



Holly Springs Utley Creek 230-kV Transmission Line Project

Application for a Certificate of Environmental Compatibility and
Public Convenience and Necessity

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Duke Energy Progress, LLC

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Contents

Acronyms and Abbreviations.....	iii
1. Project Description.....	1-1
1.1 Purpose and Need.....	1-1
1.2 Project Location.....	1-1
1.3 Structures.....	1-1
1.4 Right-of-Way.....	1-2
1.5 Operations and Maintenance	1-2
1.6 Estimated Project Cost.....	1-2
2. Route Selection Study.....	2-1
2.1 Project Area Description.....	2-2
2.1.1 Study Area.....	2-3
2.2 Constraint and Opportunity Data	2-3
2.2.1 Environmental Resources.....	2-3
2.2.2 Cultural Resources	2-5
2.2.3 Land Use	2-7
2.2.4 Raster-based Suitability Modeling	2-8
2.3 Study Segment Network and Identification of Alternative Routes.....	2-9
2.3.1 Developing the Study Segment Network.....	2-9
2.3.2 Study Segment Evaluation and Refining the Study Segment Network	2-10
2.3.3 Developing Alternative Routes	2-11
2.4 Public Information Meetings and Stakeholder Feedback.....	2-12
2.4.1 North Carolina Utilities Commission Coordination	2-12
2.4.2 Public Outreach and Project Website	2-13
2.5 Alternative Route Evaluation.....	2-13
2.5.1 Quantitative Assessment.....	2-13
2.5.2 Weighted Scoring Results	2-15
2.5.3 Qualitative Considerations.....	2-17
2.6 Selection of the Proposed Route	2-17
3. Environmental Report	3-1
3.1 Wetland.....	3-1
3.2 Waterbodies	3-1
3.3 Floodplains.....	3-1
3.4 Threatened and Endangered Species	3-1
3.5 Topography	3-3
3.6 Soils	3-3
3.7 Cultural Resources.....	3-3
3.8 Land Use	3-4
3.9 Aesthetics.....	3-4
3.10 Proposed Mitigation Measures	3-4

3.10.1	Soil and Erosion Control.....	3-5
3.10.2	Wetland and Waterbody Resources	3-5
3.10.3	Threatened and Endangered Species.....	3-5
4.	Potential Permits Approvals and Clearances	4-1
5.	References.....	5-1

Appendixes

A	Threatened and Endangered Species Review
B	Alternative Route Comparison
C	Town of Holly Springs Land Use Plans

Tables

2-1	Cultural Resources within the Study Area.....	2-6
2-2	Original and Refined Study Segments	2-11
2-3	Alternative Route Evaluation Scores.....	2-15
3-1	Soil Map Units Crossed by the Proposed Alternative Route.....	3-3
4-1	Potential Permits, Approvals, and Clearances.....	4-1

Graph

2-1	Alternative Route Evaluation Scores
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Figures

1	Project Location
2	Project Study Area
3	Ecological and Cultural Resources Constraints
4	Land Use
5	Suitability Model
6	Study Segment Overview
7A	Revised Study Segment Network
7B	Revised Study Segment Network
8	Alternative Routes
9	Proposed Route

Acronyms and Abbreviations

BMP	best management practice
CEPCPN	Certificate of Environmental Compatibility and Public Convenience and Necessity
CWA	Clean Water Act
DEP	Duke Energy Progress, LLC
FEMA	Federal Emergency Management Agency
IPaC	Information for Planning and Conservation
Jacobs	Jacobs Engineering Group Inc.
kV	kilovolt(s)
MW	megawatt(s)
NHD	National Hydrography Dataset
NCNHP	North Carolina Natural Heritage Program
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
SHPO	State Historic Preservation Office
NCDEQ	North Carolina Department of Environmental Quality
NPDES	National Pollutant Discharge Elimination System
Project	Holly Springs Utley Creek 230-kV Transmission Line Project
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

1. Project Description

Duke Energy Progress, LLC (DEP) proposes to construct a new 230-kilovolt (kV) transmission line between the Harris Plant-Wake 230-kV Transmission Line and the proposed Holly Springs Utley Creek Substation in the town of Holly Springs, North Carolina. This Project is referred to as the Holly Springs Utley Creek 230-kV Transmission Line Project (Project).

Pursuant to the requirements of Article 5A, Chapter 62 of the North Carolina General Statutes, the Project requires a Certificate of Environmental Compatibility and Public Convenience and Necessity (CEPCN) approval from the North Carolina Utilities Commission because the proposed voltage for the Project is greater than 161-kV. In accordance with North Carolina statutory requirements, the application for the CEPCN describes the Project's purpose and need, a description of the proposed Project, a summary of the route selection process, potential environmental impacts and proposed mitigation, and a list of potential permits and approvals that may be required for construction.

1.1 Purpose and Need

The Project will serve the FujiFilm Diosynth Biotechnologies (FujiFilm) proposed biopharmaceutical manufacturing facility within the town of Holly Springs. This new facility will require as much as 28 megawatts (MW) of electricity to power the proposed manufacturing operation at full buildout. The proposed biopharmaceutical facility represents more than a billion dollars of investment in the community and will ultimately create more than 1,000 new jobs. The purpose of this Project is to provide a power source by way of a new 230 kV electric transmission line to the FujiFilm facility.

To meet the purpose and need of this Project, DEP will need to tap the existing Harris Plant-Wake 230-kV Transmission Line and build a new 230-kV line to a new proposed 230-kV/23-kV 28-MW-capacity substation (herein after referred to as the Holly Springs Utley Creek Substation) near the FujiFilm site. New 23-kV distribution lines will connect the Holly Springs Utley Creek Substation to FujiFilm's facility's delivery point. The construction of the proposed substation and 230-kV transmission line tap is scheduled to begin in late 2022, with an in-service date of September 2023 as requested by the Customer.

1.2 Project Location

The Project is in Holly Springs, Wake County, North Carolina, approximately 15 miles southwest of Raleigh. From the Harris Plant-Wake 230-kV Transmission Line, the proposed transmission line route runs southeast and east within DEP-owned property, then continues east crossing the north side of a private property before connecting into the southwestern side of the proposed Holly Springs Utley Creek Substation. The Project is approximately 2.18 miles long. The location is shown on Figure 1 (figures are located at the end of this document).

1.3 Structures

The transmission structures will consist of weathered steel tangent H-Frame structures and three-pole angle structures with guy wires. Structures will be approximately 60 to 80 feet high and spaced approximately 500 to 700 feet apart. The final heights and spans may vary depending on final engineering design regarding terrain and/or measures to mitigate potential environmental impacts.

1.4 Right-of-Way

The Project will require a 125-foot-wide right-of-way (approximately 63 feet on either side of the centerline). The proposed transmission line will be on Duke-owned property where no dedicated right-of-way will be required, but the 125-foot width will still be maintained in accordance with the Company's transmission line operation standards. The preferred route crosses one privately owned property where a right-of-way easement will be acquired and maintained.

1.5 Operations and Maintenance

DEP is committed to continuing its long-standing tradition of operating and maintaining facilities that will support the health, safety, and welfare of the general public. Operation and maintenance of the transmission line would consist of periodic inspections of the line and right-of-way, as well as replacement of equipment as necessary. Additionally, DEP will perform the removal of danger trees and tall vegetation within and adjacent to the right-of-way that pose a hazard to safe operation of the line, regardless of whether the line is on DEP-owned property, or an easement on privately owned properties.

1.6 Estimated Project Cost

The total estimated cost for the Project (easement acquisition, tree clearing, and construction) is \$6,530,000.00.

2. Route Selection Study

In accordance with North Carolina statutory requirements,¹ the Project siting team, consisting of multidisciplinary staff from DEP and Jacobs Engineering Group Inc. (Jacobs), applied a common, industry-standard siting methodology that is routinely used to conduct route selection studies for electric transmission line projects in North Carolina and other states. Although the goals of a transmission line route selection study are typically similar across projects, some elements are unique to each project, such as geography and physical setting, population density, the type of project, the political and regulatory climate, and the project schedule. These unique elements influence the routing study criteria and their relative weighting (or emphasis) to determine the ranking of the alternative routes.

Transmission line projects can encounter a suite of competing technical, environmental, and land use criteria requiring a comprehensive, relevant, and effective siting study design. That design should use relevant data at the appropriate scale to focus quickly on those areas and corridors with the greatest potential for success. The siting process and methodology must also be transparent and effectively communicated.

The siting process used for this Project provides a layered approach employing methods for the siting team to determine the proposed route. The process used for this Project consisted of the following primary tasks as detailed in Sections 2.1 through 2.6.

- 1) **Identifying a project-specific study area:** The first step in the siting process was to develop a project-specific study area that identifies an appropriate geographic boundary where the siting team can collect detailed constraint and opportunity data. The study area should include a large enough area to investigate reasonable routing alternatives for the Project but not so broad as to include nearby areas where similar reasonable alternatives are not present. As part of the identification of a study area, the siting team reviewed publicly available environmental, land use, and socioeconomic information and determined the boundaries of the study area based on the initial opportunity (e.g., locations where a new transmission line may have the fewest impacts) review and constraint (e.g., existing land or features that are less suitable for a transmission line siting) review.
- 2) **Mapping constraint and opportunity data:** After the study area was determined, the siting team collected further constraint and opportunity data under three broad headings: ecological, land use/cultural, and technical. The team collected data under these broad headings based on their relevance to the Project, the study area, and the availability and quality of the dataset. The data collected reflected the existing land use and characteristics of the area. Once collected, the data were analyzed by way of the following:
 - a) The siting team mapped the data within the study area to produce an overall constraint and opportunity map.
 - b) After the data mapping was complete, the team converted opportunity and constraint information into raster-based (or grid cell) layers and assigned a value to a layer's suitability to host a transmission line. For example, an existing utility right-of-way would be assigned a high suitability score, while a residential area or wooded wetland would be assigned a low score. The team combined the individual suitability layers to form an overall suitability surface, which was used to develop a study segment network.

¹ North Carolina General Statutes 62-101 and NCUC Rule 8-62.

- 3) **Developing a study segment network and identifying alternative routes:** Once the suitability mapping and raster-based layers were completed, the information gleaned from the data analysis was used to develop a study segment network. The siting team developed study segments by using corridors that could support transmission line development minimizing the need for specialized technical designs or standard exemptions. The team then refined the study segments based on technical constraints related to the construction and operation of the Project, and land use constraints related to the future developments within the study area. Based on the refined study segments, the siting team developed unique alternative routes for the Project.
- 4) **Conducting public information meeting:** Because of the ongoing COVID-19 pandemic, the siting team hosted a project website to share the alternative routes and project information with the public. The team developed and conducted this alternative public engagement process in lieu of in-person public information meetings and interactions to maintain a safe environment.

DEP recognizes that there may be minimal impacts to the surrounding community as the transmission line is proposed to be routed largely through DEP property and focused the public engagement effort towards meeting with landowners who are within a 500-feet of either side of the transmission line. Virtual meetings were held with property owners who are within proximity to the project to gather constraint information and feedback. A project website was created to educate the general public about the Project.
- 5) **Comparing alternative routes:** Once the alternative routes were identified and public feedback was gathered, the siting team established a set of metrics to compare and rank the alternative routes. The team based these advanced metrics on opportunities and constraints identified within the study area and weighted them based on the project area's setting and primary land uses, concerns important to property owners engaged during the engagement phase, and on the professional judgment of the siting team member's whose experience includes routing projects in a similar setting. In addition to the quantitative evaluation, qualitative factors such as land use and visual impacts also played a crucial role in the selection of the proposed route for the CECPCN application. The siting team members used their respective experience to determine which and how much qualitative data would influence routing decisions.
- 6) **Selecting a proposed route:** Based on quantitative scores and qualitative analysis, the siting team identified the proposed route for the Project.

2.1 Project Area Description

The Project is in southwestern Wake County in the town of Holly Springs, southwest of Raleigh. Holly Springs is a high-growth area that sustained approximately 67.2 percent population growth between 2010 and 2020, growing by 16,578 people (from 24,661 to 41,239) (U.S. Census Bureau, 2020). Holly Springs is typical of a suburb of a major city and includes areas of high- and medium-density land uses, and areas of low-density land use. Major transportation corridors include US Route 1 (Claude E. Pope Memorial Highway), Interstate 540 (Western Wake Freeway), and North Carolina Bypass 55.

The terrain in the vicinity of the Holly Springs Utley Creek Substation and the existing Harris Plant-Wake 230-kV Transmission Line consists of rolling hills and river valleys ranging from 218 to 365 feet above mean sea level. Large natural features include the Harris Nuclear Plant and Shearon Harris Lake Reservoir. The Shearon Harris Lake Reservoir is a large, dammed lake reservoir fed by White Oak Creek and Utley Creek, and several streams and tributaries feed these water bodies. The area surrounding the reservoir is undeveloped, with mostly forested land cover.

The siting team focused their review of the area in the vicinity of the Holly Springs Utley Creek Substation and the area surrounding the existing Harris Plant-Wake 230-kV Transmission Line because these areas are the most pertinent for developing a study area specifically for the purpose and need of this Project.

2.1.1 Study Area

The study area boundaries generally follow the existing Harris Plant-Wake 230-kV Transmission Line, major roadways, and the periphery of housing developments. The study area was created to capture a footprint large enough for the siting team to assess multiple tap line locations along the Harris Plant-Wake 230-kV Transmission Line. The area between the Harris Plant-Wake 230-kV Transmission Line and the proposed Holly Springs Utley Creek Substation was the focal point of this study area.

The northern boundary of the study area is DEP's Harris Plant-Wake 230-kV Transmission Line and extends approximately 4 miles between New Hill Holleman Road and Old Holly Springs Apex Road. The western boundary extends south along New Hill Holleman Road for 2.5 miles. The southern boundary extends along Avent Ferry Road for approximately 4 miles to capture any constraints and opportunities that may affect future road access plans for Project. The eastern boundary follows the Old Holly Springs Apex Road and the North Carolina Bypass 55 corridor for approximately 2 miles. The total study area encompasses approximately 6,057 acres (9.46 square miles), as shown on Figure 2.

2.2 Constraint and Opportunity Data

After developing and agreeing on the study area, the siting team reviewed publicly available data specific to the study area to identify opportunities and constraints that could affect the viability of a proposed transmission line route. Typical constraints evaluated included the following:

- **Environmental constraints:** wetlands, waterbodies, floodplains, records of the presence of threatened and endangered species, and environmental conservation lands.
- **Cultural resources constraints:** resources listed on the National Register of Historic Places (NRHP), historic districts, state-listed historical resources, historic architectural resources, cemeteries, and known archaeological sites.
- **Land use constraints:** existing residential, commercial, and industrial uses, and future land uses as observed by planned developments and rezoning petitions.

Sections 2.2.1 through 2.2.4 summarize the opportunity and constraint data identified within the study area.

2.2.1 Environmental Resources

Within the study area, environmental resources data were reviewed prior to the development of study segments so that study segments could be developed to avoid or minimize potential impacts on these resources. Environmental resources such as wetlands, waterbodies, floodplains, and environmentally sensitive features (threatened or endangered species) could limit the siting team's ability to develop transmission line study segments because of the potential environmental impacts that could derive from building a transmission line in those areas. The siting team used federal, state, and local publicly available environmental data to develop study segments that minimize impacts on these features to the extent practicable. Environmental constraints are discussed in Sections 2.2.1.1 through 2.2.1.5 and identified on Figure 3.

2.2.1.1 Wetlands

The U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) mapping was reviewed to identify wetlands that may be present within the study area. Based on the data, it appears that extensive NWI wetlands are present in the study area (Figure 3). Most NWI wetlands occur throughout the western portion of the study area within the floodplain of White Oak Creek and throughout the central portion adjacent to Utley Creek (USFWS 2021b). Wetland areas adjacent and connecting to White Oak Creek, Utley Creek, and unnamed tributaries may be considered jurisdictional under the Clean Water Act (CWA). A more detailed site survey would need to be completed to locate boundaries and extents of potentially jurisdictional wetlands and a Jurisdictional Determination would need to be approved by the U.S. Army Corps of Engineers (USACE) – Wilmington District, Raleigh Regulatory Field Office.

If wetland crossings are to occur as part of the proposed transmission line construction, wetland permitting under Section 404 of the CWA and approval by the USACE – Wilmington District would be required before any fills or discharges into wetlands associated with installing temporary access roads, temporary work pads, or temporary pulling pads. DEP would avoid placing permanent structures within wetlands where possible. Based on the location and size of wetlands within the study area, wetlands were considered a moderate constraint to siting a transmission line in the study area.

2.2.1.2 Waterbodies

U.S. Geological Survey topographical maps and the National Hydrography Dataset (NHD) were reviewed to identify major perennial and intermittent streams within the study area that could potentially affect the feasibility of a transmission line either because a greater span length (distance between two transmission structures) would be needed to cross the waterbody or because the waterbody crossings require additional permitting/coordination with federal and state agencies (USGS 2021a). White Oak Creek, Utley Creek, and several unnamed tributaries are within the study area, as shown on Figure 3. White Oak Creek and Utley Creek are all perennial streams with Ordinary High Water Mark widths ranging from 40 to 60 feet and 20 to 30 feet, respectively. These streams are not classified by the USACE Wilmington District as Section 10 waters. The unnamed tributaries to White Oak Creek and Utley Creek consist of perennial and intermittent flows that would likely be determined to be jurisdictional as waters of the United States.

Like wetlands, stream crossings may occur within the proposed transmission line corridor. Based on the location of the streams within the study area, the anticipated span lengths are not expected to affect the feasibility of the transmission line; therefore, streams were considered a minor constraint to siting a transmission line within the study area.

2.2.1.3 Floodplains

Federal Emergency Management Agency (FEMA) floodplain maps were reviewed to identify floodplains within the study area. Based on the information gathered from FEMA, 100-year floodplains occur adjacent to White Oak Creek and Utley Creek across the western and central portions of the study area, respectively, and at the confluences of several unnamed tributaries to these streams. These floodplains vary in size with a width of approximately 1,600 feet along White Oak Creek and between 300 and 480 feet along Utley Creek (FEMA 2021).

The floodplains within the study area are associated with the observed streams; therefore, a floodplain crossing would likely occur within the selected route corridor. Floodplain permitting would be required before installing temporary access roads, temporary work pads, or temporary pulling pads and DEP would attempt to avoid placing permanent structures within the floodplain where possible. Based on the width of

the floodplains and DEP's ability to avoid work within the floodplain, they were considered a minor constraint to the Project.

