INDIVIDUAL PERMIT APPLICATION
AND
SUPPORTING DOCUMENTATION

VinFast Manufacturing US, LLC &
NCDOT STIP# HE-0006

Project Blue
Moncure, Chatham County, North Carolina

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1.0 THE APPLICANT/PROJECT OVERVIEW, LOCATION, EXISTING SITE CONDITIONS, PROJECT DESCRIPTION

1.1 The Applicant/ Project Overview

This document is intended to provide supplementary information in support of the U.S. Army Corps of Engineers' (USACE) preparation of the, Environmental Assessment, Finding of No Significant Impact, Statement of Findings, and Review and Compliance Determination according to the 404(b)(1) guidelines for the proposed industrial manufacturing development known as Project Blue and State Transportation Improvement Project (STIP) HE-0006 "Chatham Triangle Innovation Point Road Improvements" ("the Project") in Chatham County, North Carolina.

VinFast Manufacturing US, LLC (VinFast) and the North Carolina Department of Transportation (NCDOT) are joint Applicants for this permit submittal. Additional relevant parties to this application include offsite utility providers that are proposing improvements to the water and sewer (City of Sanford), natural gas (Dominion Energy), and overhead power (Duke Energy) infrastructure servicing the facility. Based on conversations with the USACE, while the utility improvements are part of the single and complete project and are being proposed to serve VinFast, they are discussed in this application. However, the utility providers are not each listed as co-applicants on this Project since the resulting utility improvements will still provide improvements and service to the surrounding areas beyond VinFast's development itself. VinFast will be responsible for the design, construction, and mitigation requirements for the industrial manufacturing facility, along with the on-site roadway and infrastructure. NCDOT will be responsible for the design, construction, and mitigation requirements for the TIP HE-0006 portion of the Project. Each of the utility providers will be responsible for the design, construction, and mitigation requirements for their respective offsite utility improvements (water, sewer, natural gas, and electrical) since they will be bid, contracted, and constructed under their own contracting mechanisms and between the provider and their preferred contractor outside of VinFast control.

1.2 Project Location

Project Blue

Project Blue comprises approximately 1,300 acres of land within the larger Triangle Innovation Point (TIP) development area in southeastern Chatham County, North Carolina. Project Blue (the "Site") is located approximately 3.5 miles east of the unincorporated community of Moncure and 1.0 mile west of the Shearon Harris Reservoir, approximately 0.5 mile west of Wake County. The Site is within the Chatham County zoning jurisdiction and is currently zoned as a Heavy Industrial District (IH). As shown on **Figure 1A: Project Blue Vicinity Map**, the Site is bounded by Old US-1 (SR 1011) to the north, Corinth Road (SR 1016) and Moncure Flatwood Road (SR 1924) to the south, Shaddox Creek to the west, and Christian Chapel Church Road (SR 1912) to the east. Project Blue is situated within the Cape Fear River Basin, outside of the Jordan Lake Water Supply Watershed, within United States Geological Survey (USGS) 8-digit Hydrologic Unit Codes (HUC): 03030002 and 03030004.

NCDOT STIP# HE-0006

NCDOT STIP# HE-0006 ("Chatham TIP Roadway Improvements" or "HE-0006") includes approximately 6 miles of roadway improvements in the southeastern area of Chatham County. This area of the county is situated between nearby Wake, Lee, and Harnett counties. The roadway network improvements proposed by STIP# HE-0006 would improve the connection between US-1 and the Project Blue Site. Functionally classified as a freeway, US-1 is also a "Strategic Transportation Corridor" in the NCDOT network, which includes facilities that are responsible for moving high volumes of people and freight across regions of the state. In addition to US-1, Old US-1 also traverses the area generally in an east-west direction. Old US-1 is largely parallel/adjacent to CSXT railroad through the area.

The Project Blue site is currently accessed from US-1 via Exit 84 at Old US-1 then following Christian Chapel Road for approximately one mile, including an at-grade railroad crossing. Christian Chapel Church

Road is a two-lane local road in the NCDOT network which connects Old US-1 with NC 42, a distance of approximately 5 miles to the south.

Utilities
The proposed offsite utility connections to the Project Blue development discussed in this application include sanitary sewer and water provided by the City of Sanford and natural gas provided by Dominion Energy, Inc (**Figure 1C: Utilities Vicinity Map**).

The City of Sanford's sewer and water improvements are split into multiple phases:

- Phase 1 of the proposed City of Sanford sanitary sewer connection will extend approximately 2.75 miles from existing infrastructure along Old US-1 (SR 1011) to Woodland Road and through the western portion of the Project Blue Site.
- Phase 2 of the proposed City of Sanford sanitary sewer connection will extend approximately 13 miles from Iron Furnace Road (SR 1463) in Sanford, Lee County to Corinth Road (SR 1916) southwest of the Project Blue Site.

- Phase 1 of the proposed City of Sanford waterline connection will extend approximately 3.5 miles from Jordan Dam Road (SR 1970) west to Woodland Road in the northwestern portion of the Project Blue Site.
- Phase 2 of the proposed City of Sanford waterline connection will extend 7.3 miles north from Poplar Springs Church Road (SR-1537) to the Old US-1 and Corinth Road intersection with an additional 3,000-foot extension from Lower Moncure Road (1002) to Moncure Pittsboro Road (SR 1012).

Dominion Energy proposes to extend an existing natural gas line located north of the Project Blue Site. The extension would construct approximately 2.24 miles of new natural gas line along Moncure Flatwood Road (SR 1924) and tie into the northern portion of the Project Blue Site.

The Duke Energy realignment is not anticipated to result in any impacts and is therefore not discussed in this application. Should any unavoidable impacts result from the Duke Energy realignment investigation, a modification to this application package will be prepared for USACE and NCDWR review.

1.3 Existing Site Conditions

1.3.1 Land Use

Project Blue
Project Blue is an approximately 1,300-acre Site primarily composed of undeveloped land, consisting primarily of forested tracts that are largely utilized for loblolly pine (*Pinus taeda*) silviculture. The planted pine tracts vary in age and are transected by Moncure Flatwood Road (SR 1924) in the east, numerous unimproved forestry roads, and maintained utility easements. No residences, commercial facilities, or associated structures are located within the Site.

Project Blue is located in the Cape Fear River Basin outside of the Jordan Lake Water Supply Watershed, within the USGS 8-digit HUCs 03030002 and 03030004. Seventeen individual streams, totaling approximately 33,339 linear feet, and thirty-six wetlands, totaling approximately 99.2 acres, were identified within the Project Blue Site (**Figure 5A: Project Blue Jurisdictional Features Map**).

NCDOT STIP# HE-0006
The roadway network improvements extend through an unincorporated area of Chatham County, just east of the Haw River. The NCDOT study area is largely characterized by wooded properties and some well-established homes. Residential uses are scattered along Old US-1, New Elam Church Road, and Pea Ridge Road, with several clusters of homes along these roads and intersecting unpaved private roads. One of these clusters, at Old US-1 and New Elam Church

Road, comprises the community of Merry Oaks. Businesses in the NCDOT study area are more prevalent along Pea Ridge Road.

The southern-most NCDOT study area (intersection of Christian Chapel Church Rd & NC 42) is wooded, with several adjacent homes on large parcels. Access to a Harris Lake boat ramp is just north of this portion of the DCIA on Christian Chapel Church Road (via Cross Point Road).

The Chatham County Future Land Use and Conservation Plan map indicates an area encompassing the Project Blue site as an Employment Center, targeted for future job-generating uses. Other employment centers are centered at the US-1 interchange with Old US-1 (encompassing a portion of the proposed interchange with New Elam Church Road) and with Pea Ridge Road.

Although the County's Comprehensive Transportation Plan doesn't include recommendations for roadway improvements in the Project Blue area, the NCDOT Transportation Planning Division is currently working cooperatively with Chatham County and the Triangle Area Rural Planning Organization (TARPO) to amend the Chatham County Comprehensive Transportation Plan (CTP). It is expected that the amendment would incorporate the short-term transportation improvements proposed for the area.

Utilities

The proposed offsite Utility Corridors are located in various directions stemming from the Project Blue Site and primarily run through undeveloped areas consisting primarily of agricultural land, natural and planted forestry tracts, and riparian corridors. The Phase 1 and 2 water corridors cross the Haw River, Shaddox Creek, the Deep River and the Cape Fear River, 11 wetland complexes, and 10 unnamed tributaries of the Haw, Deep and Cape Fear Rivers. Additionally, Phase 1 and 2 sewer corridors cross the Haw River, Little Shaddox Creek, Hughes Creek, Gum Fork, Little Buffalo Creek, Copper Mine Creek, Wombles Creek, Shaddox Creek, and the Deep River, 15 wetland complexes, and 24 unnamed tributaries of the Haw, Cape Fear and Deep Rivers.

No home sites or associated structures are located within the Utility Corridor. Portions of the corridor utilize existing powerline easements and roadway corridors. The Utility Corridor is located in the Cape Fear River Basin (United States Geological Survey (USGS) 8-digit Hydrologic Unit Code (HUC): 03030002, -03, and -04), as shown in **Figure 1C: Utility Vicinity Map**.

1.3.2 Topography

The Proposed Project Blue Development, including STIP# HE-0006 and offsite utility connections, is located within the Piedmont (45) Level III Ecoregion of North Carolina, and specifically within the Triassic Basin (45g) Level IV Ecoregion. Per the 2002 *Ecoregions of North Carolina and South Carolina* publication from the USGS, "The Triassic Basins of the Carolinas occur in four narrow bands and have unusual Piedmont geology of unmetamorphosed shales, sandstones, mudstones, siltstones, and conglomerates. Local relief and elevations are often less than in surrounding regions, and, with rocks that are easier to erode, stream valleys that cross the region tend to widen. Soils tend to be clayey with low permeability, and streams have low base flows. The clay has a high shrink-swell potential that can hinder construction; it is also utilized by many brick makers in the region. A mosaic of mixed and deciduous forest, pasture, cropland, and urban land cover occurs here."

Elevation within the Project Blue and HE-0006 areas is moderate and ranges from 170 feet to 280 feet above mean sea level (MSL). The steepest slopes within the Site exist along drainages close to Shaddox Creek. Multiple hill tops, ridgelines and drainages exist throughout the Site.

1.3.3 Jurisdictional Features

Project Blue

The 1,300-acre Project Blue Site was delineated by Kimley-Horn wetland scientists over the course of 5 years from November 2017 to March 2022. The wetland delineations were performed in accordance with the *1987 U.S. Army Corps of Engineers Wetland Delineation Manual* and *the 2012 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region* (*Version 2.0*). All potentially jurisdictional streams were evaluated utilizing the *N.C. Division of Water Resources Methodology for Identification of Intermittent and Perennial Streams and Their Origins*.

In summary, Kimley-Horn delineated 17 individual streams totaling approximately 33,339 linear feet, 36 wetlands totaling approximately 99.2 acres, and two open waters totaling approximately 0.36 acre. **Figure 5A: Project Blue Jurisdictional Features Map** shows the location of the potentially jurisdictional features delineated by Kimley-Horn staff and characteristics of each individual feature can be found in **Table 1** and **Table 2** below.

James Lastinger of the USACE verified the delineated features located within Phase 1A, 1B, and 2 of the Project Blue Site during a field review conducted on June 13, 2022. The Preliminary Jurisdictional Determination for the Phase 1A, 1B, and 2 areas was issued on July 19, 2022 (SAW-2014-00610). A Preliminary Jurisdictional Request package for the Phase 3 portion of the Project Blue Site was submitted to USACE on November 3, 2022 and is currently under review. The Preliminary Jurisdictional Determination for Phase 1A, 1B, and 2 has been included with this application in **Appendix F**.

Project Blue is located within Chatham County and is subject to the 1994 Chatham County Watershed Protection Ordinance buffer rules (2008 Revision), which applies 50' riparian buffers on any intermittent and 100' riparian buffers perennial streams mapped on the most-recent USGS Topographic Quadrangle Map (**Figure 3A: Project Blue USGS Topographic Map**). The stream and wetland delineation found one feature within the Phase 1A, 1B, and 2 areas to be in conflict with the USGS Topographic Map. Drew Blake of the Chatham County Watershed Protection Department issued a Riparian Buffer Review Letter verifying the difference on July 8, 2022. Documentation is included in **Appendix F**.

Project Blue Jurisdictional Streams

Kimley-Horn identified a total of 17 individual streams within the Project Blue Site, including 10 intermittent reaches and 10 perennial reaches, totaling approximately 33,339 linear feet (**Table 1**). All stream features within the Site drain to Shaddox Creek (DWR# 16-43), a perennial tributary to the Haw River (DWR# 16-(42)), and are located within the Cape Fear Basin (HUCs 03030002 and 03030004). Streams within the Project Blue Site were found to be characteristic of surface water features in the Triassic Basin, composed of primarily silt and sand substrate and prone to drying out during periods of low water.

Table 1. Characteristics of Jurisdictional Stream Features in Project Blue

Stream Name	Map ID	Flow Regime	Length (Linear Feet)	NCDWR Index Number	Best Usage Classification	Receiving Waterbody
Shaddox Creek	Shaddox Creek	Perennial	3,079	16-43	WS-IV	Haw River
UT to Shaddox Creek	S1	Perennial	7,083	16-43	WS-IV	Shaddox Creek
UT to Shaddox Creek	S3	Intermittent ; Perennial	3,811	16-43	WS-IV	Shaddox Creek
UT to Shaddox Creek	S5	Intermittent ; Perennial	736	16-43	WS-IV	Shaddox Creek
UT to Shaddox Creek	S6	Perennial	10,421	16-43	WS-IV	Shaddox Creek
UT to Shaddox Creek	S7	Intermittent ; Perennial	797	16-43	WS-IV	Shaddox Creek
UT to Shaddox Creek	S8	Intermittent	278	16-43	WS-IV	Shaddox Creek
UT to Shaddox Creek	S13	Perennial	2,006	16-43	WS-IV	Shaddox Creek
UT to Shaddox Creek	S14	Perennial	906	16-43	WS-IV	Shaddox Creek
UT to Shaddox Creek	S21	Intermittent	939	16-43	WS-IV	Shaddox Creek
UT to Shaddox Creek	S22	Intermittent	551	16-43	WS-IV	Shaddox Creek
UT to Shaddox Creek	S50	Intermittent	752	16-43	WS-IV	Shaddox Creek
UT to Shaddox Creek	S103	Intermittent	49	16-43	WS-IV	Shaddox Creek
UT to Shaddox Creek	S104	Intermittent	212	16-43	WS-IV	Shaddox Creek
UT to Shaddox Creek	S105	Intermittent	440	16-43	WS-IV	Shaddox Creek
UT to Shaddox Creek	S121	Perennial	400	16-43	WS-IV	Shaddox Creek
UT to Shaddox Creek	S123	Perennial	866	16-43	WS-IV	Shaddox Creek

Project Blue Jurisdictional Wetlands

Kimley-Horn identified a total of 36 wetlands within the Project Blue Site totaling approximately 99.2 acres. Based upon the NC Wetland Assessment Method (NCWAM) classification system, the majority of the wetland systems within the Project Blue Site are bottomland hardwood forest wetlands (comprising approximately 87.7 acres). In addition, multiple headwater forest and floodplain pool wetlands were identified within the Site. **Table 2** below describes each delineated wetland within the three NCWAM classification types identified within the Site, along with the primary hydrology indicators and dominant vegetation within each wetland type.

Table 2. Characteristics of Jurisdictional Wetlands in Project Blue

NCWAM Classification Type	Wetland ID	Hydrology Indicators Observed			Dominant Vegetation Observed	Area of Wetland Type (ac.)
Bottomland Hardwood Forest	W1	Drift deposits; Oxidized rhizospheres; Water-stained leaves; Drainage patterns; Geomorphic position			Red maple (*Acer rubrum*) Loblolly pine (*Pinus taeda*) American holly (*Ilex opaca*) Sweetgum (*Liquidambar styraciflua*) Japanese stilt-grass (*Microstegium vimineum*) Knotweed (*Polygonum sp.*) Common sedge (*Carex sp.*) Northern sea oats (*Chasmanthium latifolium*) Rush (*Juncus effusus*)	87.67
	W104					
	W105					
	W106					
	W123					
	W126					
Headwater Forest	W2	W23	W102	Drift deposits; Water-stained leaves; Drainage patterns; Surface soil cracks	Red maple (*Acer rubrum*) Loblolly pine (*Pinus taeda*) sweetgum (*Liquidambar styraciflua*) Groundsel bush (*Baccharis halimifolia*) Japanese stilt-grass (*Microstegium vimineum*) Knotweed (*Polygonum sp.*) Common sedge (*Carex sp.*) Northern sea oats (*Chasmanthium latifolium*) Rush (*Juncus effusus*) Woolgrass (*Scirpus cyperinus*) Lizard's tail (*Saururus cernuus*)	11.04
	W3	W24	W103			
	W4	W25	W107			
	W5	W26	W108			
	W7	W27	W109			
	W11	W29	W110			
	W12	W30	W111			
	W15	W31	W122			
Floodplain Pool	W8	Drift deposits; Crayfish burrows; Drainage patterns; Water-stained leaves; Sparsely vegetated concave surface; Geomorphic position			Red maple (*Acer rubrum*) River birch (*Betula nigra*) American hornbeam (*Carpinus caroliniana*) Sweetgum (*Liquidambar styraciflua*) Northern sea oats (*Chasmanthium latifolium*) False nettle (*Boehmeria cylindrica*) Lizard's tail (*Saururus cernuus*)	0.32
	W9					
	W10					
	W21					
	W22					
	W28					

The following table summarizes the jurisdictional features delineated within the Project Blue Site, along with location coordinates and acreages.

Table 3. Characteristics of Jurisdictional Features in Project Blue

Site number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resource in review area	Type of aquatic resource	Geographic authority to which the aquatic resource "may be" subject
W1*	35.616204	-79.013571	11.45 ac	Wetland	Section 404
W2*	35.617073	-79.017548	0.16 ac	Wetland	Section 404
W3*	35.620025	-79.022563	1.86 ac	Wetland	Section 404
W4*	35.621579	-79.017024	0.15 ac	Wetland	Section 404
W5*	35.607514	-79.00408	0.61 ac	Wetland	Section 404
W7*	35.623360	-79.015042	5.28 ac	Wetland	Section 404
W8*	35.624753	-79.014291	0.04 ac	Wetland	Section 404
W9*	35.617508	-79.008499	0.07 ac	Wetland	Section 404
W10*	35.617096	-79.009003	0.07 ac	Wetland	Section 404
W11*	35.622202	-79.004921	0.01 ac	Wetland	Section 404
W12*	35.619838	-79.012002	0.14 ac	Wetland	Section 404
W15*	35.616526	-79.003546	0.51 ac	Wetland	Section 404
W21**	35.612840	-79.033858	0.01 ac	Wetland	Section 404
W22**	35.612453	-79.034064	0.13 ac	Wetland	Section 404
W23**	35.611811	-79.033577	0.05 ac	Wetland	Section 404
W24**	35.610931	-79.031495	0.09 ac	Wetland	Section 404
W25**	35.611097	-79.032095	<0.01 ac	Wetland	Section 404
W26**	35.611498	-79.033040	0.01 ac	Wetland	Section 404
W27**	35.612103	-79.033952	0.10 ac	Wetland	Section 404
W28**	35.612398	-79.034764	<0.01 ac	Wetland	Section 404
W29**	35.607519	-79.031777	0.15 ac	Wetland	Section 404
W30**	35.607109	-79.033497	0.21 ac	Wetland	Section 404
W31**	35.607218	-79.034684	0.07 ac	Wetland	Section 404
W102*	35.607821	-79.019485	0.79 ac	Wetland	Section 404
W103*	35.607863	-79.018249	0.39 ac	Wetland	Section 404
W104*	35.608750	-79.017111	0.01 ac	Wetland	Section 404
W105*	35.609047	-79.016530	0.21 ac	Wetland	Section 404
W106*	35.609204	-79.015803	0.21 ac	Wetland	Section 404
W107*	35.608346	-79.017005	0.05 ac	Wetland	Section 404
W108*	35.608646	-79.014559	0.06 ac	Wetland	Section 404
W109*	35.610555	-79.011520	0.09 ac	Wetland	Section 404
W110**	35.613097	-79.021662	0.09 ac	Wetland	Section 404
W111**	35.612428	-79.021464	0.09 ac	Wetland	Section 404
W122**	35.613956	-79.02976	0.18 ac	Wetland	Section 404
W123**	35.611961	-79.036593	75.39 ac	Wetland	Section 404
W126**	35.615943	-79.035086	0.40 ac	Wetland	Section 404
Shaddox Creek**	35.609977	-79.03804	3,079 LF	Non-Wetland; Stream	Section 404
S1*	35.618004	-79.008094	7,083 LF	Non-Wetland; Stream	Section 404
S3*	35.609069	-79.016486	3,812 LF	Non-Wetland; Stream	Section 404
S5*	35.614244	-79.015882	737 LF	Non-Wetland; Stream	Section 404
S6*	35.614331	-79.029252	10,422 LF	Non-Wetland; Stream	Section 404
S7**	35.613617	-79.022122	799 LF	Non-Wetland; Stream	Section 404
S8**	35.617480	-79.021908	279 LF	Non-Wetland; Stream	Section 404
S13*	35.617590	-79.007291	2,006 LF	Non-Wetland; Stream	Section 404

Site number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resource in review area	Type of aquatic resource	Geographic authority to which the aquatic resource "may be" subject
S14*	35.619676	-79.003851	907 LF	Non-Wetland; Stream	Section 404
S21**	35.611577	-79.033271	939 LF	Non-Wetland; Stream	Section 404
S22**	35.607482	-79.032328	552 LF	Non-Wetland; Stream	Section 404
S50**	35.617832	-79.033207	753 LF	Non-Wetland; Stream	Section 404
S103*	35.608330	-79.017893	50 LF	Non-Wetland; Stream	Section 404
S104*	35.610093	-79.014058	213 LF	Non-Wetland; Stream	Section 404
S105*	35.611163	-79.012243	440 LF	Non-Wetland; Stream	Section 404
S121**	35.618296	-79.029991	401 LF	Non-Wetland; Stream	Section 404
S123**	35.613187	-79.027628	867 LF	Non-Wetland; Stream	Section 404
OW1*	35.616092	-79.016346	0.19 ac	Non-Wetland; Open Water	Section 404
OW2*	35.616606	-79.015686	0.16 ac	Non-Wetland; Open Water	Section 404

*Feature reviewed and verified by the USACE (SAW-2014-00610)
**Feature included in the Phase 3 PJD Request

NCDOT STIP# HE-0006

Streams and Ponds

Twenty-five streams, totaling 22,219 linear feet, were identified in the NCDOT study area. There are numerous ponds within the area, but all are less than 2 acres in size. The PJD Package was submitted to the USACE on June 3, 2022. Streams are listed in **Table 4**. The location of each stream is shown in **Figure 4B: Water Resources Map**.

Table 4. Streams in the NCDOT study area

Stream Name	Map ID	NCDWR Index Number	Best Usage Classification	Bank Height (ft)	Bankfull width (ft)	Depth (in)
UT to Shaddox Creek	SA	16-43	WS-IV	1-2	1-2	6
UT to Shaddox Creek	SB	16-43	WS-IV	1-2	4-5	1-4
UT to Shaddox Creek	SC	16-43	WS-IV	0.5	2	6
UT to Shaddox Creek	SD	16-43	WS-IV	3	3	8
UT to Shaddox Creek	SG (Per.)	16-43	WS-IV	5	4	8
UT to Shaddox Creek	SG (Int.)	16-43	WS-IV	3	3	6
UT to Shaddox Creek	SH	16-43	WS-IV	1.5	2	4
UT to Shaddox Creek	SI	16-43	WS-IV	4	2	0-8
UT to Shaddox Creek	SJ	16-43	WS-IV	5	2-4	4-10
UT to Haw River	SK	16-(42)	WS-IV	3	5	8
UT to Haw River	SL	16-(42)	WS-IV	2	6	6
UT to Haw River	SM	16-(42)	WS-IV	2	4	4
UT to Haw River	SN	16-(42)	WS-IV	2	5	4
UT to Haw River	SO	16-(42)	WS-IV	3	6	7
UT to Haw River	SP	16-(42)	WS-IV	4	7	10
UT to Haw River	SQ	16-(42)	WS-IV	3	4	4
Shaddox Creek	Shaddox Creek (SR)	16-43	WS-IV	4	10	14
UT to Shaddox Creek	SS	16-43	WS-IV	3	4	8
UT to Shaddox Creek	ST	16-43	WS-IV	2	3	4

Stream Name	Map ID	NCDWR Index Number	Best Usage Classification	Bank Height (ft)	Bankfull width (ft)	Depth (in)
UT to Haw River	SU	16-(42)	WS-IV	2-4	3-5	6
UT to Shaddox Creek	SBB	16-43	WS-IV	3	2	8
UT to Shaddox Creek	SBD	16-43	WS-IV	2	2	6
UT to Shaddox Creek	SBE	16-43	WS-IV	1	1.5	6
UT to Shaddox Creek	SCA	16-43	WS-IV	0.5	1	3
UT to Shaddox Creek	SCB (Per.)	16-43	WS-IV	1	3	6-12
UT to Shaddox Creek	SCB (Int.)	16-43	WS-IV	0.5	3	4-6
UT to Shaddox Creek	SCC	16-43	WS-IV	0.5	1	0-3

There are no streams designated as an Outstanding Resource Water (ORW) within the NCDOT study area. There are no designated High-Quality Waters (HQW) or water supply watersheds (WS-I or WS-II) within, or within 1.0 mile downstream, of the study area. The North Carolina 2022 Final 303d list of impaired waters identifies no streams within the study area as an impaired water.

Surface waters were identified in the NCDOT study area (**Table 5**). The location of each surface water is shown in **Figure 4B: Water Resources Map**.

The project is located within the Cape Fear River Basin below Jordan Lake; therefore, no state-wide buffer rules apply for this project.

Table 5. Surface waters in the NCDOT study area

Surface Water	Map ID of Connection	Area (ac) in NCDOT Study Area
PA	N/A	0.84
PB	WI	0.39
PC	N/A	0.04
PD	N/A	0.05
PE	WAI	0.23
PF	SO	0.42
PG	WAK	0.23
PH	WAM	0.40
PI	WAM	0.42
PJ	WBP	0.32
PK	WBN	0.19
PL	N/A	0.03
PM	WBE	0.10
PN	WBU	0.02
PO	WBF	0.28
PP	N/A	0.07
PQ	WBG	0.01
PR	N/A	0.04
PS	WAM	0.02
PT	N/A	0.01
PU	N/A	0.25

Surface Water	Map ID of Connection	Area (ac) in NCDOT Study Area
PV	N/A	0.43
PCA	WCA	0.86
PCB	N/A	0.13
TA	SB	<0.01
TB	WC	<0.01
TC	WD	<0.01
TE	WJ	0.02
TF	WK	0.05
TG	SBB	0.01
TH	WL	0.01
TI	N/A	0.02
TBA	SBD	0.03
	Total	**5.95**

Wetlands
Eighty-five wetlands totaling approximately 105 acres were identified within the NCDOT study area (**Table 10**). The location of these wetlands is shown on **Figures 4B: Water Resources Map**. All wetlands in the study area are located within the Cape Fear River Basin [USGS Hydrologic Unit 03030002]. USACE wetland determination forms and NCWAM forms for each site are included in a separate Jurisdictional Determination Package.

Utilities
That attached **Figure 5C** shows the NWI wetlands within the City of Sanford's Water P1/P2 and Sewer P1/P2 corridors. The corridor was delineated by Freese and Nichols staff in July and August 2022. A field review with the USACE was conducted to review the delineated features within the Water and Sewer corridors and documentation is currently pending. The Dominion Natural Gas corridor runs along existing NCDOT right-of-way on Christian Chapel Church Road and will be delineated by Dominion Energy when design is more fully determined. Since the Dominion Energy alignment crosses features also delineated by Kimley-Horn within the Project Blue Project Area, the previously determined jurisdictional resources were extended based on field reconnaissance to approximate anticipated impacts resulting from the natural gas line installation.

All intermittent and perennial streams within the various utility corridors were delineated utilizing the current *N.C. Division of Water Quality Methodology for Identification of Intermittent and Perennial Streams and Their Origins (*current version 4.11*)*. Forty-seven individual streams totaling approximately 3,717 linear feet and 33 wetlands totaling approximately 14.3 acres were identified within the Water and Sewer Utility Corridor and 2 individual streams totaling approximately 24 linear feet and 1 wetland totaling approximately 0.002 acre were identified within the Natural Gas Corridor (**Figures 5C and 5D**).

The following table summarizes the jurisdictional features delineated within the utility corridors, along with location coordinates, type of resource and acreage.

Table 8. Characteristics of Jurisdictional Features in the Utility Corridor

Site number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resource in review area	Type of aquatic resource (NWAM, Flow Regime)	Utility
P1S-WA	35.617725	-79.033255	0.07 ac.	Headwater Forest; Wetland	Sewer P1
P1S-WB	35.615315	-79.032124	0.10 ac.	Riverine Swamp Forest; Wetland	Sewer P1
P1S-WC	35.615606	-79.014236	0.02 ac.	Riverine Swamp Forest; Wetland	Sewer P1
P2S-WA	35.598945	-79.046425	0.10 ac.	Riverine Swamp Forest; Wetland	Sewer P2
P2S-WB	35.598954	-79.047847	0.02 ac.	Riverine Swamp Forest; Wetland	Sewer P2
P2S-WC	35.592130	-79.053432	0.02 ac.	Riverine Swamp Forest; Wetland	Sewer P2
P2S-WD	35.589948	-79.054955	0.01 ac.	Riverine Swamp Forest; Wetland	Sewer P2
P2S-WE	35.588933	-79.056357	0.22 ac.	Riverine Swamp Forest; Wetland	Sewer P2
P2S-WG	35.586494	-79.060339	0.07 ac.	Riverine Swamp Forest; Wetland	Sewer P2
P2S-WH	35.583737	-79.063966	0.10 ac.	Headwater Forest; Wetland	Sewer P2
P2S-WI	35.582135	-79.066414	0.07 ac.	Riverine Swamp Forest; Wetland	Sewer P2
P2S-WJ	35.581037	-79.06805	0.76 ac.	Headwater Forest; Wetland	Sewer P2
P2S-WK	35.577343	-79.073398	0.03 ac.	Riverine Swamp Forest; Wetland	Sewer P2
P2S-WL	35.574223	-79.078307	0.10 ac.	Headwater Forest; Wetland	Sewer P2
P2S-WN	35.564338	-79.095594	0.04 ac.	Headwater Forest; Wetland	Sewer P2
P2S-WP	35.565524	-79.106922	0.03 ac.	Riverine Swamp Forest; Wetland	Sewer P2
P2S-WQ	35.565564	-79.109059	<0.01 ac.	Riverine Swamp Forest; Wetland	Sewer P2
P2S-WR	35.562995	-79.140898	0.01 ac.	Riverine Swamp Forest; Wetland	Sewer P2
P2S-WS	35.549518	-79.186724	0.36 ac.	Riverine Swamp Forest; Wetland	Sewer P2
P2S-WT	35.565022	-79.123112	<0.01 ac.	Riverine Swamp Forest; Wetland	Sewer P2
P1W-WA	35.616184	-79.054123	0.03 ac.	Riverine Swamp Forest; Wetland	Water P1
P1W-WB	35.626112	-79.056402	0.49 ac.	Riverine Swamp Forest; Wetland	Water P1
P2W-WA	35.614808	-79.047748	0.12 ac.	Riverine Swamp Forest; Wetland	Water P2
P2W-WB	35.609260	-79.047288	0.38 ac.	Headwater Forest; Wetland	Water P2

Site number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resource in review area	Type of aquatic resource (NWAM, Flow Regime)	Utility
P2W-WC	35.604540	-79.046905	0.31 ac.	Bottomland Hardwood Forest; Wetland	Water P2
P2W-WD	35.599808	-79.046194	0.07 ac.	Riverine Swamp Forest; Wetland	Water P2
P2W-WE	35.559548	-79.02229	7.06 ac.	Riverine Swamp Forest; Wetland	Water P2
P2W-WF	35.592927	-79.041289	<0.01 ac.	Riverine Swamp Forest; Wetland	Water P2
P2W-WG	35.544384	-79.033836	1.27 ac.	Riverine Swamp Forest; Wetland	Water P2
P2W-WH	35.546669	-79.030180	0.22 ac.	Riverine Swamp Forest; Wetland	Water P2
P2W-WO	35.565623	-79.104475	0.04 ac.	Riverine Swamp Forest; Wetland	Water P2
P2W-WP	35.596068	-79.043498	0.53 ac.	Riverine Swamp Forest; Wetland	Water P2
W128	35.615658	-79.040264	1.64 ac.	Riverine Swamp Forest; Wetland	Water/ Sewer
W15	35.616857	-79.004083	0.002 ac.	Headwater Forest; Wetland	Natural Gas
P1S-S1	35.617718	-79.033248	50 LF	Perennial; Stream	Sewer P1
P1S-S2	35.614579	-79.031862	347 LF	Perennial; Stream	Sewer P1
P1S-S3	35.613996	-79.028021	65 LF	Perennial; Stream	Sewer P1
P1S-S4	35.614106	-79.022117	131 LF	Perennial; Stream	Sewer P1
P1S-S5	35.615419	-79.015797	51 LF	Perennial; Stream	Sewer P1
P1S-S6	35.614030	-79.012959	64 LF	Perennial; Stream	Sewer P1
P2S-S4	35.577368	-79.073352	51 LF	Intermittent; Stream	Sewer P2
P2S-S5	35.567438	-79.08774	50 LF	Intermittent; Stream	Sewer P2
P2S-S7	35.564148	-79.093587	57 LF	Intermittent; Stream	Sewer P2
P2S-S8	35.564028	-79.097874	144 LF	Intermittent; Stream	Sewer P2
P2S-S9	35.564608	-79.101907	51 LF	Intermittent; Stream	Sewer P2
P2S-S11	35.565348	-79.109541	78 LF	Intermittent; Stream	Sewer P2
P2S-S12	35.565587	-79.115192	71 LF	Intermittent; Stream	Sewer P2
P2S-S13	35.566457	-79.118365	51 LF	Intermittent; Stream	Sewer P2
P2S-S14	35.563303	-79.140123	51 LF	Intermittent; Stream	Sewer P2
P2S-S15	35.560899	-79.14508	56 LF	Intermittent; Stream	Sewer P2
P2S-S16	35.558946	-79.14950	63 LF	Perennial; Stream	Sewer P2
P2S-S17	35.558249	-79.152035	67 LF	Perennial; Stream	Sewer P2
P2S-S18	35.557962	-79.155004	54 LF	Perennial; Stream	Sewer P2
P2S-S20	35.557459	-79.157223	58 LF	Perennial; Stream	Sewer P2
P2S-S21	35.556390	-79.159283	58 LF	Intermittent; Stream	Sewer P2
P2S-S22	35.553804	-79.164723	133 LF	Perennial; Stream	Sewer P2
P2S-S23	35.55337	-79.167546	120 LF	Intermittent; Stream	Sewer P2
P2S-S24	35.553082	-79.171329	56 LF	Intermittent; Stream	Sewer P2
P2S-S26	35.542604	-79.202491	64 LF	Perennial; Stream	Sewer P2
P2S-S29	35.542163	-79.206866	53 LF	Perennial; Stream	Sewer P2
P2S-S30	35.542754	-79.212142	52 LF	Perennial; Stream	Sewer P2
P2S-S31	35.566056	-79.119206	42 LF	Perennial; Stream	Sewer P2
P2S-S32	35.562168	-79.135105	14 LF	Perennial; Stream	Sewer P2

Site number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resource in review area	Type of aquatic resource (NWAM, Flow Regime)	Utility
P2S-S33	35.586644	-79.060132	52 LF	Perennial; Stream	Sewer P2
P2S-S34	35.549214	-79.186912	62 LF	Perennial; Stream	Sewer P2
P1W-S1	35.621099	-79.081759	138 LF	Intermittent; Stream	Water P1
P1W-S2	35.623066	-79.075841	123 LF	Perennial; Stream	Water P1
P1W-S3	35.623222	-79.072508	120 LF	Perennial; Stream	Water P1
P1W-S4	35.621403	-79.067927	83 LF	Perennial; Stream	Water P1
P1W-S5	35.629178	-79.073267	51 LF	Perennial; Stream	Water P1
P1W-S6	35.626776	-79.082492	54 LF	Perennial; Stream	Water P1
P1W-S7	35.615717	-79.039512	99 LF	Perennial; Stream	Water P1
P1W-S8	35.626492	-79.083544	51 LF	Perennial; Stream	Water P1
P2W-S3	35.596532	-79.043749	59 LF	Perennial; Stream	Water P2
P2W-S4	35.595653	-79.043285	239 LF	Perennial; Stream	Water P2
P2W-S5	35.589526	-79.034281	51 LF	Intermittent; Stream	Water P2
P2W-S6	35.586369	-79.026687	51 LF	Intermittent; Stream	Water P2
P2W-S7	35.560112	-79.022462	87 LF	Intermittent; Stream	Water P2
P2W-S11	35.541201	-79.037778	57 LF	Perennial; Stream	Water P2
P2W-S12	35.538247	-79.040705	54 LF	Intermittent; Stream	Water P2
S6A	35.639913	-79.003920	10 LF	Perennial; Stream	Natural Gas
S13	35.616855	-79.004073	14 LF	Perennial; Stream	Natural Gas

1.3.4 North Carolina Wetland Assessment Method (NCWAM)

The NCWAM (Version 5) was utilized to classify and evaluate wetland features within the Project Blue Site and HE-0006 Corridor. Assessment methodology evaluated the following three major wetland functions and associated subfunctions: 1) hydrology (surface storage and retention and sub-surface storage and retention), 2) water quality (pathogen change, particulate change, soluble change, physical change, and pollution change), and 3) habitat (physical structure, landscape patch structure, and vegetation composition). Functional ratings are applied to each wetland assessment area in comparison to reference conditions of one of the sixteen North Carolina general wetland types. Due to the minimal permanent wetland impacts resulting from the proposed offsite Utility Connections, NCWAM evaluations of wetlands within the offsite water, sewer, natural gas, and overhead power utility corridors were not completed as part of this application and are assumed to be high quality for purposes of evaluations discussed below.

Project Blue

Field evaluations of representative wetland assessment areas were conducted on July 13, 2022. Data collected during this site evaluation, as well as the extensive data collected during the wetland delineation efforts, was utilized as part of the NCWAM evaluation.

The following table summarizes the results of the NCWAM analysis for the thirty-six areas evaluated within the Project Blue Site. NCWAM data forms are included in **Appendix I**.

Table 9. Summary of NCWAM Results within the Project Blue Site

Wetland ID	NCWAM Wetland Classification	Function Rating Summary	Overall Wetland Rating
W1	Bottomland Hardwood Forest	Hydrology - Low Water Qual.- Medium Habitat - Low	Low
W2	Headwater Forest	Hydrology – Medium Water Qual.- Medium Habitat - High	Medium
W3	Headwater Forest	Hydrology – Medium Water Qual.- Medium Habitat - Low	Medium
W4	Headwater Forest	Hydrology – Medium Water Qual.- Medium Habitat - High	Medium
W5	Headwater Forest	Hydrology - Low Water Qual.- Medium Habitat - Low	Low
W7	Headwater Forest	Hydrology – Medium Water Qual.- Medium Habitat - High	Medium
W8	Floodplain Pool	Hydrology - Medium Water Qual.- High Habitat - High	High
W9	Floodplain Pool	Hydrology - Medium Water Qual.- High Habitat - High	High
W10	Floodplain Pool	Hydrology - Medium Water Qual.- High Habitat - High	High
W11	Headwater Forest	Hydrology – Medium Water Qual.- Medium Habitat - High	Medium
W12	Headwater Forest	Hydrology – Medium Water Qual.- Medium Habitat - Low	Medium
W15	Headwater Forest	Hydrology – Medium Water Qual.- Medium Habitat - High	Medium
W21	Floodplain Pool	Hydrology – Medium Water Qual.- High Habitat - High	High
W22	Floodplain Pool	Hydrology – Medium Water Qual.- High Habitat - High	High
W23	Headwater Forest	Hydrology – Medium Water Qual.- Medium Habitat - High	Medium
W24	Headwater Forest	Hydrology – Medium Water Qual.- Medium Habitat - High	Medium
W25	Headwater Forest	Hydrology – Medium Water Qual.- Medium Habitat - High	Medium

Wetland ID	NCWAM Wetland Classification	Function Rating Summary	Overall Wetland Rating
W26	Headwater Forest	Hydrology – Medium Water Qual.- Medium Habitat - High	Medium
W27	Headwater Forest	Hydrology – Medium Water Qual.- Medium Habitat - High	Medium
W28	Floodplain Pool	Hydrology – Medium Water Qual.- High Habitat - High	High
W29	Headwater Forest	Hydrology – Medium Water Qual.- Medium Habitat - High	Medium
W30	Headwater Forest	Hydrology – Medium Water Qual.- Medium Habitat - High	Medium
W31	Headwater Forest	Hydrology – Medium Water Qual.- Medium Habitat - High	Medium
W102	Headwater Forest	Hydrology - Medium Water Qual.- Medium Habitat - High	Medium
W103	Headwater Forest	Hydrology - Medium Water Qual.- Medium Habitat - High	Medium
W104	Bottomland Hardwood Forest	Hydrology - Low Water Qual.- Medium Habitat - Low	Low
W105	Bottomland Hardwood Forest	Hydrology - Low Water Qual.- Medium Habitat - Low	Low
W106	Bottomland Hardwood Forest	Hydrology - Low Water Qual.- Medium Habitat - Low	Low
W107	Headwater Forest	Hydrology – Medium Water Qual.- Medium Habitat - High	Medium
W108	Headwater Forest	Hydrology – Medium Water Qual.- Medium Habitat - High	Medium
W109	Headwater Forest	Hydrology – Medium Water Qual.- Medium Habitat - High	Medium
W110	Headwater Forest	Hydrology – Medium Water Qual.- Medium Habitat - High	Medium
W111	Headwater Forest	Hydrology – Medium Water Qual.- Medium Habitat - Low	Medium
W122	Headwater Forest	Hydrology – Medium Water Qual.- Medium Habitat - Low	Medium
W123	Bottomland Hardwood Forest	Hydrology – Low Water Qual.- High Habitat - High	High

Wetland ID	NCWAM Wetland Classification	Function Rating Summary	Overall Wetland Rating
W126	Bottomland Hardwood Forest	Hydrology – Low Water Qual.- Medium Habitat - High	Low

In summary, the three wetland types observed within Project Blue were headwater forests, bottomland hardwood forests, and floodplain pools. The headwater forest wetlands within Project Blue have either a "Low" or "Medium" rating. The bottomland hardwood forest wetlands were found to have a "Low" or "High" rating. The floodplain pool wetlands have a "High" rating due to strong connectivity and/or historic disturbance. Wetlands that were found to have a NCWAM rating of "Low" were typically small in area relative to the wetland type, lacking connectivity to other natural areas, and/or impacted from historical disturbance. Photographs of the different types of wetlands within the Project Blue Site are included in **Appendix E**.

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USACE wetland determination forms and NCWAM forms for each site are included in a separate JD Package.

Table 10. Characteristics of wetlands in the NCDOT study area

Map ID	NCWAM Classification	Forested	NCWAM Rating	Hydrologic Classification	404/401 or 401	Area (ac.) in Study Area
WA	Basin Wetland	Yes	Low	Non-riparian	404/401	0.01
WB	Headwater Forest	Yes	High	Riparian	404/401	0.17
WC	Headwater Forest	Yes	High	Riparian	404/401	2.26
WD	Headwater Forest	Yes	High	Riparian	404/401	0.54
WE	Basin Wetland	Yes	Low	Non-riparian	404/401	0.08
WG	Headwater Forest	Yes	High	Riparian	404/401	1.46
WH	Headwater Forest	Yes	High	Riparian	404/401	0.29
WI	Headwater Forest	Yes	High	Riparian	404/401	0.16
WJ	Headwater Forest	Yes	High	Riparian	404/401	1.36
WK	Headwater Forest	Yes	Low	Riparian	404/401	0.13
WL	Headwater Forest	Yes	High	Riparian	404/401	0.68
WM	Bottomland Hardwood Forest	Yes	High	Riparian	404/401	15.65
WN	Headwater Forest	Yes	High	Riparian	404/401	1.39
WO	Bottomland Hardwood Forest	Yes	High	Riparian	404/401	0.88
WP	Basin Wetland	Yes	Low	Non-riparian	404/401	0.02
WQ	Basin Wetland	No	High	Non-riparian	404/401	0.04
WR	Headwater Forest	Yes	Low	Riparian	404/401	0.11
WS	Headwater Forest	Yes	High	Riparian	404/401	0.44
WT	Headwater Forest	Yes	High	Riparian	404/401	0.51
WU	Bottomland Hardwood Forest	Yes	High	Riparian	404/401	1.75
WV	Bottomland Hardwood Forest	Yes	Low	Riparian	404/401	0.60
WW	Bottomland Hardwood Forest	Yes	Medium	Riparian	404/401	0.41
WX	Bottomland Hardwood Forest	Yes	High	Riparian	404/401	4.50
WY	Headwater Forest	Yes	Medium	Riparian	404/401	0.12
WZ	Headwater Forest	Yes	Low	Riparian	404/401	0.83

Map ID	NCWAM Classification	Forested	NCWAM Rating	Hydrologic Classification	404/401 or 401	Area (ac.) in Study Area
WAA	Headwater Forest	Yes	High	Riparian	404/401	0.12
WAB	Headwater Forest	Yes	High	Riparian	404/401	0.12
WAC	Headwater Forest	Yes	High	Riparian	404/401	0.15
WAD	Headwater Forest	Yes	High	Riparian	404/401	0.15
WAE	Bottomland Hardwood Forest	Yes	High	Riparian	404/401	0.01
WAF	Seep	Yes	High	Non-riparian	404/401	0.39
WAG	Seep	Yes	High	Non-riparian	404/401	0.67
WAH	Basin Wetland	Yes	Low	Non-riparian	404/401	0.03
WAI	Headwater Forest	Yes	High	Riparian	404/401	0.28
WAJ	Headwater Forest	Yes	Low	Riparian	404/401	0.11
WAK	Basin Wetland	Yes	Medium	Non-riparian	404/401	0.10
WAL	Headwater Forest	Yes	High	Riparian	404/401	0.25
WAM	Headwater Forest	Yes	High	Riparian	404/401	2.17
WAN	Headwater Forest	Yes	High	Riparian	404/401	1.28
WAO	Hardwood Flat	Yes	Medium	Non-riparian	404/401	0.54
WAP	Riverine Swamp Forest	Yes	Low	Riparian	404/401	0.70
WAQ	Bottomland Hardwood Forest	Yes	Low	Riparian	404/401	1.09
WAR	Riverine Swamp Forest	Yes	Medium	Riparian	404/401	3.73
WAS	Basin Wetland	Yes	High	Non-riparian	404/401	0.15
WAT	Bottomland Hardwood Forest	Yes	Medium	Riparian	404/401	1.08
WAU	Hardwood Flat	Yes	High	Non-riparian	404/401	0.28
WAV	Hardwood Flat	Yes	Medium	Non-riparian	404/401	0.30
WAW	Hardwood Flat	Yes	High	Non-riparian	404/401	0.68
WAX	Hardwood Flat	Yes	Medium	Non-riparian	401	0.75
WAY	Basin Wetland	Yes	Medium	Non-riparian	401	0.07
WAZ	Bottomland Hardwood Forest	Yes	High	Riparian	404/401	18.80
WBA	Basin Wetland	Yes	Low	Non-riparian	404/401	0.02
WBB	Headwater Forest	Yes	Low	Riparian	404/401	0.05
WBC	Headwater Forest	Yes	Low	Riparian	404/401	0.84
WBD	Headwater Forest	Yes	Low	Riparian	404/401	0.31
WBE	Seep	Yes	Medium	Non-riparian	404/401	0.18
WBF	Seep	Yes	Medium	Non-riparian	404/401	0.32
WBG	Seep	Yes	High	Non-riparian	404/401	0.33
WBH	Bottomland Hardwood Forest	Yes	High	Riparian	404/401	0.06
WBI	Floodplain Pool	Yes	High	Riparian	404/401	0.01
WBJ	Bottomland Hardwood Forest	Yes	Medium	Riparian	404/401	0.15
WBK	Headwater Forest	Yes	High	Riparian	404/401	19.19
WBL	Floodplain Pool	Yes	High	Riparian	404/401	0.06
WBM	Headwater Forest	Yes	High	Riparian	404/401	0.28
WBN	Headwater Forest	Yes	High	Riparian	404/401	0.10
WBO	Headwater Forest	Yes	Low	Riparian	404/401	0.28

Map ID	NCWAM Classification	Forested	NCWAM Rating	Hydrologic Classification	404/401 or 401	Area (ac.) in Study Area
WBP	Headwater Forest	Yes	High	Riparian	404/401	0.33
WBQ	Headwater Forest	Yes	Low	Riparian	404/401	0.30
WBR	Basin Wetland	Yes	Medium	Non-riparian	404/401	0.12
WBS	Headwater Forest	Yes	High	Riparian	404/401	0.72
WBT	Headwater Forest	Yes	High	Riparian	404/401	0.07
WBU	Basin Wetland	Yes	Medium	Non-riparian	404/401	0.08
WBV	Bottomland Hardwood Forest	Yes	Medium	Riparian	404/401	12.14
WBW	Floodplain Pool	Yes	Low	Riparian	404/401	0.25
WBY	Headwater Forest	Yes	High	Riparian	404/401	0.01
WBZ	Headwater Forest	Yes	High	Riparian	404/401	0.02
WCA	Basin Wetland	Yes	Low	Non-riparian	404/401	0.17
WCB	Headwater Forest	Yes	High	Riparian	404/401	0.40
WCC	Headwater Forest	Yes	High	Riparian	404/401	0.02
WCD	Headwater Forest	Yes	High	Riparian	404/401	<0.01
WCE	Headwater Forest	Yes	High	Riparian	404/401	0.05
WCF	Headwater Forest	Yes	High	Riparian	404/401	<0.01
WCG	Headwater Forest	Yes	High	Riparian	404/401	<0.01
WCH	Floodplain Pool	Yes	High	Riparian	404/401	0.09
WCI	Floodplain Pool	Yes	High	Riparian	404/401	0.01
					Total:	105.38

Utilities

Due to the minimal permanent wetland impacts resulting from the proposed offsite utility connections, NCWAM evaluations of wetlands within the offsite water, sewer, and natural gas corridors were not completed as part of this application and are assumed to be high quality for purposes of evaluations discussed below.

1.3.5 North Carolina Stream Assessment Method (NCSAM)

The NCSAM (Version 2) was utilized to classify and evaluate stream features within the Project Blue Site and HE-0006 Corridor. Assessment methodology evaluated the following three major stream functions and associated sub-functions: 1) hydrology (baseflow, flood flow, floodplain access and function, and channel stability), 2) water quality (baseflow, pollutant filtration and thermoregulation, stressors, and aquatic life), and 3) habitat (in-stream and stream-side habitat, and channel substrate and stability). Functional ratings are applied to the stream assessment area in comparison to reference conditions identified for each of the North Carolina stream categories. Due to the minimal permanent stream impacts resulting from the proposed offsite Utility Connections, NCSAM evaluations of streams within the offsite water, sewer, natural gas, and overhead power utility corridors were not completed as part of this application and are assumed to be high quality for purposes of evaluations discussed below.

Project Blue

Kimley-Horn biologists conducted NCSAM assessments on July 13, 2022 for the stream features within the Site that were found to exhibit evidence of degradation or impairment during the delineation of the Site. Five streams were identified as potentially impaired and evaluated using NCSAM assessments within the Site. Stream S1 was identified as potentially impaired due to a beaver impoundment; however, high quality stability and in-stream habitat within the stream

resulted in an overall “Medium” NCSAM rating. Stream S3 was identified as potentially impaired due to the location within a silviculture tract; however, high quality streamside area vegetation and hydrology resulted in an overall “High” NCSAM rating. Stream S6 was identified as potentially impaired due to a beaver impoundment; however, high quality hydrology, water quality, and in-stream habitat resulted in an overall “High” NCSAM rating. Stream S13 was identified as potentially impaired due to the presence of a culvert; additionally, low flood flow and in-stream habitat resulted in an overall “Low” NCSAM rating. Stream S14 was identified as potentially impaired due to nearby roadway corridors (Christian Chapel Church Road and Moncure Flatwood Road); however, high flood flow resulted in an overall “Medium” NCSAM rating. All streams in the Project Blue Site have been designated as warm water streams for the purposes of stream mitigation.

The following table summarizes the results of the NCSAM analysis for the Site. The NCSAM data form score sheets for the following streams are included in **Appendix I.**

Table 11. Summary of NCSAM Results within Project Blue

Stream ID	Flow Regime	Function Rating Summary	Overall Stream Rating
S1	Perennial	Hydrology - High Water Qual.- Low Habitat – Medium	Medium
S3	Perennial	Hydrology - High Water Qual.- High Habitat - Low	High
S6	Perennial	Hydrology - High Water Qual.- High Habitat – High	High
S13	Perennial	Hydrology - Low Water Qual.- Low Habitat - Low	Low
S14	Perennial	Hydrology- Medium Water Qual.- Low Habitat - Medium	Medium

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Twenty-five streams were identified in the NCDOT study area (**Table 12**). The location of these streams is shown on **Figure 4B: Water Resources Map**. North Carolina Stream Assessment Method (NCSAM) and NCDWR stream identification forms are included in a separate JD Package. All streams in the NCDOT study area have been designated as warm water streams for the purposes of stream mitigation.

The project is located within the Cape Fear River Basin downstream of Jordan Lake therefore no statewide buffer rules apply for this project.

Table 12. Status of streams in the NCDOT study area

Map ID	Length (ft.)	Classification	Compensatory Mitigation Required
SA*	83	Perennial	Yes
SB	177	Perennial	Yes
SC	689	Perennial	Yes
SD	556	Perennial	Yes
SG	553	Intermittent	Yes
SG	1,412	Perennial	Yes
SH	94	Perennial	Yes
SI	342	Perennial	Yes
SJ	20	Perennial	Yes
SK	1,313	Perennial	Yes
SL	662	Perennial	Yes
SM	290	Intermittent	Yes
SN	110	Intermittent	Yes
SO	530	Perennial	Yes
SP	80	Perennial	Yes
SQ	336	Perennial	Yes
Shaddox Creek (SR)	7,275	Perennial	Yes
SS	873	Perennial	Yes
ST	1,162	Perennial	Yes
SU*	480	Perennial	Yes
SBB*	211	Perennial	Yes
SBD	188	Perennial	Yes
SBE*	376	Perennial	Yes
SCA	650	Perennial	Yes
SCB	93	Intermittent	Yes
SCB*	3,000	Perennial	Yes
SCC	664	Perennial	Yes
Total	22,219		

* NCSAM forms are available in the HE-0006 JD package

Utilities

Due to the minimal permanent stream impacts resulting from the proposed offsite utility connections, NCSAM evaluations of streams within the offsite water, sewer, and natural gas corridors were not completed as part of this application and are assumed to score as high quality.

1.3.6 Soils

Project Blue

Based on information obtained in the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Survey for Chatham County, the soils within the Project Blue Site are composed of twelve soil series. **Table 13A** summarizes the characteristics of each soil series in the Project Blue Site.

Table 13A. Soils within the Project Blue Site

Soil Series Name	Map Symbol	Drainage Class	Percentage of Project Blue Site	Hydric Status
Carbonton-Brickhaven complex, 2-6%	CcB	Moderately well drained	1.1	Non-Hydric
Carbonton-Brickhaven complex, 6-10%	CcC	Moderately well drained	8.0	Non-Hydric
Carbonton-Brickhaven complex, 10-15%	CcD	Moderately well drained	8.4	Non-Hydric
Chewacla and Wehadkee soils, 0-2%, frequently flooded	ChA	Poorly drained	7.5	Primarily Non-Hydric with Hydric Inclusions
Creedmoor-Green Level complex, 2-6%	CrB	Somewhat poorly drained	2.2	Non-Hydric
Creedmoor-Green Level complex, 6-10%	CrC	Somewhat poorly drained	4.6	Non-Hydric
Mayodan fine sandy loam, 6-10%	MdC	Well drained	0.5	Non-Hydric
Peawick fine sandy loam, 2-8%	PeB	Moderately well drained	3.1	Non-Hydric
Pittsboro-Iredell complex, 2-8%, stony	PsB	Moderately well drained	0.3	Non-Hydric
White Store-Polkton complex, 2-6%	WhB	Moderately well drained	11.0	Non-Hydric
White-Store Polkton complex, 6-10%	WhC	Moderately well drained	19.6	Primarily Non-Hydric with Hydric Inclusions
White Store-Polkton complex, 10-15%	WhD	Moderately well drained	33.8	Non-Hydric

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Soils present within the NCDOT study area consist of roadway embankment, railroad embankment, alluvium, and residuum. Roadway and Railroad embankment soils consist of 5 to 20 feet of soft to stiff, moderately to highly plastic, clayey silt and silty clay. Alluvial soils associated with the Shaddox Creek consist of 5 to 15 feet of very soft to soft, silts/clays interbedded with loose clayey and silty sand with gravel, overlying Triassic weathered rock. Triassic residual soils may be at variable depths, and consist of soft to hard, dry to moist, silty clay and clayey/sandy silt. Residual soils transition quickly to weathered and non-crystalline Triassic rock. Triassic material is considered degradable, i.e., it can exhibit high slaking characteristics when exposed to air and water. **Table 13B** summarizes the characteristics of each soil series in the NCDOT study area.

Table 13B. Soils within the NCDOT study area

Soil Series Name	Map Symbol	Drainage Class	Percentage of HE-0006	Hydric Status
Carbonton-Brickhaven complex, 2 to 6% slopes	CcB	Somewhat poorly drained	0.5	Non-Hydric
Carbonton-Brickhaven complex, 6 to 10% slopes	CcC	Somewhat poorly drained	4.2	Non-Hydric
Chewacla and Wehadkee soils, 0 to 2% slopes, frequently flooded	ChA	Somewhat poorly drained	12.3	Partially Hydric

Creedmoor-Green Level complex, 2 to 6% slopes	CrB	Moderately well drained	6.6	Non-Hydric
Creedmoor-Green Level complex, 6 to 10%slopes	CrC	Moderately well drained	6.1	Non-Hydric
Creedmoor-Green Level complex, 10 to 15% slopes	CrD	Moderately well drained	1.2	Non-Hydric
Mattaponi fine sandy loam, 2 to 8% slopes	MaB	Well drained	0.7	Non-Hydric
Merry Oaks-Moncure complex, 0 to 2% slopes, occasionally flooded	MrA	Somewhat poorly drained	6.3	Partially Hydric
Peawick fine sandy loam, 0 to 2% slopes	PeA	Moderately well drained	8.6	Non-Hydric
Peawick fine sandy loam, 2 to 8% slopes	PeB	Moderately well drained	20.8	Non-Hydric
Pittsboro-Iredell complex, 2 to 8% slopes, stony	PsB	Somewhat poorly drained	6.3	Non-Hydric
Riverview silt loam, 0 to 3% slopes, frequently flooded	RvA	Well drained	0.1	Predominantly Non-Hydric
State sandy loam, 2 to 6% slopes	StB	Well drained	2.8	Non-Hydric
Udorthents, loamy, 2 to 10% slopes	UdC	Well drained	11.7	Non-Hydric
White Store-Polkton complex, 2 to 6% slopes	WhB	Moderately well drained	4.4	Non-Hydric
White Store-Polkton complex, 6 to 10% slopes	WhC	Moderately well drained	5.9	Predominantly Non-Hydric
White Store-Polkton complex, 10 to 15% slopes	WhD	Moderately well drained	1.0	Non-Hydric

Utilities

Soils present within the Utility Corridors are composed of 39 soil series spanning Chatham and Lee Counties. **Table 14** summarizes the characteristics of each soil series in the Utility Corridors.

Table 14. Soils within the Utility Corridors

Soil Series Name	Map Symbol	Drainage Class	Percentage of Water/Sewer Corridor	County	Hydric Status
Carbonton-Brickhaven complex, 6 to 10% slopes	CcC	Somewhat poorly drained	1.4	Chatham	Non-Hydric
Chewacla silt loam, 0 to 2% slopes, frequently flooded	Ch	Somewhat poorly drained	9.2	Lee	Non-Hydric
Chewacla and Wehadkee soils, 0 to 2% slopes, frequently flooded	ChA	Somewhat poorly drained	5.0	Chatham	Primarily Non-Hydric with Hydric Inclusions
Congaree silt loam, 0 to 2% slopes, frequently flooded	Cp	Moderately well drained	8.7	Lee	Non-Hydric

Soil Series Name	Map Symbol	Drainage Class	Percentage of Water/Sewer Corridor	County	Hydric Status
Creedmoor-Green Level complex, 2 to 6% slopes	CrB	Moderately well drained	0.2	Chatham	Non-Hydric
Creedmoor fine sandy loam, 2 to 8% slopes	CrB	Moderately well drained	2.9	Lee	Non-Hydric
Creedmoor-Green Level complex, 6 to 10% slopes	CrC	Moderately well drained	0.2	Chatham	Non-Hydric
Creedmoor fine sandy loam, 8 to 15% slopes	CrD	Moderately well drained	2.9	Lee	Non-Hydric
Mattaponi fine sandy loam, 0 to 2 percent slopes	MaA	Well drained	0.4	Chatham	Non-Hydric
Mattaponi fine sandy loam, 2 to 8% slopes	MaB	Well drained	1.9	Chatham	Non-Hydric
Mayodan fine sandy loam, 2 to 6% slopes	MdB	Well drained	0.4	Chatham	Non-Hydric
Mayodan fine sandy loam, 6 to 10% slopes	MdC	Well drained	1.5	Chatham	Non-Hydric
Mayodan fine sandy loam, 2 to 8% slopes	MfB	Well drained	3.0	Lee	Non-Hydric
Mayodan fine sandy loam, 8 to 15% slopes	MfD	Well drained	4.3	Lee	Non-Hydric
Mayodan fine sandy loam, 15 to 25% slopes	MfE	Well drained	0.2	Lee	Non-Hydric
Mayodan gravelly sandy loam, 10 to 15% slopes	MgD	Well drained	1.8	Chatham	Non-Hydric
Merry Oaks-Moncure complex, 0 to 2% slopes, occasionally flooded	MrA	Somewhat poorly drained	2.9	Chatham	Primarily Non-Hydric with Hydric Inclusions
Mayodan-Urban land complex, 2 to 8% slopes	MrB	Well drained	0.4	Lee	Non-Hydric
Peawick fine sandy loam, 0 to 2% slopes, rarely flooded	PcA	Moderately well drained	5.4	Chatham	Non-Hydric
Peawick fine sandy loam, 0 to 2% slopes	PeA	Moderately well drained	7.5	Chatham	Non-Hydric
Peawick fine sandy loam, 2 to 8% slopes	PeB	Moderately well drained	8.4	Chatham	Non-Hydric
Pinkston silt loam, 2 to 8% slopes	PfB	Well drained	2.0	Lee	Non-Hydric
Pinkston silt loam, 8 to 15% slopes	PfD	Well drained	2.9	Lee	Non-Hydric

Soil Series Name	Map Symbol	Drainage Class	Percentage of Water/Sewer Corridor	County	Hydric Status
Pinkston silt loam, 15 to 40% slopes	PfF	Well drained	2.2	Lee	Non-Hydric
Roanoke silt loam, 0 to 2% slopes, occasionally flooded	Ro	Well drained	1.4	Lee	Hydric
Riverview silt loam, 0 to 3% slopes, frequently flooded	RvA	Well drained	3.1	Chatham	Primarily Non-Hydric with Hydric Inclusions
State fine sandy loam, 0 to 3% slopes, rarely flooded	StA	Well drained	0.8	Lee	Non-Hydric
State sandy loam, 2 to 6% slopes	StB	Well drained	1.2	Chatham	Non-Hydric
Tillery fine sandy loam, 1 to 4% slopes, rarely flooded	ToB	Moderately well drained	3.4	Lee	Non-Hydric
Turbeville fine sandy loam, 0 to 3% slopes	TuA	Well drained	1.9	Chatham	Non-Hydric
Udorthents, loamy	Ud	Well drained	0.9	Lee	Non-Hydric
Udorthents, loamy, 2 to 10% slopes	UdC	Well drained	1.1	Chatham	Non-Hydric
White Store-Polkton complex, 2 to 6% slopes	WhB	Moderately well drained	0.2	Chatham	Non-Hydric
White Store-Polkton complex, 6 to 10% slopes	WhC	Moderately well drained	0.2	Chatham	Primarily Non-Hydric with Hydric Inclusions
White Store-Polkton complex, 10 to 15% slopes	WhD	Moderately well drained	5.2	Chatham	Non-Hydric
Wehadkee fine sandy loam, 0 to 2% slopes, frequently flooded	Wn	Poorly drained	1.8	Lee	Hydric
White Store silt loam, 2 to 8% slopes	WsB	Moderately well drained	0.7	Lee	Non-Hydric
Wickham sandy loam, 2 to 8% slopes, rarely flooded	WwB	Well drained	1.1	Lee	Non-Hydric

1.3.7 Vegetation

Project Blue

The Project Blue Site is a mix of planted pine stands transected by a large overhead powerline easement, with pockets of hardwood tree signatures and riparian systems dispersed throughout. Select timber harvest operations have occurred over the years as recent as 2017. Invasive species commonly found in North Carolina such as autumn olive (*Elaeagnus umbellata*), Chinese privet (*Ligustrum sinense*), Japanese wisteria (*Wisteria floribunda*), and Japanese honeysuckle (*Lonicera japonica*) are prevalent throughout different areas within the Project Blue Site. Japanese stilt-grass

(*Microstegium vimineum*) was also observed within the lower, mesic mixed hardwood areas. Four terrestrial communities were identified within the Site. Terrestrial community data are presented in the context of total coverage of each type within Project Blue (**Table 15**).

