000
DRAWN BY: DNF
REVIEWED BY: JRS
SHEET: 11
SCALE: 1"=100'

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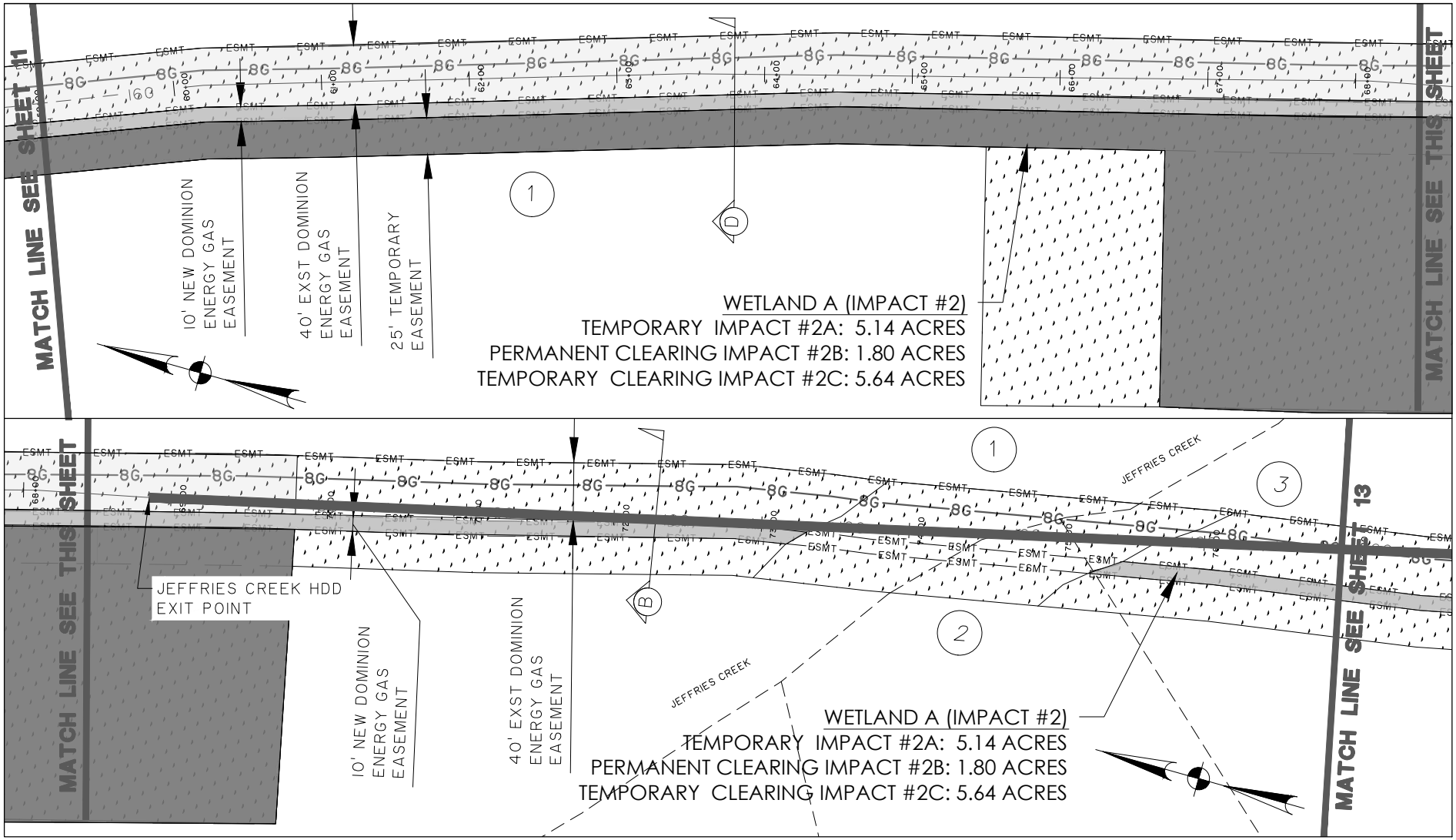

LEGEND

- TEMPORARY IMPACT
- PERMANENT CLEARING IMPACT
- TEMPORARY CLEARING IMPACT
- PROPOSED 16" GAS LINE (OPEN-CUT)
- PROPOSED 16" GAS LINE (HDD)
- WETLAND
- DOMINION ENERGY PERMANENT EASEMENT

RIVER NECK TO KINGSBURG 16" GAS MAIN

WETLAND IMPACT AREA 2

CLIENT:
DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC
DATE: 5/27/2020 DRAWN BY: DNF SHEET: 12
JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: 1"=100'

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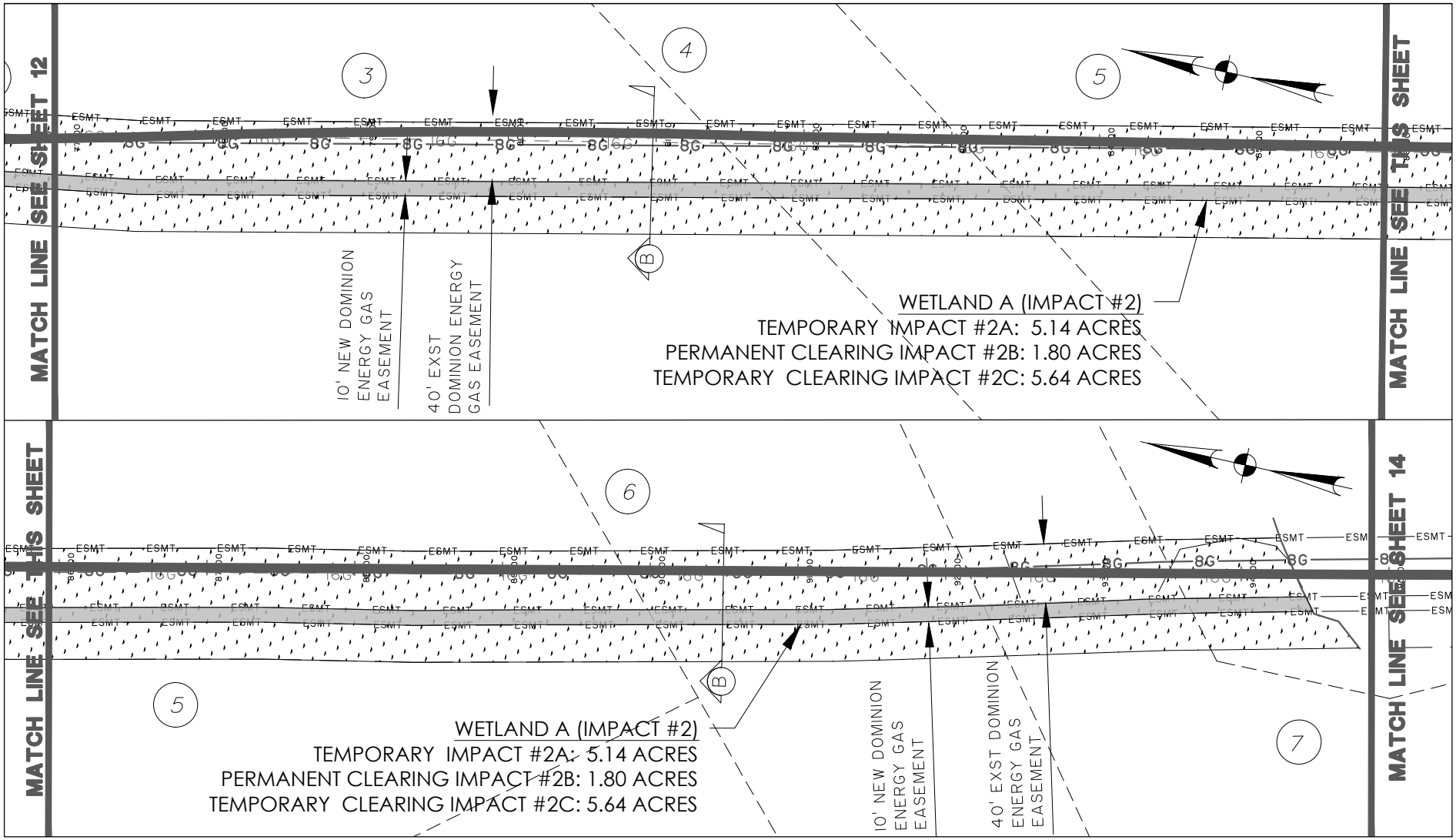

LEGEND

- TEMPORARY IMPACT
- PERMANENT CLEARING IMPACT
- TEMPORARY CLEARING IMPACT
- PROPOSED 16" GAS LINE (OPEN-CUT)
- PROPOSED 16" GAS LINE (HDD)
- WETLAND
- DOMINION ENERGY PERMANENT EASEMENT

RIVER NECK TO KINGSBURG 16" GAS MAIN

WETLAND IMPACT AREA 2

CLIENT:
DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC
DATE: 5/27/2020 DRAWN BY: DNF SHEET: 13
JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: 1"=100'

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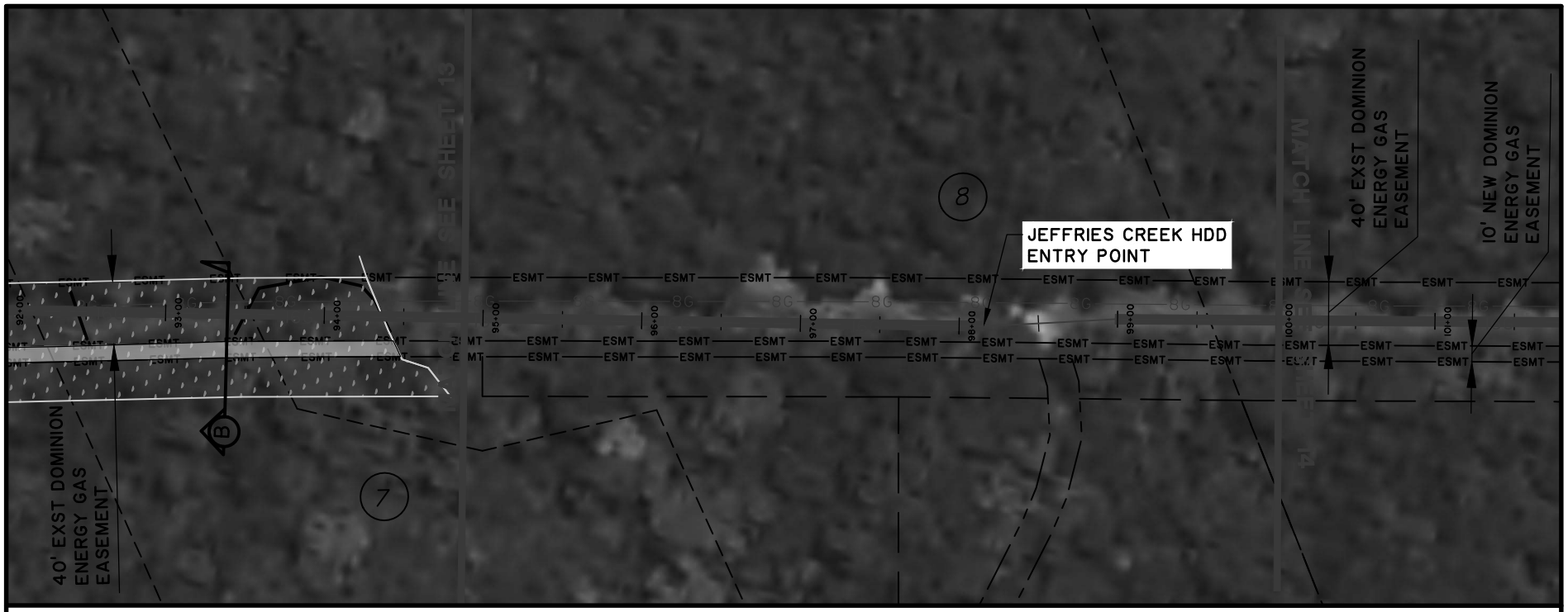

LEGEND

- TEMPORARY IMPACT
- PERMANENT CLEARING IMPACT
- TEMPORARY CLEARING IMPACT
- PROPOSED 16" GAS LINE (OPEN-CUT)
- PROPOSED 16" GAS LINE (HDD)
- WETLAND
- ESMT — DOMINION ENERGY PERMANENT EASEMENT

RIVER NECK TO KINGSBURG 16" GAS MAIN

WETLAND AREA 2 - JEFFIRES CREEK ENTRY POINT

CLIENT:
DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC
DATE: 5/18/2021 DRAWN BY: DNF SHEET: 13A
JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: 1"=100'

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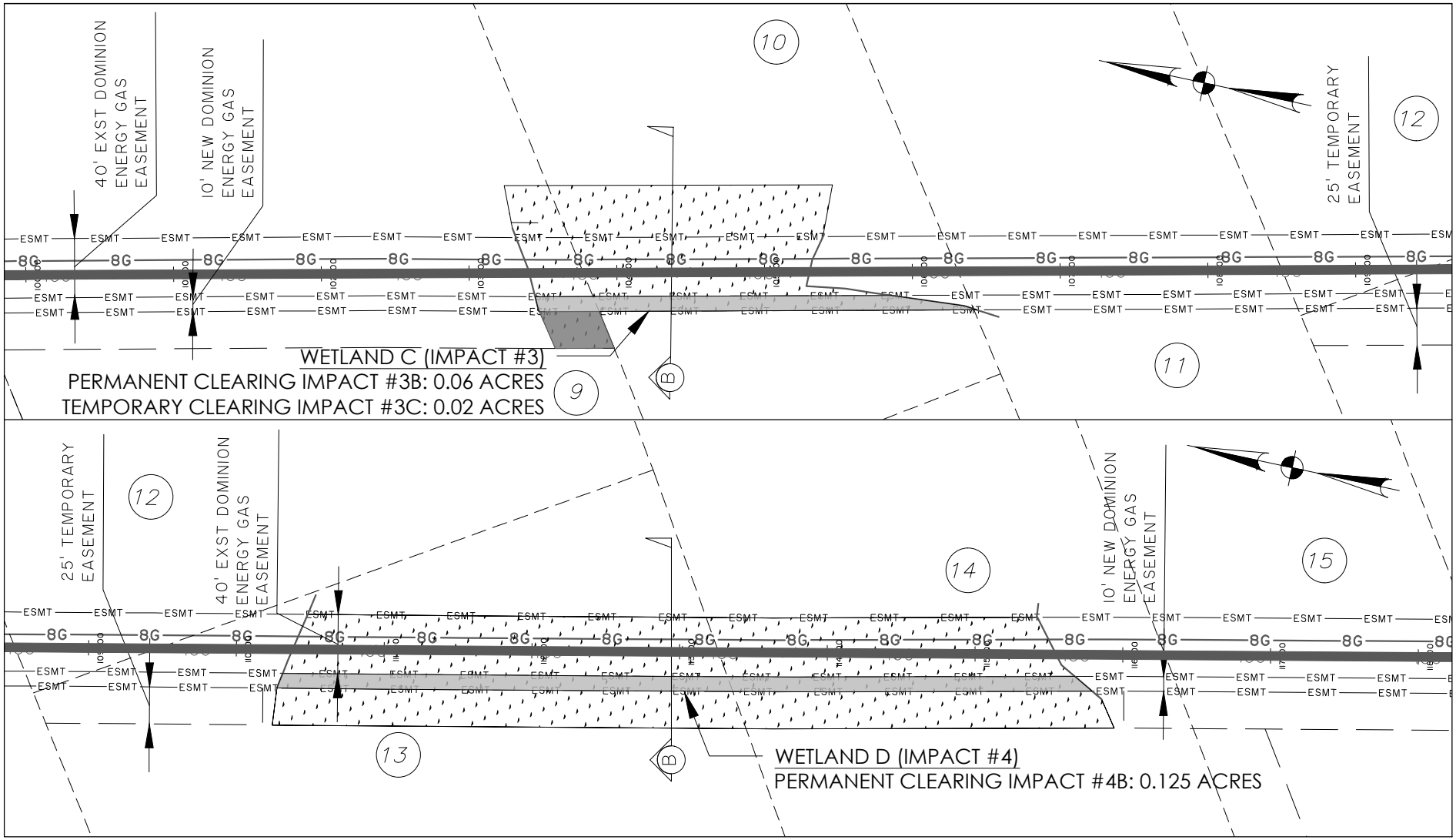

LEGEND

- TEMPORARY IMPACT
- PERMANENT CLEARING IMPACT
- TEMPORARY CLEARING IMPACT
- PROPOSED 16" GAS LINE (OPEN-CUT)
- PROPOSED 16" GAS LINE (HDD)
- WETLAND
- DOMINION ENERGY PERMANENT EASEMENT

RIVER NECK TO KINGSBURG 16" GAS MAIN

WETLAND IMPACT AREAS 3 AND 4

CLIENT:
DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC
DATE: 5/27/2020 DRAWN BY: DNF SHEET: 14
JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: 1"=100'

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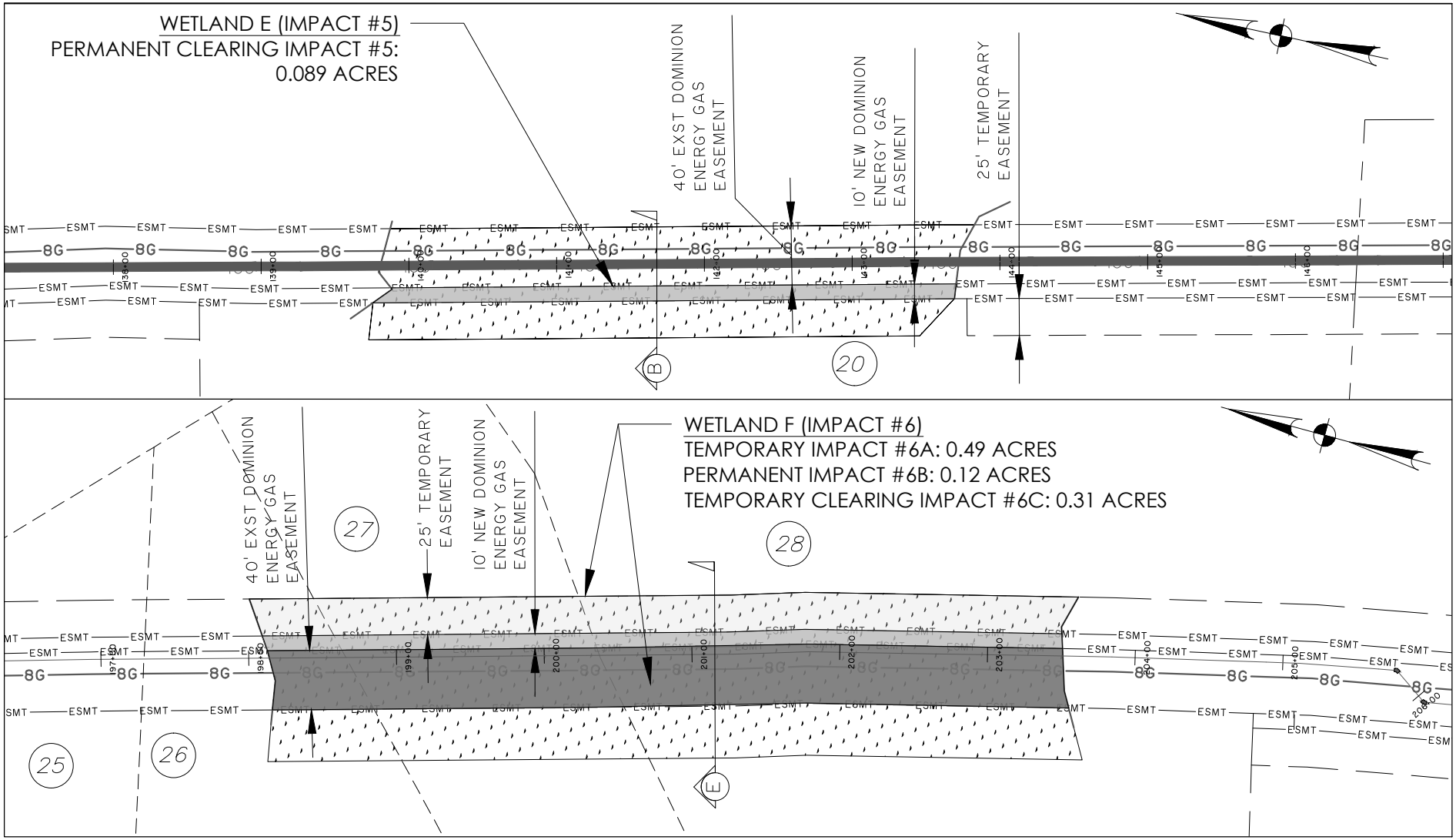