2.2.1.4 Threatened and Endangered Species

The USFWS Information for Planning and Conservation (IPaC) and the North Carolina Natural Heritage Program (NCNHP) Element Occurrence Database were reviewed to determine federally and state-listed endangered, threatened, rare, special concern, and species of concern that have the potential to occur within the study area (Appendix A) (USFWS 2021a) (NCNHP 2021). The NCNHP also reviews important natural communities, natural areas, and conservation or managed areas. Based on the IPaC report, eight federally threatened, endangered, or candidate species have the potential to occur within the study area (Appendix A). Federally listed species with the potential to occur include: red-cockaded woodpecker (*Picoides borealis*), Neuse River waterdog (*Necturus lewisi*), Cape Fear shiner (*Notropis mekistocholas*), Carolina madtom (*Noturus furiosus*), Atlantic pigtoe (*Fusconaia masoni*), dwarf wedgemussel (*Alasmodonta heterodon*), yellow lance (*Elliptio lanceolata*), and Michaux's sumac (*Rhus michauxii*).

Based on the NCNHP report, there are documented element occurrences of both federally and state-listed species within the study area including three state-listed species: four-toed salamander (*Hemidactylium scutatum*), Virginia spiderwort (*Tradescantia virginiana*), and bald eagle (*Haliaeetus leucocephalus*). The bald eagle is also afforded protection under the federal Bald/Golden Eagle Protection Act.

At this stage in the Project, the available data on threatened and endangered species do not limit the opportunities for developing study segments or routing alternatives within the study area; therefore, threatened and endangered species were not considered to be a constraint to the Project. Jacobs understands that project activities will likely be planned so that potentially suitable habitat areas will be avoided entirely or staged such that effects on federally and state-listed species are unlikely or completely avoided. For these reasons, threatened and endangered species are considered a minor constraint to the Project. Continued coordination with the USFWS and NCNHP will occur to manage any potential impacts on federally- or state-listed species.

2.2.1.5 Conservation Land

One designated NCNHP Natural Area, Utley Creek Slopes, is located within the study area and entirely within land owned by DEP. The natural area was established by DEP in cooperation with NCNHP and contains an extensive Dry Oak-Hickory Forest natural community. Other prominent features include rock outcrops, with cave-like structures along Utley Creek, exposing sedimentary rock. The state threatened Virginia spiderwort is also found within this natural area (NCNHP 2021).

DEP maintains the rights to land use within this area and therefore, development of a Duke transmission asset would not require additional rights to be granted if impacts are proposed to the Natural Area as it is on DEP-owned land; however, any development activities in the area requires coordination with the NCNHP. The NCNHP Natural Area is considered a medium constraint because DEP has the rights to develop within this natural area. Impacts to the resources identified in this area may require additional permitting considerations that could affect the Project timeline and in-service date.

2.2.2 Cultural Resources

Cultural resources data were reviewed to identify the locations and types of previously recorded cultural resources within the study area. Cultural resources are tangible remains of past human activity and may include, but are not limited to, prehistoric sites, historic or prehistoric objects, buildings, and structures. Cultural resources of exceptional significance, groupings of resources, or large historic districts can

present a major constraint for transmission line routing because these resources may impose additional regulatory requirements that could potentially delay or prevent a project from being constructed. The siting team will analyze and map cultural resources to develop study segments and routing alternatives that avoid, minimize, or mitigate impacts on known cultural resources within the study area.

The siting team conducted background research using the North Carolina State Historic Preservation Office (SHPO) and North Carolina Office of State Archaeology online mapping database in March 2021 to locate previously recorded cultural resources and surveys within the study area (NCOSA 2021, SHPO 2021). This investigation revealed 47 archaeological sites, 6 architectural and historical resources, 1 historic-age cemetery, and 1 NRHP-listed historic property within the study area. Because some of these resources are cross-listed in several categories (e.g., Jones Cemetery is cross-listed as a cemetery and an archaeological site), a total of 52 unique resources are present within the study area. Of the 47 archaeological sites present within the study area, none has been recommended as eligible for inclusion in the NRHP, and 6 sites lack an eligibility for inclusion in the NRHP status determination and may require additional research. The architectural and historical resources within the study area are shown on Figure 3. Because of the confidential nature of archaeological sites, their locations cannot be disclosed to the public and are not provided as part of Figure 3.

Six documented architectural and historical resources occur within the southern boundary of the study area (see Table 2-1). The locations of these resources were considered during the development of access plans and are not proposed to be affected directly or indirectly by the Project. Because of the location of these resources in relation to the Harris Plant-Wake 230-kV Transmission Line and proposed Holly Springs Utley Creek Substation, these resources are considered a minor constraint to the Project.

Table 2-1. Cultural Resources within the Study Area

Historic Resource Number	Alternate Name	Classification	Location
31WA1026	Samuel Bartley Holleman House	Queen Anne/Colonial Revival brick and stone residence that was listed in the NRHP (under Criteria A, B, and C) and as a Local Historic Landmark in 2006.	2424 Avent Ferry Road in Holly Springs
31WA1027	Collins Grove Baptist Church	A 1900 one-story front gable church. Has been determined to be eligible for inclusion in the NRHP by the SHPO.	3400 Avent Ferry Road in Holly Springs
WA7797/31WA1627	Jones Family Cemetery	A late nineteenth century cemetery* with an unknown number of interments.	3082 Avent Ferry Road in Holly Springs
WA0616	None	An 1850-1900 residence that was demolished during the construction of the Holly Point neighborhood between 2005 and 2010. Has been previously determined to be eligible for inclusion in the NRHP by the SHPO	Intersection of Avent Ferry Road and Diggory Drive

Table 2-1. Cultural Resources within the Study Area

Historic Resource Number	Alternate Name	Classification	Location
WA0619	Ethelred Jones House	An 1850-1860 one-story traditional/vernacular residence which is listed by SHPO as destroyed.	1432 Avent Ferry Road
WA0612	None	A 1900-1915 one-story pyramid roof frame house with unknown NRHP-eligibility status.	Southwest of the intersection of North Carolina Bypass 55 and Avent Ferry Road

*Cemeteries are ineligible for listing in the NRHP.

2.2.3 Land Use

Land use impacts include direct and indirect impacts on residential, commercial, recreational, industrial development, and institutional uses (such as schools, places of worship, cemeteries, and hospitals). These uses can limit the potential for a transmission line corridor to be constructed in highly developed areas. As part of this siting study, the siting team analyzed existing land use features and future land use plans within the study area to determine whether these land uses provide opportunities or constraints for routing an electric transmission line. Land use constraints are shown on Figure 4.

2.2.3.1 Existing Land Use

The study area is within the town of Holly Springs, which has been experiencing a population increase and a high rate of new residential and commercial growth to support the growing population. The existing land use within the study area consists of undeveloped land owned by DEP and recent private developments, including residential, commercial, and industrial land uses.

The northeastern and southeastern sections of the study area are characterized by typical urban land uses common among high-growth suburban areas of major cities. The Town of Holly Springs has developed three planning jurisdiction maps to guide development in three development areas (Appendix C). These jurisdictional maps include Holly Springs Town Limits, Holly Springs Extra-Territorial Jurisdiction, and Holly Springs Short Range Urban Service Area.

The Holly Springs Town Limits border the town's center, along the main highway and arterial roads (i.e., North Carolina Bypass 55, North Main Street, Avent Ferry Road, and Cass Holt Road). The land is zoned mostly for mixed-use and high-density development, including residential, multi-family residential, local business, and community business. Along the North Carolina Bypass 55 and Cass Holt Road, areas are zoned for business, research, and industry technology. The Holly Springs Extra-Territorial Jurisdiction includes less-dense residential development bordering the Holly Springs Town Limits. These areas are zoned for single use development, including residential neighborhoods that characterize the southeastern portion of the study area.

The Holly Springs Short Range Urban Service Area encompasses Shearon Harris Reservoir, which is undeveloped and consists of mainly natural areas and woodlands (Holly Springs, NC. 2019). The central and western portions of the study area are largely within DEP-owned property, adjacent to the Shearon Harris Reservoir and associated tributaries. Portions of this area are currently being logged for timber. There are no major commercial operations in this area. The siting team considered existing land uses to be a moderate constraint within the study area because characteristics are rapidly changing given the pace of residential and commercial development.

2.2.3.2 Future Land Use

The town of Holly Springs is experiencing rapid development. Based on the Holly Springs Comprehensive Plan, the town has designated three main areas as part of their growth strategy (Appendix C) including plans to preserve, enhance, and transform. Preservation areas include the natural and forested areas surrounding Shearon Harris Reservoir. Holly Springs identifies these as environmentally sensitive lands and discourages future development in these areas.

Enhancement areas include the existing residential neighborhoods adjacent to the town center. Holly Springs plans to continue developing single dwelling or mixed residential neighborhoods in these areas.

Transformation areas are focused within the center of Holly Springs. The town plans to increase allowable densities in this area, adding infrastructure capacity, improving nearby neighborhoods, and encouraging economic and private investors (Holly Springs, NC. 2019). Impacts on future land use will be coordinated with the Town of Holly Springs.

DEP's Harris Nuclear Plant is beyond the western end of the study area, west of the Shearon Harris Reservoir (Figure 1). DEP previously considered an expansion of the Harris Nuclear Plant in 2008. If an additional reactor were to be installed to the nuclear plant in the future, the flood elevation would rise to encompass areas at or below 265 feet, compromising the integrity of the transmission line to be constructed. There are no current plans to install an additional reactor, although locating the transmission line above a 265-foot elevation is preferable to mitigate potential future impacts on the Project.

Upon review of the Holly Springs Interactive Development Map (Holly Springs, NC. 2019), the siting team identified multiple proposed developments and rezoning projects within the study area. The siting team reviewed future and in-progress development plan boundaries and considered how the transmission line corridors may affect future land use and the characteristics of the area.

2.2.4 Raster-based Suitability Modeling

The siting team scored constraint and opportunity data based on their relative importance. The team used the siting criteria data, in conjunction with the National Land Cover Data set (USGS 2016), to create a raster-based suitability surface in the form of a grid over the study area. The purpose of this suitability surface was to provide a visual tool illustrating the opportunities and constraints within the study area, and aid in developing a study segment network. The suitability model analysis resulted in three levels of detail of suitability surfaces:

- **Individual Data Layer Suitability:** The siting team identified individual layers such as woodlots, wetlands, soils, and threatened and endangered species, which were collected and mapped individually. The team converted each data layer to raster format where each grid cell measured 100 feet by 100 feet and was assigned a suitability score between 1 and 10, where 1 is "best" and 10 is "worst." The siting team determined the scores using professional experience with similar projects and regulatory guidelines.
- **Grouped Suitability:** The siting team combined related data layers into one of three categories: technical, ecological, and land use/cultural. Using a progressive chromatic scale from red (least suitable) to green (most suitable), the team color coded these grouped layers. For example, woodlands, wetlands, endangered species, and protected areas were combined to form an ecological suitability surface. In addition to serving as the foundational pieces of the suitability model, these grouped layers are useful in communicating the siting process to interested parties.

- **Combined Overall Suitability:** The siting team combined the grouped data layers into an overall suitability surface that was color coded using the same progressive chromatic scale used for the grouped suitability model. The team applied weights to individual data layers and/or group as determined by the site-specific characteristics and most likely constraints or opportunities that would have influence on determining suitability of the study segment network.

The combined suitability model (Figure 5) includes a color-coded display that allows for visual assessment of routing constraints and opportunities. Additionally, geospatial algorithms can be applied to determine the suitability of potential route study segments and corridors.

The grouping data allow for visual representation of the data based on reproducible methods in assessing and modeling constraints in the study area. The purpose of creating the suitability model for this Project was to help identify areas that would be the most suitable for developing a study segment network. By assigning a suitability score to the limited constraints within the study area, the suitability model shows areas where routing constraints would limit the development of study segments. The siting team met to review the results of the raster-based suitability model before developing study segments.

2.3 Study Segment Network and Identification of Alternative Routes

2.3.1 Developing the Study Segment Network

Using the combined suitability model, aerial photography, topographic maps, and the collected constraint data, the siting team evaluated the constraints and opportunities within the study area and developed 45 route study segments (Figure 6). At the time of initial study segment development, the final Holly Springs Utley Creek Substation site had not been determined; therefore, the team developed study segments to provide feasible options to serve two potential substation sites, with Segments 19, 20, and 21 as connector segments between the two substations. In addition, the Harris Plant-Wake 230-kV transmission line can be tapped from any location in proximity to the proposed Holly Springs Utley Creek Substation. Developing an extensive study segment network would allow the team to consider all constructable route options and provide a thorough evaluation of various land use impacts throughout the entire study area.

The eastern portion of the study area consists of existing residential and commercial developments, and large undeveloped lots with planned residential, commercial, and industrial future land uses. The siting team identified three tap locations (Segments 22, 23, and 31) along the Harris Plant-Wake 230-kV Transmission Line. The team could not identify more tap locations because the transmission line is not easily accessible given to the highly developed and future planned land uses in the surrounding area.

From the tap locations, study segments (Segments 24, 25, 27, 28, 29, 32, 33, 34, 40, and 41) run mostly south parallel to roadways and alongside commercial development areas. These segments are proposed to be developed outside of the road right-of-way and on private easements to avoid conflicts with future road widening or expansion projects. Study segments 26, 36, and 38 extend further from roadways to provide segment options on currently undeveloped land that is proposed as future office and commercial uses (according to permitting documents filed with the Town of Holly Springs). Study Segments 42, 43, 44, and 45 also run overland to connect to one of the two substation options. The study segments developed in the eastern portion of the study area (Segments 22-45) may have potential impacts on future land use, although limited to public road corridors and the perimeters of planned developments, but will have minimal impacts on environmental resources.

The western portion of the study area is largely undeveloped forested land owned by DEP. The siting team developed study segments while considering environmental resources, topography, and a potential rise in

flood elevation of the Shearon Harris Reservoir. The siting team identified three unique tap locations along the Harris Plant-Wake 230-kV Transmission Line that are in proximity to existing access roads used for timbering. These access roads travel south from the Harris Plant-Wake 230-kV Transmission Line right-of-way corridor and into the study area. From the tap points, study segments 1, 2, and 3 extend south. The remaining study segments (4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, and 15) then extend east towards the proposed substation sites, avoiding existing residential developments and near-term future developments in the area. One privately-owned property west of one of the proposed substation sites is crossed by study segments 16, 17, and 18. Because of dense residential developments in the surrounding areas, crossing the privately owned property will be unavoidable to connect study segments from the west to the two potential substation sites.

2.3.2 Study Segment Evaluation and Refining the Study Segment Network

The siting team met virtually to evaluate the feasibility of the initial study segment network and refine the network based on information gathered during the site visit on May 18, 2021. In addition, the team selected the final substation site; thus, study segments were refined to terminate at the final proposed substation location.

The northeastern part of the study area has a high density of residential and commercial developments with few open linear corridors, which would require nonstandard designs for a new transmission line to stay out of road right-of-way (Figure 6). The future development plans within this portion of the study area largely consists of single-family home subdivisions and multi-building manufacturing and technical centers. The siting team met to determine whether a transmission line could be routed along or through the proposed developments without impeding existing and future land uses. Larger undeveloped lots that have recently undergone the rezoning process from residential to commercial or mixed-use were also evaluated to determine whether a transmission line corridor would adversely affect future commercial and mixed-use plans.

Through the evaluation of the proposed developments, the siting team determined that there were few opportunities for a transmission line corridor because of the inability to feasibly acquire easements in the eastern area. The density of the existing and planned developments would require a special, non-standard transmission line design and a modified right-of-way width to condense the footprint of the transmission line, both of which may result in significant increased costs and, therefore, are considered infeasible by DEP.

The eastern study segments were removed from further consideration because of the impacts to existing and future land use and lack of available space to support a transmission line alignment within a private easement without special designs or condensed right-of-way construction and operation. Given the current rate of new development in the town of Holly Springs, introducing a transmission line to the eastern area would limit future development opportunities. For these reasons, DEP conducted a more detailed evaluation of the western study segments because the undeveloped parcels provide more viable opportunities for a transmission line route without engineering or right-of-way modifications.

The siting team refined the western segments by evaluating environmental and cultural resources and constructability criteria. The team's refinement of study segments in this undeveloped, predominantly DEP-owned area was based on reducing wetland and stream crossings, maximizing distance from cultural resources and residential developments, and assessing the feasibility of access roads for construction and maintenance purposes. Segments were combined or eliminated if environmental impacts such as unnecessary stream crossings were proposed. The siting team shifted study segment 18, which crosses a private property adjacent to the proposed substation site, to the north to reduce the length of the route on

this property while avoiding impacts on a nearby stream. The siting team also adjusted study segments 3, 7, and 9 and created four additional segments to provide varying segment alternatives in the area. The revised study segments are provided on Figure 7A.

2.3.3 Developing Alternative Routes

After the siting team refined the study segment network, Study Segments 1, 2, 3, 3b, 7-adj, 8, 9, 9b, 9-adj, 13, 15, and 18 were retained for further evaluation and development of alternative routes. Segment 3-adj was eliminated because it introduced an additional tap location that was close to tributaries of White Oak Creek. The elevation of the terrain varies considerably along the length of Segment 3-adj which presents equipment access concerns. Segments 4 and 7 were eliminated because of their close proximity to the residential developments to the north. Segment 14 was eliminated because it involves an additional crossing of Utley Creek to route into the proposed substation. This decision to eliminate Segment 14 is compensated for by Segment 15, which provides as option to route into the substation south of Utley Creek.

To simplify the identification of routes for the scoring and ranking process, the siting team renumbered the seven study segments as shown on Figure 7B. A new Study Segment 3 was developed from the original Study Segment 3 and 3b; the new Segment 3 will reduce impacts on wetlands and on the eastern property that is planned for residential development. All the study segments are on DEP-owned property except for Segment 7 which crosses a single private property. The original corresponding study segments that were combined into the final segments are listed in Table 2-2:

Table 2-2. Original and Refined Study Segments

Refined Study Segments	Original Study Segments
Study Segment 1	Segment 1
Study Segment 2	Segments 2 and 7-adj
Study Segment 3	New Segment, adjusted from Segments 3 and 3b
Study Segment 4	Segments 9, 9b, 9-adj, and 13
Study Segment 5	Segment 8
Study Segment 6	Segment 15
Study Segment 7	Segment 18 (partial)

The siting team assembled the refined study segments into five complete alternative routes that span the Harris Plant-Wake 230-kV transmission line and the proposed substation site. The alternative routes are provided on Figure 8.

Route A (Study Segments 3, 4, and 7) is the shortest route, at approximately 1.98 miles. This route taps the Harris Plant- Wake 230-kV transmission line at the eastern-most location, sharing a tap location with Route B. Route A travels south for approximately 0.85 mile between a parcel planned for development to the east, and White Oak Creek to the west. This alignment travels east for the remaining 1.13 miles between the residential area to the east and environmental constraints (forested land, streams and wetlands) to the south and west. Route A remains south of the existing and future residential developments while staying north of Utley Creek. Route A crosses Utley Creek three times at narrow points as the route traverses to the substation.

Route B (Study Segments 3, 5, 6, and 7) is approximately 2.07 miles. This route taps the Harris Plant-Wake 230-kV transmission line at the eastern most location, sharing the tap location with Route A. The route travels south for approximately 0.90 mile and traverses between the proposed and existing residential developments to the east, and White Oak Creek to the west. Route B continues south for approximately 0.27 mile, crossing Utley Creek, before extending east for 0.90 mile towards the proposed substation.