Table 15. Coverage of terrestrial communities within Project Blue

Community	Dominant Species (scientific name)	Coverage (ac.)
Pine Stands	loblolly pine (*Pinus taeda*) sweetgum (*Liquidambar styraciflua*)	995
Mesic Mixed Hardwood	sweetgum (*Liquidambar styraciflua*) loblolly pine (*Pinus taeda*) red maple (*Acer rubrum*)	83
Bottomland Hardwood Forest	red maple (*Acer rubrum*) Japanese stilt-grass (*Microstegium vimineum*)	88
Headwater Forest	loblolly pine (*Pinus taeda*) black willow (*Salix nigra*) sweetgum (*Liquidambar styraciflua*) soft rush (*Juncus effesus*) bulrush (*Scirpus pendulus*) broadleaf cattail (*Typha latifolia*)	12
Floodplain Pool	sweetgum (*Liquidambar styraciflua*) common rush (*Juncus effusus*) broad-winged sedge (*Carex alata*)	<1
Maintained/Disturbed	loblolly pine (*Pinus taeda*) fescue (*Fesutca spp.*)	122
	Total	**1,300**

Wetland communities within the forested areas of Project Blue include headwater forest wetlands, bottomland hardwood forest wetlands, and floodplain pool systems. Brief descriptions of these wetland communities, as well as common species observed in each community type, are provided below. Photographs of vegetation within these wetland types are included in **Appendix E**.

Headwater Forest
Within the headwater forest community, the canopy and understory species were dominated by loblolly pine (*Pinus taeda*), black willow (*Salix nigra*), and sweetgum (*Liquidambar styraciflua*). Common species observed in the herbaceous layer typically included Pennsylvania smartweed (*Polygonum pennsylvanica),* Pennsylvania sedge (*Carex pensylvanica)* bushy knotweed (*Polygonum ramosissimum),* and Japanese stilt-grass (*Microstegium vimineum*).

Bottomland Hardwood Forest
Within the Bottomland Hardwood Forest community, the vegetation was dominated by red maple (*Acer rubrum*), sweetgum (*Liquidambar styraciflua*), and a few loblolly pines (*Pinus taeda*) scattered throughout the canopy and sapling levels. Other vegetation observed includes knotweed (*Polygonum sp.*), Japanese silt-grass (*Microstegium vimineum*), dog fennel (*Eupatorium capillifolium*), and common sedge (*Carex sp.*).

Floodplain Pool
Within the floodplain pool community, the vegetation was dominated by sweetgum (*Liquidambar styraciflua*), common rush (*Juncus effusus*), and broad-winged sedge (*Carex alata*). Other vegetation observed includes bulrush (*Scirpus*), and broadleaf cattail (*Typha latifolia*).

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Five terrestrial communities were identified in the NCDOT study area. Terrestrial community data are presented in the context of total coverage of each type within the study area (**Table 16**).

Table 16. Coverage of terrestrial communities in the NCDOT study area

Community	Dominant Species (scientific name)	Coverage (ac.)
Maintained/Disturbed	tall fescue (*Schedonorus arundinaceus*) wild garlic (*Allium vineale*) lanceleaf plantain (*Plantago lancifolia*)	408
Mixed Pine/Hardwood Forest	loblolly pine (*Pinus taeda*) red maple (*Acer rubrum*) sweetgum (*Liquidambar styraciflua*)	282
Pine Forest	loblolly pine (*Pinus taeda*) shortleaf pine (*Pinus echinata*) American holly (*Ilex opaca*)	266
Bottomland Hardwood Forest	tulip poplar (*Liriodendron tulipifera*) American hornbeam (*Carpinus caroliniana*) American sycamore (*Platanus occidentalis*)	67
Mixed Hardwood Forest	loblolly pine (*Pinus taeda*) red maple (*Acer rubrum*) sweetgum (*Liquidambar styraciflua*)	31
	Total	**1,054**

1.3.8 Protected Species and Habitat

Project Blue
Development within the Project Blue Site is not expected to result in permanent adverse effects to the overall fish or wildlife value of the Site and its surrounding vicinity. During construction, it is likely that some aquatic and terrestrial animals might be lost, along with their habitat. Following construction, the remaining natural areas and riparian buffers, as well as the large contiguous forest areas surrounding the Site, would continue to provide sufficient habitat for fish and migratory bird species that may utilize the area.

As of July 12, 2022, the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) website lists three federally endangered species protected under the Endangered Species Act (ESA) as known to occur within the Project Blue vicinity, including Cape Fear shiner (*Notropis mekistocholas*), red-cockaded woodpecker (*Picoides borealis*), and harperella (*Ptilimnium nodosum*). Bald eagle is also known to occur in Chatham County and is protected under the Bald and Golden Eagle Protection Act (BGPA). A review of the NC Natural Heritage Program (NCNHP) element occurrence database records (updated July 2022) indicates that there are no known occurrences of any protected species within the Project Blue Site, however, one historic (1984) occurrence of the red-cockaded woodpecker (RCW) was documented within 1.0 mile of the Project Blue Site boundary.

Table 17. ESA Federally Protected Species Listed for the Project Blue Vicinity

Scientific Name	Common Name	Federal Status	Habitat Present	Biological Conclusion
Notropis mekistocholas	Cape Fear shiner	E	No	MA-NLAA
Picoides borealis	Red-cockaded woodpecker	E	Yes	No Effect
Ptilimnium nodosum	Harperella	E	No	No Effect

E – Endangered
MA-NLAA – May Affect, Not Likely to Adversely Affect

Kimley-Horn submitted a Project Review Request to the USFWS on July 26, 2022 to request concurrence that the proposed project "May Affect, but is Not Likely to Adversely Affect" the Cape Fear shiner and will have "No Effect" on the RCW, harperella, or bald eagle. Detailed results from the habitat evaluation and the biological conclusions rendered are presented below. John Ellis of the USFWS concurred via email with Kimley-Horn's biological conclusions outlined in the submitted Project Review Request on September 20, 2022 (**Appendix F**).

Cape Fear shiner
The Cape Fear shiner is known only from the Cape Fear River watershed. In general, habitat occurs in streams with clean gravel, cobble, or boulder substrates. It is most often observed inhabiting slow pools, riffles, and slow runs associated with water willow (*Justicia americana*) beds, which it uses for cover. Juveniles can be found inhabiting slack water, among large rock outcrops and in flooded side channels and pools. Suitable habitat for Cape Fear shiner is not present within the Project Blue Site. However, streams within the Project Blue Site drain to the Haw River, which supports one of the few known Cape Fear shiner populations. Due to the lack of known occurrences within the Project Blue vicinity, the lack of suitable habitat within the Project Blue Site, and the location within the Haw River watershed, it is anticipated that the proposed Project Blue development "May Affect, but is Not Likely to Adversely Affect" the Cape Fear shiner.

Red-cockaded woodpecker
The RCW typically occupies open, mature stands of southern pines, particularly longleaf pine (Pinus palustris), for foraging and nesting habitat. The RCW excavates cavities for nesting in living pine trees, aged 60 years or older, which are contiguous with pine stands at least 30 years of age for foraging habitat. The foraging range for RCW is normally less than 0.5 miles. Potentially suitable foraging habitat for the RCW is present within the open, mature loblolly pine stands located throughout the Project Blue Site. Therefore, Kimley-Horn biologists conducted a habitat assessment of the mature loblolly pine stands within the Site on June 16, 2022, and no RCW individuals were observed, and no suitable nesting habitat was found. Additionally, the Project Blue Site is located outside of the RCW Consultation Area, as identified in the USFWS RCW SLOPES Manual. Due to the Project Blue location outside the RCW Consultation Area and the lack of suitable nesting habitat within the Project Blue Site, it is anticipated that the proposed Project Blue development would have "No Effect" on the RCW.

Harperella
Harperella typically occur on rocky or gravel shoals and sandbars along the margins of clear, swift-flowing streams. Harperella occupies narrow ranges of water depths, so changes in flow can destroy suitable habitat through inundation or dewatering. Suitable habitat for harperella is not present within the Project Blue Site due to the lack of streams containing gravel and rock substrate with clear, swift-flowing water. Due to the lack of suitable habitat within the Project Blue Site and the lack of known occurrences within the Project Blue vicinity, it is anticipated that the Project Blue development will have "No Effect" on harperella.

Northern Long-eared Bat
Potentially suitable summer roosting habitat for the NLEB may be present within forested areas in the Site. Percussive activities and tree cutting/removal are anticipated as part of the Project Blue construction phase. The Final 4(d) rule (effective as of February 16, 2016) exempts incidental take

of NLEB associated with activities that occur greater than 0.25 miles from a known hibernation site, and greater than 150 feet from a known, occupied maternity roost tree during the pup season (June 1 – July 31). Based on the Standard Local Operating Procedures for Endangered Species Act Compliance (SLOPES) for the northern long-eared bat in North Carolina, Kimley-Horn conducted a review of the most current maps of confirmed/known hibernacula and maternity sites for the NLEB. The action area for Project Blue is located outside of any county in North Carolina with watersheds with known NLEB maternity trees or hibernation sites (the highlighted areas/red 12-digit HUCs). In addition, a review of the NCNHP database records (updated July 2022) indicates there are no known occurrences of NLEB in or within 1.0 mile of the Site. Based on the review, the proposed activities in the action area occur at a location where any incidental take that may result from the associated activities is exempt under the Final 4(d) rule; therefore, it is anticipated that Project Blue "May Affect, Not Likely to Adversely Affect" NLEB.

Bald and Golden Eagle Protection Act (BGPA)
The bald eagle is protected under the BGPA, enforced by the USFWS. Habitat for the bald eagle primarily consists of mature forests in proximity to large bodies of open water for foraging. Large dominant trees are utilized for nesting sites, typically within 1.0 mile of open water. A desktop review of available aerial imagery identified two water bodies (the Haw River and the Shearon Harris Reservoir) large enough or sufficiently open to be considered potential feeding sources for bald eagle within a 1.13-mile radius (1.0 mile plus 660 feet) of the Project Blue Site. Since foraging habitat was identified within 1.13 miles of the Project Blue boundary, Kimley-Horn conducted pedestrian surveys for the bald eagle within areas of potential nesting habitat located in or within 660 feet of the Project Blue Site on June 16, 2022, and no nests or individuals were observed. Due to the lack of observed nests and individuals, and the lack of known occurrences within the Project Blue vicinity, it is anticipated that the Project Blue development will have "No Effect" on the bald eagle.

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The United States Fish and Wildlife Service (USFWS) list the following federally protected species within the NCDOT study area, under the Endangered Species Act (ESA) (**Table 18**). For each species, a discussion of the presence or absence of habitat is included below along with the Biological Conclusion rendered based on survey results in the NCDOT study area.

Table 18. ESA federally protected species within the NCDOT Study Area[1]

Scientific Name	Common Name	Federal Status	Habitat Present	Biological Conclusion
Picoides borealis	red-cockaded woodpecker	E	Yes	No effect
Notropis mekistocholas	Cape Fear shiner	E	Yes	MA-NLAA
Ptilimnium nodosum	harperella	E	Yes	No effect

[1] IPaC data checked on 4/29/2020 E – Endangered; MA-NLAA – May Affect, Not Likely to Adversely Affect

Red-cockaded woodpecker
USFWS optimal survey window: year-round; November – early March (optimal)
Biological Conclusion: No effect

Foraging habitat for the red-cockaded woodpecker (RCW), in the form of mixed pine/hardwood stands greater than 30 years old, is present in the NCDOT study area. Nesting habitat, in the form of pine dominated mixed pine/hardwood stands 60 years in age or older is present within the NCDOT study area. Due to the presence of foraging and nesting habitat, cavity tree surveys for the RCW were completed in July 2022. A review of NHP records on May 23, 2022, indicates one historical record within 1.0 mile of the NCDOT study area, last observed in 1984.

Cape Fear shiner
USFWS optimal survey window: year-round; November – early March (optimal)
Biological Conclusion: May Affect, Not Likely to Adversely Affect

Due to the presence of marginally suitable habitat for the Cape Fear shiner located downstream of the Old US-1 crossing in Shaddox Creek and the nearest element occurrence (EO) for this species located upstream of the NCDOT study area with no barriers separating this EO, it can be concluded that the completion of this project May Affect, Not Likely to Adversely Affect the Cape Fear shiner. Surveys were conducted May 30 – June 3, 2022. No Cape Fear shiners were observed. A review of NHP records on May 23, 2022, indicates no records within 1.0 mile of the NCDOT study area. A Freshwater Fish Survey Report was completed by NV5 (August 2022) for HE-0006.

Harperella
USFWS optimal survey window: July – early September (during low water)
Biological Conclusion: No effect

The stream systems within the NCDOT study area are generally turbid, slow-moving, and have a sandy or silt substrate. Harperella requires clear and swift flowing channels, typically with exposed bedrock. However, an area of suitable habitat was located within Shaddox Creek. Surveys were completed in July 2022. A review of NHP records on May 23, 2022, indicates no records within 1.0 mile of the NCDOT study area.

Northern long-eared bat
The U.S. Fish and Wildlife Service has revised the previous programmatic biological opinion (PBO) in conjunction with the Federal Highway Administration (FHWA), the U.S. Army Corps of Engineers, and NCDOT for the Northern long-eared bat (NLEB; *Myotis septentrionalis*) in eastern North Carolina. The PBO covers the entire NCDOT program in Divisions 1-8, including all NCDOT projects and activities. Although this programmatic covers Divisions 1-8, NLEBs are currently only known in 22 counties, but may potentially occur in 8 additional counties within Divisions 1-8. NCDOT, FHWA, and USACE have agreed to two conservation measures which will avoid/minimize mortality of NLEBs. These conservation measures only apply to the 30 current known/potential counties shown on Figure 2 of the PBO at this time. The programmatic determination for NLEB for the NCDOT program is May Affect, Likely to Adversely Affect. The PBO will ensure compliance with Section 7 of the Endangered Species Act for ten years (effective through December 31, 2030) for all NCDOT projects with a federal nexus in Divisions 1-8, which includes Chatham County, where Project Blue is located.

Bald and Golden Eagle Protection Act
The Bald and Golden Eagle Protection Act is enforced by the USFWS. Golden eagles do not nest in North Carolina. Habitat for the bald eagle primarily consists of mature forests in proximity to large bodies of open water for foraging. Large dominant trees are utilized for nesting sites, typically within 1.0 mile of open water. A desktop-GIS assessment of the NCDOT study area, as well as the area within a 1.0-mile radius of the project limits, was performed on May 2, 2022, using color aerials. The Haw River is less than 1 mile from the western portion of the NCDOT study area. There are numerous ponds within the NCDOT study area, but all are less than 2 acres in size. Due to the NCDOT study area's proximity to water bodies with potential foraging or nesting habitat, a survey of the project study area and the area within 660 feet of the project limits was conducted. No evidence of bald eagle nesting or foraging was observed. Additionally, a review of the NHP database on May 23, 2022, revealed no known occurrences of this species within 1.0 mile of the NCDOT study area. Due to the lack nesting or foraging observations during field investigations, known occurrences, and minimal impact anticipated for this project, it has been determined that this project will not affect this species.

Utilities

Development within the Utilities corridors are not expected to result in permanent adverse effects to the overall fish or wildlife value of the Site and its surrounding vicinity. During construction, it is likely that some aquatic and terrestrial animals might be lost, along with their habitat. Following construction, the remaining natural areas and riparian buffers, as well as the large contiguous forest areas surrounding the Site, would continue to provide sufficient habitat for fish and migratory bird species that may utilize the area.

The United States Fish and Wildlife Service (USFWS) identifies plant and animal species that are in the process of decline or at risk of extinction that require federal protection. Federal law, under Section 7 of the Endangered Species Act (ESA) of 1973, as amended, requires that any action likely to adversely affect a federally protected species be subject to review by USFWS. Other species may also receive additional protection under separate federal laws.

On September 29, 2022, the City of Sanford's consultant, Freese and Nichols (FNI) consulted the USFWS IPaC website to determine the potential for threatened or endangered species occurrence within the corridors. Three endangered species were identified as known to occur within the vicinity of the project. The identified species include red-cockaded woodpecker (*Picoides borealis*), Cape Fear shiner (*Notropis mekistocholas*), and Harperella (*Ptilimnium nodosum*). A brief description of each species' habitat requirements, along with a biological conclusion rendered based upon a desktop assessment of the corridors are detailed below in **Table 19**.

Table 19. Species Conclusions Table: Sewer and Water Improvements

Species / Resource Name	Conclusion	ESA Section 7 / Eagle Act Determination	Notes / Documentation
Red-cockaded woodpecker *Picoides borealis*	No suitable habitat present	No Effect	Most of the alignment runs along previously disturbed and maintained utility and highway right-of-way (ROW). The non- ROW areas of the project run through mix hardwood and pine forest that was harvested via clear-cut in 1999 (based on historic aerial imagery analysis). No trees are present that would provide RCW nesting, roosting, or foraging habitat. A review of the NCNHP database on September 29, 2022 did not identify any RCW observations within 1-mile of the project alignment.
Cape Fear shiner *Notropis mekistocholas*	Potential habitat present and no current survey conducted	No Effect	The project crosses the Deep, Haw and Cape Fear Rivers. All crossings are downstream of identified Cape Fear shiner critical habitat. The Deep, Haw and Cape Fear Rivers crossings will be horizontal directionally drilled (HDD) to minimize impact to the stream bed and riparian areas and will not impact the stream bed, substrate or protected riparian areas within the project alignment. Perennial tributaries of the Deep, Haw, and Cape Fear Rivers identified within the project area are comprised primarily of gravel and sand substrate, with most impaired by erosion and sedimentation. No islands were identified within the project alignment, and no associate vegetation, including *Justica americana*, were identified within the project area. All other streams within the alignment will be open cut. Proper erosion and sediment controls, storm water control measures, and watershed protection rules will be implemented to mitigate impacts to the species. A review of the NCNHP database on September 29, 2022 identified Cape Fear shiner observations from June 2021 within the project alignment and also within 1 mile of the project alignment.
Harperella *Ptilimnium nodosum*	Potential habitat present and no current survey conducted	No Effect	The project crosses the Deep, Haw and Cape Fear Rivers. All crossings are downstream of identified Cape Fear shiner critical habitat. The Deep, Haw and Cape Fear Rivers crossings will be horizontal directionally drilled (HDD) to minimize impact to the stream bed and riparian areas and will not impact the stream bed, substrate or protected riparian areas within the project alignment. Perennial tributaries of the Deep, Haw, and Cape Fear Rivers identified within the project area are comprised primarily of gravel and sand substrate, with most impaired by erosion and sedimentation. No islands or rocky shoals were identified within the project alignment, and no *Justica americana* were identified within the project area. All other streams within the alignment will be open cut. Proper erosion and sediment controls, storm water control measures, and watershed protection rules will be implemented to mitigate impacts to the species. A review of the NCNHP database on September 29, 2022 identified Cape Fear shiner observations from 1971 within 1-mile of the project alignment. Habitat assessments were conducted during the flowering period (July - August). No individuals were identified during the 2022 habitat assessments.

Species / Resource Name	Conclusion	ESA Section 7 / Eagle Act Determination	Notes / Documentation
Critical Habitat	No Critical Habitat Present	No Effect	The most upstream crossing is 4.4 river miles downstream of Cape Fear shiner critical habitat on the Deep River.
Bald Eagle (*Haliaeetus leucocephalus*)	Unlikely to disturb nesting bald eagles	No Eagle Act Permit Required	*No Species Specific Comments*

1.3.9 Historic Architecture and Archaeological Sites

Project Blue

Kimley-Horn conducted a desktop-GIS assessment of the Project Blue Site on July 20, 2022, using the North Carolina State Historic Preservation Office (NCSHPO) HPOWEB GIS Service database. This assessment was undertaken in order to identify any known National Register (NR) properties, National Register Study List (SL) properties, and properties Determined to be Eligible (DOE) for National Register listing or previously surveyed in or within 1.0-mile of the Site. No known historic or cultural resources were identified within the Project Blue Site.

One DOE Historic District, the "Merry Oaks Historic District" [ID: 24873], was identified within a 1.0-mile radius of the Project Blue Site. The Merry Oaks Historic District received DOE status in 1993 and is located approximately 0.6 mile north of the Project Blue Site along Old US-1. A review of a Historic Structures Survey (ER 93-8764) indicates that the Merry Oaks Historic District was originally a small railroad community that prospered in the late-nineteenth and early-twentieth centuries. The area is composed of 10 buildings that contribute to the historic and architectural character of the district. The Merry Oaks Historic District is separated from the Project Blue Site by large mature forests, land application fields, and existing industrial development. Due to the distance from the Project Blue Site and the existing land uses of the properties between the Site and the Historic District, it is assumed that the proposed Project Blue Development will have no effect on the Merry Oaks Historic District.

Eight other historic and cultural resources currently listed as "Survey Only" (SO) or "Survey Only - Gone" (SD) were found within 1.0-mile of the Project Blue Site. Due to the listing status of 'Survey Only', it is Kimley-Horn's understanding that these resources do not currently receive protection under the National Historic Preservation Act. If the listing status changes to NR, SL, or DOE prior to construction, the potential for impacts to these resources may need to be re-evaluated; however, due to the distance from the Project Blue Site and the existing land uses within the vicinity of the Site, it is assumed that the proposed Project Blue Development will have no effect on these 'Survey Only' resources.

The nearest National Register (NR) listing to the Project Blue Site is located approximately 1.7 miles west in Lee County. The "Obediah Farrar House" [ID: LE0687] is an 1850s single-dwelling with Greek Revival architecture and was listed in the NR in 1993. Due to the distance from the Project Blue Site and the existing land uses of the properties between the Site and the NR listing, it is assumed that the proposed Project Blue Development would have no effect on the Obediah Farrar House.

Based on a review of the North Carolina Cemetery Census online map, there are no documented cemeteries within the Project Blue Site. The Project Blue Site has been in active timber production since 1960s and, therefore, is unlikely to contain any unmarked grave sites. Additionally, Kimley-

Horn staff has conducted numerous field reconnaissance visits to the Project Blue Site over the course of 5 years and no unmarked gravesites have been identified.

The Site is situated within an area of moderate topography and in close proximity to Shaddox Creek, a perennial tributary to the Haw River. While areas in close proximity to large streams could contain archaeological resources, the historic and on-going silvicultural operations and maintenance corridors have likely disturbed and compacted soils to more than 3-feet deep within the majority of the Site and likely have destroyed any remnant artifacts that might have been present. An Environmental Review Request documenting these findings was submitted to NCSHPO on July 26, 2022. NCSHPO responded on August 16, 2022 and confirmed that Project Blue will not result in any impacts to historic structures. NCSHPO however did request archaeological surveys due to the project area having never been systematically surveyed for archaeological resources. The size of the project, proximity to the Haw River and tributaries of Shaddox Creek, and presence of upland landforms were all cited by NCSHPO as justification for archaeological surveys. VinFast is currently contracted with a TerraXplorations, a Professional Archaeologist, to conduct archaeological surveys within proposed limits of disturbance for each Phase of Project Blue. Surveys will be conducted over the coming months and updates will be provided to the USACE as data is reported by TerraXplorations and NCSHPO accordingly. The Environmental Review response letter from NCSHPO is included in **Appendix F**.

NCDOT STIP# HE-0006

In correspondence signed May 9, 2022, NCDOT-Historic Architecture found that a Historic Architecture Survey is required for HE-0006 because there are documented and undocumented properties over fifty years of age within the NCDOT study area. NCDOT staff identified 16 architectural resources, including one district, that required survey.

In response, RK&K completed a Historic Architectural Resources Survey (September 9, 2022) for HE-0006. The purpose of the survey was to identify any properties that are either listed or eligible for listing in the National Register of Historic Places (NRHP). Of the 16 properties documented in the survey report, the NCSHPO concurred on October 14, 2022, that the following properties are eligible for listing in the National Register of Historic Places (NRHP): (Former) Jack Womble's Filling Station (4674 Old US 1), Edwards House (Old Christian Chapel Church Road) and Yates Store (Old Christian Chapel Church Road). Direct impacts to these properties are not anticipated. An assessment of effects is required and is underway.

NCDOT-Archaeology determined an Archaeological Survey is required for HE-0006 "because of the ideal soil conditions and topographic settings along the Haw River, around Harris Lake, and within the historic community of Merry Oaks." An Archaeological Survey was completed by RK&K and is under review.

The Environmental Review response letter from NCSHPO is included in **Appendix F**.

Utilities

FNI conducted a limited desktop cultural resources review for the proposed corridors. The Area of Potential Effects (APE) for archaeological resources is defined as the area where construction activities will cause ground disturbance. The APE is defined in three dimensions, including the project limits, width, acreage, and depth of impacts. The APE encompasses the entirety of both Phase 1 and Phase 2 within the project area to the maximum extent of construction and comprised the extent of the proposed corridors with an estimated width of 50 feet. The areas are expected to be excavated to a depth up to 10 feet. The review consisted of an examination of available records to provide a cultural resources context for the area. The North Carolina Archaeology Site Files and the North Carolina State Historic Preservation Office (SHPO) HPOWEB 2.0 online mapper were consulted to determine if previously recorded cultural resources were located within, or adjacent to, the APE. Reports on archaeological research conducted in the vicinity were also obtained for a 1 mile area around the proposed corridors. These reports were obtained to provide insight as to the types of archaeological sites and locations likely to contain sites in the area.

Within the Sewer Corridor:
The records search identified 2 archaeological sites and 12 historic properties within one mile of the APE. Five previous archaeological surveys were conducted within the one mile search radius of the APE. One archaeological site (LE--) was located directly within the APE. Of the historic properties located in close proximity (within 500 feet) of the proposed corridors, one historic property is on the National Register of Historic Places (NRHP). Three properties were on the Study List. Structures and sites that are in proximity to of the proposed corridors and are on the Study List or National Register of Historic Places (NRHP) are described below.

- Endor Iron Furnace (LE0001), a NRHP site located 0.5 mi north of the Big Buffalo Creek WWTP
- Pattishal-Wicker House (LE0756), a Study List site located on Colon Road
- McIver (Scotch Ever) Cemetery (LE0232), a Study List site located on Cotten Road
- Mike Atkins Farm (LE0233), a Study List site located on Cotten Road

Within the Water Corridor
The records search identified 7 archaeological sites and 46 historic properties within one mile of the APE. Forty five previous archaeological surveys were conducted within the one mile search radius of the APE. One archaeological site (CH690) was located directly within the APE and three archaeological sites (CH957, CH586, CH587, and LE72) were located within 250 feet of the corridors along Corinth Road. Of the historic properties located in close proximity (within 500 feet) of the proposed corridors, one historic property is on the National Register of Historic Places (NRHP). No properties were on the Study List. Structures and sites that are in proximity to of the proposed corridors and are on the Study List or National Register of Historic Places (NRHP) are described below.

- Lockville Dam, Canal, and Powerhouse (CH0018), a NRHP property on Lockville Road in Chatham County

Thirteen sites were identified within 400 feet of the proposed corridors, including three cemeteries, and nine inactive or closed out underground storage tank (UST) incident. One active UST incident was identified. Based upon the available data, the incident is considered high risk. The cemeteries and high-risk UST incidents are listed below.

Cemeteries

- Memphis Church
- Private Cemetery, 3331 Corinth Road, Moncure
- Rose Hill Church

High-Risk UST Incidents

- Circle K Store #2724136, 8036 Moncure Pittsboro Road, petroleum release

Previous land disturbing activities associated with the construction of existing development, installation of utilities and other infrastructure, and agricultural activities have likely disturbed archaeological resources that may have been present in portions of the proposed corridors. Due to the proximity of the aforementioned cultural resources to the proposed corridors, and the moderate to high potential of impacting archaeological artifacts in the undisturbed areas of the corridors, FNI recommends that coordination with SHPO be initiated early in the design phase. SHPO may identify design or construction considerations to be incorporated to maintain the historical significance, character, and integrity of cultural resources of the area as well as ensuring compliance with the National Historic Preservation Act. SHPO may also request archaeological surveys in areas along the selected corridor.

The proposed infrastructure improvements for the natural gas corridor will be primarily constructed within existing, maintained easements and roadside rights-of-way. The minimal new location improvements are proposed within areas of existing or proposed development. Additionally, the proposed natural gas line will be located underground. Due to the minimal visual impact anticipated,

the existing land use conditions within the proposed alignment, and the lack of existing NR, SL, and DOE resources within the proposed natural gas corridors, it is anticipated that the proposed natural gas line will have no effect on historic or cultural resources.

1.3.10 Regulated Floodplain

Project Blue

A review of the Federal Emergency Management Agency (FEMA) Flood Maps and the North Carolina Flood Risk Information System (accessed July 27, 2022) indicates that the 100-year floodplain associated with Shaddox Creek enters into the northwestern portion of the Project Blue Site (FEMA Panels: 3710975300K – Panel No. 9753 (effective November 17, 2017) and 3710975200J – Panel No. 9752 (effective February 2, 2007). Pursuant to Executive Order 11988, consideration is also given here to the effect that the proposed Project Blue development may have in reducing the risk of flood loss, minimizing the impact of floods on human safety, health and welfare, and restoring and preserving the natural and beneficial values served by floodplains.

The proposed Project Blue manufacturing facility would not have any impact to the FEMA regulated floodplains within the Site boundary. As such, no FEMA floodplain development permits, or floodplain authorizations are anticipated to be necessary for development of the Project Blue manufacturing facility. Additionally, the Project Blue manufacturing facility is not expected to have any impact on the overall hazard of flooding downstream of the Site. The development would result in increases to impervious surface within the watershed, but some of this increase would be offset by the retention of stormwater runoff within post-construction Stormwater Control Measure devices and the existing natural wetlands and riparian corridors.

NCDOT STIP# HE-0006

A 100-year floodplain (as designated by FEMA) is associated with Shaddox Creek and is located within the NCDOT study area (FEMA Flood maps 3710969700J – Panel No. 9697 (02/02/02), 3710968700L – Panel No. 9687 (11/17/2017).

There are five anticipated hydraulic major structures for STIP# HE-0006 as noted in **Table 20**.

Table 20. Hydraulic Major Structures

Feature ID	Classification	Figure	Stream / Map ID	Anticipated Drainage
SCB	WS IV, Intermittent / Perennial	Figure 4B Map #8 and #9	UT to Shaddox Creek	2 @ 8'x8' RCBC / 2 @ 42" RCP-III
ST	WS IV, Perennial	Figure 4B Map #5	UT to Shaddox Creek	Bridge
WAZ	Bottomland Hardwood Forest, Riparian	Figure 4B Map #5	Shaddox Creek	Bridge / 42" RCP-III
Shaddox Creek	WS IV, Perennial	Figure 4B Map #3	Shaddox Creek	Bridge
SK	WS IV, Perennial	Figure 4B Map #1	UT to Haw River	Extend 2 @ 7'x7' RCBC & 60" WS

Utilities

A review of the Federal Emergency Management Agency (FEMA) Flood Maps and the North Carolina Flood Risk Information System (accessed July 28, 2022) indicates that there are multiple FEMA-regulated floodplains and floodways within the sanitary sewer and water corridors. FEMA issues were evaluated throughout the design process by the City of Sanford. All areas that are located within FEMA floodways or floodplains will be returned to pre-construction contours after utility line installation. All proposed lift and pump stations will be constructed outside of any FEMA

floodways or floodplains. No FEMA floodways or floodplains are located within the natural gas corridor.

1.3.11 Zoning

Project Blue
The Site is part of the larger Triangle Innovation Point Megasite, located in an area of Chatham County that has been historically used for industrial activities and is currently targeted for additional industrial growth by Chatham County. The Project Blue Site is subject to Chatham County Zoning regulations, reviewed and enforced by the Planning Department. The Site is currently zoned as IH, Heavy Industrial District. Section 10.10 of the Chatham County Zoning Ordinance defines the IH as being primarily used for manufacturing operations involving heavy manufacturing processes such as dyeing, chemical mixing, melting, and stamping. Properties zoned as IH in Chatham County allow for by right uses such as assembly of automobiles, machines, appliances, and goods from previously prepared parts, machinery manufacture, railroad rights-of-way, and transportation equipment manufacture, among other uses.

Project Blue is anticipated to comply with applicable zoning regulations. The Chatham County Planning Department will be responsible for reviewing and approving the site plan prior to VinFast initiating construction within the Site.

NCDOT STIP# HE-0006
The NCDOT study area is subject to Chatham County zoning regulations and is primarily zoned a low-density residential classification, with some parcels in industrial or commercial classifications.

1.3.12 Noise

Project Blue
Minor increases in noise levels are anticipated during construction of the Site due to the machinery being used for land clearing, site preparation, and the construction of the proposed facilities and roadway infrastructure. However, construction activities will be generally limited to daylight hours, Monday through Friday, and are not anticipated to occur on holidays. The increase in noise levels during construction will be temporary and noise levels resulting from construction are unlikely to be significant. Additionally, given the rural nature of the surrounding areas, noise transmission off of the Site is anticipated to be minimal.

Long-term noise levels are not expected to increase due to the proposed Project, as the Project is within an area currently used for industrial development, an outdoor shooting range, and subject to roadway and traffic noise. The Project will be designed to contain noise and will be in compliance with municipal ordinances.

NCDOT STIP# HE-0006
Based on the Traffic Noise Analysis (October 2022, RK&K) conducted for HE-0006, the predicted traffic noise impacts would include 44 residences. Noise abatement would not be feasible; therefore, noise abatement measures are not proposed. In accordance with NCDOT Traffic Noise Policy, the Federal/State governments are not responsible for providing noise abatement measures for new development for which building permits are issued after the Date of Public Knowledge. The Date of Public Knowledge of the proposed highway project will be the approval date of the Finding of No Significant Impact (FONSI).

1.3.13 Air Quality

Project Blue
VinFast is currently navigating a Non-PSD Air Permit with the NC Department of Environmental Quality (NCDEQ) Division of Air Quality (NCDAQ) for emissions associated with VinFast Phase 1A. VinFast will subsequently be applying for air permits for Phases 1B, 2, and 3 if needed once a final design more complete and emissions are quantifiable. The primary emissions source from an automotive manufacturing facility of this nature is generally associated with the Paint Shop and volatile organic compounds (VOCs). Based on meeting the levels of a Non-PSD air permit, emissions and impacts to air quality are anticipated to be minor. Emissions associated with the future development on the Site are anticipated to be below levels seen in Phase 1A's facilities, so overall impacts to air quality as a result of the project are anticipated to be minimal.

During construction, ambient air quality will likely be affected by an increase in airborne particulates that result from the land clearing and exhaust emissions associated with construction of the proposed facility and infrastructure. The impact to public health that will result from these activities is expected to be negligible. Proper vehicle maintenance, frequent wetting of exposed soils, and proper use of required erosion control Best Management Practices (BMP) is expected to minimize any adverse effects.

NCDOT STIP# HE-0006
A Qualitative Air Quality Report was completed by RK&K in September 2022. A qualitative analysis provides a basis for identifying and comparing the potential differences among mobile source air toxics (MSAT) emissions, if any, from the various alternatives.

The Project is located in Chatham County, which has been determined to comply with the National Ambient Air Quality Standards. The proposed project is located in an attainment area; therefore, 40 CFR Parts 51 and 93 are not applicable. This project is not anticipated to create any adverse effects on the air quality of this attainment area.

1.3.14 Environmental Justice

Project Blue
Due to the location of the Site within the larger Triangle Innovation Point (TIP) Megasite, and due to the existing site conditions consisting of large tracts of loblolly pine cultivated for silviculture and no houses, structures, or occupants on the Site, no adverse effects are anticipated to occur within the Site.

NCDOT STIP# HE-0006
Based on the Community Impact Assessment (CIA) for HE-0006 (July 2022), Census data does not indicate a notable presence of populations meeting the criteria for Environmental Justice or protected by Title VI and related statutes; however, potential low-income communities may be present along New Elam Church Road, Old US-1, and Pea Ridge Road. An area populated predominately by a minority community in the Brown Hill Road vicinity was noted by a property owner (partially within the NCDOT study area).

The presence of a "multicultural church," Liberty Chapel Church (1855 Old US-1) and the adjacent Rose Hill AME Zion Church (1917 Old US-1), approximately 0.25 miles west of the Haw River, indicates the likely presence of minority communities in the general Project vicinity. Local planners noted there is a higher percentage of minority communities in the Moncure/Haywood area (west of the Haw River). In addition, a Hindu temple complex is planned in Haywood and is expected to be under construction in 2022.

Elderly residents in the Old US-1/Donnie Haithcox Drive area were identified through informal meetings held with residents regarding environmental surveys. No other Title IV populations were identified in the NCDOT study area.

2.0 PROJECT DESCRIPTION

Project Blue

The purpose of the proposed Project Blue is to construct an automotive manufacturing facility capable of taking raw materials and producing finished electric vehicles for sale in the US. The production facility would initially focus on the VF 8 and VF 9 Sport Utility Vehicles (SUV), with additional models being manufactured at the Site as design and sales progress. Manufacturing facilities proposed for the Site include the Press Shop, Body Shop, General Assembly, Paint Shop, Final Car Lot, Gigafactory, supplier park, and associated parking, along with the necessary supporting infrastructure such as roadways, rail spur, utilities, and stormwater management facilities intended to address the Site and local, regional, and state economic development needs. During Phase 3, additional upland development in high ground is planned to provide facilities for third-party suppliers serving VinFast and other automotive and/or EV manufacturers.

To support the VinFast development, additional offsite infrastructure improvements are proposed. The North Carolina Department of Transportation (NCDOT) proposes roadway network improvements to support Project Blue, and third-party entities are designing offsite utility improvements due to the lack of existing water, sewer, and natural gas infrastructure in the area. The proposed utility improvements include water and sewer upgrades planned by the City of Sanford, extension of natural gas infrastructure planned by Dominion Energy, extension of broadband high speed data connections by local suppliers, and potential realignment of overhead power transmission infrastructure by Duke Energy. Project Blue, as well as the associated roadway and utility projects, will all be constructed in multiple phases.

NCDOT STIP# HE-0006

The North Carolina Department of Transportation (NCDOT) proposes roadway network improvements to support Project Blue. Proposed roadway improvements are currently anticipated to include:

- Modifying the US-1 interchange with Old US-1 at Exit 84;
- Adding a new US-1 interchange with New Elam Church Road (SR 1910) (i.e., converting the existing overpass to an interchange);
- Realigning New Elam Church Road between US-1 and Old US-1 and upgrading to a multi-lane facility[3] with limited access control;
- Constructing interchange access from realigned New Elam Church Road to Old US-1 and spanning the railroad right of way with the interchange bridge;
- Modifying the existing US-1 interchange with Pea Ridge Road (SR 1972) at Exit 81;
- Realigning Pea Ridge Road (SR 1972) between US-1 and Old US-1 and upgrading to a multi-lane facility[2] with limited access control;
- Constructing interchange access from realigned Pea Ridge Road to Old US-1 and spanning the railroad right of way with the interchange bridge;
- Improving the existing Pea Ridge Road intersection with Old US-1*;
- Upgrading Old US-1 to a multi-lane facility at the new interchanges with realigned New Elam Church Road and realigned Pea Ridge Road; and
- Improving the Christian Chapel Church Road (SR 1912) intersection with NC 42*.

  **This includes the potential to add turn lanes and/or signalization*.

The project is included in the 2020-2029 State Transportation Improvement Program (STIP) and is state funded. The project is currently programmed for planning and environmental study only. Funding for the roadway network improvements and associated wetlands mitigation needed to support the project would be through the state's Economic Development Project Reserve.

[3] Four-lane median divided roadway with 50 mph design speed

2.1 Land Ownership

Project Blue
The approximately 1,300-acre Site includes a roadway corridor and an assemblage of seven different parcels owned by VinFast Manufacturing US, LLC. The Site is primarily composed of silvicultural land and expansive forested tracts that are largely used for loblolly pine *(Pinus taeda*) production. Maintained pine stands of varying ages are present with dirt forest roads, logging decks, and multiple utility easements interspersed throughout.

Figure 6A: Project Blue Property Parcels shows the property parcels and adjacent property parcels of the Site. The names and addresses of each property owner of the Site and adjacent property owners are included in **Appendix H.**

NCDOT STIP# HE-0006
The names and addresses of each adjacent property owner are included in **Appendix H**.

Utility Corridor
While utility alignments have been intentionally designed to utilize existing NCDOT Rights-of-Way to the extent practicable, it is likely that extensive new utility easements will need to be acquired to facilitate the installation of the offsite infrastructure improvements. Adjacent property owner maps and tables with contact information for the water and sewer corridor are included in **Appendix H**. The City of Sanford and Dominion Energy will acquire easements from private landowners along the proposed alignment following the applicable laws and best practices as design progresses and prior to construction.

2.2 Construction Sequence

Project Blue
VinFast is proposing the construction of a manufacturing complex within the approximately 1,300-acre Project Blue Site, which will be constructed in multiple phases over the next 2-7 years:

- Phase 1A is currently under construction and consists of approximately 205 acres of high ground uplands in the southeastern corner of the Site, accessed from existing public roadway corridors. The Phase 1A build consists of multiple manufacturing shops to take raw materials to finished vehicles and includes a rail spur to provide connectivity form Phase 1A to the existing rail lines in the Site and the adjacent CSX railroad. The Phase 1A layout will facilitate a stepped manufacturing process flow and includes the following shops (described in process order):
    - Press Shop – takes raw coils of steel, cut them into blanks, and stamp sheet metal parts for use on vehicles
    - Body Shop – takes body panels and frames and assembles the vehicle body
    - Paint Shop – paint and coating operations for the assembled vehicle bodies
    - General Assembly – takes the painted vehicle bodies and assembles all other components (battery, drivetrain, electronics, interior/exterior pieces)
    - Final Car Lot – storage area for completed vehicles ready for shipping

The remaining Project Blue phases are anticipated to be completed over the coming years, with anticipated completion of the complex in 2027 based on current schedules. Facilities to be constructed in each phase are described below:

- Phase 1B is the proposed roadway connection from Phase 1 in the southeastern portion of the Site north to the proposed NCDOT improvements at the existing US-1/Old US-1 interchange (NCDOT STIP Project # HE-0006). The Phase 1B roadway corridor will become the primary entrance into the manufacturing facility and will provide improved, direct connectivity for vehicle and truck traffic between the Site and US-1.
- Phase 2 is the proposed Gigafactory that will produce the EV battery cells for use in the vehicles being produced by VinFast on the Site, along with supporting internal roadway infrastructure, stormwater control measures, and parking areas.

- Phase 3 of the VinFast facility is an expansion of the interior roadway network, providing a new roadway connection heading west to connect to the US-1 and Pea Ridge Road interchange improvements proposed by NCDOT as STIP# HE-0006. This interior roadway is planned to come online as VinFast ramps up production on the Site and is anticipated to exceed traffic capacity for a single interchange point of access to US-1 at Old US-1

NCDOT STIP# HE-0006

STIP# HE-0006 is proposed to be constructed in two phases. Construction of HE-0006 Phase 1 is planned to begin in January 2023. However, this schedule is subject to change and is contingent on funding. While the State of North Carolina has allocated funding for HE-0006 Phase 1, funding for HE-0006 Phase 2 is expected to follow future announcements confirming additional employment/development. Phase 2 construction is expected to follow future notification from the industry that necessary job creation thresholds have been met. Per North Carolina General Assembly Session Law 2022-74, the industry must meet a target of 3,875 jobs prior to release of funds for Phase 2 construction, therefore there is no defined timetable for delivery of Phase 2 improvements.

- HE-0006 Phase 1 provides roadway improvements in the eastern portion of the study area in the vicinity of New Elam Church Road, US-1, and Old US-1. In addition, potential intersection improvements at Pea Ridge Road with Old US-1 and at NC 42 with Christian Chapel Church Road are included in Phase 1.
- HE-0006 Phase 2 provides additional roadway improvements in the western portion of the study area in the vicinity of Pea Ridge Road, US-1, and Old US-1.

Utilities

Each of the following utility corridors will be constructed in varying stages:

The City of Sanford's water and sewer improvements are proposed for construction in two phases:

- Phase I – provides water service from Chatham County to the Project Blue Site, and a lift station and force main to convey wastewater flow from the Site to an existing gravity sewer main at the intersection of Old US-1 and Corinth Road. Phase I allows the VinFast plant to begin ramping up production with a temporary water supply from Chatham County and existing available wastewater capacity in the Shaddox Creek Lift Station while Phase II construction is completed. Phase 1 waterline, sewer, and TIP East Pump Station will begin construction in January 2023 and finish construction in December 2023 for a duration of 12 months.
- Phase II – provides water service from the City of Sanford's Water Treatment Plant to the TIP site, and various sewer conveyance facilities to convey wastewater from the Shaddox Creek Lift Station to Sanford's Big Buffalo Wastewater Treatment Plant. Phase 2 waterline, sewer, and sewer PS upgrades will begin construction in January 2023 and finish construction in April 2024 for a duration of 14 months.

Dominion Energy is currently designing the natural gas transmission line improvements to provide service to the manufacturing facility. Approximately 2.24 miles of new natural gas pipeline are necessary, and will connect to the existing natural gas line at Old US-1 north of the Project Blue Site. The proposed natural gas line will connect to the Site along the current Moncure-Flatwood Road, however once Moncure-Flatwood Road is abandoned by NCDOT, VinFast intends to provide a maintenance easement for the natural gas corridor. Timing for installation is currently unknown, however design is anticipated to begin by 2023 and service is anticipated to be available to the VinFast facilities in 2024.

Duke Energy is evaluating the relocation of the existing overhead transmission lines that currently cross the proposed VinFast Phase 2 (Gigafactory) location. Duke Energy has not determined the need or location of the revised alignment; however, Duke Energy is anticipated to utilize existing utility easements in the vicinity to minimize environmental impacts to the extent practicable, and minimize the overall length of the realignment to meet VinFast needs. Any relocation of overhead power infrastructure would be completed as part of the Project Blue Phase 2 construction.

2.3 Proposed Impacts

Project Blue

Overall, environmental impacts associated with Project Blue are minimal in nature and associated with roadway crossings of streams in three different locations:

- Impact Site #1 (*Stream S1 – Perpendicular Road Crossing*) includes 105 LF of permanent stream impact and 110 LF of permanent no net loss stream impact for riprap armoring the stream channel to provide outlet protection.
- Impact Site #2 (*Stream S13 and Wetland W15 – Perpendicular Road Crossing*) includes 91 LF of permanent stream impact and 0.009 acre of permanent wetland impact. This impact is an extension of an existing culvert carrying S13 beneath Moncure-Flatwood Road, and VinFast has designed the roadway corridor to utilize the existing culverted length and minimize new impacts to streams and wetlands.
- Impact Site #3 (*Stream S3 – Perpendicular Road Crossing*) includes 92 LF of permanent stream impact and 67 LF of permanent no net loss stream impact for riprap armoring the stream channel to provide outlet protection.

The "Permit Impact Drawings" included in **Appendix G** depict the temporary and permanent impact areas for the Site and include detailed impact types and impact quantities.

NCDOT STIP# HE-0006

Although impacts to jurisdictional streams and wetlands will be avoided and minimized to the extent practicable, permanent impacts are unavoidable. Impacts based on preliminary design (slope stakes plus a 40-foot buffer) are summarized in **Table 22**.

Table 21. Stream and Wetland Impacts for HE-0006 by Phase

Project Phase	Streams[1] (LF)	Wetlands[1] (acres)
East (Phase 1)	1,634	6.52
West (Phase 2)	1,589	16.26
Total	**3,223**	**22.78**

[1] Impact estimates are based on slope stakes (preliminary design) with a 40-foot buffer.

Utilities

The construction of the offsite utility improvements will result in unavoidable impacts to jurisdictional wetlands for the establishment of permanent utility easements (wetland conversion) along the utility line improvements as well as temporary impacts to jurisdictional wetlands and streams for the construction corridor necessary to install the proposed utility lines:

Water/Sewer

- 8.82 acres of permanent wetland conversion impacts
- 5.47 acres of temporary wetland impact
- 0.61 acre of temporary stream impact (4,055 LF)

Natural Gas

- 0.002 acres of temporary wetland impact
- 40 linear feet of temporary stream impact

Table 22. Wetland Impact Summary within the Utility Corridors

Impact Site	Wetland ID	Type of Impact	Permanent/ Temporary Impact	Impact Amount (Acres)	Utility
W-01	P1S_WA	Clearing, Grubbing	Temporary	0.03	Sewer Ph 1
W-02	P1S_WA	Trenching, Clearing, Grubbing	Permanent	0.04	Sewer Ph 1
W-03	P1S_WB	Clearing, Grubbing	Temporary	0.04	Sewer Ph 1
W-04	P1S_WB	Trenching, Clearing, Grubbing	Permanent	0.06	Sewer Ph 1
W-05	P1S_WA	Clearing, Grubbing	Temporary	0.02	Sewer Ph 1
W-06	P1S_WA	Trenching, Clearing, Grubbing	Permanent	0.0001	Sewer Ph 1
W-07	P1S_WB	Clearing, Grubbing	Temporary	0.02	Sewer Ph 1
W-08	P1S_WB	Trenching, Clearing, Grubbing	Permanent	0.01	Sewer Ph 1
W-09	P1W_WA	Clearing, Grubbing	Temporary	0.19	Water Ph 1
W-10	P1W_WA	Trenching, Clearing, Grubbing	Permanent	0.30	Water Ph 1
W-11	W128	Clearing, Grubbing	Temporary	0.45	Water/Sewer
W-12	W128	Trenching, Clearing, Grubbing	Permanent	1.19	Water/Sewer
W-13	P2S_WA	Clearing, Grubbing	Temporary	0.03	Sewer Ph 2
W-14	P2S_WA	Trenching, Clearing, Grubbing	Permanent	0.07	Sewer Ph 2
W-15	P2S_WB	Clearing, Grubbing	Temporary	0.01	Sewer Ph 2
W-16	P2S_WB	Trenching, Clearing, Grubbing	Permanent	0.01	Sewer Ph 2
W-17	P2S_WC	Clearing, Grubbing	Temporary	0.02	Sewer Ph 2
W-18	P2S_WD	Clearing, Grubbing	Temporary	0.01	Sewer Ph 2
W-19	P2S_WE	Clearing, Grubbing	Temporary	0.08	Sewer Ph 2
W-20	P2S_WE	Trenching, Clearing, Grubbing	Permanent	0.14	Sewer Ph 2
W-21	P2S_WG	Clearing, Grubbing	Temporary	0.04	Sewer Ph 2

Impact Site	Wetland ID	Type of Impact	Permanent/ Temporary Impact	Impact Amount (Acres)	Utility
W-22	P2S_WG	Trenching, Clearing, Grubbing	Permanent	0.03	Sewer Ph 2
W-23	P2S_WH	Clearing, Grubbing	Temporary	0.03	Sewer Ph 2
W-24	P2S_WH	Trenching, Clearing, Grubbing	Permanent	0.07	Sewer Ph 2
W-25	P2S_WI	Clearing, Grubbing	Temporary	0.02	Sewer Ph 2
W-26	P2S_WI	Trenching, Clearing, Grubbing	Permanent	0.05	Sewer Ph 2
W-27	P2S_WJ	Clearing, Grubbing	Temporary	0.30	Sewer Ph 2
W-28	P2S_WJ	Trenching, Clearing, Grubbing	Permanent	0.46	Sewer Ph 2
W-29	P2S_WK	Clearing, Grubbing	Temporary	0.01	Sewer Ph 2
W-30	P2S_WK	Trenching, Clearing, Grubbing	Permanent	0.02	Sewer Ph 2
W-31	P2S_WL	Clearing, Grubbing	Temporary	0.04	Sewer Ph 2
W-32	P2S_WL	Trenching, Clearing, Grubbing	Permanent	0.06	Sewer Ph 2
W-33	P2S_WN	Clearing, Grubbing	Temporary	0.02	Sewer Ph 2
W-34	P2S_WN	Trenching, Clearing, Grubbing	Permanent	0.02	Sewer Ph 2
W-35	P2S_WP	Clearing, Grubbing	Temporary	0.01	Sewer Ph 2
W-36	P2S_WP	Trenching, Clearing, Grubbing	Permanent	0.02	Sewer Ph 2
W-37	P2S_WQ	Clearing, Grubbing	Temporary	0.004	Sewer Ph 2
W-38	P2S_WQ	Trenching, Clearing, Grubbing	Permanent	0.004	Sewer Ph 2
W-39	P2S_WR	Clearing, Grubbing	Temporary	0.001	Sewer Ph 2
W-40	P2S_WR	Trenching, Clearing, Grubbing	Permanent	0.01	Sewer Ph 2
W-41	P2S_WS	Clearing, Grubbing	Temporary	0.16	Sewer Ph 2

Impact Site	Wetland ID	Type of Impact	Permanent/ Temporary Impact	Impact Amount (Acres)	Utility
W-42	P2S_WS	Trenching, Clearing, Grubbing	Permanent	0.20	Sewer Ph 2
W-43	P2S_WT	Clearing, Grubbing	Temporary	0.002	Sewer Ph 2
W-44	P2W_WA	Clearing, Grubbing	Temporary	0.05	Water Ph 2
W-45	P2W_WA	Trenching, Clearing, Grubbing	Permanent	0.07	Water Ph 2
W-46	P2W_WB	Clearing, Grubbing	Temporary	0.15	Water Ph 2
W-47	P2W_WB	Trenching, Clearing, Grubbing	Permanent	0.23	Water Ph 2
W-48	P2W_WC	Clearing, Grubbing	Temporary	0.12	Water Ph 2
W-49	P2W_WC	Trenching, Clearing, Grubbing	Permanent	0.19	Water Ph 2
W-50	P2W_WD	Clearing, Grubbing	Temporary	0.02	Water Ph 2
W-51	P2W_WD	Trenching, Clearing, Grubbing	Permanent	0.05	Water Ph 2
W-52	P2W_WE	Clearing, Grubbing	Temporary	2.81	Water Ph 2
W-53	P2W_WE	Trenching, Clearing, Grubbing	Permanent	4.24	Water Ph 2
W-54	P2W_WF	Clearing, Grubbing	Temporary	0.004	Water Ph 2
W-55	P2W_WG	Clearing, Grubbing	Temporary	0.52	Water Ph 2
W-56	P2W_WG	Trenching, Clearing, Grubbing	Permanent	0.76	Water Ph 2
W-57	P2W_WH	Clearing, Grubbing	Temporary	0.05	Water Ph 2
W-58	P2W_WH	Trenching, Clearing, Grubbing	Permanent	0.17	Water Ph 2
W-59	P2W_WO	Clearing, Grubbing	Temporary	0.02	Water Ph 2
W-60	P2W_WO	Trenching, Clearing, Grubbing	Permanent	0.02	Water Ph 2
W-61	P2W_WP	Clearing, Grubbing	Temporary	0.21	Water Ph 2
W-62	P2W_WP	Trenching, Clearing, Grubbing	Permanent	0.32	Water Ph 2

Impact Site	Wetland ID	Type of Impact	Permanent/ Temporary Impact	Impact Amount (Acres)	Utility
NG-2	W15	Construction Access	Temporary	0.002	Natural Gas

Table 23. Stream Impact Summary within the Utility Corridors

Impact Site	Stream ID	Type of Impact	Permanent/ Temporary Impact	Impact Amount (Feet)	Utility
S-01	P1S_S1	Excavation	Temporary	50.0	Sewer Ph 1
S-02	P1S_S2	Excavation	Temporary	346.9	Sewer Ph 1
S-03	P1S_S3	Excavation	Temporary	64.3	Sewer Ph 1
S-04	P1S_S4	Excavation	Temporary	130.4	Sewer Ph 1
S-05	P1S_S5	Excavation	Temporary	50.4	Sewer Ph 1
S-06	P1S_S6	Excavation	Temporary	63.8	Sewer Ph 1
S-07	P1W_S1	Excavation	Temporary	137.2	Water Ph 1
S-08	P1W_S2	Excavation	Temporary	122.6	Water Ph 1
S-09	P1W_S3	Excavation	Temporary	119.5	Water Ph 1
S-10	P1W_S4	Excavation	Temporary	82.4	Water Ph 1
S-11	P1W_S5	Excavation	Temporary	50.3	Water Ph 1
S-12	P1W_S6	Excavation	Temporary	53.2	Water Ph 1
S-13	P1W_S7	Excavation	Temporary	98.3	Water Ph 1
S-14	P1W_S8	Excavation	Temporary	51.0	Water Ph 1
S-15	P2S_S11	Excavation	Temporary	78.1	Sewer Ph 2
S-16	P2S_S12	Excavation	Temporary	71.2	Sewer Ph 2
S-17	P2S_S13	Excavation	Temporary	50.5	Sewer Ph 2
S-18	P2S_S35	Excavation	Temporary	84.0	Sewer Ph 2
S-19	P2S_S14	Excavation	Temporary	50.3	Sewer Ph 2
S-20	P2S_S15	Excavation	Temporary	55.7	Sewer Ph 2
S-21	P2S_S16	Excavation	Temporary	63.0	Sewer Ph 2
S-22	P2S_S17	Excavation	Temporary	66.3	Sewer Ph 2
S-23	P2S_S18	Excavation	Temporary	53.5	Sewer Ph 2
S-24	P2S_S20	Excavation	Temporary	57.4	Sewer Ph 2
S-25	P2S_S21	Excavation	Temporary	57.2	Sewer Ph 2
S-26	P2S_S22	Excavation	Temporary	50.7	Sewer Ph 2
S-27	P2S_S22	Excavation	Temporary	38.7	Sewer Ph 2
S-28	P2S_S22	Excavation	Temporary	24.8	Sewer Ph 2
S-29	P2S_S22	Excavation	Temporary	19.0	Sewer Ph 2
S-30	P2S_S23	Excavation	Temporary	119.2	Sewer Ph 2
S-31	P2S_S24	Excavation	Temporary	55.6	Sewer Ph 2
S-32	P2S_S25	Excavation	Temporary	109.8	Sewer Ph 2
S-33	P2S_S26	Excavation	Temporary	63.8	Sewer Ph 2
S-34	P2S_S27	Excavation	Temporary	51.5	Sewer Ph 2
S-35	P2S_S28	Excavation	Temporary	50.1	Sewer Ph 2
S-36	P2S_S29	Excavation	Temporary	52.1	Sewer Ph 2
S-37	P2S_S3	Excavation	Temporary	112.3	Sewer Ph 2
S-38	P2S_S30	Excavation	Temporary	51.3	Sewer Ph 2
S-39	P2S_S31	Excavation	Temporary	41.1	Sewer Ph 2
S-40	P2S_S32	Excavation	Temporary	13.3	Sewer Ph 2
S-41	P2S_S33	Excavation	Temporary	51.2	Sewer Ph 2
S-42	P2S_S34	Excavation	Temporary	61.7	Sewer Ph 2
S-43	P2S_S4	Excavation	Temporary	50.7	Sewer Ph 2

Impact Site	Stream ID	Type of Impact	Permanent/ Temporary Impact	Impact Amount (Feet)	Utility
S-44	P2S_S5	Excavation	Temporary	50.0	Sewer Ph 2
S-45	P2S_S6	Excavation	Temporary	35.3	Sewer Ph 2
S-46	P2S_S7	Excavation	Temporary	57.0	Sewer Ph 2
S-47	P2S_S8	Excavation	Temporary	143.3	Sewer Ph 2
S-48	P2S_S9	Excavation	Temporary	51.0	Sewer Ph 2
S-50	P2W_S11	Excavation	Temporary	56.3	Water Ph 2
S-51	P2W_S12	Excavation	Temporary	53.7	Water Ph 2
S-53	P2W_S3	Excavation	Temporary	58.2	Water Ph 2
S-54	P2W_S4	Excavation	Temporary	238.7	Water Ph 2
S-55	P2W_S5	Excavation	Temporary	50.2	Water Ph 2
S-56	P2W_S6	Excavation	Temporary	50.1	Water Ph 2
S-57	P2W_S7	Excavation	Temporary	86.1	Water Ph 2
NG-1	S6A	Construction Access	Temporary	10.0	Natural Gas
NG-2	S13	Construction Access	Temporary	14.0	Natural Gas

2.4 Stormwater Quality Controls

Project Blue

Stormwater management within the Project Blue Site has been carefully and intentionally designed to maintain existing drainage areas, and intends to work with the natural topography of the site with multiple smaller stormwater control measures (SCMs) rather than a single large SCM. SCMs have been located at the top of natural drainages and outlets will be stabilized with riprap to ensure long term erosion protection at the outfalls. Stormwater for the Site is being reviewed and permitted by Chatham County for each Phase as design progresses. Similarly, construction-phase erosion control will be reviewed and permitted by NCDEQ Division of Energy, Mineral, and Land Resources (NCDEMLR). The currently under construction Phase 1A will provide 6 dry ponds to provide both stormwater quantity and quality control. Throughout the Site, vegetated grass treatment swales and bioretention islands will be provided for water quality benefits and to meet Chatham County's requirement of 85% TSS removal. The proposed dry pond locations will be located outside of stream buffers and wetlands, while also maintaining natural drainage patterns to the extent practicable. No impacts to streams or wetlands will result from the grading or construction of the SCMs

The same stormwater approach will be utilized for Phases 1B, 2, and 3. Due to the early design stage of these Phases, stormwater is conceptual and will be refined by VinFast's design team as the design is further developed. Erosion control and stormwater management will be actively reviewed with NCDEMLR and Chatham County collaboratively as the site development progresses. VinFast is fully aware of the need for stormwater management on Phases 1B, 2, and 3, and will ensure that SCMs are designed into the Site and located in uplands within the Site such that no impacts to streams, wetlands, or riparian buffers result from the construction or installation of the SCMs.

NCDOT STIP# HE-0006

Stormwater management within the HE-0006 corridor will comply with the NCDOT Statewide Stormwater Permit. Various SCMs typical of roadway infrastructure projects will be utilized within the NCDOT improvements.

Utilities

Due to the underground nature of the proposed utility improvements, no stormwater is anticipated to be collected or concentrated in the utility corridors. Small areas of stormwater concentration may result at lift stations or pump stations along the sewer corridor, however the small size of these disturbed areas and

pervious surfaces typically used on these facilities mean no large scale SCMs are anticipated. Any SCMs required based on the design of the pump or lift stations will be located in uplands to the extent practicable and will be reviewed and permitted with NCDEMLR and/or Chatham County depending on specific project location.

3.0 THE PUBLIC NEED

The need for the Project is based on Chatham County's vision for a major employment center, which targets this area of the county for future job-generating uses. Development of the Project Blue site will support Chatham County's primary economic development goal stated in the county's comprehensive plan*: To diversify the tax base and generate more high quality, in-county jobs to reduce dependence on residential property taxes, create economic opportunity and reduce out-commuting*.

Project Blue
Fundamentally, the public need for Project Blue is driven by the rapidly increasing demand in the US for EVs and at increasingly lower and more attainable price points. The EV demand is increasingly forcing globally active automotive manufactures like VinFast to figure out ways to innovate and expand their production capabilities and make their vehicles more accessible to the US market specifically. VinFast's Project in Chatham County will allow them to focus on production in the US (rather than producing overseas and importing to the US) and will allow VinFast to better manage their supply chain, reduce vehicle pricing for the public, and overall reduce customer wait times on orders, making the affordable and desirable VinFast EVs more accessible to US customers while reducing greenhouse gas emissions throughout the supply chain.

The scale of the VinFast manufacturing complex will also cumulatively generate billions of dollars in revenue for the State of North Carolina and Chatham County while contributing an estimated 7,500 jobs with an average salary of more than $51,000. This amount of job creation in this historically rural part of Chatham County will greatly benefit the general public and provide a much needed high-paying, long term, employment center.

NCDOT STIP# HE-0006
In addition to providing direct vehicular access to the Project Blue site, STIP# HE-0006 would improve mobility in this area of Chatham County. HE-0006 supports local, regional and statewide economic development goals.

Roadway network improvements are needed to address:

- Inadequate roadway capacity,
- Deficient roadway geometries, and the
- At-grade railroad crossings

Utilities
While the utility infrastructure improvement is needed to serve VinFast's development in the Project Area, the general public will also greatly benefit from the expansion of water and sewer service in this historically underserved part of Chatham County. The majority of residential properties in the area are served by private wells and septic systems. Extensions of water and sewer service will allow for more reliable and long-term utility service to residents of Chatham County.

4.0 PROJECT PURPOSE AND NEED

Project Blue
As described in Section 3.0, Project Blue would develop an electric vehicle (EV) manufacturing facility to help meet the demand for EVs in the United States domestically, while providing jobs for residents of the community, and helping reduce greenhouse gas emissions from the transportation sector by consolidating manufacturing to a single domestic location and longer term by reducing gasoline-consuming cars on the road in the US.

- BASIC PROJECT PURPOSE – The basic purpose is to develop a large-scale automotive manufacturing facility for production of multiple models of electric vehicles and batteries.
- OVERALL PROJECT PURPOSE – The purpose of the proposed Project is to create an automotive manufacturing facility capable of taking raw materials and producing finished electric vehicles for sale in the US. The production facility would initially focus on the VF 8 and VF 9 Sport Utility Vehicles (SUV), with additional models being manufactured at the Site as design and sales progress. Manufacturing facilities proposed for the Site include the Press Shop, Body Shop, General Assembly, Paint Shop, Final Car Lot, Gigafactory, supplier park, and associated parking, along with the necessary supporting infrastructure such as roadways, rail spur, utilities, and stormwater management facilities intended to address the Site and local, regional, and state economic development needs.
- ADDITIONAL BENEFITS – The proposed work will benefit U.S. consumers of EV's nationally, as well as the state of North Carolina, Chatham County, and the Town of Moncure by providing jobs and expanding the tax base through clean industry. The primary financial beneficiary will be the Applicant, VinFast, a privately owned corporation. The project will be primarily funded by VinFast supplemented with State, County, and local incentives and grants.
- NCDOT HE-0006 BENEFITS TO PUBLIC – The proposed roadway network improvements would support the development and operation of the Project Blue Site while also greatly improving access and mobility in the area of US-1, Old US-1, and Pea Ridge Road, enhancing future traffic operations in this growing area of Chatham County.