LEGEND

- TEMPORARY IMPACT
- PERMANENT CLEARING IMPACT
- TEMPORARY CLEARING IMPACT
- PROPOSED 16" GAS LINE (OPEN-CUT)
- PROPOSED 16" GAS LINE (HDD)
- WETLAND
- DOMINION ENERGY PERMANENT EASEMENT

RIVER NECK TO KINGSBURG 16" GAS MAIN

WETLAND IMPACT AREAS 5 AND 6

CLIENT:
DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC
DATE: 5/27/2020 DRAWN BY: DNF SHEET: 15
JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: 1"=100'

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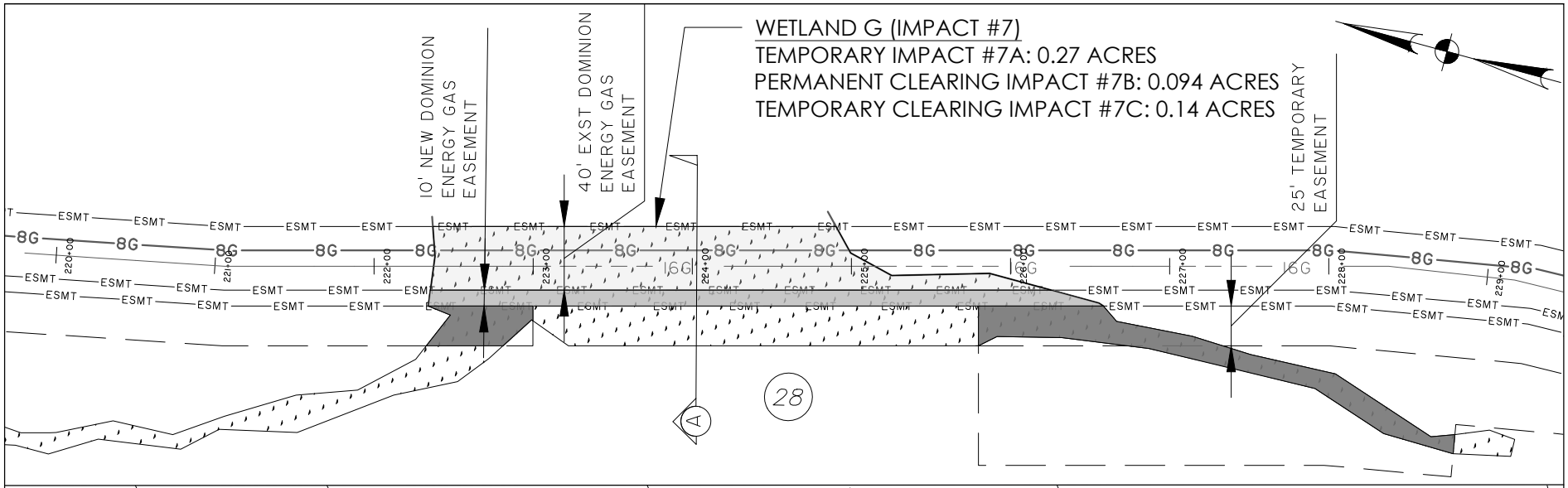

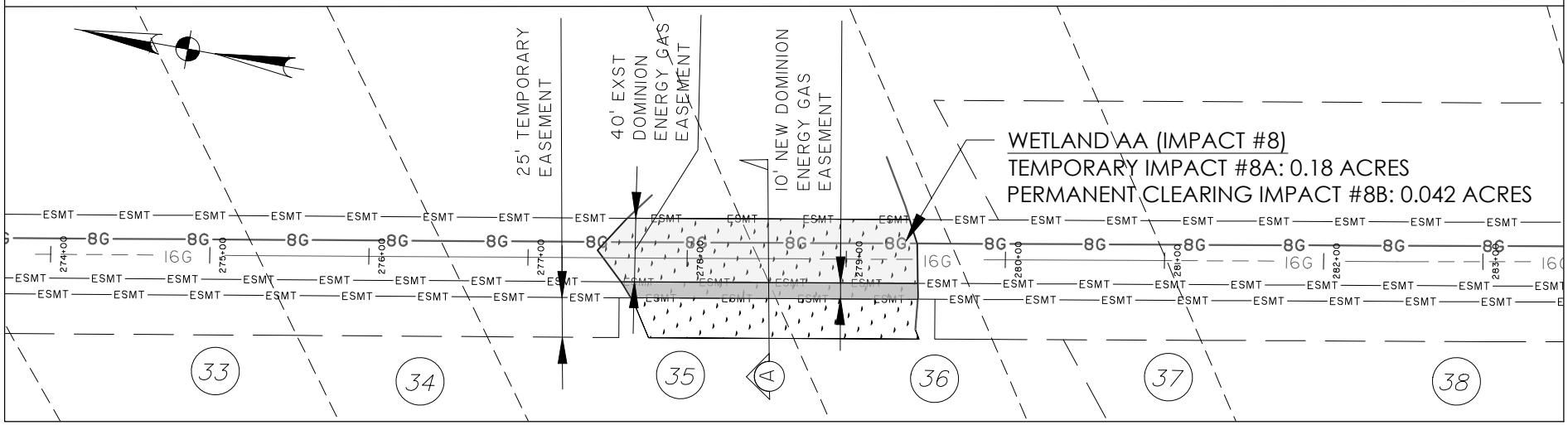

LEGEND

- TEMPORARY IMPACT
- PERMANENT CLEARING IMPACT
- TEMPORARY CLEARING IMPACT
- 16G — PROPOSED 16" GAS LINE (OPEN-CUT)
- PROPOSED 16" GAS LINE (HDD)
- WETLAND
- ESMT — DOMINION ENERGY PERMANENT EASEMENT

RIVER NECK TO KINGSBURG 16" GAS MAIN

WETLAND IMPACT AREAS 7 AND 8

CLIENT:
DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC
DATE: 5/27/2020
DRAWN BY: DNF
SHEET: 16
JOB NUMBER: J-27886.0000
REVIEWED BY: JRS
SCALE: 1"=100'

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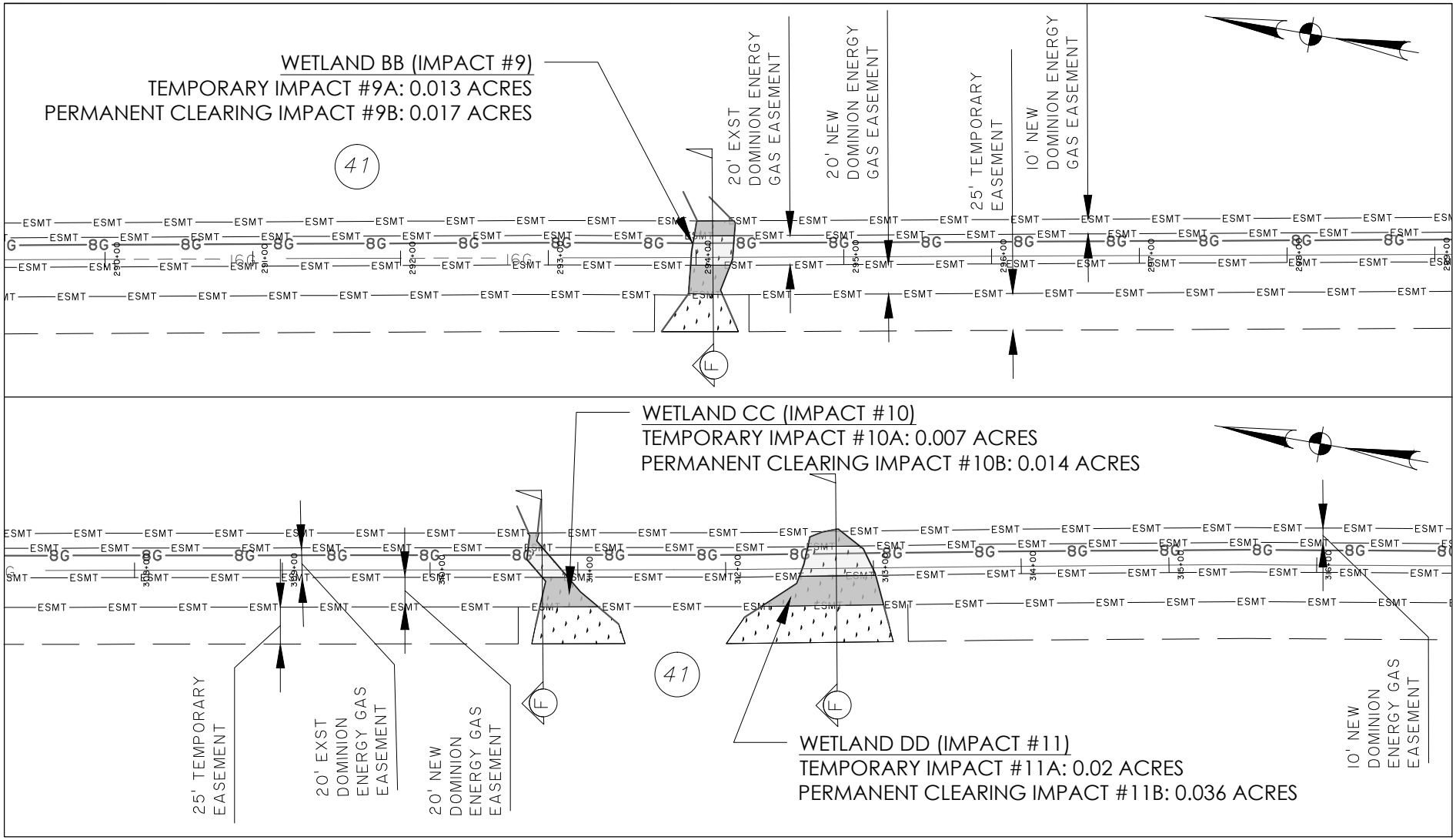

LEGEND

- TEMPORARY IMPACT
- PERMANENT CLEARING IMPACT
- TEMPORARY CLEARING IMPACT
- PROPOSED 16" GAS LINE (OPEN-CUT)
- PROPOSED 16" GAS LINE (HDD)
- WETLAND
- DOMINION ENERGY PERMANENT EASEMENT

RIVER NECK TO KINGSBURG 16" GAS MAIN

WETLAND IMPACT AREAS 9,10 AND 11

CLIENT:
DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC
DATE: 5/27/2020 DRAWN BY: DNF SHEET: 17
JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: 1"=100'

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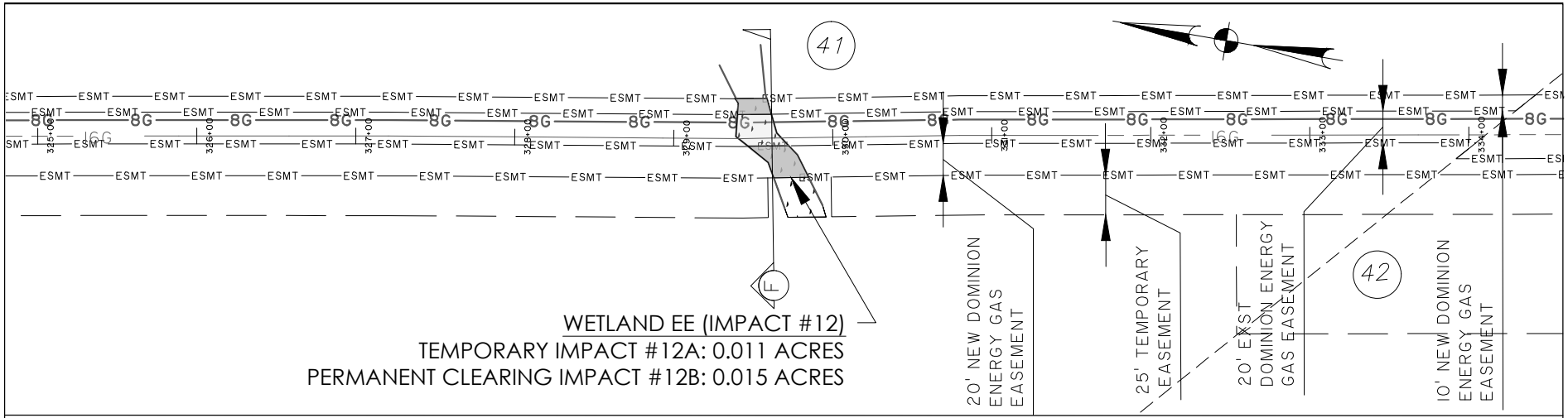

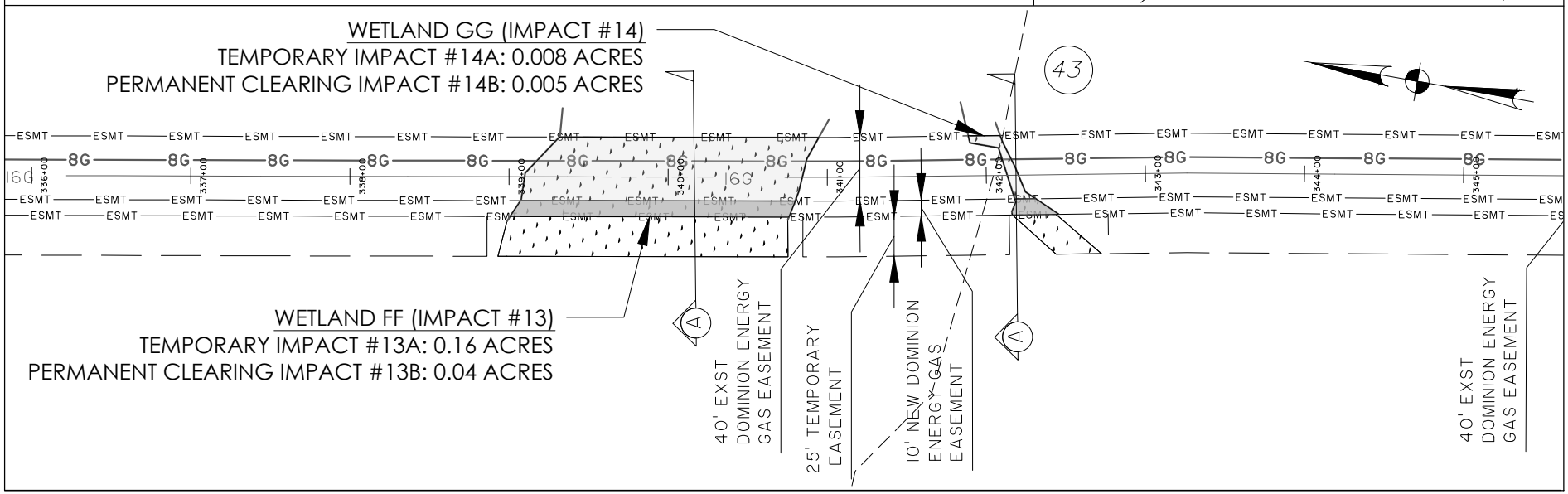

LEGEND

- TEMPORARY IMPACT
- PERMANENT CLEARING IMPACT
- TEMPORARY CLEARING IMPACT
- 16G — PROPOSED 16" GAS LINE (OPEN-CUT)
- PROPOSED 16" GAS LINE (HDD)
- WETLAND
- ESMT — DOMINION ENERGY PERMANENT EASEMENT

RIVER NECK TO KINGSBURG 16" GAS MAIN

WETLAND IMPACT AREAS 12, 13 AND 14

CLIENT:
DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC
DATE: 5/27/2020 DRAWN BY: DNF SHEET: 18
JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: 1"=100'

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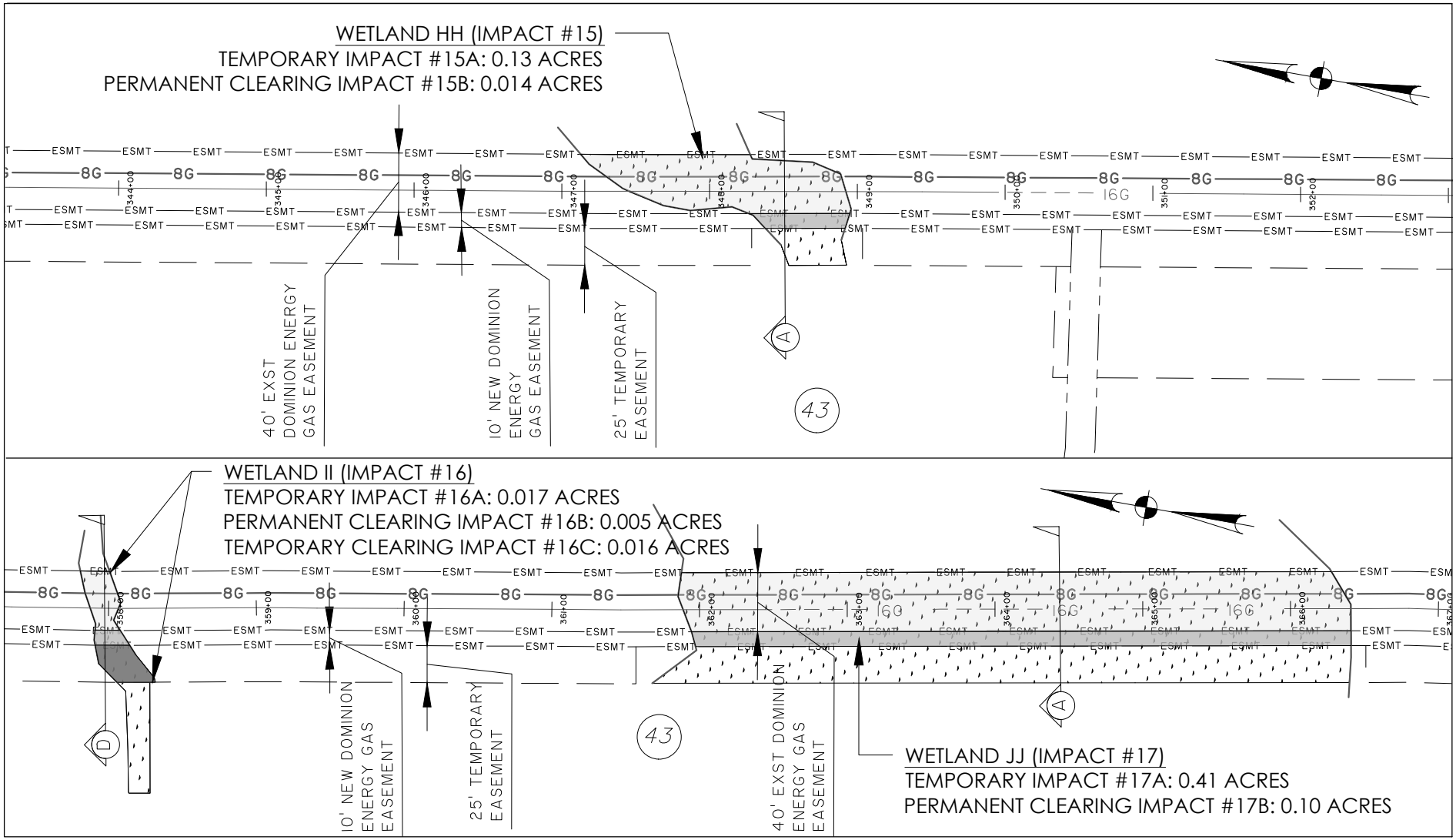