Route C (Study Segments 2, 4, and 7) is approximately 2.09 miles. From the middle tap point along the Harris Plant-Wake 230-kV transmission line, Route C travels southeast for approximately 0.40 mile, paralleling a stream to the east, then turns east and crosses White Oak Creek and its associated floodway. The route continues east for the remaining 1.69 miles, south of the proposed developments and north of Utley Creek. Similar to Route A, Route C crosses Utley Creek three times as it traverses to the substation.

Route D (Study Segments 2, 5, 6, and 7) is approximately 2.18 miles. This route taps the middle point of the Harris Plant-Wake 230-kV line, sharing the tap location with Route C. The route travels southeasterly from the tap location paralleling the stream towards the east for approximately 0.40 mile, runs east for approximately 0.58 mile, and then crosses the northern side of White Oak Creek and its associated floodway in the same orientation as Route C. The route then angles south for approximately 0.20 mile, crossing Utley Creek and its associated floodplain, and extends east for 1 mile to the proposed substation.

Route E (Study Segments 1, 6, and 7) is the longest route alternative at approximately 2.66 miles. The route taps the Harris Plant-Wake 230-kV Transmission Line at the western-most tap point. From here, the route runs southeast for approximately 0.82 mile then turns east for approximately 0.38 mile, crossing the northern boundary of the Shearon Harris Reservoir. Route E has the southern-most alignment and crosses the Shearon Harris Reservoir at a narrower point than other alignments that cross the reservoir. The route then extends northeast toward the proposed substation for the remaining 1.46 miles.

2.4 Public Information Meetings and Stakeholder Feedback

2.4.1 North Carolina Utilities Commission Coordination

On July 26, 2021, the siting team met with the Public Staff of NCUC to present the need for the Project, which is to deliver a power source to the planned Fujifilm biopharma manufacturing facility. The siting team provided an explanation of the study area, the development of the study segment network, and the route analysis completed to date. An explanation of the siting team's position on eliminating the Study Segments on the eastern portion of the study area from consideration as explained in Section 2.3.2 was also provided. Because the Project is proposed to be entirely on DEP-owned property, except for one private property, the siting team explained that individual meetings with stakeholders directly affected or within 500 feet of the proposed study segment network would be held to gather feedback for the Project. A Project website will also be available to those interested in more Project information. The schedule was communicated, providing an approximate timeframe of an August 2023 Project completion date.

2.4.2 Public Outreach and Project Website

A Project website was developed to provide the community with Project information including the purpose and need, project development and NCUC filing schedule, map of the routes under consideration, and the expected benefits to the community as a result of completing the Project. The Project website was made available for public viewing starting on August 31, 2021. The website also provides the public with a forum for submitting questions. The online resources will be available until March 2022.

The website is provided as the following link:

<https://www.duke-energy.com/our-company/about-us/electric-transmission-projects/holly-springs>

Due to the COVID-19 pandemic and because only one private landowner would be directly impacted, DEP determined that the Project website was an effective tool for communicating information about the Project and allowing external stakeholders to submit questions. DEP held individual meetings with those directly impacted (one property owner) and property owners within 500 feet of the refined study segments. This included outreach to Fielding Homes at Trinity Creek, Toll Brothers, and the Homeowners Associations all of which are involved in developing the private property north of the proposed substation and route alternatives. DEP conducted these meetings to gather any feedback for the proposed Project and provide an avenue of communication between DEP and those directly and indirectly impacted by the Project. No substantive information was obtained from the meetings that changed the DEP siting team's siting methodology or the route alternatives.

2.5 Alternative Route Evaluation

2.5.1 Quantitative Assessment

Based on the publicly available data assembled to identify opportunities and constraints within the study area, the siting team developed a set of evaluation criteria to quantitatively compare the alternative routes (Appendix B). The siting team used the siting criteria to evaluate and compare the routes based on their relevance to the Project. The four siting criteria categories include ecological, social, land use, and technical or engineering.

For the ecological category, the siting team evaluated the total area of forest land and NWI wetlands within the right-of-way, NHD stream crossings, and length of floodplain crossed by the alternative routes. Impacts on forest land and NWI wetlands were measured within the proposed right-of-way of 125-feet to account for construction and clearing of trees. Stream impacts were measured by the number of crossings to account for temporary bridge construction and potential permitting requirements.

The siting team examined existing and future land use and cultural resource data for the land use and social categories. As part of the land use category, the team evaluated the planned and approved developments within 250 feet of the centerline and conservation lands crossed by the right-of-way. As part of the social category, the siting team evaluated the number of existing property owners within 1,000 feet of the centerline to reflect potential direct impacts of each alternative route. The social category captures existing residential areas such as the residential neighborhood southeast of the study area. The social category did not address the planned future residential developments on the northeast side of the study area, because they are captured under the land use subcategory.

The social category also captures impacts to archaeological sites and historic structures within 1,000 feet of the centerline. Institutional land uses such as schools and hospitals were not a factor in the social category because they are not in proximity to the proposed routes.

Lastly, the siting team evaluated technical opportunities and constraints by assessing slopes greater than 20 percent crossed by the right-of-way, number of turn angles greater than or equal to 30 degrees, length adjacent to or within existing DEP right-of-way, acreage of right-of-way at or below the 265-foot elevation, and the overall length of the alternative routes.

To quantitatively compare the alternative routes, raw data for each data category and each route were collected, quantified, and then normalized to a dimensionless parameter.² Lower scores indicate more preferable conditions whereas higher scores indicate less preferable conditions. Normalizing the data allows all the constraints to be compared according to the same scale and avoids one constraint being unintentionally influential.

The next step in this process was to weight the criteria within each category (ecological, social, land use, and technical) and each criterion within the four categories. Weighting recognizes that under certain circumstances, one evaluation criterion can be more important and relevant than another or have more influence on the route options. The criteria weighting values were determined by consensus of the siting team and based on the specific Project area setting, planned future development, and professional judgment of the siting team members' experience conducting route selection studies in similar settings.

In the ecological category, area of woodlots within the right-of-way were weighted the highest to account for tree clearing activities that would be required within the right-of-way. The area of NWI wetlands within the right-of-way, NHD stream crossings, and the length of floodplain crossed were weighted less because these features can usually be spanned by the transmission line, thus reducing the environmental impact the Project may have on them.

For the social category, archeological resources were weighted the highest given the high density of known archeological sites within the study area. Residences within 250 feet of the centerline and within 1,000 feet of the centerline were weighted slightly lower to capture impacts on existing residences within the study area.

Within the land use category, planned or approved developments crossed by the right-of-way were weighted the highest because of the rapid nature of development within the study area. This higher weighting incorporated the recognition that residences and occupants of future residential or commercial developments could be close to, yet at a safe distance from (in accordance with DEP's standards) the proposed transmission line. As part of this category, conservation lands were also evaluated and were weighted lower than planned or approved developments.

Within the technical category, routes with significant slopes (greater than 20 percent grade) were weighted the highest to capture any access issues presented by steep slopes during construction and maintenance. The amount of right-of-way at a 265-foot elevation and below is also of a higher weight in case the DEP Harris Nuclear Plant installs an additional reactor and increases the reservoir flood elevation in the future, resulting in some structures below the flood elevation or a need to relocate a portion of the transmission line. The number of turn angles greater than or equal to 30 degrees was weighed third highest because structures may be costly and present minor engineering challenges. Length of the route was weighted the lowest of the criteria that were evaluated because all of the route alternatives are of similar length.

² The formula used to normalize the raw data: Normalized Score = $((X_{ij} - \text{Min Value } j) / \text{Range}) * 100$, where: $i = x^{\text{th}}$ value in constraint and $j = \text{constraint}$

Across the four categories, the ecological category was weighted the highest (35 percent), followed by land use (30 percent), technical (20 percent), and social (15 percent). The siting team gave the ecological category the highest weight because the Project is located in expansive forest land with a high density of mapped sensitive environmental resources such as wetlands, waterbodies, and floodplains. These constraints will greatly affect the route options and placement of transmission structures.

The land use category was given the second highest score given that potential impacts on planned and approved residential or commercial developments and the visual impacts that are associated with constructing a transmission line nearby. The technical category was given the third highest weight to capture potential access, construction, and maintenance challenges. The social category was weighed the lowest because the area is largely undeveloped land owned by DEP.

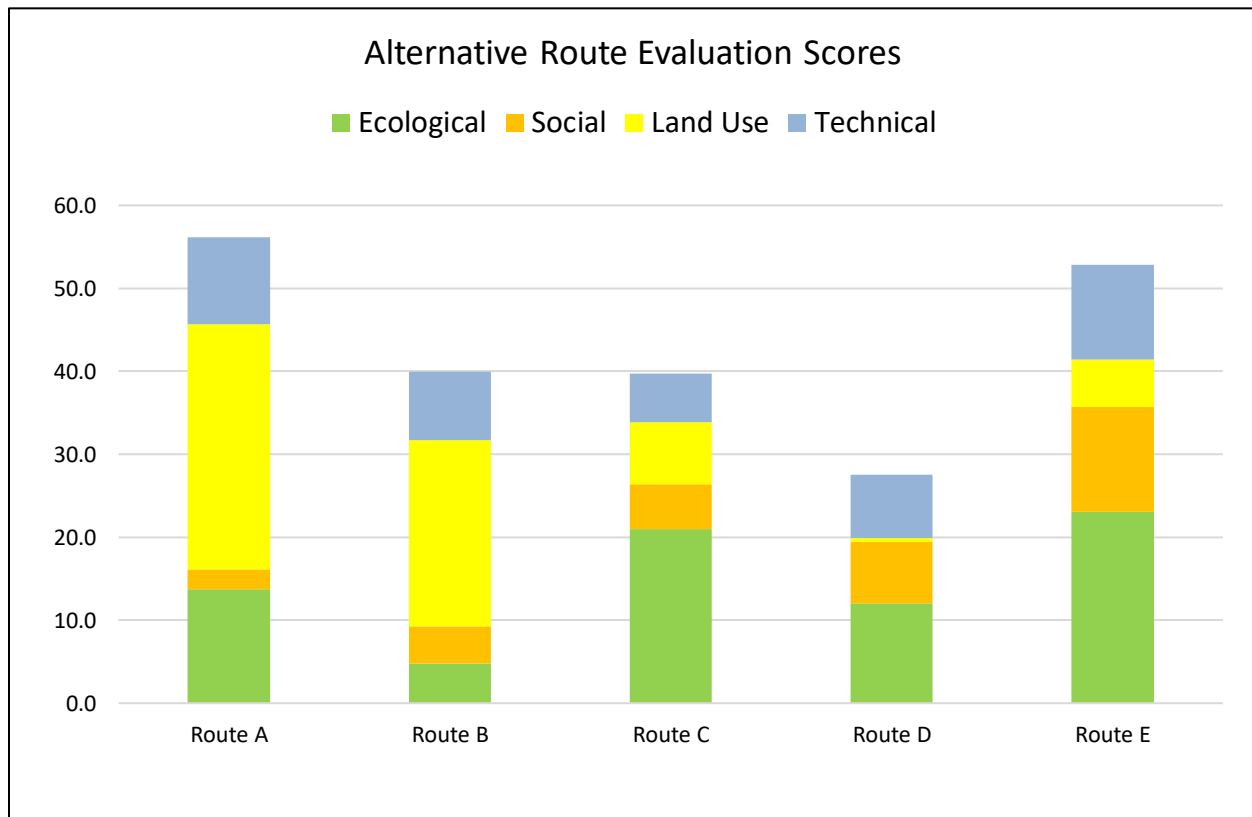
2.5.2 Weighted Scoring Results

All five alternative routes (Routes A, B, C, D, and E) were assessed using the quantitative scoring process. Appendix B includes the detailed scoring evaluation results. Each alternative route was quantitatively evaluated and ranked by the individual categories (i.e., ecological, social, land use, and technical), then ranked by the overall score.

Table 2-3 shows overall rank and individual categories for the five alternative routes. The alternative routes are also presented as a bar graph in Graph 2-1, which provides visual representation of the overall score and shows how each route scored in the four categories.

Table 2-3. Alternative Route Evaluation Scores

Route	Ecological Score	Social Score	Land Use Score	Technical Score	Final Score	Overall Rank
Alternative A	13.8	2.4	29.5	10.5	56.2	5
Alternative B	4.8	4.4	22.5	8.3	40.0	3
Alternative C	21.0	5.4	7.5	5.9	39.7	2
Alternative D	12.0	7.4	0.5	7.7	27.6	1
Alternative E	23.1	12.6	5.7	11.4	52.9	4



Graph 2-1: Alternative Route Evaluation Scores

Alternative Route D is the top-ranked route with the lowest final score, indicating the overall least impact based on all of the siting criteria evaluated in the study. Route D is not close to any known existing or planned developments and provides an alignment that will most likely not be within viewshed to residences northeast of the route. Route D also provides a minimal crossing of the conservation land, and only one major floodplain crossing.

Alternative Route C is the second-ranked route, providing the most favorable technical score. Route C crosses the fewest areas of slopes that are of 20 percent or greater and the fewest acres of woodlots within the 125-foot right-of-way. Route C is close to the existing and planned residential developments northeast of the route and crosses more acres of conservation land than all the other alternative routes.

Alternative Route B is the third-ranked route and has the least ecological impact because it crosses the mapped NWI wetlands at the narrowest point. Route B also provides the least social impact because few archaeological sites are close to the route and the alignment is proposed on the DEP parcel and only one private property parcel. However, Route B is close to existing and planned developments northeast of the route.

Alternative Route E is the fourth-ranked route, in part because the route has the most area of forest land within its right-of-way. The route also crosses a large amount of NWI wetlands and floodplain and has the most known archaeological sites within 1,000 feet of its centerline compared to the other routes. Route E also scored less favorable in the technical category, partly because it has to the most slopes greater than 20 percent crossed by the right-of-way.

Alternative Route A is the fifth and lowest-ranked route. This route is close to existing and planned residential developments east and north of the route for the entirety of the alignment and has the greatest potential for viewshed impacts on residents. Route A crosses the second-longest length of floodplain, has the longest length crossing of the conservation land, and contains the largest area of right-of-way that would be at or below 265 feet elevation.

2.5.3 Qualitative Considerations

In addition to the quantitative assessment, the siting team considered qualitative factors throughout the siting process in the evaluation of alternative routes. Qualitative considerations include factors that cannot easily be quantified but are critical to the selection of a final proposed route. These factors include such attributes as future land uses identified in comprehensive land use plans; viewshed impacts from residences (current and future); overall ease of constructability and maintenance, and input from municipal leaders, private organizations, and the public.

The route alternatives that were closer to the planned development towards the north were less favored by the siting team because of concerns regarding the transmission line being potentially visible from future residential developments. Mitigating impacts to future developments within Holly Springs was a key consideration in evaluating the alternative routes. This is also reflected in the weighted values assigned to the land use category in the weighted scoring table. It was the siting team's opinion that potential visual or viewshed impacts on future developments was of high importance in the selection of the proposed route.

Environmental impacts were another qualitative consideration discussed by the siting team. The siting team preferred the alternative routes where fewer NWI crossings were required. Reducing impacts to wetlands would limit the need for specialized construction methods which may be costly. The timing of environmental permitting was discussed, resulting in the conclusions that alternative routes that required the least environmental permitting effort were more favorable.

2.6 Selection of the Proposed Route

The siting team met to discuss the alternative routes and select the proposed route for inclusion in the CECPCN application. The team considered both quantitative scores and qualitative factors. The siting team agreed that the quantitative scoring process was effective in yielding the optimal route, and after discussion of the qualitative considerations the team selected **Alternative Route D** as the proposed route (Figure 9).

The selection of Alternative Route D was predicated on the following:

1. The route is a sufficient distance from the existing and planned residential developments in the study area to minimize viewshed impacts to the extent possible.
2. The route has the lowest right-of-way acreage below the 265-foot flood elevation. This reduces the risk that some of the transmission structures could be inundated with reservoir water if an additional reactor is installed at DEP's Harris Nuclear Plant.
3. Alternative Route D's presents minimal impacts to the conservation lands.
4. The route would have moderate impacts on ecological considerations and is not expected to require an extensive environmental permitting effort.
5. There are few construction and engineering challenges for Alternative Route D based on siting team observations from the site visit.
6. Alternative Route D is located on DEP-owned property and only one privately owned parcel.

3. Environmental Report

3.1 Wetland

According to NWI mapping, the proposed route right-of-way will cross 4.37 acres of palustrine forested wetlands. These are mapped as riparian wetlands associated with White Oak Creek and Utley Creek. A delineation survey will be completed to determine the exact wetland and waterbody impacts of the Project. Transmission line construction activities that would impact a wetland or waterbody may trigger the need for a Section 404/401 permit from the USACE. DEP will avoid placing permanent structures with permanent ground disturbances within wetlands to the extent practicable; therefore, construction and operation of the Project will not result in a significant permanent loss of wetland acreage along the proposed route. Mechanized clearing of vegetation for right-of-way establishment within forested wetlands would result in conversion to palustrine emergent wetland and may result in reduced wetland functionality. DEP will coordinate with the USACE district engineer to determine appropriate compensatory mitigation measures to offset losses of wetland function for these areas.

3.2 Waterbodies

The proposed route is located within the White Oak Creek Sub-watershed (Hydrologic Unit Code 030300040102) and crosses White Oak Creek and Utley Creek (USGS, 2021b). Based on the North Carolina Department of Environmental Quality (NCDEQ) Water Quality Standards (Title 15A of the North Carolina administrative Code subchapter 02B), both White Oak Creek and Utley Creek are classified as Class C waters and located within the Cape Fear River Basin. Class C designations are given to waters protected for secondary recreation (i.e., wading, boating, and other uses that involve human body contact), fishing, wildlife, fish consumption, aquatic life including propagation, survival and maintenance of biological integrity, and agriculture. These waterbody quality classifications are also used to define uses and set standards for activities or developments that may impact waters protected under these rules. DEP would avoid placing permanent structures within waterbodies, where possible; therefore, construction and operation of the Project will not significantly impact waterbody resources along the proposed transmission line route.

3.3 Floodplains

The proposed route crosses a 100-year floodplain adjacent to White Oak Creek and Utley Creek. The FEMA 100-year flood is a flood that has a 1 percent chance of being equaled or exceeded in any given year (FEMA, 2021). Wake County Watershed Management regulates encroachments in floodplain areas. Any structures or activities would require County approval and a flood permit. A hydrological study may need to be conducted to determine that the flood levels have not increased and thus not affecting neighboring properties, communities, or structures. DEP will span these floodplains where possible and apply for the necessary approvals with the County. Therefore, construction and operation of the Project is not expected to significantly affect the floodplain along the proposed route.