5.0 SCOPE OF ANALYSIS

The proposed Project will benefit residents of North Carolina and Chatham County by providing jobs and expanding the tax base with a new manufacturing facility in a currently industrial-focused area of Chatham County. US residents and US Domestic Market (USDM) EV drivers and consumers will also benefit from reduced greenhouse gas emissions nationwide, reduced wait times for high quality EVs, and reduced cost of entry for EVs. The primary financial beneficiary of the proposed project would be the Applicant, VinFast, a privately-owned corporation. The project will be primarily funded by VinFast supplemented with State, County, and local incentives and grants. In addition to the requirement to obtain a Section 404 permit, the only other federal involvement in the proposed project is USFWS coordination. There are no practicable alternatives to the proposed site plan that would further avoid or minimize impacts to waters of the U.S., and the project would not meet the Applicant's purpose and need but for the proposed impacts. Additionally, the proposed project Site is crossed by multiple stream corridors and the proposed crossings of these areas and the resulting impacts to these areas are essential to for the development of Project Blue, HE-0006, and the offsite utility improvements as a whole.

NCDOT STIP# HE-0006

STIP# HE-0006 is a state-funded project and is subject to the State Environmental Policy Act (SEPA). The analysis in this document addresses wetlands, streams, and other waters of the United States within the NCDOT study area and the impacts that STIP# HE-0006 would have on those waters. The analysis also addresses agency scoping input; traffic analysis; public input; protected species; land use; residential neighborhoods/communities; property acquisition; potential relocations; Environmental Justice and Title VI populations; recreation; Section 106 of the National Historic Preservation Act resources; traffic noise; air quality; farmland; geoenvironmental sites of concern; and indirect and cumulative effects.

6.0 OTHER FEDERAL, STATE, AND LOCAL AUTHORIZATIONS OBTAINED OR REQUIRED AND PENDING

Kimley-Horn and NCDOT will obtain all permits and approvals required by federal, state, and local laws and regulations prior to the construction of the Project. The main approvals are outlined and discussed below, but additional permits may be required for impacts to FEMA-regulated floodways and/or floodplains, interconnections and approvals associated with water and sewer infrastructure, and air quality permits.

6.1 State Water Quality (401) Certification

In addition to a USACE permit under the Clean Water Act Section 404, a corresponding Section 401 Individual Water Quality Certification will be required to authorize construction on this project.

6.2 Stormwater Permit

Project Blue
A stormwater permit and accompanying Stormwater Management Plan will be submitted to Chatham County for review and approval.

NCDOT STIP# HE-0006
HE-0006 is subject to NCDOT's National Pollutant Discharge Elimination System Statewide Stormwater Discharge Permit.

Utilities
A stormwater management plan is not anticipated to be required for the proposed utility improvements due to lack of collection or concentration of stormwater and the underground nature of the utilities.

6.3 Sedimentation and Erosion Control Permit

Project Blue
A Sediment and Erosion Control Plan/Land Disturbance Permit will be required from NCDEMLR, which includes a NPDES General Stormwater Permit. Applicable standards and BMPs will be utilized to ensure compliance with sediment and erosion control requirements and to prevent impacts to downstream receiving waters during construction and site preparation activities.

NCDOT STIP# HE-0006
HE-0006 would be designed in conformance with the NCDOT Erosion and Sediment Control Design and Construction Manual. NCDEQ is the delegated authority to implement the Sedimentation Pollution Control Act of 1973 (SPCA) to the NCDOT-Division of Highways.

Utilities
Erosion control permitting for land disturbance will be conducted with NCDEMLR prior to land disturbing activities within the utility corridors.

6.4 Site Plan Approval

Project Blue
Site Plan approval will be required by Chatham County

NCDOT STIP# HE-0006
Site plan approval by Chatham County is not required for the roadway network improvements.
HE-0006 will follow all applicable NCDOT requirements, standards and Best Management Practices.

Utilities
Due to the length of the utility corridors and crossing multiple jurisdictions, the Site Plan review process is anticipated to vary locally based on the Authority Having Jurisdiction (AHJ). The City of Sanford and Dominion Energy will follow applicable local Site Plan and Utility Interconnection permitting and plan review processes and requirements.

6.5 Driveway Permit

The North Carolina Department of Transportation (NCDOT) will require a Driveway Permit for any new roads that connect to an existing right of way (ROW). An Encroachment Permit from NCDOT will be required if roadway improvements or utility crossings are required within existing NCDOT R/W.

7.0 PROJECT ALTERNATIVES/ALTERNATIVES CONSIDERED

The purpose of the proposed project is the construction of a large-scale automotive manufacturing facility for production of multiple models of electric vehicles and batteries. As part of the development process, numerous off-site and on-site alternatives were evaluated for potential feasibility. Based on the factors considered below, the Applicant (VinFast Manufacturing US, LLC) has demonstrated that there are no off-site alternatives that would allow them to avoid impacts to waters of the U.S., and that the least environmentally damaging practicable alternative has been selected for the Project. The Applicants (VinFast Manufacturing US, LLC and NCDOT) have also demonstrated that alternative on-site plans and roadway alternatives were evaluated, along with the environmental consequences of each plan, and that the proposed Site Plan and NCDOT roadway alignment represent the minimum amount of impact to aquatic resources while still meeting the stated purpose.

7.1 Avoidance (No action, uplands, and availability of other sites):

VinFast Manufacturing US, LLC (VinFast) is globally headquartered in Vietnam and has current operations in the US, Canada, Germany, France, and the Netherlands, however there are no VinFast manufacturing facilities in North America. VinFast selected North Carolina as the site for its first electric vehicle (EV) manufacturing plant in North America to fill the need for US-produced electric vehicles for the US domestic market. With the rapid increase in demand for EVs and supply chain constraints being felt worldwide, VinFast needs to expand their production capabilities and make their vehicles more accessible to the US market specifically. Production in the US (rather than producing overseas and importing to the US) will allow VinFast to better manage their supply chain, reduce vehicle pricing for customers, and overall reduce build times and customer wait times on orders, making the VinFast vehicles more accessible to US customers while reducing greenhouse gas emissions throughout the supply chain.

VinFast conducted a nationwide search for a suitable site for the manufacturing facility, including 29 states. Selection criteria focused on a large site (approximately 800+ acres), suitable power capacity and utility provider support, available labor pool, ability for future expansion (larger sites preferred), capacity for infrastructure support from State and local agencies, ability to meet a rapid construction schedule, and various state incentive support. After initial high level site searches in those 29 states, the available pool of sites was focused down to five sites in five states.

The five states targeted by VinFast were Alabama, Georgia, Mississippi, North Carolina, and Texas. Each of the states has a specific site available to locate the proposed facility, and VinFast then reached out to each of the state's Economic Development Councils to begin more in-depth discussions of the specific sites. Siting criteria utilized for comparison of the five sites included:

Site Requirements:

- Proximity to Labor Pool: Sites were evaluated for distance to nearest major metropolitan area as well as population and workforce availability within 60 miles
- Total Land Requirement: Approximately 800 buildable acres in a desirable shape for development with potential for expansion in future, with suitable ownership entity to facilitate the property transaction
- Zoning: Sites needed to be zoned for industrial or manufacturing uses or un-zoned to facilitate development of the Project
- Geotechnical Considerations: Sites needs to support between 150-250kn/m^2
- Environmental Contamination: Sites needed to be clean or free of known contamination issues
- Utilities: Initial screening focused on a demand of approximately:
    - 400 MW electric capacity
    - 1.1M m^3/month natural gas
    - 9,000 m^3/day water
    - 7,200 m^3/day wastewater
    - High-bandwidth telecom
- Transportation: Sites were evaluated for proximity to all modes of transportation (highway, rail, air, and seaports)

Following the evaluation of various sites by each of the five states, two "finalists" were identified that best matched VinFast's development criteria and timeline requirements. The three eliminated sites and the two finalists, including the preferred alternative, are discussed in more detail below.

The discussion includes an analysis of how well each site meets designated selection criteria presented above. An evaluation of potential environmental impacts is also presented for each alternative (other than the preferred alternative, which is discussed in Sec 7.1.3 below) based upon the information that was provided for each site by the respective state. For proprietary purposes, the names and specific locations of the evaluated sites are not included in this report but available for USACE review upon request.

7.1.1 No-Action Alternative:

Project Blue

The No Build/No Action Alternative means that the Applicant's proposed Project would be implemented without requiring any approval from the USACE, or that the proposed Project would not be implemented. The resulting environmental effects from taking no action would serve as a baseline from which to compare the effects of permitting the proposed Project or an alternative to proceed.

VinFast has considered the no action (i.e., no permit required) alternative which would not result in temporary or permanent impacts to jurisdictional waters and wetlands. While this would be the least damaging alternative, it is not practicable, and does not support the project purpose and need. Vehicles and components would need to be produced in existing production facilities and shipped globally, which would increase production times, increase costs, increase emissions, and increase supply chain disruptions all while increasing end EV unit costs for consumers. Therefore, a no-action alternative is not a viable option for the Applicant.

With regard to upland-only alternatives on other sites, the large land requirements for the design and layout of a large-scale automotive manufacturing facility along with the temporary and permanent roadway network and utility infrastructure required to support construction and operational traffic would result in likely conflicts with jurisdictional resources and environmental constraints. The five states considered are located in piedmont and coastal plain physiographic regions of the southeastern US and are primarily underlain by large areas of hydric soils. Extensive

natural stream networks and modified natural channels along with extensive riparian and non-riparian wetland systems in the region mean that it is unlikely that any site of sufficient size, including the sites identified in this alternatives analysis, would support a large manufacturing development without any impact to jurisdictional resources.

On the preferred alternative site, the no-action (no permit) alternative would require the extensive use of retaining walls to limit the extent of fill for the NCDOT roadway improvements and on-site roadway infrastructure and the construction of bridges to access the various phases of the Site from offsite roadways and internal development phases. This alternative would also require significantly reducing the size of the production facilities to fit within the pocketed areas of uplands, or require breaking up the manufacturing operations into several separate production areas within the larger Site, again requiring the use of extensive bridges and retaining walls to restore connectivity between areas of production. Utility improvements in the area would require extensive rerouting to avoid crossing streams or wetlands, or the use of extensive lift stations (for gravity sewer) and require extensive directional drilling at a sufficient depth to avoid the need for cleared maintenance easements on the surface above the lines. Not establishing maintenance easements would substantially limit the ability of the utility providers to access the lines should a failure or issue occur on the line or emergency repair be needed.

While it may be technically possible to construct the Site, the offsite roadway infrastructure, and the offsite utility improvements all without direct impacts to the jurisdictional areas, that would heavily reduce the efficiency of the vehicle production within the Site and require substantially increased offsite improvements (roadway and infrastructure), would render the facility too inefficient to be a viable operation and long-term financial investment, and would fail to meet the stated purpose of the Project.

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The No-Action Alternative would not provide any substantial improvements to the roadway network within the NCDOT study area; only typical maintenance activities would occur. The No-Action Alternative would not provide additional roadway network capacity to support the Project Blue development and would not meet the purpose and need of the Project. In the absence of Project Blue, no roadway improvements in the vicinity would be included in the current NCDOT STIP.

7.1.2 Off-Site Alternatives

Project Blue

The alternative site search led by VinFast's consultant JLL, identified five finalist sites based on the screening criteria. For proprietary purposes, the name and specific location of the evaluated sites are not included here, but rather are referred to by the locations and site names shown in **Appendix A**. All five sites were found to be desirable size and shape with room for expansion, lacked geotechnical information, and had available high bandwidth data providers in the area. The distinguishing characteristics of each of the five "finalist" alternatives are discussed below:

Alternative 1 - Alabama Site:

- Located approximately 56 km outside of Mobile, Alabama
- Un-zoned
- Environmentally clean location
- Utilities available at the requested levels by target build date
- Highway adjacent, rail on-site, close to airport, and 51 km to a port via direct access
- Regional population: 1.3M, regional workforce 600k
- Site due diligence determined that approximately 5-7 months of site prep work is necessary

Alternative 2 – Georgia Site:

- Located approximately 41 km outside of Savanna, Georgia
- Zoned Heavy Industrial

- Environmentally clean location
- Utilities available at the requested levels by target build date
- Highway adjacent, rail on-site, close to airport, and 37 km to a port via direct access
- Regional population: 1M, regional workforce 400k
- Site due diligence determined that site is flat and timeline to construction appeared feasible.

Alternative 3 – Mississippi Site:

- Located approximately 59 km outside of Memphis, TN
- Zoned for Advanced Manufacturing
- Environmentally clean location
- Electric demand can scale close to Site requirement (408 MW), but ultimate supply is available after requested date. All other utilities are present and able to meet requested levels by the target build date.
- Highway adjacent, rail is proximate on-site with unknown date for being on-site, close to airport, and 570 km to a port
- Regional population: 1.6M, regional workforce 800k
- Site due diligence determined that infrastructure concerns and site preparation timing concerns are both present on Alternative 3.

Alternative 4 – North Carolina Site (Preferred Alternative):

- Located approximately 32 km outside of Raleigh, Durham, and Chapel Hill, North Carolina
- Zoned Heavy Industrial
- Environmentally clean location
- Utilities available at the requested levels by the targeted build date, however existing powerlines on the Site were noted to be relocated with an 18–24-month time frame. Long-term electric power capacity was noticed available before requested date. All other utilities are present and able to meet requested levels by target build dates.
- Highways are close to the Site, rail on-site, close to airport, and 209 km to a port
- Regional population: 3.8M, regional workforce 1.8M
- Site due diligence determined that the power line relocation requiring 18-24 months is a concern.

Alternative 5 – Texas Site:

- Located approximately 61 km outside of Houston, Texas
- Property owned by Union Pacific (timing unknown to be available)
- Property not constrained by county zoning restrictions
- Environmental condition unknown
- Utility capacity and availability unknown
- Highways are close, rail on-site, close to airport, and 77 km to a port
- Regional population: 7.2M, regional workforce 3.4M
- Site due diligence determined that the property ownership was a concern due to unknown timing to sell.

Based on the site selection process, it was determined that Alternatives 1, 3, and 5 would be screened out as not practicable. Alternative 1 was eliminated due to issues with workforce and site prep delays. Alternative 3 was eliminated due to electric power capacity and availability, as well as distance to rail and port facilities. Alternative 5 was eliminated due to unknown utility availability and property ownership issues making timeline commitments not practicable for VinFast. Alternatives 2 and 4 were carried forward for more detailed investigations by the VinFast team. The more detailed shortlist investigation of both sites found that Alternative 2 provided a smaller workforce pool in proximity to the Site compared to Alternative 4. Additionally, the finalist sites were evaluated for jurisdictional streams and wetlands based on best available data provided by each alternative sites' team.

Table 24. Finalist Sites and Anticipated Impacts

	Alternative 2	Alternative 4
Site Name	*Bryan County Megasite*	*Triangle Innovation Point*
Total Site Area	2,136 acres	2,100 acres
Additional Expansion Area	433 ac and 777 ac	245 ac and 168 ac
Jurisdictional Features	676 acres wetland	167 acres wetland 16 mi stream
Anticipated Impacts (Initial Build, Site Only)	7 acres wetland impact	0 acres wetland impact 0 LF stream impact
Anticipated Impacts (Full Build Out, Site Only)	63 acres wetland impact 0 LF stream impact	0.009 acres wetland impact 288 LF stream impact 177 LF outlet protection

Based on the evaluation of anticipated impacts resulting from Alternatives 2 and 4, Alternative 2 was removed from consideration due to extensive wetland impacts. Alternative 4 was selected as the Least Environmentally Damaging Practicable Alternative.

To facilitate operation of the facility within the Preferred Alternative, offsite utility improvements are also proposed by the City of Sanford and Dominion Energy for water/sewer and natural gas respectively. Proposed utility improvements include:

Water and Sewer Improvements:

- Phase 1 improvements consist of approximately 19,216 feet of water line, an 8.75 MGD capacity sewer lift station, 12,630 feet of gravity sewer, and 4,430 feet of force main to provide additional water supply facilities from Chatham County and wastewater service to the existing Sanford-Chatham County wastewater system located along Corinth Road.
- Phase 2 improvements consist of approximately 38,117 feet of water line, modifications to 3 sewer lift stations, 1,900 feet of gravity sewer, and 67,545 feet of force main to provide new water transmission facilities from the Sanford Water Treatment Plant (WTP) and wastewater system to parallel the existing Sanford-Chatham County system.

Natural Gas Improvements:

- Approximately 11,842 LF of new natural gas distribution pipeline are necessary provide service to the VinFast manufacturing facility.
- The closest natural gas pipeline is located along Old US-1 north of the Site. The proposed new line begins at Old US-1 and runs along the west side of Christian Chapel Church Road, then continues along the west side of Moncure Flatwood Road towards the Site. The line crosses beneath Moncure Flatwood Road to run east of Moncure Flatwood Road to the ultimate termination point at the VinFast manufacturing facility's central utility plant.

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Off-site alternatives to HE-0006 would utilize the existing roadway network. Access to the Project Blue site from US-1 would be via existing exits at Old US-1 and Pea Ridge Road, to Christian Chapel Church Road, with an at-grade crossing of the CSXT Railroad. Access to the Project Blue site from the south would be via NC 42 to Christian Chapel Church Road. Roadways in the local network are two lane roads with limited capacity and would not adequately address traffic needs of Project Blue. With improvements to existing roadways, there would not be direct access to the Project Blue site from US-1, a four-lane median divided freeway. The proximity of the railroad to

Old US-1 is a constraint in creating a grade-separated crossing along Christian Chapel Church Road, which is needed to improve traffic operations and safety.

7.1.3 Preferred (Practical) Alternative

The Preferred Alternative is the proposed North Carolina Site. The approximately 2,100-acre North Carolina Site was marketed as the Triangle Innovation Point. Three additional parcels are noted as available for purchase to 'square off' the Site and make it more favorable for VinFast layouts. This North Carolina Site is more than sufficient to meet the minimal size requirements of the VinFast manufacturing facility, meets all necessary utility requirements, and had extensive due diligence studies completed by the property owners. Located within Chatham County, the area of the County was already zoned for heavy industrial and surrounding land uses were industrial as well, making the VinFast development compatible with existing surrounding land uses. The site search found that three additional parcels abutting the Site are available for potential future expansion by VinFast.

The Site consists of rolling topography and is managed for silvicultural production. The majority of the Site is planted with loblolly pine, with low-lying riparian areas consisting of various levels of disturbed forested headwater wetlands. Many of the streams and wetlands within the Site have been historically impacted by beaver activity. The proposed project is compatible with the current land uses including existing industrial operations adjacent to, abutting, and in the vicinity of the Site.

Jurisdictional wetlands and streams are located within the Project Area. Although impacts to some of these areas are unavoidable, the location of the wetland and streams are primarily concentrated into narrow riparian systems within topographic crenulations, leaving substantial areas of high ground within the Project Area to allow for the construction of the Project while minimizing and avoiding impacts to wetlands and streams. Impacts to jurisdictional wetlands have been avoided and minimized to the greatest extent practicable. The initial build of the first phase of the Project (Phase 1A) consists of activities entirely in uplands and avoids all jurisdictional resources. Minor impacts to streams and wetlands proposed in Phases 1B, Phase 2, and Phase 3 are associated with the construction of the interior roadway network within the manufacturing facility.

The Preferred Alternative has an ideal location for the sharing of support staff and materials associated with Phase 1A of the Project (currently under construction), however Phase 1B, Phase 2, and Phase 3 of the Project have been positioned within the Site to provide efficient access to adjacent roadway and railroad corridors. The Phase 1A portion of the Project will utilize existing roadway corridors to facilitate construction (anticipated duration 1-2 years), with access to US-1 and Old US-1 from Christian Chapel Church Road. As production increases and Phase 1B, Phase 2, and Phase 3 come online, the additional materials and supplier vehicles, trucks, and employee traffic will need larger and more dedicated access roads to US-1 and adjacent railroad lines. As part of the Phase 1B, Phase 2, and Phase 3 build and as discussed in this application, additional proposed access corridors from US-1 will come into the facility from the east at the Old US-1 interchange, and from the west at the Pea Ridge Road interchange would provide additional connections to US-1 and nearby highways. The Preferred Alternative has rolling topography, but VinFast has designed the Site layout to work with existing natural topography to the extent practicable and minimize earth work and avoid impacts to streams and wetlands within the Site.

NCDOT has selected Alternative 5 (see **Figures 5B, 6B,** and **7B**) as its Preferred Alternative. The screening process and alternatives analysis that led to the Preferred Alternative for STIP# HE-0006 are described in Section 7.2.

The Preferred Alternative (including the Site, NCDOT's HE-0006 offsite roadway improvements, and the necessary offsite utility improvements) will result in unavoidable permanent wetland and stream impacts. Temporary impacts are also necessary to facilitate construction of the underground utilities servicing the Site. Impact totals by entity are:

- VinFast Manufacturing Facility
    - 288 LF permanent stream impact
    - 177 LF permanent no net loss impacts for riprap outlet protection
    - 0.009 acre permanent wetland impact
- NCDOT TIP HE-0006 (slope stakes with 40-foot buffer)
    - 3,223 LF permanent stream impact
    - 22.78 acres permanent wetland impact
- Water/Sewer Improvements
    - 8.82 acres permanent wetland conversion impacts
    - 5.47 acres temporary wetland impact
    - 0.61 acre temporary stream impact (4,055 LF)
- Natural Gas Improvements
    - 0.002 acre temporary wetland impact
    - 40 LF temporary stream impact

7.2 Minimization (modified project designs, etc.)

7.2.1 On-Site Alternatives:

Project Blue

The development of the Project Blue site layout was an iterative process based upon numerous variables, but also including purposeful avoidance and minimization of impacts to jurisdictional areas to the maximum extent possible. Buildings were located in uplands whenever practicable and impacts were reserved for unavoidable crossings of streams for roadway infrastructure only.

Initial site planning began with preliminary wetland delineation data and investigated multiple adjacent property parcels to allow for realignment of the Site to further avoid streams and wetlands, and refined as more delineation data was collected by wetland specialists conducting on-site delineations. Once delineation data was better known, and using preliminary discussions with the regulatory and resource agencies to help identify critical areas, design constraints were further evaluated, and the site layout was continually refined. Therefore, the initial site layout incorporated design criteria intended to avoid and minimize environmental impacts from the beginning of the design process. The evaluated on-site alternatives are shown in **Appendix B: On-Site Project Alternatives** and discussed in detail below.

Alternative 1

VinFast initially designed the Site in an ideal orientation to maximize efficiency of movement for vehicle build out, sticking to a generally linear progression within the manufacturing facility in Phase 1A and orienting the Phase 2 Gigafactory off-axis to align with the existing Duke Energy overhead transmission lines. Alternative 1 also utilizes a different interior road network layout, and separates the Gigafactory from the Phase 1A facility and the Phase 3 facilities. This alternative results in substantial impacts to streams and wetlands within the southern adjoining property parcel (not part of Project Blue). Alternative 1 also does not utilize the on-site rail spur to ship finished vehicles, meaning Alternative 1 results in increased traffic loading and infrastructure demands by utilizing trucks for finished vehicle shipments. The interior connector roadway also results in 5 jurisdictional stream/wetland complex crossings and presents multiple challenges with on-site product movement. Alternative 1 was modified following the completion of additional delineation work within the southern adjoining parcel and more careful on-site avoidance and minimization of impacts.

Alternative 2

With the substantial impacts resulting from Alternative 1, the VinFast design team revised the site layout to focus on uplands only for Phase 1A and look for alternative site layout that would avoid stream and wetland crossings to the extent practicable. Alternative 2 re-orients the Phase 2 Gigafactory to provide better connectivity within the Site and allow for perimeter roadway facilities and ample room for stormwater management as design progresses. Alternative 2 also

adds the rail spur from the Phase 1A finished car lot, allowing for the use of rail to ship finished product. Note that Phase 3 is not shown on Alternative 2 as Alternative 2 was developed solely as a reorientation of Phase 1A, 1B, and 2 and the Phase 3 roadway connection was not being evaluated for the exercise. Despite careful realignment of the Phase 1A and 1B layouts, Alternative 2 resulted in impacts for Phase 1A from the perimeter roadway network in an attempt to allow for a more natural T-alignment intersection between the Phase 1B roadway and the Phase 1A interior roadway network.

Alternative 3

In an effort to reduce the additional stream impact associated with the Phase 1A perimeter road, Alternative 3 was developed to bring the roadway much closer to the Press Shop on the north end of Phase 1A. A less ideal but still safe and acceptable skew was utilized at the intersection of the Press Shop perimeter road and the intersection with Phase 1B's connection to Phase 1A. This allowed for the clean split between Phase 1A and 1B, with Phase 1A being fully located in uplands and no impacts resulting to streams or wetlands. The Phase 1B connection to the Phase 2 Gigafactory is aligned to provide perpendicular crossings over the two stream crossings that bisect the Site. Alternative 3 also re-oriented the Phase 3 layout from the earlier iterations, and is laid out such that no impacts result from the supplier park while still allowing for the connection to the NCDOT Phase 2 roadway improvements from Pea Ridge Road. The Phase 3 roadway is designed to follow uplands through the western portion of the Project before meeting up with the NCDOT terminus. This western roadway does result in 1 perpendicular crossing for a stream next to the Battery storage building, however total stream impacts are substantially lower than Alternative 1 and Alternative 2.

Alternative 4 (Preferred Alternative)

Following extensive agency discussions and internal re-evaluation of the program objectives for Project Blue, VinFast determined that the Battery storage building was no longer needed within Phase 1A of the Site. Removing the Battery building allows for a better stream crossing orientation and alignment for the Phase 3 roadway connection over a perpendicular reach of the stream. Removing the building also better protects against unknown issues that may have resulted from the location of a building envelope so close to the stream and stream valley that could have resulted in unforeseen additional impacts or unplanned retaining walls during construction relating to rock or unsuitable soils. Alternative 4 also utilizes divided roadway corridors in an effort to ensure safety since the nature of this facility means large trucks and cargo traffic will be comingling with employee personal vehicles consistently on a daily basis in all weather conditions and times of day. The potential for truck and personal vehicle interaction is unacceptable to VinFast and utilizing a divided highway is the best way to ensure safety and protection of employees and vehicles of all sizes using the facilities. Even though the divided roadway corridors will result in the need for slightly longer culverts at the three proposed crossings, impact lengths are overall short and culverts will be installed to ensure protection of aquatic life movement in the stream even in periods of low water similar to the natural stream bed.

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To support Project Blue, roadway network improvements would need to provide direct access from US-1 to the Project Blue site and provide a grade separated crossing of Old US-1 and CSXT railroad. Prior to the development of roadway concepts, initial consideration was given to the number of access points from US-1. Specifically, either a single access point or two access points were reviewed, as described below.

Access Alternatives Development

Review of a Single Access Point to US-1

Two potential locations for a single access point from US-1 to the Project Blue site were reviewed: New Elam Church Road and a central location situated between the two existing interchanges at Pea Ridge Road and Old US-1 (Exit 81 and 84, respectively).

A single access point from US-1 through a new interchange at New Elam Church Road, designed to accommodate the substantial increase in traffic volume is not practicable due to the following design constraints:

- A new interchange in this location would be located too close to the US-1 interchange at Old US-1 (Exit 84), requiring closure of Exit 84.
- The new US-1 interchange with New Elam Church Road would need to replace access to Old US-1 for this area; however, the distance between US-1 and Old US-1 along New Elam Church Road (less than 2,000 feet) would not accommodate this access while providing a grade-separated crossing (with a 23-foot minimum vertical clearance) of the CSX Transportation railroad (CSX or CSXT) which runs parallel to Old US-1 in this location.

Therefore, if only one access point from US-1 to the Project Blue site is provided, the new interchange would need to be located west of New Elam Church Road, between the existing US-1 interchanges at Pea Ridge Road (Exit 81) and Old US-1 (Exit 84). This option would allow the existing US-1 interchanges at Pea Ridge Road (Exit 81) and at Old US-1 (Exit 84) to remain in place, while avoiding design constraints of the New Elam Church Road location. However, other limitations were identified, as outlined below.

- Traffic Operations: A new interchange between the existing interchanges at Pea Ridge Road and Old US-1, designed to accommodate the substantial increase in traffic volume, is expected to negatively impact traffic operations along US-1. Heavy on-ramp and off-ramp traffic volumes sometimes exceeding 2,000 vehicles per hour, would create a need for large acceleration, deceleration, and even auxiliary lanes along US-1. A single interchange is expected to result in 5,000 – 5,500 vehicles per direction per shift on the new roadway. This would require a wider cross section, i.e., two additional through travel lanes, as well as require increased shoulder and clear zone widths to accommodate the larger traffic volumes. Additionally, designing the ingress and egress to the facility to process the projected traffic will require a larger transportation network within the Project Blue site (given the concentration of entering/exiting traffic volumes).
- Traffic Safety: Traffic safety along US-1 would be reduced if all the Project Blue site traffic were concentrated at one interchange and due to the spacing along US-1 between the three interchanges (Exit 81, the new single access point interchange, and Exit 84). An additional access point along US-1 in the form of an interchange (between Pea Ridge Road and Old US-1), is also expected to bring negative impacts to traffic safety along US-1.

With 7,500 employees anticipated in the initial phases of the Project Blue development, a single access point from US-1 to the VinFast site would need to accommodate substantial traffic volume. A single access point design including multi-lane, braided ramps as well multi-level “flyover” roadway structures would be required at the interchange with US-1 to provide adequate capacity and access. In addition to the geometric, operational, and safety limitations of the two single point alternatives stated above, an interchange of this magnitude is also not practicable due to cost. It would also require a very large footprint with associated impacts to resources, residences, and businesses. Other factors precluding a single access point include:

- Evacuation Route: The study area is located in Harris Nuclear Plant’s Emergency Planning Zone. Evacuation from the site could be delayed with only one access point for the Project Blue development.
- Incident Management: With a single access point to the Project Blue development, incidents as a result of crash or vehicle breakdown would severely impact traffic going in and out of the facility.
- Lack of Access: With a single access point to Project Blue through US-1, there would be no other local roadways to account for traffic originating from other parts of the network including Christian Chapel Church Road, Corinth Road, and Old US-1.

- Economic Development: The purpose of the roadway network improvements is to support the development and operation of the Project Blue site. Funding for the roadway network improvements was allocated by G.A. Session Law 2022-74 (House Bill 103, Section 11.9), which established a phased funding approach associated with employment goals. The construction of a single access point is inconsistent with this phased funding approach because total funding for transportation network improvements is not available until employment requirements are met.

Therefore, concepts that would provide only one point of access from US-1 to the Project Blue site were not studied in detail.

Review of Two Access Points to US-1

The phased construction of two access points is consistent with the funding allocated by G.A. Session Law 2022-74 (House Bill 103, Section 11.9), which established a phased approach associated with employment goals.

Using two access points from US-1 into the Project Blue development, traffic would be split, resulting in reduced traffic volumes at each interchange and smaller interchange design footprints. With two access points, one interchange can be located at New Elam Church Road in place of an interchange closer to Pea Ridge Road. This spacing would provide an adequate distance between the two interchanges and enhance operations and safety both along US-1 and at the individual interchange locations. Some modification of the existing US-1 with Old US-1 would still be needed.

With the potential for development in the area, the existing interchange at US-1 and Pea Ridge Road (Exit 81) will likely need interchange upgrades to accommodate future growth in traffic. By providing a second access point to the Project Blue development from US-1 via the interchange at Pea Ridge Road, and with the resulting interchange improvements, the US-1 interchange at Pea Ridge Road will be capable of handling additional traffic generated outside of the Project Blue development, accommodating design year traffic demands for Project Blue, and future growth in the area.

Based on these considerations, it was concluded that access to the Project Blue site would be via two access points from US-1, Pea Ridge Road (Exit 81) and New Elam Church Road (new Exit). Two access points from US-1 to the Project Blue site would accommodate future traffic volumes while enhancing safety and traffic operations.

Roadway Alternatives Development

Five initial roadway concepts utilizing two access points were developed to improve access from US-1 to the Project Blue Site. These concepts would provide primary access from US-1 to the Project Blue Site at two interchange locations, while eliminating the existing Old US-1 interchange with US-1 (Exit 84). These concepts include new interchanges with Old US-1, existing roadway alignments, and new locations alignments. (See **Figure 5B: Prior Concept Comparison**.) Concepts utilize a combination of roadway alignments at:

- New Elam Church Road (referred to as “East” below), and
- Pea Ridge Road (referred to as “West” below).

All concepts include a new interchange with US-1 at New Elam Church Road and utilize the same alignment to just north of the Project Blue site (including the interchange with Old US-1). They also include a modified US-1 interchange with Pea Ridge Road with a similar location for the interchange with Old US-1 and connection to the Project Blue site. Concepts are illustrated on **Figure 5B**. Concepts were screened by desktop analysis using a 300-ft wide corridor to evaluate their potential environmental impacts. **Table 25** shows a comparison of potential wetland and stream impacts of the HE-0006 concepts.

Table 25. Initial Roadway Network Improvement Concepts

Concept	Phase/Total	Impacts	
		Streams (LF)	Wetlands (ac)
Concept 1	East	2,583	3.71
	West	4,113	14.09
	Total	**6,696**	**17.8**
Concept 2	East	1,620	4.59
	West	4,113	14.09
	Total	**5733**	**18.68**
Concept 3	East	2,583	3.71
	West	2,563	12.49
	Total	**5,146**	**16.2**
Concept 4	East	1,620	4.59
	West	2,563	12.49
	Total	**4,183**	**17.08**
Concept (5) *(Preferred)*	East	2,116	3.18
	West	2,119	11.58
	Total	**4,235**	**14.76**

Notes & Assumptions: 1) Impact estimates are based on a 300-ft corridor. 2) Stream estimates are based on USGS National Hydrography Data. 3) Wetland estimates are based on an NCDOT Wetland Prediction model.

Based on this comparison, Concept 5 was the corridor that would minimize impacts. Concept 5 was selected as the Preferred Concept and was carried forward for detailed study (as the Preferred Alternative). Streams and wetlands were then delineated in the field within the Preferred Alternative study area.

Preliminary designs were then progressed on the Preferred Alternative. Hydraulic crossings and grade separations were analyzed and roads to maintain access were added where required. In addition to stream and wetland impact minimization, the Preferred Alternative was also refined to avoid or minimize impacts to historic resources, a cemetery, several community facilities, and a future park site.

Based on preliminary design and delineated streams and wetlands, **Table 26** shows estimated stream and wetland impacts for the Preferred Alternative following the refinement of the concept design. Preliminary design is shown in **Figures 6B and 7B**.

Table 26. Preferred Alternative Proposed Impacts

Phase	Streams (LF)	Wetlands (ac)
Phase 1 (East)	1,634	6.52
Phase 2 (West)	1,589	16.26
Total	**3,223**	**22.78**

[1] Impact estimates are based on slope stakes (preliminary design) with a 40-foot buffer.

7.2.2 On-Site Minimization of Unavoidable Impacts

In general, perpendicular stream crossings were maintained where possible to achieve minimum impact to streams and wetlands. Existing drainage patterns would also be maintained to avoid overall impacts to the human and natural environment. In addition to modifying the general layout of the site, VinFast has also carefully designed each crossing to avoid and minimize impacts to streams and wetlands to the extent practicable.

At VinFast Impact Site 1, the design utilizes a perpendicular crossing of stream S1 to reduce impact lengths, and crosses S1 at a particularly straight stream reach further minimizing impacts. A large culvert system is proposed to ensure aquatic connectivity and provide unobstructed base flow and storm flow through the culvert, while protecting aquatic life movement. Riprap outlet protection is proposed to be keyed into the stream bed and banks to ensure long term stability at the crossing location.

At VinFast Impact Site 2, the design utilizes an existing culvert crossing of Stream S13 and proposes to extend the culvert slightly to accommodate the required roadway typical section width. As part of the crossing at Site 2, the existing culvert will be upsized, allowing better flow and aquatic connectivity beneath the roadway. Currently the culvert is undersized and appears to overtop the road occasionally. The culvert extension is primarily to the west as well, which avoids the majority of wetland W15 on the upstream side. Minimal impacts (<0.01 ac) to the wetland will result. At Site 2, riprap outlet protection will again be keyed into the bed and banks to ensure long term stability while minimizing loss of waters.

At VinFast Impact Site 3, perpendicular crossings are used for the crossing over stream S3, and a very straight section of stream has been utilized for the culvert installation, minimizing impacts to the extent practicable. Riprap outlet protection will be keyed into the bed and banks of the stream to avoid loss of stream length while still providing long term erosion control and preventing stream degradation.

NCDOT has similarly avoided and minimized impacts to aquatic resources to the extent practicable. Measures taken by NCDOT in the design process to minimize unavoidable impacts include:

- Adjusting the alignment and curve on a hydraulic bridge to cross Shaddox Creek at a straight section of the creek.
- For any hydraulic crossings under 10 feet of fill that will need more than a 60-inch pipe opening, a box culvert would be constructed with sills/baffles sized as necessary.
- Perpendicular crossings would be maintained to achieve minimum impact to streams and/or wetlands.
- Proposed bridges are shown spanning three crossings on Shaddox Creek, including the removal of a 1928 (4-barrel) box culvert under Old US-1 and possible channel improvements upon removal to restore stream function.

Utilities have been carefully designed to avoid and minimize impacts to provide utility service to the manufacturing facility. Water and sewer lines will be directionally drilled beneath streams and wetlands where practicable, and maintenance easements have been narrowed where practicable in stream or wetland areas.

7.2.3 Conclusion of Alternatives Analysis

The Applicants have provided information regarding the site selection process, and have reviewed several sites in the project search area. This analysis demonstrates that there are no off-site alternatives that would meet the project purpose and need and result in reduced impacts to waters of the U.S. The Applicants have also addressed on-site alternatives for the facility and for the HE-0006 improvements, including a discussion of the limitations to the site design process, such as grading, topography, traffic flow, etc. The evaluation has also addressed alternative site configurations and efforts make by the Applicants to minimize impacts to streams and wetlands,

and to attempt to locate unavoidable impacts in areas that support the least aquatic functions. After reviewing the alternatives and the efforts made to avoid and minimize impacts to the aquatic environment, the proposed plan represents the Least Environmentally Damaging Practicable Alternative (LEDPA).

8.0 MITIGATION

Due to the long construction timeline and duration of development between the permit application and the ultimate buildout of each of the respective phases of the Project, the Applicants propose to mitigate for unavoidable stream and wetland impacts on a per-phase basis. Each Applicant will be responsible for the mitigation requirement associated with their respective impacts in each phase. The Applicants will notify the USACE and NCDWR in advance of anticipated construction initiation for each phase, and will secure mitigation for that phase and submit the required documentation to USACE and NCDWR for review prior to initiating impacts associated with each phase. For purposes of mitigation, the following phases and mitigation splits are proposed:

Table 27 – Phased Mitigation Proposed for Project Blue and Offsite Infrastructure Impacts

Project Entity	Phase	Unavoidable Impacts	Mitigation Ratio Proposed	Mitigation Proposed
VinFast	Phase 1B	0.009 ac Wetland	2:1	0.018 ac
		196 LF Stream	2:1	392 LF
		110 LF Stream; PNNL*	*N/A (PNNL)*	*None*
	Phase 2	*(No wetland impacts)*	*N/A*	*None*
		(No stream impacts)	*N/A*	*None*
	Phase 3	*(No wetland impacts)*	*N/A*	*None*
		92 LF Stream	2:1	184 LF
		67 LF Stream; PNNL*	*N/A (PNNL)*	*None*
NCDOT	Phase 1 (East)	6.52 ac Wetland	2:1	13.04 ac
		1,634 LF Stream	2:1	3,268 LF
	Phase 2 (West)	16.26 ac Wetland	2:1	32.52 ac
		1,589 LF Stream	2:1	3,178 LF
City of Sanford	No Phasing Split Proposed	8.82 ac Wetland; Conversion	1:1	8.82 ac
		5.47 ac Wetland; Temporary	*N/A (Temporary)*	*None*
		4,055 LF Stream; Temporary	*N/A (Temporary)*	*None*
Dominion Energy	No Phasing Split Proposed	0.002 ac Wetland; Temporary	*N/A (Temporary)*	*None*
		40 LF Stream; Temporary	*N/A (Temporary)*	*None*
Duke Energy	No Phasing Split Proposed	*(No wetland impacts)*	*N/A*	*None*
		(No stream impacts)	*N/A*	*None*
			Total Mitigation Proposed	54.40 ac Wetland
				7,022 LF Stream

* - Permanent No Net Loss Impacts

Project Blue

VinFast will be responsible for mitigation associated with the construction of the Project Blue Site. Impacts to streams and wetlands are located within the Haw River watershed (HUC 03030002). VinFast proposes to mitigate for permanent impacts to wetlands by purchasing riparian wetland mitigation credits and warm water stream credits from the NC Division of Mitigation Services (NCDMS). Available banks in the watershed were contacted and did not have enough credits at the time of request, however given the long lead time and phased mitigation approach, VinFast will verify credit availability from approved 3rd party mitigation banks in the watershed prior to utilizing NCDMS. For purposes of this application, mitigation has been reserved with NCDMS so that in the event that 3rd party mitigation bank credits are not available when needed, mitigation can still be provided for proposed impacts in each phase. Documentation of acceptance by the ILF program from NCDMS is also included in **Appendix J**. As shown in the above **Table 27,** minor impacts to streams are proposed associated with riprap outlet protection. Shown in the table as "Permanent No Net Loss", or PNNL, riprap is proposed to be keyed into the bed and bank of the stream channels to better armor and protect the stream from long term erosional risks associated with the installation of the culverts. The riprap will be installed in accordance with NCDOT, USACE, and NCDWR requirements to

ensure no permanent loss of function in the stream or impacts to aquatic life movement. Since no loss of function is anticipated, no mitigation is proposed for PNNL impacts.

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The NCDOT has avoided and minimized impacts to jurisdictional resources to the maximum extent practicable at this stage of design. NCDOT will continue to refine designs to minimize impacts. The proposed construction of HE-0006 will likely result in unavoidable impacts to jurisdictional streams, open water ponds, non-riparian and riparian wetlands within the Haw River watershed (HUC 03030002). The current impact totals are shown in **Table 26**. NCDOT is utilizing NCDMS for compensatory mitigation for HE-0006 permanent stream and wetland impacts at a 2:1 ratio.

Utilities
The majority of the impacts associated with the water, sewer, and natural gas utility improvements will be temporary in nature. Extensive horizontal directional drilling (HDD) and boring will be used to avoid impacts to streams and wetlands along the utility corridors, however some areas of the alignment will not be able to be installed via HDD or boring and will require open cut trench installation. These open cut trench installations are the temporary impacts quantified in the application. Temporary impacts to streams and wetlands will be re-graded and revegetated to pre-construction conditions, however establishment of permanent utility maintenance easements is anticipated to result in permanent loss of function to forested wetlands along the utility corridors. Mitigation for the loss of function for conversion of forested wetlands to herbaceous wetlands is proposed at a 1:1 ratio, and mitigation credits will be secured by available 3rd party mitigation bank credits and/or NCDMS. The utility alignment crosses three different HUCs (Caper Fear -02, -03, and -04), and mitigation credit availability is highly variable between the three watersheds.

9.0 EVALUATION OF THE 404(b)(1) GUIDELINES

9.1 Factual Determinations

9.1.1 Physical Substrate

The Project Blue Site primarily consists of primarily forestry tracts managed for timber production with unimproved road corridors and utility easements crossing the Site in multiple locations. The forested areas of the Project Blue Site also include bottomland hardwood forests, floodplain pools, and headwater wetland features. Approximately 288 LF of stream channel would be placed into a culvert for the Project Blue Site and 3,223 LF for HE-0006. In these areas, the existing substrate within the channel would be replaced by the culvert bottom. The culvert would be placed below the streambed, if possible, to allow upstream sediment to form a more natural channel bed over time. The culvert would be sized appropriately to convey the 100-year storm without any adverse effects to upstream properties and ensuring the passage of aquatic life. Fill slopes associated with the culvert inlet and outlet would be revegetated and stabilized with riprap along the base of the fill to prevent erosion, and headwalls will be used where practicable to reduce fill slope impacts.

9.1.2 Water Circulation, Fluctuation, and Salinity

The Project should have no appreciable effect on current or circulation. Hydrology from the Project contributes to numerous tributaries and wetland systems, all of which flow directly or indirectly into the Haw River by way of Shaddox Creek. All waters are fresh waters, and the Project will not affect salinity levels within them Drainage patterns may be altered within the microsite based on culvert placement. Construction of interior roadways and the HE-0006 improvements necessary for access to the Site will use culvert systems sized appropriately to convey normal baseflow and stormflows without impeding or impounding flow through the stream. The stream and wetland impacts are not substantial given the size of the stream and wetland systems present within the Site and Project Area. The loss of floodwater retention capacity of the wetlands would be offset by the installation of stormwater detention basins, such that that the project would not result in a measurable decrease

in overall floodwater retention. In general, the discharge of stormwater from the site would be regulated to prevent large spikes in volume following most rainfall events. Large storms in excess of the 100-year storm event may exceed the storage capacity of the basins and result in increased flows downstream of the site. Water chemistry may also be changed somewhat from existing levels. Additionally, the increase in impermeable surfaces may result in increased temperatures in stormwater runoff.

9.1.3 Suspended Particulate/Turbidity

The project-specific sedimentation and erosion control measures that will be utilized during construction will minimize downstream sedimentation. The majority of turbidity increases would likely result from the clearing and construction of the proposed mass grading area within the Site. Sediment loss would be minimized by the implementation of sediment and erosion control measures. Once construction of the Project is complete, the soils would be stabilized, revegetated, and stormwater runoff would be directed to detention and treatment basins. Accordingly, the effects of turbidity resulting from the proposed undertaking are expected to be temporary and minor.

9.1.4 Contaminant Availability

Land use in the Project has historically supported various silvicultural and agricultural uses, which included the application of numerous herbicides, pesticides, and fungicides. Following construction of the Project Blue and HE-0006, the use of these contaminants would be discontinued. Proposed uses for the site would result in the potential discharge of some pollutants, including road treatment for winter weather, oil products from automobile engines, and some fertilizers for landscaping. In general, the level of potential contaminant introduction to the aquatic systems is low. Contaminants would leave the site in the initial runoff for up to a 100-year storm event, where they would wash to the stormwater detention basins. Additionally, only suitable earthen material originating on-site, which should be free of toxic pollutants or contaminants, would be used for construction of the permitted fills. Any wastewater leaving the Project Blue facilities would be in compliant with applicable permits and regulations.

9.1.5 Aquatic Ecosystem Effects

The direct effects due to the placement of fill associated with culvert placement for the roadway network and improvements (on and offsite) would be a loss of aquatic function in the aquatic ecosystem in the footprint of the culvert and associated fill placement. Any aquatic habitat present within the wetland impact areas would be completely lost. The secondary short-term effects expected downstream would primarily be limited to temporary discharges of sediment during construction. Even with proper construction and maintenance, sediment control measures do not eliminate all turbidity in receiving waters, though these effects should be limited to the duration of site construction and maintenance of required sediment and erosion control measures.

9.1.6 Proposed Disposal Site

No disposal sites are required by Project Blue. Any HE-0006 disposal sites will comply with NCDOT rules and regulations to ensure no adverse effects will result from the placement of disposed soil.

9.1.7 Secondary and Cumulative Effects

Secondary Effects
The proposed project is designed to meet a growing demand for EVs in the United States The project is expected to provide an economic boost to the local community and state of North Carolina, primarily as a result of tax revenues and job creation. Based on the type and number of

jobs created, the economic benefit is expected to go toward meeting current job demand as well as contributing to a moderate regional population growth.

Construction of the proposed project will require the extension of utilities as this area of Chatham County has been historically rural and is not serviced by utilities. However, the existing low-density residential and industrial development are present in the area, and both residential and industrial developments are currently underway in the vicinity of the Site, further driving the need for utility expansions beyond just VinFast. The City of Sanford is extending the water and sewer services into the Site, and Dominion Energy will bring natural gas service to the Site. When considering these factors, Project Blue is defined as the secondary impact associated with the prior construction of industrial development and targeted growth in this area of Chatham County, rather than the sole cause for future development. It is likely that adjacent land parcels that are currently used for silviculture and agriculture may become available for development as a result of increased land values and access to roadway corridors, but also as a result of the increased demand for commercial and industrial supporting facilities that traditionally follows the development of a large manufacturing facility like Project Blue. It is also possible that additional impacts to the aquatic environment may be requested for future developments in the area, most likely as a result of the extension of utilities (i.e., water and sewer services). These effects may not be realized in the near future, but because ample high ground areas are present in adjacent and surrounding parcels, long term additional impacts to streams and wetlands could result from future development decisions by others.

If this project were not constructed, the reduction in rate of regional development is expected to only be short-term. The project is located within an industrial area of Chatham County along Old US-1 between Pea Ridge Road and the Shearon Harris Power Plant operated by Duke Energy. Existing and planned industrial development is present around the Site due to ample available land, power capacity, and raw water intakes. The demand for new industrial and commercial space is increasing in the vicinity in response to encroaching sprawl from Raleigh, Apex, Holly Springs, and greater Wake County. The proposed project site is located close to US-1, providing quick access to the RDU Airport, Interstates I-40, I-85, and I-95, so continued industrial and commercial growth is focused in this area of Chatham County. Chatham County has also zoned these areas specifically to encourage industrial development. If Project Blue's development plans were abandoned, future development proposals for this Site are anticipated, although likely at a somewhat smaller-scale as outlined in the Triangle Innovation Point conceptual site plan.

Based on the factors discussed above, the secondary and cumulative effect of the proposed undertaking does not pose a substantial threat to the integrity of the aquatic environment. Additionally, the secondary impacts resulting from the proposed plans would include increased development pressure on neighboring or surrounding undeveloped tracts of land. Based on this estimate, the overall secondary effects on aquatic resources associated with this project are expected to be moderate.

Cumulative Effects

For the purposes of assessing cumulative effects that the proposed action may have to the aquatic environment, it is reasonable to evaluate the effects within the project boundaries and downstream of the project as it could affect the watershed. The direct impact of the proposed construction includes the loss of 288 linear feet of perennial stream channel and <0.01 acre of jurisdictional wetland. The impacts to these resources would result in a complete loss of function, including water quality functions (nutrient sequestration, sediment filtration, etc.), habitat for aquatic and terrestrial species, and hydrology (flood water attenuation, groundwater recharge, etc.).

The Site is located in an area that is relatively rural, with a mix of industrial development, low-density residential areas, and silvicultural/agricultural land uses. The Site is located in the headwaters of Shaddox Creek. Current stresses on this system comes from high sediment and nutrient loads that come from silvicultural/agricultural land use and industrial sites utilizing land application for grease septage, as well as development for commercial, industrial, and residential

uses. The potential cumulative effects on the aquatic environment generated by the project would be both temporary and permanent. The temporary effects would primarily be limited to the increased sediment load that result from site disturbance. High sediment loads can cause changes to the channels capacity, potential destabilization of the stream banks, and loss of aquatic habitat. The potential for sediment discharges would last for the duration of site construction, though the effects of the sediment may be long lasting. This effect can be moderated by the proper installation and maintenance of erosion control measures.

Stormwater discharge from the proposed project would not affect downstream properties or the natural environment. All stormwater falling on the Site will be collected within the future stormwater system and conveyed to an SCM basin or utilize NCDOT stormwater treatment facilities. The final Site conditions are anticipated to result in post-construction runoff rates below that of pre-construction conditions for storms up to the 25-year 24-hour event per Chatham County Stormwater Ordinance. All velocities (ditch, swale and outlet) during construction and post-construction will be non-erosive. Rip rap dissipater pads will be utilized at outlets to promote diffuse flow and ensure non-erosive velocities.

The long-term cumulative effects would include the incremental loss of aquatic function provided by the stream and wetlands on the site, including in-stream and riparian habitat, sediment and nutrient filtration, stormwater retention, baseflow maintenance, groundwater recharge, sediment transport, etc. The long-term effects would also include increases in stormwater flowing off the site. Increased stormwater can have a substantial effect on a stream system's stability and functional integrity for miles downstream of a discharge. This effect can also manifest itself over many years, and is often caused by numerous small changes within a watershed. The client will construct multiple SCM basins, designed to capture up to the 25-year storm event and provide minimum 1-foot of freeboard at the 50-year storm event within the contributing drainage area as required by Chatham County Stormwater Ordinance. The proposed measures will reduce a minimum 85% of the total suspended solids (TSS) produced by the development as required by Chatham County Stormwater Ordinance. TSS removal rates are per North Carolina Stormwater Control Measure Credit Document. These measures can substantially reduce the effect of stormwater on downstream tributaries. As the watershed is still largely rural, the cumulative effect of the proposed project and other similar projects is moderate. Proper implementation of sediment and erosion control measures and stormwater management practices, as proposed by the current plans, is the best way to minimize the cumulative impact of this type of development.

Overall, the anticipated effects of the proposed project would be moderate relative to similar types of projects in the region, and taken alone, do not present a significant or imminent threat to the stability and integrity of the aquatic ecosystem within the watershed. The type of wetland and stream system that would be impacted is not a particularly unique or high-quality resource in this area of the State. By implementing proposed best management practices, such as the retention of stormwater and the implementation of sediment and erosion control measures, the effects of the project could be somewhat reduced. The loss of stream and wetland function would also be replaced by the proposed mitigation.

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RK&K completed indirect and cumulative effects studies in accordance with NCDOT guidance. These studies addressed the Project Blue development and the transportation improvements, considered together as a single and complete non-linear project ("the Project"). The Indirect and Cumulative Effects (ICE) report, a qualitative screening for indirect and cumulative impacts, was approved by NCDOT in July 2022 (**Appendix L**). The Future Land Use Study Area (FLUSA) defined for this analysis encompassed approximately 27,459 acres, including portions of adjacent Wake and Lee counties. The determination of the ICE report was that a qualitative property-level assessment or Land Use Scenario Assessment (LUSA), is warranted; therefore, RK&K also prepared a LUSA that was approved by NCDOT in July 2022 (**Appendix M**). This assessment compared No-Build and Build scenarios for the Project and concluded that a more detailed

quantitative analysis of indirect effects was not warranted. The indirect effects matrix is provided as **Table 28** and the LUSA matrix is provided as **Table 29**. The full ICE report and LUSA are included in Appendices L and M, respectively. A summary of findings follows:

Construction of HE-0006 would result in transportation impact causing activities such as the creation of new land use nodes at proposed interchanges, an increase in direct access and a minor change in local travel patterns. Indirect effects would be access based and would occur primarily adjacent to new location roadways, along improved roadways, at existing and planned interchanges, and within Triangle Innovation Point.

Development is anticipated to occur in the FLUSA due to market demand and demographic trends. The Project is expected to be a catalyst in accelerating the pace of development and could lead to a heightened potential for induced growth and higher densities including industrial, commercial, and residential uses. This contrasts with a No-Build scenario where somewhat smaller-scale development is anticipated as outlined in the Triangle Innovation Point[4] conceptual site plan.

Development is subject to regulations that will guide development and help to mitigate potential impacts. Any development, with or without the Project, that potentially impacts jurisdictional resources, will be subject to regulatory permitting requirements, the requirements of adopted town and county ordinances, and state and local buffer regulations and will occur in accordance with local comprehensive land use plans. The presence of conservation/managed lands and WSWS protected and critical areas, which have density and impervious surface restrictions and riparian buffer requirements, will aid in mitigating detrimental indirect water quality effects.

The potential for the degradation of water quality also exists through erosion and stream sedimentation. Any direct natural environmental impacts by NCDOT projects would be addressed by avoidance, minimization, and mitigation consistent with programmatic agreements with the natural resource agencies during the Merger and Permitting processes. The adherence to Best Management Practices, such as stormwater control measures during construction, will help to mitigate direct water quality effects.

The Project would have a moderate overall cumulative effect when considered in the context of other past, present, and future public and private development actions.

[4] https://www.triangleinnovationpoint.com/ and https://edpnc.com/megasites/moncure-megasite/

Table 28. Indirect Effects Matrix*

Indirect Effects Matrix - Triangle Innovation Point and the Roadway Network Improvements - Chatham County											
Rating	Scope of Project	Travel Time Savings	Forecasted Population Growth	Forecasted Employment Growth	Available Land	Water/Sewer Availability	Market for Development	Public Policy	Notable Natural Environmental Features	Result	
More Concern	High	> 10 minute travel time savings	> 3% annualized population growth	> 3% annualized employment growth	40% or greater of available land	Services available (80 - 100% of FLUSA served)	Development Activity Abundant	Less stringent; no growth management	Notable Feature(s): Abundant / More Sensitive		
High	X				X						Land Use Scenario Assessment Required
Medium-High							X				
Medium			X			X			X	Possible Land Use Scenario Assessment	Coordinate with CS
Medium-Low		X		X				X			
Low											
Less Concern	Low	No travel time savings	No population growth or decline	No employment growth or decline	0 - 9% of available land	Limited or no service available now or in future (0 - 20% of FLUSA served)	No Development Activity	More stringent; growth management	Notable Feature(s): Minimal / Less Sensitive		

* The categories listed in the Indirect Effects Matrix are recognized as factors that influence land development decisions and trends, both statewide and nationally.

Table 29. Land Use Scenario Assessment Matrix*

Land Use Scenario Assessment Matrix - Triangle Innovation Point and the Roadway Network Improvements - Chatham County								
Rating	Scope of Development	Development Intensity	Future Shift of Regional Population Growth	Future Shift of Regional Employment Growth	Pressure for Land Development Outside Regulated Areas	Planned / Managed Land Use and Impacts	Result	
More Concern	40% or Greater Change in Developed Land within the PDAs	Higher Development Intensities Anticipated	Strong Attraction of Development in the PDAs	Strong Attraction of Development in this Area	All PDAs are Outside a Regulated Area	Land Development and Stormwater Management Goals Not Set		
High								Indirect and Cumulative Effects Summary Required
Medium-High	Build Scenario	Build Scenario	Build Scenario	Build Scenario				
Medium		No-Build Scenario	No-Build Scenario	No-Build Scenario			Indirect Land Use Effects Possible	
Medium-Low	No-Build Scenario					No-Build and Build Scenarios		
Low					No-Build and Build Scenarios			
Less Concern	0-9% Change in Developed Land within the PDAs	No Current or Proposed Development Anticipated	No Population Shift Likely	No Employment Shift Likely	All PDAs are Inside a Regulated Area	Land Development, Stormwater Management Goals, and Growth Management Provisions in Place		

*The Land Use Scenario Assessment Matrix serves as a tool to evaluate any differences between the Build and No-Build Scenarios in their potential to induced change in land use.

10.0 PUBLIC INTEREST REVIEW

10. 1 Public Interest Factors

10.1.1 Conservation

In developing Project Blue and the associated infrastructure improvements, the Applicants will utilize Best Management Practices for land and water protection and conservation. The proposed Project will adhere to the applicable stormwater and erosion control programs put in place by the State and Chatham County. Properly designed and located sediment control structures will be utilized to prevent sedimentation of undisturbed waters. The proposed development will avoid and minimize disturbance to wetlands and streams to the extent practicable. Implementation of the proposed mitigation plan (payment to the NCDMS In-Lieu Fee Program) would be used to restore and preserve a greater amount of streams and wetlands within the watershed than that would be lost as a result of the approval of this permit.

10.1.2 Economics

The proposed development will expand VinFast's ability to produce EVs in the United States. With the increase in global climate goals, the rising demand for EVs, and supply chain constraints being felt worldwide, expanding production into the United States will make EVs more accessible for the consumer. The proposed project will be VinFast's first facility in North America developed to produce EVs for the US market.

In addition to helping supply the growing global demand for EVs, the proposed development will provide an economic benefit to the citizens of North Carolina and in particular to Chatham County. VinFast will invest millions of dollars constructing the new facility and plans to generate thousands of new jobs in North Carolina.

10.1.3 Aesthetics

The proposed development will be designed to be aesthetically pleasing and will necessitate proper landscaping and lighting plans are included as part of the overall site layout. The avoidance of streams and riparian corridors within the Project Blue Site and integration with the natural ground surface resulting in variable building elevations across the Site will create a more natural, park-like feel to the development and provide natural landscape buffers for future neighbors. Additionally, the Project Blue Site is situated in area of the County with existing heavy industrial uses. The proposed roadway improvements serving the Project Blue Site will likely be an aesthetic improvement to the aging roadway corridors and infrastructure in the area. The proposed development would not cause disharmony in the aesthetics of the community or planned future growth of the region.

10.1.4 General Environmental Concerns (33CFR320.4(p))

Project Blue
Any adverse impact to the environment from construction of Project Blue would be minimal and temporary in nature. Temporary increases in sedimentation, construction noise, traffic levels, etc., are expected during construction of the Project Blue Site. Any potential long-term impacts to wetlands, streams, and fish and wildlife would at least in part be offset by the compensatory mitigation proposed by the Applicants, and further mitigated through onsite measures such as protection of riparian corridors and stormwater management.

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Direct impacts are anticipated because of the proposed roadway network improvements. This will mainly include residential and business relocations, property acquisition and land conversion, and changes in access and travel patterns. These direct impacts will be avoided, minimized, and mitigated for to the greatest extent possible. This will include targeted outreach to affected communities, business owners and other stakeholders with an emphasis on traditionally underserved populations and equity.

Utilities

Direct impacts are anticipated to result from the proposed sanitary sewer, water, and natural gas improvements to service the Project Blue development. Temporary increases in sedimentation, construction noise, and traffic detours are expected during construction of the new utility lines. Any potential long-term impacts to wetlands, streams, and fish and wildlife would be minimal, and offset through compensatory mitigation payments. While the proposed utility maintenance corridors will fragment some existing forests, the corridors will be vegetated and still provide wildlife use, pollutant removal through wetlands, and aquatic species mobility through streams. Additionally, to the extent possible, the proposed maintenance corridors will be located within existing rights-of-way and easements.

10.1.5 Wetlands (33CFR320.4(b))

Project Blue

The Project Blue Site would result in the cumulative, permanent loss of 0.009 acre of headwater forest wetlands and 288 linear feet of streams that currently provide some nutrient filtering, sediment removal, and aquatic habitat. The Applicant proposes to offset these losses through the NCDMS In-Lieu Free Program as outlined in Section 7.0 Compensatory Mitigation above.

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Eighty-five wetlands totaling approximately 105 acres were identified In the NCDOT study area. HE-0006 would result in unavoidable wetland impacts. Mitigation plans will be developed as HE-0006 proceeds to final design. The state's Economic Development Project Reserve Funding would provide funding for the roadway network improvements and associated wetlands mitigation needed to support the Project.

Utilities

The construction of the offsite utility improvements will result in unavoidable impacts to jurisdictional wetlands for the establishment of permanent utility easements along the utility line improvements as well as temporary impacts to jurisdictional wetlands and streams for the construction corridor necessary to install the proposed utility lines. In total, the water and sewer improvements will result in the permanent conversion of approximately 8.82 acres of forested wetlands to herbaceous wetlands, temporary impacts to approximately 5.47 acres of forested wetlands, and 0.61 acre (4,055 LF) of temporary impacts to jurisdictional streams. Additionally, the proposed natural gas improvements will result in temporary impacts to approximately 0.002 acre of forested wetlands and temporary impacts to approximately 40 linear feet of jurisdictional streams.

10.1.6 Historic and Cultural Resources (33CFR320.4(e))

Project Blue

Kimley-Horn submitted an Environmental Review Request to the NC SHPO on July 26, 2022, to request concurrence that the proposed Project Blue Site would have no impact on historic or archaeological resources. The NC SHPO replied stating that they expect the project area may contain intact, significant archaeological sites due to its proximity to the Haw River and its tributaries. As a result, archaeological surveys of the Project Blue Site within areas of potential disturbance are under contract and slated to Q4 of 2022 following acceptance of the survey plan by NCSHPO Office of State Archaeology (OSA). Additional information is included in Section 1.3.9 above and documentation of the NC SHPO coordination is included in **Appendix F.**

NCDOT STIP# HE-0006
RK&K completed a Historic Architectural Resources Survey (September 9, 2022) for HE-0006. Survey findings were reviewed by the NCSHPO. Of the 16 properties documented in the survey report, the NCSHPO concurred on October 14, 2022 that the following properties are eligible for listing in the NRHP: (Former) Jack Womble's Filling Station (4674 Old US 1), Edwards House (Old Christian Chapel Church Road) and Yates Store (Old Christian Chapel Church Road). Direct impacts to these properties are not anticipated. An assessment of effects is required and is underway.

NCDOT-Archaeology determined an Archaeological Survey is required for HE-0006 "because of the ideal soil conditions and topographic settings along the Haw River, around Harris Lake, and within the historic community of Merry Oaks." An Archaeological Survey was completed by RK&K and is under review.

The Environmental Response review letter from NCSHPO is included in **Appendix F**.

Utilities
The proposed offsite Utility Connections will be primarily constructed within existing, maintained easements and roadside rights-of-way. The minimal new location improvements are proposed within areas of existing or proposed development and/or previously disturbed forests. Additionally, the proposed sanitary sewer lines, waterlines, and natural gas lines will be located underground. Due to the minimal visual impact anticipated, the existing land use conditions within the proposed Utility Connection corridors, and the lack of existing NR, SL, and DOE resources within the proposed utility corridors, it is anticipated that the proposed offsite utility improvements will have no effect on historic or cultural resources. Additional information on the historic and cultural resources within the utility corridors is included in Section 1.3.9 above.