LEGEND

- TEMPORARY IMPACT
- PERMANENT CLEARING IMPACT
- TEMPORARY CLEARING IMPACT
- PROPOSED 16" GAS LINE (OPEN-CUT)
- PROPOSED 16" GAS LINE (HDD)
- WETLAND
- DOMINION ENERGY PERMANENT EASEMENT

RIVER NECK TO KINGSBURG 16" GAS MAIN

WETLAND IMPACT AREAS 15, 16 AND 17

CLIENT:
DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC
DATE: 5/27/2020 DRAWN BY: DNF SHEET: 19
JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: 1"=100'

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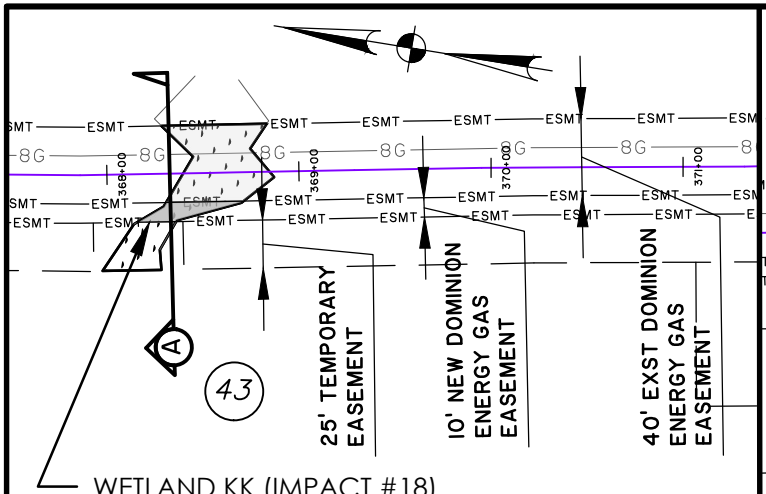
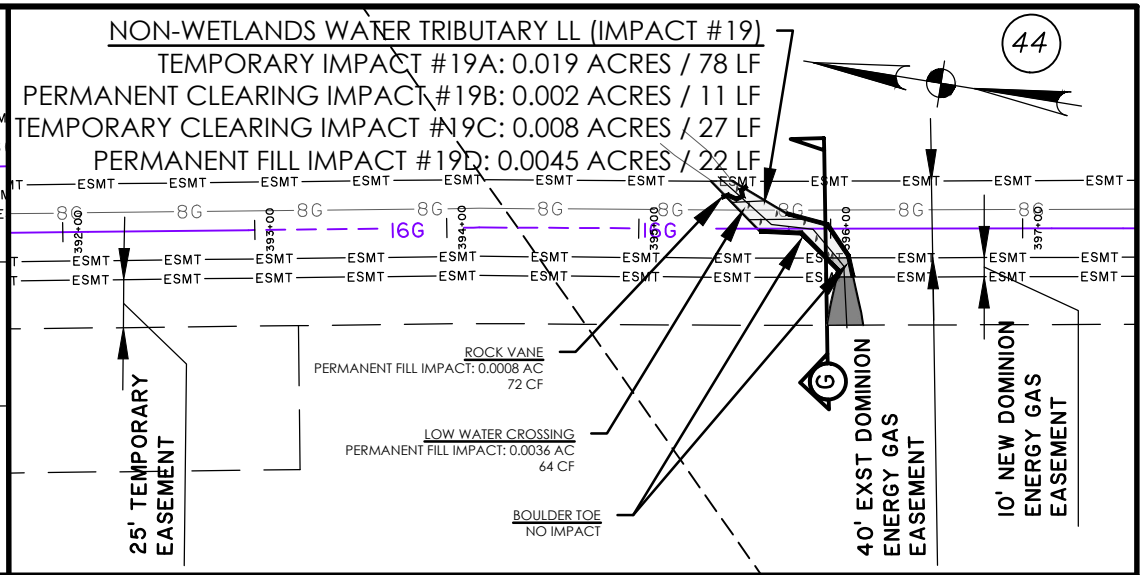
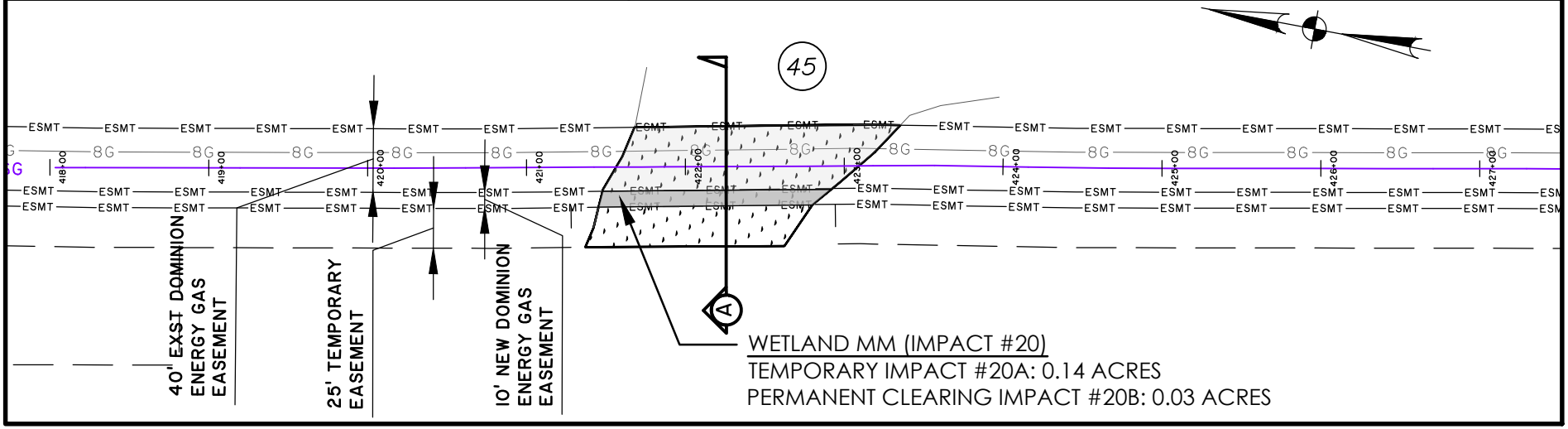


WETLAND KK (IMPACT #18)
TEMPORARY IMPACT #18A: 0.04 ACRES
PERMANENT CLEARING IMPACT #18B: 0.007 ACRES



NON-WETLANDS WATER TRIBUTARY LL (IMPACT #19)
TEMPORARY IMPACT #19A: 0.019 ACRES / 78 LF
PERMANENT CLEARING IMPACT #19B: 0.002 ACRES / 11 LF
TEMPORARY CLEARING IMPACT #19C: 0.008 ACRES / 27 LF
PERMANENT FILL IMPACT #19D: 0.0045 ACRES / 22 LF



WETLAND MM (IMPACT #20)
TEMPORARY IMPACT #20A: 0.14 ACRES
PERMANENT CLEARING IMPACT #20B: 0.03 ACRES

LEGEND

- TEMPORARY IMPACT
- PERMANENT CLEARING IMPACT
- TEMPORARY CLEARING IMPACT
- PERMANENT FILL IMPACT
- WETLAND
- ESMT — DOMINION ENERGY PERMANENT EASEMENT

RIVER NECK TO KINGSBURG 16" GAS MAIN

WETLAND IMPACT AREAS 18, 19 AND 20

CLIENT:
DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC
DATE: 5/27/2020
JOB NUMBER: J-27886.0000
DRAWN BY: DNF
REVIEWED BY: JRS
SHEET: 20
SCALE: 1"=100'

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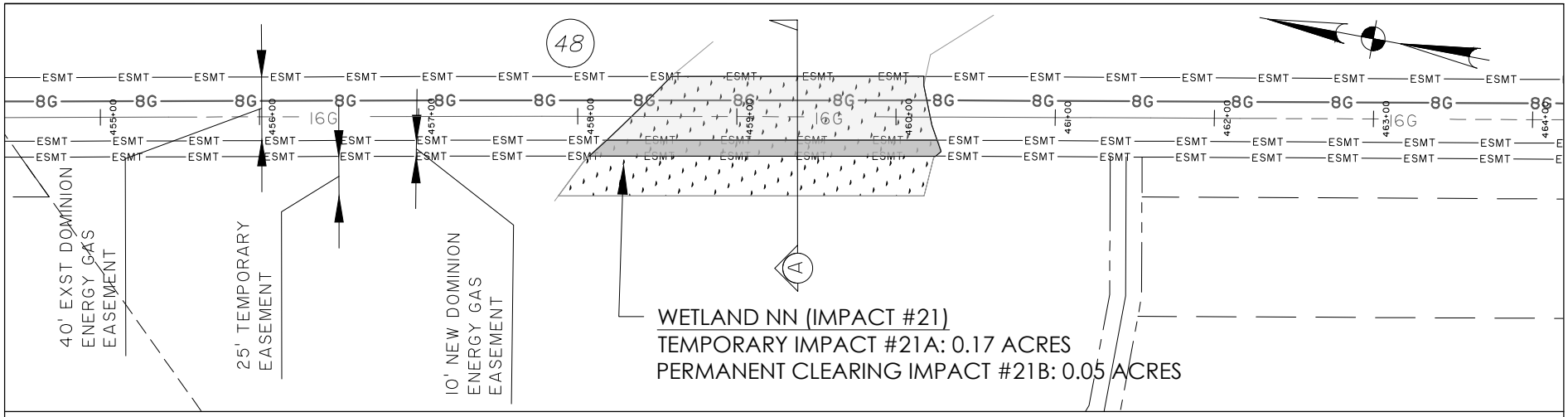

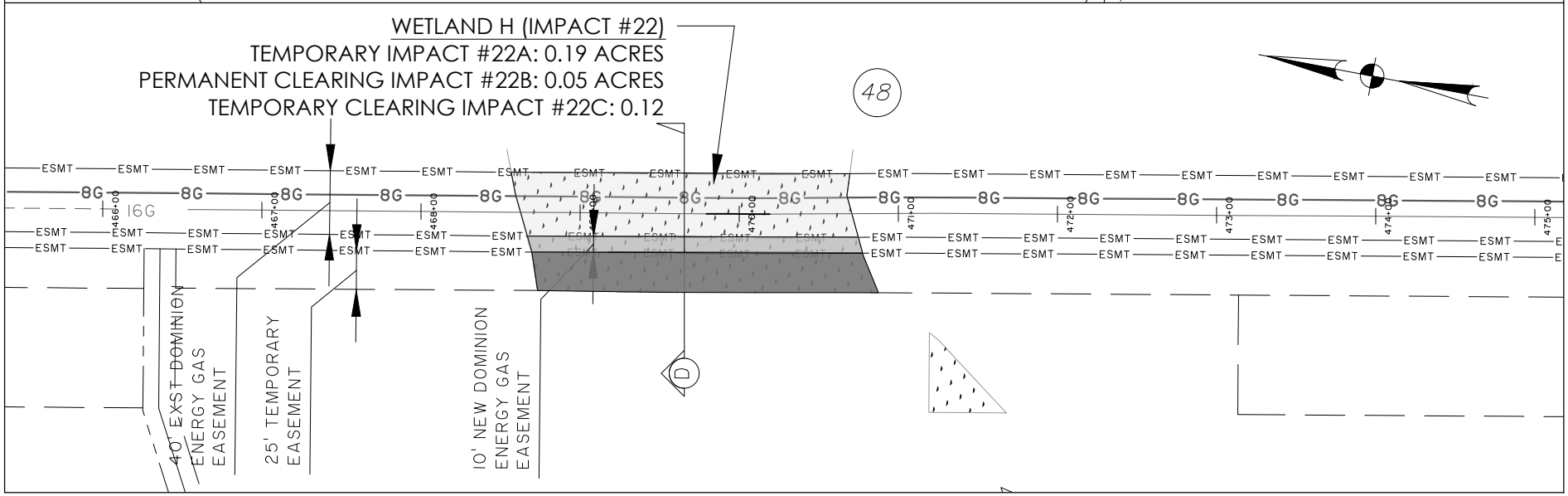

LEGEND

- TEMPORARY IMPACT
- PERMANENT CLEARING IMPACT
- TEMPORARY CLEARING IMPACT
- PROPOSED 16" GAS LINE (OPEN-CUT)
- PROPOSED 16" GAS LINE (HDD)
- WETLAND
- DOMINION ENERGY PERMANENT EASEMENT

RIVER NECK TO KINGSBURG 16" GAS MAIN

WETLAND IMPACT AREAS 21 AND 22

CLIENT:
DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC
DATE: 5/27/2020 DRAWN BY: DNF SHEET: 21
JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: 1"=100'

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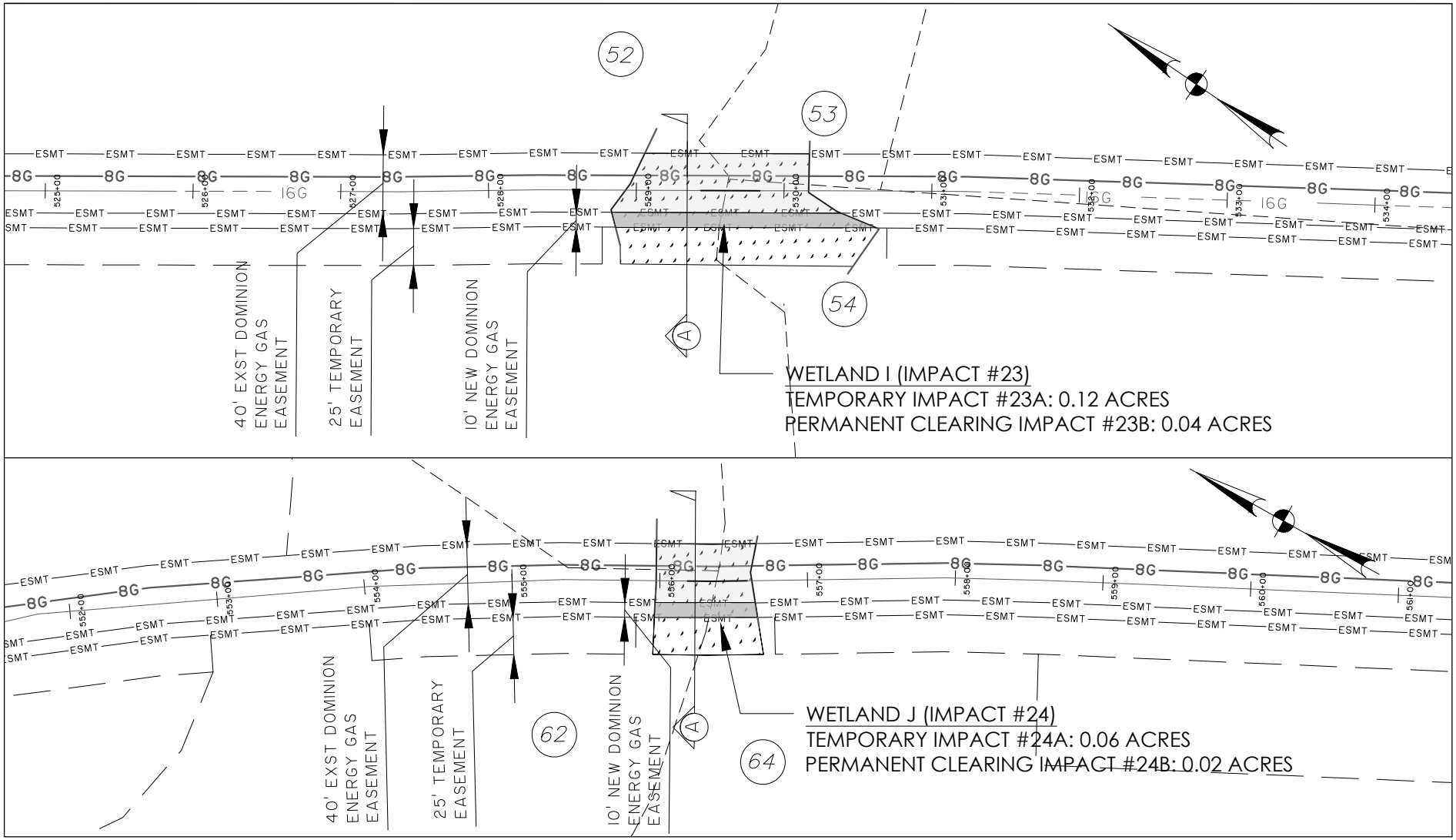

LEGEND

- TEMPORARY IMPACT
- PERMANENT CLEARING IMPACT
- TEMPORARY CLEARING IMPACT
- 16G — PROPOSED 16" GAS LINE (OPEN-CUT)
- PROPOSED 16" GAS LINE (HDD)
- WETLAND
- ESMT — DOMINION ENERGY PERMANENT EASEMENT

RIVER NECK TO KINGSBURG 16" GAS MAIN

WETLAND IMPACT AREAS 23 AND 24

CLIENT:
DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC
DATE: 5/27/2020
JOB NUMBER: J-27886.0000
DRAWN BY: DNF
REVIEWED BY: JRS
SHEET: 22
SCALE: 1"=100'