3.4 Threatened and Endangered Species

Based on information from the USFWS IPaC, one federal-listed bird species, the red-cockaded woodpecker, has the potential to occur within the study area (USFWS 2021a). Additionally, the NCNHP Element Occurrence Database identified the state-listed and BGEPA-protected bald eagle as a potential occurrence. The red-cockaded woodpecker is found in relatively open pine tree stands that are 60 to 120 years old. They are found in excavated cavities in older pine trees and generally avoid denser forest

stands and hardwood species. Suitable habitat for the red-cockaded woodpecker is potentially present within the right-of-way of the proposed route and may be impacted by the Project because of tree clearing. The primary concern for effects on the red-cockaded woodpecker, bald eagle, and other migratory bird species is the cutting, clearing, and removal of existing vegetation during the main nesting season. The Project will require tree, herbaceous, and shrub/sapling removal. Tree clearing will be completed during the winter, outside of any listed species' nesting seasons to minimize or avoid potential impacts on these species. Exact tree clearing timeframes will be established upon further consultation with the USFWS.

Several federally listed aquatic species have the potential to occur within the study area including two fish species, the Cape Fear shiner and Carolina madtom, and three mussel species, the Atlantic pigtoe, dwarf wedgemussel, and yellow lance. These species require similar habitat parameters including clean, silt-free, shallow flowing streams, pools, or riffles with gravel, cobble, and boulder substrates. None of these listed species have been specifically identified in the reaches of White Oak Creek or Utley Creek that will be crossed by the proposed Project route. Additionally, DEP would avoid impacts on streams by spanning over them using construction access bridging, resulting in no permanent impacts to on the streams. Therefore, the Project will likely have no impact on these species. A more thorough investigation of potential habitat and species presence will be determined upon further consultation with the USFWS.

USFWS and NCNHP identified two amphibian species as potentially occurring within the study area; the state-listed four-toed salamander and federally listed Neuse River waterdog. The four-toed salamander occurs in bogs, boggy streams, and hardwood floodplains under rocks, logs, and leaf litter, while the Neuse River waterdog is typically found in freshwater streams over 45 feet wide and 3 feet deep. The primary concern for effects on the four-toed salamander is the cutting, clearing, and removal of existing vegetation within stream buffers and hardwood floodplains. A more thorough investigation of the presence of potential habitat and species will be determined upon further consultation with the USFWS and NCNHP.

USFWS and NCNHP identified two vascular plant species that have the potential to occur within the study area; the state-listed Virginia spiderwort, and federally listed Michaux's sumac. Both species may be found in rocky open woods on acidic soils. The Virginia spiderwort exhibits a preference for more shaded conditions, and Michaux's sumac appears to depend on some form of disturbance to maintain the open quality of its habitat. Artificial disturbances, such as right-of-way maintenance may provide some of the habitat openness historically provided by naturally occurring fires. The concern for effects on these species is the cutting, clearing, and removal of existing vegetation. Pre-construction habitat surveys will be conducted to determine the presence/absence of the Virginia spiderwort and Michaux's sumac. If individuals are identified, siting of transmission structures and clearing of vegetation in these areas would be avoided to the extent practical. A more thorough investigation of potential habitat and species presence will be determined upon further consultation with the USFWS and NCNHP.

The Project route will likely cross the NCNHP designated Natural Area, Utley Creek Slopes. This Natural Area, which is located entirely within DEP property, was established through an agreement between DEP and the NCNHP, with DEP maintaining rights to land use. While vegetation clearing will be the primary effect concern to this area, DEP will coordinate with NCNHP to determine appropriate surveys and construction methodologies so that the construction team can avoid or minimize potential impacts on the Dry Oak-Hickory Forest natural community or known populations of Virginia spiderwort within this Natural Area, where practicable.

3.5 Topography

The topography along the proposed route consists of undulating hills, fluctuating between 200 to 300 feet above sea level. Approximately 6.9 acres of slopes crossed by the proposed route right-of-way are greater than 20 percent grade. Construction of a transmission line does not require extensive grading or earthwork, because DEP has the capabilities to span or build structures on landscapes with steep terrain. Construction of the Project will not result in changes to the existing topography.

3.6 Soils

Based on the U.S. Department of Agriculture Natural Resources Conservation Service Soil Survey, the proposed route will cross 11 soil map units (NRCS, 2021). The soil map units that will be crossed are listed in Table 3-1.

Table 3-1. Soil Map Units Crossed by the Proposed Alternative Route

Symbol	Map Unit Name
AuA	Augusta fine sandy loam, 0 to 2 percent slopes, rarely flooded
CaB	Carbonton-Brickhaven complex, 2 to 6 percent slopes
CaC	Carbonton-Brickhaven complex, 6 to 10 percent slopes
CaD	Carbonton-Brickhaven complex, 10 to 15 percent slopes
ChA	Chewacla and Wehadkee soils, 0 to 2 percent slopes, frequently flooded
CrB	Creedmoor-Green Level complex, 2 to 6 percent slopes
CrD	Creedmoor-Green Level complex, 10 to 15 percent slopes
DaA	Dorian sandy loam, 0 to 4 percent slopes, rarely flooded
PkD	Pinoka gravelly fine sandy loam, 4 to 15 percent slopes
PkF	Pinoka gravelly fine sandy loam, 15 to 30 percent slopes
W	Water

Impacts to soils from construction is expected to be minimal, as extensive grading or earthwork would not be required. Soil disturbance will be localized where excavation is required for transmission structure installation and access road construction. The siting team considers all impacts, except for permanent access roads, temporary as the site will be stabilized before and after construction. DEP will also adhere to any soil erosion and sediment control measures implemented by the local agencies.

3.7 Cultural Resources

Seven known archaeological sites (31WA1693, 31WA1743 to 1746, 31WA1758, and 31WA1761) are located within 1,000 feet of the proposed route. Only site 31WA1758, is located within 250 feet; however, this site is ineligible for NRHP inclusion. Site 31WA1693 is the only site within 1,000 feet of the proposed route that has not been excluded from inclusion in the NRHP; its status is unknown. The seven sites

represent a mix of prehistoric-age artifact scatters associated with temporary camps/resource procurement areas and mid-to-late 19th century artifact scatters.

Approximately half of the proposed route traverses a region that was subjected to an intensive archaeological survey and deep testing program along the margins of the Shearon Harris Reservoir for DEP in 2014 (Patch et al. 2014). Consequently, the potential for undiscovered cultural resources within much of the proposed route is low. No historical built-environment resources, NRHP-listed properties, or cemeteries are located within 1,000 feet of the proposed route.

Consultation with the NC SHPO will be initiated before construction. Cultural surveys may be required along the proposed route, especially in the areas that have not been previously surveyed. If cultural surveys are completed and cultural resources are identified along the route, these resources can generally be avoided by strategic transmission structure placement.

3.8 Land Use

Land use impacts include direct and indirect impacts on residential, recreational, and environmental areas, and cultural resources. Construction of a transmission line can result in changes in land use and aesthetic impacts on residents and recreational users. The existing land use within the proposed route includes contiguous forests. DEP's proposed route is located on mostly DEP-owned land with the exception of one privately owned parcel. The proposed route will not directly cross residential, commercial, recreational, industrial development, or institutional land uses. Impacts on existing land use include the conversion of forested areas into herbaceous right-of-way. The Project will result in a permanent vegetation change because trees will be cleared for the right-of-way and converted to maintain the right-of-way.

3.9 Aesthetics

Aesthetic impacts involve changes in viewsheds where the new transmission line could be partially visible from nearby residences or other populated areas. The construction of the new transmission line may affect the existing aesthetics where the upper portions of the transmission line pole and conductors could be visible from future residential development areas. Because the transmission line is proposed entirely within an undeveloped DEP property and at least 350 feet from the nearest planned residential development, aesthetic impacts are expected to be minimal.

Visual impacts to the residences near the proposed route will be minimized by preserving, to the extent practicable, existing vegetation between the residences and the new transmission corridor. If timbering near the transmission line is to occur, the proposed transmission line is a sufficient distance from the residential properties to the north at varying elevations and will most likely not be visible to residents. The existing trees will provide a vegetative buffer for residences from the transmission line and the substation.

The proposed route will not result in permanent topographic changes to the landscape that would further alter the existing viewshed. Any temporary changes to topography resulting from construction activities will be restored to pre-construction conditions.

3.10 Proposed Mitigation Measures

The proposed route minimizes impacts on natural resources, land use, and cultural resources. Best management practices (BMPs) will be implemented to address unavoidable impacts from construction and operation of the Project. Measures to avoid or minimize impacts are described in Sections 3.10.1 through 3.10.3.

3.10.1 Soil and Erosion Control

Construction of the proposed Project will result in unavoidable land disturbance. Construction vehicles traversing the right-of-way and access roads and erecting the transmission structures and ancillary facilities will cause temporary soil disturbances. All areas of soil disturbance will be restored with seeding/mulching and other plantings as required. Excavations are required for each transmission structure and will require the use of heavy construction equipment. Typical soil erosion and sediment control measures will be used to prevent soil from leaving the Project site during construction and from being discharged into adjacent wetlands, waterbodies, or other environmentally sensitive areas. Soil stockpiled from excavations will be placed in upland areas and erosion control devices will be installed appropriately. Prior to construction, the Project will submit a National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Permit (NCG01) and an Erosion Control Plan to NCDEQ. Construction will adhere to all conditions listed in the approved stormwater permit and Erosion Control Plan.

3.10.2 Wetland and Waterbody Resources

Wetland and waterbody crossings are typically unavoidable for electric transmission lines. During construction and right-of-way clearing, permanent impacts on wetlands and waterbodies will be avoided to the extent practical. If required, USACE will conduct a wetland and waterbody delineation to identify and verify boundaries and extents of waters of the United States prior to construction. Transmission structures will be placed outside of wetlands, waterbodies, and floodplains where possible, to minimize or avoid temporary and permanent impacts on these features.

Construction equipment will only cross identified waterbodies using bridges, or possibly culverts, to avoid impacts on these features. Where possible, construction access to the right-of-way will occur from either side of a waterbody to avoid equipment crossings. In instances where identified wetlands must be crossed during construction, temporary timber mats will be installed to minimize impacts on wetlands and prevent rutting of wetland soil from heavy equipment. BMPs will also be used to prevent potential discharges and runoff of sediment into wetland areas and waterbodies. The right-of-way will be restored to pre-existing contours, and there will be no changes to overland stormwater flow from construction. During tree clearing, no debris will be placed in wetlands or waterbodies. Construction will adhere to all permit conditions (CWA Section 404/401 and NPDES Construction Stormwater Permit NCG01) regarding mitigation measures to wetlands and waterbodies.

3.10.3 Threatened and Endangered Species

The USFWS and NCNHP did not identify specific population locations of federally or state-listed species occurring within the proposed Project's right-of-way; however, the proposed route may contain potential habitat for federally or state-listed species. BMPs to avoid impacts on federally or state-listed species and migratory birds include strategic transmission structure placement, tree clearing windows, avoidance, and other impact minimization measures as recommended during consultation with the USFWS and NCNHP. A habitat survey will be conducted before right-of-way clearing to assess potential habitat and determine potential presence/absence for threatened and endangered species. If habitat is present or listed-species individuals are identified, DEP will further coordinate with applicable state and federal agencies to determine appropriate tree clearing and ground disturbance timeframes and BMPs to avoid and minimize potential impacts to listed species.

4. Potential Permits Approvals and Clearances

A summary of the potentially applicable permits and approvals from federal, state, and local agencies required for construction and operation of the Project are provided in Table 4-1. The permitting review is a screening-level assessment based on current understanding of the Project, site-specific characteristics, and DEP's experience with permitting transmission line projects in North Carolina. No permits listed in Table 4-1 have been obtained or applied for.

Table 4-1. Potential Permits, Approvals, and Clearances

Agency	Potentially Required Permit, Approval, or Clearance	Action Requiring Permit, Approval, or Clearance
Federal		
USACE	CWA Section 404 Nationwide Permit 57 ¹ and Jurisdictional Determination	Impacts on waters of the United States. This also triggers compliance with Section 7 of the Endangered Species Act and Section 106 of the National Historic Preservation Act within a permitted area.
USFWS	Federally Listed Threatened and Endangered Species Consultation	Work may affect federally listed species; compliance with Section 7 of the Endangered Species Act of 1973.
State		
NCUC	CEPCN	Constructing a transmission line greater than 161 kV.
NCDEQ – Division of Energy, Mineral, and Land Resources	Erosion and Sediment Control Certificate of Approval	Land-disturbing activity covering 1 acre or more; compliance with the Sedimentation Pollution Control Act of 1973.
	NPDES General Stormwater Construction Permit NCG01	Construction activities that disturb more than 1 acre of land.
NCDEQ – Division of Water Resources	CWA Section 401 Water Quality Certification ¹	Any federally permitted or licensed activity that may result in a discharge to waters of the United States.
	Isolated and Other Non-404 Jurisdictional Wetlands and Waters Permit	Impacts on less than 1 acre of non-404 jurisdictional wetlands/open waters and/or impacts on less than 300 feet of non-404 jurisdictional streams.
North Carolina Wildlife Resources Commission	State listed Threatened and Endangered Species Consultation	Construction may affect state-listed animal species.
North Carolina Department of Natural Resources – North Carolina Natural Heritage Program	State listed Threatened and Endangered Plant Species Consultation	Construction may affect state-listed plant species or designated natural areas.
SHPO	Cultural Resources Consultation	Compliance with Section 106 of the National Historic Preservation Act.

Application for a Certificate of Environmental Compatibility and
Public Convenience and Necessity

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Apr 14 2022

Table 4-1. Potential Permits, Approvals, and Clearances

Agency	Potentially Required Permit, Approval, or Clearance	Action Requiring Permit, Approval, or Clearance
Local		
Wake County Watershed Management	Flood Permit	Encroachments within flood hazard areas.
	Stormwater Permit	Disturbance of 1 acre or more of land.
	Land Disturbing Permit – Grading Permit	Disturbance of 12,000 square feet or more of land.
	Land Disturbing Permit – Watercourse Buffer Permit	Projects that have a state regulated watercourse buffer on site.
	Sediment and Erosion Control NCG01 Permit	All disturbances of land equal to or greater than 1 acre.
Property owners	Right-of-way easement	New transmission line route requires easement acquisition

¹ On October 21, 2021, the United States District Court for the Northern District of California remanded the U.S. Environmental Protection Agency's 2020 CWA 401 rule with vacatur. As a result, the USACE is not finalizing any permit decisions that rely on a certification or waiver under the 2020 rule at this time. This decision affects 16 NWP's that the USACE finalized in January 2021, all of which went through formal notice and comment rulemaking and were subject to the CWA Section 401 certification process before being issued, including for the purposes of this filing, NWP 57 - *Electric Utility Line and Telecommunications Activities*. A path forward and timeframe to allow for final permit decisions is currently pending from the USACE.