10.1.7 Fish and Wildlife Values (33CFR320.4(c))

Project Blue
The Project Blue Site would not be expected to result in permanent adverse effects to the overall fish or wildlife value in the area. During construction, it is likely that some aquatic and terrestrial animals might be lost or displaced, along with their habitat. The type of habitat within the Project Blue Site includes headwater forest wetlands, forested upland areas, planted pine stands, and in-stream and riparian habitat. Following construction, the remaining natural areas and riparian buffers would continue to provide sufficient habitat for fish and migratory bird species. No effect is anticipated to any federally listed threatened or endangered terrestrial species known to occur in Chatham County, and the Project May Affect but is Not Likely to Adversely Affect" the Cape Fear Shiner.

NCDOT STIP# HE-0006
The USFWS lists three federally protected species within the NCDOT study area, under the ESA: red-cockaded woodpecker, Cape Fear shiner and harperella. Surveys were conducted in July 2022 for red-cockaded woodpecker and harperella.

The results of a fish survey in Shaddox Creek indicate a poor fish diversity. Given the marginal available habitat, lack of water willow beds, lack of cobble/boulder substrate, and the nearest element occurrence (EO) for this species located upstream of the study area with no barriers separating this EO, it can be concluded that the completion of HE-0006 May Affect but is Not Likely to Adversely Affect the Cape Fear Shiner.

Utilities
The proposed utility improvements would not be expected to result in permanent adverse effects to the overall fish or wildlife value in the area. Due to the location of the proposed utility corridors primarily within existing rights-of-way and easement, is anticipated that construction would displace

very few aquatic or terrestrial species, and any habitat loss would be minimal and temporary in nature. While the proposed new location utility maintenance corridors will fragment some existing forests, the corridors will be vegetated and still provide wildlife use, pollutant removal through wetlands, and aquatic species mobility through streams.

10.1.8 Flood Hazards

Project Blue
The Project Blue Site is not expected to have an impact on the overall flood hazard condition downstream of the development. The development would result in increases to impervious surface within the watershed, but this increase would be offset by the proposed retention of stormwater within the post-construction SCMs in addition to the runoff mitigated by the remaining natural wetlands and riparian corridors within the area. Phase 3 of Project Blue would tie an internal access road to the proposed STIP# HE-0006 Phase 2 improvements within the 100-year floodplain of Shaddox Creek. Any necessary FEMA floodplain development permits, No Rise Certifications, or CLOMR approvals will be acquired prior to developing Phase 3 of Project Blue.

NCDOT STIP# HE-0006
A 100-year floodplain (as designated by FEMA) is associated with Shaddox Creek and is located within the NCDOT study area (FEMA Flood maps 3710969700J – Panel No. 9697 (02/02/02), 3710968700L – Panel No. 9687 (11/17/2017). STIP# HE-0006 would increase impervious surface within the water supply watershed.

Utilities
The proposed sewer and water utility improvements would cross multiple FEMA-regulated floodplains and floodways associated with the Cape Fear River and its tributaries. It is anticipated that the proposed sanitary sewer and water improvements will have no impact to these regulated floodplains and floodways or will be able to achieve a No Rise Certification, which will be pursued, if necessary, prior to construction. There are no FEMA regulated floodplains or floodways located within the proposed natural gas corridor.

10.1.9 Floodplain Values (33CFR320.4(l))

Project Blue
Pursuant to Executive Order 11988, consideration is also given here to the effect that the proposed Project Blue may have in reducing the risk of flood loss, minimizing the impact of floods on human safety, health and welfare, and restoring and preserving the natural and beneficial values served by floodplains. The proposed stormwater control measures and remaining wetlands within the Project Blue site and immediate watershed would assist in the retention of stormwater runoff and downstream flooding. Overall, the Project Blue Site should not result in measurable impacts to the functions or value of the floodplain areas.

NCDOT STIP# HE-0006
The area is drained by Shaddox Creek and associated tributaries to the south and west into Haw River. It is conveyed under US-1 and Old US-1 (SR 1011) by a 3-barrel and 4-barrel culvert, respectively. Shaddox Creek has a well-developed, wide floodplain.

Utilities
The proposed utility improvements are not anticipated to result in measurable impacts to the functions or value of the floodplain areas.

10.1.10 Land use

Project Blue
The proposed Project Blue would result in the conversion of mostly silvicultural and agricultural land to industrial development. While this would be a major change in land use, the Project Blue Site is zoned by right for heavy industrial development and is consistent with Chatham County's long range planning goals for this area.

NCDOT STIP# HE-0006
The Project is consistent with existing plans, regulations, and policies at the local level, including *Plan Chatham Comprehensive Plan* (adopted in 2017). As depicted on the Future Land Use and Conservation Plan map, employment centers are designated at the US-1 interchange with Old US-1 (encompassing a portion of the proposed interchange with New Elam Church Road) and with Pea Ridge Road. The Project Blue site and surrounding area, referred to in local plans as the Moncure Megasite, is also designated an employment center, the largest in the county. (The area is marketed as Triangle Innovation Point, an advanced manufacturing industrial park.)

The NCDOT Transportation Planning Division is currently working cooperatively with Chatham County and the Triangle Area Rural Planning Organization (TARPO) to amend the Chatham County Comprehensive Transportation Plan (CTP). It is expected that the amendment would incorporate the short-term transportation improvements proposed for the area.

Chatham County is undertaking a process to rewrite its land-use regulations, including zoning and subdivision regulations, which will result in a new Unified Development Ordinance (UDO) to guide all development and land use within the county. As part of this effort, considerations of the Moncure Megasite (Triangle Innovation Point) may be incorporated into the UDO. In addition, the County initiated a small area planning process for the section of Chatham County expected to be most directly impacted by development of the Project Blue site.

Utilities
The proposed utility improvements would result in some conversion of forested area to utility easements; however, the majority of the proposed improvements will be located within existing rights-of-way or otherwise disturbed areas have no effect to current land uses in the area.

10.1.11 Navigation (33CFR320.4(o))

Project Blue
Project Blue is not water dependent and is not located on a Section 10 navigable waterway. Accordingly, consideration of Project Blue's effect on navigation is not applicable. It is located adjacent to Shaddox Creek which is a Traditionally Navigable Water (TNW). Project Blue would not interfere with navigation along Shaddox Creek.

NCDOT STIP# HE-0006
The Project is just east of the Haw River and would not impede with navigation along the river.

Utilities
The proposed Sewer Phase 2 improvements and Water Phase 2 improvements would cross under the Haw River and the Cape Fear River (Section 10 Waters) by means of Horizontal Directional Drilling (HDD). The proposed HDD is not anticipated to impede navigation along the Haw River or the Cape Fear River.

10.1.12 Shore Erosion and Accretion

This public interest issue is not applicable to this application as the Project is not located in an area where shoreline erosion or accretion is problematic. Terrestrial erosion and potential sedimentation

to surface waters would be addressed through the NCDEMLR – Land Quality Section and Chatham County required Sedimentation and Erosion Control Plan.

10.1.13 Recreation

Project Blue
No existing public or private recreational facilities would be negatively affected by the Project Blue Site. The proposed Project Blue development would not be intended to provide recreational activities to the surrounding community. The Project Blue Site will be designed in a manner that provides employees/authorized personnel with a pleasant atmosphere in which to work, including walking paths, and natural areas. Overall, the proposed project is not anticipated to affect regional recreational opportunities.

NCDOT STIP# HE-0006
Chatham County purchased a 147-acre property on the east side of Pea Ridge Road for a future park. According to the conceptual park master plan (approved in 2020), Parkers Ridge Park will feature several multi-purpose fields, a fitness course, playgrounds, a dog park, a disc golf course, a 1.5-mile nature trail, and over 1 acre of interpretive area with a shelter. Approximately nine acres of the site is reserved for a future school; however, it has not been determined if the site will be able to accommodate a school, according to Chatham County staff.

Based on current designs, the realignment of Pea Ridge Road would impact the park property along the existing roadway and the southernmost portion of the park property. Because of the irregular configuration of the park property boundary, right-of-way acquisition would likely have a minimal effect on the overall use of the park property.

The proposed park entrance on existing Pea Ridge Road would be limited to right-in/right-out access due to the proposed median. A full-movement entrance would be provided on realigned Pea Ridge Road to align with the median break at the tie-in of the existing section of the roadway. However, an entrance in this location would require revisions to the park master plan.

During a June 22, 2022 meeting with Chatham County Parks staff, the HE-0006 team requested that the County incorporate plans for a transportation corridor for the proposed project in the design plans for the planned park. NCDOT will continue outreach and coordination with the Chatham County Parks and Recreation Department regarding the transportation improvements and potential impacts to the park property.

In addition, US Bike Route 1, State Bike Route 1 (Carolina Connection), and Chatham County Bike Loop Route C follow Old US-1 through the NCDOT study area. Chatham County Bike Loop Route C is also routed along Pea Ridge Road. HE-0006 would improve roadways for cyclists by providing wider paved shoulders.

Utilities
No public or private recreational facilities would be negatively affected by the proposed utility improvements. The proposed utilities will be located underground and primarily within maintained rights-of-way or along existing easements.

10.1.14 Water Supply (33CFR320.4(m))

Project Blue and Utilities
The Project is located within a WS-IV classified water supply watershed. The development of the Project would comply with all surface water standards for “WS-IV” waters. The site would be serviced by City of Sanford utilities and would draw from local water supply sources. The industrial facility would require a large water demand, but the proposed Water and Sewer Improvements will be more than enough to support this facility.

NCDOT STIP# HE-0006
The Project is within the Cape Fear River (Sanford) Water Supply Watershed (WS-IV, Protected). In 2021 Chatham County established the Moncure Megasite Watershed Overlay District where the 10/70 option applies, meaning non-residential uses may occupy ten percent of the protected area with a 70 percent built upon area if approved as a special non-residential intensity allocation. Pea Ridge Road is within the County's River Corridor Special Area, a buffer of land within 2,500 feet of the bank of the Haw River with density and impervious surface restrictions.

10.1.15 Water Quality (also 33CFR320.4(d))

Project Blue and Utilities
A NCDWR Individual Water Quality Certification, as required for the issuance of this requested Individual Permit from the USACE, has been applied for in association with this permit application. Special conditions are anticipated, and a copy of these conditions will be provided to the USACE. No major impacts to water quality are expected as a result of the Project Blue development or utility infrastructure improvements. However, increases in turbidity during construction, loss of nutrient removal capacity of the filled wetland, and some discharge of pollutants and nutrients in the runoff could result. The devices required under Erosion and Sedimentation Control Plans that will be approved by Chatham County for development in the Project Blue Site would assist in the protection of water quality. It is anticipated that the proposed SCMs on site should offset long-term impacts by removing sediment, nutrients, and other pollutants from treated stormwater, and by attenuating peak flows downstream. The NCDWR and/or Chatham County will review the proposed stormwater plans prior to construction of the Project.

NCDOT STIP# HE-0006
Any development, with or without the Project, that potentially impacts jurisdictional resources, will be subject to regulatory permitting requirements, the requirements of adopted town and county ordinances, and state and local buffer regulations and will occur in accordance with local comprehensive land use plans. The presence of conservation/managed lands in the Project vicinity and WSWS protected and critical areas, which have density and impervious surface restrictions and riparian buffer requirements, will aid in mitigating detrimental indirect water quality effects.

The potential for the degradation of water quality also exists through erosion and stream sedimentation. Any direct natural environmental impacts by NCDOT projects would be addressed by avoidance, minimization, and mitigation consistent with programmatic agreements with the natural resource agencies during the Permitting processes. The adherence to Best Management Practices such as stormwater control measures during construction, will help to mitigate direct water quality effects.

10.1.16 Energy needs (33CFR320.4(n))

The proposed Project Blue would add additional requirements to the local electrical grid. The additional demand would peak during the summer when air conditioning use is greatest. An electrical substation would be constructed as part of the proposed Project Blue Site to help alleviate demand to the existing infrastructure in the area, and Duke Energy has stated that there is ample capacity within the grid in this location.

10.1.17 Safety

Project Blue
All entrances to the Project Blue Site along existing state roads have already or will meet the standards of the NCDOT. In addition to the NCDOT constraints imposed for the sake of safety, there are also constraints on the construction phase of Project Blue by state law and the Occupational Safety and Health Administration. The Project Blue Site has been designed in

accordance with local traffic safety regulations and should not result in result in additional safety concerns. Chatham County is reviewing VinFast's building permits to ensure compliance with fire regulations and other public safety concerns for employees using the Site and surrounding residents.

NCDOT STIP# HE-0006
Emergency services in the NCDOT study area are provided by Chatham County. The County's Moncure Fire Station 8 is located at the Pea Ridge Road intersection with Old US-1 (northwest quadrant). The station houses fire and EMS apparatus and crews. The station's primary access is from Pea Ridge Road, while secondary access (staff driveway) is from Old US-1.

Minor access impacts are expected. For northbound response from Moncure Fire Station 8 utilizing Pea Ridge Road, a left-turn movement would be needed to continue north on the improved roadway. Input received from the Chatham County Emergency Management Director indicates concerns related to temporary impacts during construction. Signalization for emergency response vehicles at the new intersection of existing Pea Ridge Road with improved/realigned Pea Ridge Road would be considered.

The Project falls within the 10-mile Emergency Planning Zone (EPZ) surrounding the Harris Nuclear Power Plant. The major evacuation routes in the project vicinity are US-1 southbound, Moncure Pittsboro Road northwest towards Pittsboro, and Pea Ridge Road / Beaver Creek Road north towards US 64. Duke Energy maintains outdoor warning sirens mounted on telephone poles, including the following locations:

- Pea Ridge Road – between Old US-1 and US-1
- Old US-1 – northeast of Railroad Drive (outside the DCIA)
- New Elam Church Road – between Old US-1 and US-1
- Christian Chapel Church Road – south of the transmission line
- Moncure-Flatwood Road – just east of Corinth Road (outside the DCIA)

10.1.18 Food and fiber production

Project Blue
The proposed Project Blue development is located within an area historically used for silviculture production, but has not been actively used since the area was designated as a Megasite. Project Blue is not anticipated to impact food or fiber production in the area.

NCDOT STIP# HE-0006
Agricultural operations may be present in the NCDOT study area vicinity; however, no active operations or named farms were identified along public roadways. HE-0006 is not anticipated to impact agricultural activity. Approximately 141 acres of prime farmland soils would be impacted by the roadway improvements.

Utilities
Portions of the proposed utility easements will result in the conversion of agricultural land to maintained easement corridor; however, these impacts are anticipated to be minimal and no impact to food or fiber production is anticipated.

10.1.19 Mineral Needs

Project Blue
The Project has not historically been used for the production of mineral products, so consideration of mineral needs is not applicable.

NCDOT STIP# HE-0006
Triangle Brick Company, a brick manufacturer and supplier, holds mining permits on two parcels partially within the NCDOT study area. Brick clay is mined on-site at the company's Merry Oaks

Plant (294 King Road). Triangle Brick owns an additional 223-acre property located on the north side of Old US-1 and plans future mining on the site. As currently designed, HE-0006 would require right of way along the eastern side of the future mining site.

Utilities
The proposed utility improvements are not anticipated to have an impact on mineral needs within the area.

10.1.20 Considerations of Property Ownership

Project Blue
Adjacent landowners may be affected as a result of the proximity of their property to the project. It is possible that the adjacent landowners may experience increased commercial interest in their property, leading to higher value and resulting tax rate. However, the use of land would be consistent with the designated zoning, and the owner's right to reasonable, private use of their land.

10.1.21 Environmental Justice

According to the US Environmental Protection Agency (USEPA), Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

Executive Order 12898 (EJ Order) states that "…each Federal agency shall make achieving Environmental Justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." The intent of the EJ Order is to ensure that disproportionately high and adverse human health or environmental effects on minority and low-income populations do not occur.

In addition, Title VI of the Civil Rights Act of 1964 provides that: "no person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance" (42 U.S.C. §2000d).

Project Blue
Consideration was given to the environmental justice impacts resulting from the proposed Project Blue Site. As the development is situated on privately owned property that is zoned-by-right for heavy industrial use, and in a rural area containing many industrial facilities with targeted industrial expansion, the Project Blue Site is not anticipated to result in negative impacts to persons living or owning land in the vicinity of the development. Accordingly, authorization of the proposed activity would not unjustly impact any surrounding property owner or minority group (ethnic, socioeconomic, or otherwise).

NCDOT STIP# HE-0006

As part of the Community Impact Assessment (CIA) for HE-0006, RK&K completed an Environmental Justice analysis for the NCDOT study area. This analysis was primarily based on site visits and review of demographic data, as well as interviews with local planners and several property owners. Demographic data included US Census data for the census block group encompassing the NCDOT study area, referred to as the Demographic Study Area. The CIA, approved by NCDOT in July 2022, is included in **Appendix K** and discussion of Environmental Justice is summarized below.

Existing Conditions
While Census data does not indicate a notable presence of populations meeting the criteria for Environmental Justice or protected by Title VI and related statutes within the Demographic Study Area, potential low-income communities were observed within the NCDOT study area during the field visit along New Elam Church Road, Old US-1, and Pea Ridge Road and were noted by local planners. A potential predominantly African-American community in the Brown Hill Road vicinity was noted by a property owner.

The presence of a "multicultural church," Liberty Chapel Church (1855 Old US-1) and the adjacent Rose Hill AME Zion Church (1917 Old US-1), approximately 0.25 miles west of the Haw River and Demographic Study Area, indicates the likely presence of minorities in the general project vicinity. Planners noted there is a higher percentage of minorities in the block groups to the west of the Demographic Study Area in the Moncure/Haywood area. Planners also noted a Hindu temple complex is planned in Haywood and is expected to be under construction in 2022.

Elderly residents in the study area were identified through public outreach activities. No other Title VI populations were identified in the NCDOT study area.

Impacts
Overall, HE-0006 impacts (relocations, right of way acquisition, access changes) will be distributed throughout the community. Although relocations may include homes of low-income and/or minority residents, they have not been specifically identified.

Notably adverse community impacts are anticipated with this project but appear to affect all populations equivalently; thus, impacts to minority and low-income populations do not appear to be disproportionately high and adverse. Benefits and burdens resulting from the project are anticipated to be equitably distributed throughout the community. No disparate impacts are anticipated under Title VI and related statutes.

Public involvement and outreach activities must ensure full and fair participation of all potentially affected communities in the transportation decision-making process. NCDOT should ensure that public involvement activities that include potential low-income and minority populations, are carried out in accordance with the approved public involvement outreach plan.

Utilities
Easements will be acquired from privately owned properties to provide the necessary maintenance access for the utility providers along the proposed utility improvements. To the extent possible, easement acquisition from private property owners has been avoided by utilizing existing rights-of-way and the utility corridors have been intentionally sited to reduce acquisition while providing the most direct route to the proposed Project Blue Site. Additionally, the proposed utility improvements will provide some residences with access to public infrastructure that was previously unavailable. In general, the proposed utility improvements will not disproportionately affect any surrounding property owner or minority group (ethic, socioeconomic, or otherwise).

10.1.22 Air Quality

Project Blue
A Non-PSD Air Quality Permit application has been submitted to the NC Division of Air Quality (NCDAQ) for Phase 1A of the Project Blue Site. Further phases may require a new Air Quality Permit or the modification of the Phase 1A approval, and will be applied for prior to construction once design progresses and emissions specifics are known.

NCDOT STIP# HE-0006

A Qualitative Air Quality Report was completed by RK&K in September 2022. A qualitative analysis provides a basis for identifying and comparing the potential differences among mobile source air toxics (MSAT) emissions, if any, from the various alternatives.

Compared to the No-Build Alternative, emissions will likely be lower than present levels in the design year as a result of the EPA's national control programs that are projected to reduce annual MSAT emissions by over 90 percent from 2010 to 2050 (Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents, Federal Highway Administration, October 12, 2016). Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in virtually all locations.

Under the Build Alternative there may be localized areas where vehicle miles traveled (VMT) would increase, and other areas where VMT would decrease. Therefore, it is possible that localized increases and decreases in MSAT emissions may occur. The localized increases in MSAT emissions would likely be most pronounced along the section of Old US-1 west of New Elam Church Road. Even if these MSAT emission increases do occur, they too will be substantially reduced in the future due to implementation of 16 EPA's vehicle and fuel regulations. In sum, under the Build Alternative in the design year it is expected there would be reduced MSAT emissions in the immediate area of the project, due to EPA's MSAT reduction programs.

The Project is located in Chatham County, which has been determined to comply with the National Ambient Air Quality Standards. The proposed project is located in an attainment area; therefore, 40 CFR Parts 51 and 93 are not applicable. This project is not anticipated to create any adverse effects on the air quality of this attainment area.

Air quality impacts resulting from roadway construction activities are typically not a concern when contractors utilize appropriate control measures. In North Carolina, contractors shall perform all construction activities with adequate control measures in place, e.g., watering exposed surfaces, covering or maintaining free board space on haul trucks, limiting vehicle speeds on unpaved roads, and minimizing equipment idling time.

10.1.23 Noise

Project Blue

Minor increases in noise levels are anticipated during construction of the Site due to the machinery being used for land clearing, site preparation, and the construction of the proposed facilities and roadway infrastructure. However, construction activities will be generally limited to daylight hours, Monday through Friday, and are not anticipated to occur on holidays. The increase in noise levels during construction will be temporary and noise levels resulting from construction are unlikely to be significant. Additionally, given the rural nature of the surrounding areas, noise transmission off of the Site is anticipated to be minimal.

Long-term noise levels are not expected to increase due to the proposed Project, as the Project is within an area currently used for industrial development, an outdoor shooting range, and subject to roadway and traffic noise. The Project will be designed to contain noise and will be in compliance with municipal ordinances.

NCDOT STIP# HE-0006

Based on the Traffic Noise Analysis (October 2022, RK&K) conducted for HE-0006, the predicted traffic noise impacts would include 44 noise-sensitive receptors. Noise abatement would not be feasible; therefore, noise abatement measures are not proposed. In accordance with NCDOT

Traffic Noise Policy, the Federal/State governments are not responsible for providing noise abatement measures for new development for which building permits are issued after the Date of Public Knowledge. The Date of Public Knowledge of the proposed highway project will be the approval date of the Finding of No Significant Impact (FONSI).

10.1.24 Hazardous Materials

Project Blue
VinFast utilized WSP (formerly Wood, PLC) to conduct a Phase I Environmental Site Assessment consistent with ASTM Standard E2247-16. WSP did not identify any RECs within the Project. No hazardous materials were identified within the Project. Post-construction, any hazardous materials will be stored, used, and disposed of in compliance with applicable federal, state, and local regulations.

NCDOT STIP# HE-0006
The GeoEnvironmental Section of the NCDOT Geotechnical Engineering Unit performed a Phase I field investigation on May 11, 2022 for HE-0006 to identify geoenvironmental sites of concern. Sites of concern may include, but are not limited to, underground storage tank (UST) sites, dry cleaning facilities, hazardous waste sites, regulated landfills and unregulated dumpsites. These sites of concern were documented in an effort to assist project stakeholders in reducing or avoiding impacts to these sites.

Three sites of concern were identified within the NCDOT study area. The identified sites are (former) K&K Grill, 996 Pea Ridge Road; (former) Performance Fibers, Inc, 338 Pea Ridge Road; and SkyMart Inc., 5875 Old US-1. Low to moderate monetary and scheduling impacts resulting from these sites is anticipated.

10.2 Previous Public Outreach

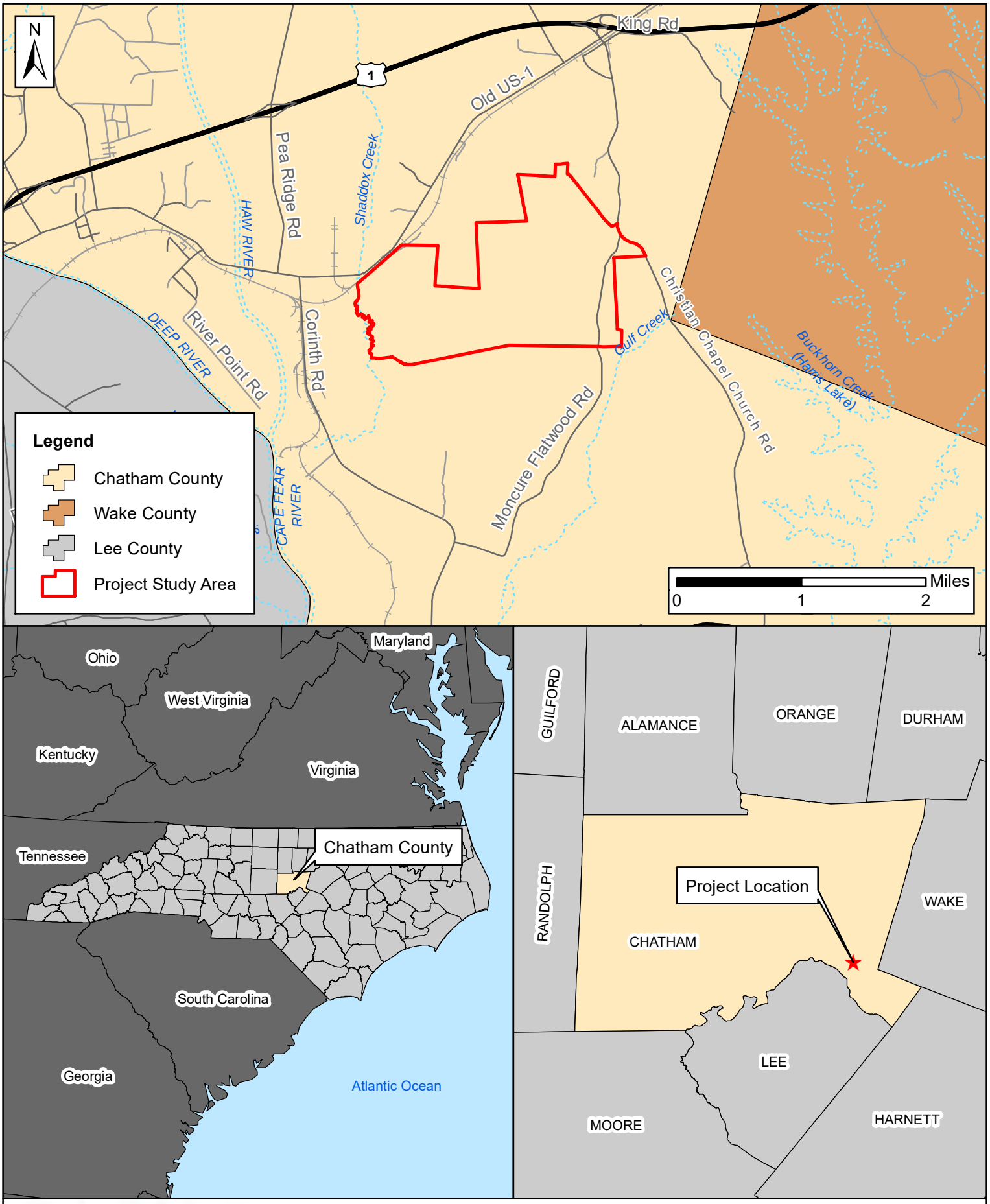
No previous public outreach has been conducted by VinFast for this Project, however VinFast anticipates working with the USACE, NCDWR, and NCDOT as necessary to assist in addressing public comments submitted to the agencies concerning this Project's public notice associated with this application package. Additionally, no public outreach has been conducted by the various utility providers discussed in this application to date.

For HE-0006, a public outreach plan that identifies and engages local stakeholders (in compliance with NCDOT guidelines) was approved by NCDOT in June 2022. The public outreach plan provides a general framework for public involvement activities. A project website was created to provide HE-0006 information and updates to the public. Maps showing preliminary design for the transportation improvements were posted to the website in July 2022. Prior to holding public meetings, a Local Officials Informational Meeting was held on August 2 for public officials to review the public meeting handout and maps. In-person and virtual public meetings were held on August 16, 2022 and August 18, 2022, respectively. A meeting announcement was distributed to over 3,200 residents and/or property owners. Following the meetings, answers to questions received during the public comment period were posted to the project website.

Public involvement activities also included fieldwork notices and responding to property owner comments with telephone calls, emails, and one-on-one meetings. Some property owners expressed concern and dissatisfaction with the changes that are occurring in the area, specifically with the assemblage of properties (under one ownership) for the development of Triangle Innovation Point. Property owners have also expressed opposition to any impacts to their property resulting from roadway network improvements, including relocations, property acquisition, and driveway access.

NCDOT will continue to coordinate with individual property owners and other stakeholders as necessary and ensure that public involvement activities, including small group meetings, are carried out in accordance with the approved public involvement outreach plan.

FIGURES



Kimley»Horn

Figure 1A: Project Blue Vicinity Map
Project Blue Site
Moncure, Chatham County, NC
July 2022

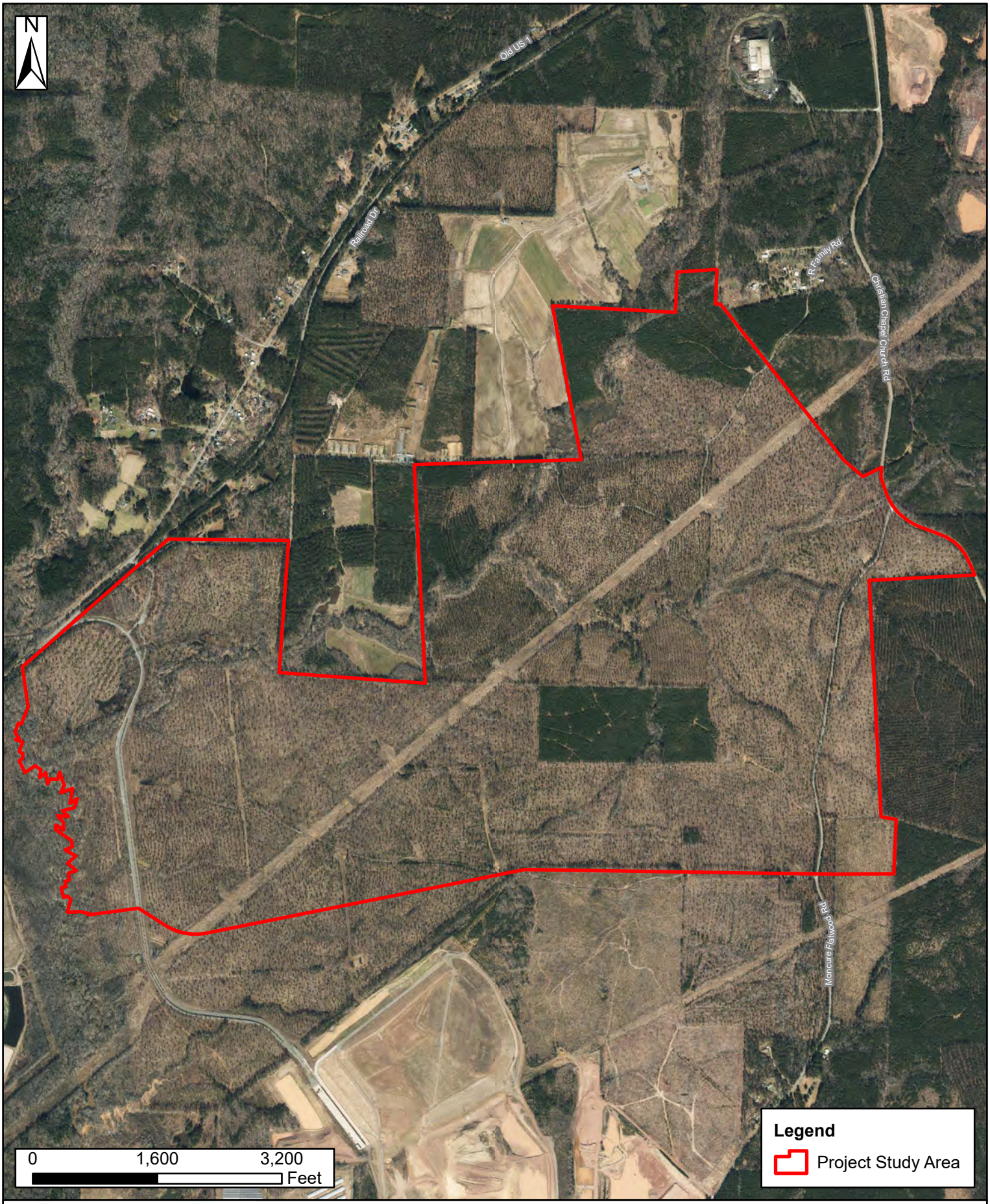


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Figure 2A: Project Blue Aerial Imagery Map
Project Blue Site
Moncure, Chatham County, NC
October 2022

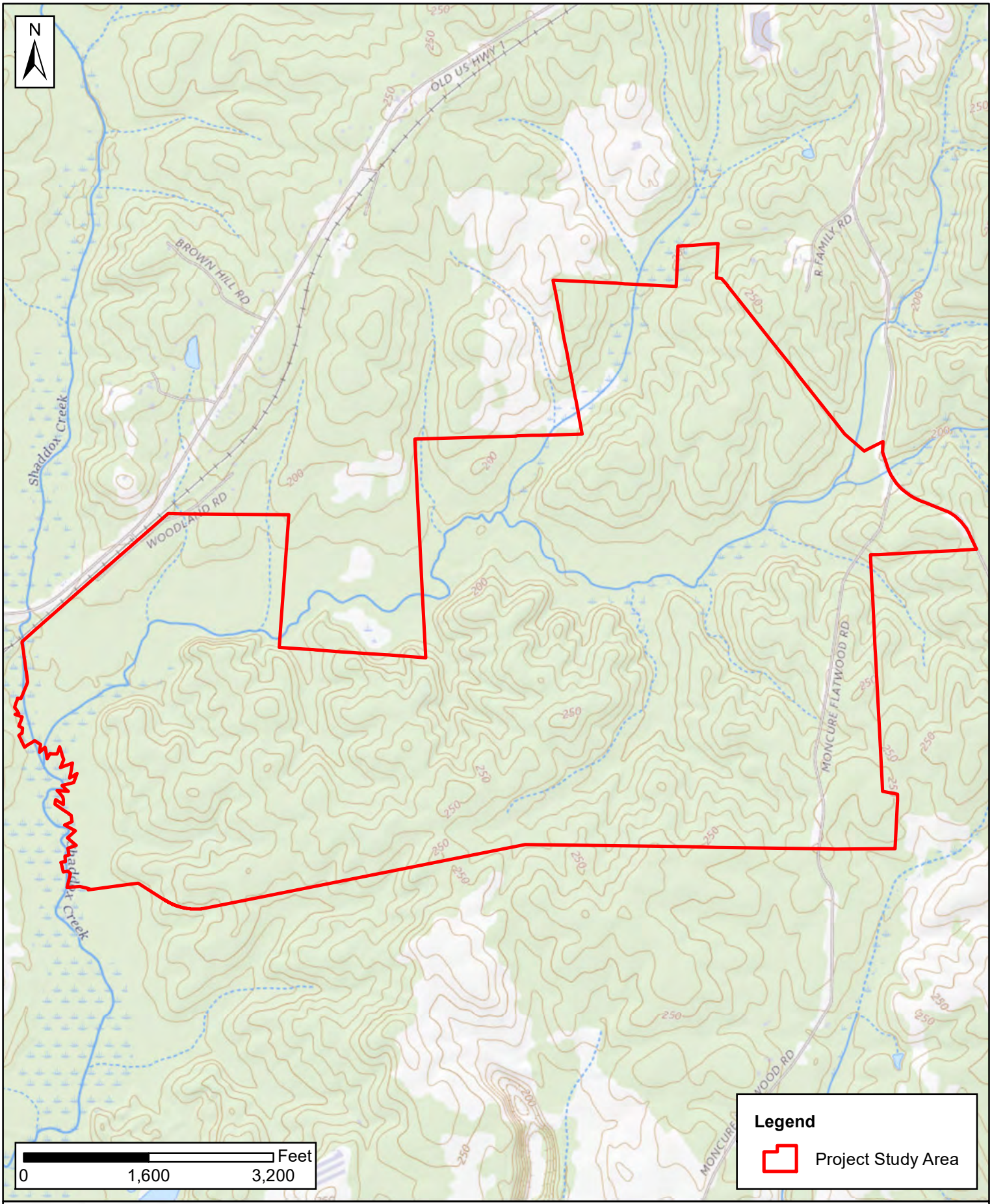

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Figure 3A: Project Blue USGS Topographic Map
Project Blue Site
Moncure, Chatham County, NC
July 2022

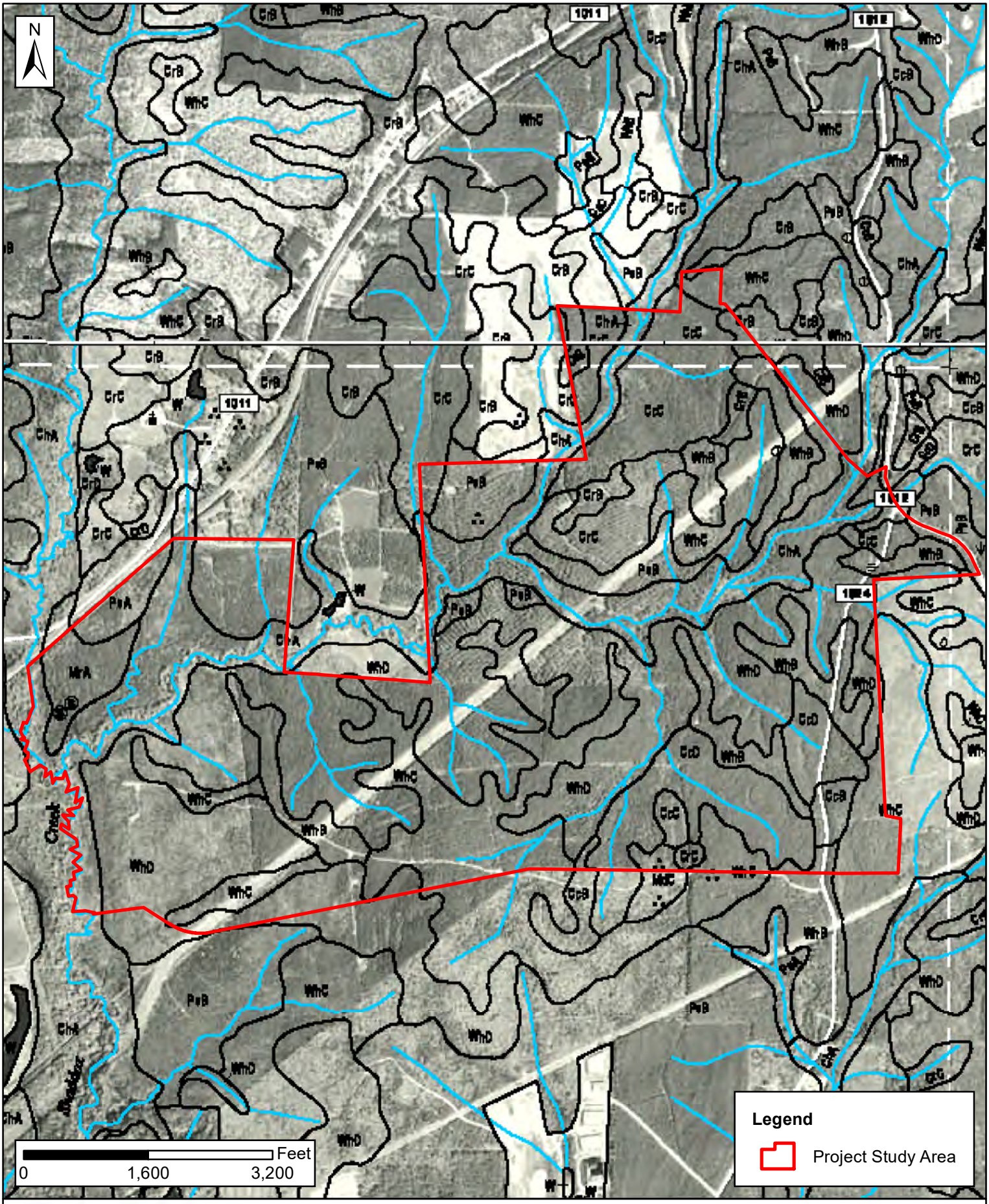

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Figure 4A: Project Blue NRCS Soil Survey Map
Project Blue Site
Moncure, Chatham County, NC
October 2022

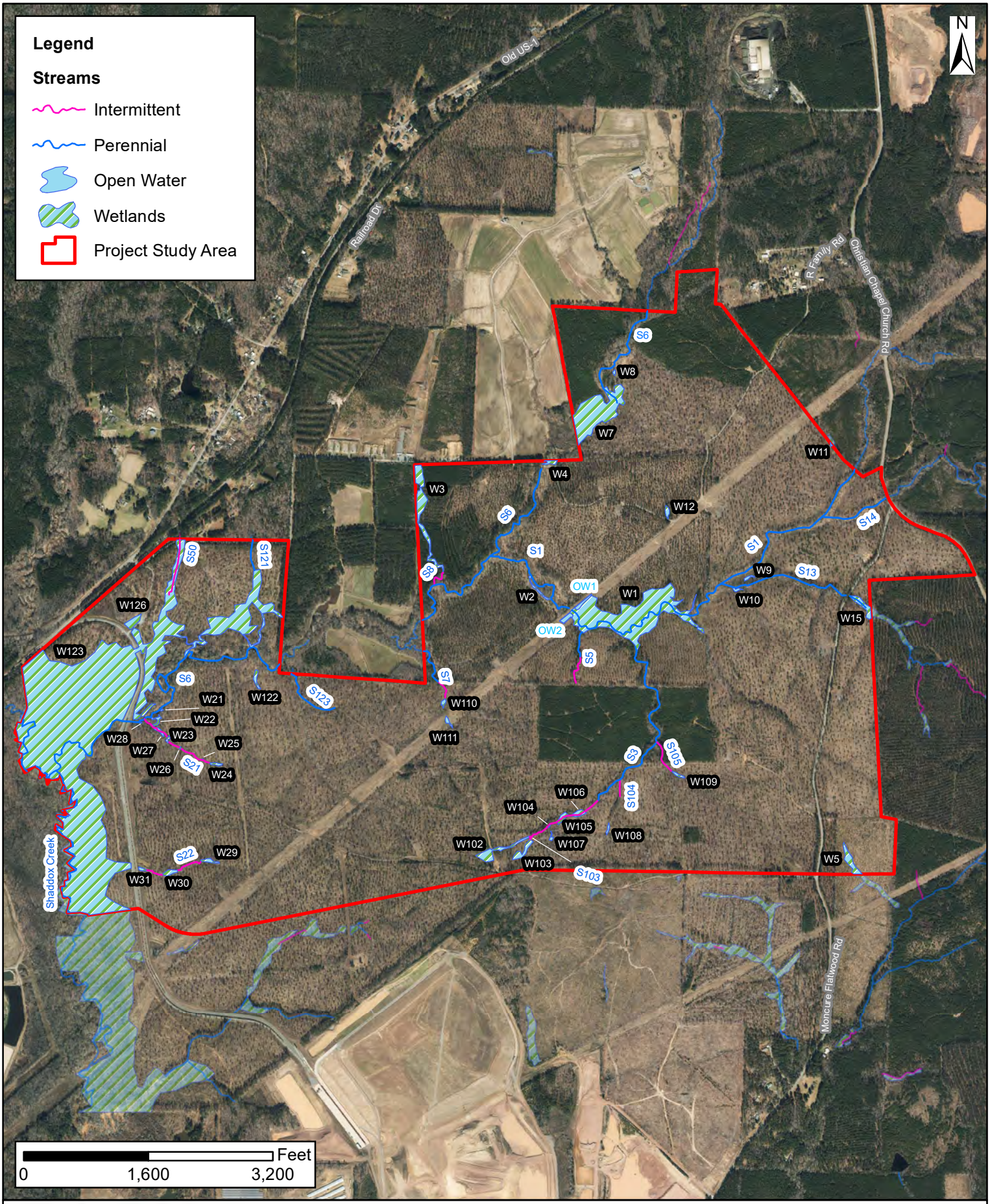

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Figure 5A: Project Blue Jurisdictional Features Map
Project Blue Site
Moncure, Chatham County, NC
July 2022

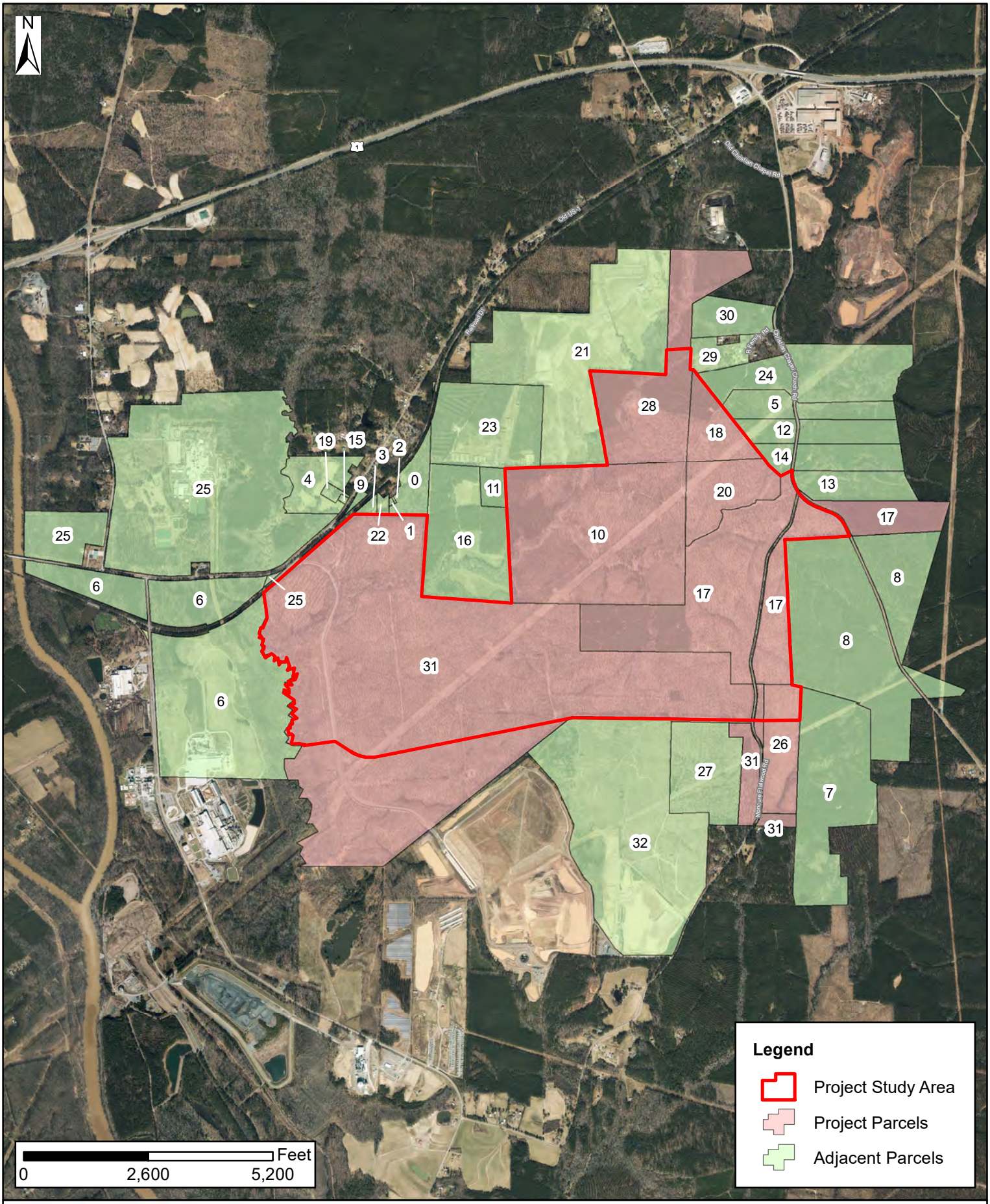

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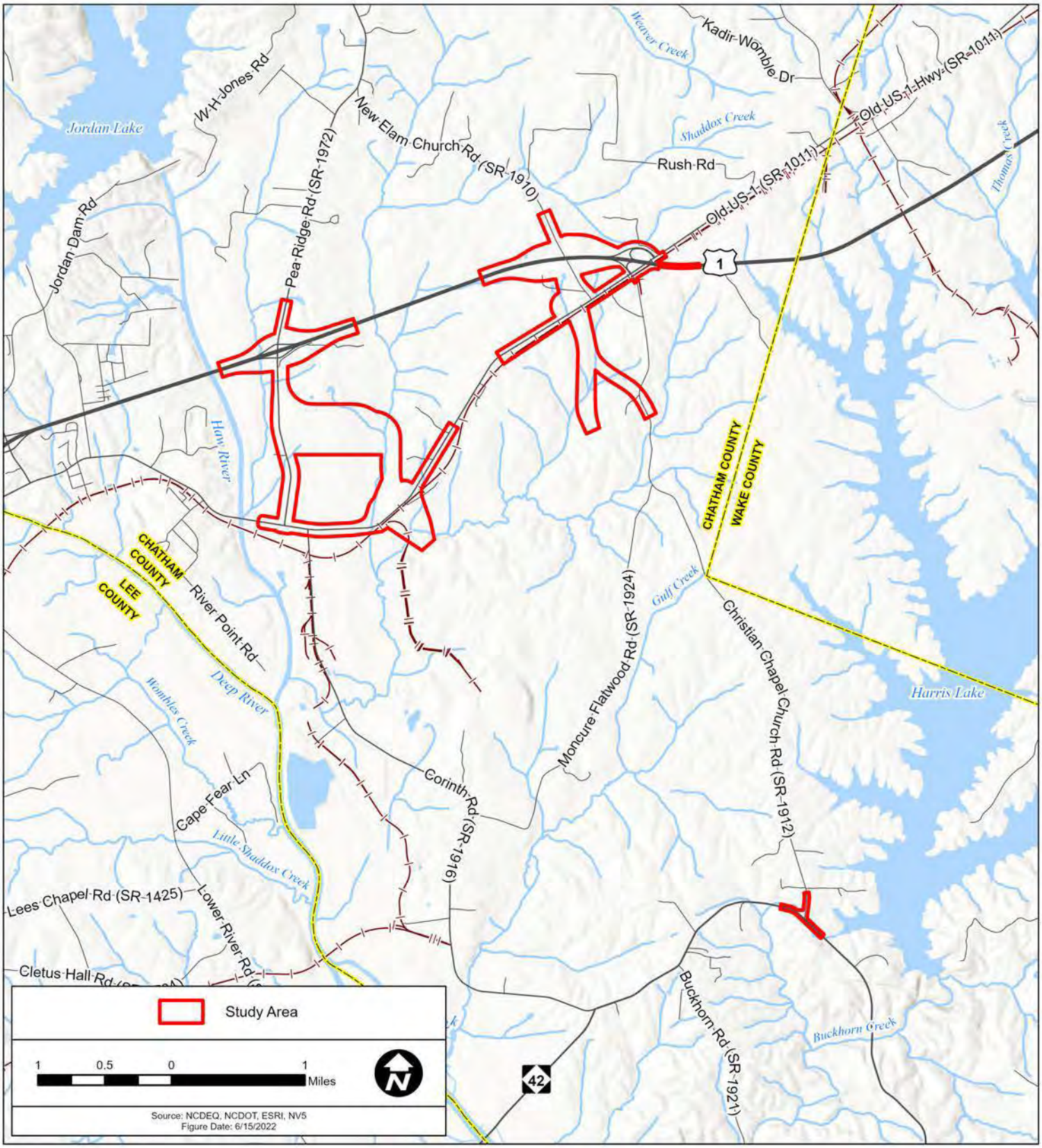
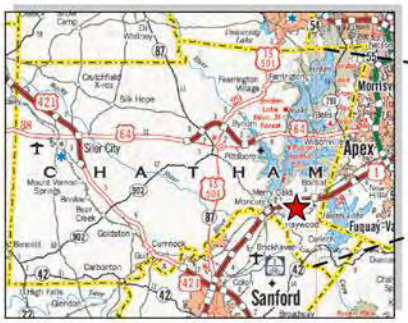
Figure 6A: Project Blue Property Parcels Map
Project Blue Site
Moncure, Chatham County, NC
July 2022





Chatham County

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION 8

STIP HE-0006

Triangle Innovation Point

Roadway Network Improvements

Chatham County

Figure 1B: Vicinity Map

Poe's Ridge Boat Ramp
Moncure School Rd
Moncure School
Chatham RV Park
Moncure Pittsboro Rd
Jordan Dam RV Park
Moncure
Cotten's RV Campgrounds
Ray's Supermarket
Mt Olive Missionary Baptist Church
Moncure United Methodist Church
Moncure Baptist Church
USPS Post Office
Future Carolina Murugan Temple
Haywood
Liberty Chapel Church
Rose Hill AME Zion Church
Exit 81
Peak Truss Builders
Top Chord Way
ST Wooten Corporation
Pea Ridge Rd
Air Management Systems
Advanced Materials
Future Parker's Ridge Park
Performance Equine Vet
Courtesy Towing
Smith Funeral Home
The Bradford
Future FedEx
ALLIED CHEMICAL CORP/PERFORMANCE FIBERS
PERFORMANCE FIBERS
Moncure Fire
Moncure Collection Center
Shadrox Creek
Brown Hill Rd
Haw River
Deep River
Chatham
Lee
Lower River Rd
River Point Rd
Southern Veneer Specialty Products
BOISE CASCADE
Corinth Rd
Arclin
WEYERHAEUSER MONCURE ARAUCO PANELS USA LLC
Arauco
Progress Energy - Cape Fear Plant
Cape Fear River
Old US 1
Woodland Rd
Donnie Haithcox Dr
Truth Missionary Baptist Church
Woody's Rifle Club
Between the Lakes Boat & RV Storage
New Elam Church Rd
Merry Oaks Cemetery
Triangle Brick
Merry Oaks Baptist Church
Obler Rd
Sky Mart
Sky Mart, Inc.
King Rd
Elkins Sawmill
Triangle Bricks Company - Merry Oaks Plant
Old Christian Chapel Rd
McGill - Merry Oaks Compost Facility
Exit 84
Cemetery (Name Unknown)
Harris Lake
Ute Shadrox Creek
Chatham
Wake
Christian Chapel Church Rd
Gulf Creek
Moncure Flatwood Rd
Ut to Gulf C
Harris Game Land
Harris Lake Boat Ramp
42

Note: Features shown are from initial modeling and may not match final surveyed jurisdictional features.

0.5 0.25 0 0.5 Miles

Source: NC OneMap, NC Center for Geographic Information and Analysis, NC 911 Board

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION 8

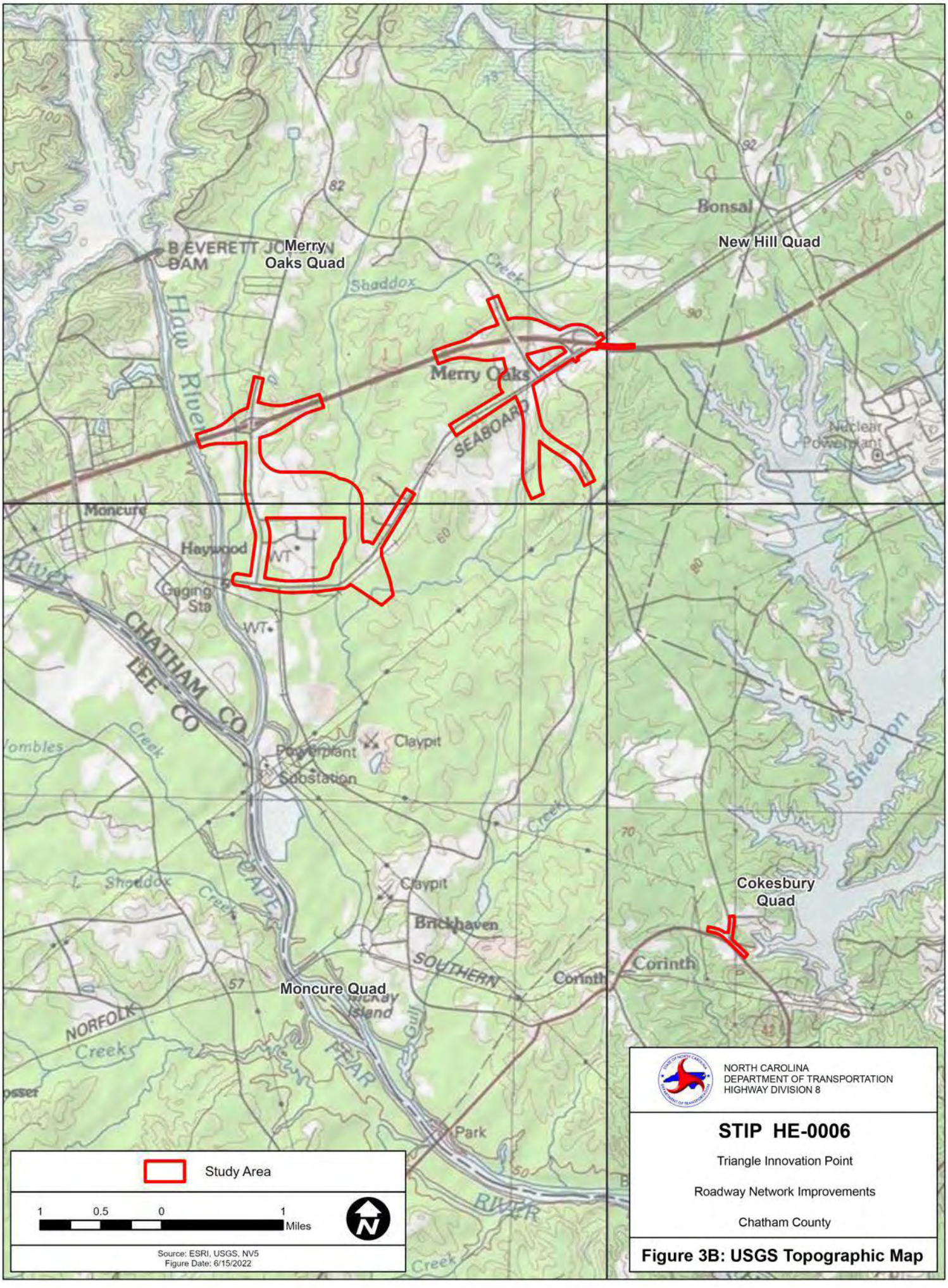
STIP HE-0006

Triangle Innovation Point
Roadway Network Improvements
Chatham County

Figure 2B: Aerial Imagery Map

- Transportation Study Area
- Triangle Innovation Point
- NHP Managed Area
- Farms/Agricultural Use
- Transmission Easement
- Parcel Boundary
- County Boundary
- Bicycle Route
- Strategic Highway Corridor
- Stream/River
- Railroad
- Greenway
- Solid Waste Facility
- Regional USTs
- NC DEQ Underground Storage Tank Incidents
- NC DEQ Hazardous Waste Sites
- NC DEQ Inactive Hazardous Waste Sites
- NC DEQ 303d and 305b Streams
- Brownfields Boundary
- Sanford Water Supply/Watershed
- NHP Managed Areas
- FEMA 100 Year Floodplain
- Modeled Wetlands
- Modeled OpenWater
- Modeled Streams
- Community Features
  - Cemetery
  - Fire Station
  - Post Office
  - School
  - Place of Worship
  - Business
- Historic Resources
  - Surveyed Only
- Surveyed, Gone
- Surveyed Area center point
- Parcel Boundary

Triangle Innovation Point Boundary Source: www.triangleinnovationpoint.com and Chatham County Land Records (ownership and zoning), Boundary is Subject to Change