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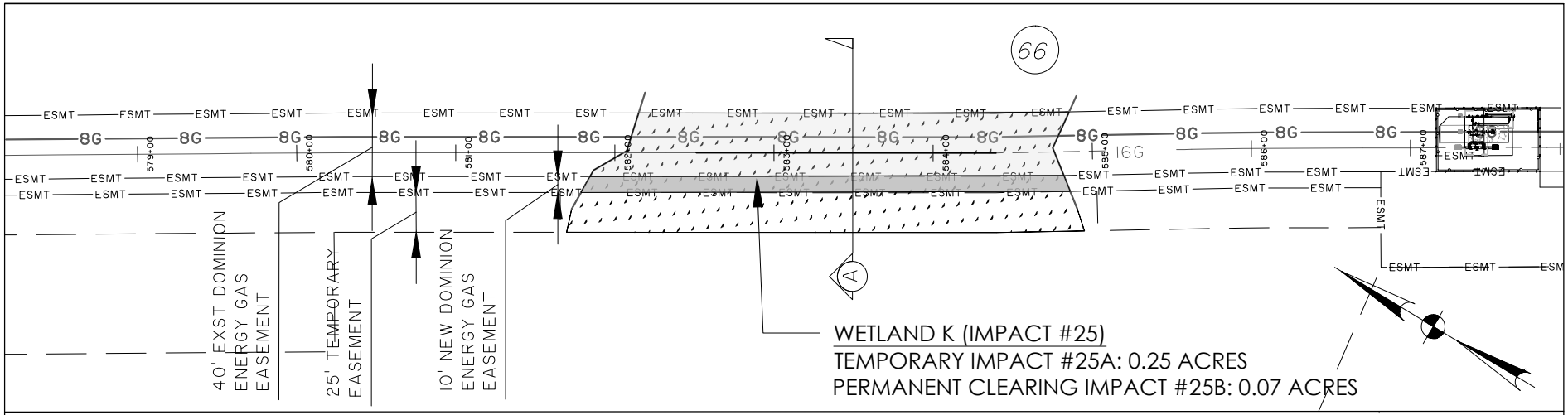

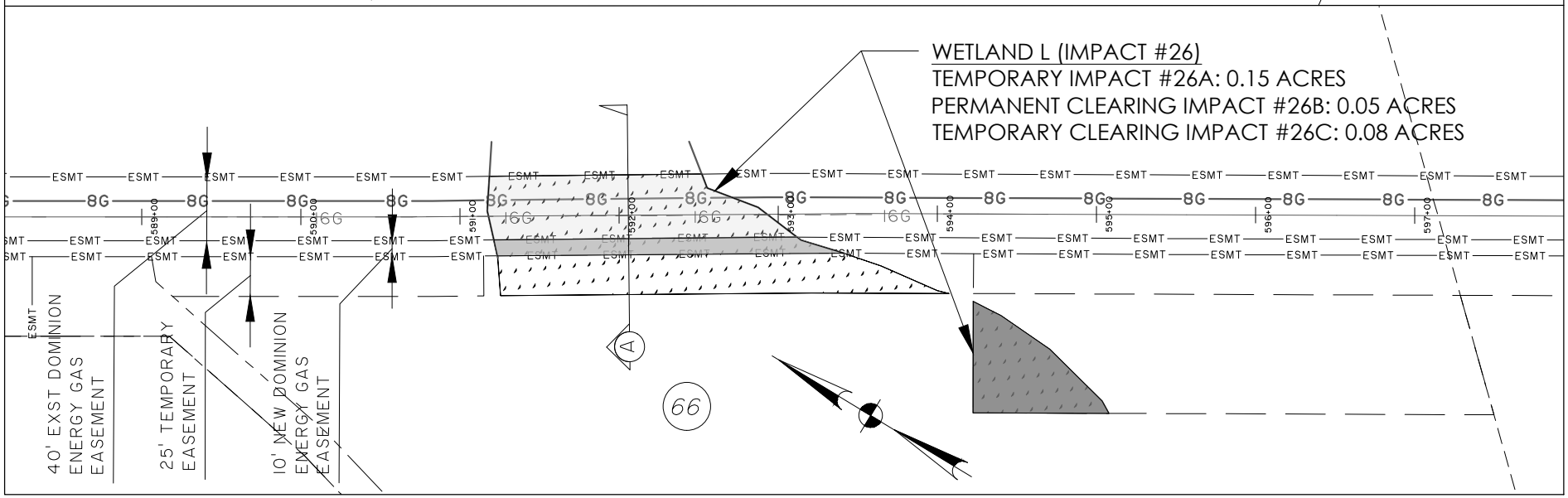

LEGEND

- TEMPORARY IMPACT
- PERMANENT CLEARING IMPACT
- TEMPORARY CLEARING IMPACT
- PROPOSED 16" GAS LINE (OPEN-CUT)
- PROPOSED 16" GAS LINE (HDD)
- WETLAND
- DOMINION ENERGY PERMANENT EASEMENT

RIVER NECK TO KINGSBURG 16" GAS MAIN

WETLAND IMPACT AREAS 25 AND 26

CLIENT:
DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC
DATE: 5/27/2020 DRAWN BY: DNF SHEET: 23
JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: 1"=100'

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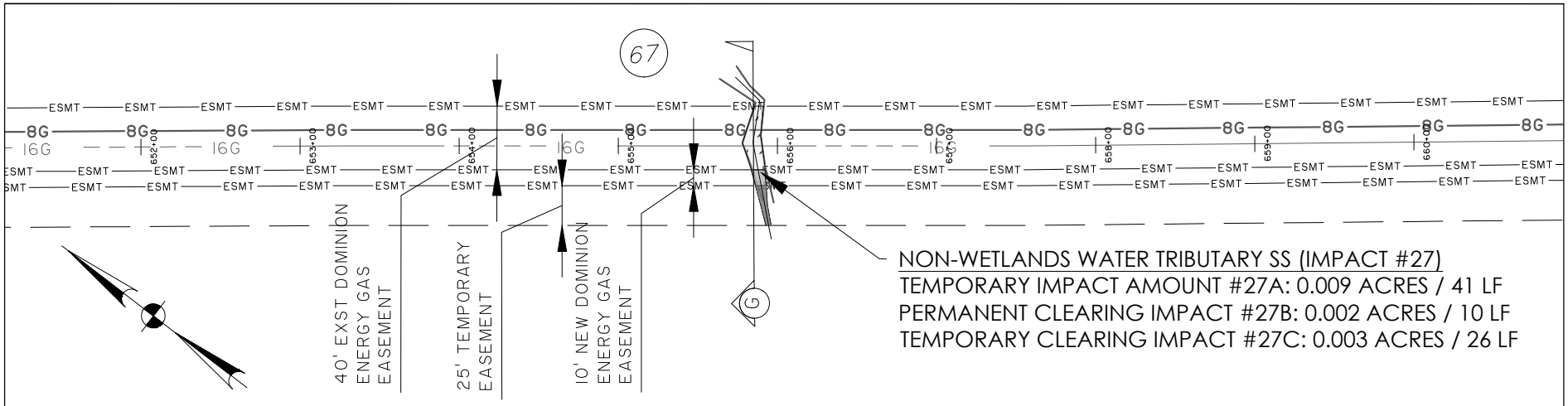
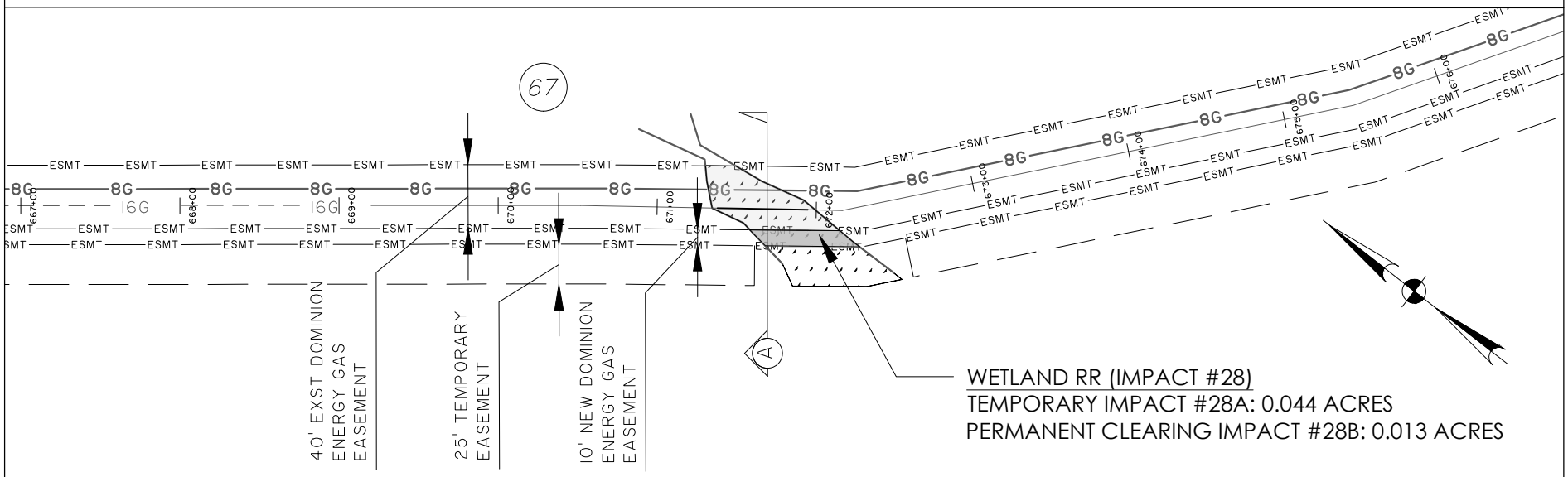


NON-WETLANDS WATER TRIBUTARY SS (IMPACT #27)
TEMPORARY IMPACT AMOUNT #27A: 0.009 ACRES / 41 LF
PERMANENT CLEARING IMPACT #27B: 0.002 ACRES / 10 LF
TEMPORARY CLEARING IMPACT #27C: 0.003 ACRES / 26 LF



WETLAND RR (IMPACT #28)
TEMPORARY IMPACT #28A: 0.044 ACRES
PERMANENT CLEARING IMPACT #28B: 0.013 ACRES

LEGEND

- TEMPORARY IMPACT
- PERMANENT CLEARING IMPACT
- TEMPORARY CLEARING IMPACT
- PROPOSED 16" GAS LINE (OPEN-CUT)
- PROPOSED 16" GAS LINE (HDD)
- WETLAND
- DOMINION ENERGY PERMANENT EASEMENT

RIVER NECK TO KINGSBURG 16" GAS MAIN

WETLAND IMPACT AREAS 27 AND 28

CLIENT:
DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC
DATE: 5/27/2020 DRAWN BY: DNF SHEET: 24
JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: 1"=100'

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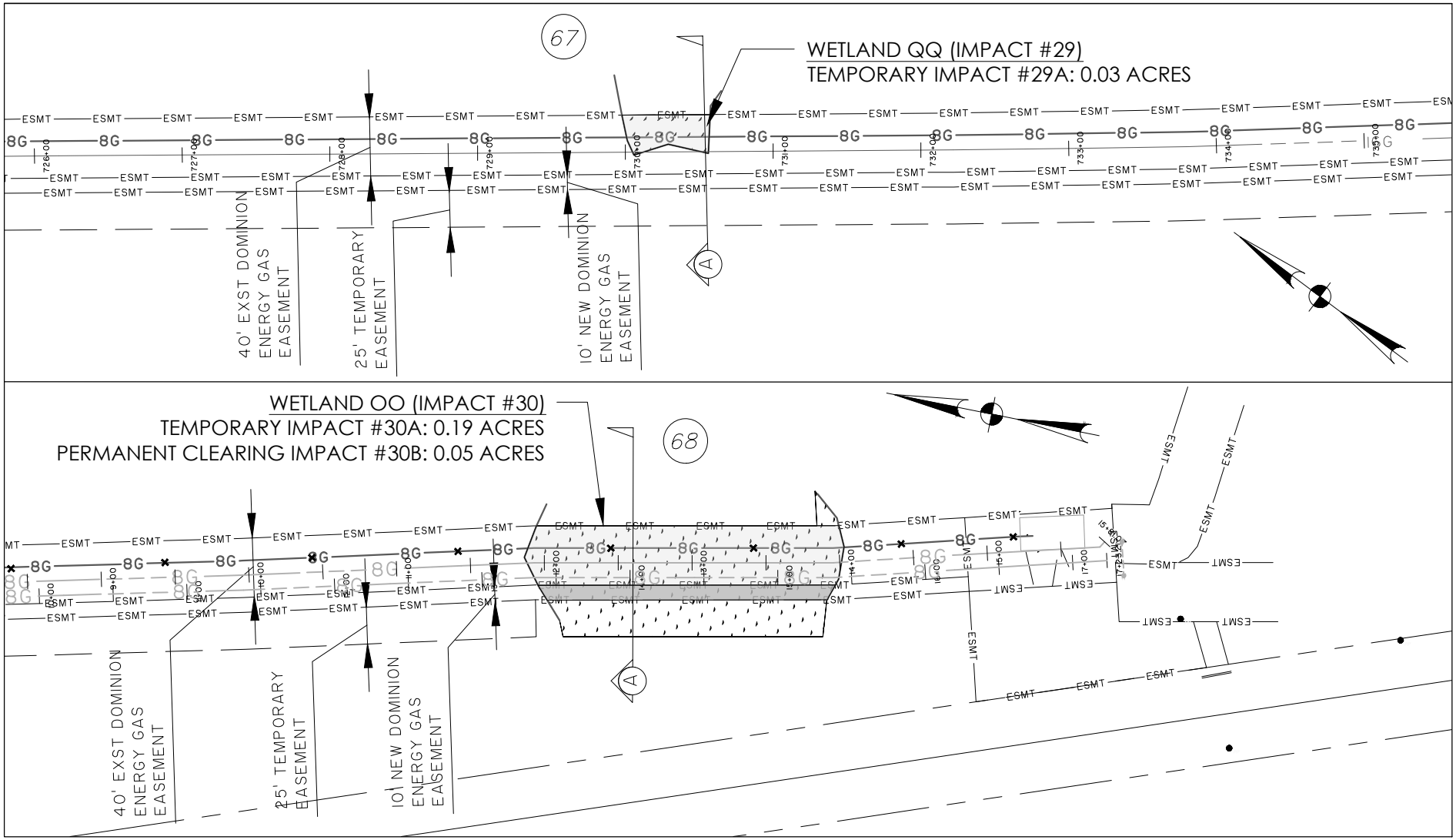

LEGEND

- TEMPORARY IMPACT
- PERMANENT CLEARING IMPACT
- TEMPORARY CLEARING IMPACT
- PROPOSED 16" GAS LINE (OPEN-CUT)
- PROPOSED 8" GAS LINE (OPEN-CUT)
- PROPOSED 16" GAS LINE (HDD)
- WETLAND
- DOMINION ENERGY PERMANENT EASEMENT

RIVER NECK TO KINGSBURG 16" GAS MAIN

WETLAND IMPACT AREAS 29 AND 30

CLIENT:
DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC
DATE: 5/27/2020 DRAWN BY: DNF SHEET: 25
JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: 1"=100'

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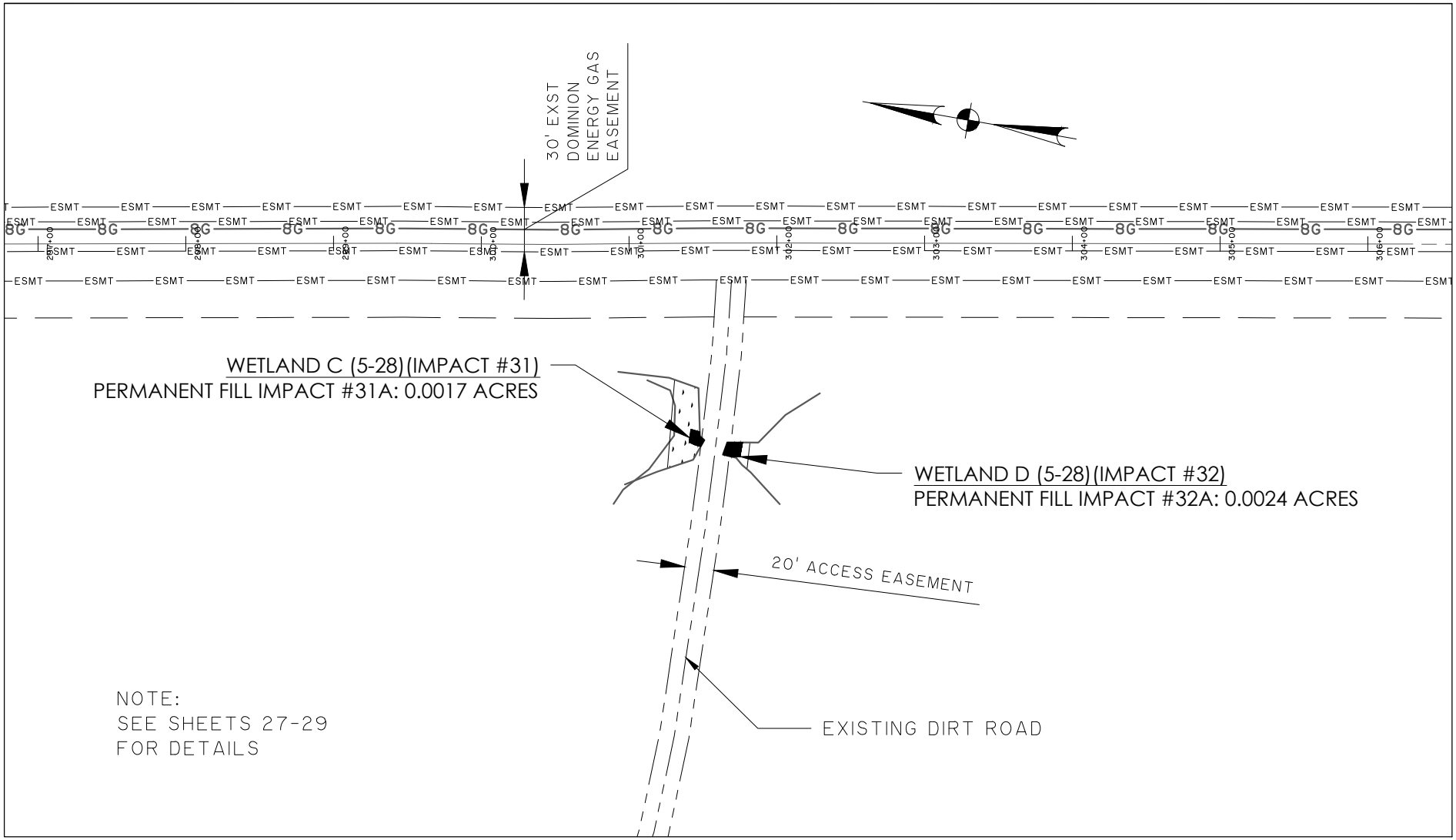

LEGEND

- PERMANENT FILL IMPACT
- TEMPORARY IMPACT
- PERMANENT CLEARING IMPACT
- TEMPORARY CLEARING IMPACT
- PROPOSED 16" GAS LINE (OPEN-CUT)
- PROPOSED 16" GAS LINE (HDD)
- WETLAND
- DOMINION ENERGY PERMANENT EASEMENT