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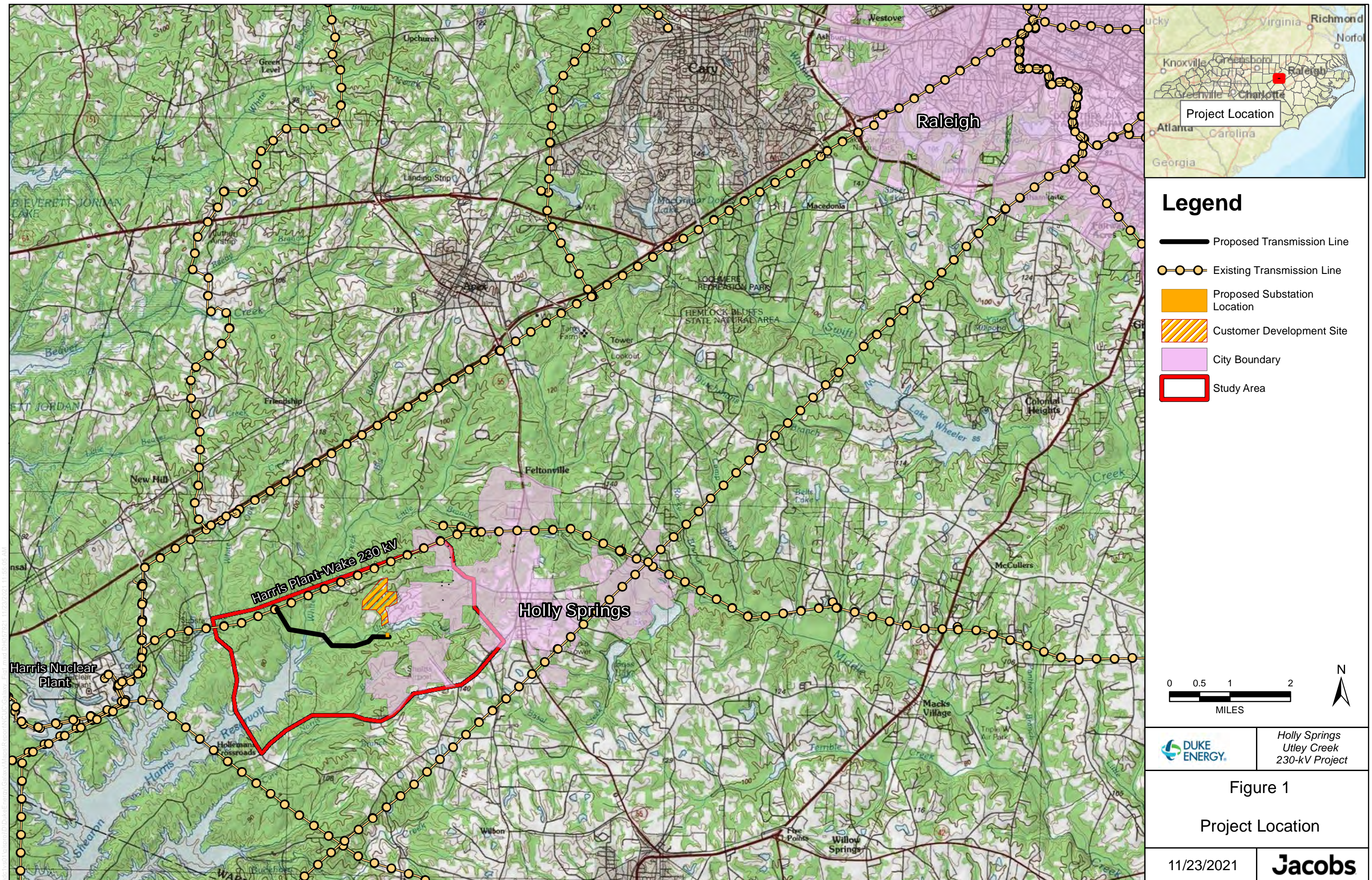
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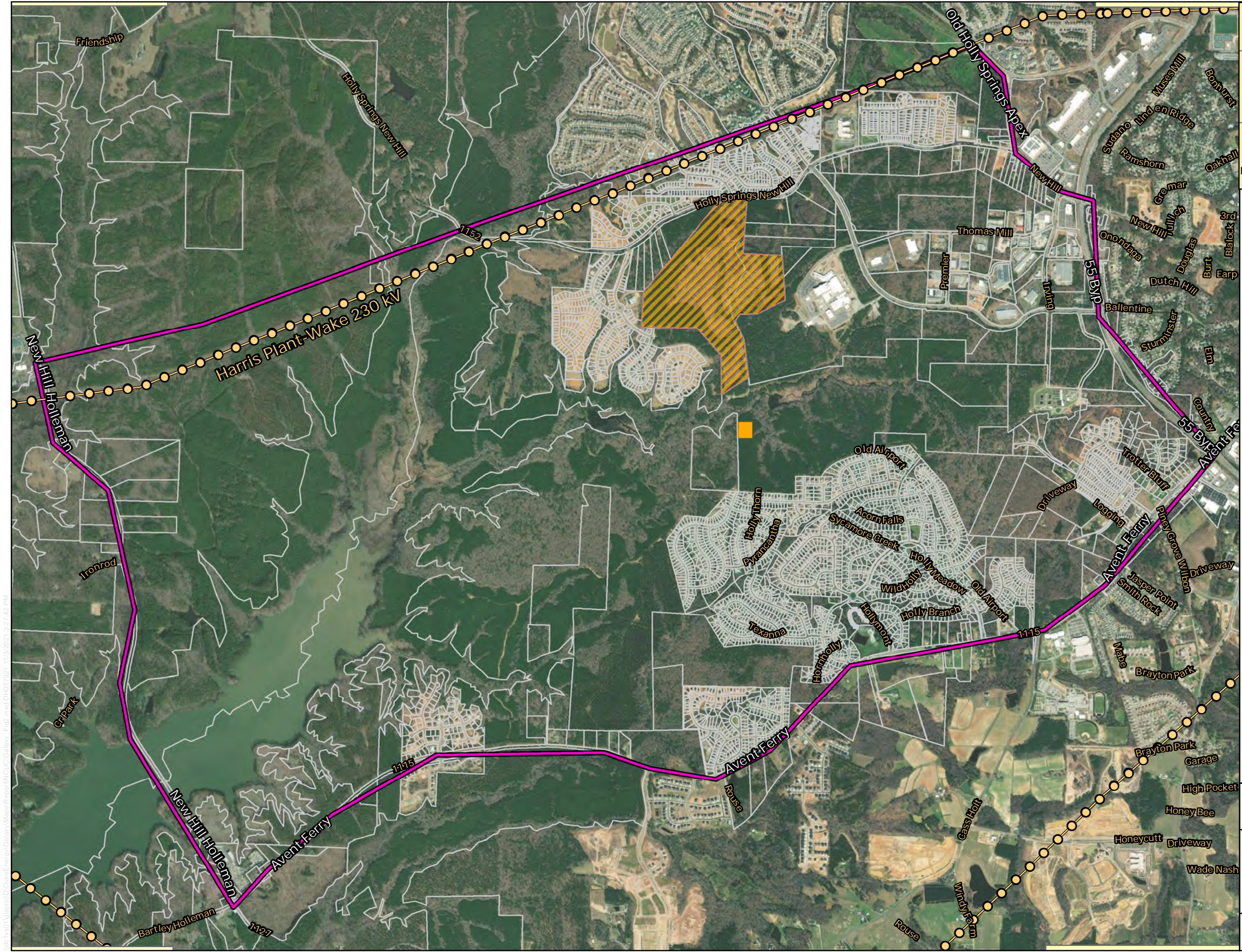
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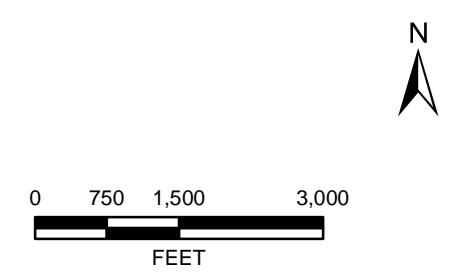
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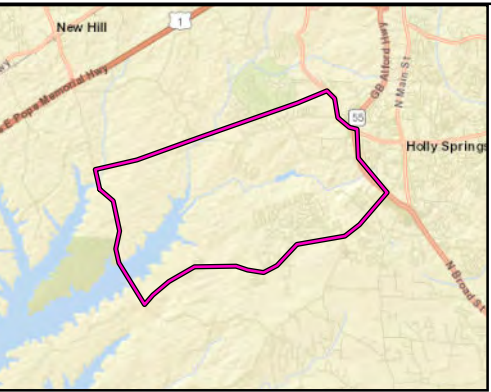
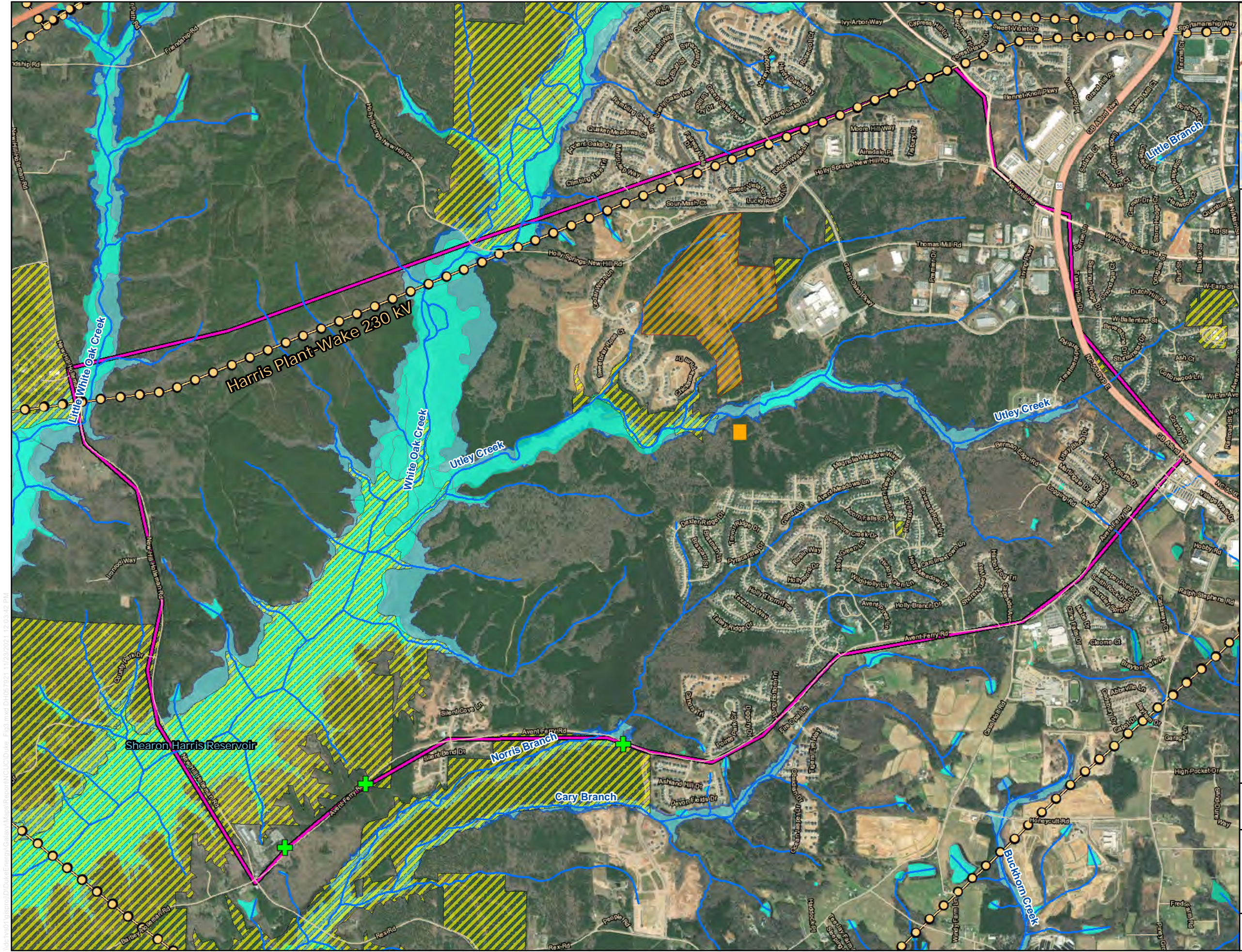


- ### Legend
- Existing Transmission Line
 - Proposed Substation Location
 - Customer Development Site
 - Study Area
 - Parcel Boundary

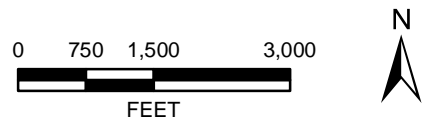


	Holly Springs Utley Creek 230-kV Project
Figure 2 Project Study Area	
11/3/2021	Jacobs

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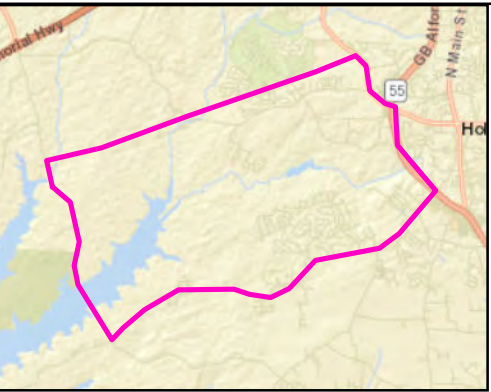
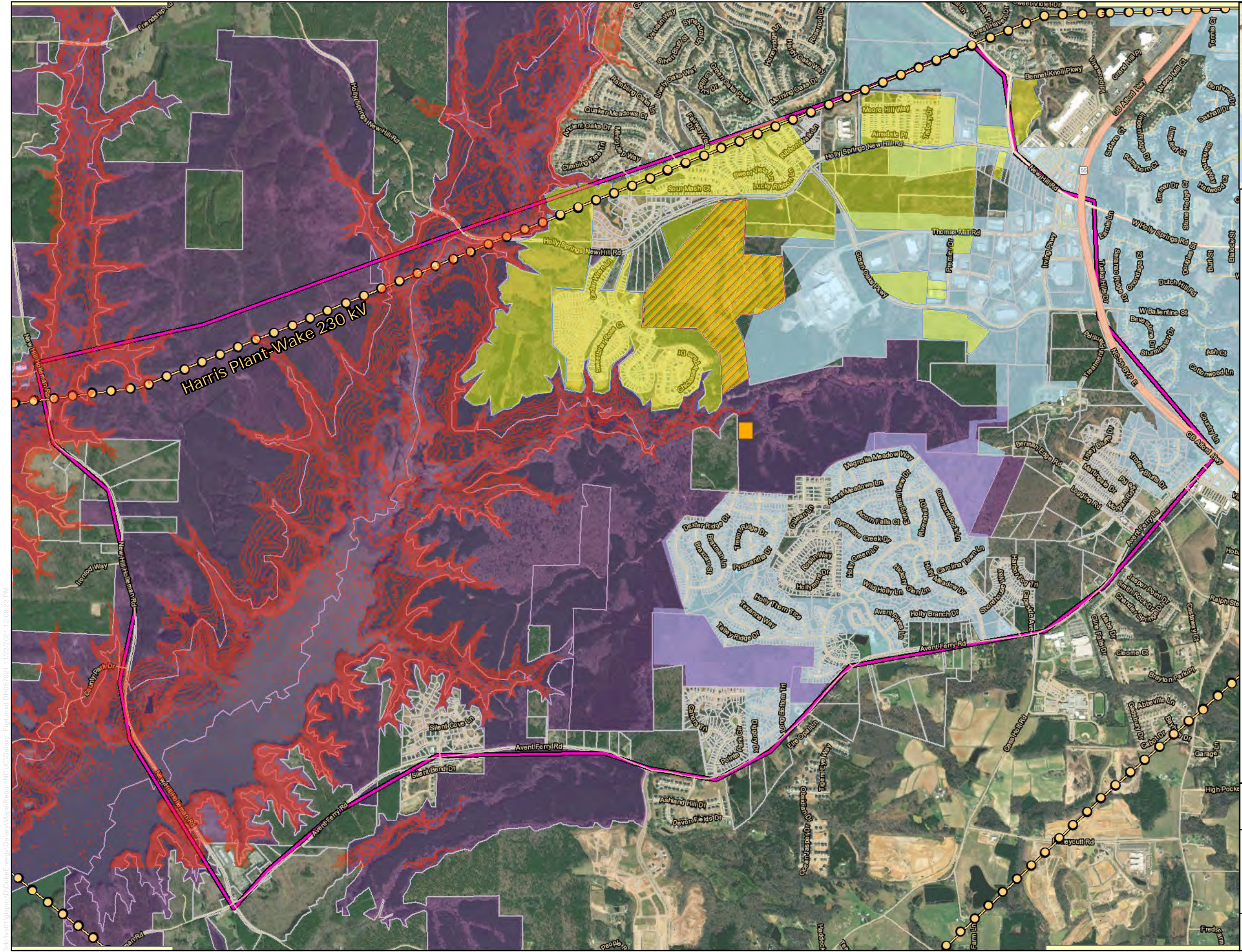
- ### Legend
- Cemetery
 - Existing Transmission
 - NHD Streams
 - Wetland
 - 100-Year Flood Plain
 - 500-Year Flood Plain
 - NCNHP Natural Area
 - Proposed Substation Location
 - Customer Development Site
 - Study Area



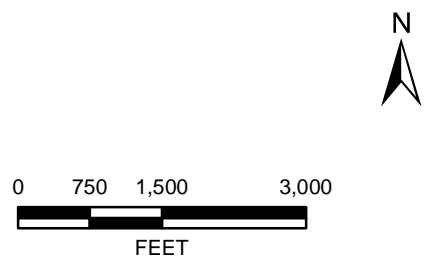
**Holly Springs
Utley Creek
230-kV Project**

Figure 3
**Ecological and Cultural
Resources Constraints**

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- ### Legend
- 2-ft. Contours (Below 265-ft.)
 - Existing Transmission Line
 - Customer Development Site
 - Developments
 - Proposed Substation Location
 - Study Area
 - Parcel Boundary
 - Duke Energy Owned Property
 - Holly Springs Boundary

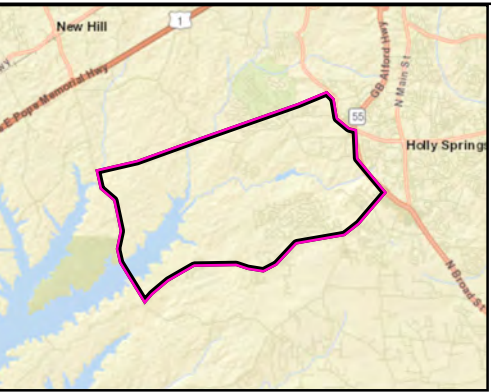
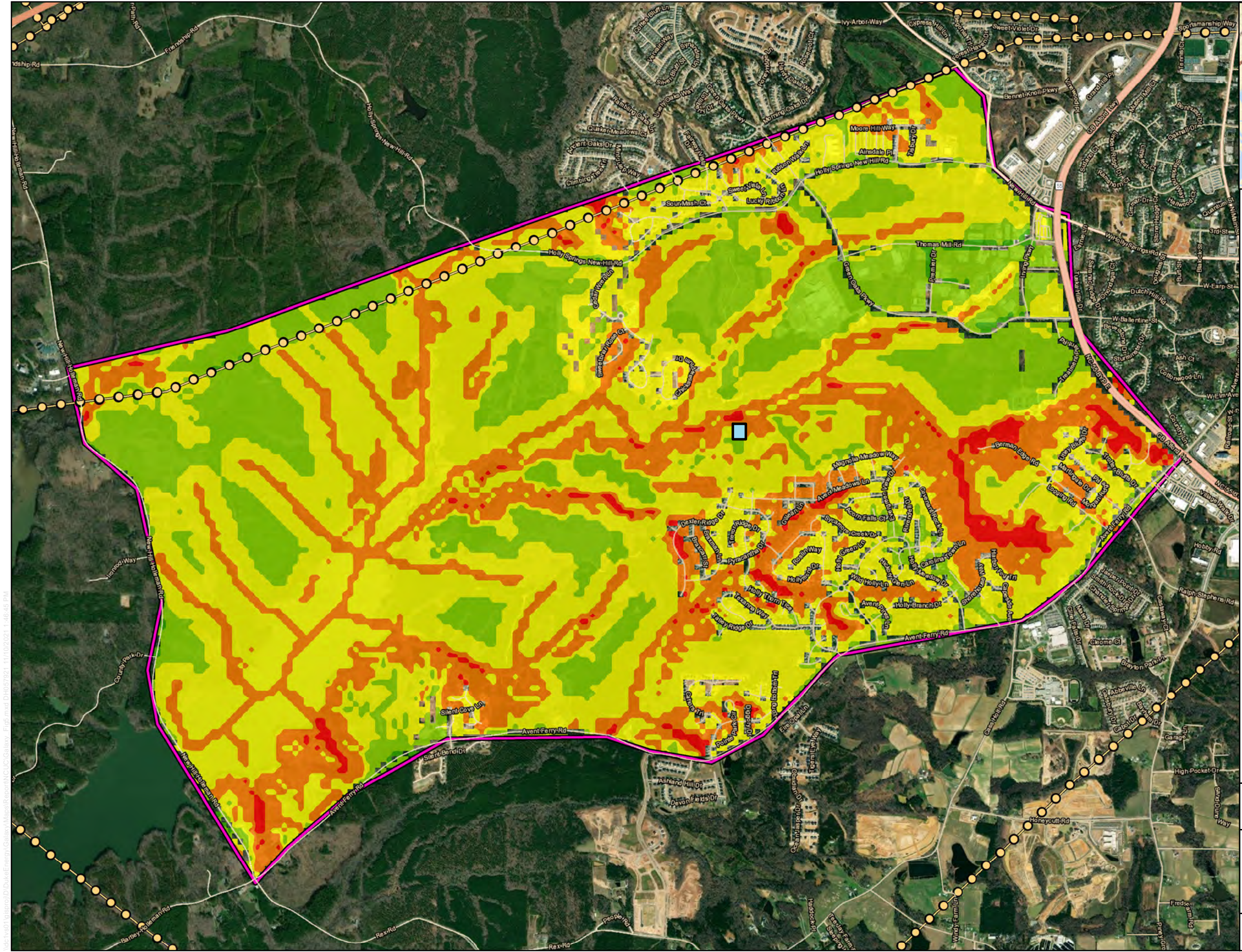