Merry Oaks Quad
New Hill Quad
Moncure Quad
Cokesbury Quad
B EVERETT JR DAM
Haw River
Shaddox Creek
Merry Oaks
SEABOARD
Bonsal
Nuclear Power Plant
Moncure
Haywood
WT
Gaging Sta
CHATHAM CO
LEE CO
Claypit
Powerplant
Substation
Shearon
Brickhaven
SOUTHERN
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Park
Study Area
1 0.5 0 1 Miles
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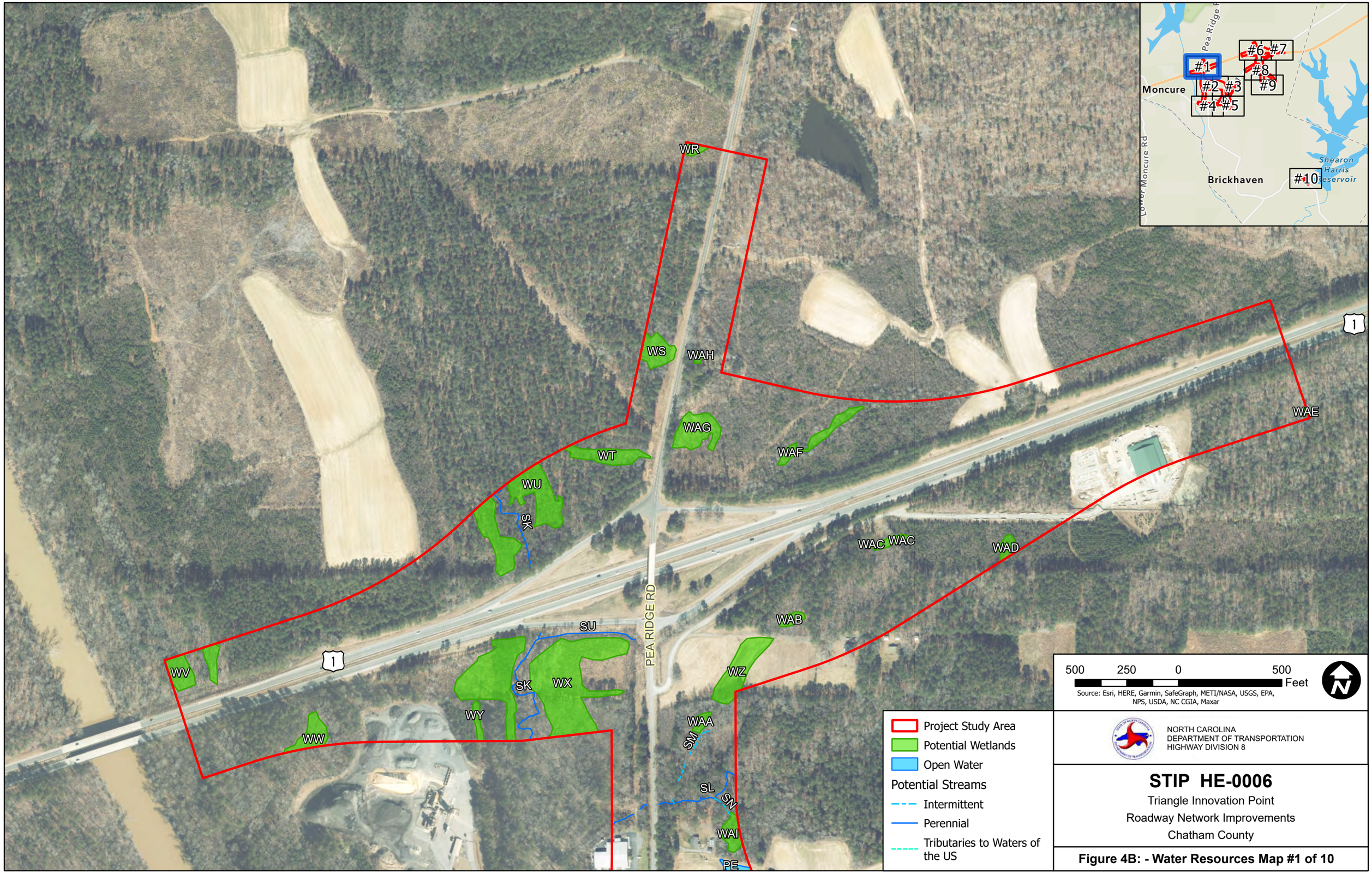
Source: ESRI, USGS, NV5
Figure Date: 6/15/2022
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION 8
STIP HE-0006
Triangle Innovation Point
Roadway Network Improvements
Chatham County
Figure 3B: USGS Topographic Map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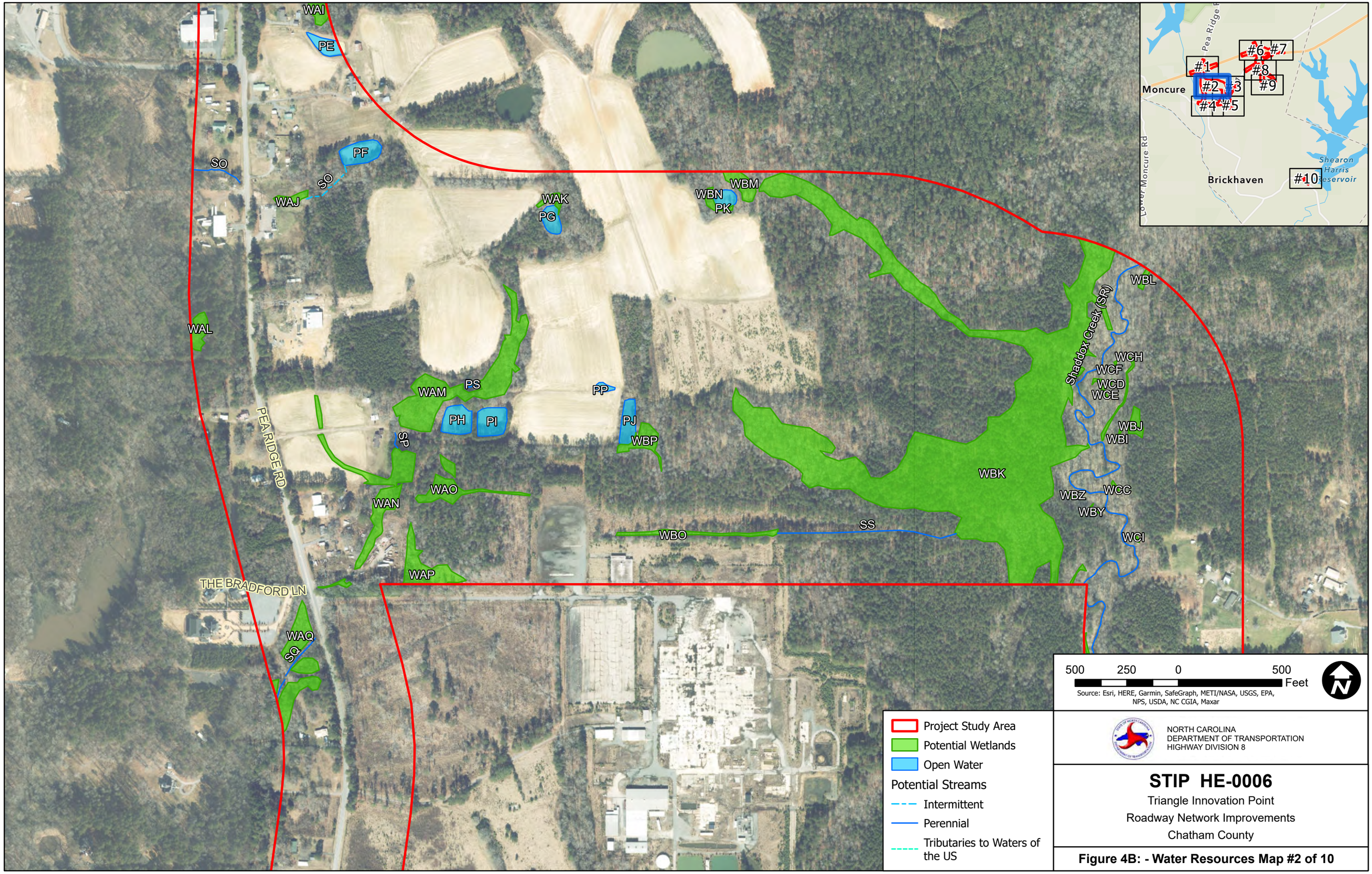
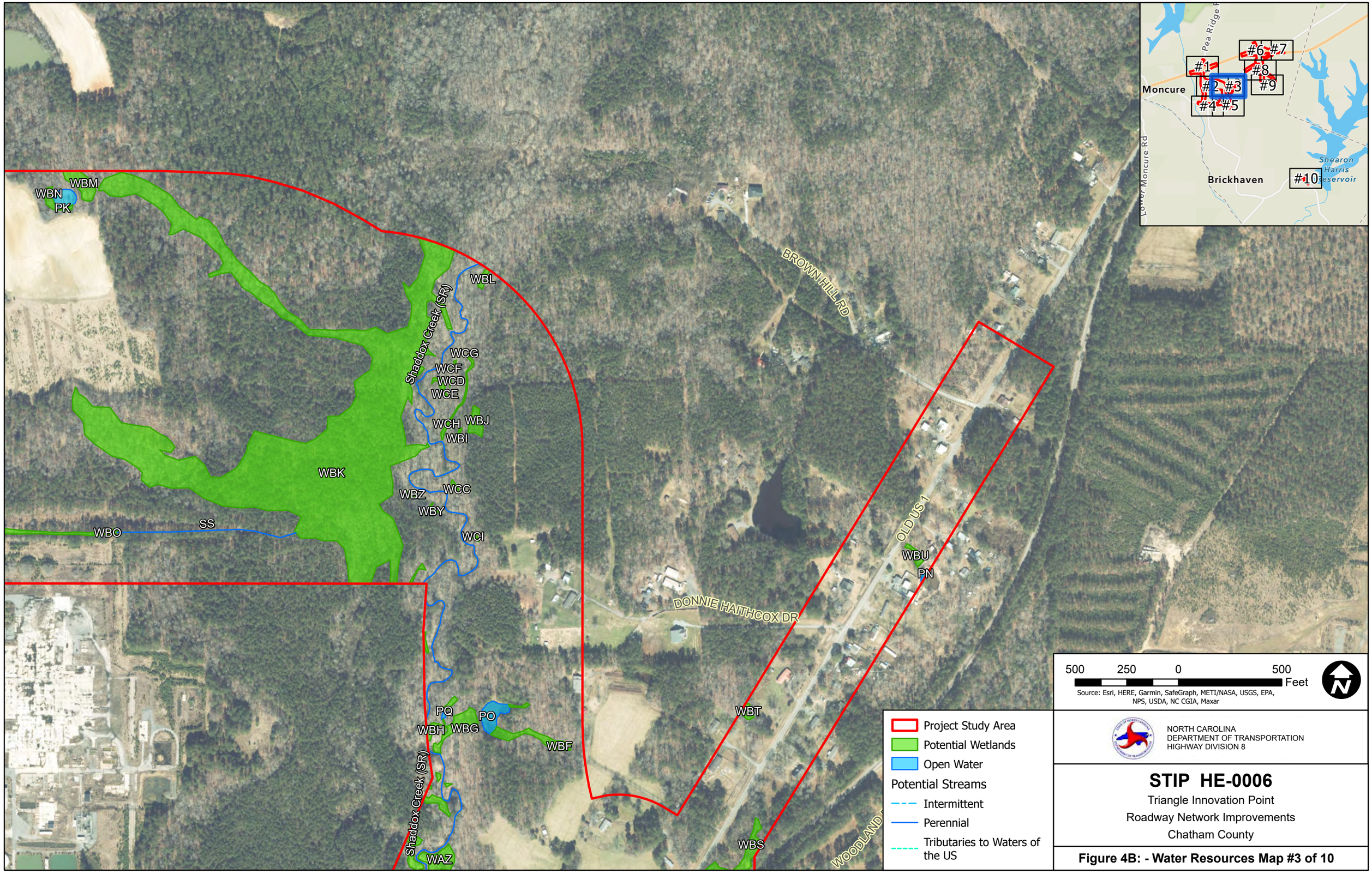
Moncure
Brickhaven
Lower Moncure Rd
Pea Ridge Rd
Shearon Harris Reservoir
#1
#2
#3
#4
#5
#6
#7
#8
#9
#10
500 250 0 500 Feet
Source: Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NC CGIA, Maxar
Project Study Area
Potential Wetlands
Open Water
Potential Streams
Intermittent
Perennial
Tributaries to Waters of the US
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION 8
STIP HE-0006
Triangle Innovation Point
Roadway Network Improvements
Chatham County
Figure 4B: - Water Resources Map #1 of 10


WAI
PE
PF
SO
SO
WAJ
WAK
PG
WBM
WBN
PK
WAL
PEA RIDGE RD
WAM
PS
PH
PI
PP
PJ
WBP
SP
WAO
WAN
WBO
SS
WBK
WBL
Shaddox Creek (SR)
WCH
WCF
WCD
WCE
WBJ
WBI
WBZ
WCC
WBY
WCI
WAP
THE BRADFORD LN
WAQ
SQ
Moncure
Brickhaven
Pea Ridge Rd
Lower Moncure Rd
Shearon Harris Reservoir
#1
#2
#3
#4
#5
#6
#7
#8
#9
#10
500 250 0 500 Feet
Source: Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NC CGIA, Maxar
Project Study Area
Potential Wetlands
Open Water
Potential Streams
Intermittent
Perennial
Tributaries to Waters of the US
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION 8
STIP HE-0006
Triangle Innovation Point
Roadway Network Improvements
Chatham County
Figure 4B: - Water Resources Map #2 of 10

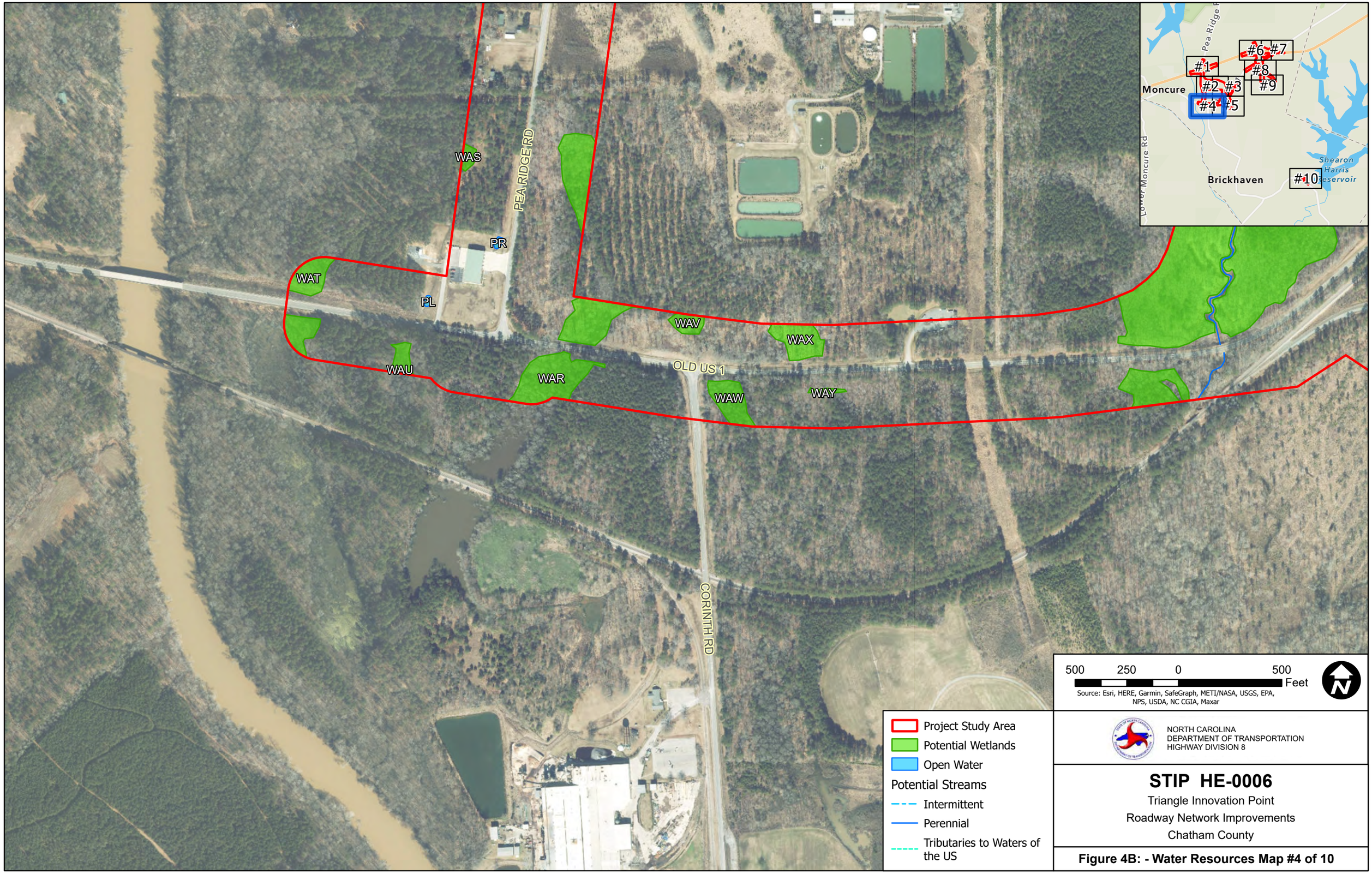


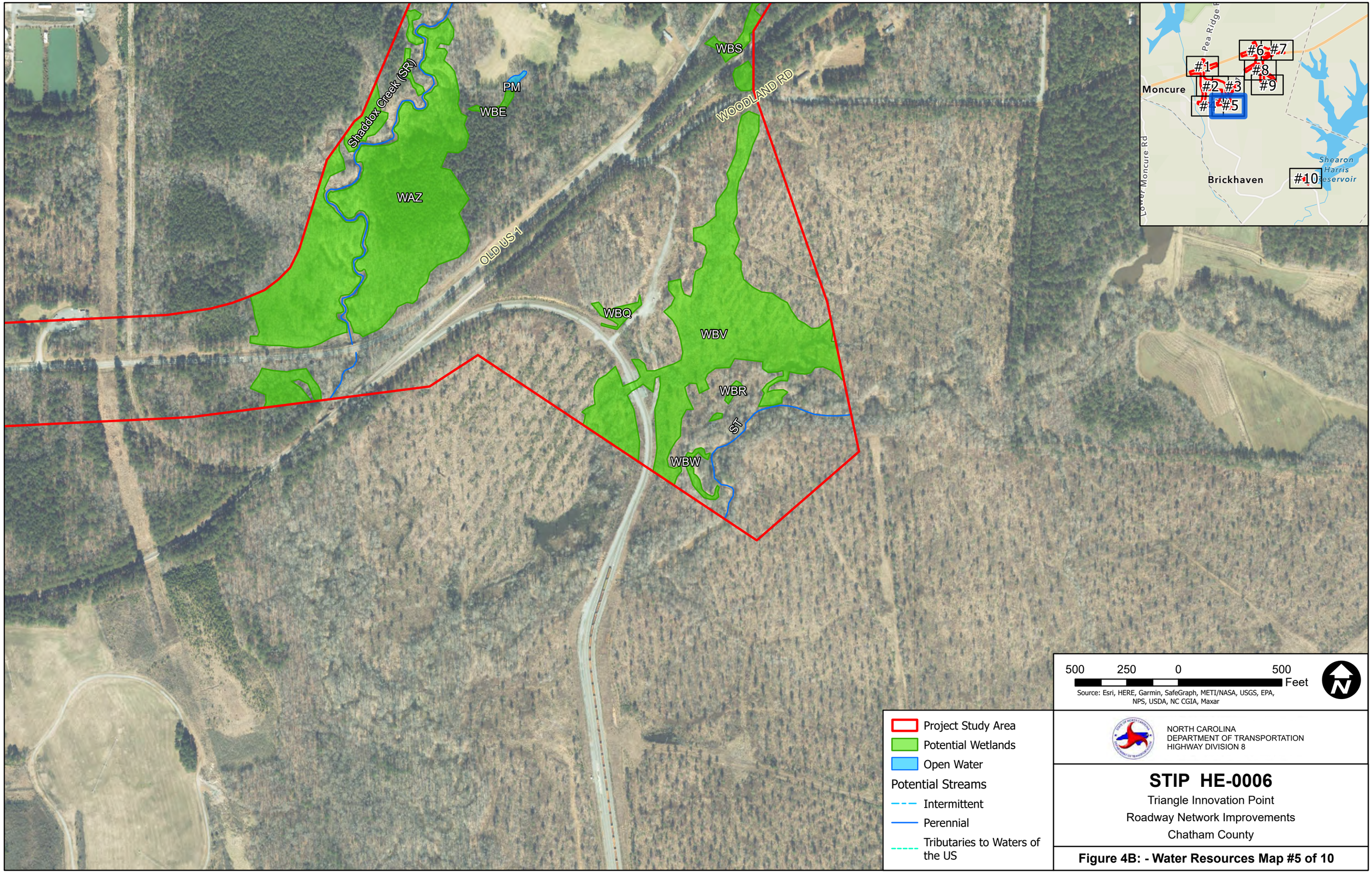
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION 8

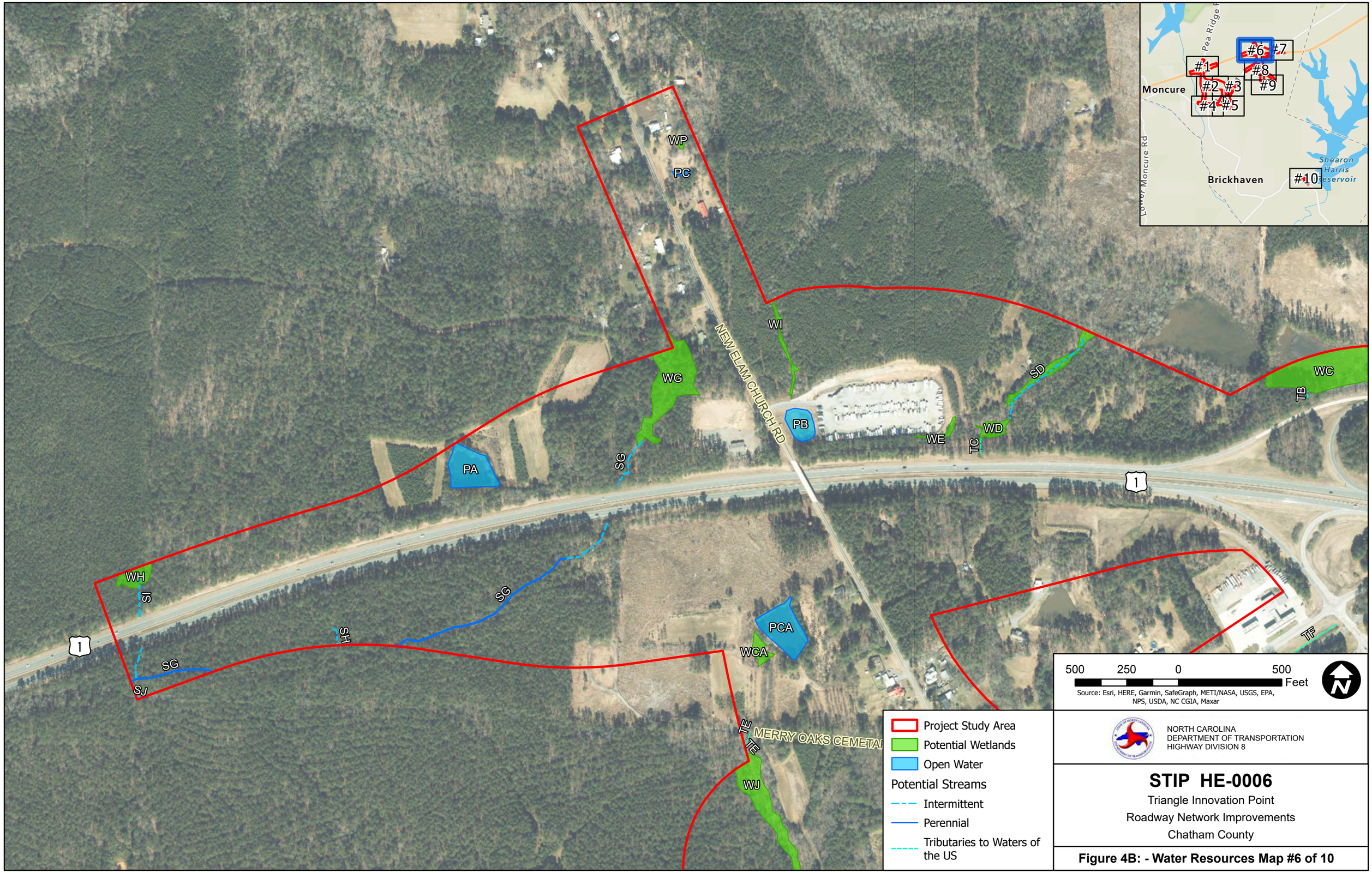
STIP HE-0006

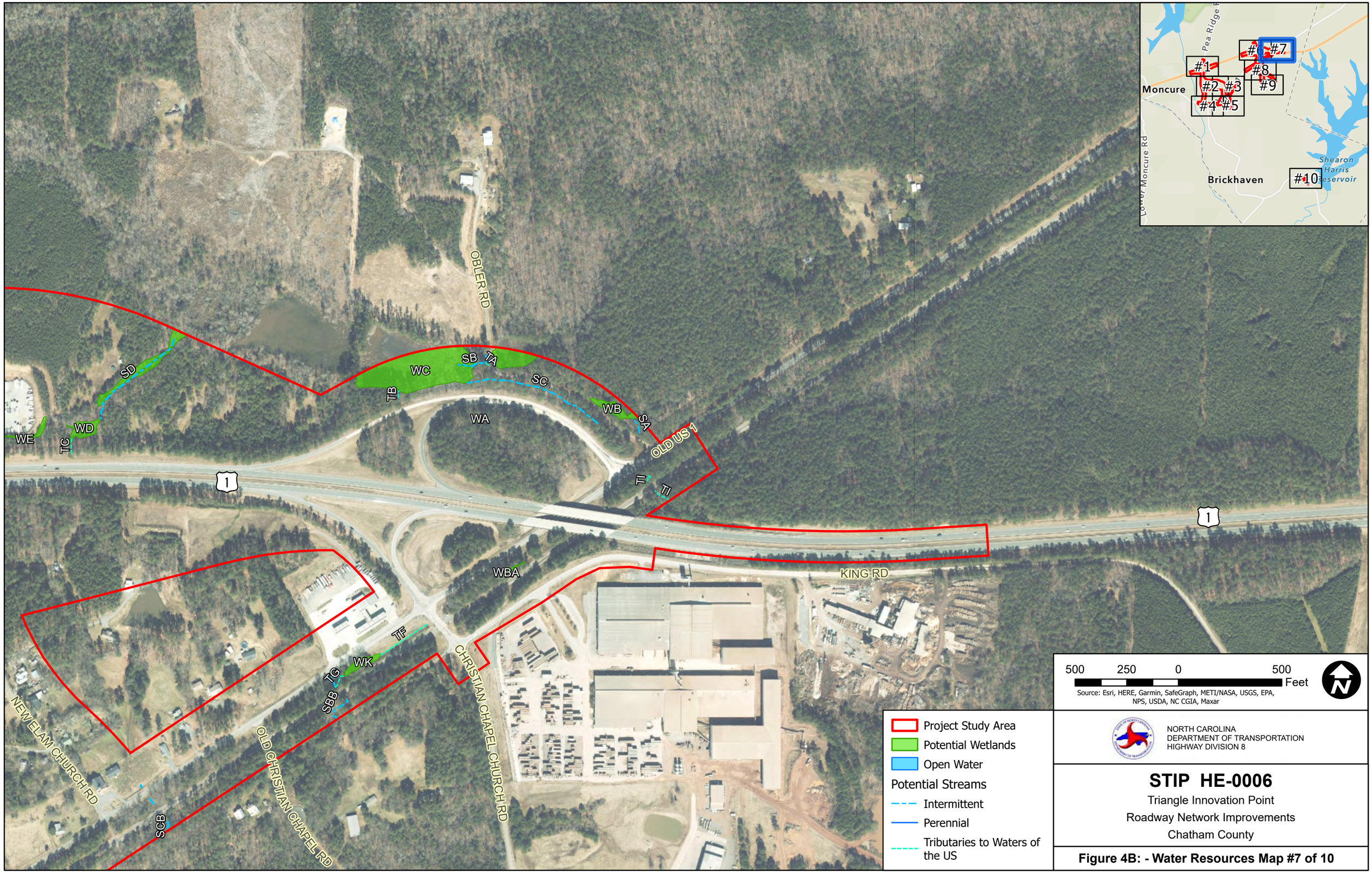
Triangle Innovation Point
Roadway Network Improvements
Chatham County

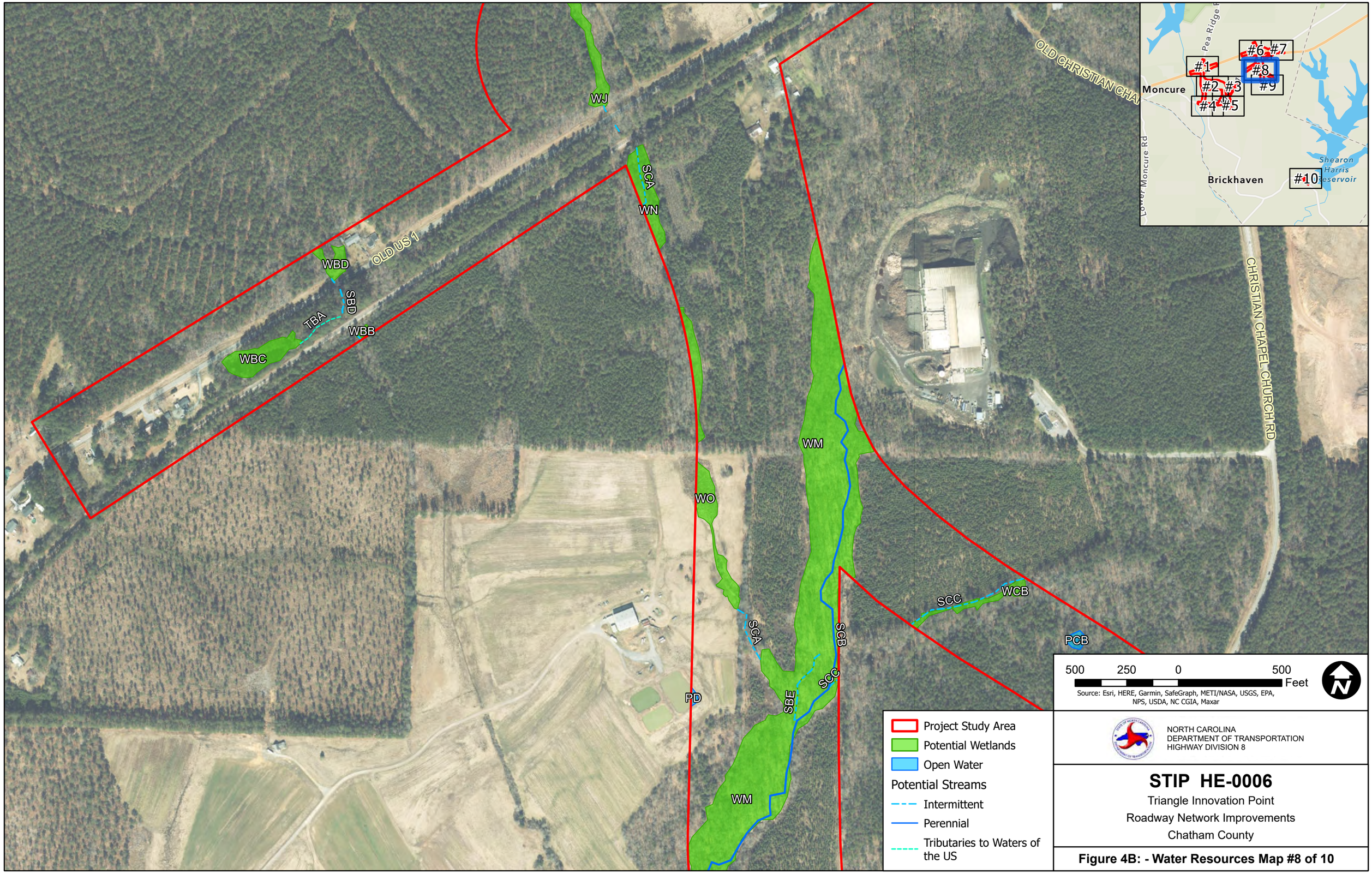
Figure 4B: - Water Resources Map #3 of 10


WAS
PEA RIDGE RD
PR
WAT
PL
WAU
WAR
WAV
WAX
OLD US 1
WAW
WAY
CORINTH RD
Moncure
Pea Ridge Rd
Lower Moncure Rd
Brickhaven
Shearon Harris Reservoir
#1
#2
#3
#4
#5
#6
#7
#8
#9
#10
500 250 0 500 Feet
Source: Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NC CGIA, Maxar
Project Study Area
Potential Wetlands
Open Water
Potential Streams
Intermittent
Perennial
Tributaries to Waters of the US
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION 8
STIP HE-0006
Triangle Innovation Point
Roadway Network Improvements
Chatham County
Figure 4B: - Water Resources Map #4 of 10


Shaddox Creek (SR)
PM
WBE
WBS
WOODLAND RD
WAZ
OLD US 1
WBQ
WBV
WBR
ST
WBW
Moncure
Pea Ridge Rd
Lower Moncure Rd
Brickhaven
Shearon Harris Reservoir
#1
#2
#3
#4
#5
#6
#7
#8
#9
#10
Project Study Area
Potential Wetlands
Open Water
Potential Streams
Intermittent
Perennial
Tributaries to Waters of the US
500 250 0 500 Feet
Source: Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NC CGIA, Maxar
N
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION 8
STIP HE-0006
Triangle Innovation Point
Roadway Network Improvements
Chatham County
Figure 4B: - Water Resources Map #5 of 10


WP
PC
WI
NEW ELAM CHURCH RD
WG
PB
SD
WE
TC
WD
WC
TB
SG
PA
WH
IS
SG
SH
SG
SJ
PCA
WCA
TE
TE
MERRY OAKS CEMETA
WJ
TF
1
1
Moncure
Brickhaven
Pea Ridge R
Lower Moncure Rd
Shearon Harris Reservoir
#1
#2
#3
#4
#5
#6
#7
#8
#9
#10
500
250
0
500
Feet
Source: Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NC CGIA, Maxar
Project Study Area
Potential Wetlands
Open Water
Potential Streams
Intermittent
Perennial
Tributaries to Waters of the US
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION 8
STIP HE-0006
Triangle Innovation Point
Roadway Network Improvements
Chatham County
Figure 4B: - Water Resources Map #6 of 10


OBLER RD
WC
SB
TA
SC
TB
WB
SA
WA
WE
WD
TC
SD
OLD US 1
TF
TI
1
WBA
KING RD
CHRISTIAN CHAPEL CHURCH RD
NEW ELAM CHURCH RD
OLD CHRISTIAN CHAPEL RD
WK
TG
SBB
SCB
Moncure
Brickhaven
Pea Ridge Rd
Lower Moncure Rd
Shearon Harris Reservoir
#1
#2
#3
#4
#5
#7
#8
#9
#10
500 250 0 500 Feet
Source: Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NC CGIA, Maxar
Project Study Area
Potential Wetlands
Open Water
Potential Streams
Intermittent
Perennial
Tributaries to Waters of the US
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION 8
STIP HE-0006
Triangle Innovation Point
Roadway Network Improvements
Chatham County
Figure 4B: - Water Resources Map #7 of 10

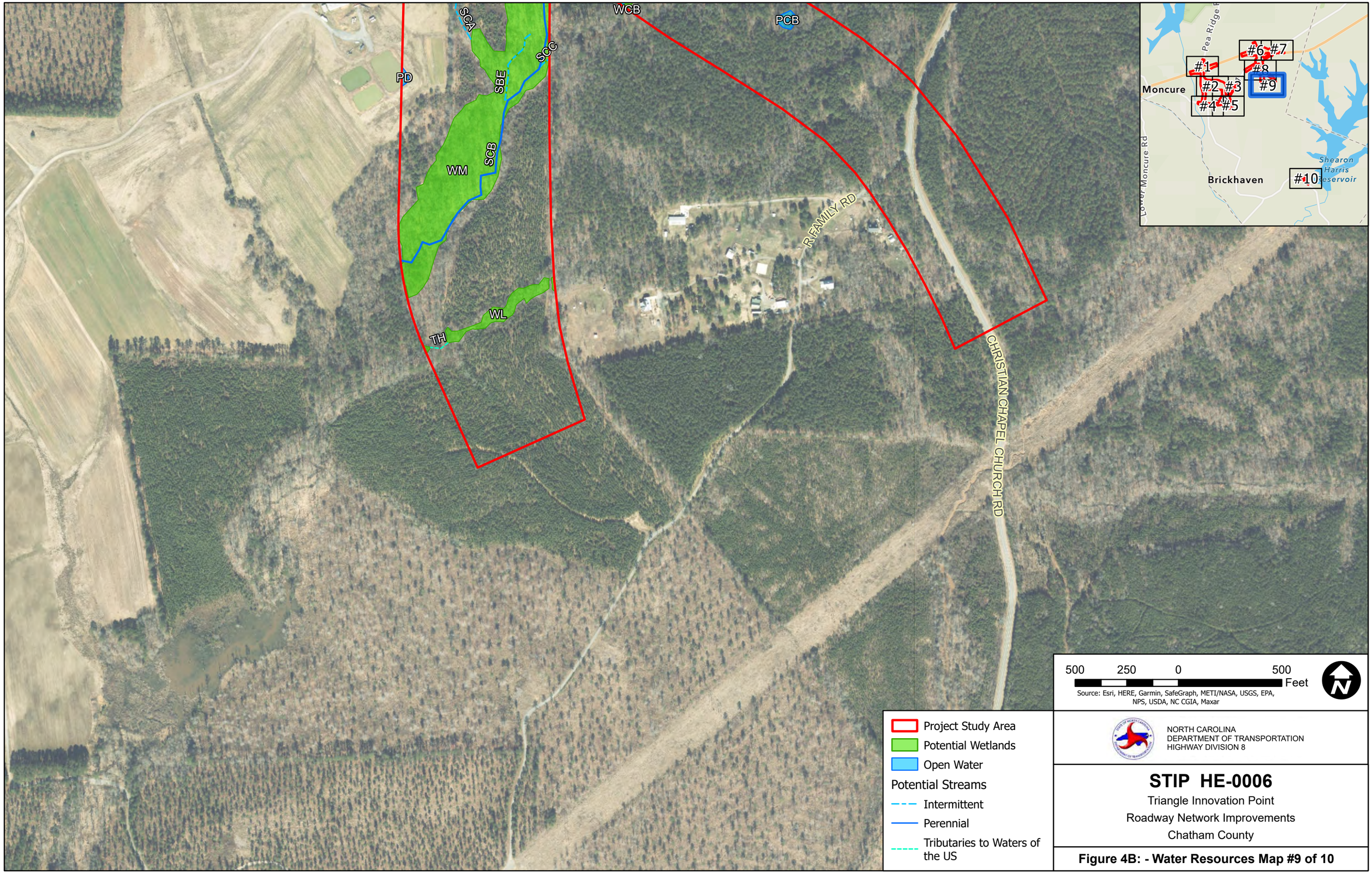


NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION 8

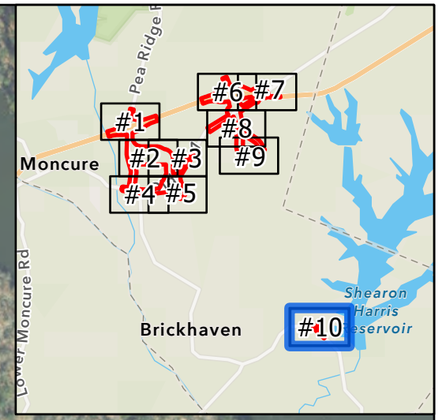
STIP HE-0006

Triangle Innovation Point
Roadway Network Improvements
Chatham County

Figure 4B: - Water Resources Map #8 of 10


SCA
SCG
SBE
SCB
WM
PD
WCB
PCB
WL
TH
R FAMILY RD
CHRISTIAN CHAPEL CHURCH RD
Pea Ridge Rd
Moncure
Lower Moncure Rd
Brickhaven
Shearon Harris Reservoir
#1
#2
#3
#4
#5
#6
#7
#8
#9
#10
Project Study Area
Potential Wetlands
Open Water
Potential Streams
Intermittent
Perennial
Tributaries to Waters of the US
500 250 0 500 Feet
Source: Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NC CGIA, Maxar
N
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION 8
STIP HE-0006
Triangle Innovation Point
Roadway Network Improvements
Chatham County
Figure 4B: - Water Resources Map #9 of 10

MORRIS WOOD LN
SMITH RD
CHRISTIAN CHAPEL CHURCH RD
CROSS POINT RD
ELLIS RD
42
PU
WQ
PV
PT



500 250 0 500 Feet

Source: Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NC CGIA, Maxar

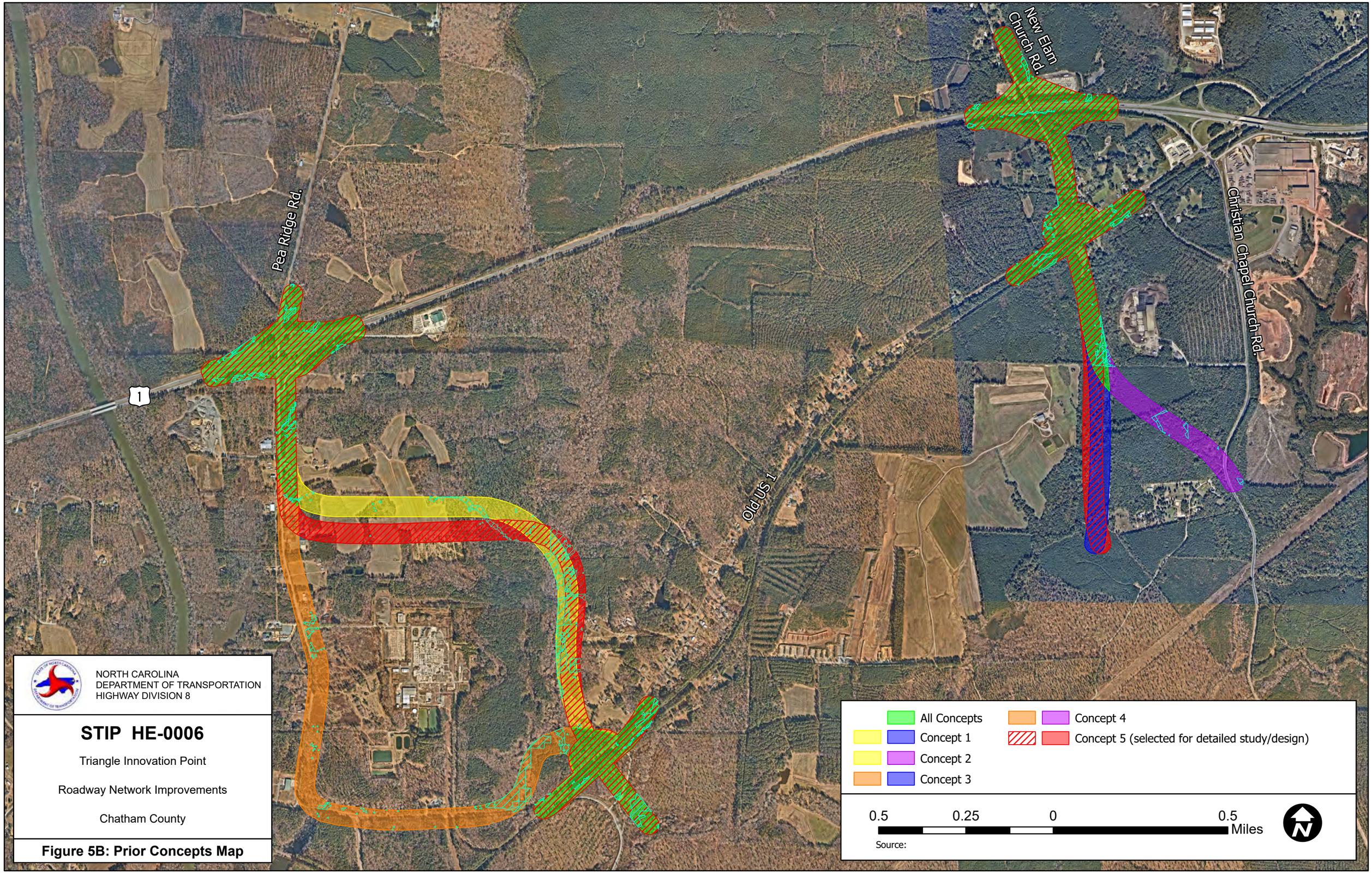
Project Study Area
Potential Wetlands
Open Water
Potential Streams
Intermittent
Perennial
Tributaries to Waters of the US

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION 8

STIP HE-0006

Triangle Innovation Point
Roadway Network Improvements
Chatham County

Figure 4B: - Water Resources Map #10 of 10


Pea Ridge Rd.
New Elam Church Rd.
Christian Chapel Church Rd.
Old US 1
1
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION 8
STIP HE-0006
Triangle Innovation Point
Roadway Network Improvements
Chatham County
Figure 5B: Prior Concepts Map
All Concepts
Concept 1
Concept 2
Concept 3
Concept 4
Concept 5 (selected for detailed study/design)
0.5
0.25
0
0.5
Miles
Source:

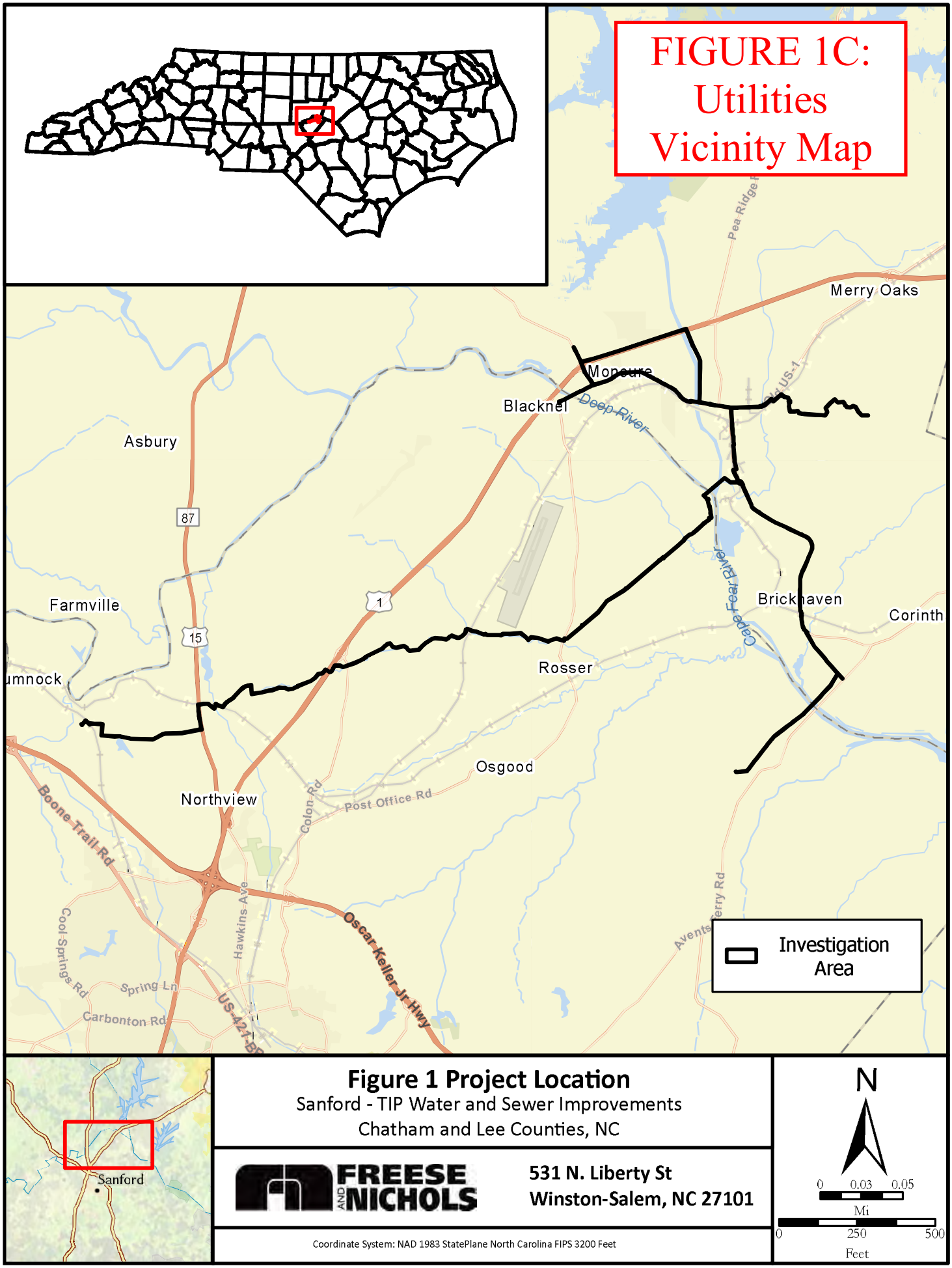
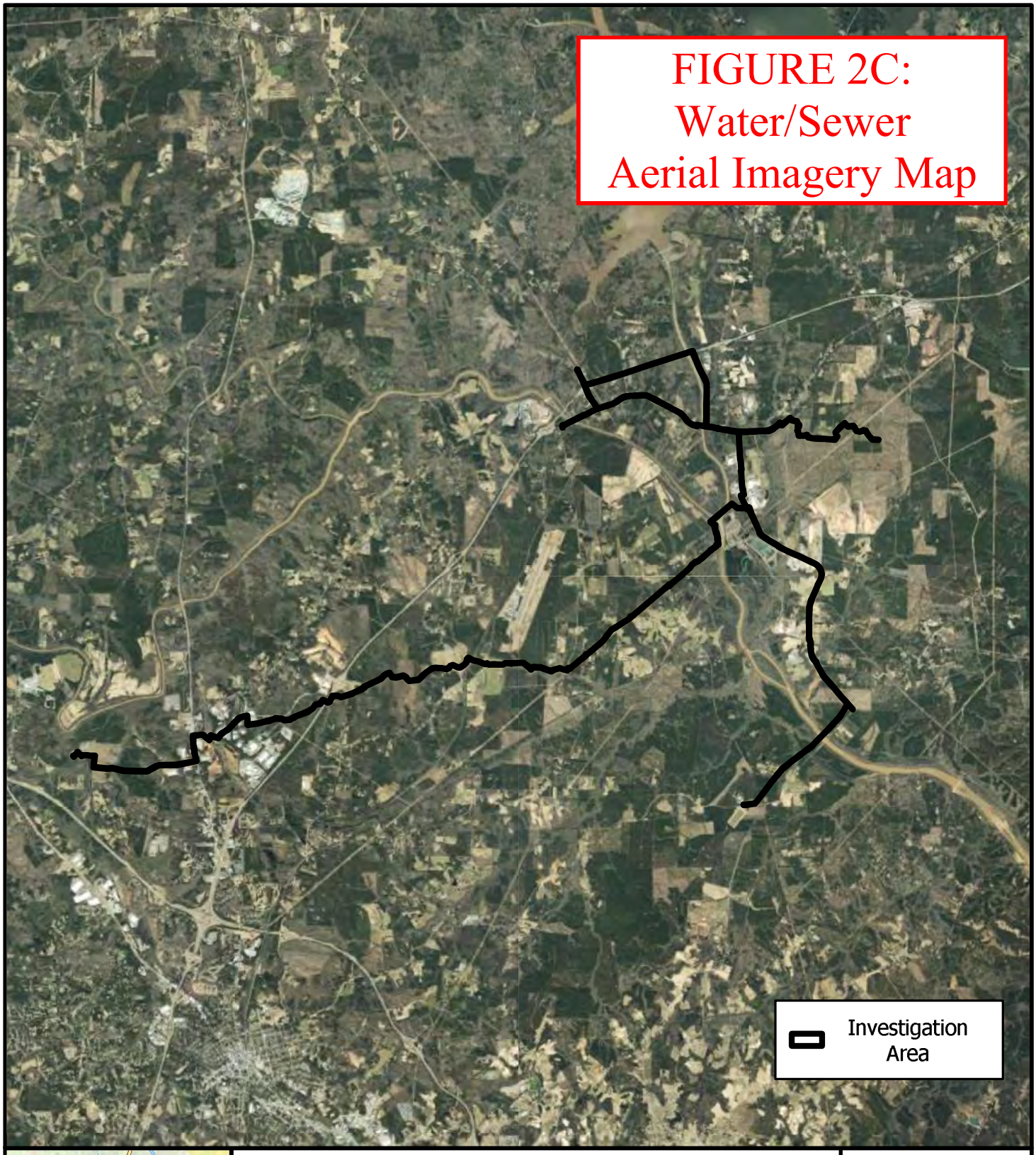


FIGURE 1C:
Utilities
Vicinity Map
Merry Oaks
Monroe
Blacknel
Deep River
Asbury
87
Farmville
15
1
Brickhaven
Corinth
Rosser
Osgood
Northview
Boone Trail Rd
Colon Rd
Post Office Rd
Hawkins Ave
Oscar Keller Jr Hwy
Cool Springs Rd
Spring Ln
Carbonton Rd
US-421-BP
Pea Ridge
US-1
Cape Fear River
Avents Ferry Rd
Investigation Area
Sanford
Figure 1 Project Location
Sanford - TIP Water and Sewer Improvements
Chatham and Lee Counties, NC
FREESE AND NICHOLS
531 N. Liberty St
Winston-Salem, NC 27101
Coordinate System: NAD 1983 StatePlane North Carolina FIPS 3200 Feet
N
0 0.03 0.05
Mi
0 250 500
Feet

FIGURE 2C: Water/Sewer Aerial Imagery Map



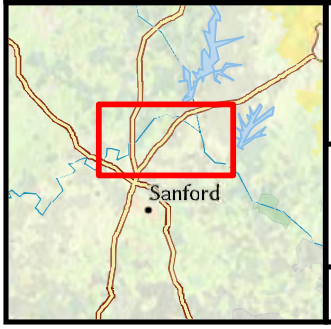


Figure 3 Aerial Imagery
Sanford - TIP Water and Sewer Improvements
Chatham and Lee Counties, NC

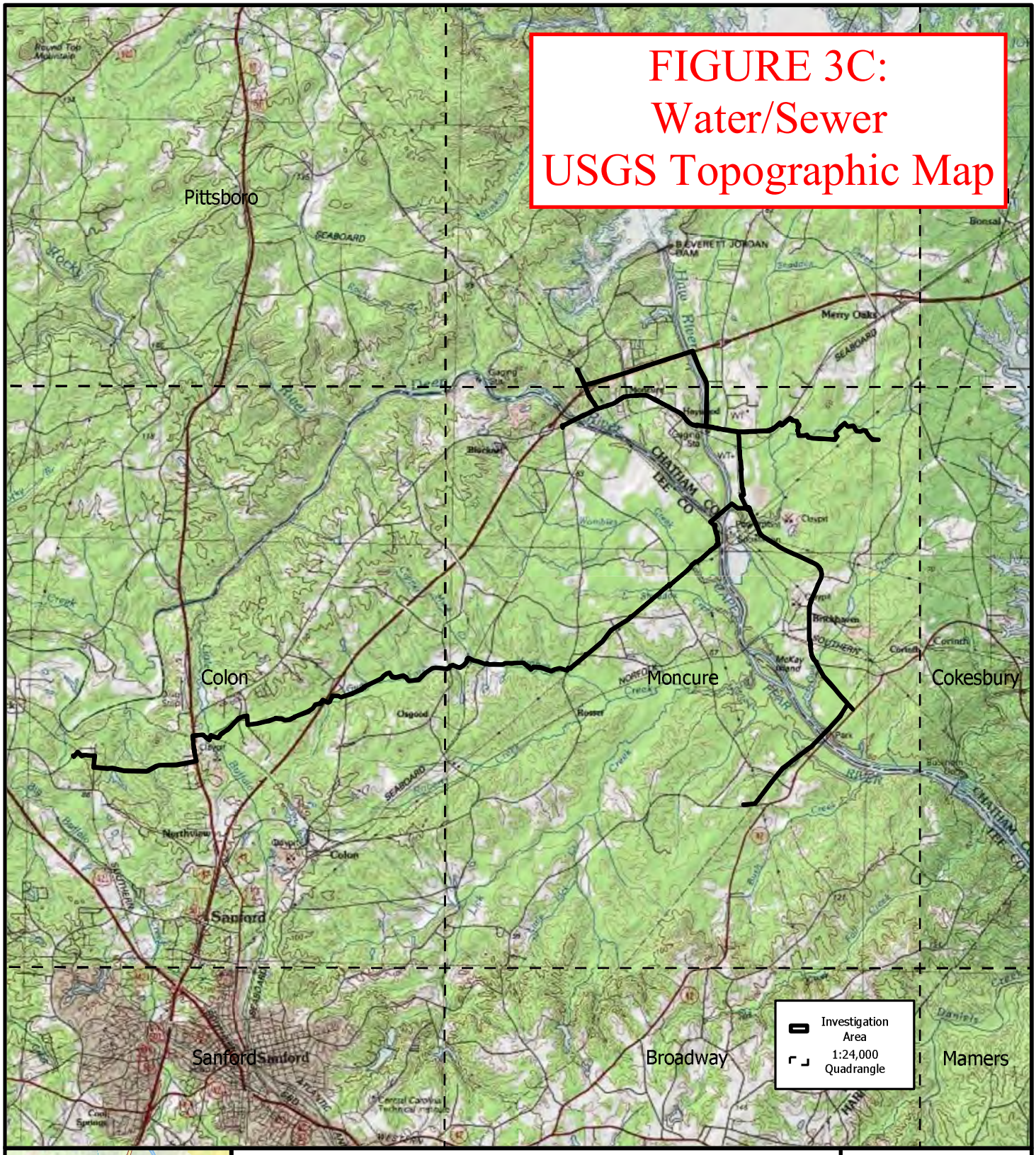
FREESE AND NICHOLS
531 N. Liberty St
Winston-Salem, NC 27101

Coordinate System: NAD 1983 StatePlane North Carolina FIPS 3200 Feet

N

0 0.03 0.05
Mi

0 250 500
Feet



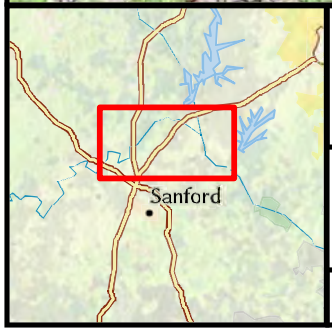


Figure 2 Topographic Mapping

Sanford - TIP Water and Sewer Improvements

Chatham and Lee Counties, NC

FREESE AND NICHOLS

531 N. Liberty St

Winston-Salem, NC 27101

Coordinate System: NAD 1983 StatePlane North Carolina FIPS 3200 Feet

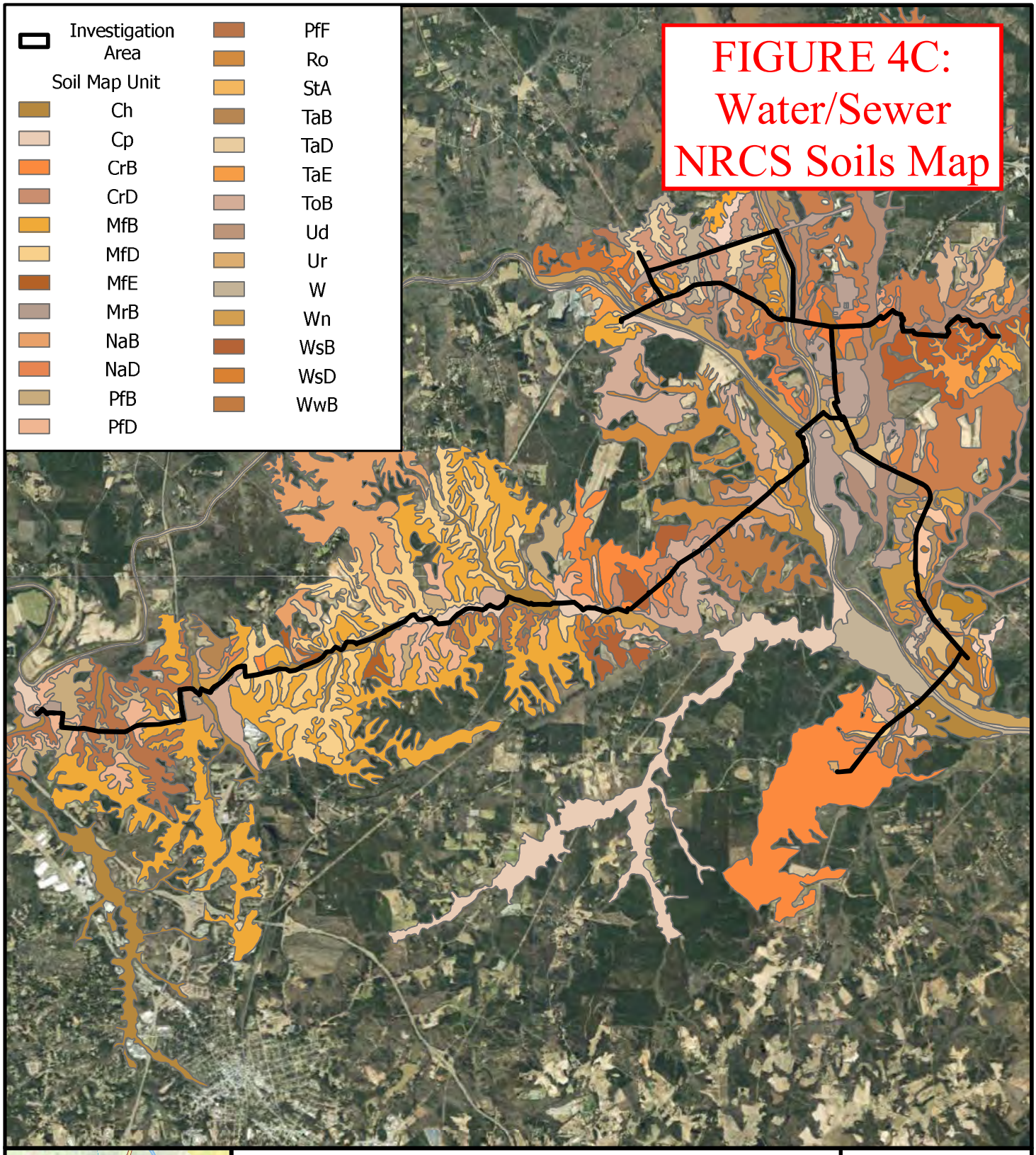
N

0 0.03 0.05

Mi

0 250 500

Feet



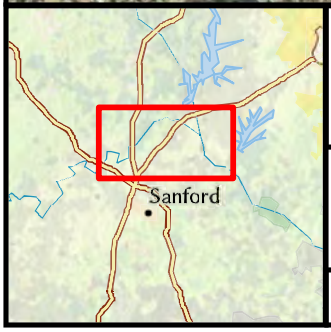


Figure 6 NRCS Mapped Soils

Sanford - TIP Water and Sewer Improvements

Chatham and Lee Counties, NC

FREESE AND NICHOLS

531 N. Liberty St

Winston-Salem, NC 27101

Coordinate System: NAD 1983 StatePlane North Carolina FIPS 3200 Feet

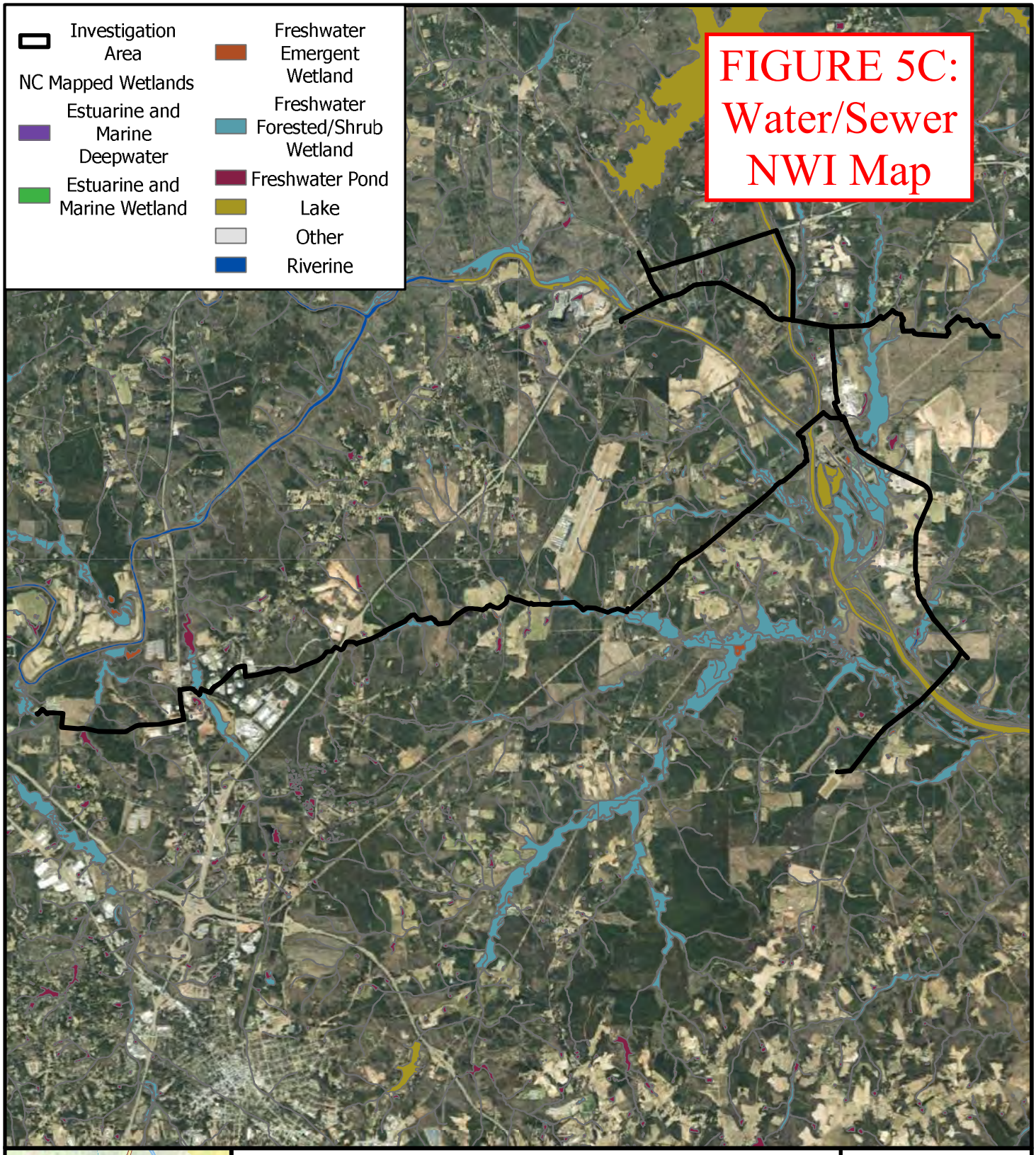
N

0 0.03 0.05

Mi

0 250 500

Feet



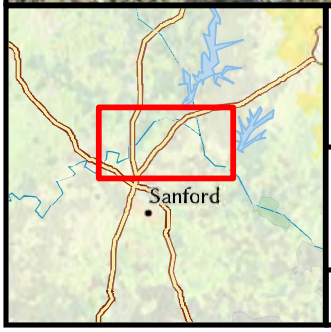


Figure 4 NWI Mapping

Sanford - TIP Water and Sewer Improvements
Chatham and Lee Counties, NC

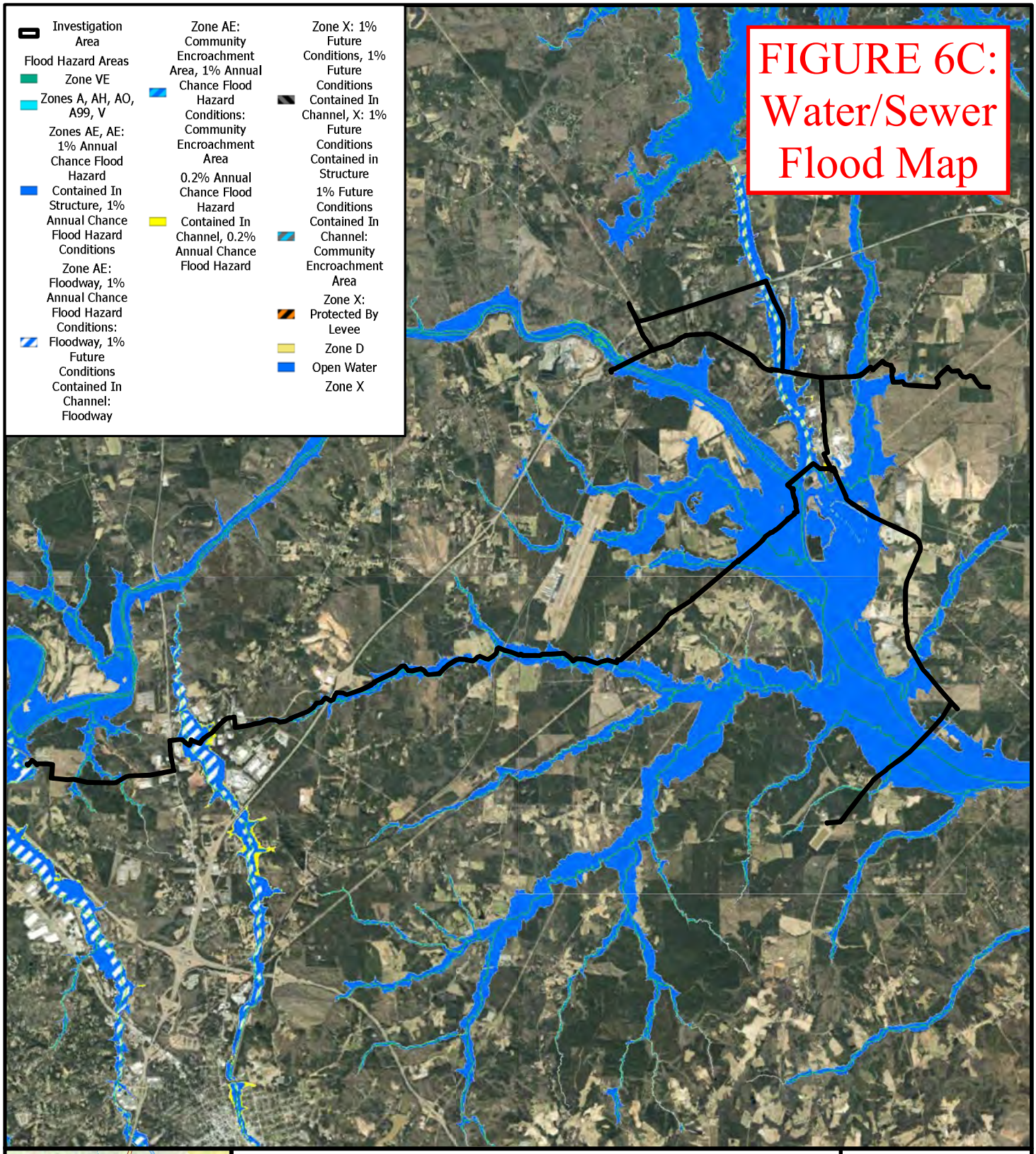
FREESE AND NICHOLS
531 N. Liberty St
Winston-Salem, NC 27101