RIVER NECK TO KINGSBURG 16" GAS MAIN

WETLAND IMPACT AREAS 31 AND 32

CLIENT:
DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC
DATE: 5/27/2020 DRAWN BY: DNF SHEET: 26
JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: 1"=100'

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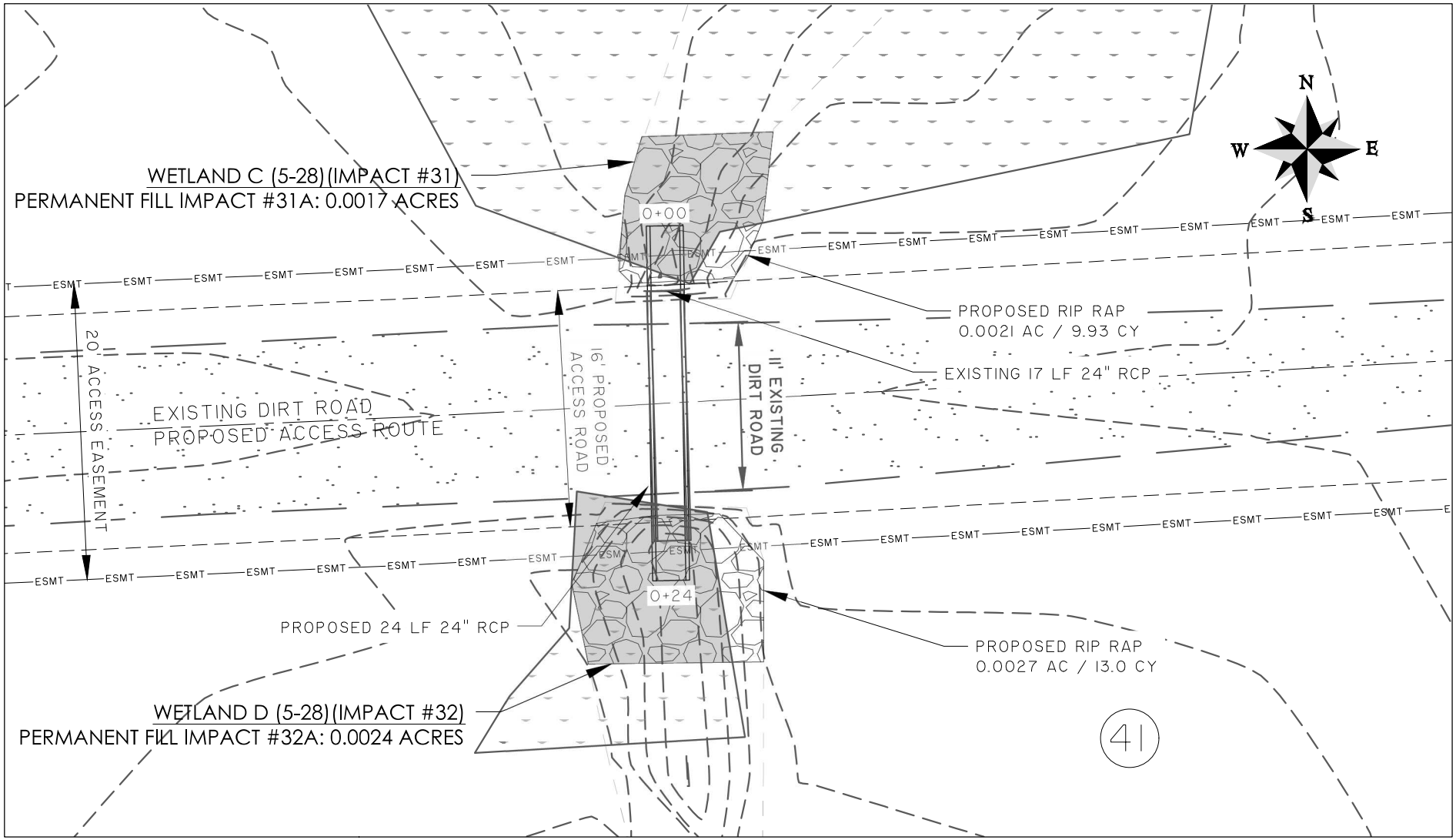

LEGEND

- TEMPORARY IMPACT
- PERMANENT CLEARING IMPACT
- TEMPORARY CLEARING IMPACT
- PERMANENT FILL IMPACT
- WETLAND
- ESMT — DOMINION ENERGY PERMANENT EASEMENT

RIVER NECK TO KINGSBURG 16" GAS MAIN

WETLAND IMPACT AREAS 31 & 32

CLIENT:
DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC
DATE: 5/27/2020 DRAWN BY: DNF SHEET: 27
JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: 1" = 10'

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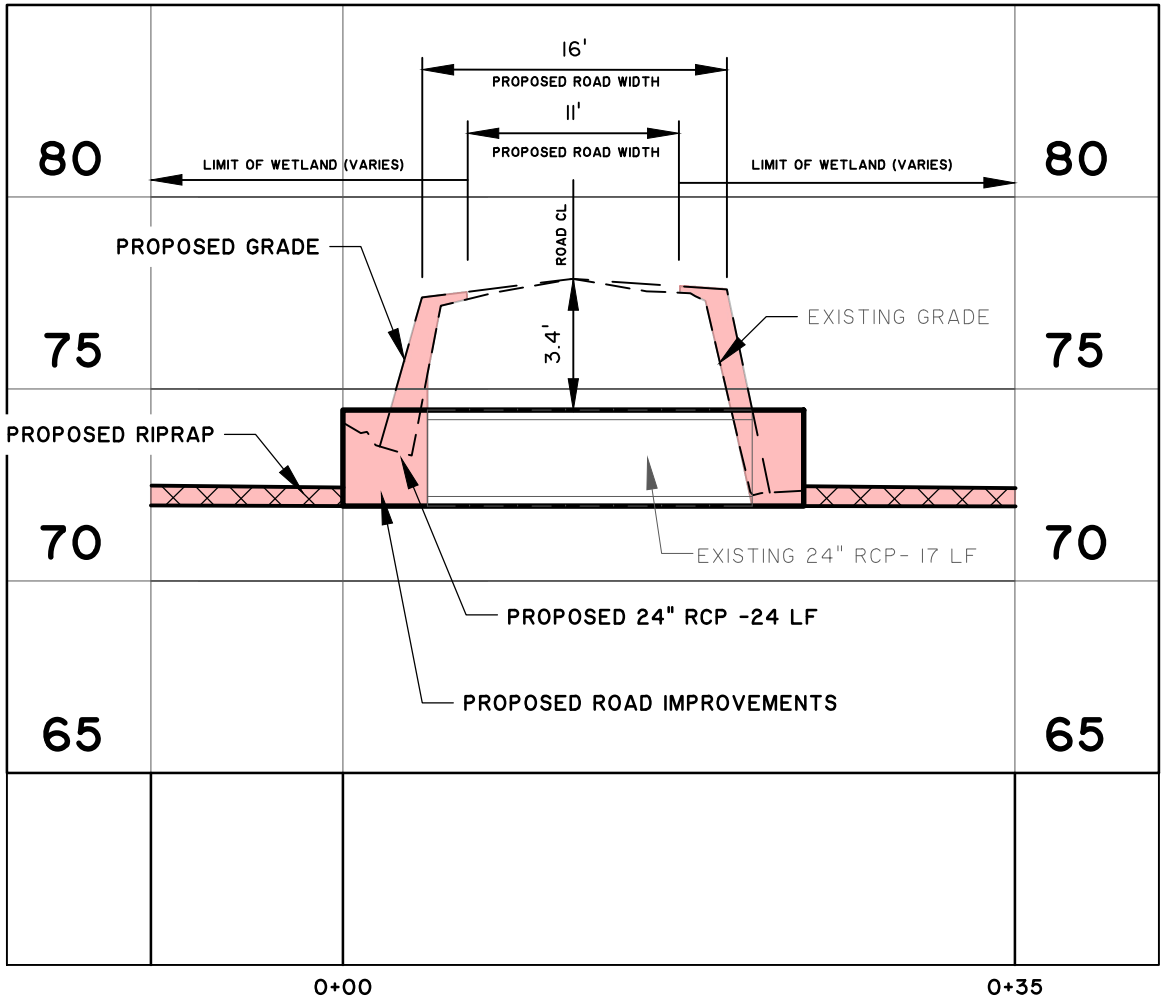

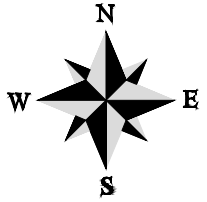

TRACT 41 CULVERT

RIVER NECK TO KINGSBURG 16" GAS MAIN

WETLAND IMPACT AREAS 31 & 32 PROFILE DETAIL

CLIENT:
DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC
DATE: 04/21/21 DRAWN BY: DNF SHEET: 28
JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: 1" = 10'

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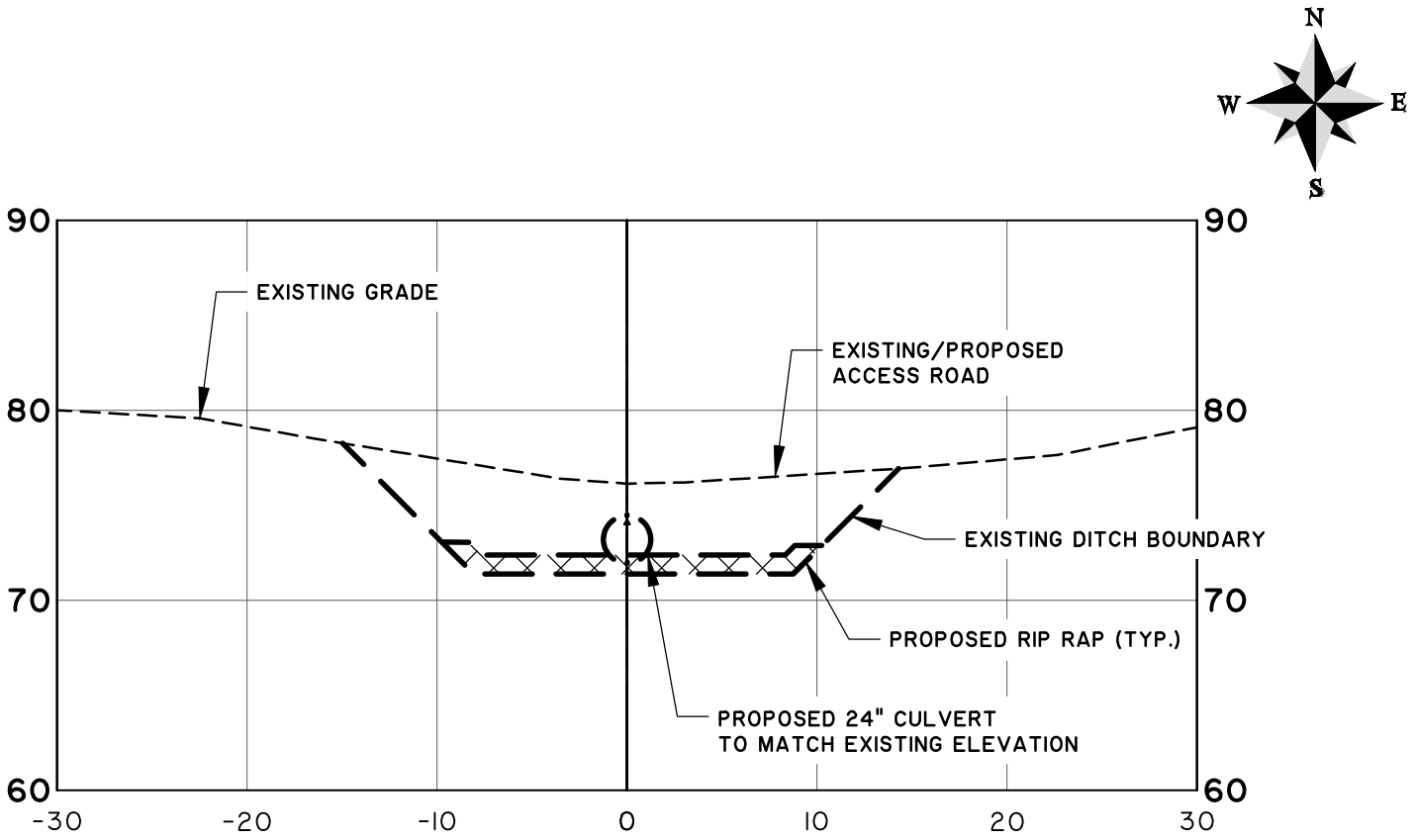

STA: 0+00.14

SCALE: HORZ.: 1" = 10'
VERT.: 1" = 10'

RIVER NECK TO KINGSBURG 16" GAS MAIN

WETLAND IMPACT AREAS 31 & 32 SECTION DETAIL STA 0+00.14

CLIENT:
DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC
DATE: 04/21/21 DRAWN BY: DNF SHEET: 29
JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: 1" = 10'

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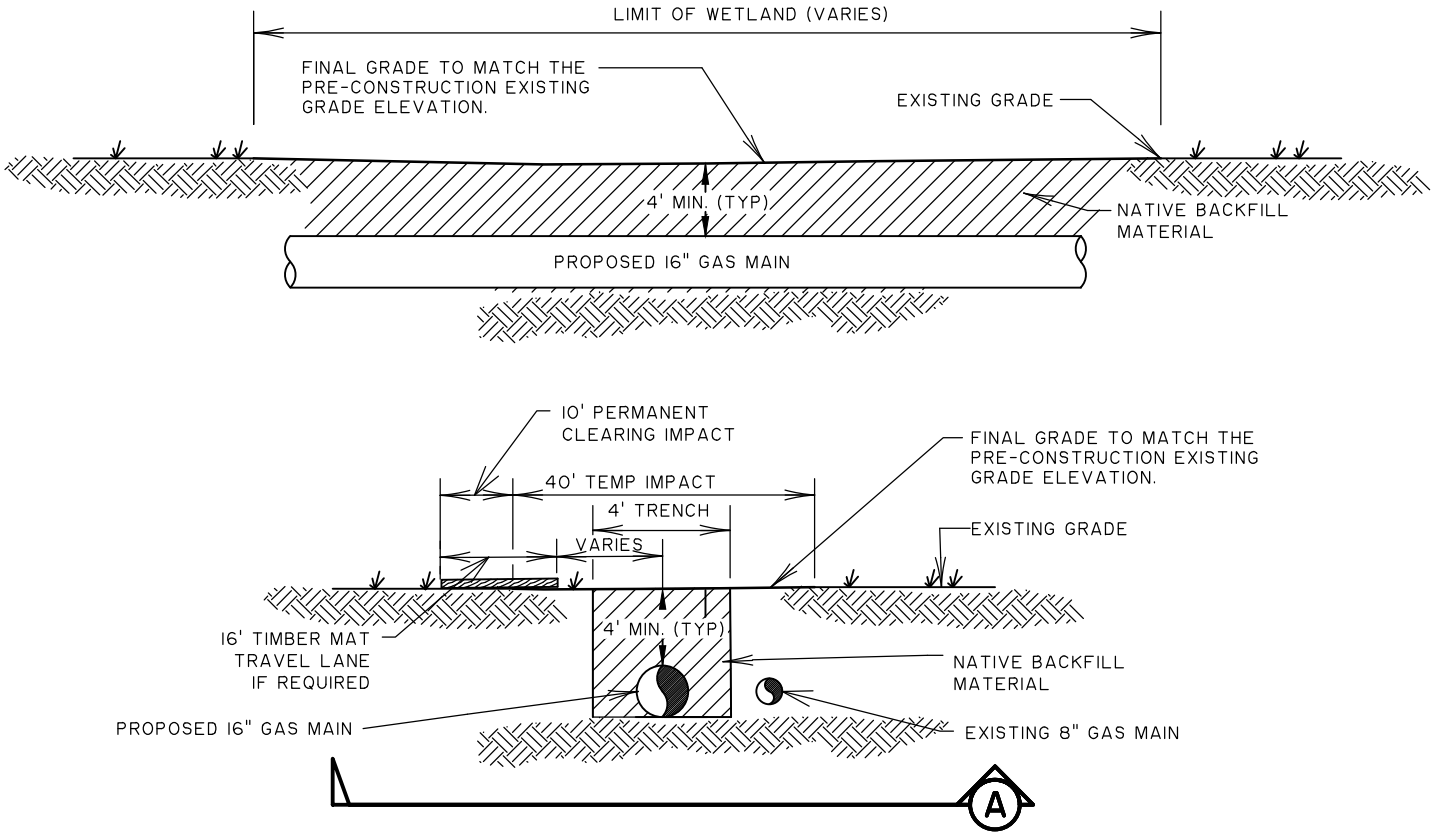

TYPICAL SECTION "A" - GAS MAIN INSTALLATION WITHIN WETLANDS

NOT TO SCALE

NOTE: CONTRACTOR TO RESTORE WETLANDS TO ITS PRE-CONSTRUCTION CONTOURS.