DUKE ENERGY

Holly Springs
Utley Creek
230-kV Project

Figure 4
Land Use

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Legend

SymbolID

- Proposed Substation Location
- Existing Transmission
- Study Area

Suitability Model

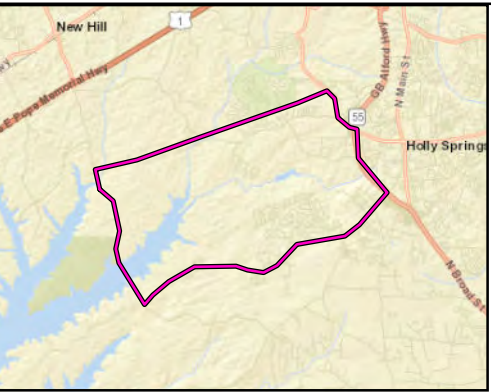
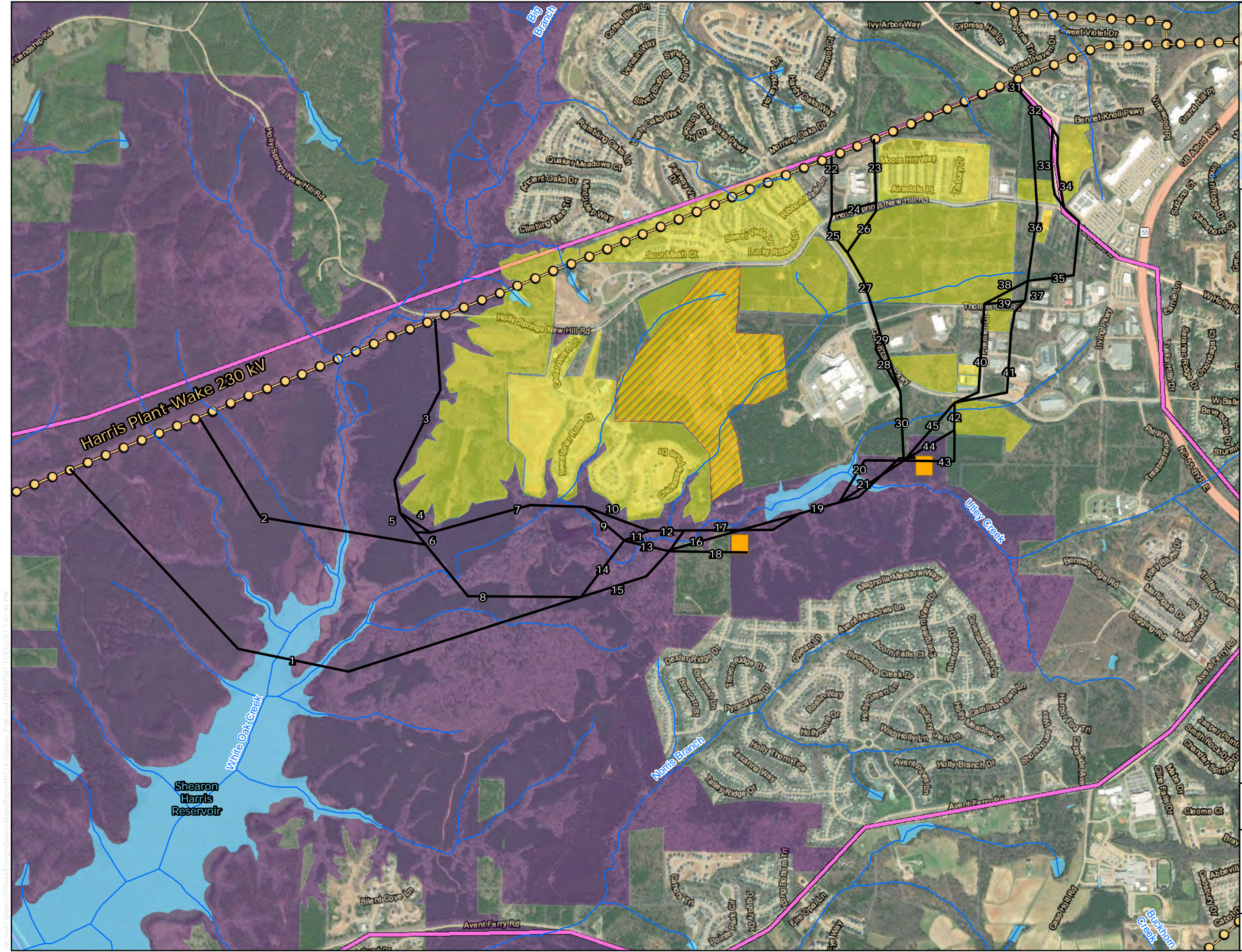
- Least Suitable
- Most Suitable

0 750 1,500 3,000
FEET

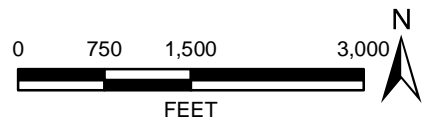
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	Holly Springs Utley Creek 230-kV Project
Figure 5 Suitability Model	
11/10/2021	Jacobs

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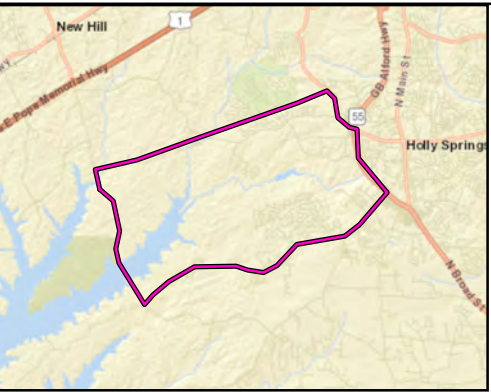
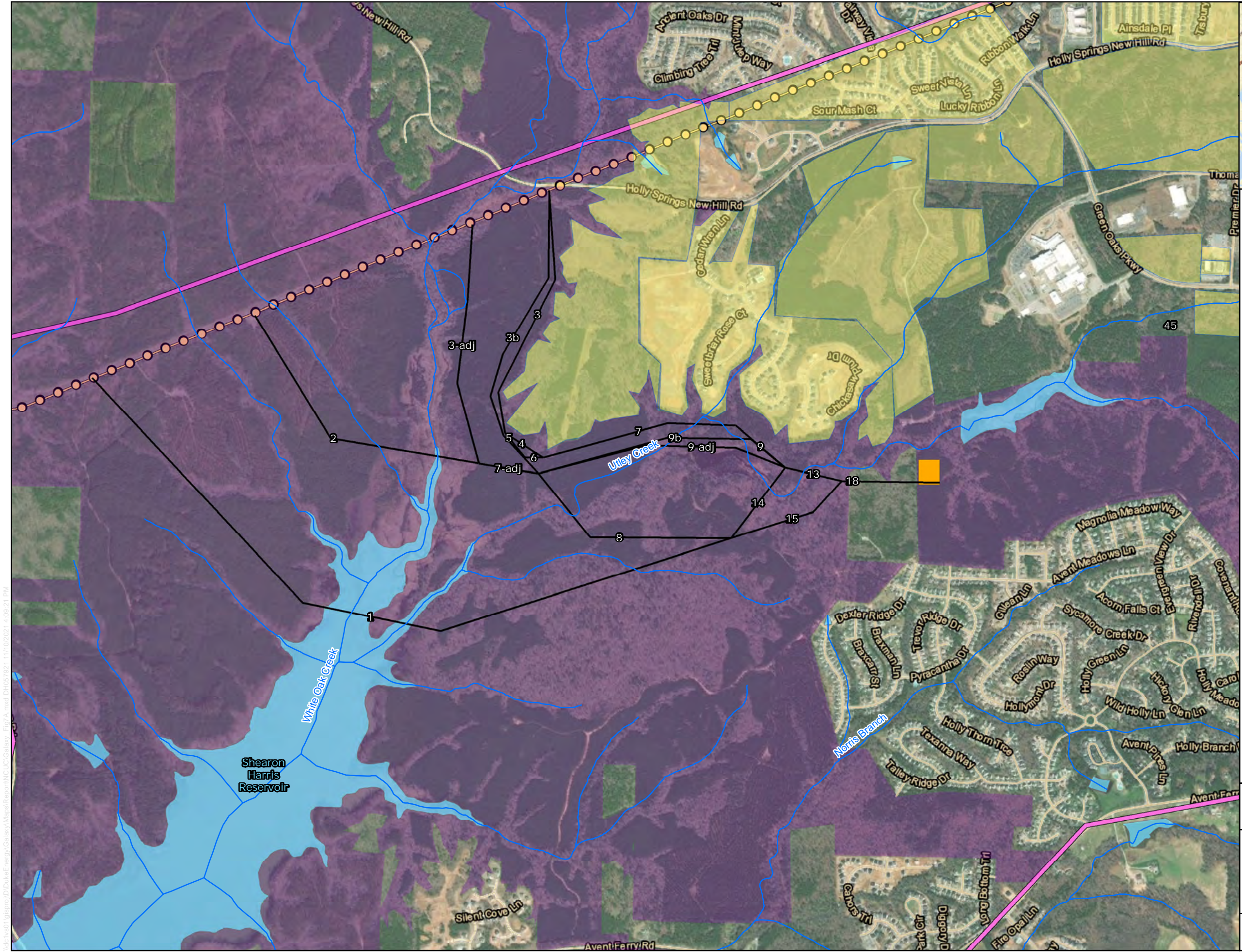


- ### Legend
- Study Segment
 - Existing Transmission
 - NHD Stream
 - NHD Waterbody
 - Substation Sites Considered
 - Developments
 - Customer Development Site
 - Study Area

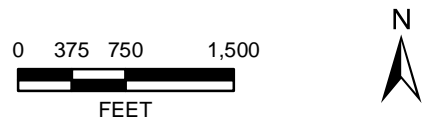


	Holly Springs Utley Creek 230-kV Project
Figure 6	
Study Segment Overview	
11/23/2021	Jacobs

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- ### Legend
- Study Segment
 - Existing Transmission
 - NHD Stream
 - NHD Waterbody
 - Proposed Substation Location
 - Duke Energy Owned Property
 - Developments
 - Study Area

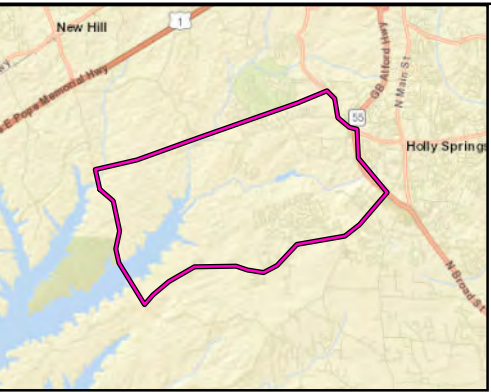
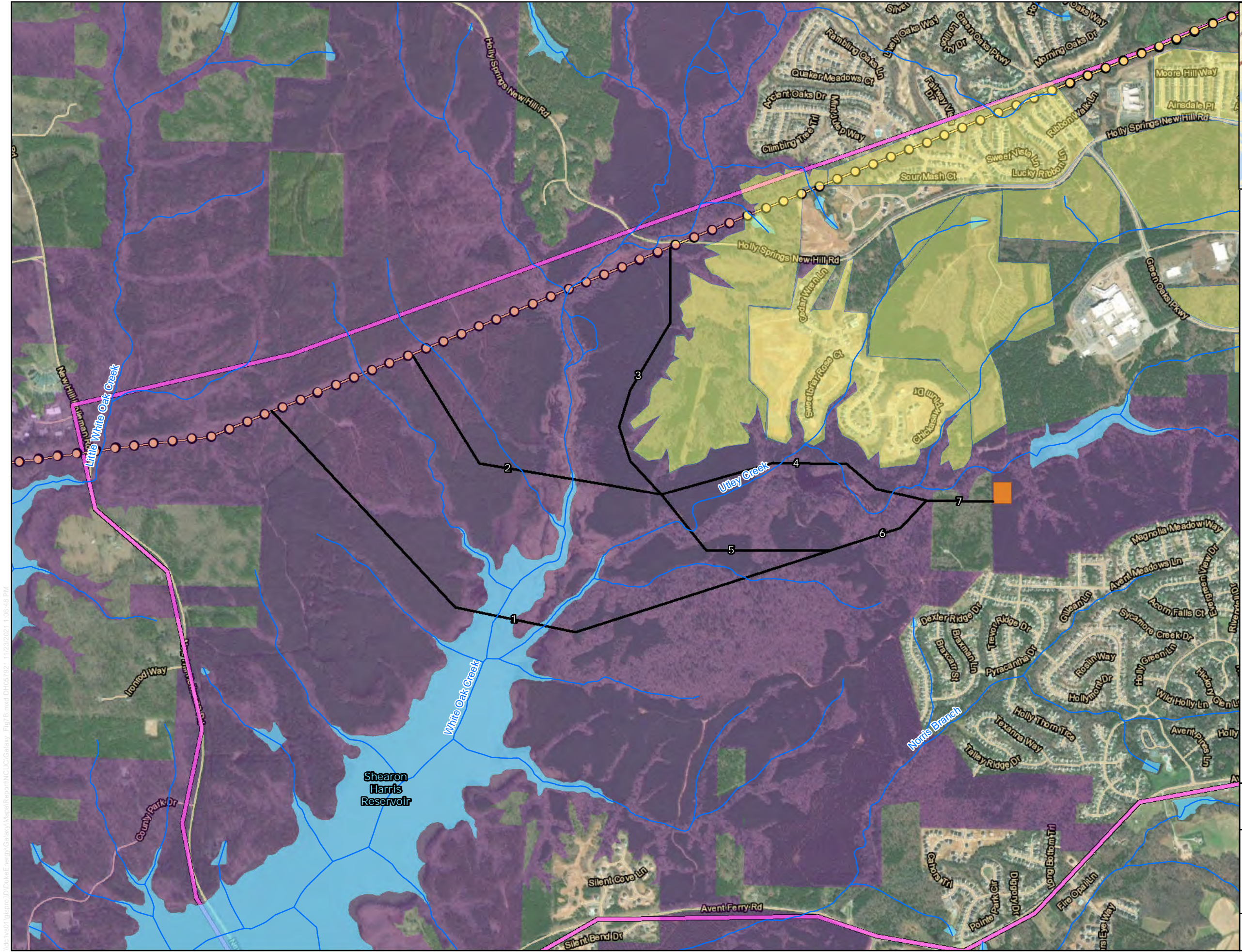


DUKE ENERGY

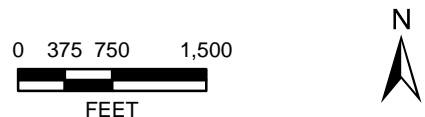
Holly Springs
Utley Creek
230-kV Project

Figure 7A	
Revised Study Segment Network	
11/10/2021	Jacobs

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- ### Legend
- Study Segment
 - Existing Transmission
 - NHD Stream
 - NHD Waterbody
 - Proposed Substation Location
 - Developments
 - Duke Energy Owned Property
 - Study Area



DUKE ENERGY

Holly Springs
Utley Creek
230-kV Project

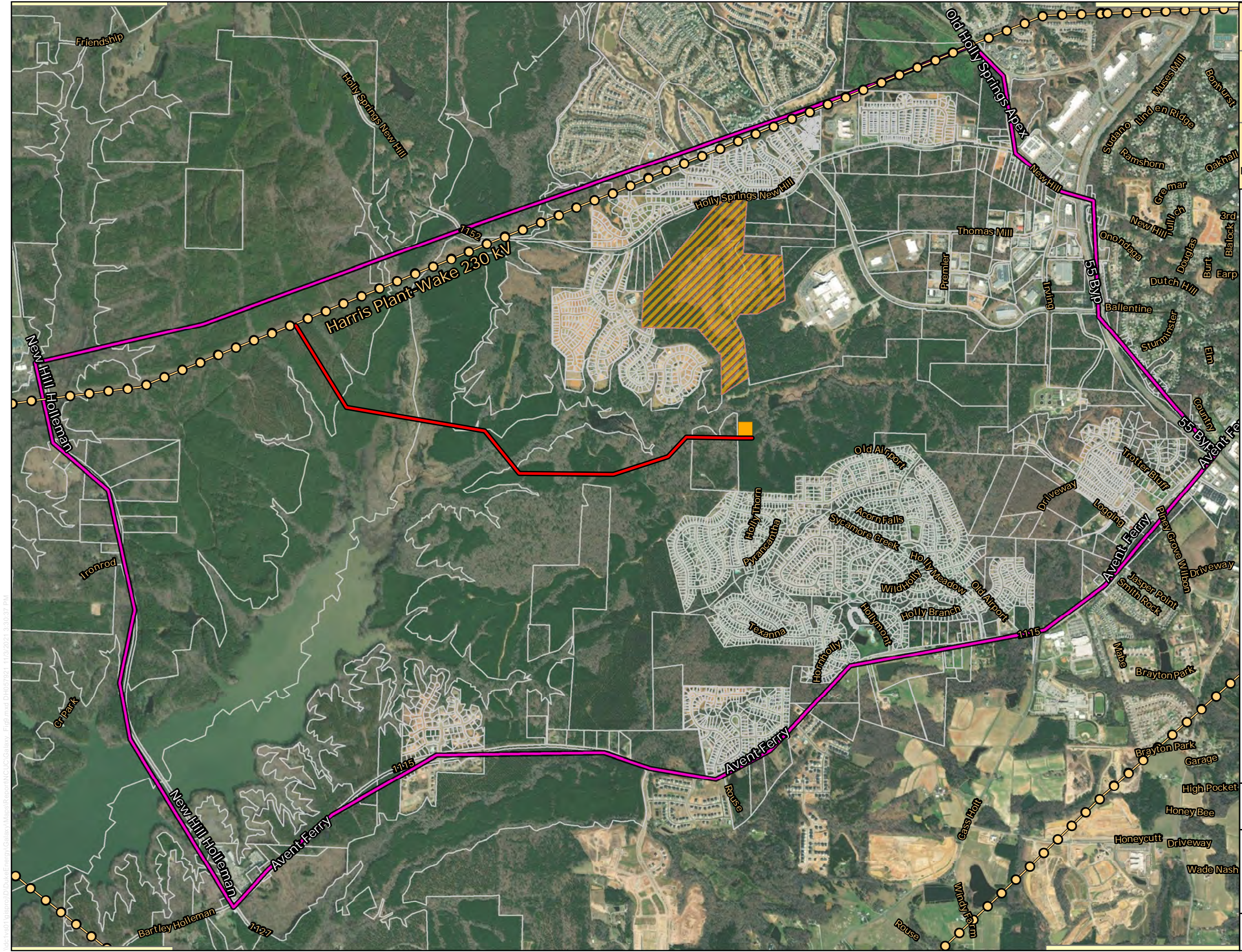
Figure 7B

Revised Study
Segment Network

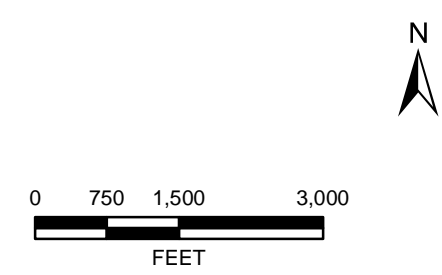
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- ### Legend
- Proposed Transmission Line
 - Existing Transmission Line
 - Proposed Substation Location
 - Customer Development Site
 - Study Area
 - Parcel Boundary



	Holly Springs Utley Creek 230-kV Project
Figure 9 Proposed Route	
11/3/2021	Jacobs

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Appendix A

Threatened and Endangered Species Review



☒ NORTH CAROLINA WILDLIFE RESOURCES COMMISSION ☒

Cameron Ingram, Executive Director

May 3, 2021

Mr. Matt Jenkins
Jacobs (Charlotte)
14120 Ballantyne Corporate Place
Suite 200
Charlotte, NC 28277

Subject: Request Scoping Information for Duke Energy Progress – Project Galaxy.