Coordinate System: NAD 1983 StatePlane North Carolina FIPS 3200 Feet

N

0 0.03 0.05
Mi

0 250 500
Feet



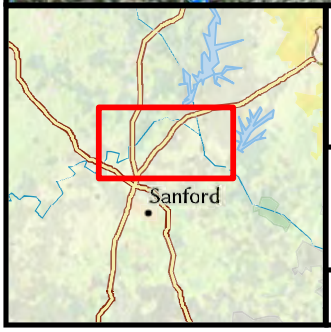


Figure 5 Flood Mapping

Sanford - TIP Water and Sewer Improvements

Chatham and Lee Counties, NC

FREESE AND NICHOLS

531 N. Liberty St

Winston-Salem, NC 27101

Coordinate System: NAD 1983 StatePlane North Carolina FIPS 3200 Feet

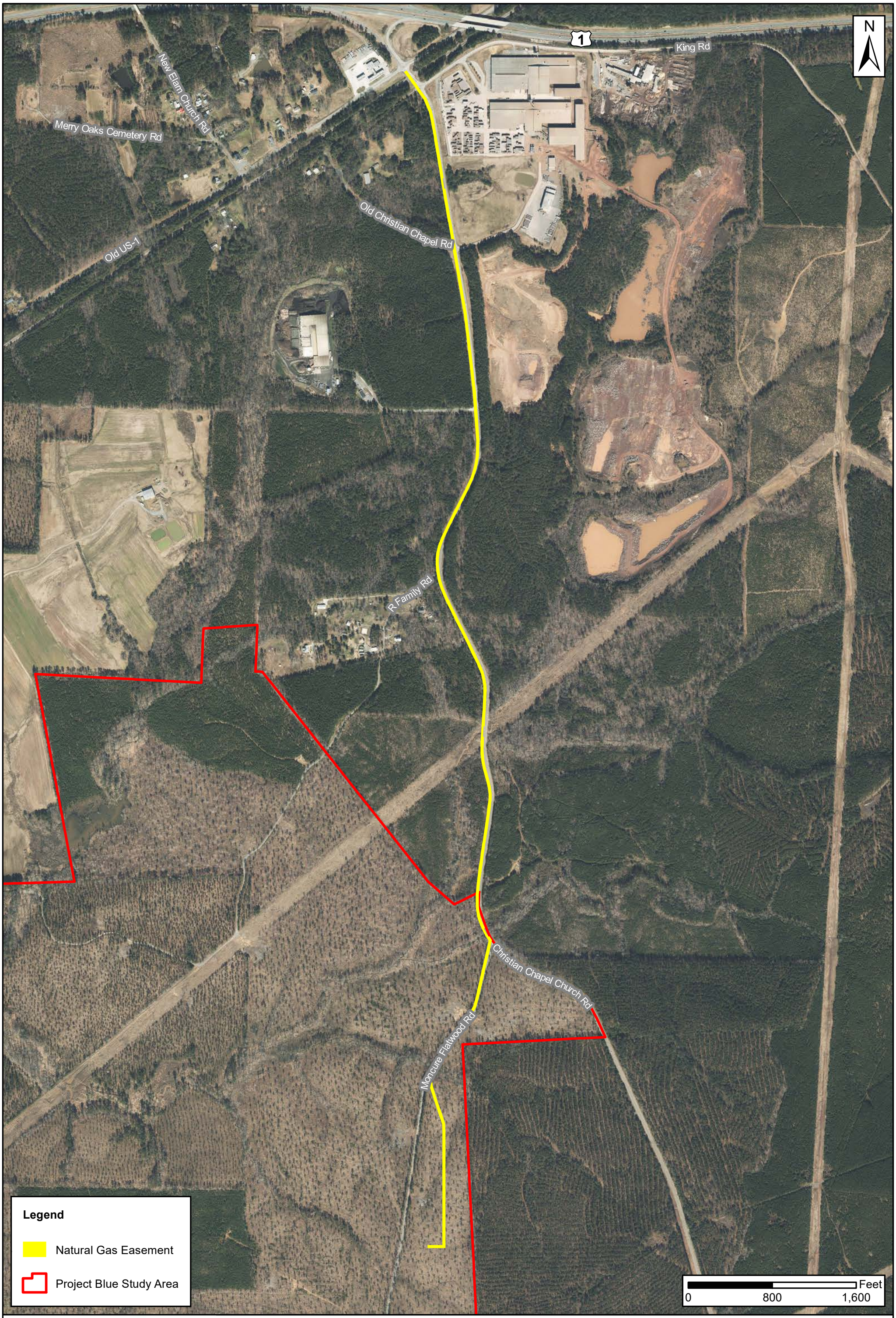
N

0 0.03 0.05

Mi

0 250 500

Feet



Kimley»Horn

Figure 2D: Natural Gas Aerial Imagery Map
Project Blue - Utilities
Chatham County, NC
October 2022

N

KING RD

NEW ELAM CHURCH RD

MERRY OAKS CEMETARY RD

OLD US HWY 1

OLD CHRISTIAN CHAPEL RD

CHRISTIAN CHAPEL CHURCH RD

R FAMILY RD

MONCURE FLATWOOD RD

Legend

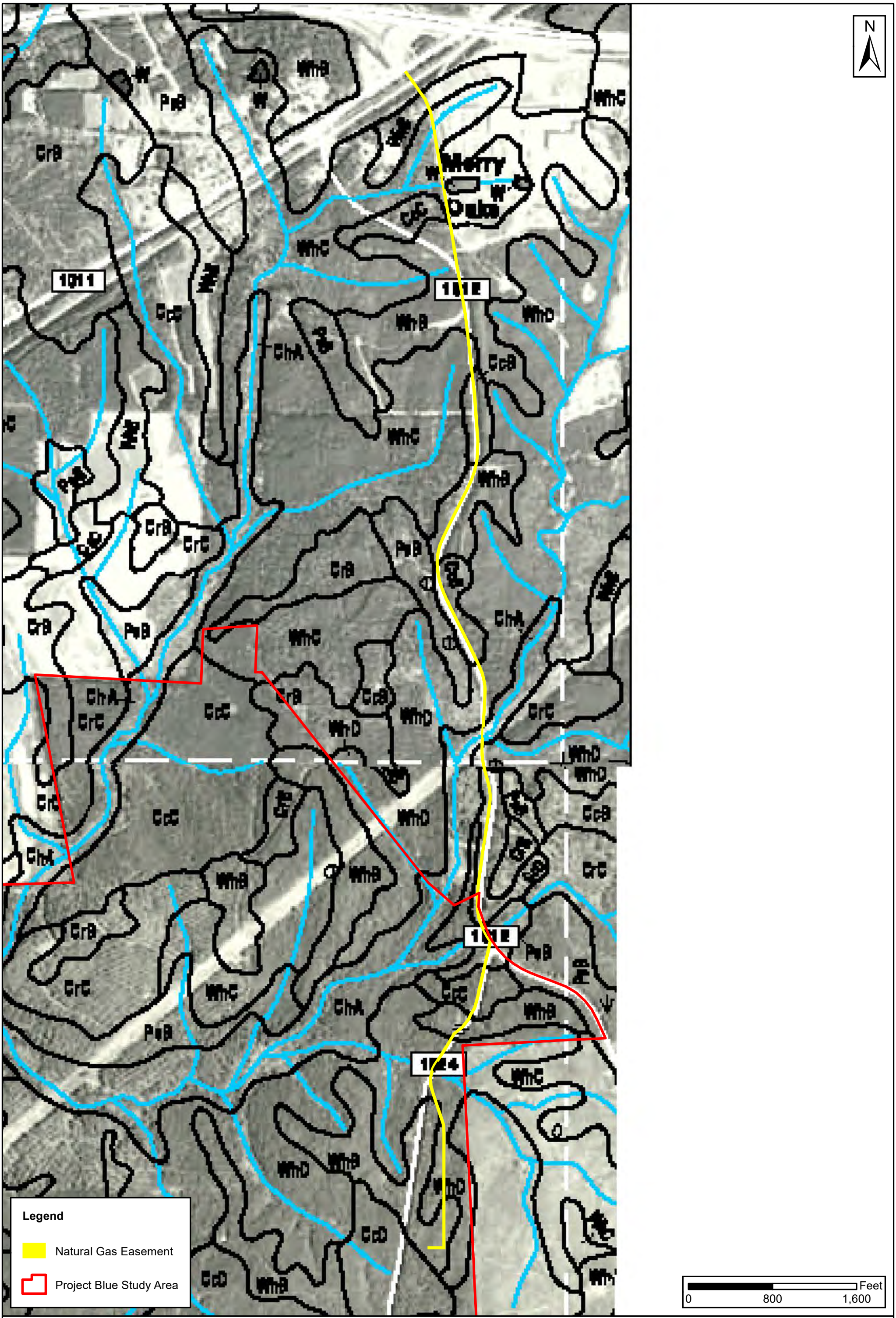
Natural Gas Easement

Project Blue Study Area

Feet
0 800 1,600

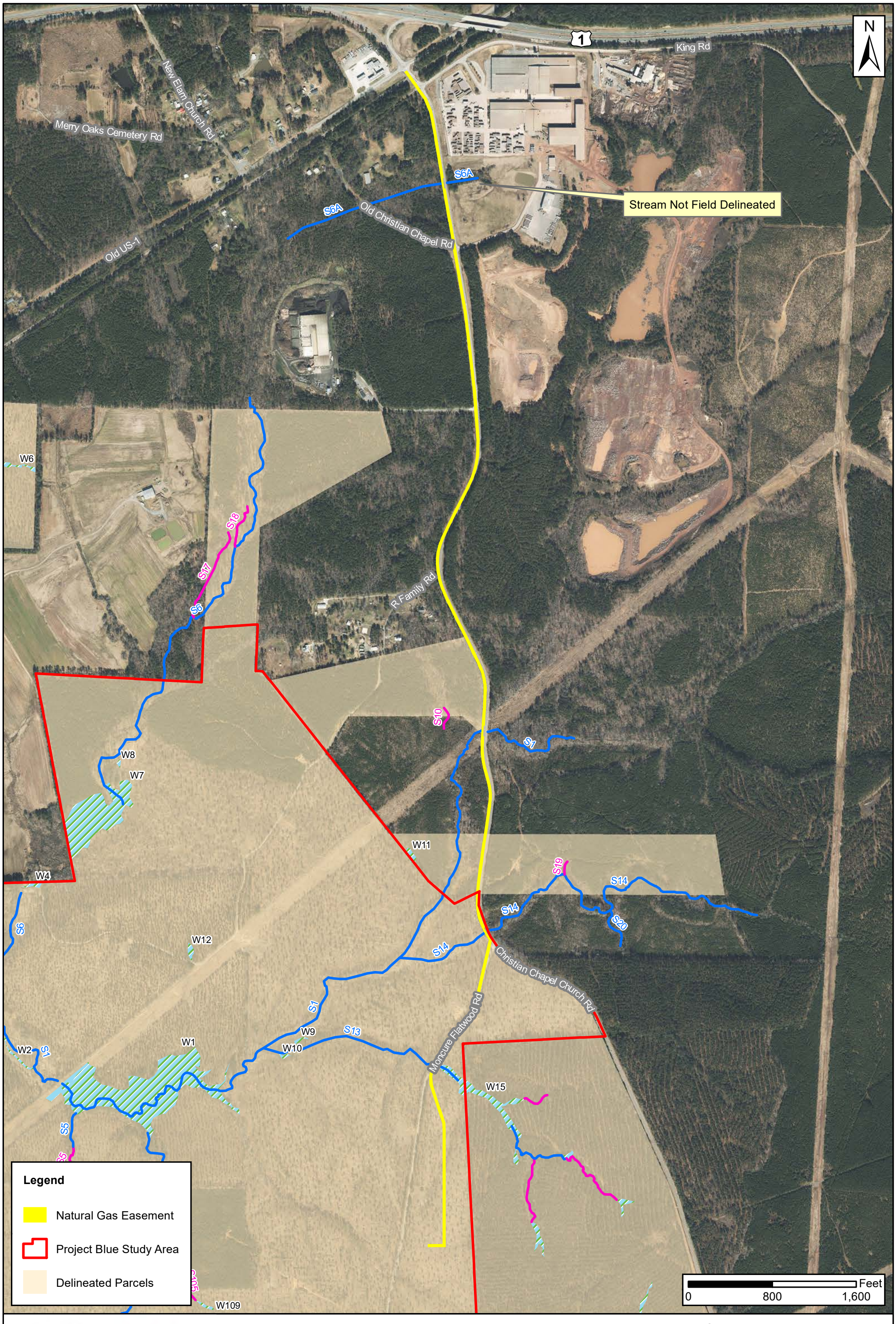
Kimley»Horn

Figure 3D: Natural Gas USGS Topographic Map
Project Blue - Utilities
Chatham County, NC
October 2022



Kimley»Horn

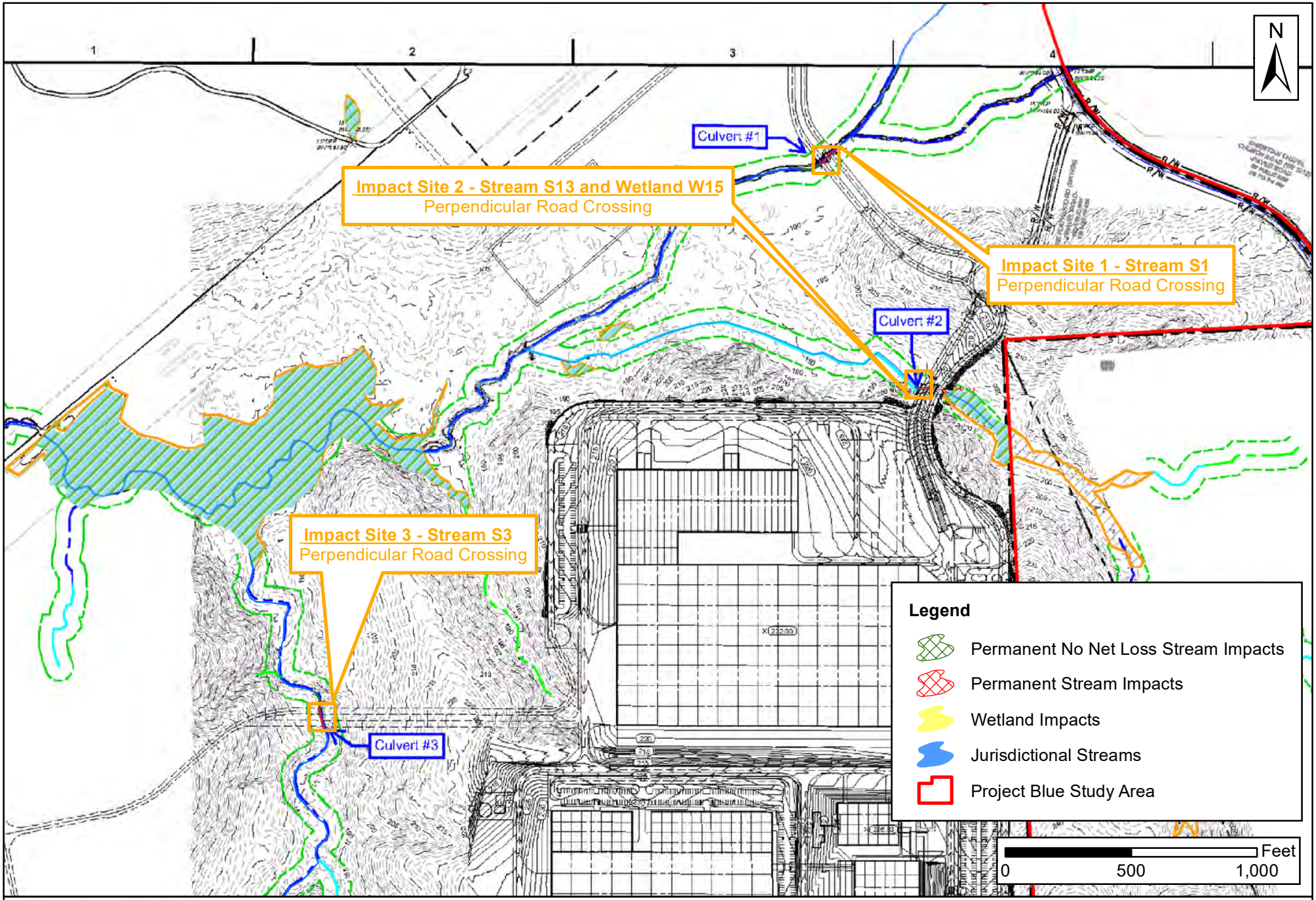
Figure 4D: Natural Gas NRCS Soils Map
Project Blue - Utilities
Chatham County, NC
October 2022



Kimley»Horn

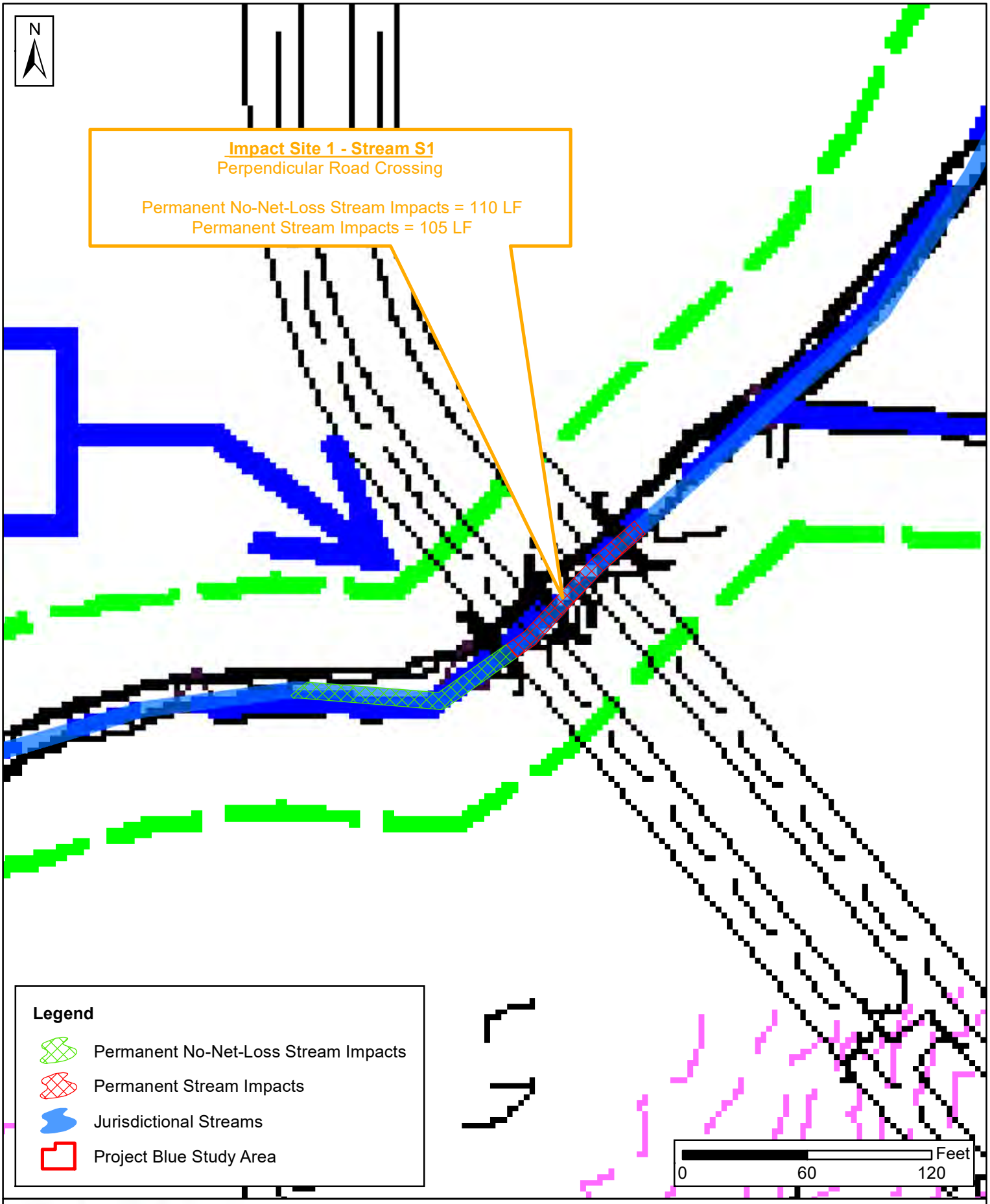
Figure 5D: Natural Gas Jurisdictional Features Map
Project Blue - Utilities
Chatham County, NC
October 2022

APPENDIX G
PERMIT IMPACT DRAWINGS



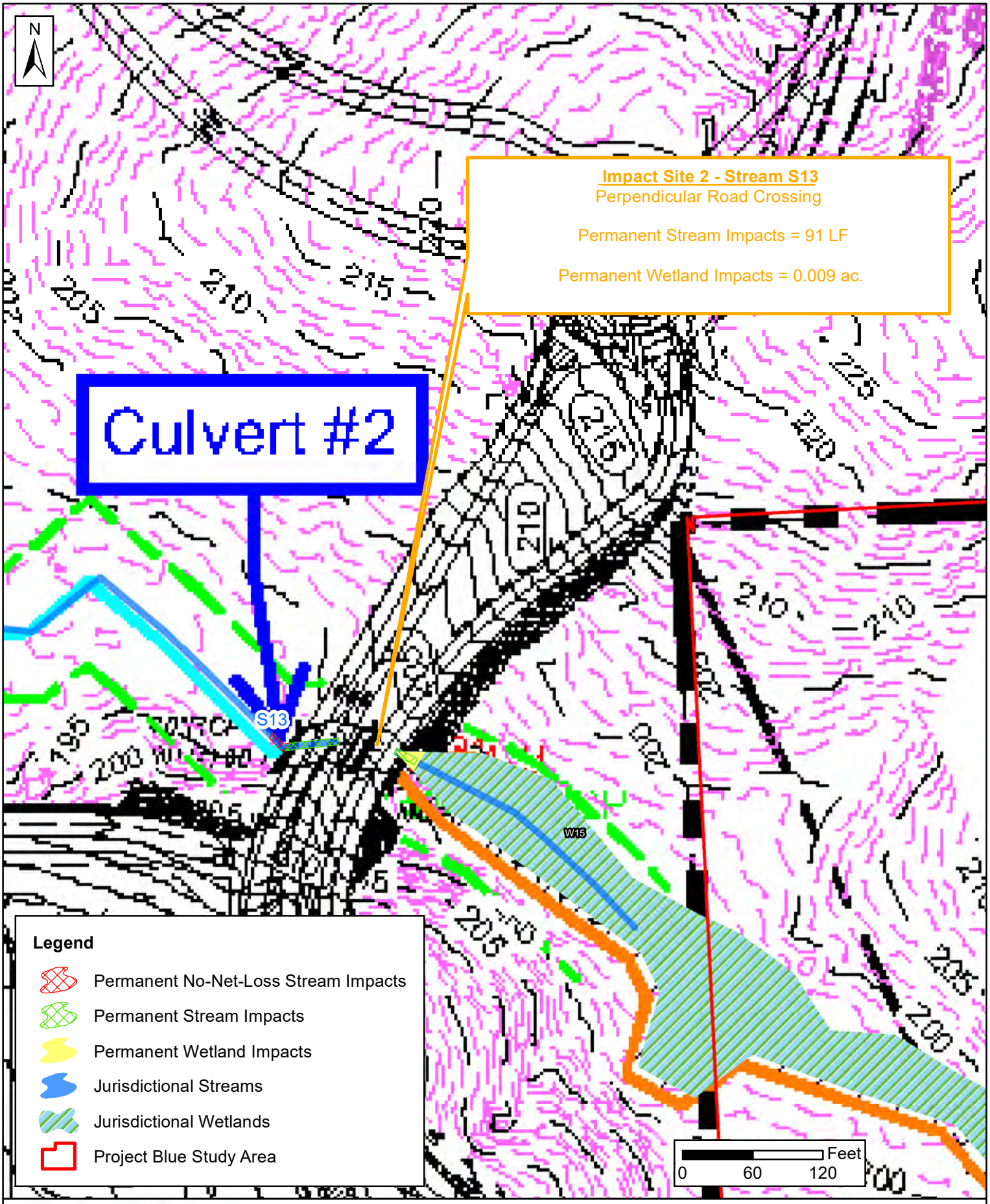
Kimley»Horn

Appendix G: Project Blue Permit Impact Drawings - Overall
Project Blue
Chatham County, NC
October 2022



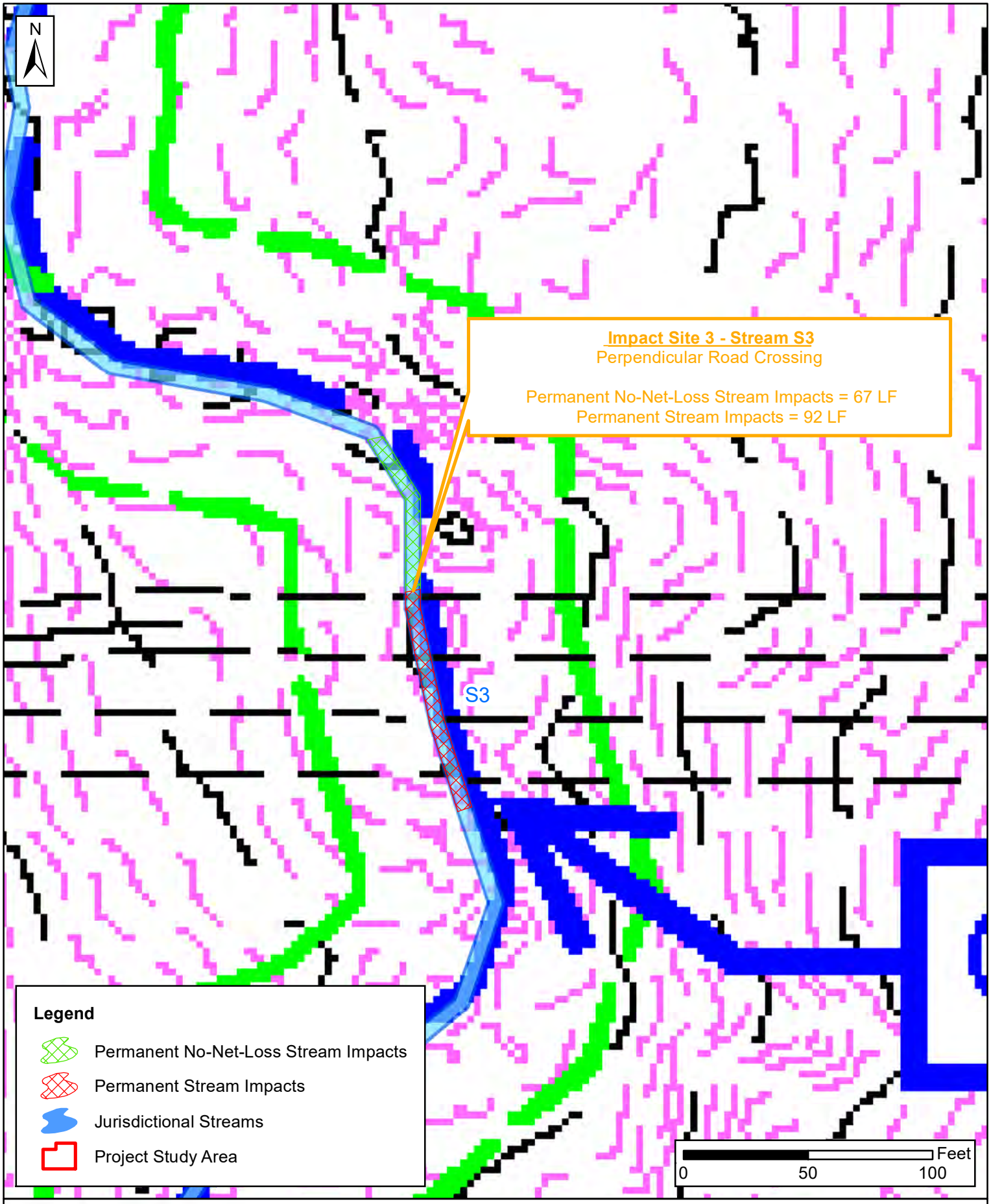
Kimley»Horn

Appendix G: Project Blue Permit Impact Drawings - Impact Site 1
Project Blue
Chatham County, NC
October 2022



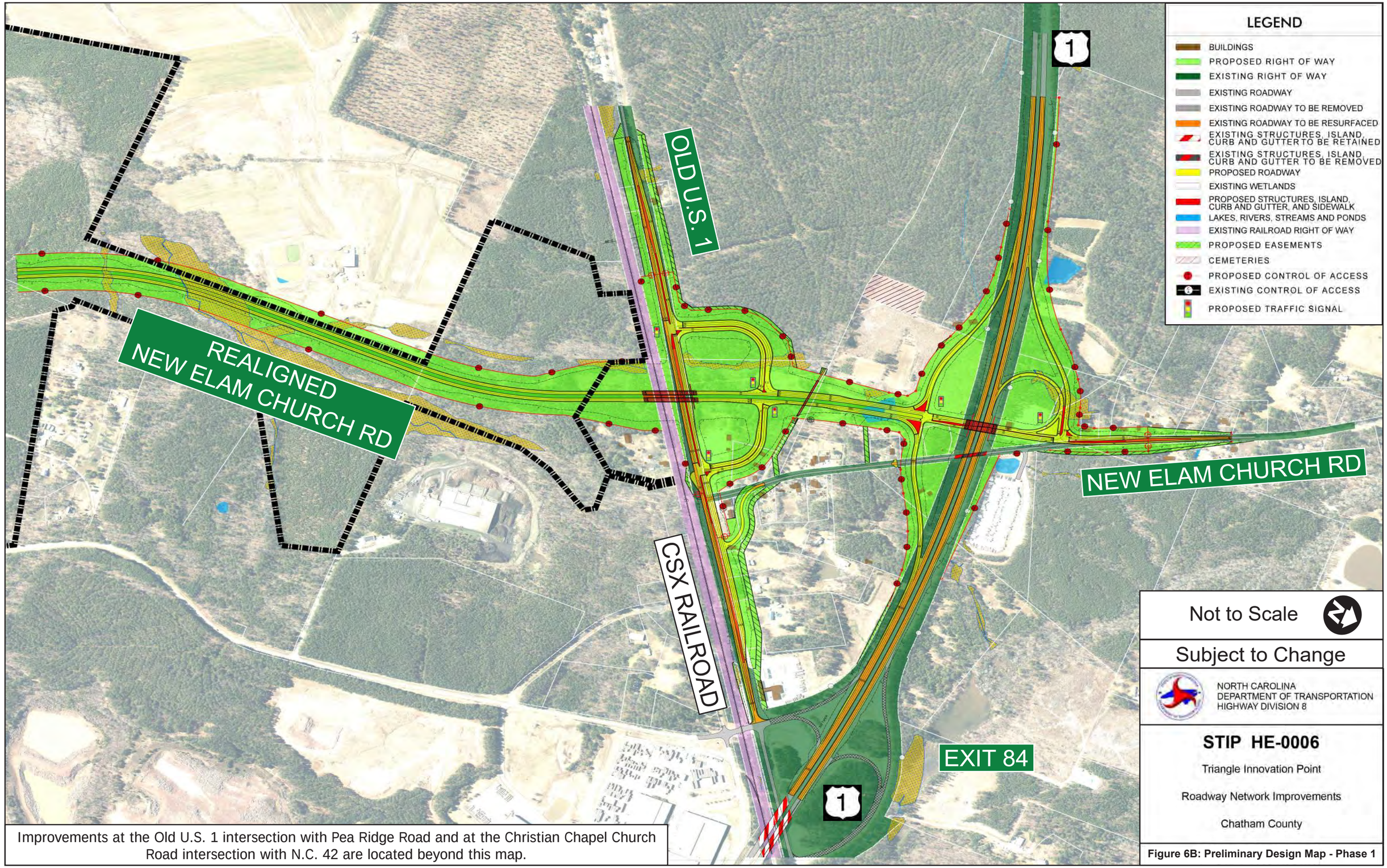
Kimley»Horn

Appendix G: Project Blue Permit Impact Drawings - Impact Site 2
Project Blue
Chatham County, NC
October 2022



Kimley»Horn

Appendix G: Project Blue Permit Impact Drawings - Impact Site 3
Project Blue
Chatham County, NC
October 2022



Improvements at the Old U.S. 1 intersection with Pea Ridge Road and at the Christian Chapel Church Road intersection with N.C. 42 are located beyond this map.

Not to Scale

Subject to Change

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION 8

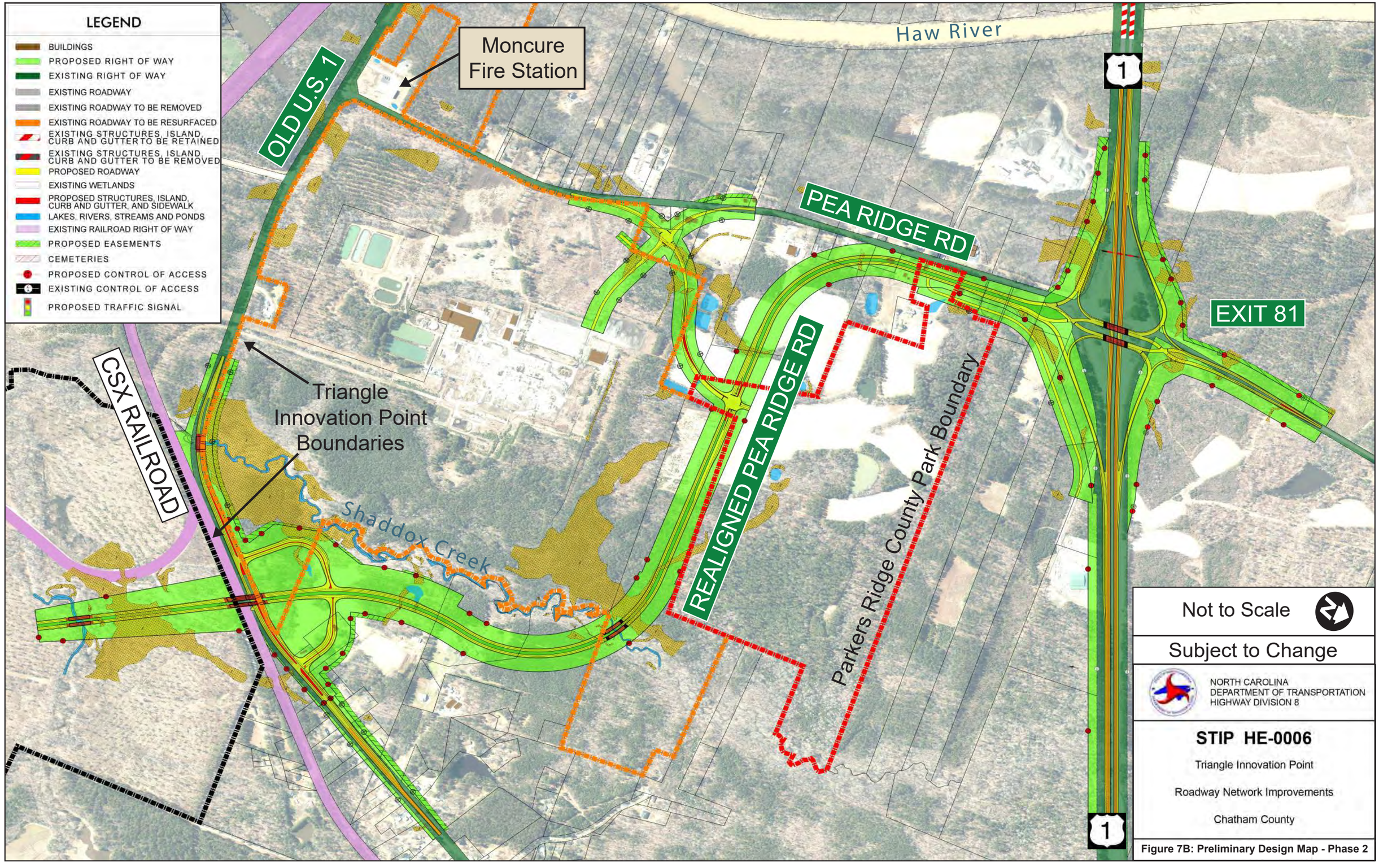
STIP HE-0006

Triangle Innovation Point

Roadway Network Improvements

Chatham County

Figure 6B: Preliminary Design Map - Phase 1



Not to Scale

Subject to Change

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION 8

STIP HE-0006

Triangle Innovation Point

Roadway Network Improvements

Chatham County

Figure 7B: Preliminary Design Map - Phase 2

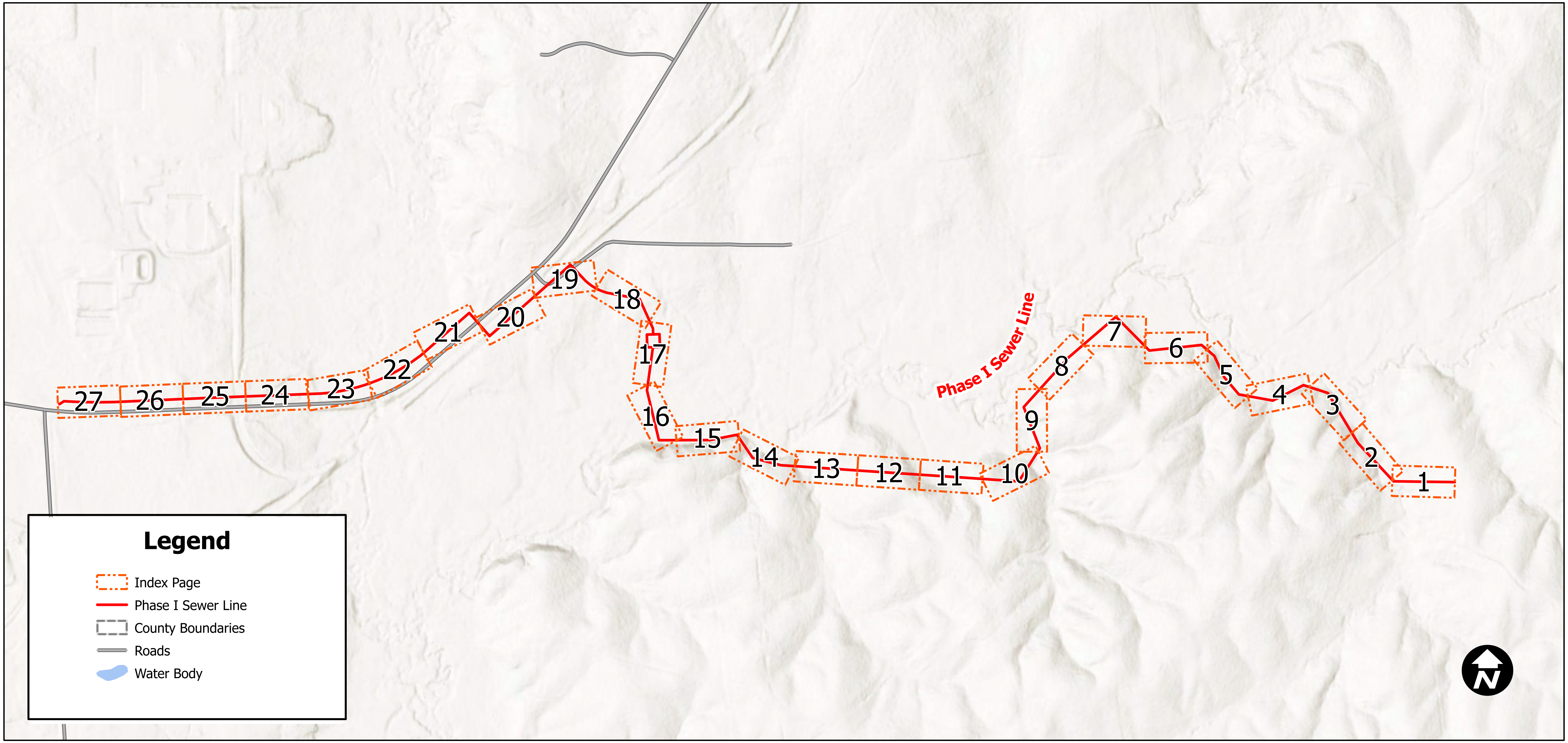
CITY OF SANFORD

SANFORD - TIP WATER AND SEWER IMPROVEMENTS

PHASE I SEWER LINE WOTUS IMPACTS

SANFORD NORTH CAROLINA

FREESE AND NICHOLS



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Job No.: SFD22406
Location: H:\ENVIRONMENTAL\Working\LMH_Working\Env_Impct_Mapbooks\Phase_1_Sewer_2\Phase_1_Sewer_2.aprx
Updated: Wednesday, August 17, 2022 7:32 PM
User Name: 08067

Created By Freese and Nichols, Inc.
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CITY OF SANFORD

SANFORD-TIP
PHASE I SEWER LINE

- Streams
- Stream Impact Area
- Permanent Impacts
- Temporary Impacts
- Phase I Sewer Line
- Phase I Water Line
- Temporary Construction Easement
- Phase I Sewer Line Permanent Access Corridor
- Phase I Water Line Permanent Access Corridor

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SCALE IN FEET

SANFORD NORTH CAROLINA

FREESE NICHOLS

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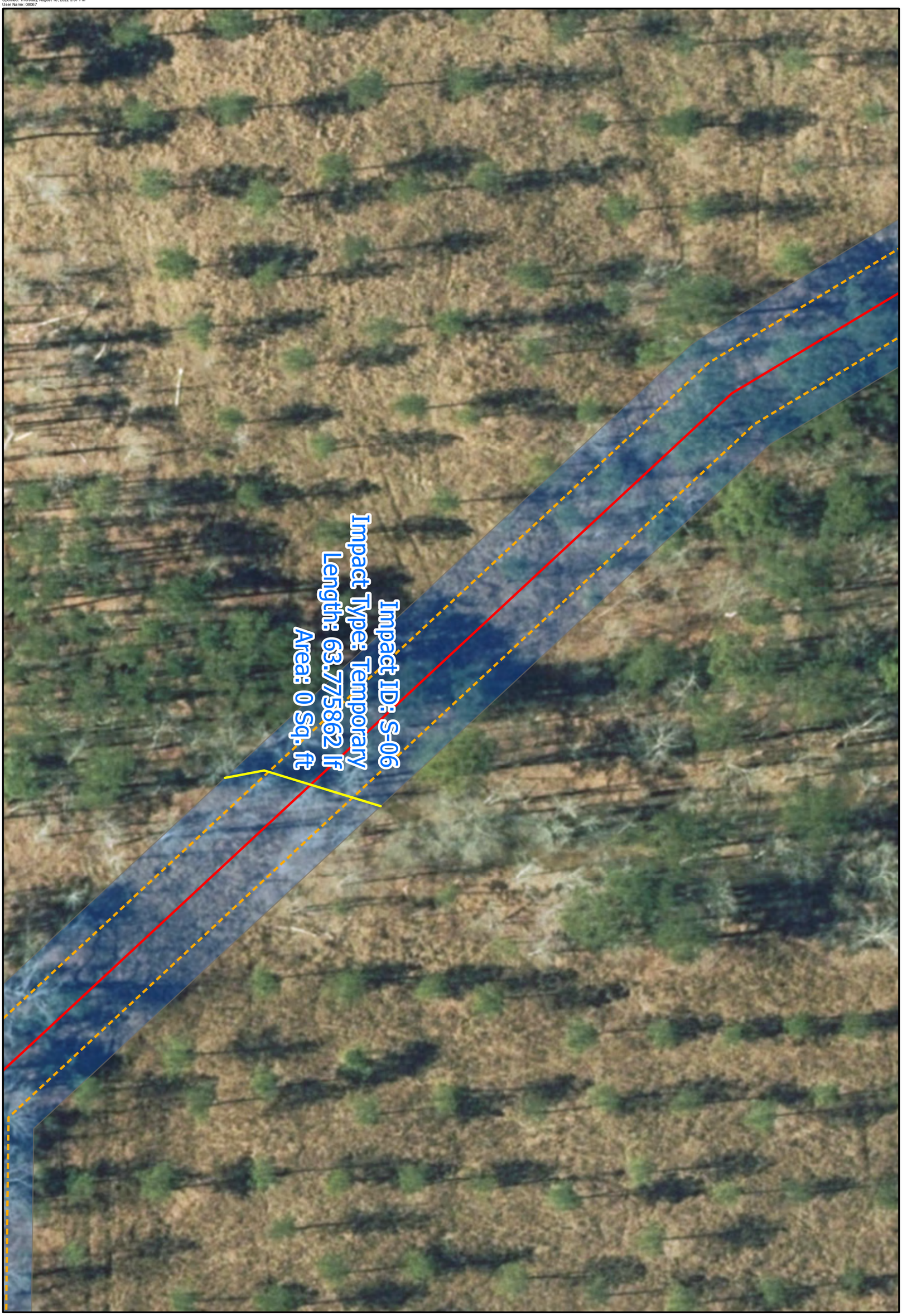

CITY OF SANFORD

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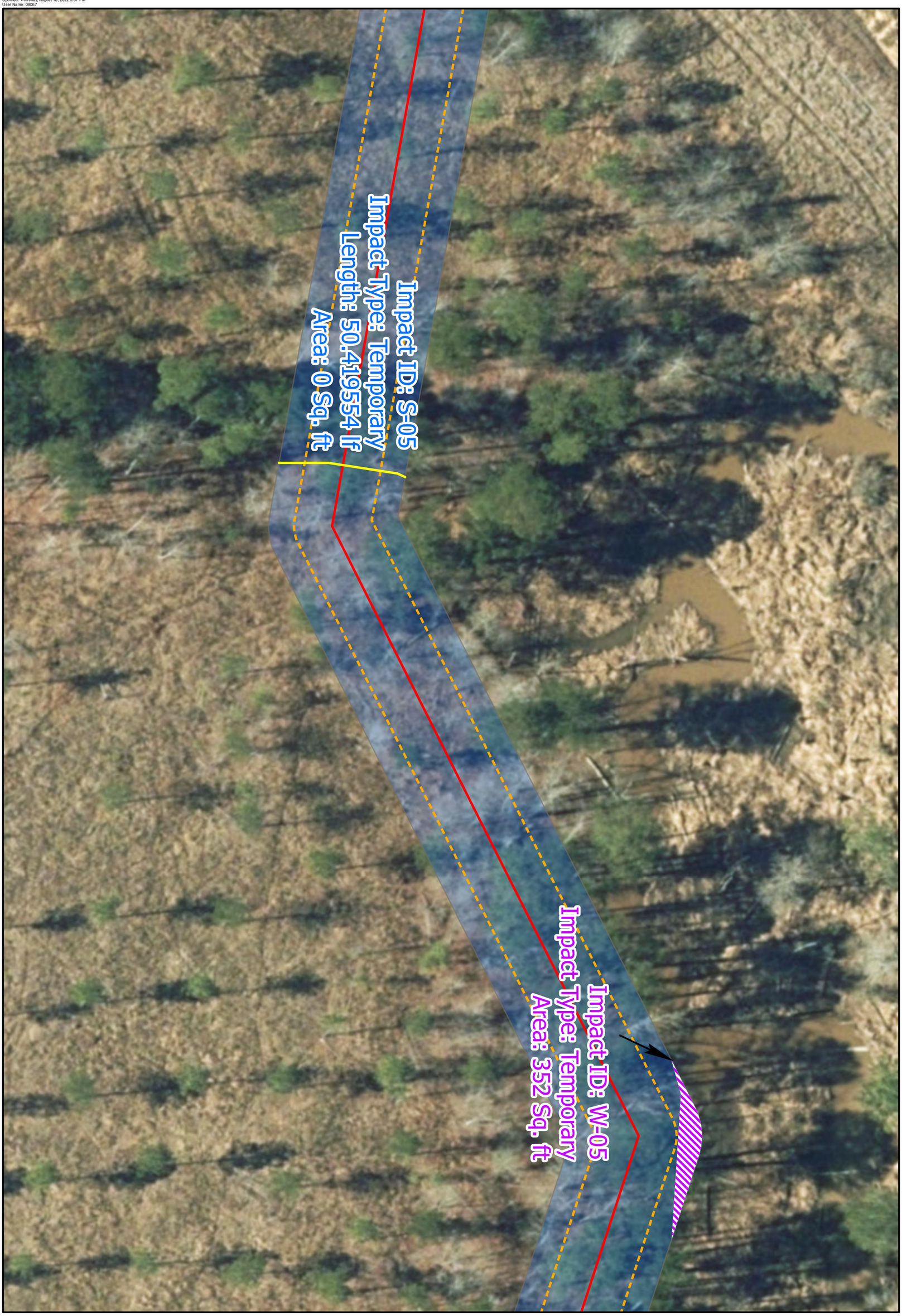

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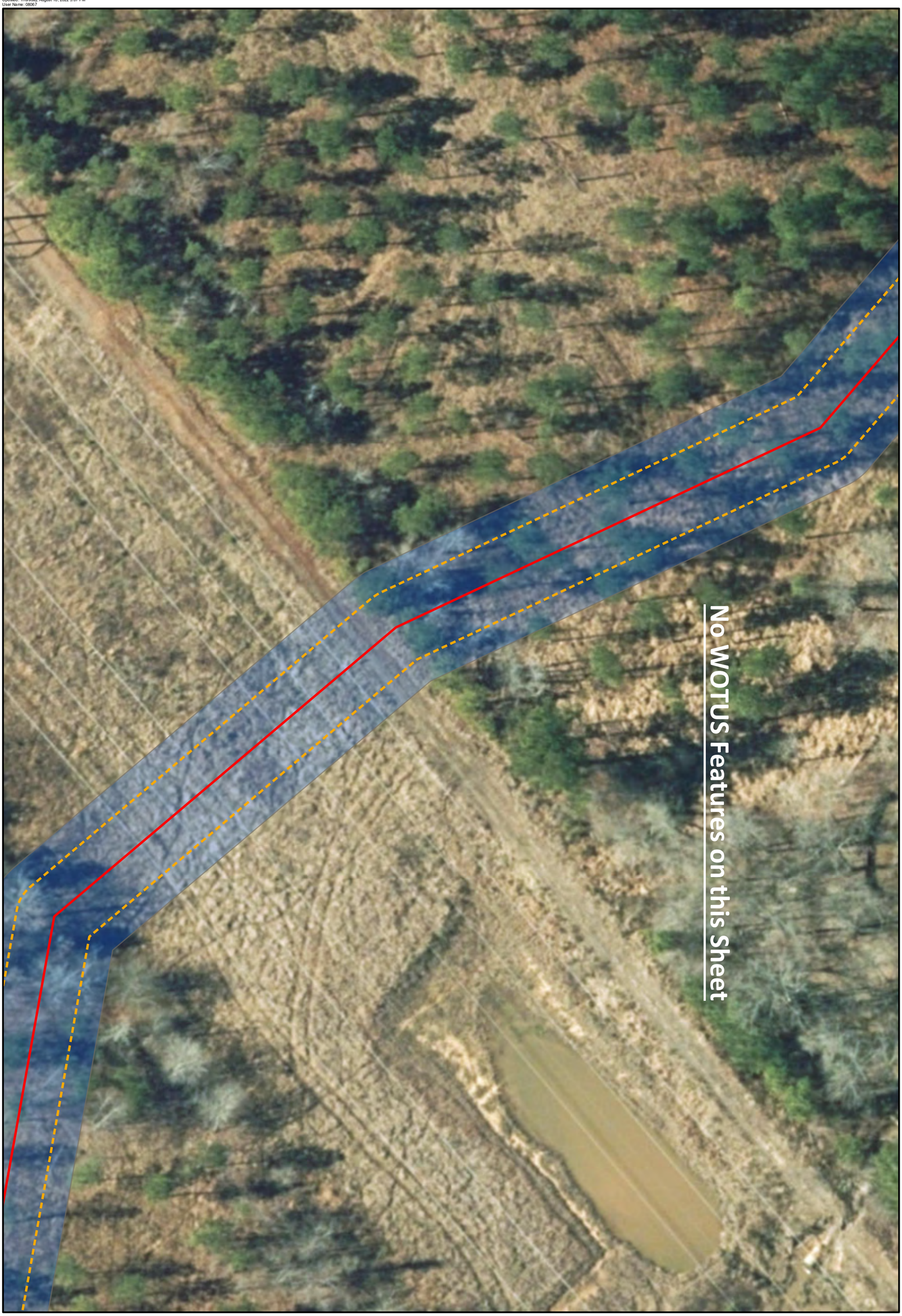

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CITY OF SANFORD

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CITY OF SANFORD

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SANFORD NORTH CAROLINA

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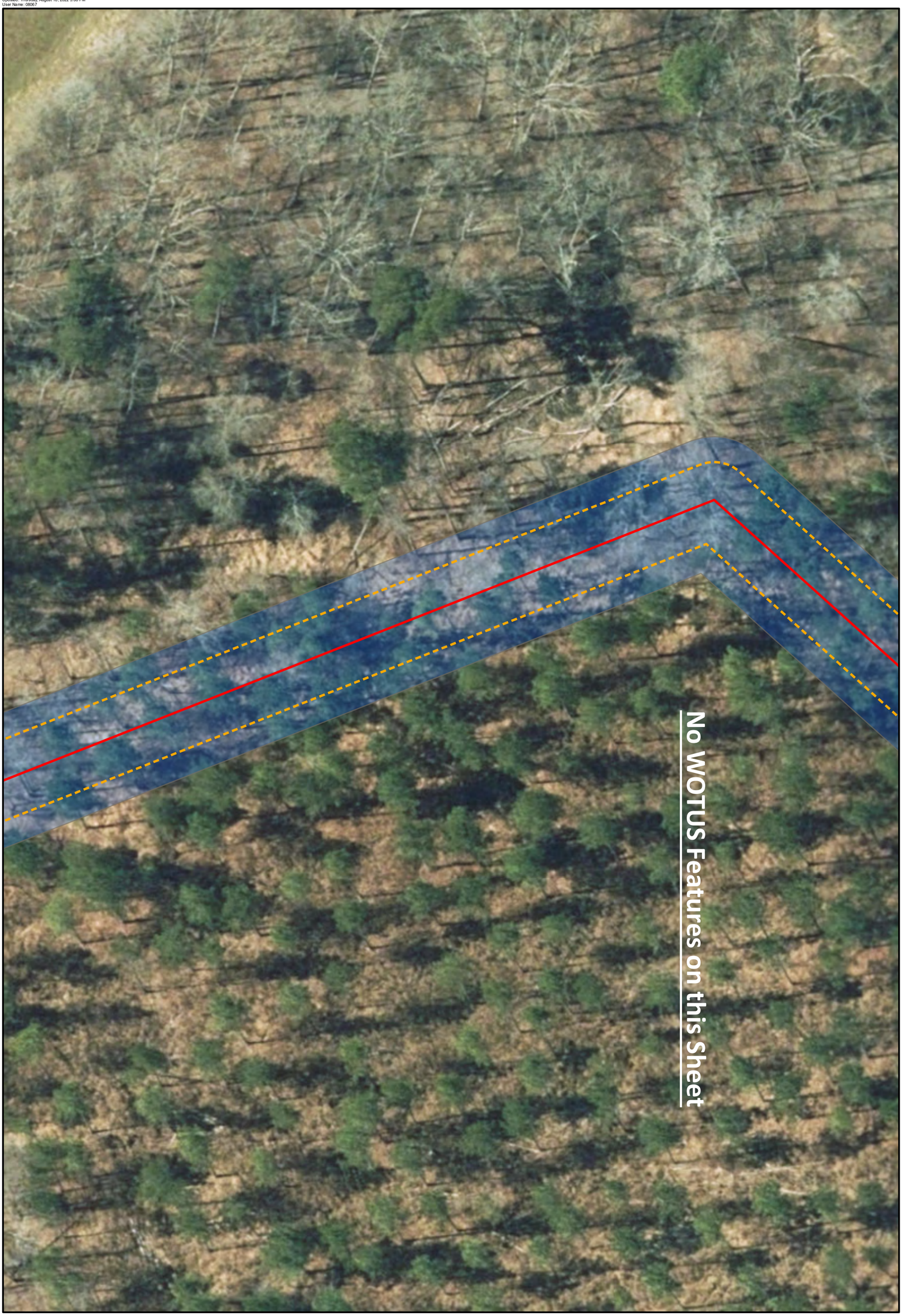

CITY OF SANFORD

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CITY OF SANFORD

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CITY OF SANFORD

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SCALE IN FEET

SANFORD NORTH CAROLINA

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SANFORD NORTH CAROLINA
FREESE NICHOLS

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Phase 1 Water Line Permanent Access Corridor
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SANFORD NORTH CAROLINA

FREESE NICHOLS

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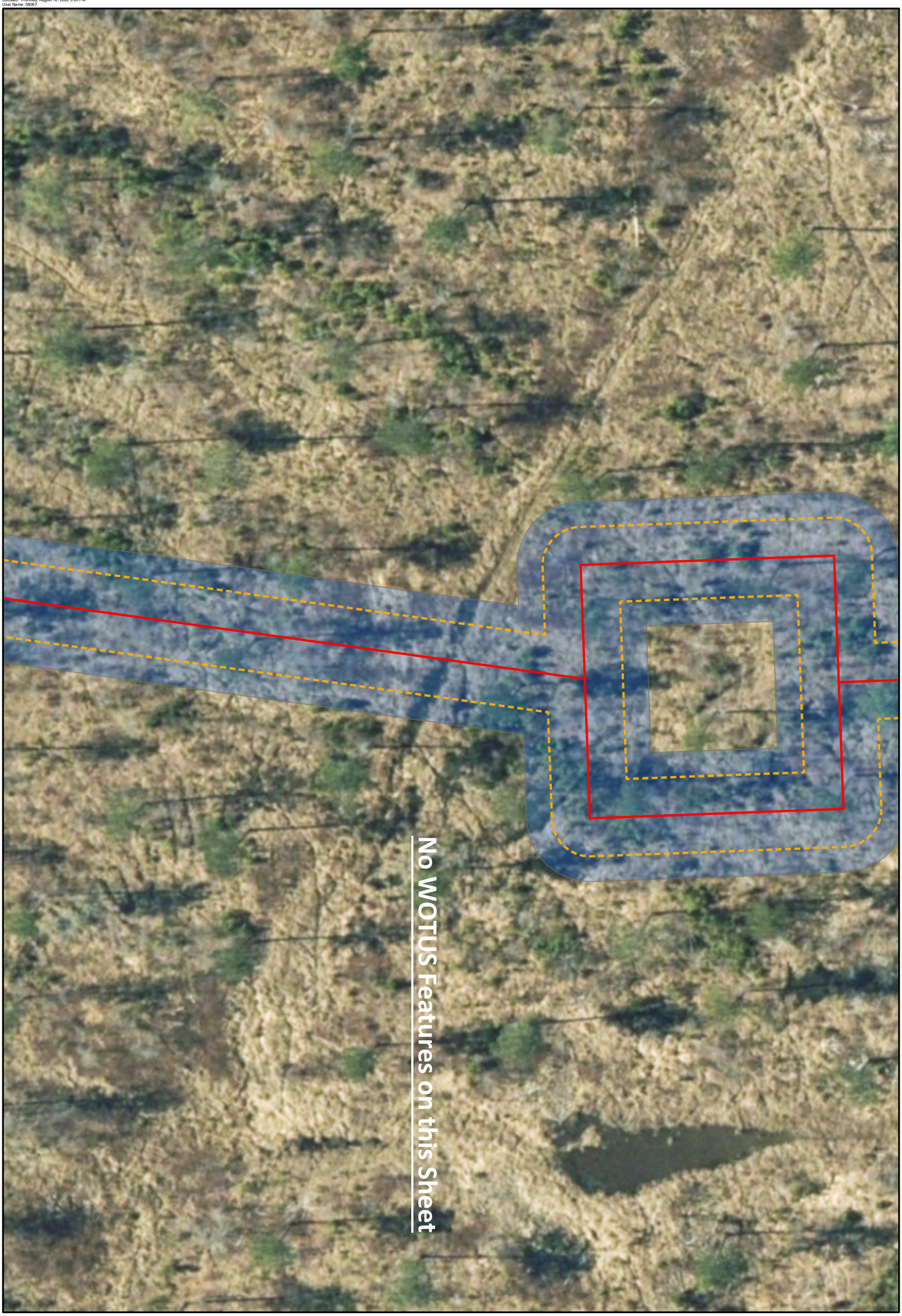

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SCALE IN FEET

SANFORD NORTH CAROLINA

FREESE NICHOLS

SANFORD NORTH CAROLINA

FREESE NICHOLS

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SCALE IN FEET

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Phase I Water Line
Temporary Construction Easement
Phase I Sewer Line Permanent Access Corridor
Phase I Water Line Permanent Access Corridor
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Temporary Impacts
Phase I Sewer Line

CITY OF SANFORD
SANFORD-TIP
PHASE I SEWER LINE

SANFORD NORTH CAROLINA

FREESE NICHOLS

SCALE IN FEET

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Phase I Water Line
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Phase I Water Line Permanent Access Corridor
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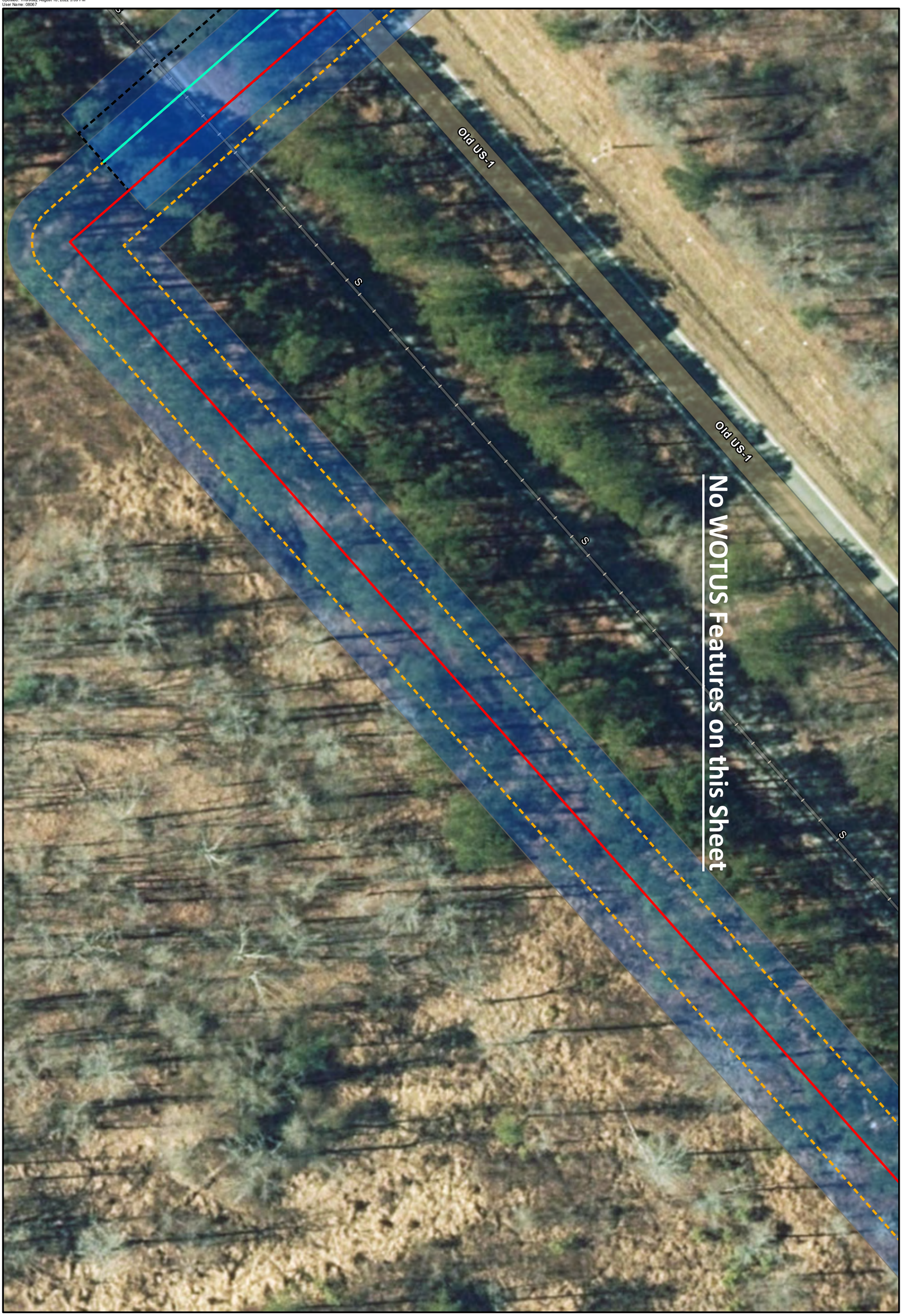

CITY OF SANFORD

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SCALE IN FEET

SANFORD NORTH CAROLINA
FREESE NICHOLS

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SANFORD NORTH CAROLINA
FREESE NICHOLS

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SCALE IN FEET

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Phase I Water Line
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Phase I Sewer Line Permanent Access Corridor
Phase I Water Line Permanent Access Corridor
Streams
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Temporary Impacts
Phase I Sewer Line