RIVER NECK TO KINGSBURG 16" GAS MAIN

CROSS SECTION A

CLIENT:
DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC
DATE: 04/21/21 DRAWN BY: DNF SHEET: 30
JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: NTS

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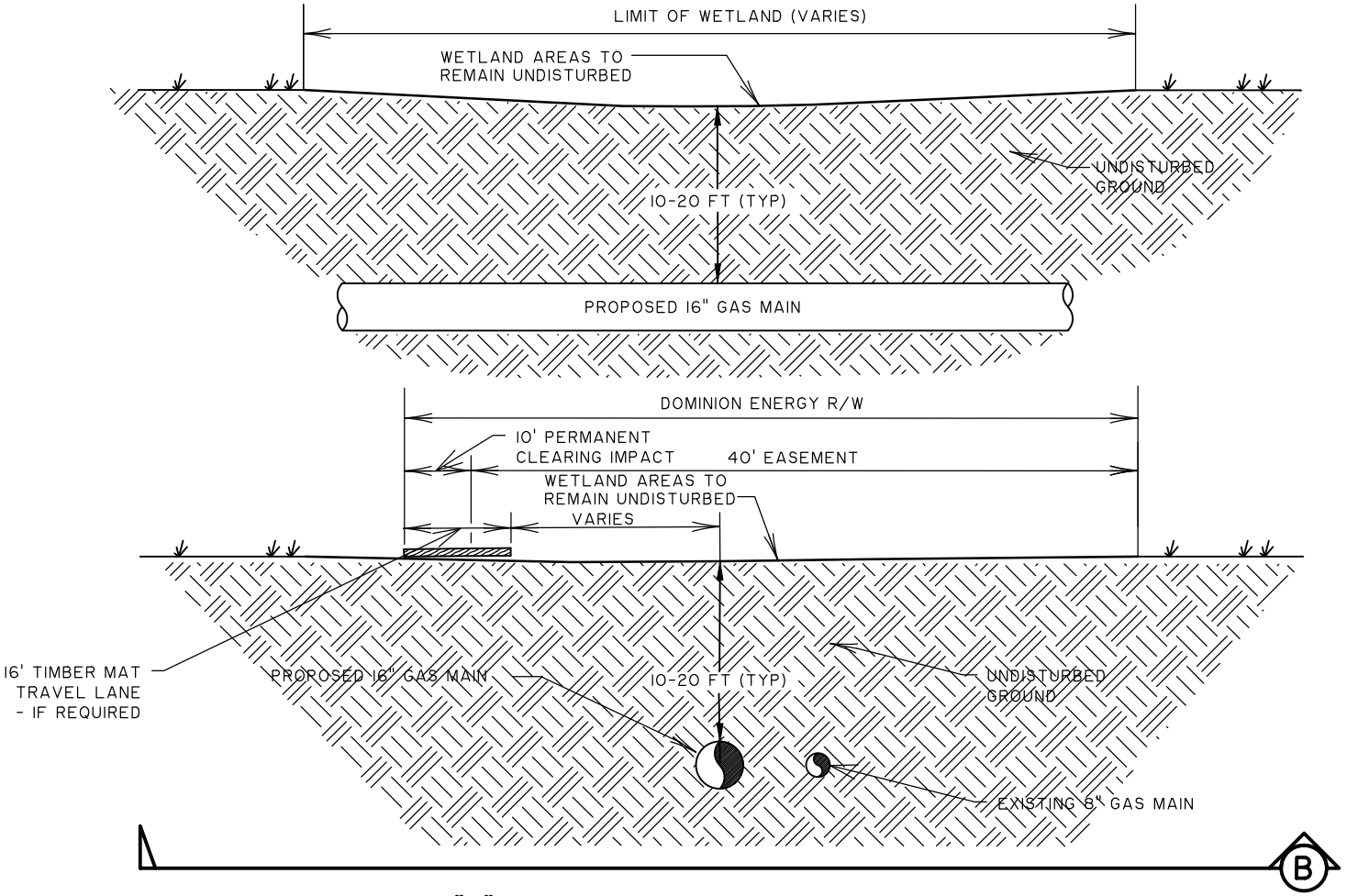

TYPICAL SECTION "B" - GAS MAIN INSTALLATION UNDER WETLANDS BY HDD

NOT TO SCALE

RIVER NECK TO KINGSBURG 16" GAS MAIN

CROSS SECTION B

CLIENT:
DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC
DATE: 04/21/21 DRAWN BY: DNF SHEET: 31
JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: NTS

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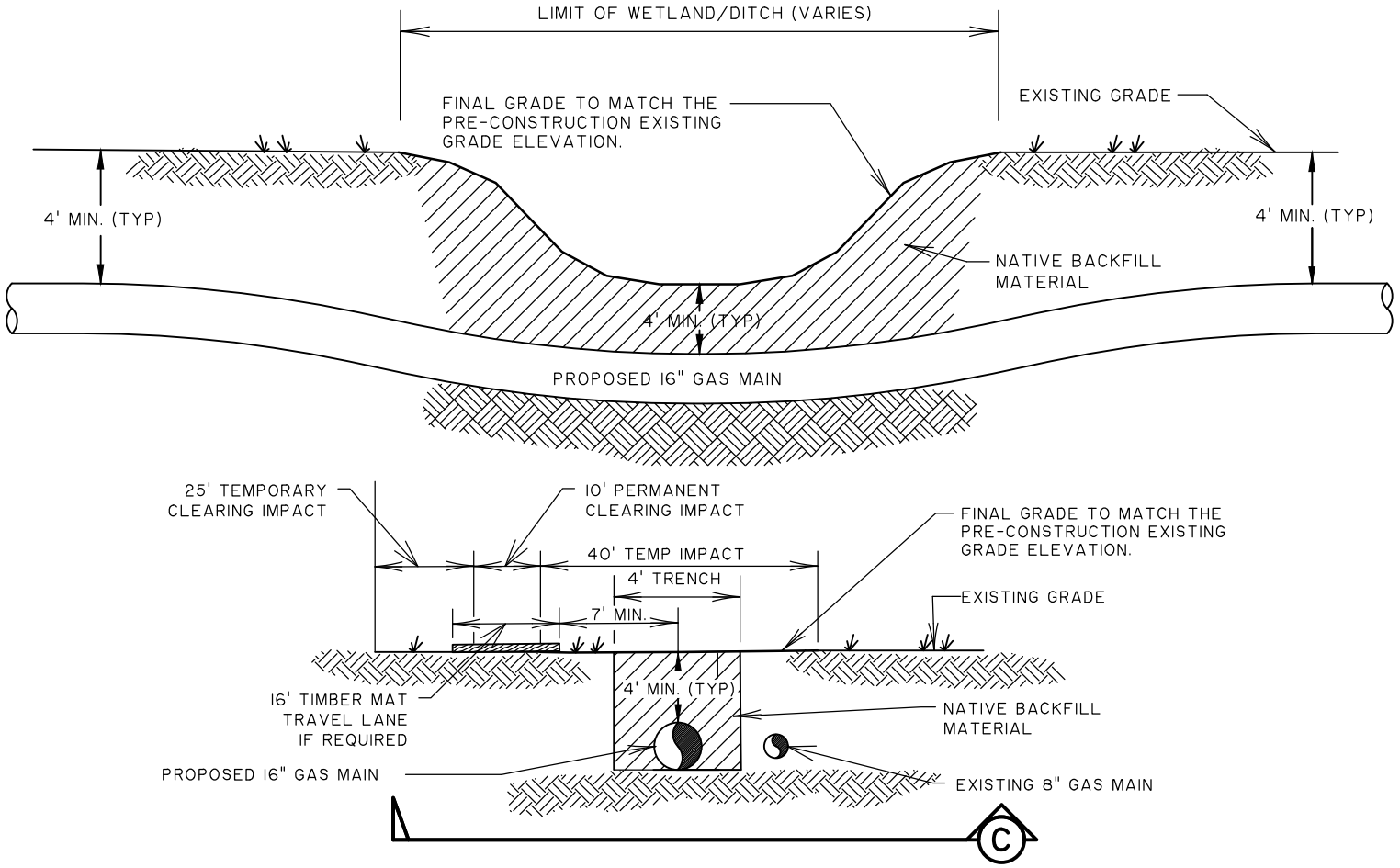

TYPICAL SECTION "C" - GAS MAIN INSTALLATION AT DITCH CROSSINGS

NOT TO SCALE

RIVER NECK TO KINGSBURG 16" GAS MAIN

CROSS SECTION C

CLIENT:
DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC
DATE: 04/21/21 DRAWN BY: DNF SHEET: 32
JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: NTS

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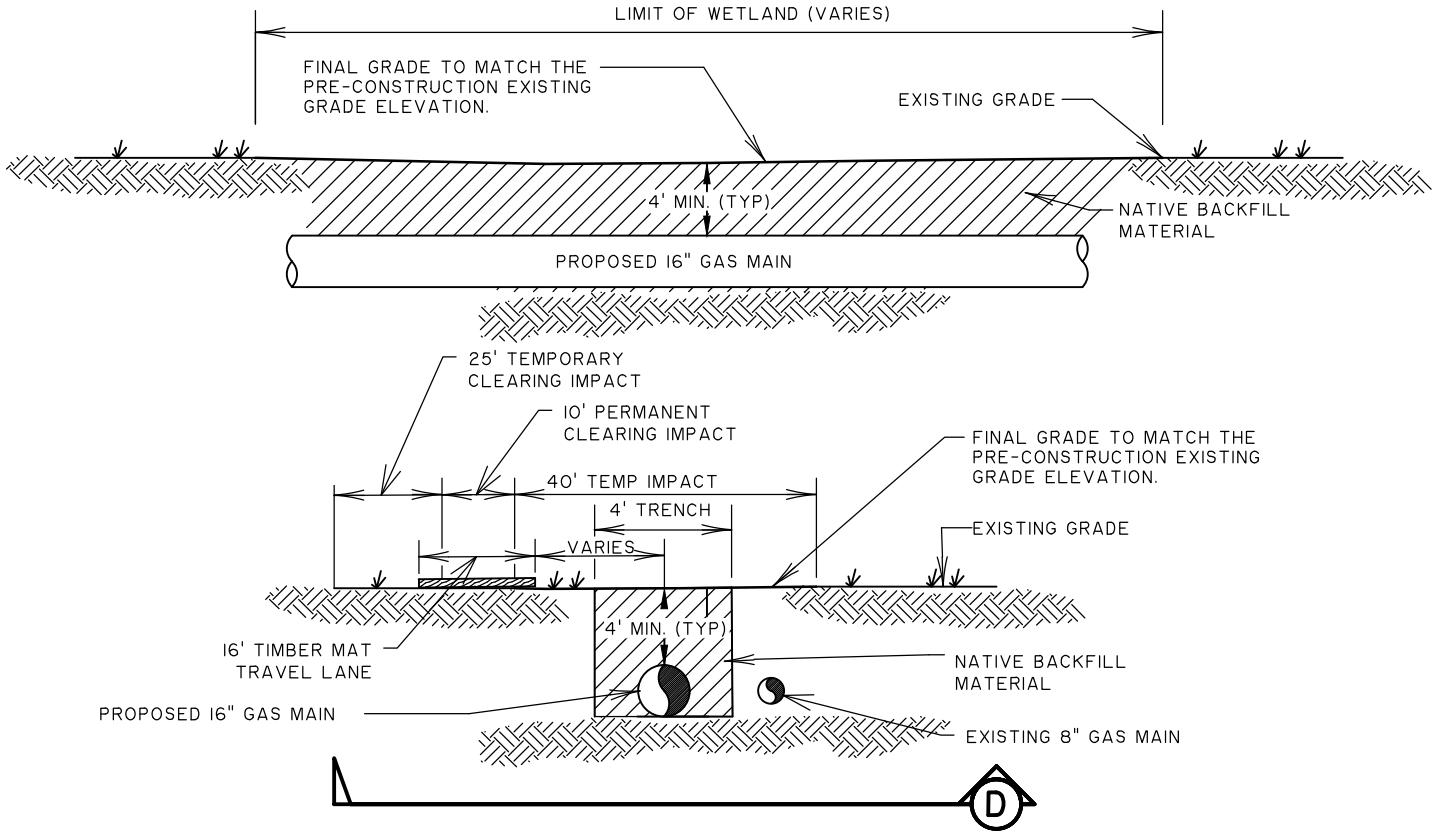

TYPICAL SECTION "D" - GAS MAIN INSTALLATION WITHIN WETLANDS

NOT TO SCALE

NOTE: CONTRACTOR TO RESTORE WETLANDS TO ITS PRE-CONSTRUCTION CONTOURS.

RIVER NECK TO KINGSBURG 16" GAS MAIN

CROSS SECTION D

CLIENT:
DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC
DATE: 04/21/21 DRAWN BY: DNF SHEET: 33
JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: NTS

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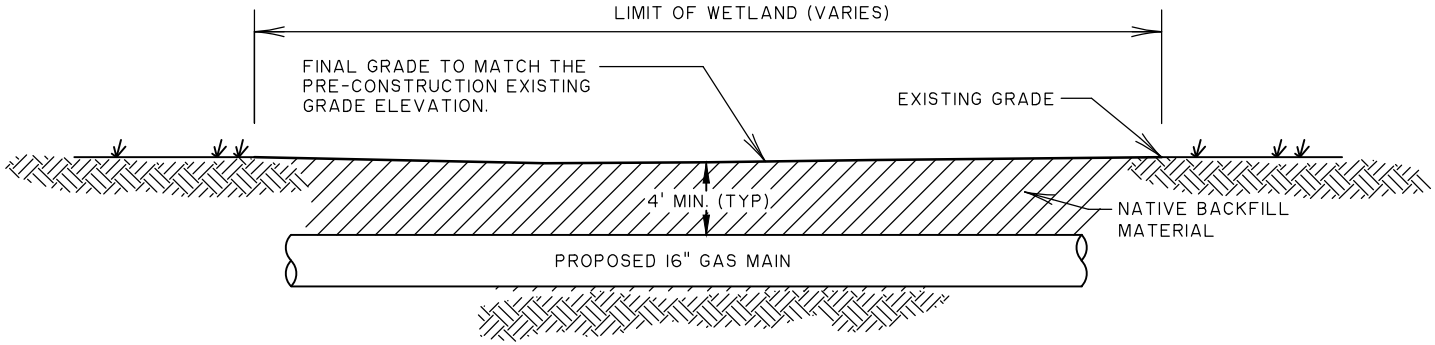

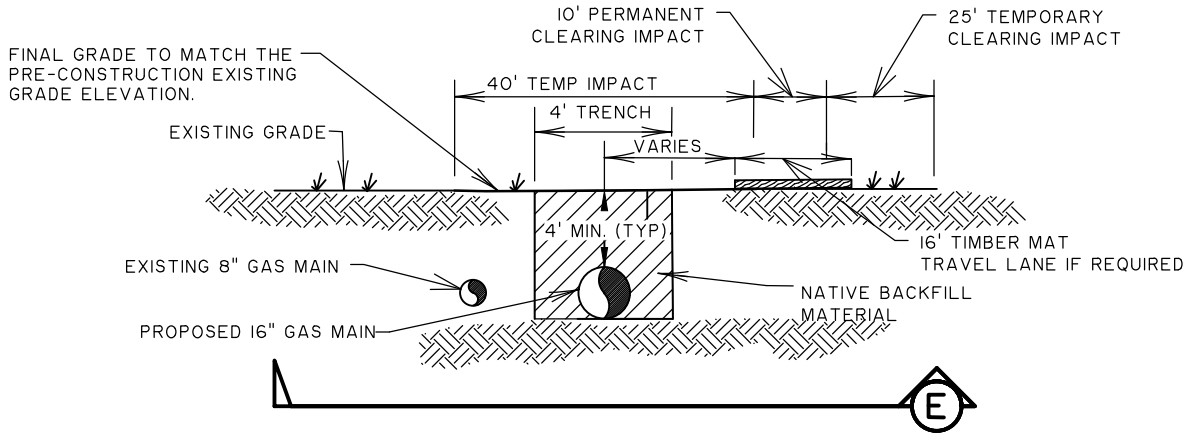

TYPICAL SECTION "E" - GAS MAIN INSTALLATION WITHIN WETLANDS

NOT TO SCALE

NOTE: CONTRACTOR TO RESTORE WETLANDS TO ITS PRE-CONSTRUCTION CONTOURS.

RIVER NECK TO KINGSBURG 16" GAS MAIN

CROSS SECTION E

CLIENT:
DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC
DATE: 04/21/21 DRAWN BY: DNF SHEET: 34
JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: NTS

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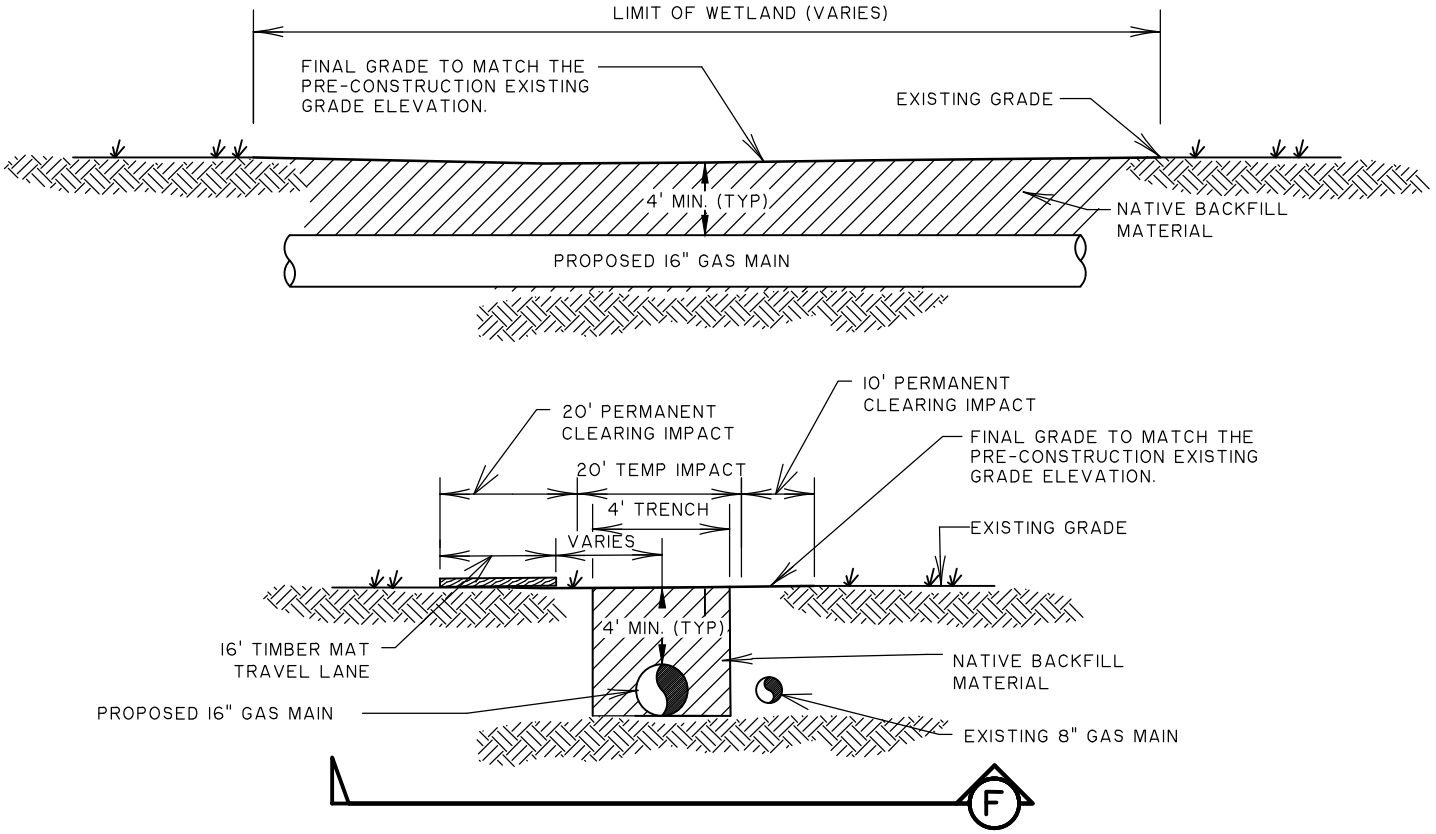

TYPICAL SECTION "F" - GAS MAIN INSTALLATION WITHIN WETLANDS

NOT TO SCALE

NOTE: CONTRACTOR TO RESTORE WETLANDS TO ITS PRE-CONSTRUCTION CONTOURS.