Mr. Jenkins,

Biologists with the North Carolina Wildlife Resources Commission (NCWRC) have reviewed the subject information and are familiar with the habitat values of the area. Comments are provided in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667e) and North Carolina General Statutes (G.S. 113-131 et seq.).

On behalf of Duke Energy Progress, Jacobs is requesting environmental information regarding a transmission line routing project to support a new biopharma manufacturing facility in the Raleigh-Durham Triangle Area. As such, Duke Energy Progress has identified a preliminary project study area, draining primarily to the Cape Fear River basin.

There are several natural resource priority areas within the proposed study area, to include the following: Harris Game Lands, Utle Creek Slopes Natural Heritage Natural Area (NHNA), Shearon Harris Longleaf Pine Forest NHNA and Hollemans Crossroads Slopes NHNA. In addition, there are records for bald eagles (*Haliaeetus leucocephalus*), a species protected by the Migratory Bird Treaty Act as well as the Bald and Golden Eagle Protection Act.

There are no national refuges within the project vicinity, nor are there migratory or feeding grounds for anadromous fish. Utle Creek and various tributaries to Harris Lake bisect the project area. The NCWRC typically recommends maintaining a minimum 100-foot undisturbed, native, forested buffer along perennial streams, and a minimum 50-foot buffer along intermittent streams and wetlands. However, where federally listed species are found, the NCWRC recommends a 200-foot buffer along perennial streams and a 100-foot buffer along intermittent streams and wetlands. Forested riparian buffers protect water quality by filtering stormwater runoff and maintaining stream bank stability. In addition, these buffers provide a travel corridor for wildlife species.

The United States Army Corps of Engineers (USACE) should verify the project site for wetlands and streams to ensure there are no impacts to surface waters. In addition to providing wildlife habitat, wetland areas and streams aid in flood control and water quality protection. USACE Section 404 Permits and NC Division of Water Resources Section 401 Certifications are required for any impacts to jurisdictional streams or wetlands. Temporarily disturbed wetland areas should be returned to original

May 3, 2021

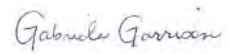
Scoping – Jacobs, Project Galaxy

soils and contours, reseeded with annual small grains appropriate for the season (e.g. oats, millet, rye, wheat or rye grass) and allowed to revert to natural wetland vegetation.

Sediment and erosion control measures should be installed prior to any land clearing or construction. The use of biodegradable and wildlife-friendly sediment and erosion control devices is strongly recommended. Silt fencing, fiber rolls and/or other products should have loose-weave netting that is made of natural fiber materials with movable joints between the vertical and horizontal twines. Silt fencing that has been reinforced with plastic or metal mesh should be avoided as it impedes the movement of terrestrial wildlife species. Excessive silt and sediment loads can have detrimental effects on aquatic resources including destruction of spawning habitat, suffocation of eggs and clogging of gills.

If I can provide further assistance, please call (910) 409-7350 or email gabriela.garrison@ncwildlife.org.

Sincerely,



Gabriela Garrison
Eastern Piedmont Habitat Conservation Coordinator
Habitat Conservation Program



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Raleigh Ecological Services Field Office
Post Office Box 33726
Raleigh, NC 27636-3726
Phone: (919) 856-4520 Fax: (919) 856-4556



In Reply Refer To:
Consultation Code: 04EN2000-2021-SLI-0793
Event Code: 04EN2000-2021-E-01737
Project Name: Project Galaxy

March 08, 2021

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The species list generated pursuant to the information you provided identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

Section 7 of the Act requires that all federal agencies (or their designated non-federal representative), in consultation with the Service, insure that any action federally authorized, funded, or carried out by such agencies is not likely to jeopardize the continued existence of any federally-listed endangered or threatened species. A biological assessment or evaluation may be prepared to fulfill that requirement and in determining whether additional consultation with the Service is necessary. In addition to the federally-protected species list, information on the species' life histories and habitats and information on completing a biological assessment or

evaluation and can be found on our web page at <http://www.fws.gov/raleigh>. Please check the web site often for updated information or changes

If your project contains suitable habitat for any of the federally-listed species known to be present within the county where your project occurs, the proposed action has the potential to adversely affect those species. As such, we recommend that surveys be conducted to determine the species' presence or absence within the project area. The use of North Carolina Natural Heritage program data should not be substituted for actual field surveys.

If you determine that the proposed action may affect (i.e., likely to adversely affect or not likely to adversely affect) a federally-protected species, you should notify this office with your determination, the results of your surveys, survey methodologies, and an analysis of the effects of the action on listed species, including consideration of direct, indirect, and cumulative effects, before conducting any activities that might affect the species. If you determine that the proposed action will have no effect (i.e., no beneficial or adverse, direct or indirect effect) on federally listed species, then you are not required to contact our office for concurrence (unless an Environmental Impact Statement is prepared). However, you should maintain a complete record of the assessment, including steps leading to your determination of effect, the qualified personnel conducting the assessment, habitat conditions, site photographs, and any other related articles.

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

Not all Threatened and Endangered Species that occur in North Carolina are subject to section 7 consultation with the U.S Fish and Wildlife Service. Atlantic and shortnose sturgeon, sea turtles, when in the water, and certain marine mammals are under purview of the National Marine Fisheries Service. If your project occurs in marine, estuarine, or coastal river systems you should also contact the National Marine Fisheries Service, <http://www.nmfs.noaa.gov/>

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office. If you have any questions or comments, please contact John Ellis of this office at john_ellis@fws.gov.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Raleigh Ecological Services Field Office

Post Office Box 33726
Raleigh, NC 27636-3726
(919) 856-4520

Project Summary

Consultation Code: 04EN2000-2021-SLI-0793

Event Code: 04EN2000-2021-E-01737

Project Name: Project Galaxy

Project Type: TRANSMISSION LINE

Project Description: Preliminary study site investigation for linear utility infrastructure.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@35.64177375,-78.88035637420762,14z>



Counties: Wake County, North Carolina

Endangered Species Act Species

There is a total of 8 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Red-cockaded Woodpecker <i>Picoides borealis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7614	Endangered

Amphibians

NAME	STATUS
Neuse River Waterdog <i>Necturus lewisi</i> There is proposed critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6772	Proposed Threatened

Fishes

NAME	STATUS
Cape Fear Shiner <i>Notropis mekistocholas</i> There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6063	Endangered
Carolina Madtom <i>Noturus furiosus</i> There is proposed critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/528	Proposed Endangered

Clams

NAME	STATUS
Atlantic Pigtoe <i>Fusconaia masoni</i> There is proposed critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5164	Proposed Threatened
Dwarf Wedgemussel <i>Alasmodonta heterodon</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/784	Endangered
Yellow Lance <i>Elliptio lanceolata</i> There is proposed critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/4511	Threatened

Flowering Plants

NAME	STATUS
Michaux's Sumac <i>Rhus michauxii</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5217	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.



Roy Cooper, Governor

D. Reid Wilson, Secretary

Walter Clark

Director, Division of Land and Water Stewardship

NCNHDE-14775

June 2, 2021

Matt Jenkins
Jacobs Engineering
10 10th Street NE
Atlanta, GA 30309
RE: DK210100

Dear Matt Jenkins:

The North Carolina Natural Heritage Program (NCNHP) appreciates the opportunity to provide information about natural heritage resources for the project referenced above.

A query of the NCNHP database indicates that there are records for rare species, important natural communities, natural areas, and/or conservation/managed areas within the proposed project boundary. These results are presented in the attached 'Documented Occurrences' tables and map.

The attached 'Potential Occurrences' table summarizes rare species and natural communities that have been documented within a one-mile radius of the property boundary. The proximity of these records suggests that these natural heritage elements may potentially be present in the project area if suitable habitat exists. Tables of natural areas and conservation/managed areas within a one-mile radius of the project area, if any, are also included in this report.

If a Federally-listed species is documented within the project area or indicated within a one-mile radius of the project area, the NCNHP recommends contacting the US Fish and Wildlife Service (USFWS) for guidance. Contact information for USFWS offices in North Carolina is found here: <https://www.fws.gov/offices/Directory/ListOffices.cfm?statecode=37>.

Please note that natural heritage element data are maintained for the purposes of conservation planning, project review, and scientific research, and are not intended for use as the primary criteria for regulatory decisions. Information provided by the NCNHP database may not be published without prior written notification to the NCNHP, and the NCNHP must be credited as an information source in these publications. Maps of NCNHP data may not be redistributed without permission.

Also please note that the NC Natural Heritage Program may follow this letter with additional correspondence if a Dedicated Nature Preserve, Registered Heritage Area, Land and Water Fund easement, or an occurrence of a Federally-listed species is documented near the project area.

If you have questions regarding the information provided in this letter or need additional assistance, please contact Rodney A. Butler at rodney.butler@ncdcr.gov or 919-707-8603.

Sincerely,
NC Natural Heritage Program

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Apr 14 2022

Natural Heritage Element Occurrences, Natural Areas, and Managed Areas Intersecting the Project Area

DK210100
June 2, 2021
NCNHDE-14775

Element Occurrences Documented Within Project Area

Taxonomic Group	EO ID	Scientific Name	Common Name	Last Observation Date	Element Occurrence Rank	Accuracy	Federal Status	State Status	Global Rank	State Rank
Amphibian	1931	Hemidactylium scutatum	Four-toed Salamander	2002-03-28	BC	2-High	---	Special Concern	G5	S3
Animal Assemblage	32281	Waterbird Colony	Waterbird Colony	2009-04-19	C	2-High	---	---	GNR	S3
Bird	22207	Haliaeetus leucocephalus	Bald Eagle	2011	E	2-High	Bald/Golden Eagle Protection Act	Threatened	G5	S3B,S3N
Natural Community	29964	Dry Basic Oak--Hickory Forest	---	2002-10-03	C	2-High	---	---	G2G3	S2S3
Natural Community	29963	Dry Oak--Hickory Forest (Piedmont Subtype)	---	2002-10-03	NR	2-High	---	---	G4G5	S4
Vascular Plant	15312	Tradescantia virginiana	Virginia Spiderwort	2002-05-21	B?	3-Medium	---	Threatened	G5	S2S3

Natural Areas Documented Within Project Area

Site Name	Representational Rating	Collective Rating
Shearon Harris Longleaf Pine Forest	R4 (Moderate)	C5 (General)
Utley Creek Slopes	R4 (Moderate)	C5 (General)
Hollemans Crossroads Slopes	R5 (General)	C5 (General)
Hollemans Crossroads Wetland	R4 (Moderate)	C5 (General)

Managed Areas Documented Within Project Area*

Managed Area Name	Owner	Owner Type
Harris Game Land	Duke Energy	Private
Town of Holly Springs Open Space	Town of Holly Springs	Local Government
NC Department of Transportation Mitigation Site	NC Department of Transportation	State
Wake County Open Space - Harris Lake County Park	Wake County	Local Government
Town of Holly Springs Open Space	Town of Holly Springs	Local Government
Town of Holly Springs Open Space	Town of Holly Springs	Local Government

*NOTE: If the proposed project intersects with a conservation/managed area, please contact the landowner directly for additional information. If the project intersects with a Dedicated Nature Preserve (DNP), Registered Natural Heritage Area (RHA), or Federally-listed species, NCNHP staff may provide additional correspondence regarding the project.

Definitions and an explanation of status designations and codes can be found at <https://ncnhde.natureserve.org/help>. Data query generated on June 2, 2021; source: NCNHP, Q1 April 2021. Please resubmit your information request if more than one year elapses before project initiation as new information is continually added to the NCNHP database.

OFFICIAL COPY

Apr 14 2022

Natural Heritage Element Occurrences, Natural Areas, and Managed Areas Within a One-mile Radius of the Project Area

DK210100
June 2, 2021
NCNHDE-14775

Element Occurrences Documented Within a One-mile Radius of the Project Area

Taxonomic Group	EO ID	Scientific Name	Common Name	Last Observation Date	Element Occurrence Rank	Accuracy	Federal Status	State Status	Global Rank	State Rank
Amphibian	1931	Hemidactylium scutatum	Four-toed Salamander	2002-03-28	BC	2-High	---	Special Concern	G5	S3
Animal Assemblage	32281	Waterbird Colony	Waterbird Colony	2009-04-19	C	2-High	---	---	GNR	S3
Bird	22207	Haliaeetus leucocephalus	Bald Eagle	2011	E	2-High	Bald/Golden Eagle Protection Act	Threatened	G5	S3B,S3N
Dragonfly or Damselfly	32043	Coryphaeschna ingens	Regal Darner	2004-Pre	H?	5-Very Low	---	Significantly Rare	G5	S2?
Natural Community	29964	Dry Basic Oak--Hickory Forest	---	2002-10-03	C	2-High	---	---	G2G3	S2S3
Natural Community	29963	Dry Oak--Hickory Forest (Piedmont Subtype)	---	2002-10-03	NR	2-High	---	---	G4G5	S4
Natural Community	19719	Dry Piedmont Longleaf--Pine Forest	---	1998-12-03	CD	4-Low	---	---	G2	S2
Sawfly, Wasp, Bee, or Ant	40032	Megachile oenotherae	a leafcutter bee	1961-05-15	H	4-Low	---	Significantly Rare	G1G3	SH
Vascular Plant	3172	Rhus michauxii	Michaux's Sumac	2009	Di	2-High	Endangered	Endangered	G2G3	S2
Vascular Plant	15312	Tradescantia virginiana	Virginia Spiderwort	2002-05-21	B?	3-Medium	---	Threatened	G5	S2S3

Natural Areas Documented Within a One-mile Radius of the Project Area

Site Name	Representational Rating	Collective Rating
Shearon Harris Longleaf Pine Forest	R4 (Moderate)	C5 (General)
Utley Creek Slopes	R4 (Moderate)	C5 (General)
Hollemans Crossroads Slopes	R5 (General)	C5 (General)
Hollemans Crossroads Wetland	R4 (Moderate)	C5 (General)

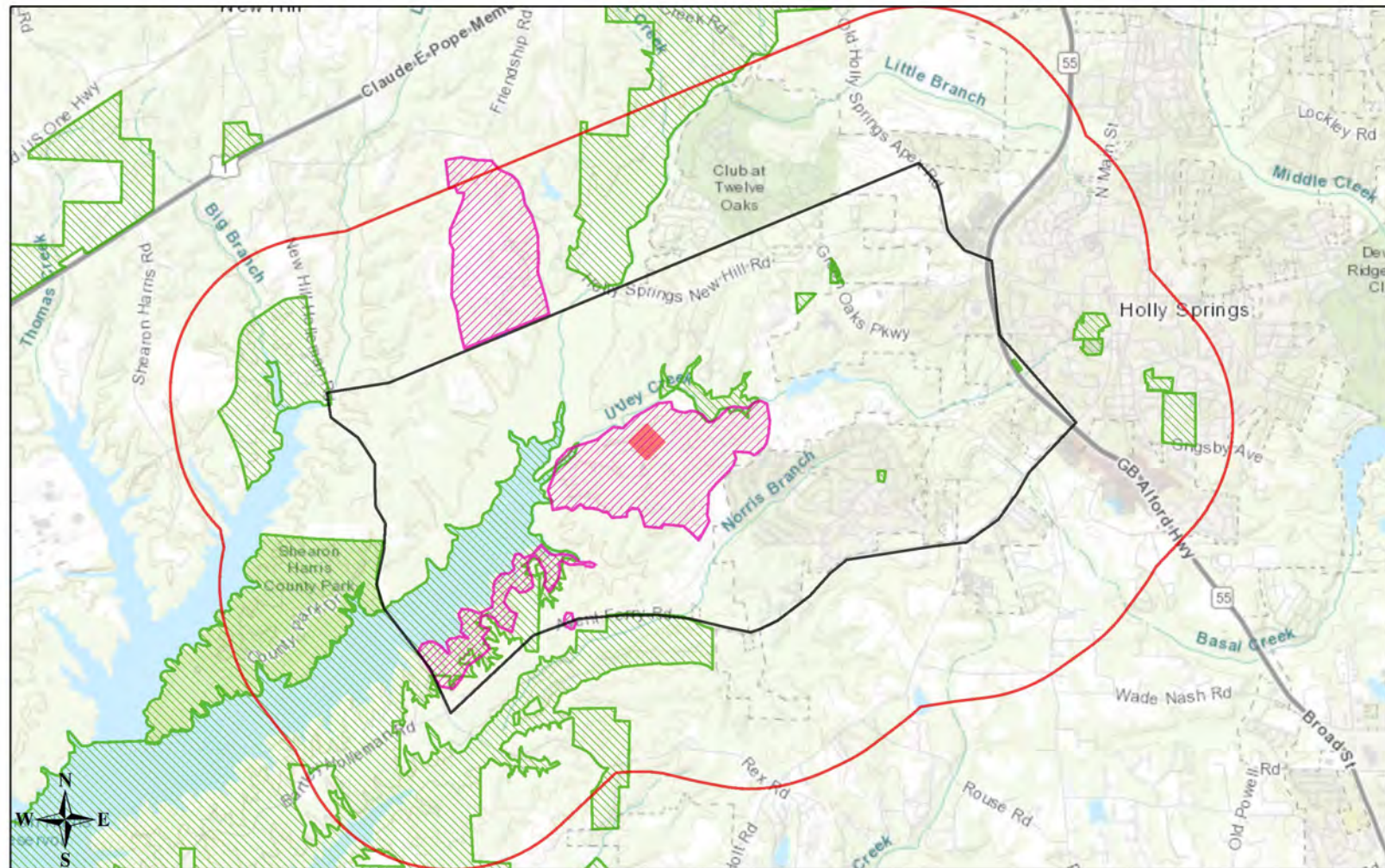
Managed Areas Documented Within a One-mile Radius of the Project Area

Managed Area Name	Owner	Owner Type
Harris Game Land	Duke Energy	Private

Managed Areas Documented Within a One-mile Radius of the Project Area

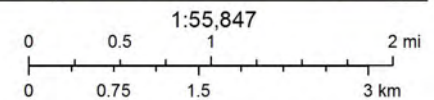
Managed Area Name	Owner	Owner Type
Town of Holly Springs Open Space	Town of Holly Springs	Local Government
Town of Holly Springs Open Space - Holly Springs Cultural Center	Town of Holly Springs	Local Government
Town of Holly Springs Open Space - Future Park Site (Mims Property)	Town of Holly Springs	Local Government
NC Department of Transportation Mitigation Site	NC Department of Transportation	State
Town of Holly Springs Open Space - Hunt Community Center	Town of Holly Springs	Local Government
Wake County Open Space - Harris Lake County Park	Wake County	Local Government
Town of Holly Springs Open Space - Parrish Womble Park	Town of Holly Springs	Local Government
Town of Holly Springs Open Space	Town of Holly Springs	Local Government
Town of Holly Springs Open Space	Town of Holly Springs	Local Government

Definitions and an explanation of status designations and codes can be found at <https://ncnhde.natureserve.org/help>. Data query generated on June 2, 2021; source: NCNHP, Q1 April 2021. Please resubmit your information request if more than one year elapses before project initiation as new information is continually added to the NCNHP database.