CITY OF SANFORD
SANFORD-TIP
PHASE I SEWER LINE

SANFORD NORTH CAROLINA

FREESE NICHOLS

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SCALE IN FEET

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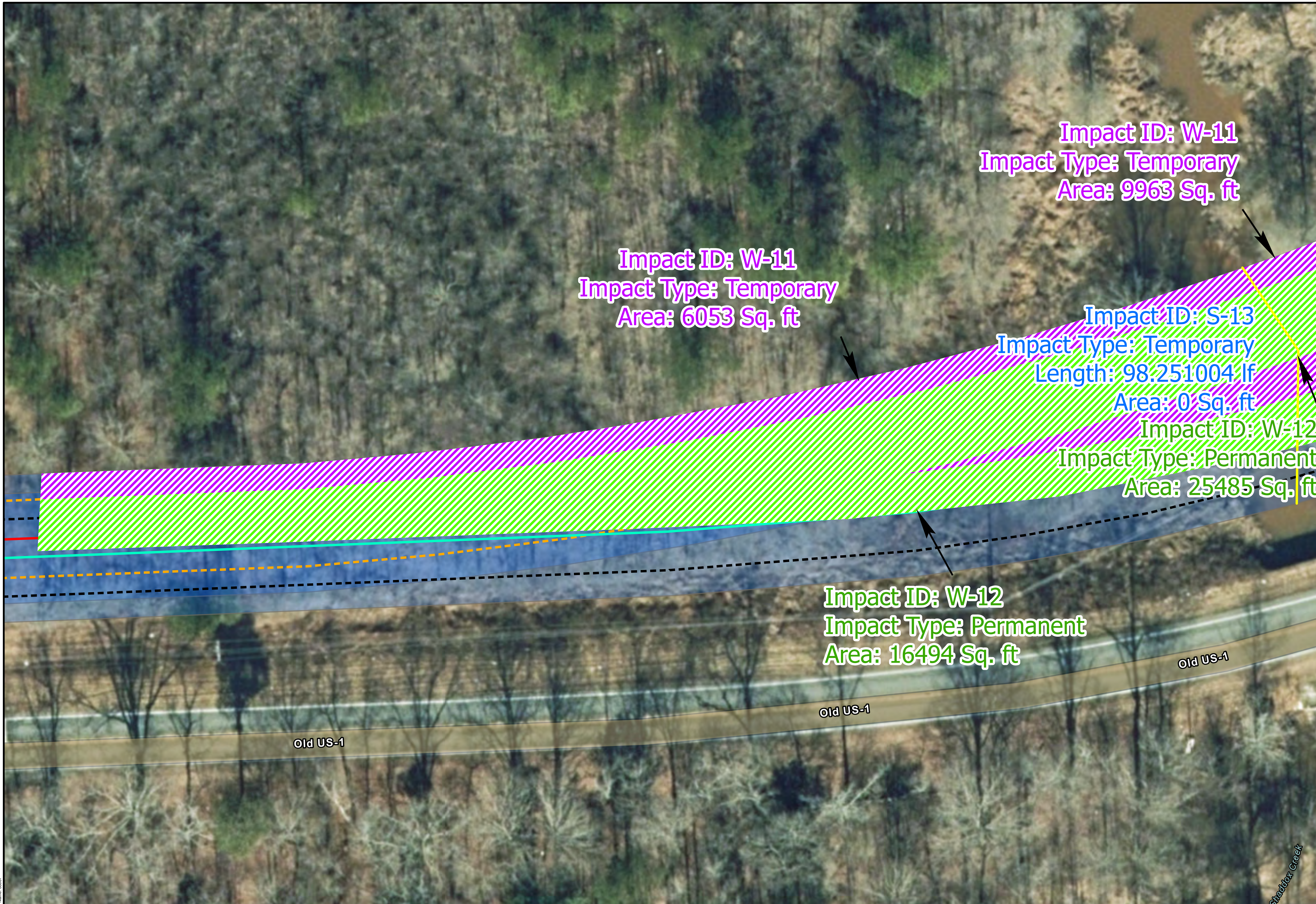

SANFORD NORTH CAROLINA
FREESE NICHOLS

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SCALE IN FEET

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CITY OF SANFORD
SANFORD-TIP
PHASE I SEWER LINE

SANFORD NORTH CAROLINA

FREESE NICHOLS

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SCALE IN FEET

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SANFORD-TIP
PHASE I SEWER LINE

SANFORD NORTH CAROLINA

FREESE NICHOLS

SCALE IN FEET

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SANFORD NORTH CAROLINA
FREESE NICHOLS

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SCALE IN FEET

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Phase I Sewer Line Permanent Access Corridor
Phase I Water Line Permanent Access Corridor
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Temporary Impacts
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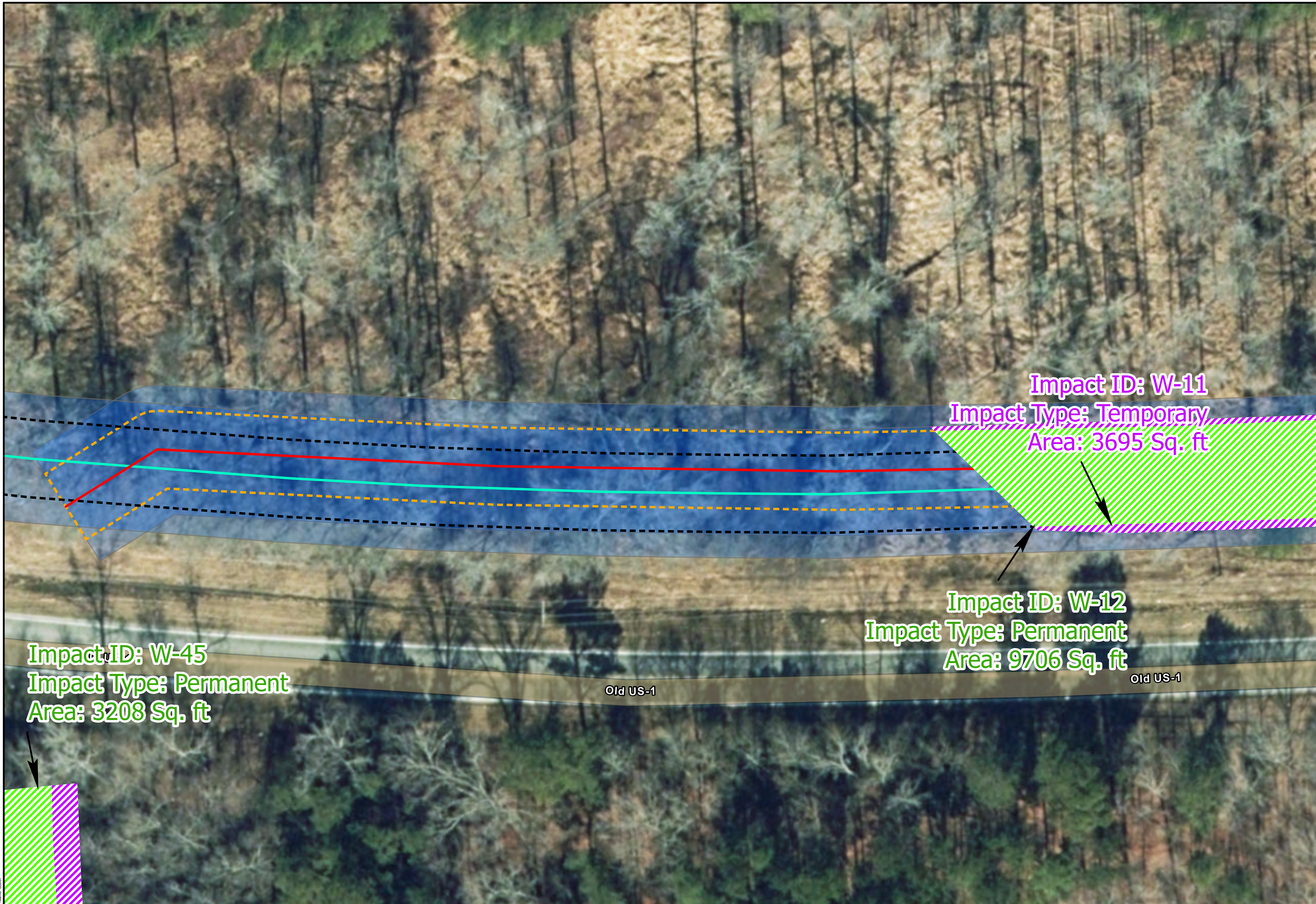

SANFORD NORTH CAROLINA
FREESE NICHOLS

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SCALE IN FEET

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Phase I Water Line Permanent Access Corridor
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CITY OF SANFORD
SANFORD-TIP
PHASE I SEWER LINE

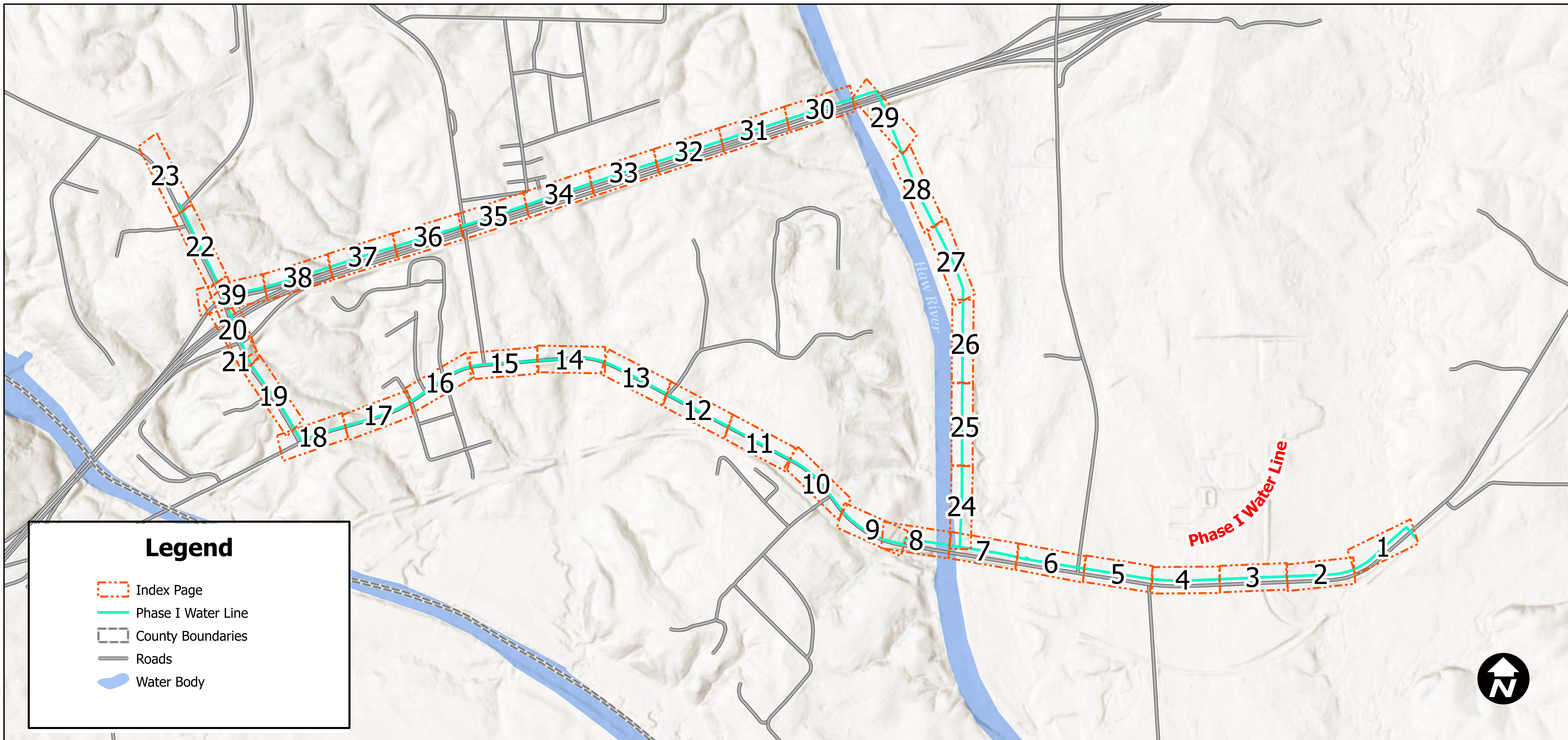
CITY OF SANFORD

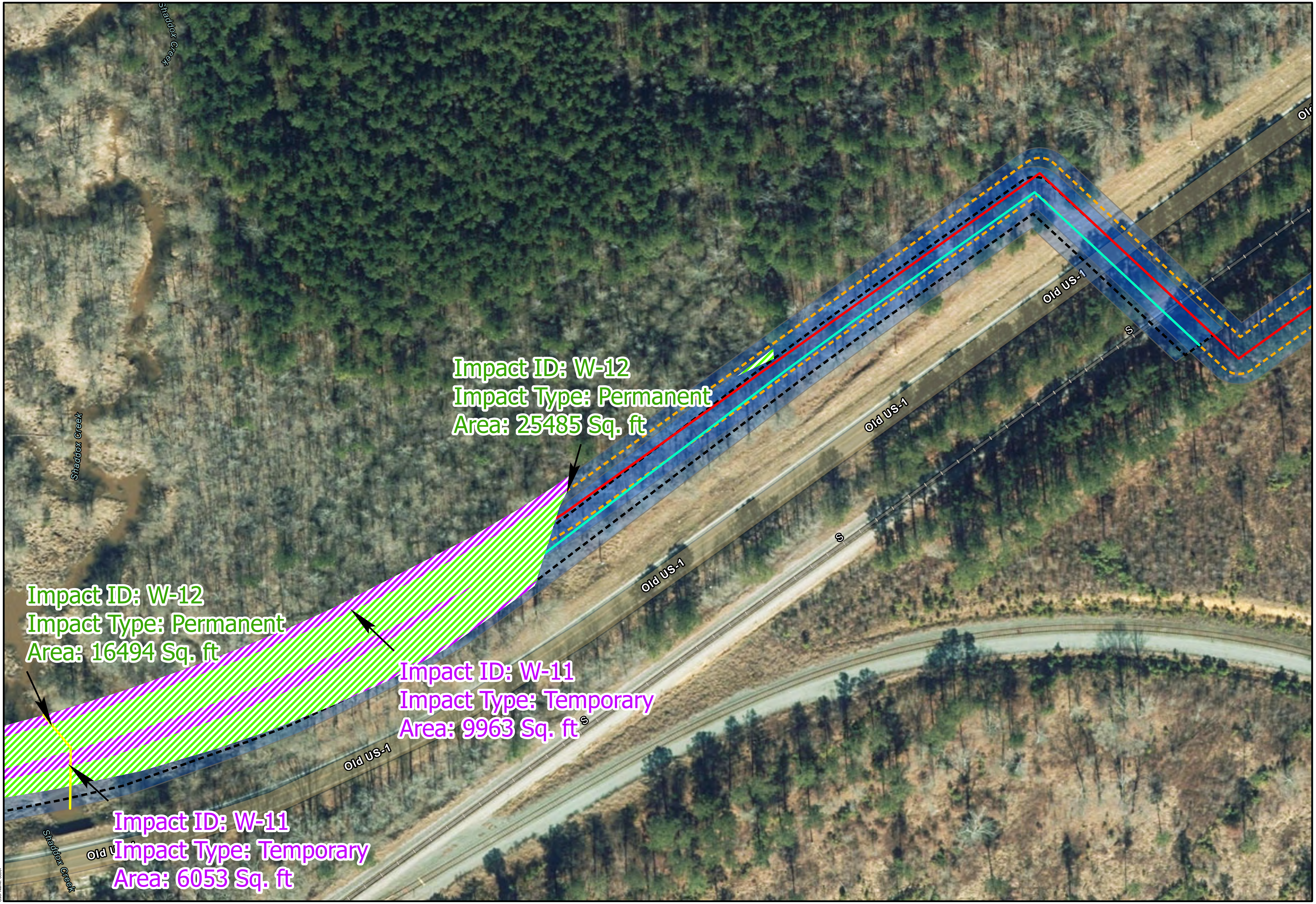
SANFORD - TIP WATER AND SEWER IMPROVEMENTS

PHASE I WATER LINE WOTUS IMPACTS

SANFORD NORTH CAROLINA

FREESE AND NICHOLS





SANFORD NORTH CAROLINA

FREESE NICHOLS

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SCALE IN FEET

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Permanent Impacts
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Phase I Sewer Permanent Access Corridor

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SANFORD-TIP
PHASE I WATER LINE

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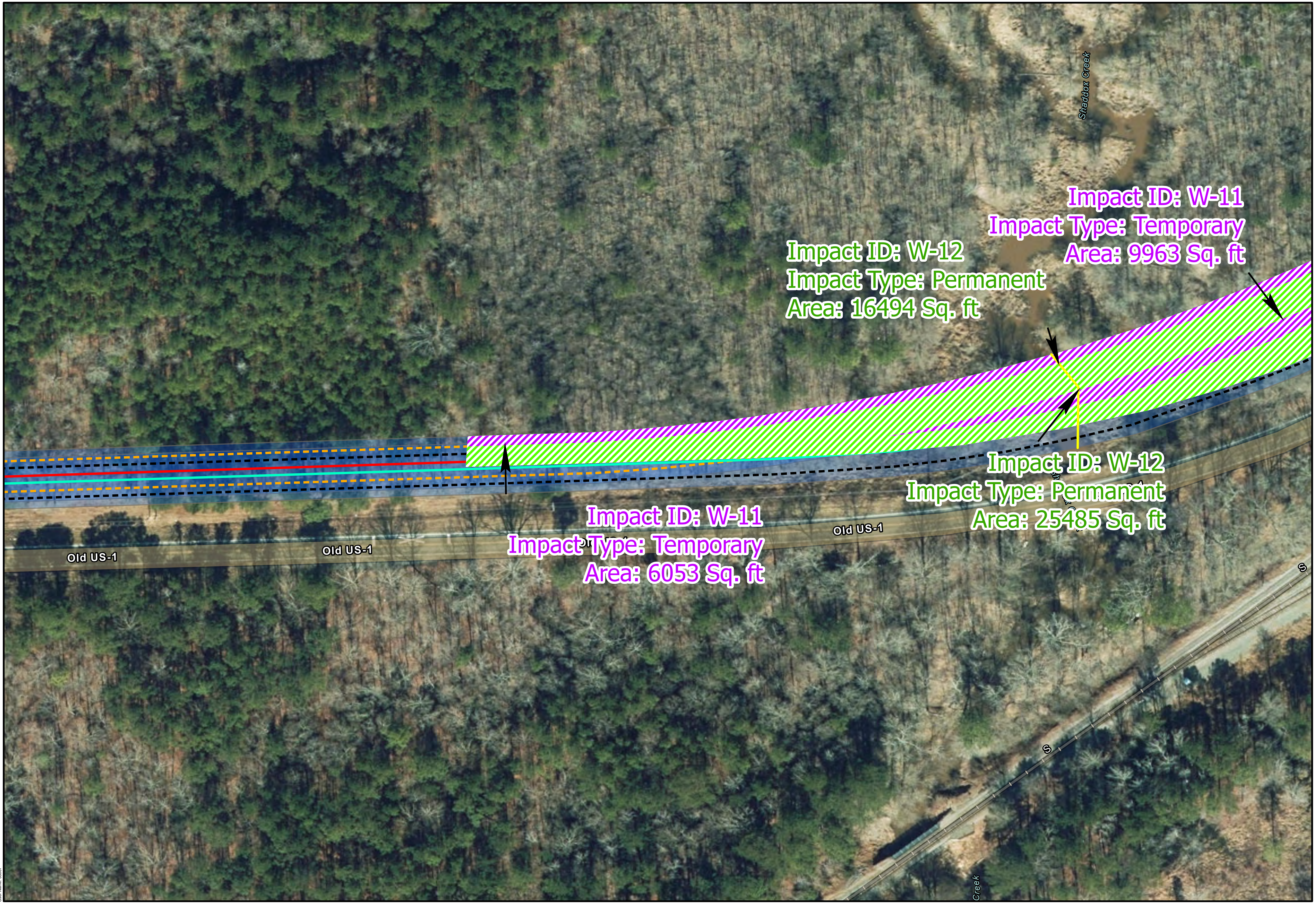

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FREESE NICHOLS

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SCALE IN FEET

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PHASE I WATER LINE

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SANFORD NORTH CAROLINA

FREESE NICHOLS

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SCALE IN FEET

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Phase 1 Sewer Line

Temporary Construction Easement

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Phase I Sewer Permanent Access Corridor

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Permanent Impacts

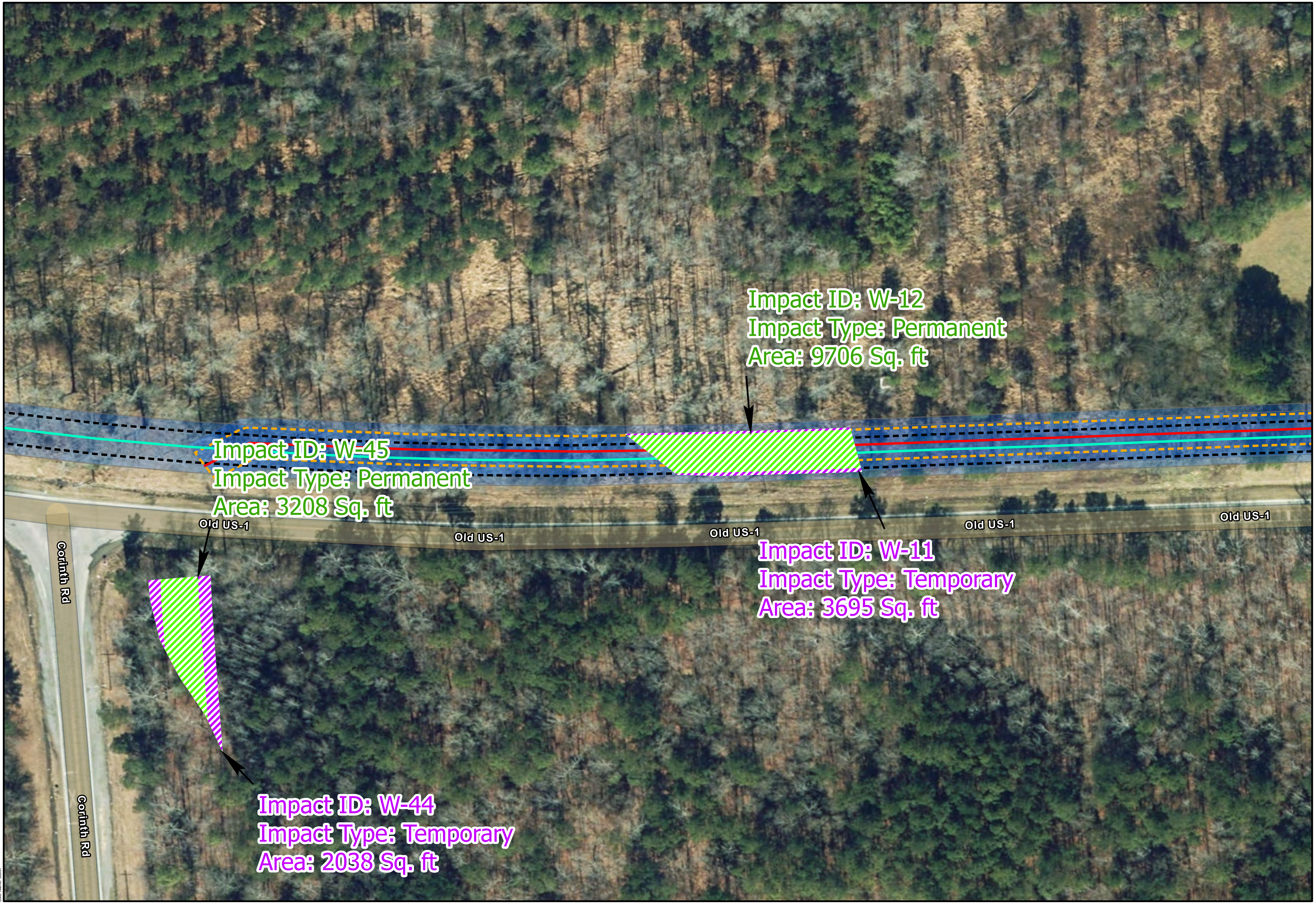
Temporary Impacts

Phase I Water Line

CITY OF SANFORD

SANFORD-TIP

PHASE I WATER LINE



SCALE IN FEET
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Phase I Water Permanent Access Corridor
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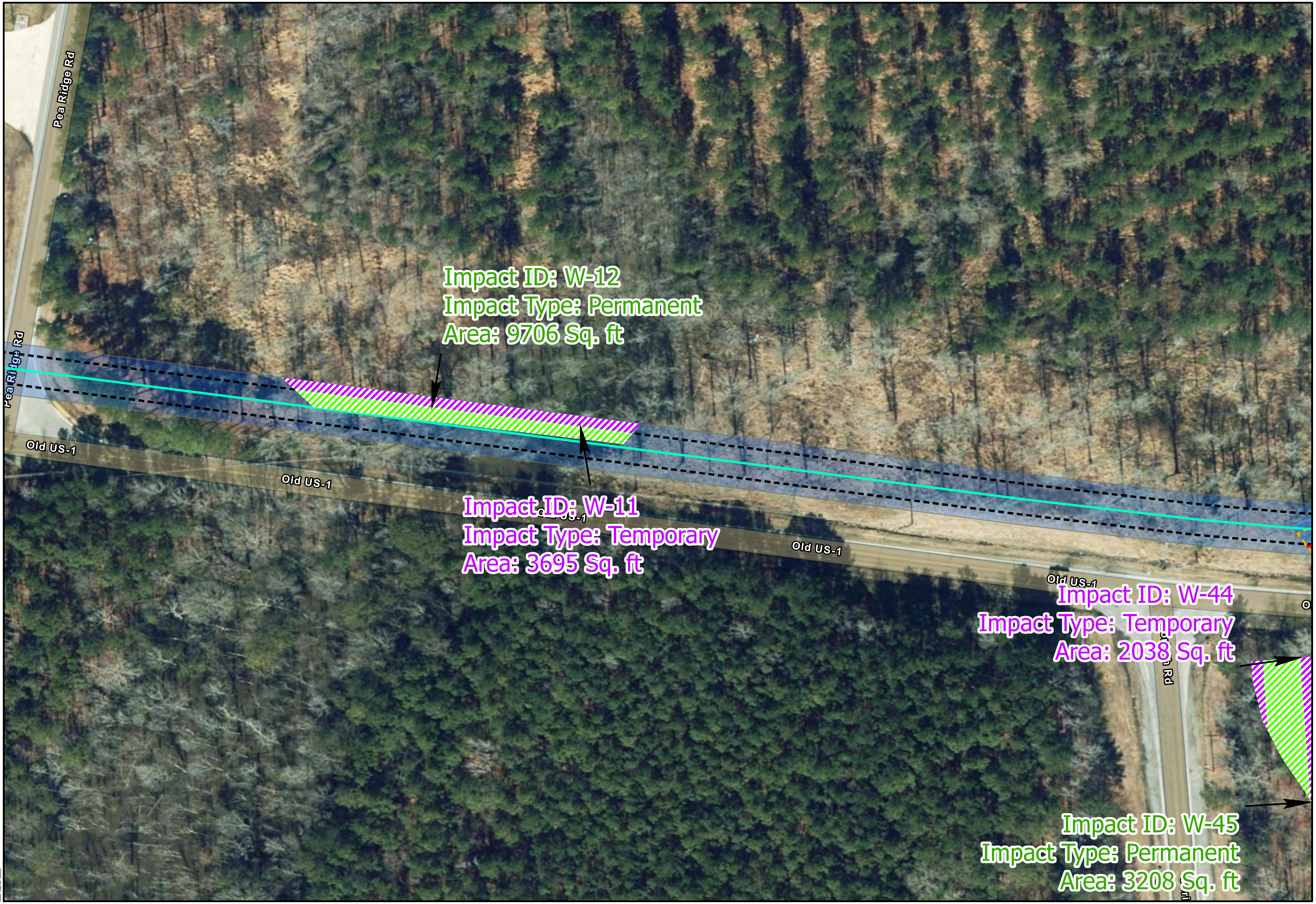
SANFORD-TIP
PHASE I WATER LINE



SANFORD NORTH CAROLINA
FREESE NICHOLS

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SCALE IN FEET

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Phase 1 Sewer Line
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Phase I Sewer Permanent Access Corridor
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SANFORD-TIP
PHASE I WATER LINE

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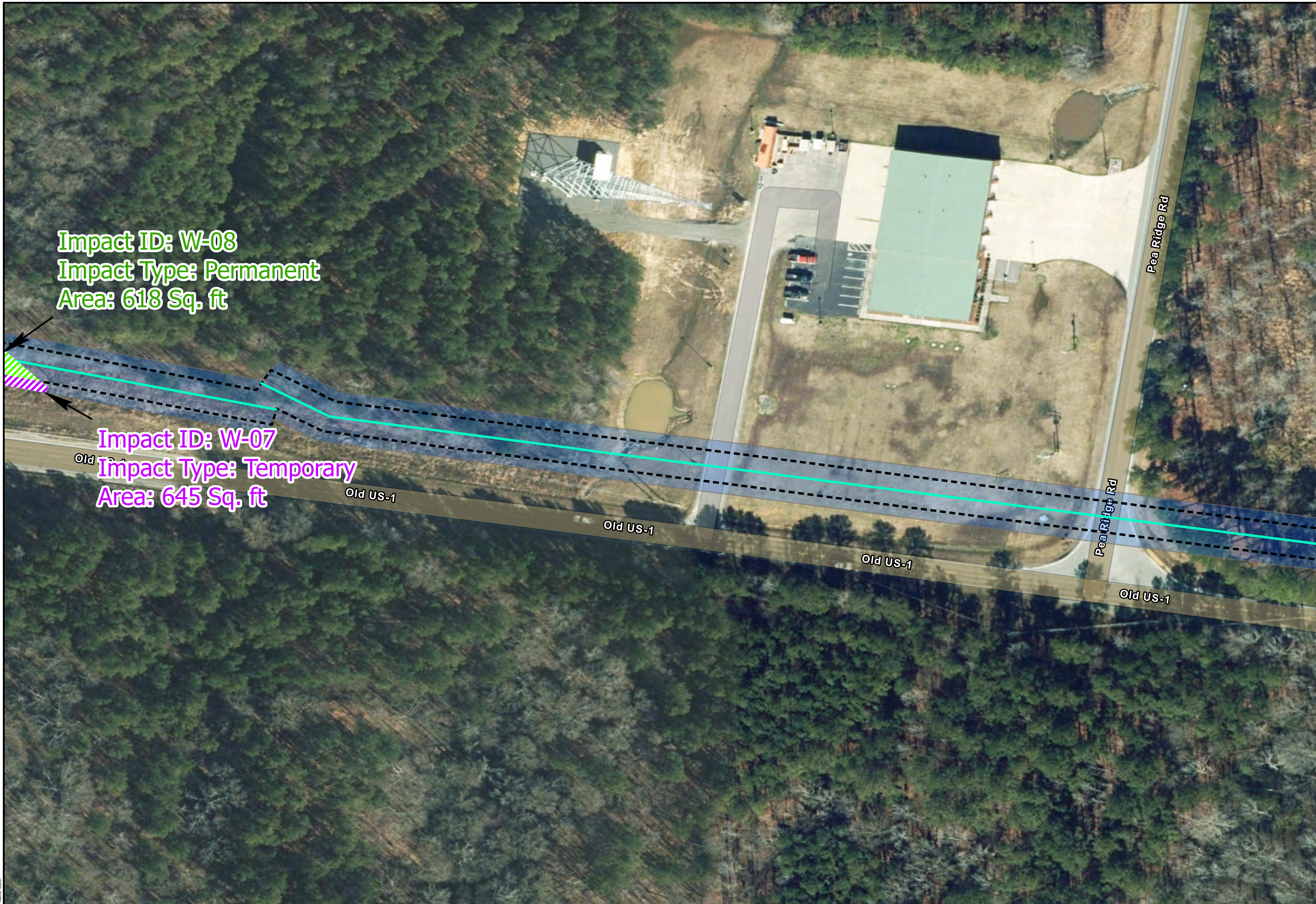

SANFORD NORTH CAROLINA
FREESE NICHOLS

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SCALE IN FEET

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- Phase 1 Sewer Line
- Temporary Construction Easement
- Phase I Water Permanent Access Corridor
- Phase I Sewer Permanent Access Corridor
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- Stream Impact Area
- Permanent Impacts
- Temporary Impacts
- Phase I Water Line

CITY OF SANFORD
SANFORD-TIP
PHASE I WATER LINE

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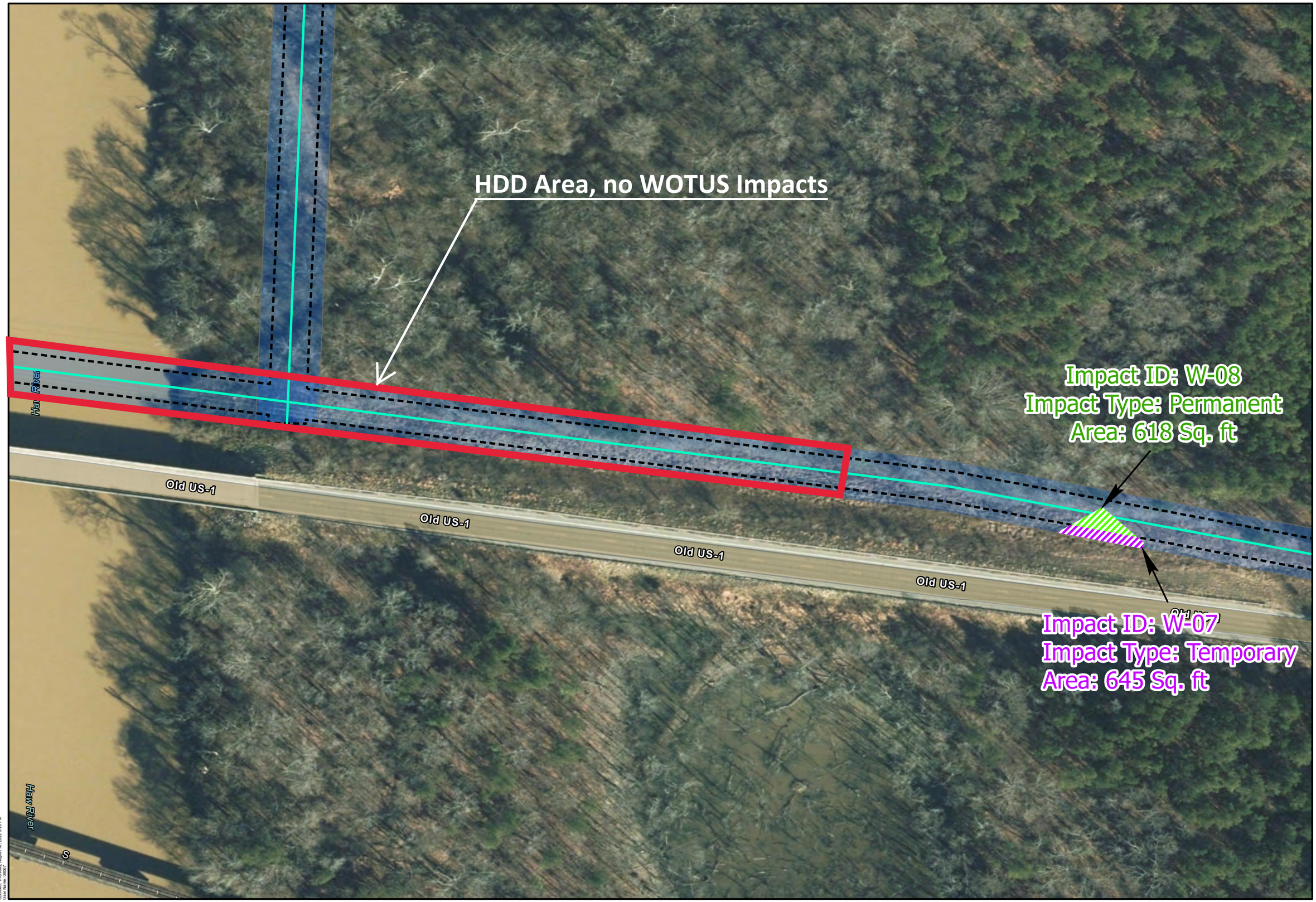

SANFORD | FREESE NICHOLS

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SCALE IN FEET

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Phase 1 Sewer Line
Temporary Construction Easement
Phase 1 Water Permanent Access Corridor
Phase 1 Sewer Permanent Access Corridor

Streams
Stream Impact Area
Permanent Impacts
Temporary Impacts
Phase I Water Line

CITY OF SANFORD
SANFORD-TIP
PHASE I WATER LINE

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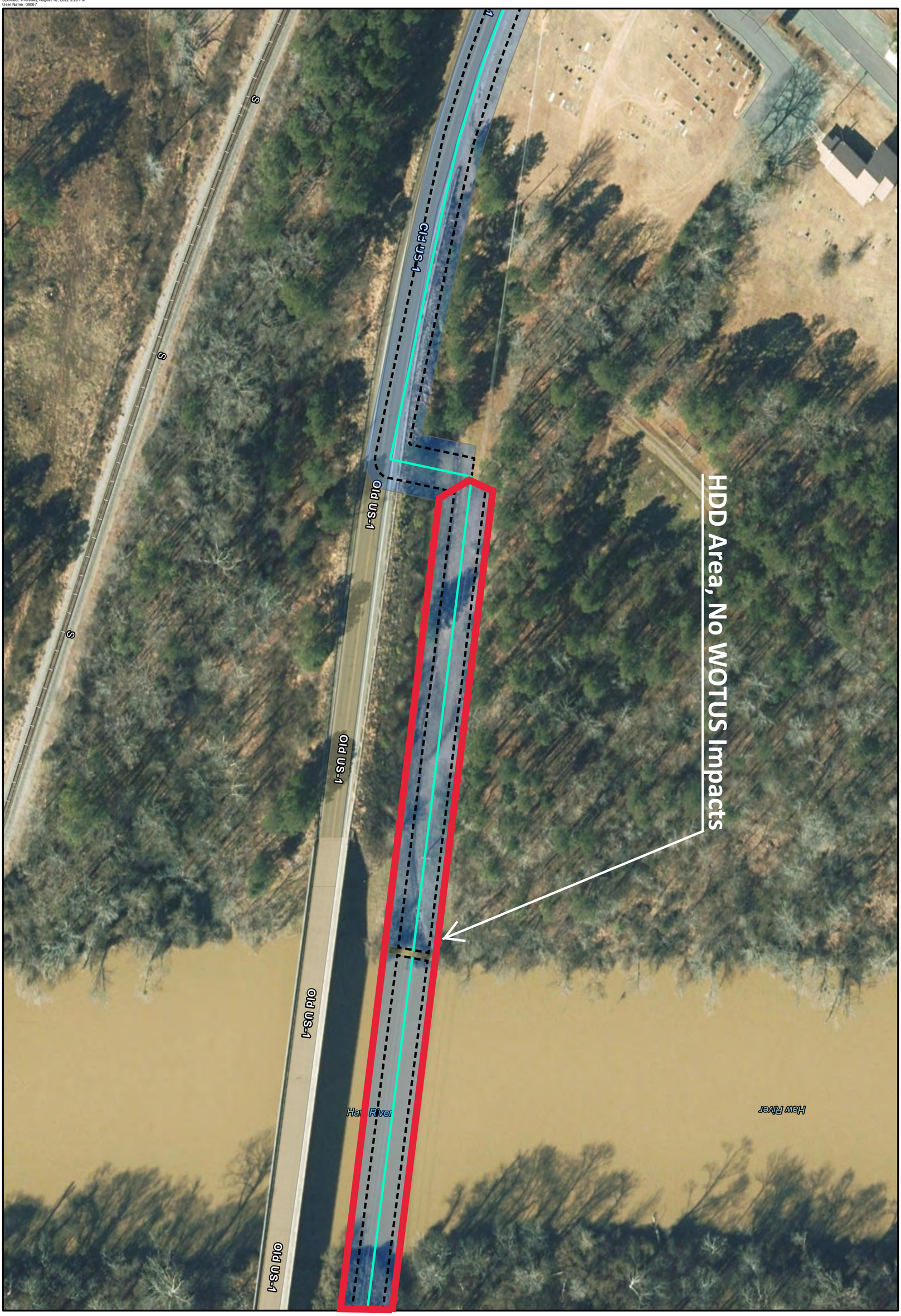

CITY OF SANFORD

SANFORD-TIP
PHASE I WATER LINE

- Streams
- Stream Impact Area
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- Phase 1 Sewer Line
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SCALE IN FEET

SANFORD NORTH CAROLINA
FREESE NICHOLS

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SCALE IN FEET

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Phase 1 Sewer Line
Temporary Construction Easement
Phase I Water Permanent Access Corridor
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Streams
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SANFORD-TIP

PHASE I WATER LINE

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SANFORD NORTH CAROLINA

FREESE NICHOLS

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SCALE IN FEET

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Phase 1 Sewer Line
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SANFORD-TIP
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SANFORD NORTH CAROLINA

FREESE NICHOLS

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CITY OF SANFORD

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SCALE IN FEET

SANFORD NORTH CAROLINA
FREESE NICHOLS

SANFORD NORTH CAROLINA

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SCALE IN FEET

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Phase I Water Line

CITY OF SANFORD

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SANFORD NORTH CAROLINA

FREESE NICHOLS

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SCALE IN FEET

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SCALE IN FEET

SANFORD NORTH CAROLINA
FREESE NICHOLS

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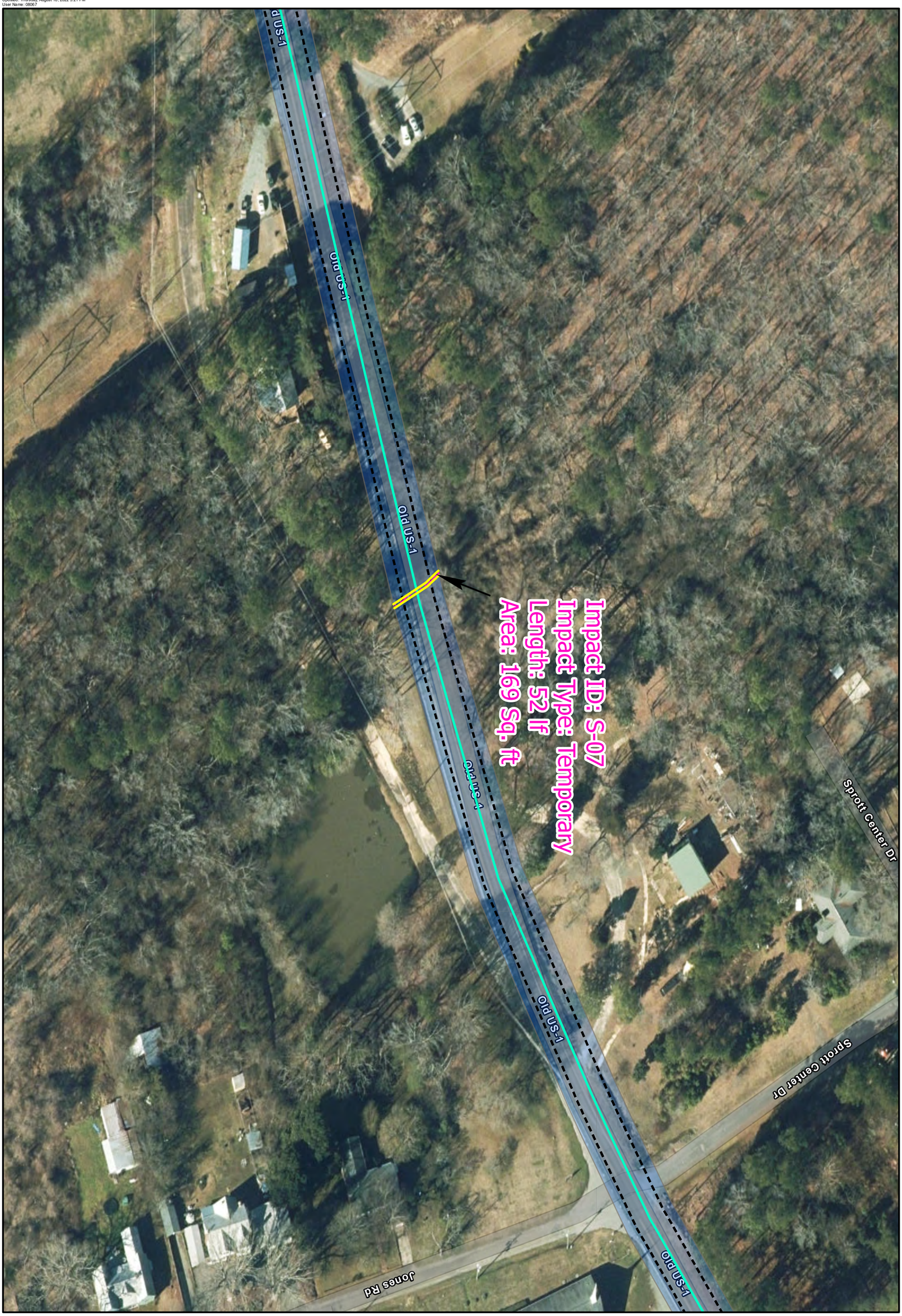

CITY OF SANFORD

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SCALE IN FEET

SANFORD NORTH CAROLINA
FREESE NICHOLS

SANFORD NORTH CAROLINA
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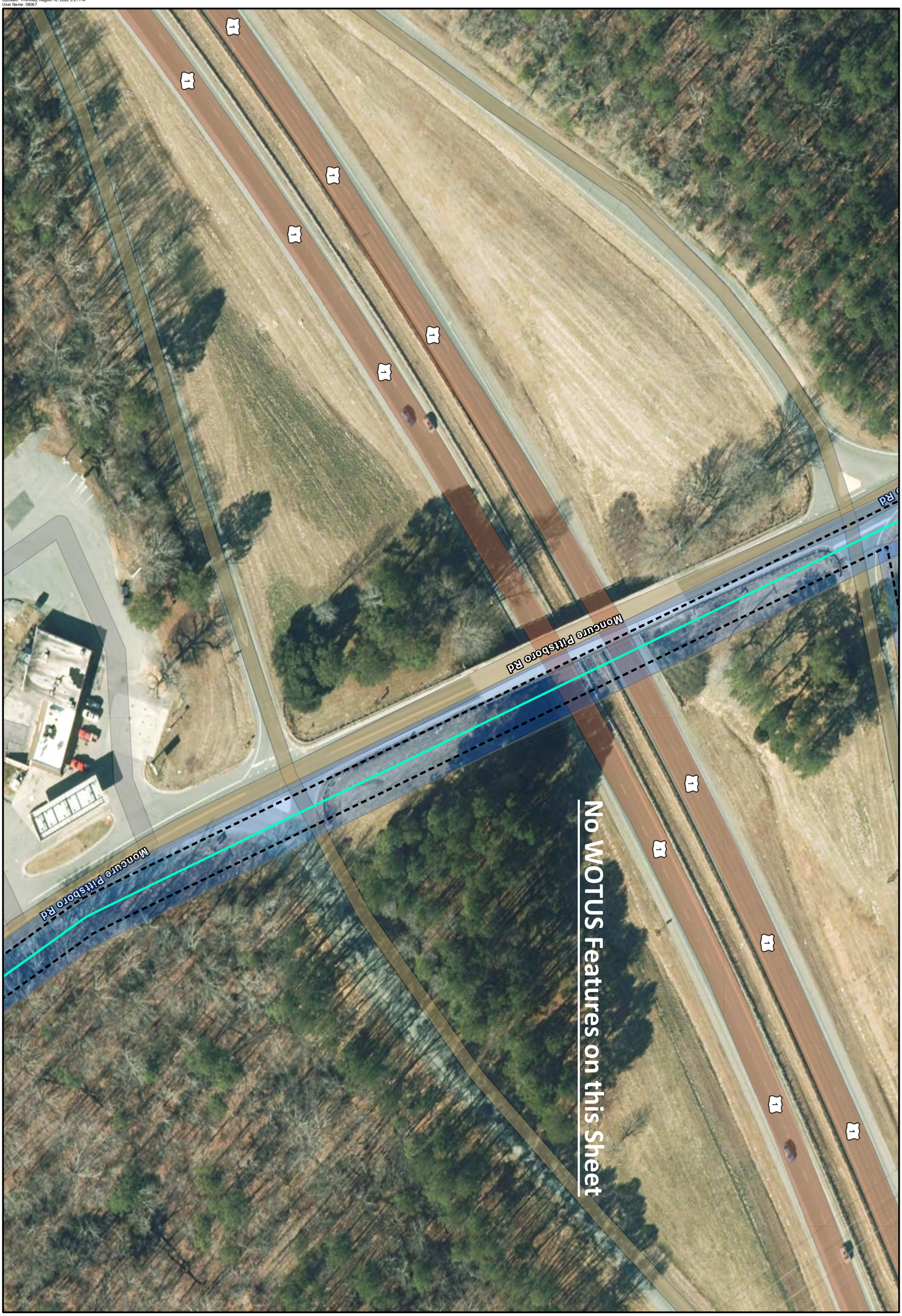

CITY OF SANFORD

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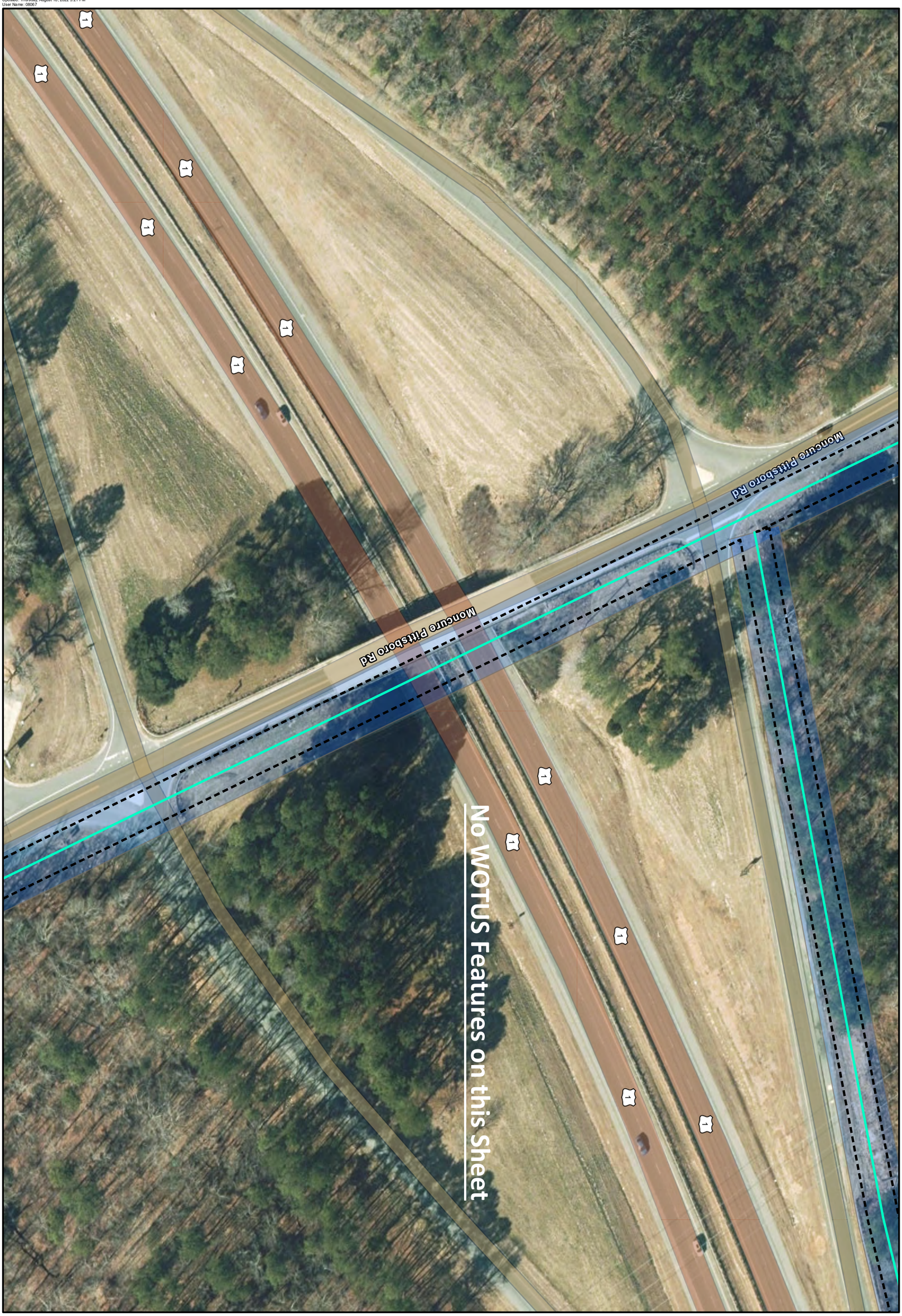

CITY OF SANFORD

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SCALE IN FEET

SANFORD NORTH CAROLINA
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SANFORD NORTH CAROLINA

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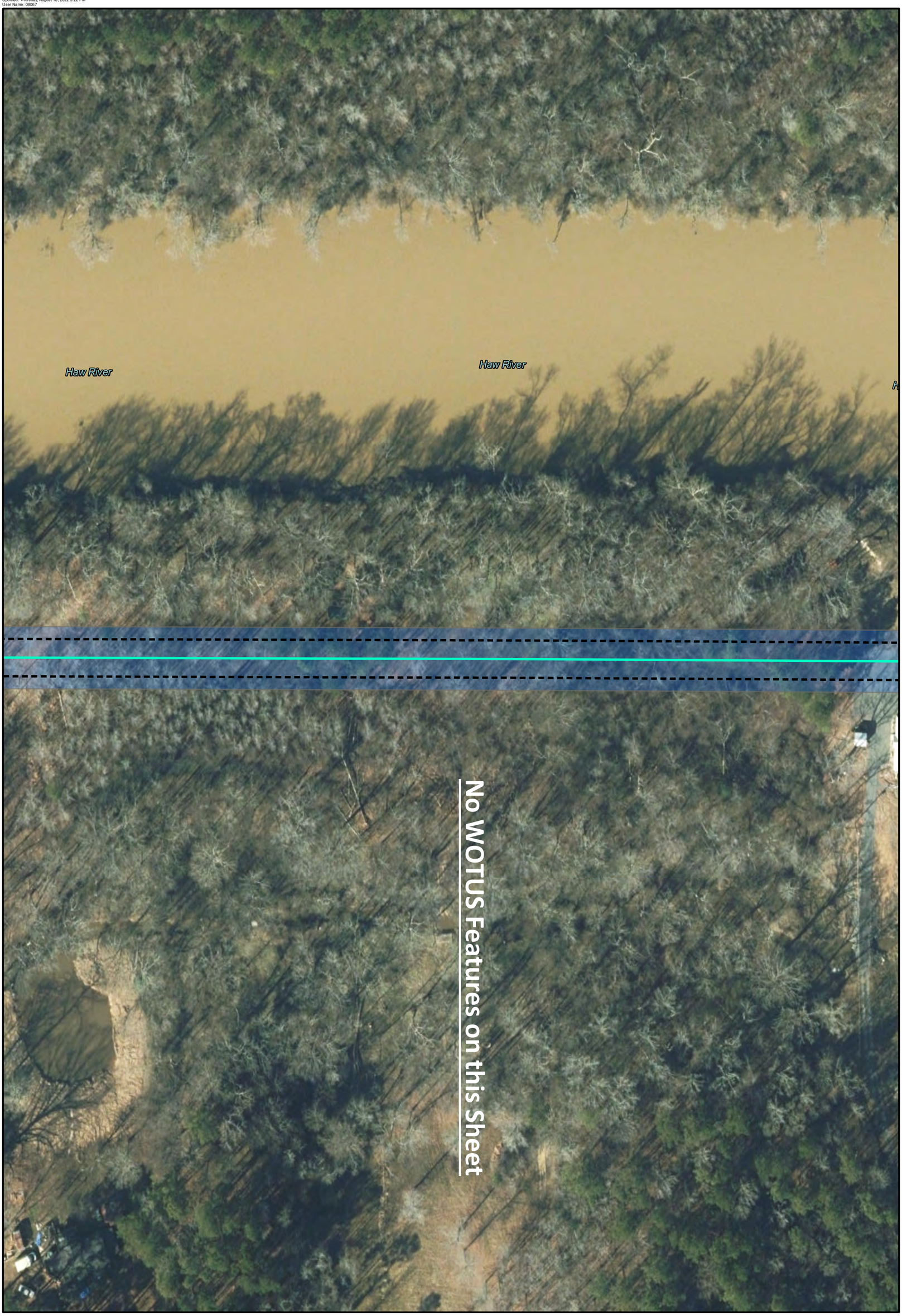

CITY OF SANFORD

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SCALE IN FEET

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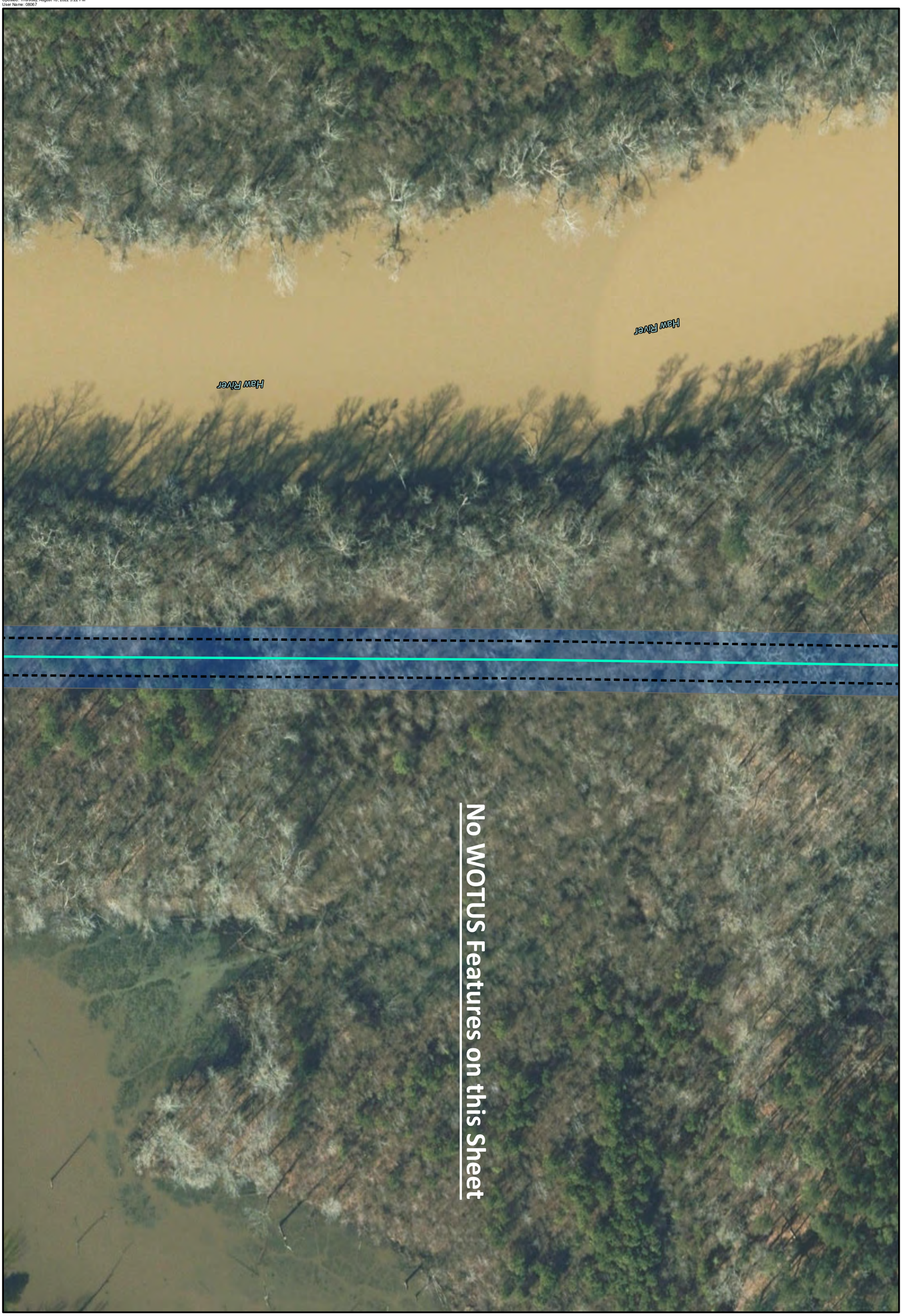

CITY OF SANFORD

SANFORD-TIP
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SCALE IN FEET

SANFORD NORTH CAROLINA
FREESE NICHOLS

SANFORD NORTH CAROLINA

FREESE NICHOLS

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SCALE IN FEET

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- Phase 1 Sewer Line
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CITY OF SANFORD
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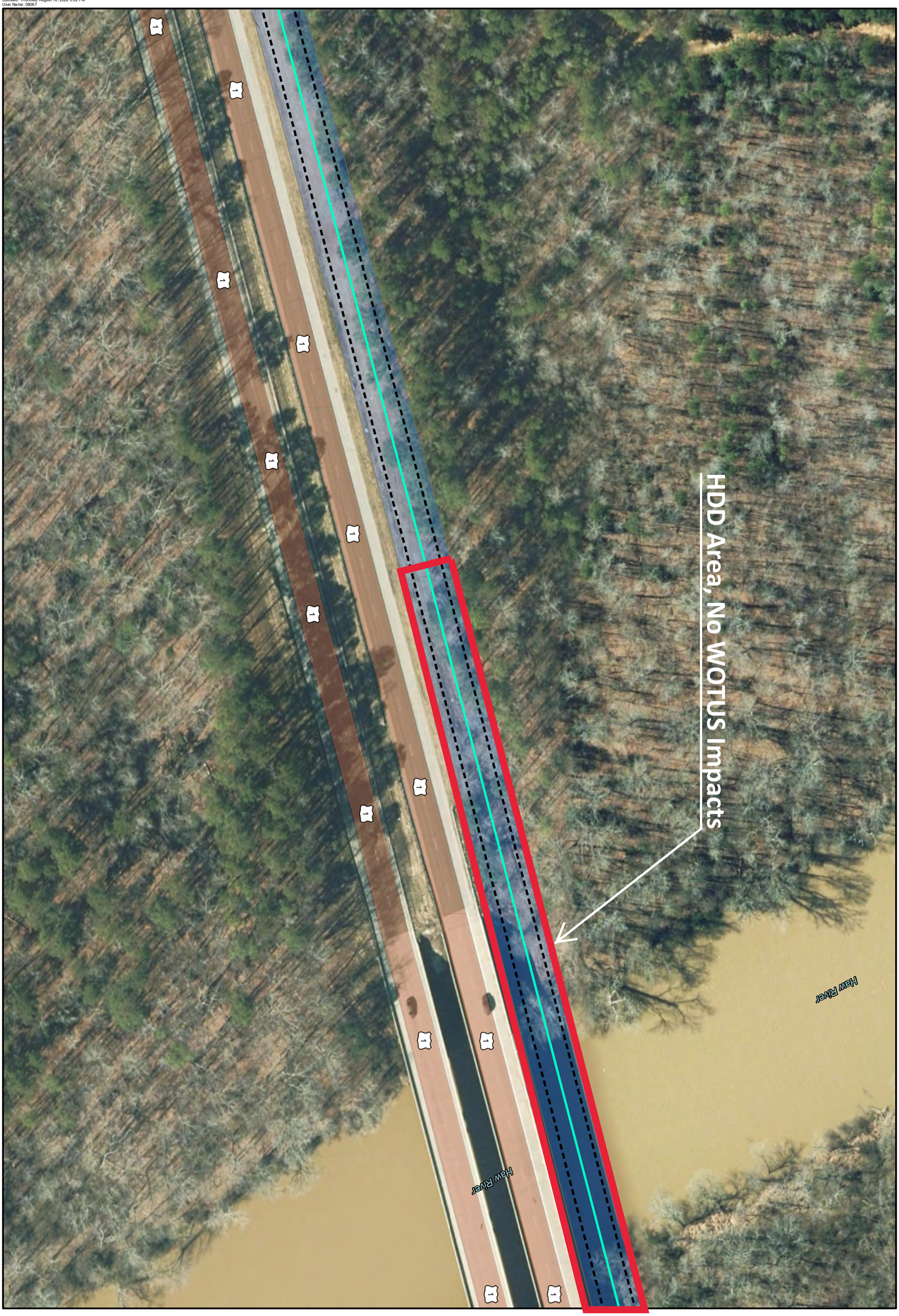

CITY OF SANFORD

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0 50 100
SCALE IN FEET

SANFORD NORTH CAROLINA
FREESE NICHOLS

Impact ID: S-11
Impact Type: Temporary
Length: 50 lf
Area: 186 Sq. ft

Bryan St
New Hope MHP
Peg St
Andy St
Pam St
Pam St

SANFORD
FREESE NICHOLS

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SCALE IN FEET

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Phase 1 Sewer Line
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CITY OF SANFORD