RIVER NECK TO KINGSBURG 16" GAS MAIN

CROSS SECTION F

CLIENT:

DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC

DATE: 04/21/21 DRAWN BY: DNF SHEET: 35

JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: NTS

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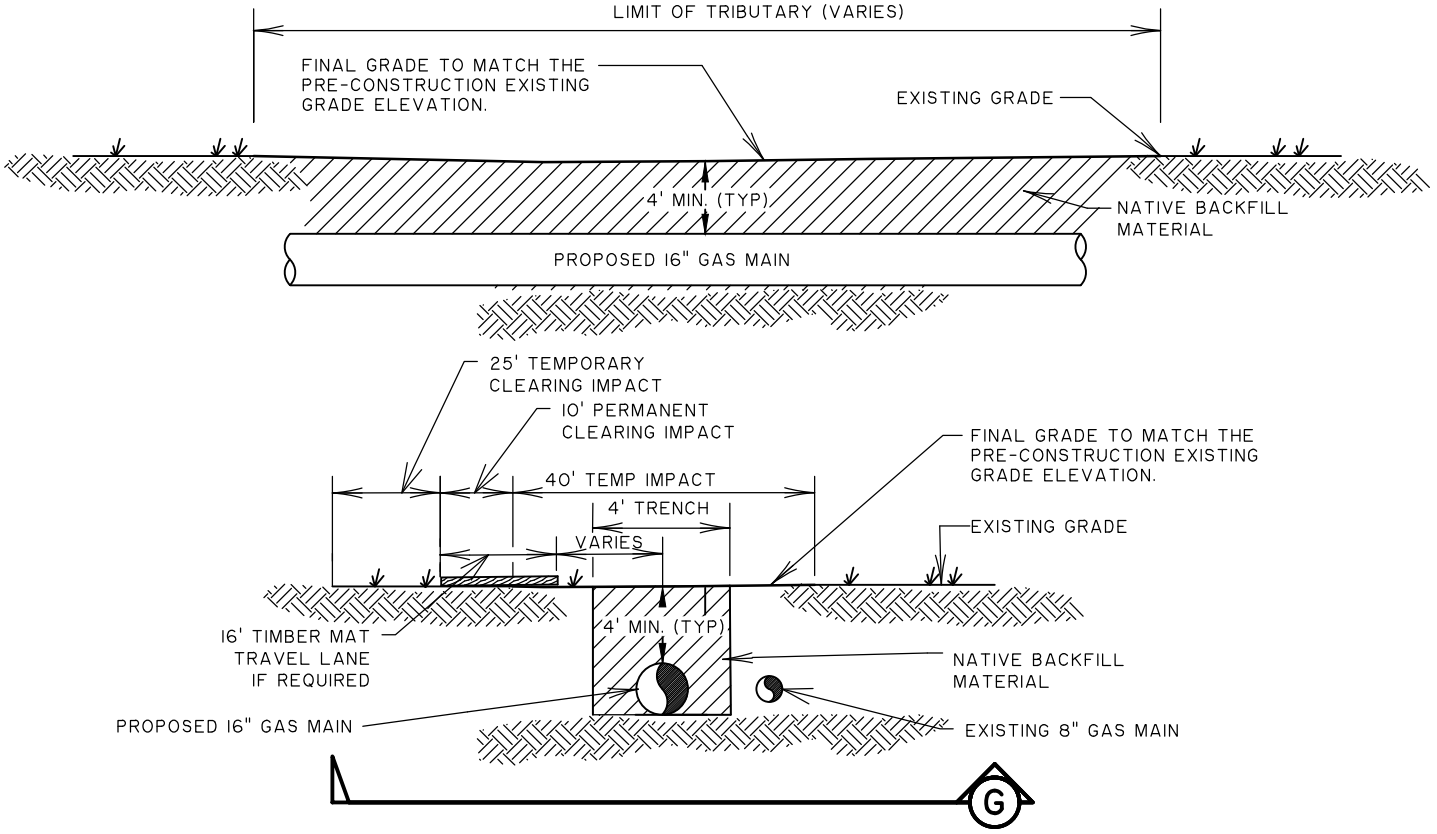

TYPICAL SECTION "G" - GAS MAIN INSTALLATION WITHIN TRIBUTARY

NOT TO SCALE

NOTE: CONTRACTOR TO RESTORE WETLANDS TO ITS PRE-CONSTRUCTION CONTOURS.

RIVER NECK TO KINGSBURG 16" GAS MAIN

CROSS SECTION G

CLIENT:
DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC
DATE: 04/21/21 DRAWN BY: DNF SHEET: 36
JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: NTS

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WETLAND ID	IMPACT #	TEMPORARY IMPACT (ACRES / LF)		PERMANENT CLEARING IMPACT (ACRES / LF)		PERMANENT FILL IMPACT (ACRES / LF)		TEMPORARY CLEARING IMPACT (ACRES / LF)		WETLAND TYPE	ACREAGE	FEET
B	1	0.110	0.00	0.030	0.00	0.000	0.00	0.000	0.00	WETLAND	0.140	0.00
A	2	5.140	0.00	1.800	0.00	0.000	0.00	5.640	0.00	WETLAND	12.580	0.00
C	3	0.000	0.00	0.060	0.00	0.000	0.00	0.020	0.00	WETLAND	0.080	0.00
D	4	0.000	0.00	0.125	0.00	0.000	0.00	0.000	0.00	WETLAND	0.125	0.00
E	5	0.000	0.00	0.089	0.00	0.000	0.00	0.000	0.00	WETLAND	0.089	0.00
F	6	0.490	0.00	0.120	0.00	0.000	0.00	0.310	0.00	WETLAND	0.920	0.00
G	7	0.270	0.00	0.094	0.00	0.000	0.00	0.140	0.00	WETLAND	0.504	0.00
AA	8	0.180	0.00	0.042	0.00	0.000	0.00	0.000	0.00	WETLAND	0.222	0.00
BB	9	0.013	0.00	0.017	0.00	0.000	0.00	0.000	0.00	WETLAND	0.030	0.00
CC	10	0.007	0.00	0.014	0.00	0.000	0.00	0.000	0.00	WETLAND	0.021	0.00
DD	11	0.020	0.00	0.036	0.00	0.000	0.00	0.000	0.00	WETLAND	0.056	0.00
EE	12	0.011	0.00	0.015	0.00	0.000	0.00	0.000	0.00	WETLAND	0.026	0.00
FF	13	0.160	0.00	0.040	0.00	0.000	0.00	0.000	0.00	WETLAND	0.200	0.00
GG	14	0.008	0.00	0.005	0.00	0.000	0.00	0.000	0.00	WETLAND	0.013	0.00
HH	15	0.130	0.00	0.014	0.00	0.000	0.00	0.000	0.00	WETLAND	0.144	0.00
II	16	0.017	0.00	0.005	0.00	0.000	0.00	0.016	0.00	WETLAND	0.038	0.00
JJ	17	0.410	0.00	0.100	0.00	0.000	0.00	0.000	0.00	WETLAND	0.510	0.00
KK	18	0.040	0.00	0.007	0.00	0.000	0.00	0.000	0.00	WETLAND	0.047	0.00
TRIBUTARY LL	19	0.019	78.00	0.002	11.00	0.0045	22.00	0.008	27.00	NON-WETLAND WATERS	0.034	138.00
MM	20	0.140	0.00	0.030	0.00	0.000	0.00	0.000	0.00	WETLAND	0.170	0.00
NN	21	0.170	0.00	0.050	0.00	0.000	0.00	0.000	0.00	WETLAND	0.220	0.00
H	22	0.190	0.00	0.050	0.00	0.000	0.00	0.120	0.00	WETLAND	0.360	0.00
I	23	0.120	0.00	0.040	0.00	0.000	0.00	0.000	0.00	WETLAND	0.160	0.00
J	24	0.060	0.00	0.020	0.00	0.000	0.00	0.000	0.00	WETLAND	0.080	0.00
K	25	0.250	0.00	0.070	0.00	0.000	0.00	0.000	0.00	WETLAND	0.320	0.00
L	26	0.150	0.00	0.050	0.00	0.000	0.00	0.080	0.00	WETLAND	0.280	0.00
TRIBUTARY SS	27	0.009	41.00	0.002	10.00	0.000	0.00	0.003	26.00	NON-WETLAND WATERS	0.014	77.00
RR	28	0.044	0.00	0.013	0.00	0.000	0.00	0.000	0.00	WETLAND	0.057	0.00
QQ	29	0.030	0.00	0.000	0.00	0.000	0.00	0.000	0.00	WETLAND	0.030	0.00
OO	30	0.190	0.00	0.050	0.00	0.000	0.00	0.000	0.00	WETLAND	0.240	0.00
C (5-28)	31	0.000	0.00	0.000	0.00	0.0017	0.00	0.000	0.00	WETLAND	0.002	0.00
D (5-28)	32	0.000	0.00	0.000	0.00	0.0024	0.00	0.000	0.00	WETLAND	0.002	0.00
Total	--	**8.378**	119.00	**2.990**	21.00	**0.009**	22.00	**6.337**	53.00	--	**17.714**	**193.00**

RIVER NECK TO KINGSBURG 16" GAS MAIN

SUMMARY TABLE

CLIENT:

DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC

DATE: 5/27/2020 DRAWN BY: DNF SHEET: 37

JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: NO SCALE

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BREAKDOWN OF SITE

	ACREAGE
TOTAL SITE	212.2
TOTAL WETLANDS WITHIN SITE	20.8
TOTAL NON-WETLANDS WATER WITHIN SITE	0.043

RIVER NECK TO KINGSBURG 16" GAS MAIN

SUMMARY TABLE

CLIENT:

DOMINION ENERGY

LOCATION: FLORENCE COUNTY, SC

DATE: 04/21/21 DRAWN BY: DNF SHEET: 38

JOB NUMBER: J-27886.0000 REVIEWED BY: JRS SCALE: 1" = 1'

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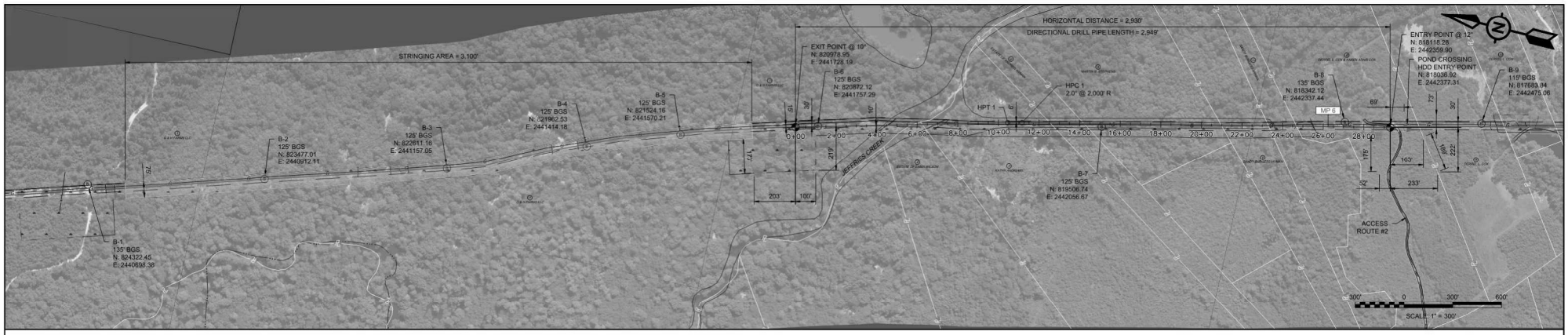

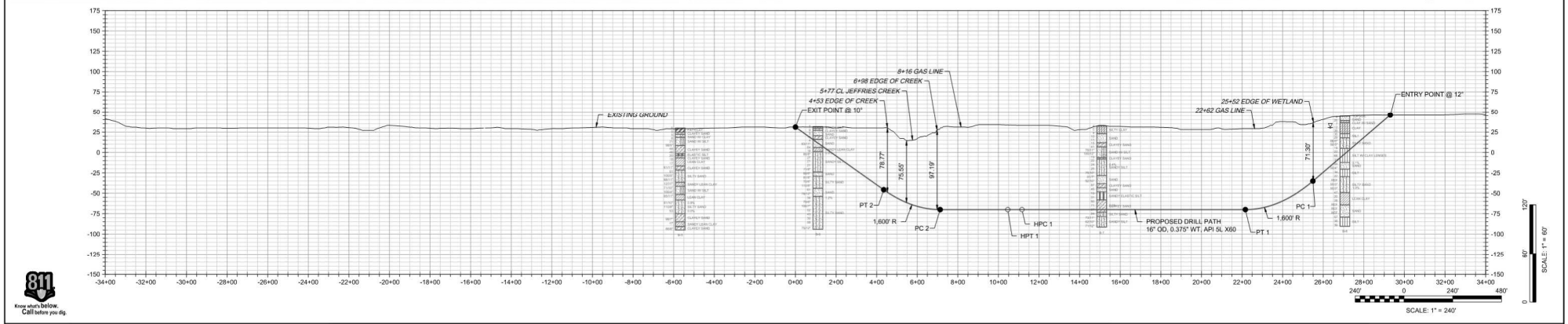

Know what's below. Call before you dig.

DIRECTIONAL DRILL DATA		
DESCRIPTION	STATION (ft)	ELEVATION (ft)
ENTRY POINT @ 12°	29+30.00	45.96
PC 1 (1,600' R)	25+48.92	-35.04
PT 1	22+16.26	-70.00
HPC 1 (2.0° @ 2,000' R)	11+15.60	-70.00
HPT 1	10+45.79	-70.00
PC 2 (1,600' R)	7+12.77	-70.00
PT 2	4+34.93	-45.69
EXIT POINT @ 10°	0+00.00	31.00
HORIZONTAL DISTANCE (ft) = 2930.00		
DIRECTIONAL DRILL PIPE LENGTH (ft) = 2949.08		

GENERAL NOTES

1. DRILL PATH STATIONING IS IN FEET BY HORIZONTAL MEASUREMENT AND IS REFERENCED TO THE CONTROL POSITION FOR THE CROSSING.
2. ALL COMPANY SPECIFICATIONS, PERMIT REQUIREMENTS AND CONTRACT DOCUMENTS SHALL BE ADHERED TO BY CONTRACTOR.
3. CONTRACTOR SHALL PLACE ONE CALL/811 NOTIFICATIONS AND ABIDE BY STATE REGULATIONS BEFORE DRILLING COMMENCES.
4. PRESENCE, LOCATION, AND ELEVATIONS (POTHOLE IF NEEDED) OF ALL UTILITIES/FACILITIES TO BE VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION AND CLEARLY MARKED AND EXPOSED (IF NECESSARY).
5. DRILLING PRACTICES AND DOWNHOLE ASSEMBLIES SHALL BE MODIFIED TO PREVENT DAMAGE TO UNDERGROUND FACILITIES.
6. CONTRACTOR SHALL MONITOR TRENCHLESS OPERATIONS FOR AREA IMPACTS SUCH AS GROUND DISTURBANCE AND INADVERTENT RETURNS.
7. PILOT HOLE TOLERANCES AND MINIMUM THREE JOINT RADIUS SHALL BE MAINTAINED DURING PILOT HOLE OPERATIONS. COMPROMISE TO TOLERANCES AND MINIMUM RADIUS SHALL BE REVIEWED BY COMPANY FOR APPROVAL.
8. CONTRACTOR HAS THE OPTION TO USE DUAL RIGS AND/OR RIG PLACEMENT IN REFERENCE TO ENTRY AND EXIT.
9. GEOTECHNICAL DATA AND INFORMATION IS PRESENTED FOR REFERENCE ONLY. REVIEW THE ASSOCIATED GEOTECHNICAL REPORT FOR ALL INTERPRETATIONS AND DETERMINATIONS REGARDING SUBSURFACE CONDITIONS.
10. PROJECT TOLERANCES SHALL NOT SUPERSEDE ANY PILOT HOLE ENCROACHMENT THAT COMES WITHIN 1.5 FEET OF THE EASEMENT BOUNDARIES AT ANY LOCATION ALONG THE HDD ALIGNMENT.

ISSUED FOR PERMIT ONLY

MATERIAL SPECIFICATIONS AND TOLERANCES	
ITEM	SPECIFICATIONS
PRODUCT PIPE	16" OD, 0.375" WT, API 5L X60
EXTERNAL COATING	12-16 MILS FBE, 40-60 MILS ARO
OPERATING CONDITIONS	MAOP – 1000 PSIG ASSUMED MAXIMUM OPERATING TEMP = 100°F
ITEM	TOLERANCE
PILOT HOLE ENTRY ANGLE	INCREASE ANGLE UP TO 1° (STEEPER). NO DECREASE IN ANGLE ALLOWED.
PILOT HOLE ENTRY LOCATION	AS PER COORDINATES PROVIDED BY COMPANY. NO CHANGES WITHOUT COMPANY APPROVAL.
PILOT HOLE EXIT ANGLE	INCREASE ANGLE UP TO 1° (STEEPER) OR DECREASE UP TO 2° (FLATTER).
PILOT HOLE EXIT LOCATION	UP TO 20 FEET BEYOND OR 10 FEET SHORT OF THE EXIT STAKE. BETWEEN 5 FEET LEFT AND 5 FEET RIGHT OF CENTERLINE.
PILOT HOLE DEPTH	UP TO 2 FEET ABOVE THE DESIGN DRILL PROFILE OR 10 FEET BELOW THE DESIGN DRILL PROFILE.
PILOT HOLE ALIGNMENT	SHALL REMAIN WITHIN 5 FEET LEFT OR RIGHT OF THE HDD CENTERLINE.
MINIMUM RADIUS OF CURVATURE	MINIMUM COMBINED (HORIZONTAL AND VERTICAL) RADIUS OF CURVATURE = 1,200' OVER EACH 3 JOINT SEGMENT

LEGEND

- PROPOSED DRILL PATH
- PROPOSED PIPELINE
- GAS LINE
- OVERHEAD POWER
- EXISTING EASEMENT
- PROPOSED EASEMENT
- TEMPORARY WORKSPACE
- PROPERTY LINE
- FENCE LINE
- ACCESS ROUTE
- WATERWAY CL
- EDGE OF WATER
- STRINGING AREA
- WETLAND
- CULTURAL RESOURCES SITE
- PROPOSED HDD ENTRY / EXIT POINT
- GEOTECHNICAL BORE LOCATION
- N VALUES
- MATERIAL GRAPHIC
- GRAVEL CONTENT
- WATER LEVEL DURING SAMPLING
- WATER LEVEL AFTER SAMPLING

REVISION			APPROVAL		
REV	DATE	DESCRIPTION	CAD	CHK	APP

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 38010 KELLY J. SCHOO 4-5-2021

HDR ENGINEERING INC., OF THE CAROLINAS
440 SOUTH CHURCH STREET, SUITE 1000,
CHARLOTTE NC, 28202
NO. C0318

Dominion Energy®

PROJECT INFORMATION	
DOMINION ENERGY RIVER NECK TO KINGSBURG 16-INCH GAS MAIN	
COORDINATE SYSTEM	NAD83 SOUTH CAROLINA STATE PLANES, INTERNATIONAL FEET
VERTICAL DATUM	NAVD88
TOPOGRAPHIC DATA	GLENN ASSOCIATES SURVEYING, INC.
AERIAL IMAGERY	GLENN ASSOCIATES SURVEYING, INC.
SURVEY COMPANY	GLENN ASSOCIATES SURVEYING, INC.