June 2, 2021

- Project Boundary
- Buffered Project Boundary
- NHP Natural Area (NHNA)
- Managed Area (MAREA)



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Appendix B

Alternative Route Comparison

Category	Criteria		Criteria Weight	Category Weight	Influence
Ecological	Area of Woodlots within ROW* (in acres)		40%	35%	14.0%
	Area of NWI within ROW (in acres)		30%		10.5%
	NHD Stream Crossing		20%		7.0%
	Length of floodplain crossed (feet)		10%		3.5%
Social	Known Archaeology Sites within 1,000-ft of centerline		60.0%	15%	9.0%
	Parcels	Parcels between 0 and 250-ft of centerline	24.0%		2.2%
		Parcels between 250 and 1,000-ft of centerline	16.0%		1.4%
Land Use	Planned/Approved developments within 250 feet of centerline		75.0%	30%	22.5%
	Conservation Lands crossed by ROW (in acres)		25.0%		7.5%
Technical	Slopes >20% Crossed by ROW (in acres)		30%	20%	6.0%
	Turn Angles Greater than or Equal to 30 Degrees (count)		20%		4.0%
	Amount of ROW at 265 elevation and below (acres)		35%		7.0%
	Length of Route (in miles)		15%		3.0%

*ROW width is 125-feet

Route	Ecological							
	Area of Woodlots within ROW* (acres)	Normalized Score for Area of Woodlots within ROW	Area of NWI within ROW* (acres)	Normalized Score for Area of NWI within ROW	NHD Stream Crossing (count)	Normalized Score for NHD Stream Crossing	Length of Floodplain Crossed (feet)	Normalized Score for Length of Floodplain Crossed
Alternative A	30.08	11	4.82	54	3	50	2738.9	87
Alternative B	31.46	30	1.67	0	1	0	1956.3	19
Alternative C	29.25	0	7.52	100	5	100	2888.1	100
Alternative D	30.63	18	4.37	46	3	50	2105.5	32
Alternative E	36.73	100	3.81	37	4	75	1740.6	0
MIN	29.25	0	1.67	0	1	0	1740.6	0
MAX	36.73	100	7.52	100	5	100	2888.1	100
RANGE	7.48	100	5.85	100	4	100	1147.5	100

Route	Social					
	Known Archaeology Sites within 1,000-ft of centerline (count)	Normalized Score for Known Archaeology Sites within 1,000-ft of centerline	Parcels within 250-ft of centerline (count)	Normalized Score for Parcels within 250-ft of centerline (weighted 60%)	Parcels between 250 and 1,000-ft of centerline (count)	Normalized Score for Parcels between 250 and 1,000-ft of centerline (weighted 40%)
Alternative A	2	0	5	0	73	100
Alternative B	3	8	6	100	17	3
Alternative C	6	33	5	0	72	98
Alternative D	7	42	6	100	16	2
Alternative E	14	100	6	100	15	0
MIN	2	0	5	0	15	0
MAX	14	100	6	100	73	100
RANGE	12	100	1	100	58	100

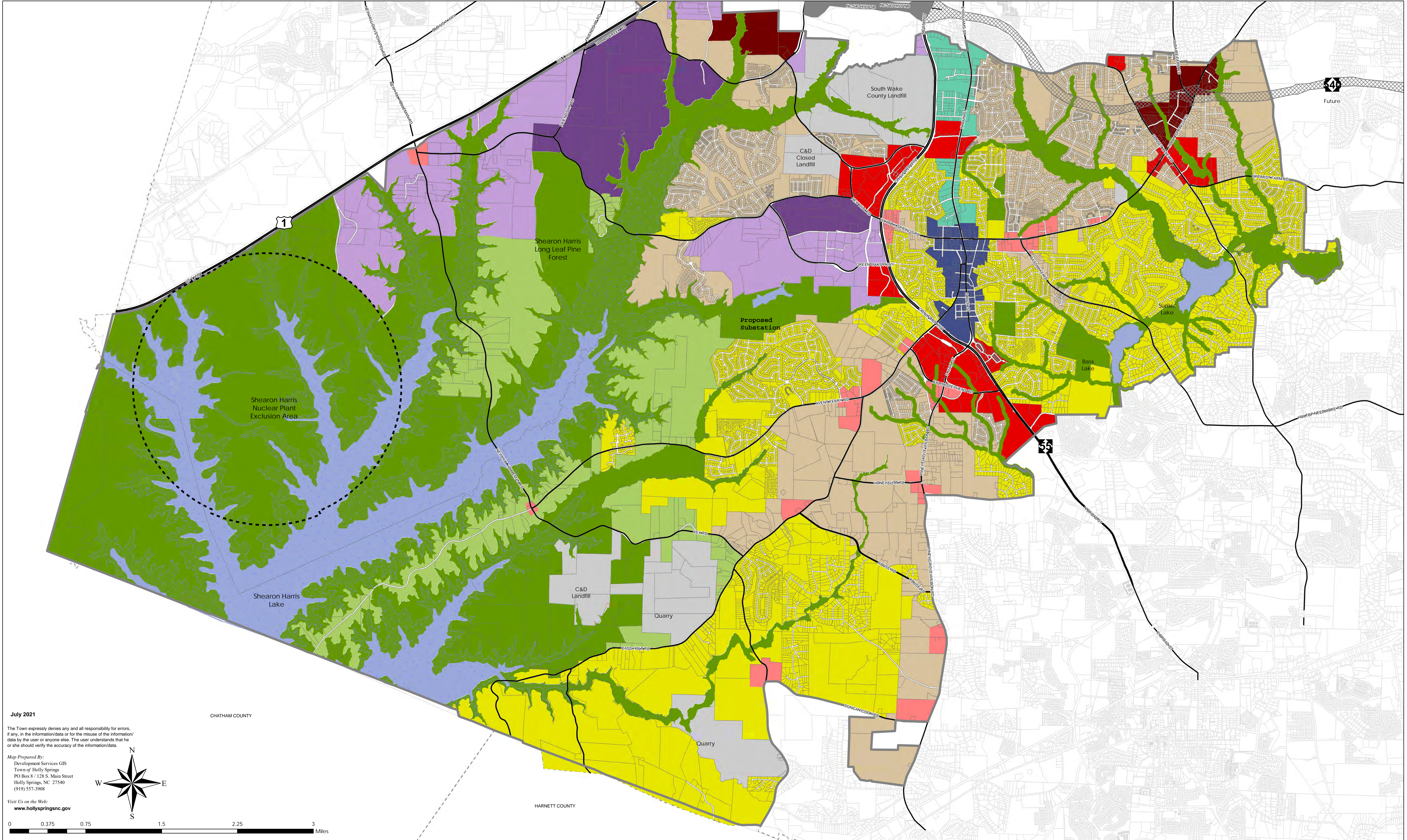
Route	Land Use			
	Planned/Approved Developments within 250 feet of center line (count)	Normalized Score for Planned/Approved Developments within 250 feet of center line	Conservation Lands crossed by ROW (acres)	Normalized Score for Conservation Lands crossed by ROW
Alternative A	1	100	3.5	94
Alternative B	1	100	0.2	0
Alternative C	0	0	3.7	100
Alternative D	0	0	0.5	6
Alternative E	0	0	2.9	77
MIN	0	0	0.2	0
MAX	1	100	3.7	100
RANGE	1	100	3.5	100

Route	Technical							
	Slopes >20% Crossed by ROW (acres)	Normalized Score Slopes >20% Crossed by ROW (in acres)	Turn Angles Greater than or Equal to 30 Degrees (count)	Normalized Score for Turn Angles Greater than or Equal to 30 Degrees	Amount of ROW at or below 265 ft elevation (acres)	Normalized Score for Amount of ROW at or below 265 ft elevation	Length of Route (miles)	Normalized Score for Length of Route
Alternative A	5.3	25	5	50	26.1	100	1.98	0
Alternative B	9.2	71	5	50	17.6	23	2.07	13
Alternative C	3.2	0	4	0	23.6	77	2.09	16
Alternative D	7.1	46	6	100	15.0	0	2.18	29
Alternative E	11.7	100	4	0	18.9	35	2.66	100
MIN	3.2	0	4	0	15.0	0	1.98	0
MAX	11.7	100	6	100	26.1	100	2.66	100
RANGE	8.5	100	2	100	11.1	100	0.68	100

Route	Normalized Score					Weighted Score				Final Score	Rank
	Normalized Ecological Score	Normalized Social Score	Normalized Land Use Score	Normalized Technical Score		Weighted Ecological Score	Weighted Social Score	Weighted Land Use Score	Weighted Technical Score		
Alternative A	39.3	16.0	98.4	52.5		13.8	2.4	29.5	10.5	56.2	5
Alternative B	13.7	29.6	75.0	41.3		4.8	4.4	22.5	8.3	40.0	3
Alternative C	60.0	35.7	25.0	29.4		21.0	5.4	7.5	5.9	39.7	2
Alternative D	34.4	49.3	1.6	38.3		12.0	7.4	0.5	7.7	27.6	1
Alternative E	66.0	84.0	19.2	57.2		23.1	12.6	5.7	11.4	52.9	4

Appendix C

Town of Holly Springs Land Use Plans

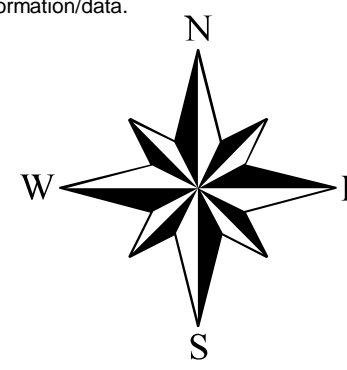


July 2021

The Town expressly denies any and all responsibility for errors, if any, in the information/data or for the misuse of the information/data by the user or anyone else. The user understands that he or she should verify the accuracy of the information/data.

Map Prepared By:
Development Services GIS
Town of Holly Springs
PO Box 8 / 128 S. Main Street
Holly Springs, NC 27540
(919) 557-3908

Visit Us on the Web:
www.hollyspringsnc.gov

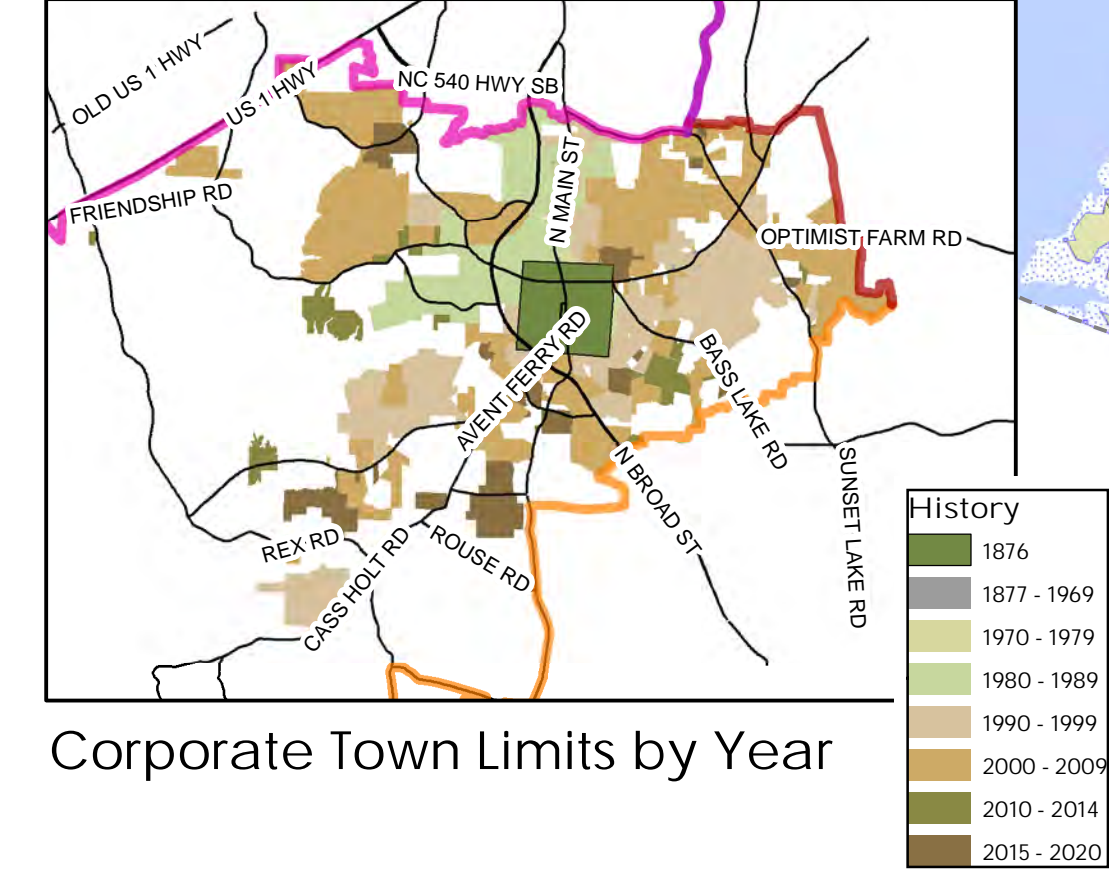
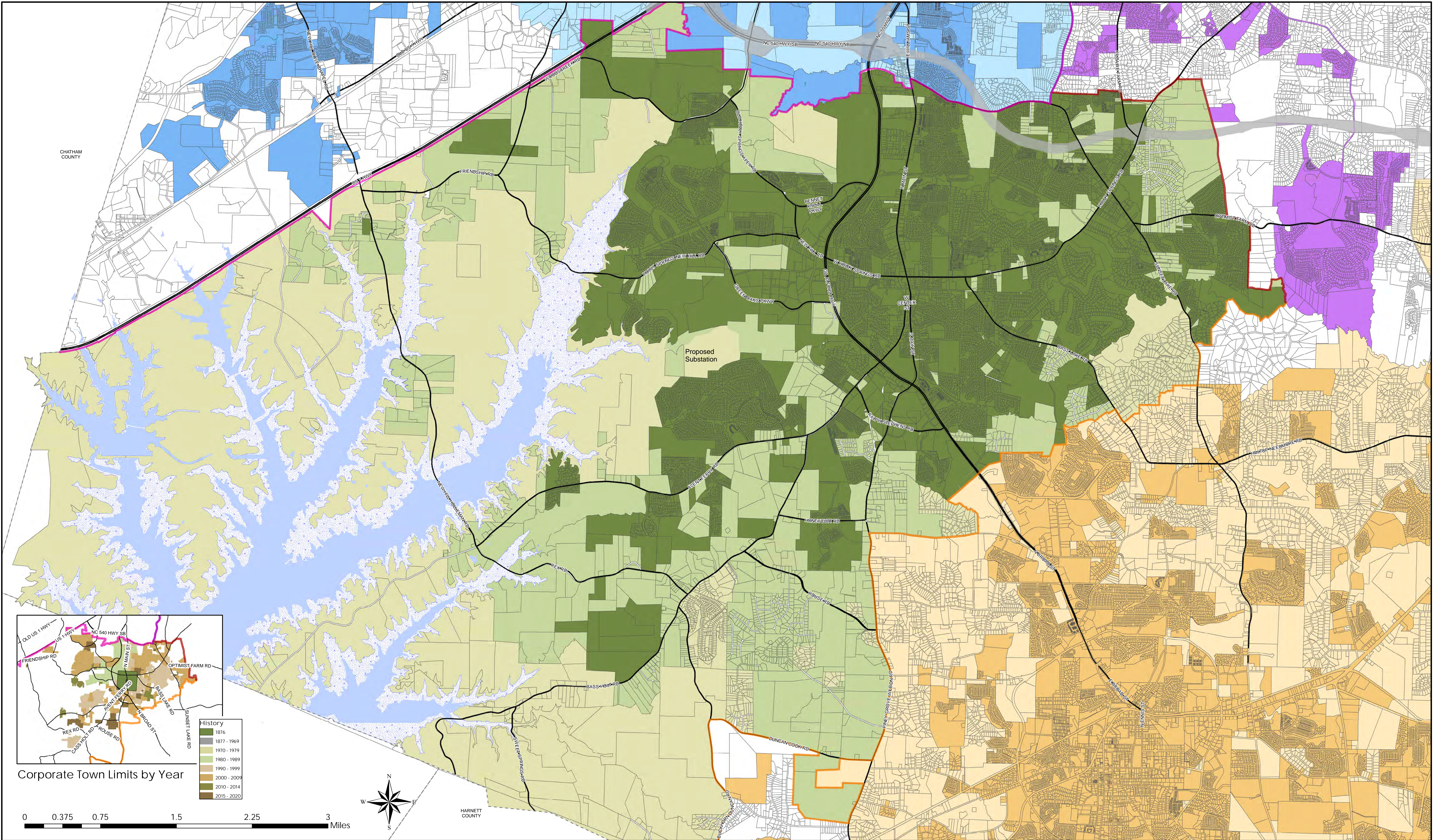


0 0.375 0.75 1.5 2.25 3 Miles

PLACES TO PRESERVE		PLACES TO ENHANCE		PLACES TO TRANSFORM	
<div></div> Natural Area		<div></div> Conservation Neighborhood	<div></div> Business & Industrial	<div></div> Neighborhood Center	<div></div> Mixed-Use Center
<div></div> Water		<div></div> Residential Neighborhood	<div></div> Special Use	<div></div> N. Main Street District	<div></div> Regional Center
<div></div> High Lake Level		<div></div> Mixed Residential Neighborhood		<div></div> Downtown Village District	<div></div> Innovation Village

Vision Holly Springs
Land Use & Character Plan

Future Land Use



Parcels	Apex Town Limits	Cary Town Limits	Fuquay-Varina Town Limits	Holly Springs Town Limits
Shearon Harris Lake	Apex ETJ	Cary ETJ	Fuquay-Varina ETJ	Holly Springs Extra-Territorial Jurisdiction (ETJ)
Proposed Shearon Harris Lake Level	Apex/Cary Annexation Agreement	Apex/Holly Springs Annexation Agreement 2013	Cary/Holly Springs Annexation Agreement 2003	FV/Holly Springs Short Range Urban Service Area

18.65 Sq Mile
11,942 Acres

13.31 Sq Miles
8518 Acres

Through Annexation Ordinance A20-09
July 2021

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Town of Holly Springs Planning Jurisdiction