DRAWING INFORMATION		
16-INCH JEFFRIES CREEK CROSSING HORIZONTAL DIRECTIONAL DRILL PLAN AND PROFILE OPTION A PERMIT DRAWING		
LOCATION	FLORENCE COUNTY, SOUTH CAROLINA	
SCALE NOTED	SHEET 65A	10239249-02T-5-003

SIZE - ANSI D (34x22)

HDD Inadvertent Return Contingency Plan

Dominion Energy – River Neck to Kingsburg 16" Gas Main

Florence County, South Carolina

Thomas & Hutton Project Number 27886.0000

PREPARED FOR:

Dominion Energy
601 Old Taylor Road
Cayce, SC 29083

PREPARED BY:

Thomas and Hutton Engineering
682 Johnnie Dodds Blvd. Suite 100
Mt. Pleasant, SC 29464

June 4, 2020

June 4, 2020

Dominion Energy
601 Old Taylor Road
Cayce, SC 29083

Attention: Mr. Robert Priester, P.E.

Reference: **HDD Inadvertent Return Contingency Plan**
Dominion Energy – River Neck to Kingsburg 16" Gas Main
Florence, South Carolina
T&H Project Number: 27886.0000

Dear Mr. Priester:

Thomas and Hutton Engineering (T&H) is pleased to submit this HDD Inadvertent Return Contingency Plan for the above-referenced pipeline project that runs from River Neck Road to the Kingsburg Valve Station in Florence County, South Carolina. This report is provided in accordance with our plans dated April 10, 2020. The report is based on horizontal direction drill (HDD) design information provided by Thomas & Hutton. The purpose of this report is to provide guidance in order to help avoid an inadvertent return during HDD construction activities.

T&H appreciates the opportunity to assist you during this phase of the project. If you have questions concerning this report, please contact us.

Sincerely,

Thomas & Hutton

Jonathan Smith, PE
Project Manager

Table of Contents

Appendices

1.0 Introduction

Dominion Energy is proposing to construct approximately 76,218 LF of new 16-inch diameter steel natural gas main that runs from River Neck Road to the Kingsburg Valve Station in Florence county, South Carolina. The project route will begin with a connection to an existing gas regulating station at River Neck Road. The gas main will run within an existing Dominion Energy easement paralleling Dominion Energy's existing 8-inch steel gas main. The 16-inch gas main will continue southeast for 14.5 miles where it will terminate at the Kingsburg Valve Station. The new pipeline will be completed by a combination of open-cut trench and horizontal directional drill (HDD). All work will be performed in an existing Dominion Energy utility easement.

HDD operations have the potential for Inadvertent Returns (IR) of drilling fluids, or unintended release of drilling fluids, during the HDD installation process. IRs occur due to migration of drilling fluids through subsurface formations or soils other than the bore annulus and can be released to the ground surface, surface waters and/or migrate to neighboring aquifers. Drilling fluids utilized during HDD activities primarily consist of bentonite clay and water mixtures and are often referred to as drill mud. Small amounts of chemical additives (typically less than 1%) may be mixed with the drilling fluids to improve drilling performance, or in response to a release. Though not classified as toxic or hazardous, these drilling fluids may adversely impact aquatic and/or terrestrial ecosystems if an IR occurs.

Dominion Energy is committed to verifying that all project construction activities will be completed in an environmentally responsible manner. Accordingly, this Inadvertent Return Contingency Plan has been developed and outlines procedures to:

- Minimize the potential for an IR.
- Detect the first indications of an IR.
- Prepare the HDD contractor so their response to an IR will be organized, timely and appropriate to minimize environmental impacts.
- Verify that notifications to appropriate parties and regulatory agencies are made.

Detailed designs have been prepared and geotechnical assessments are planned for both HDD crossings. These designs establish borehole line and grade, evaluate pipeline installation and operating stresses, evaluate geotechnical conditions along the bore path, and identifies known surface and subsurface utilities and obstructions. Based on these designs, the selected HDD Contractor can effectively pre-plan the drilling work and prepare their project-specific risk management and contingency strategies. This report can be updated once design and geotechnical work is completed.

2.0 Inadvertent Return Prevention Measures

In order to minimize potential environmental impacts associated with IRs, HDD profile designs have been created, and planning for specific measures to be taken before, during, and after the HDD installation process have been completed.

2.1 Bore Profile Design

HDD profile designs have been created using surface profile information and will be augmented with geotechnical assessment data. Survey information has been used to design the drill profile such that potential obstacles are avoided and an acceptable depth below the stream/wetlands is achieved. The geotechnical data will be used to determine if the geologic soils and formations that are being drilled through will allow for effective steering and control along the bore path and are conducive to containment of the drill mud. This information, combined with HDD designer experience, will help to minimize the risks of an IR.

2.2 Pre-Drill Preventive Measures

Before the start or continuance of both of the HDDs, the following measures shall be implemented:

2.2.1 HDD Drilling Supervisor

The HDD Contractor shall have a HDD Drilling Supervisor present at all times during HDD operations. The HDD Drilling Supervisor is responsible for making sure the HDD is implemented in accordance with the design. The Drilling supervisor shall also confirm that all personnel are: 1) aware of their responsibilities if an IR occurs; 2) aware of the location and proper deployment of materials and cleanup methods, and; 3) are capable of completing the required actions.

2.2.2 Dominion Energy Environmental Inspector

A Dominion Energy Environmental Inspector shall be on-site and shall verify that:

- Construction limits are clearly marked.
- Sensitive resources within, and adjacent to, the construction workspaces are flagged.
- All required clearances or permits related to sensitive features have been obtained.
- All setbacks and offsets from sensitive resources shall be maintained.
- Coordination with the USACE and SCDHEC to communicate anticipated HDD schedule has occurred.
- Erosion and sediment controls are appropriate for the current and expected conditions, have been installed, and are functioning properly.
- A properly-stocked spill response kit is present at the drill site.
- Appropriate response equipment is on-site and in good working order (Minimum required equipment is listed in Appendix II but may be modified by the Dominion Energy Environmental Inspector based on current and expected conditions at the site at the time of installation).
- A pre-construction meeting is conducted with contractor personnel to identify and locate sensitive resources at the site and to review the Inadvertent Return Contingency Plan for the HDD.
- Subsequent daily briefings with contractor personnel are conducted.

2.2.3 HDD Contractor

The HDD Contractor shall perform the HDD utilizing reasonable measures to minimize the risk of IRs while ensuring the completion of a successful HDD. These measures include, but are not limited to, the following:

2.2.3.1 Monitoring of Mud Quality

Monitoring of drilling fluid (mud) pressures, viscosities, circulation, and returns shall be completed during all drilling activities to verify that the mud handling equipment is operating within the expected parameters of the anticipated soil conditions. The soil returns will be continuously monitored, and adjustments made as necessary.

2.2.3.2 Controlled Drill Head Advance

The HDD Operator will advance the drill head at a pace that permits sufficient time for soil cuttings to be flushed from the borehole by the drilling fluids. Attempting to advance the drill head too quickly can cause plugging to occur due to build-up of cuttings in the annular space. Continuing to advance the drill head when plugging has occurred will cause annular space pressures to increase, which could lead to an IR. If plugging occurs, the drill head advance shall be slowed, stopped, or reversed as necessary to clear the build-up of cuttings. Swabbing the drill hole may also be required to clear excess build-up of cuttings.

Drilling mud pump pressure will be maintained at a level above the minimum pressure required to keep the annular space clear of cuttings and promote good drilling fluid circulation. However, this pressure should not be exceeded more than is necessary and should be maintained well below the maximum allowable annular mud pressure. Calculations will be completed to provide the minimum and maximum mud pressures along the drill path based off the provided geotechnical and surface survey information.

2.2.3.3 Proper Tool and Equipment Sizing

Appropriately sized (diameter) drill heads and reamer bits will be used to maintain proper annular space size through the drill, especially in the curves of the drill path. This will allow sufficient annular space for the circulation of drilling fluids. An appropriately sized drill rig shall also be selected so that the HDD can be completed successfully.

2.2.4 Contacts

- Robert Priester – Engineering and Construction Project Manager – Phone: (803) 217-9815
- Patrick Coolidge – Engineering and Construction Manager – Phone: (803) 331-9221
- A. Robert Schwartz – Environmental Lead – Phone: (803) 217-7112
- Candis Hollowood – Environmental Compliance Coordinator – Phone: (803) 542-2723

3.0 IR Monitoring

The HDD Contractor will verify that operations are monitored for the occurrence of IRs using each of the following methods, as appropriate:

3.1 Mud Pressure Monitoring

The HDD Contractor is responsible for continually monitoring mud pressures during all HDD activities. Sudden loss of mud pressure could indicate an IR to the surface, loss of fluid into a pre-existing void or fractured rock, blockage of the return path, or borehole collapse. Upon loss of mud pressure, investigation of the cause of mud pressure loss should commence. Drilling activities should be slowed or cease, and mud flow from the pump should be slowed until the cause is determined.

3.2 Ground Surface Inspection

Visual inspection of the ground surface for indications of escaping drilling fluids shall be completed along the path of the HDD, with priority given to environmentally-sensitive areas. To the extent practicable, and without trespassing outside the approved workspace, the inspection should cover a corridor that is at least 300 feet wide, centered on the drill. Inspections shall be made relative to the rate of advance of the drill head; however, a full-length inspection pass shall be made at least once every hour while pumping drilling fluids. Indications of a release shall be reported immediately to the HDD Drilling Supervisor and Dominion Energy Pipeline Inspector.

3.3 Surface Water Inspection

Inspection passes shall be made at least once every hour while pumping. Indications of an IR shall be reported immediately to the HDD Drilling Supervisor and Dominion Energy Pipeline Inspector. If operating parameters indicate the possibility of an IR under water, the water inspection will become continuous (during daylight only) until the location of the suspected inadvertent release is found, the drill is completed, or measures to remedy the inadvertent release using approved additives or other operations adjustments have been successful. Inspections will be made from an elevated position on land with an unobstructed view of the water body. If required, completion of turbidity sampling that might indicate an IR is occurring will be taken at sites upstream and downstream of the HDD crossing.

4.0 Response Measures

Contractor personnel are responsible to report indications of an IR or an observed IR to the on-site Dominion Energy Pipeline Inspector. If either of these conditions are reported and confirmed, HDD operations are to immediately cease. HDD activities shall not resume until cleanup procedures are complete and appropriate agencies have authorized resumption of work.

Containment and removal of drilling fluid releases to the surface will be performed where practical and where there will be a net benefit in the reduction of overall environmental impacts. Response actions will be coordinated through the on-site Dominion Energy Environmental Inspector, Dominion Energy Pipeline Inspector, Dominion Energy Gas Transmission Construction Manager and Dominion Energy Environmental Lead.

4.1 Loss of Drilling Fluid Circulation

As stated in section 3.1, mud pressure loss and fluid circulation loss can indicate an IR at the surface. In the event of loss, or reduction, of drilling fluid circulation the following measures should be taken:

Notify the Dominion Energy Pipeline Inspector and Dominion Energy Environmental Inspector of the loss of fluid circulation.

- Retract the drill head a short distance, if deemed appropriate.
- Discontinue drilling operations to investigate the loss of fluid circulation.
- Pump drilling fluid into the borehole for approximately 15 minutes without advancement of the bore head.
- If fluid circulation is regained, resume drilling operations. The HDD Drilling Supervisor will notify the Dominion Energy Pipeline Inspector, Dominion Energy Environmental Inspector, and Dominion Energy Environmental Lead and continue visual monitoring of the project area for signs of drilling fluid release.
- If a drilling fluid release is detected, discontinue drilling and implement mitigation measures as detailed in

this contingency plan.

- HDD Contractor shall monitor and adjust fluid properties, fluid volumes, and rate of penetration to match ground conditions and maintain circulation and borehole stability once drilling operations resume.

4.2 Notifications and Documentation

If there is an IR or other environmental or safety incident, the HDD Contractor shall report the incident to the on-site Dominion Energy Environmental Inspector or Dominion Energy Pipeline Inspector immediately and directly. The Dominion Energy Environmental Lead will be responsible for making the appropriate regulatory agency notifications.

Documentation of the IR shall include:

- Initial indication/observation of the IR and time observed.
- Location of the IR.
- Resources impacted by the IR.
- Location of the drill head/reamer.
- Stage of the HDD.
- Times of notification and who was notified.
- Actions taken in response to the IR and times those actions were taken.
- Amount of drilling fluid loss.
- Containment methods employed.
- Effectiveness of containment methods.
- Photos (before, during and after cleanup).

4.3 Terrestrial (Upland) Releases

The HDD Drilling Supervisor will utilize the appropriate combination of hay bales, silt fence, compost filter sock, wattles, pumps, hoses, and other measures that will most effectively contain and remove drilling fluids from upland areas. The HDD Drilling Supervisor shall make the determination of the appropriate equipment and materials to be used, with approval of the Dominion Energy Pipeline Inspector and Dominion Energy Environmental Inspector. The actions may include:

- Constructing a small pit or sandbag coffer around the IR location(s), installing a section of silt fence, compost filter sock, and/or hay bales to trap as much drilling fluids as possible, and placing a pump hose in the pit to pump the drilling fluid back to the bore site or temporary holding area or vessels (i.e. vac truck).
- Reducing drilling fluid pressures.
- Thickening drilling fluid mixture; and/or
- Adding pre-approved loss circulation materials to the fluid mixture, such as wood fibers or shredded paper.

If the HDD Contractor determines the fluids are reusable, the HDD Contractor shall instruct the recovery crew to pump the contained and recovered fluids to on-site tanks for reuse. Otherwise, the fluids will be transported off-site for disposal at an approved facility. Dominion Energy will obtain landowner permission prior to accessing upland sites for fluids containment and removal operations, except in emergency cases where inaction would pose an imminent threat to human health, environmentally sensitive areas, or public/private property.

4.4 Surface Water Releases

If an IR occurs within streams and/or wetlands, drilling operations will cease until the HDD Drilling Supervisor, Dominion Energy Pipeline Inspector and Dominion Energy Environmental Lead have had an opportunity to examine the site and evaluate the threat to the waterbody. A turbidity curtain (Type 3 DOT or approved equivalent) will be installed per manufacturer instructions within the waterbody at the site of the inadvertent return location to confine suspended solids from the IR until an observable degree of settlement occurs. If necessary, the containment shall remain in place throughout HDD installation and until settlement renders turbidity inside the containment similar to the adjacent waters based on visual inspection, the threat to sensitive resources has passed, or the Dominion Energy Environmental Lead authorizes removal of the turbidity curtain. Removal of the diluted drilling fluids is not anticipated, unless dictated by unusual circumstances or directed by environmental agencies, and subject to Dominion Energy approval.

Drilling operations shall not cease during the pipe pullback process in the event of an inadvertent release due to significant risk of causing the pull to be stuck and unable to resume. In this case the turbidity curtain would be installed to confine suspended solids.

4.5 Wetland Releases

Upon confirmation of an IR in wetlands, HDD operations will cease. Containment and removal of drilling fluids released to wetlands shall be performed after consultation with the appropriate regulatory agencies. The HDD Contractor shall assist the on-site Dominion Energy Environmental Inspector with the following steps:

- Measure the area directly affected by the released drilling fluids. The area affected may be estimated from a distance, if access to the affected area for measurement would result in additional unacceptable negative impacts or is not otherwise feasible.
- The Dominion Energy Environmental Inspector or a qualified wetland biologist will characterize the type of impact caused by the released drilling fluids (e.g., temporary, vegetation only, permanent, change in surface hydrology). The Dominion Energy Environmental Inspector or Dominion Energy Environmental Lead will seek regulatory agency concurrence, if required.
- The HDD Contractor, Dominion Energy Pipeline Inspector, and the on-site Dominion Energy Environmental Inspector shall jointly estimate the additional area, if any, likely to be affected if the drilling were to proceed and the drilling fluids were not contained and removed.
- In consultation with the HDD Contractor, the on-site Dominion Energy Environmental Inspector will estimate and characterize the additional impacts to wetlands likely to occur as a result of accessing the affected area for containment and removal of the drilling fluids.
- The on-site Dominion Energy Environmental Inspector will estimate any reduction in impacts that might be achieved if the released fluids were removed.
- If it is determined that the released drilling fluid is to be contained and recovered, the HDD Drilling Supervisor, in consultation with the Dominion Energy Pipeline Inspector and Dominion Energy Environmental Inspector, shall direct the personnel or placement of equipment at the applicable points of fluids release and transfer the contained fluids to a hopper barge or tank for subsequent reuse or disposal.
- If the decision is made to forgo containment and proceed with the drill, the on-site Dominion Energy Environmental Inspector will continue to observe the location of the release. If impacts continue, the Dominion Energy Pipeline Inspector will periodically reevaluate the decision to continue until containment and removal are justified or the HDD is complete.

- Access to wetlands will be done in such a manner as to cause the least impacts to vegetation and surface hydrology, and only with prior agency approval. Because of site-specific variables such as distance from open water, surface hydrologic conditions, and vegetation cover, selection of the most appropriate access method will be made on a case-by-case basis, subject to approval by the Dominion Energy Pipeline Inspector and Dominion Energy Environmental Inspector. The least number of personnel and equipment necessary to accomplish the task safely in a timely manner shall be deployed.
- Following containment and removal, the HDD Contractor will continue to monitor the crossing location for additional releases as the drilling work progresses.
- Impacts to wetlands from inadvertent releases will be measured, assessed, and recorded by the Dominion Energy Environmental Inspector with assistance from the HDD Contractor, to support mitigation or restoration measures that may be necessary.
- Upon completion of the boring, the HDD Contractor will remove containment and recovery equipment, tools, supplies, materials, wastes, and debris from the wetlands.

5.0 Restoration and Post-Construction Monitoring

Impacted areas will be restored to pre-existing contours. Upland areas shall be restored through typical right-of-way practices of seeding and mulching as described in the reclamation plan for the project.

Restoration of wetlands may vary depending on the extent of disturbance to the upper soil layer and vegetation during the initial IR response.

In the event of a drilling fluid release in streams and/or wetlands, a site-specific, post-remediation protocol shall be prepared and submitted to the USACE and SCOCRM. Once approved, the plan implemented under the direction of Dominion Energy. This protocol will be based on the specific parameters of the release, including volume, location and extent. The goal of the plan will be to determine what adverse effects may have occurred in the impacted area of release. Efforts may include random sampling of each habitat and comparison of impacted habitats to non-impacted habitats. Pre-drilling data for this project will be used for comparative purposes.

At a minimum, an inspection of the entire drill path will occur within 48 hours of completion of drilling activities. A letter report will be prepared to summarize fluid deposits that are identified. If there is no drilling fluid release, post drilling monitoring will consist of an underwater investigation to be performed within 30 days after completion of drilling activities. Drilling fluid releases that persist beyond completion of drilling activities shall be removed within 30 days of completion of drilling, if requested by the Federal or State regulatory agencies having jurisdiction.

Appendices

Appendix I
IR Contingency Minimum Required Equipment List

- 4" – 6" Trash Pumps
- 40' Suction Hose
- 1500' Lay Flat Hose
- Straw Bales – Entry and exit side
- Silt Fence
- Sand Bags
- Plastic Sheeting
- Shovels, brooms, and appropriate hand tools
- Generator and Flood Lights for night work
- Frack Tanks (2) or mud pit large enough for excess mud
- Super Sacks (3) if needed to contain mud
- MSDS for the drilling mud and additives
- Long Reach Excavator for containment and cleanup of drilling mud