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SCALE IN FEET

SANFORD NORTH CAROLINA
FREESE NICHOLS

SANFORD NORTH CAROLINA

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Phase 1 Sewer Line

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CITY OF SANFORD

SANFORD-TIP

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SCALE IN FEET

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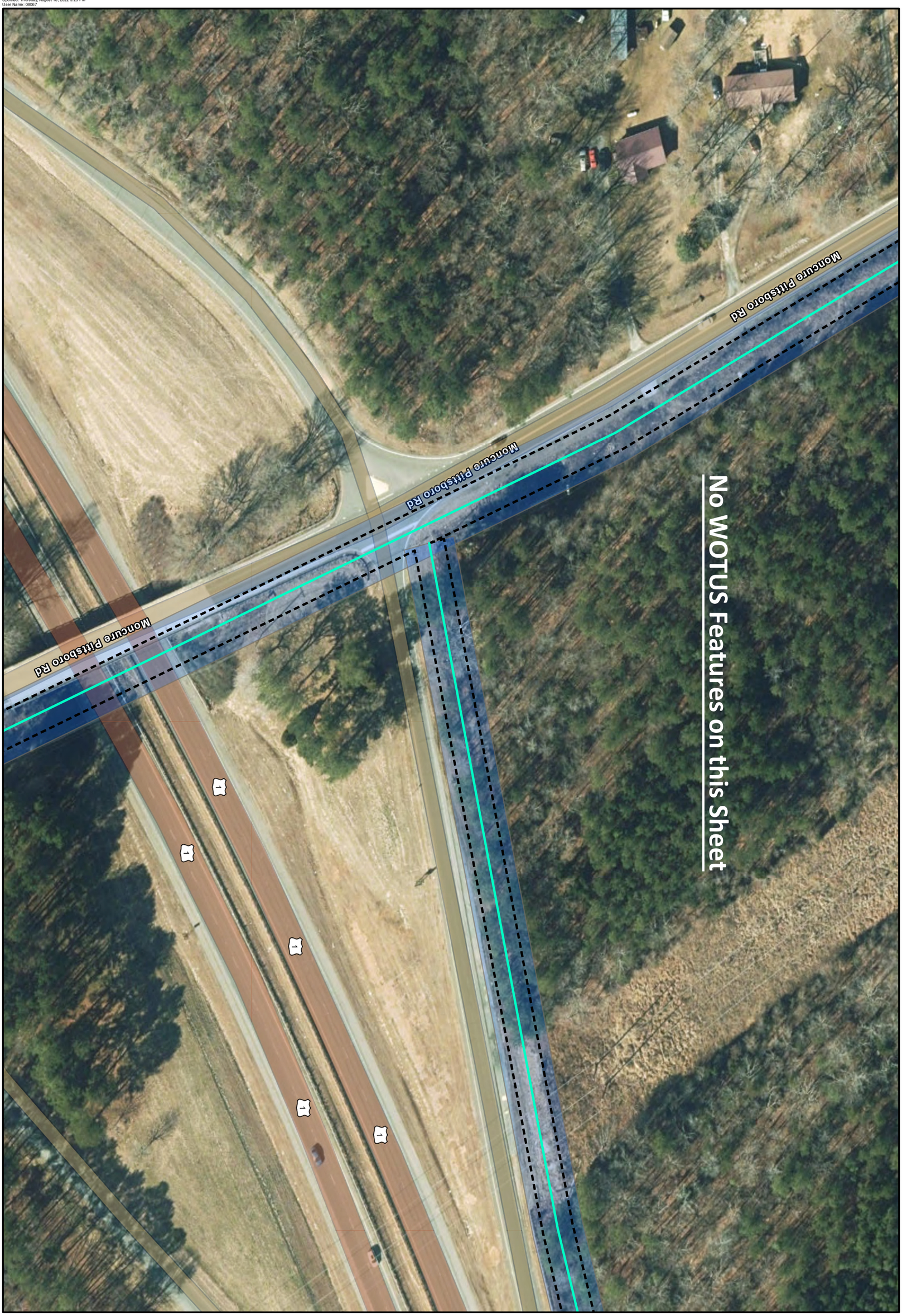

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SCALE IN FEET

SANFORD NORTH CAROLINA
FREESE NICHOLS

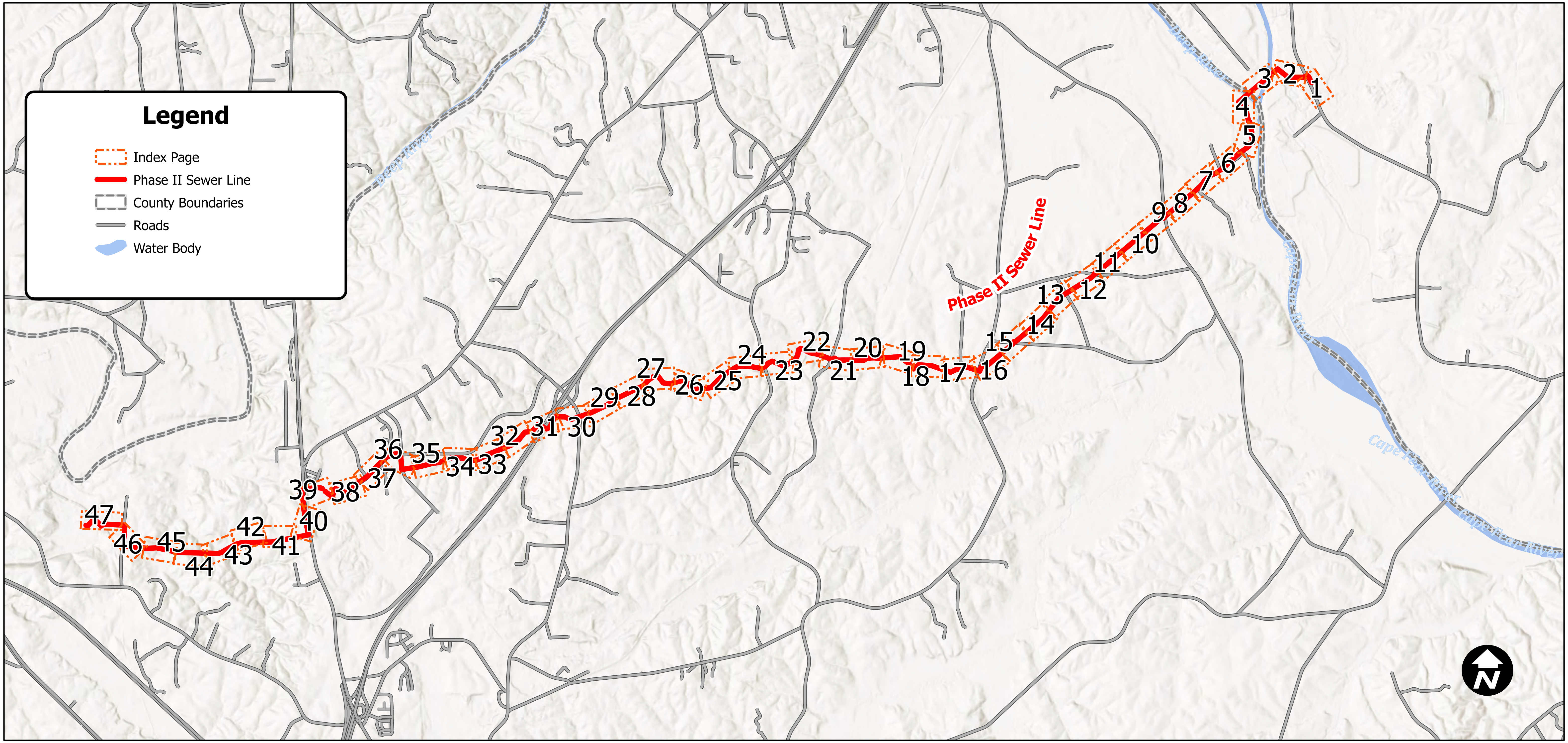
CITY OF SANFORD

SANFORD - TIP WATER AND SEWER IMPROVEMENTS

PHASE II SEWER LINE WOTUS IMPACTS

SANFORD NORTH CAROLINA

FREESE AND NICHOLS



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SANFORD-TIP
PHASE II SEWER LINE

- Streams
- Stream Impact Area
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- Phase II Sewer Line
- Phase II Water Line
- Temporary Construction Easement
- Phase II Sewer Permanent Access Corridor
- Phase II Water Permanent Access Corridor

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SCALE IN FEET

SANFORD NORTH CAROLINA

FREESE NICHOLS

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SCALE IN FEET

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Phase II Water Line
Temporary Construction Easement
Phase II Sewer Permanent Access Corridor
Phase II Water Permanent Access Corridor
Streams
Stream Impact Area
Permanent Impacts
Temporary Impacts
Phase II Sewer Line

CITY OF SANFORD
SANFORD-TIP
PHASE II SEWER LINE

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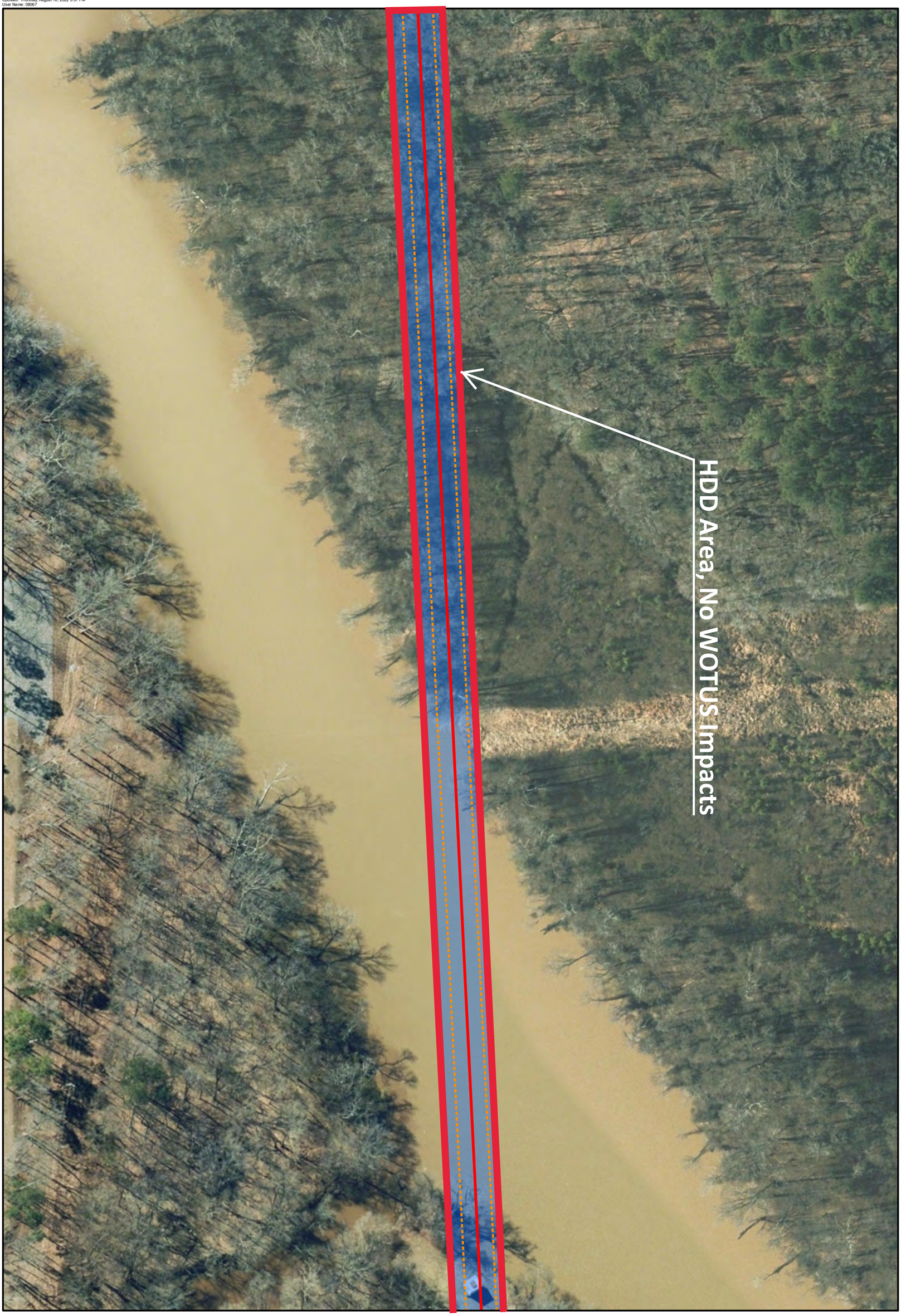

CITY OF SANFORD

SANFORD-TIP
PHASE II SEWER LINE

- Streams
- Stream Impact Area
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SCALE IN FEET

SANFORD NORTH CAROLINA

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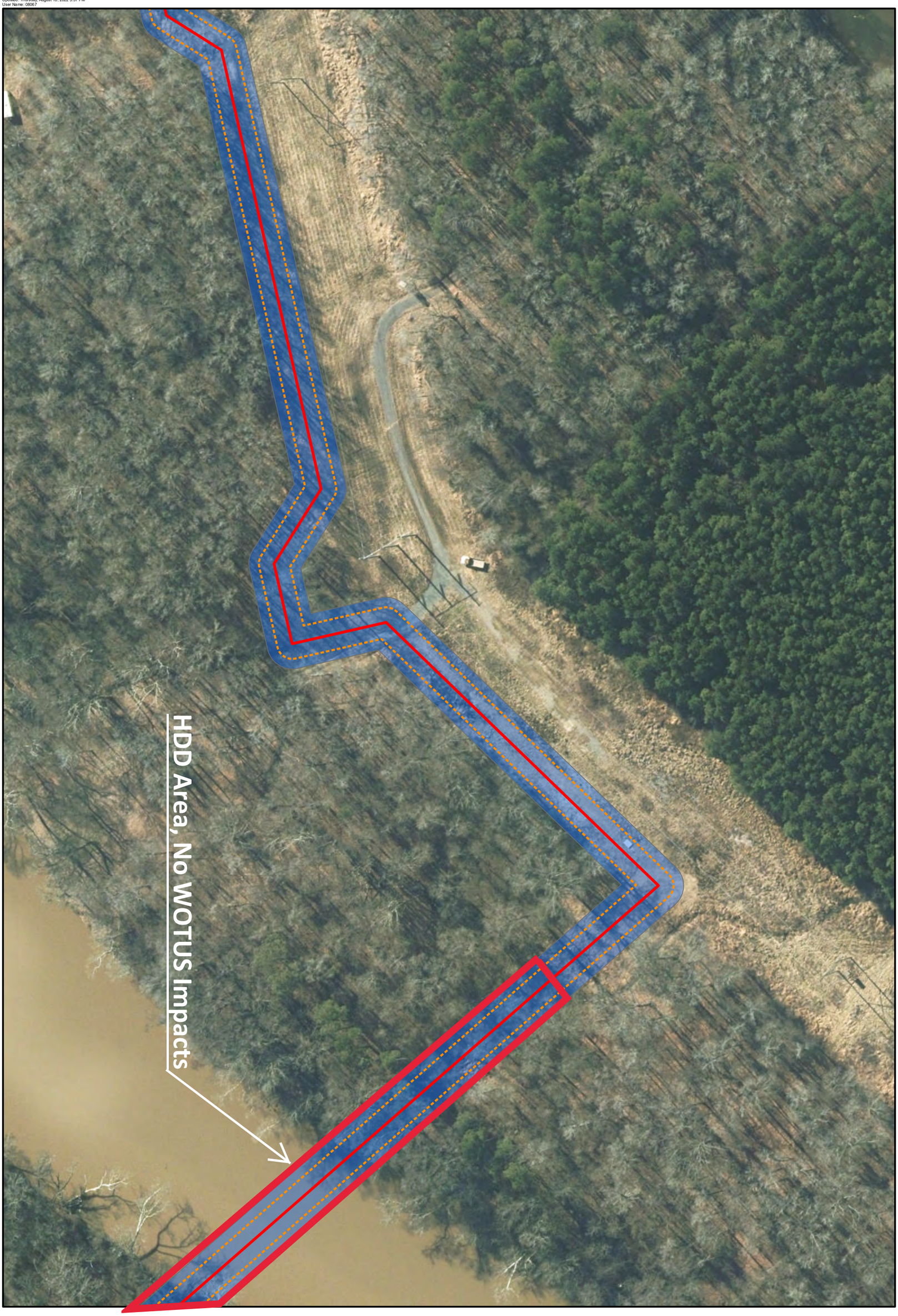

CITY OF SANFORD

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SCALE IN FEET

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CITY OF SANFORD

SANFORD-TIP
PHASE II SEWER LINE

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SCALE IN FEET

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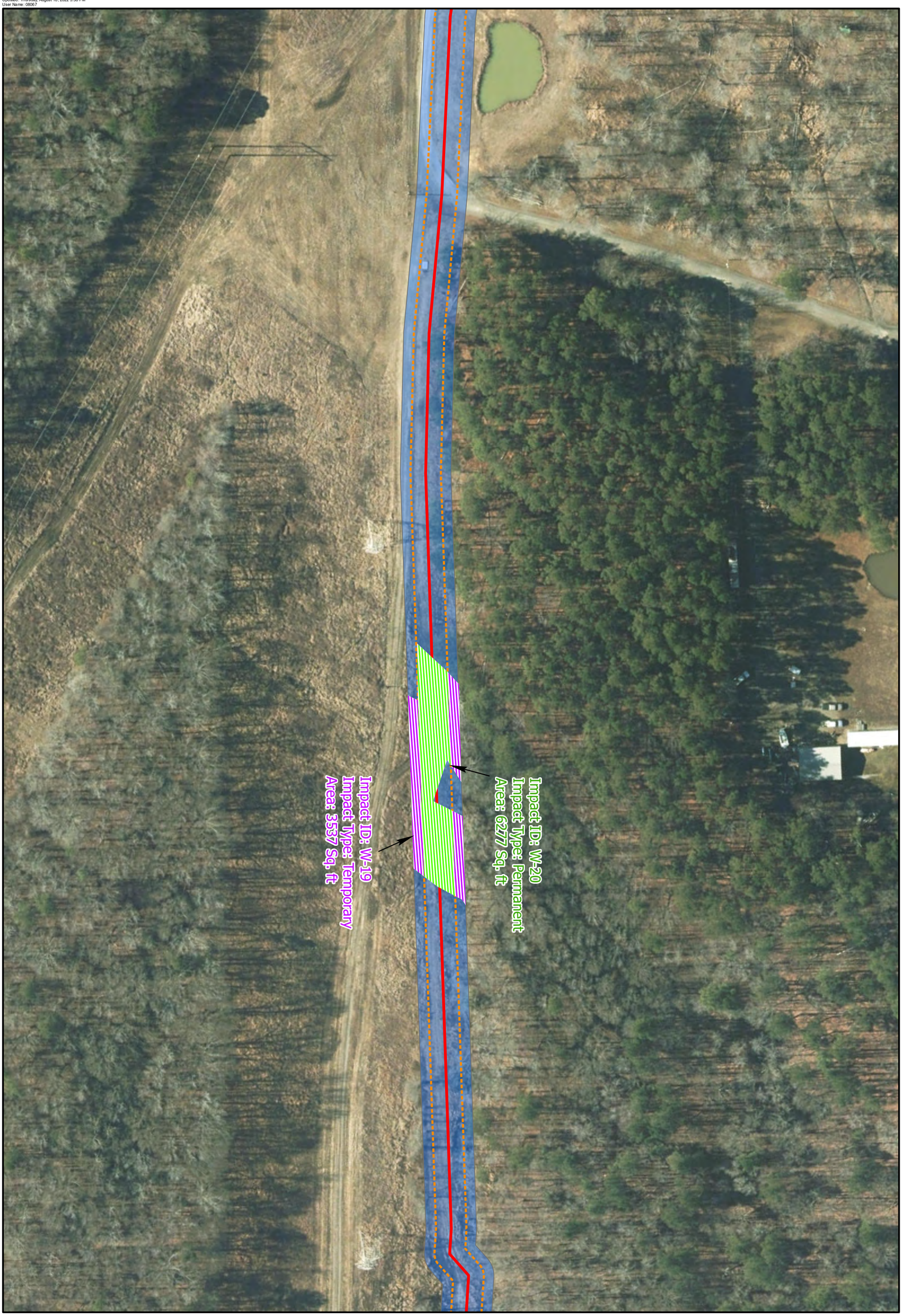

CITY OF SANFORD

SANFORD-TIP
PHASE II SEWER LINE

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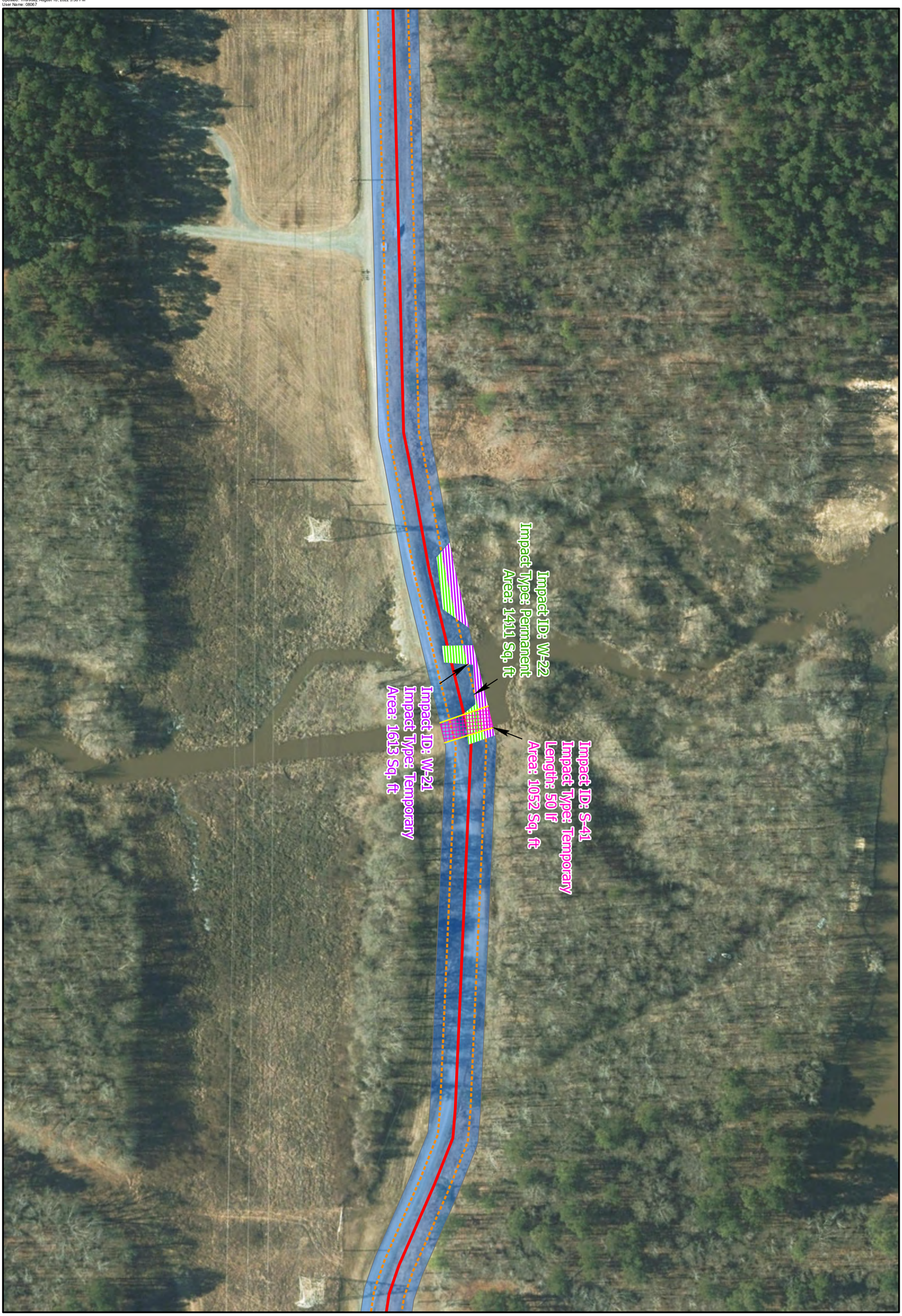

CITY OF SANFORD

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SANFORD NORTH CAROLINA

FREESE NICHOLS

SCALE IN FEET

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Phase II Water Line
Temporary Construction Easement
Phase II Sewer Permanent Access Corridor
Phase II Water Permanent Access Corridor
Streams
Stream Impact Area
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Phase II Sewer Line

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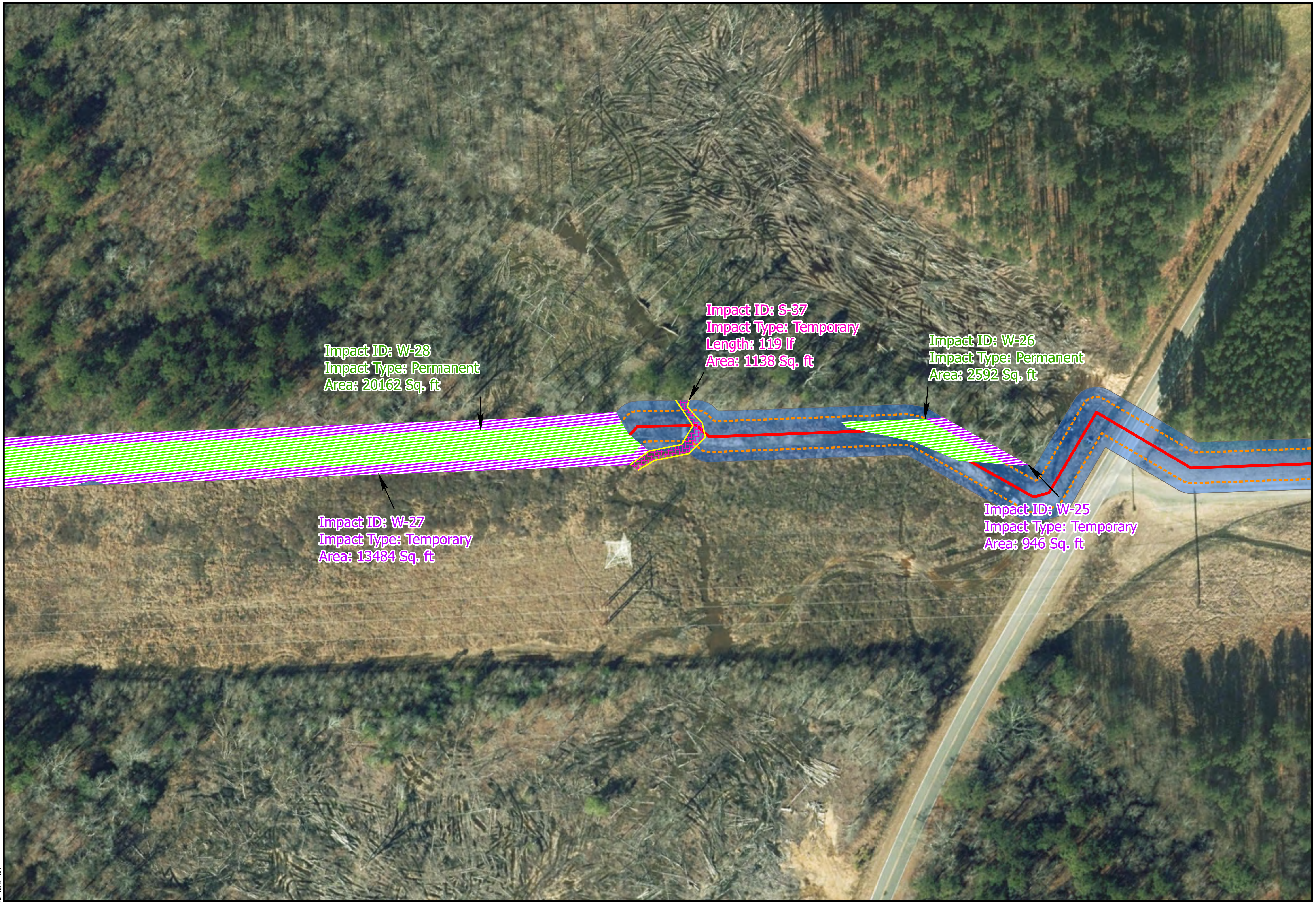

SANFORD NORTH CAROLINA

FREESE NICHOLS

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Temporary Construction Easement
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Streams
Stream Impact Area
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CITY OF SANFORD

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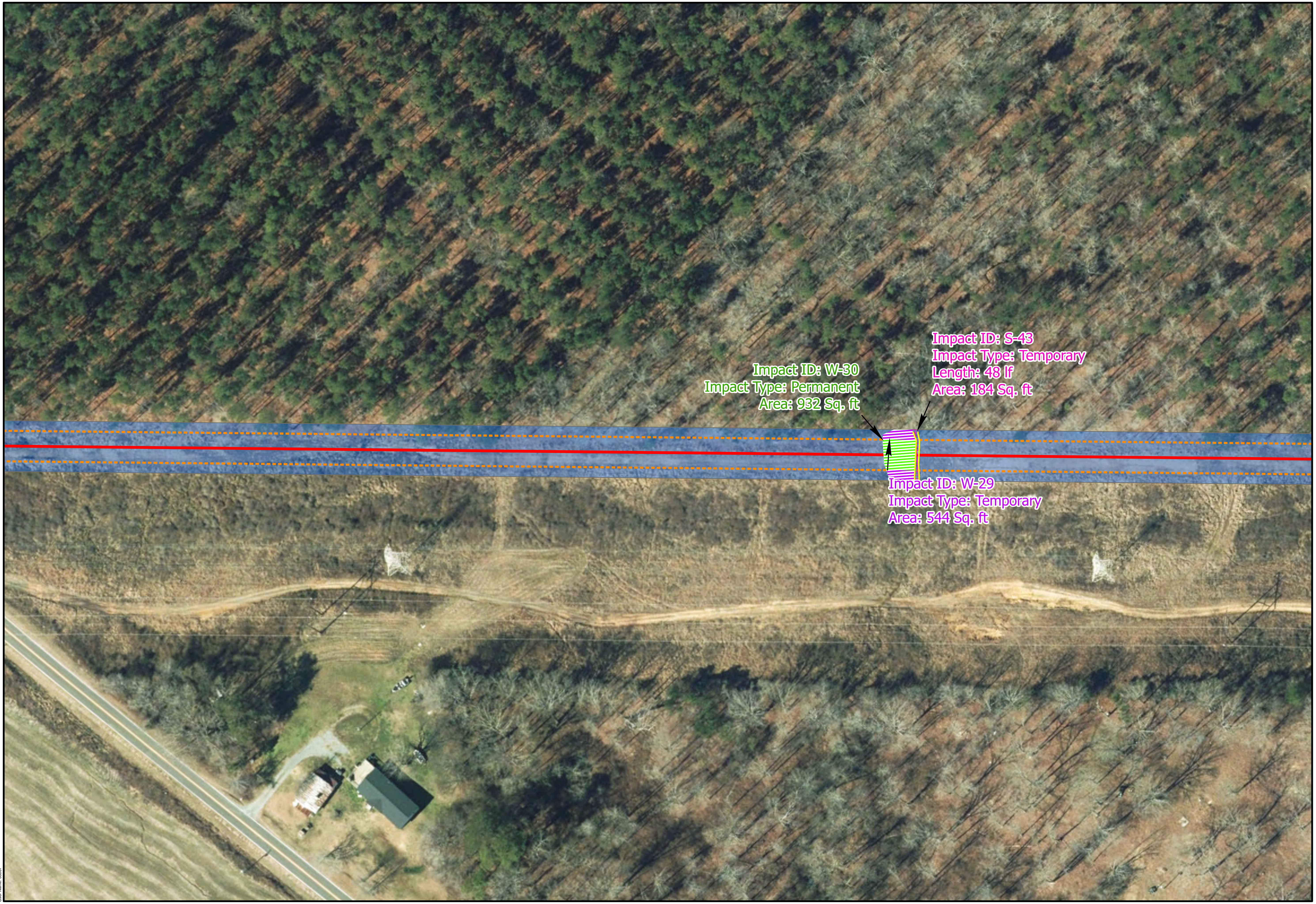
FREESE NICHOLS



SANFORD NORTH CAROLINA
FREESE NICHOLS

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SCALE IN FEET

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Phase II Water Line
Temporary Construction Easement
Phase II Sewer Permanent Access Corridor
Phase II Water Permanent Access Corridor
Streams
Stream Impact Area
Permanent Impacts
Temporary Impacts
Phase II Sewer Line

CITY OF SANFORD
SANFORD-TIP
PHASE II SEWER LINE

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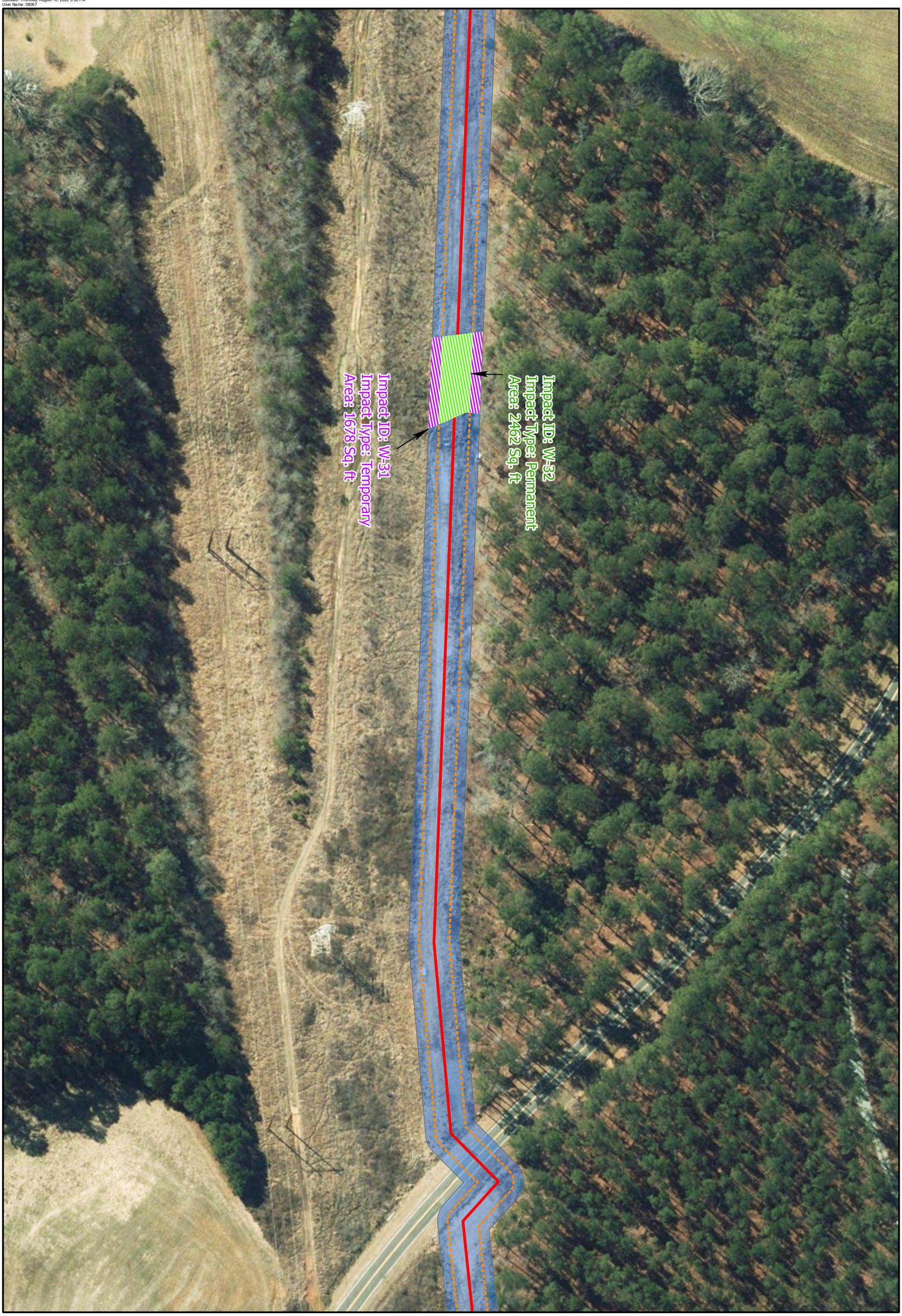

CITY OF SANFORD

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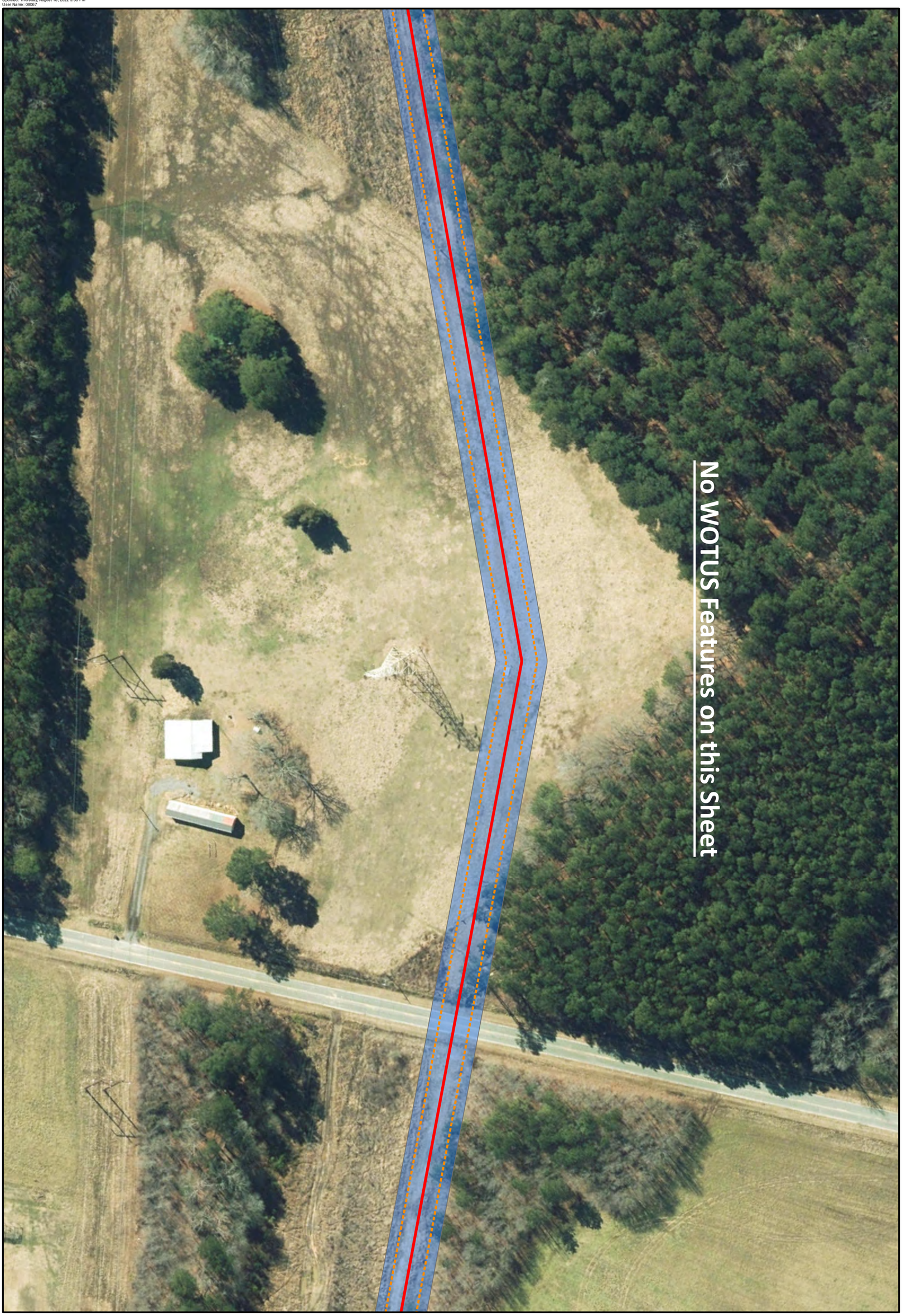

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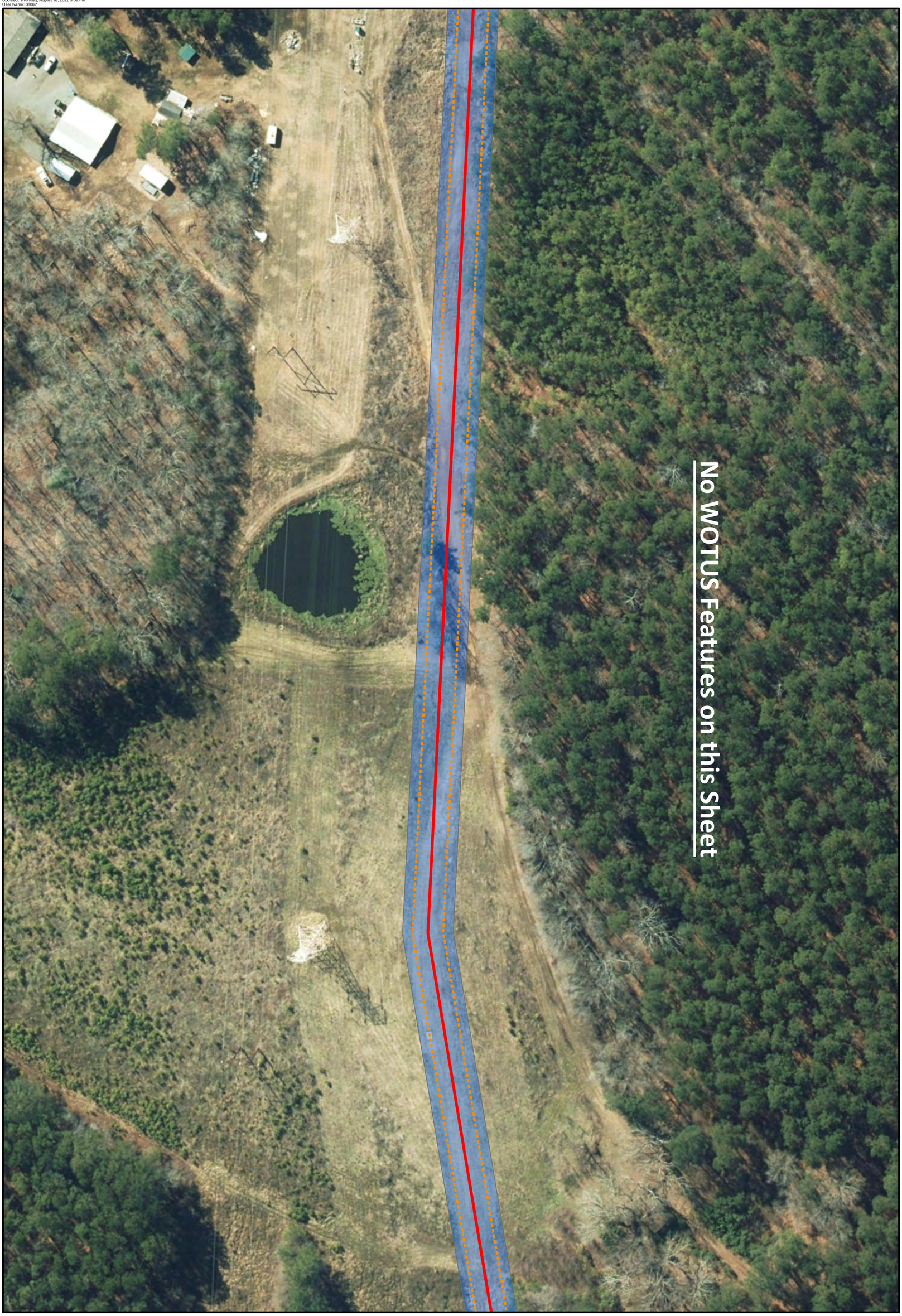

CITY OF SANFORD

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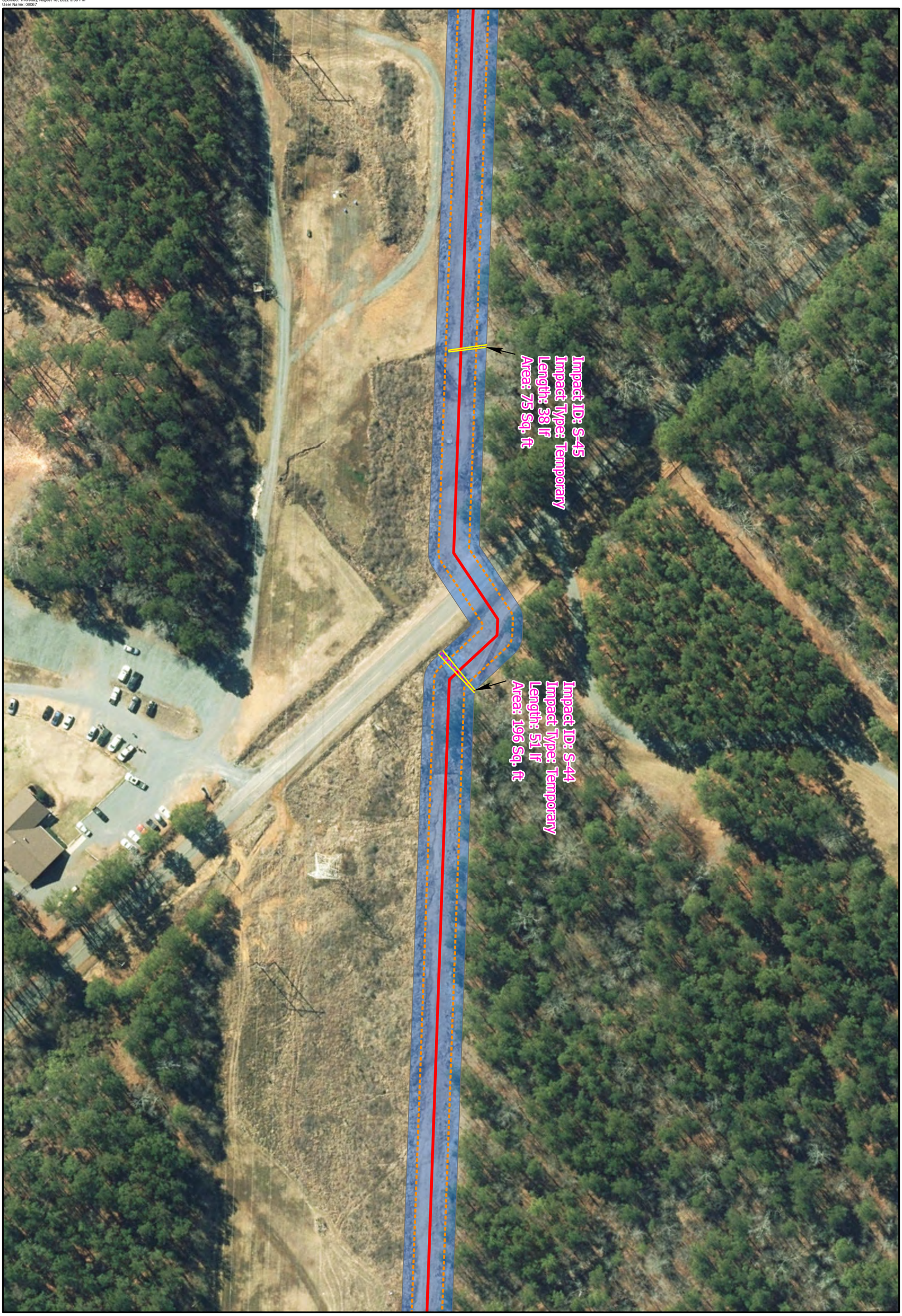

CITY OF SANFORD

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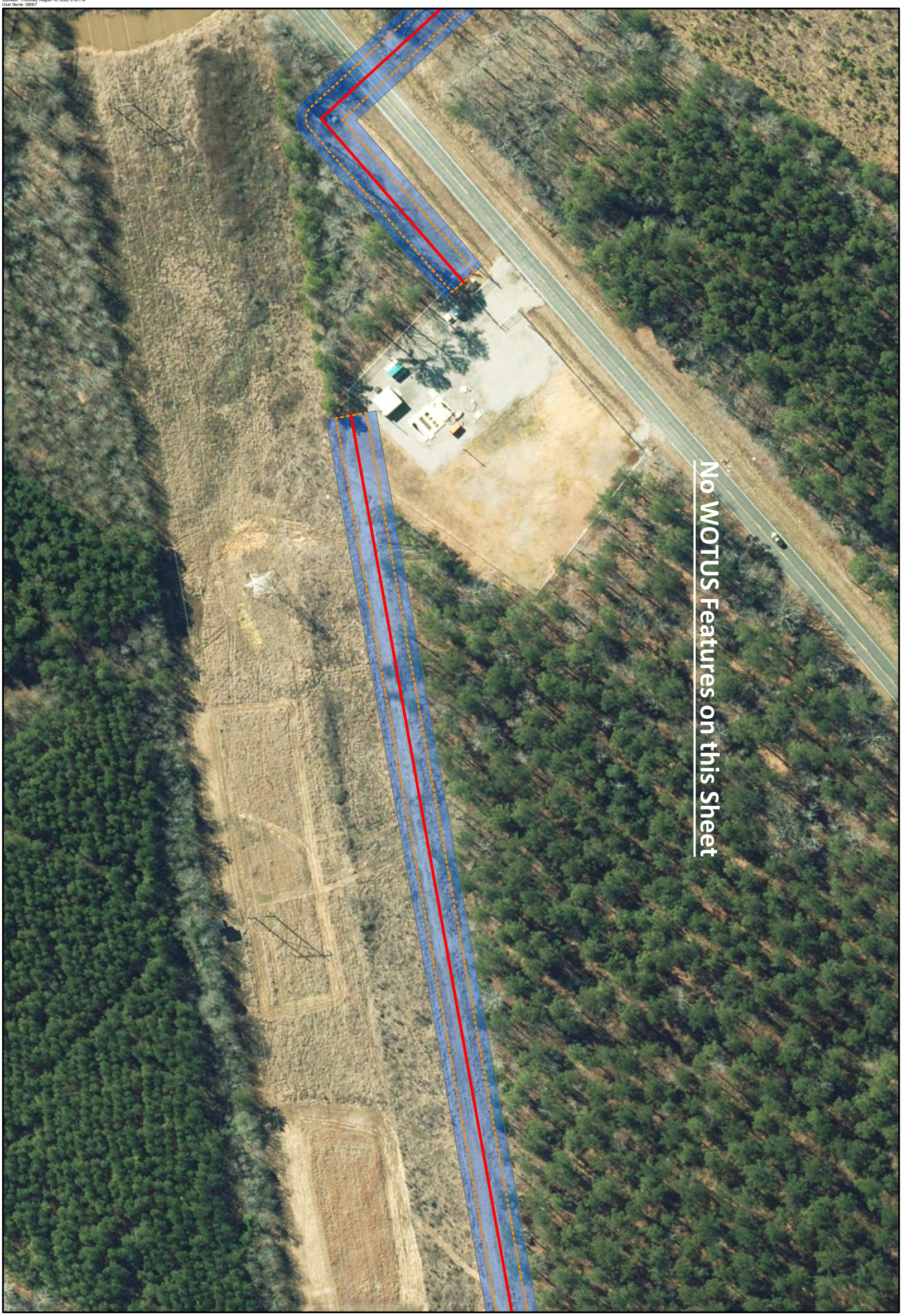

CITY OF SANFORD

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SCALE IN FEET

SANFORD NORTH CAROLINA

FREESE NICHOLS

SCALE IN FEET
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Phase II Water Line
Temporary Construction Easement
Phase II Sewer Permanent Access Corridor
Phase II Water Permanent Access Corridor
Streams
Stream Impact Area
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Phase II Sewer Line

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CITY OF SANFORD

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SCALE IN FEET

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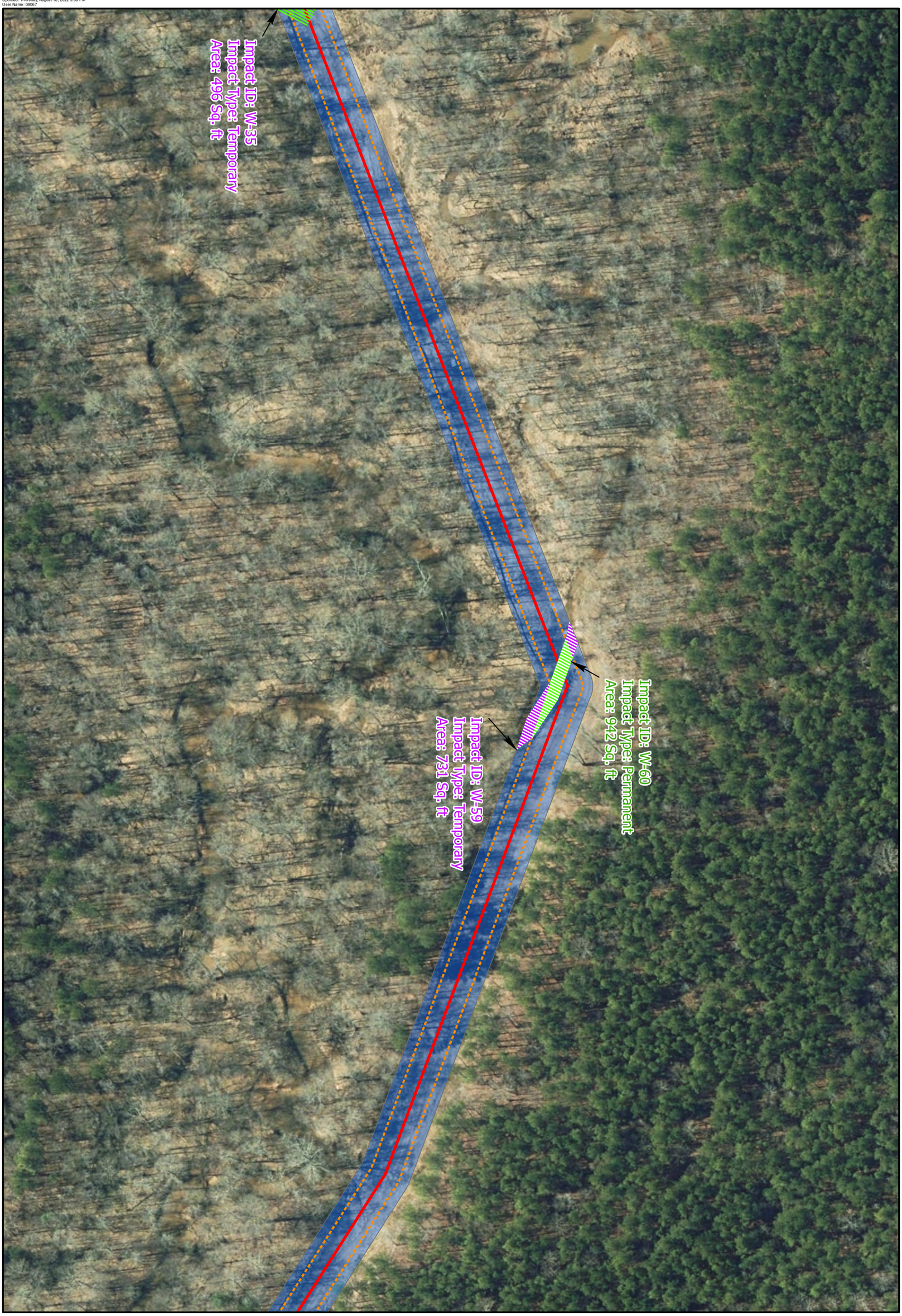

CITY OF SANFORD

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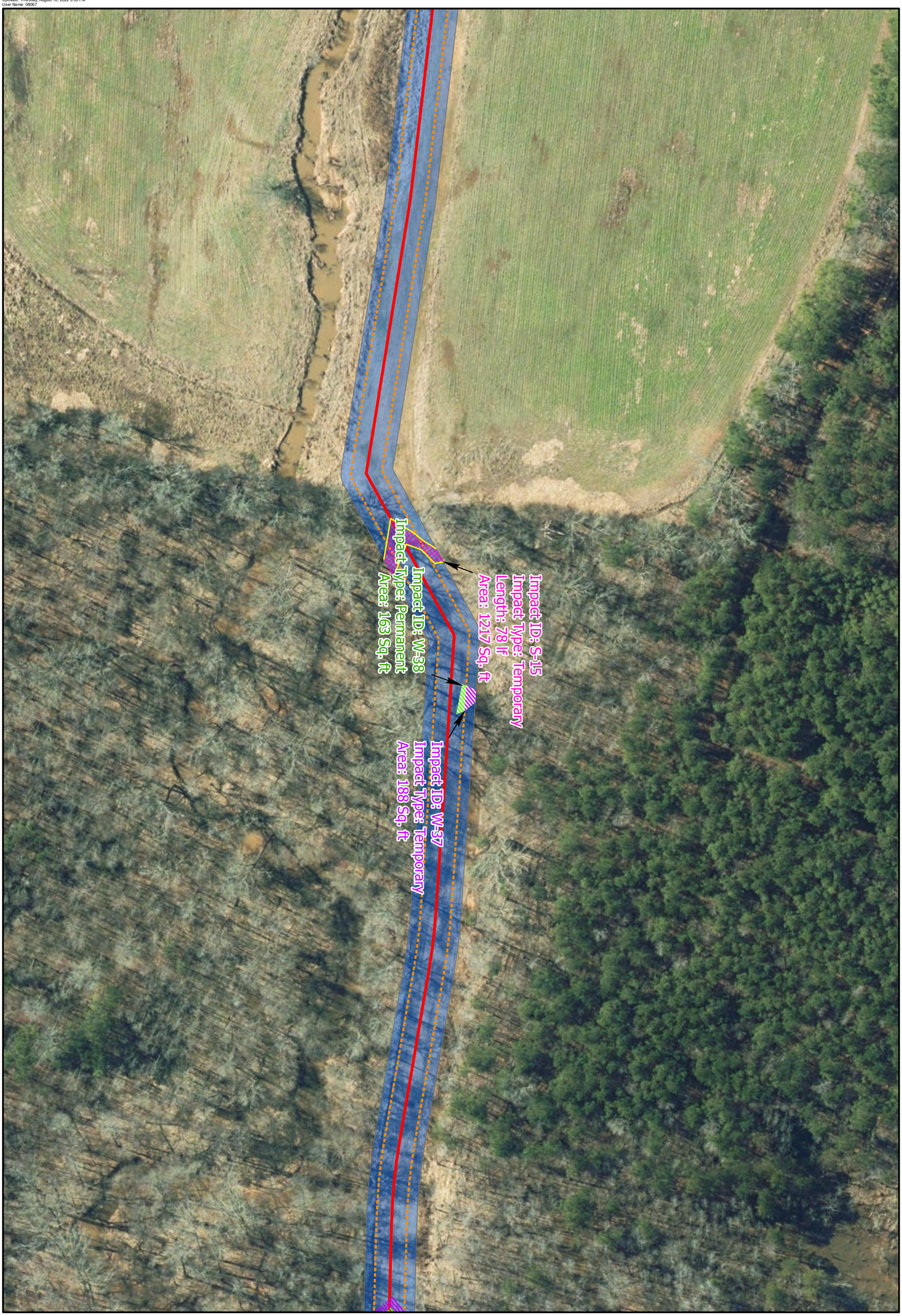

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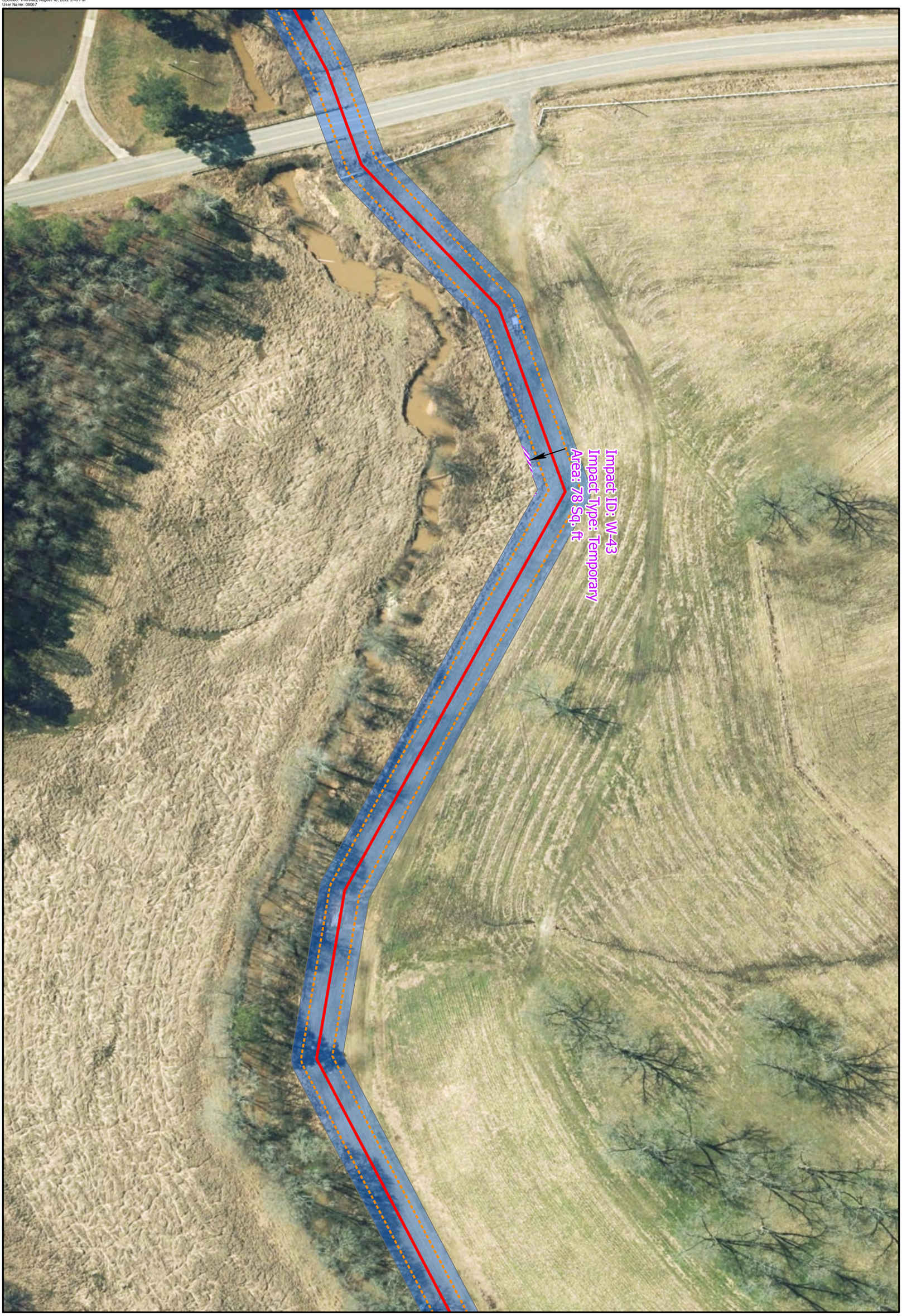

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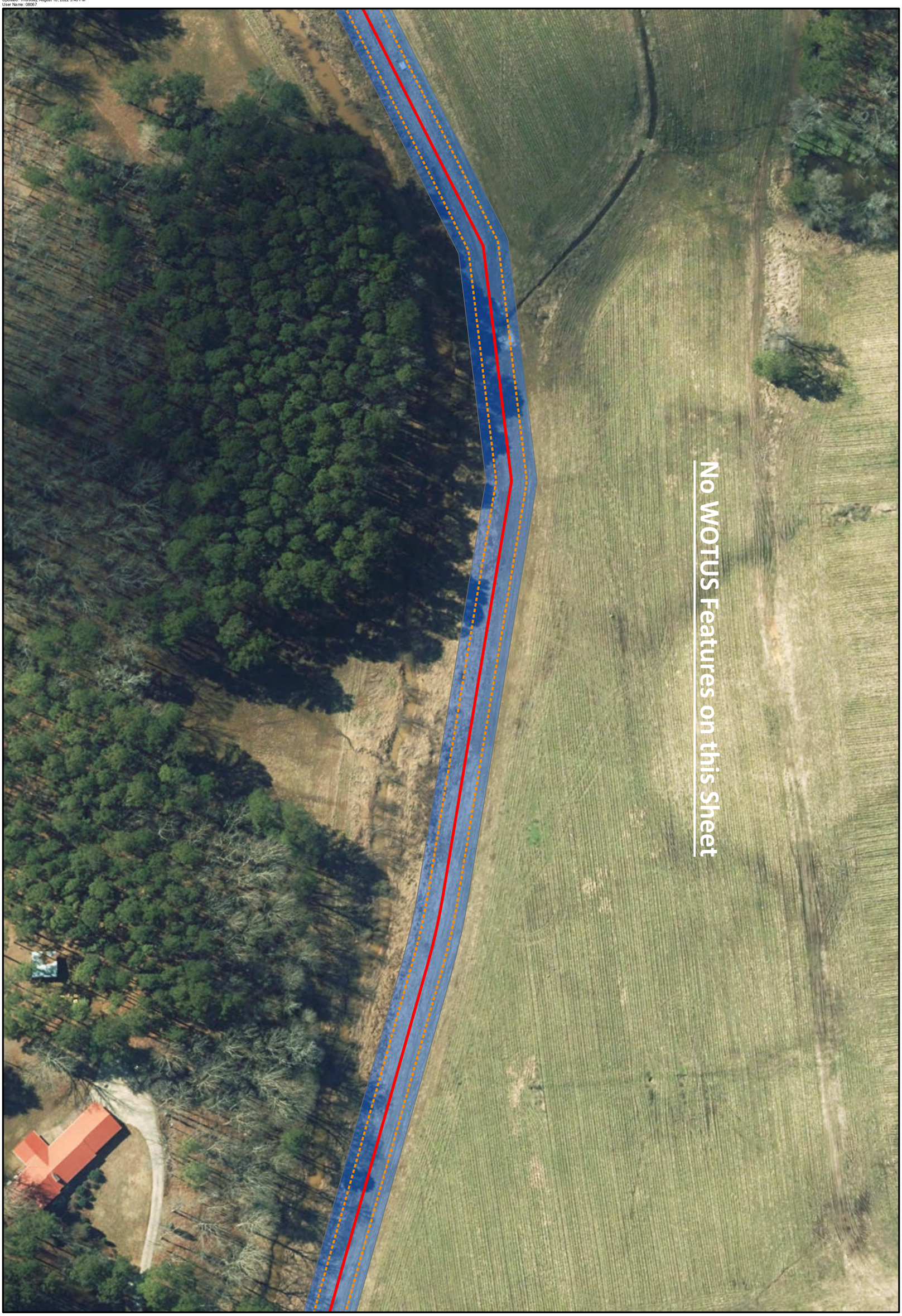

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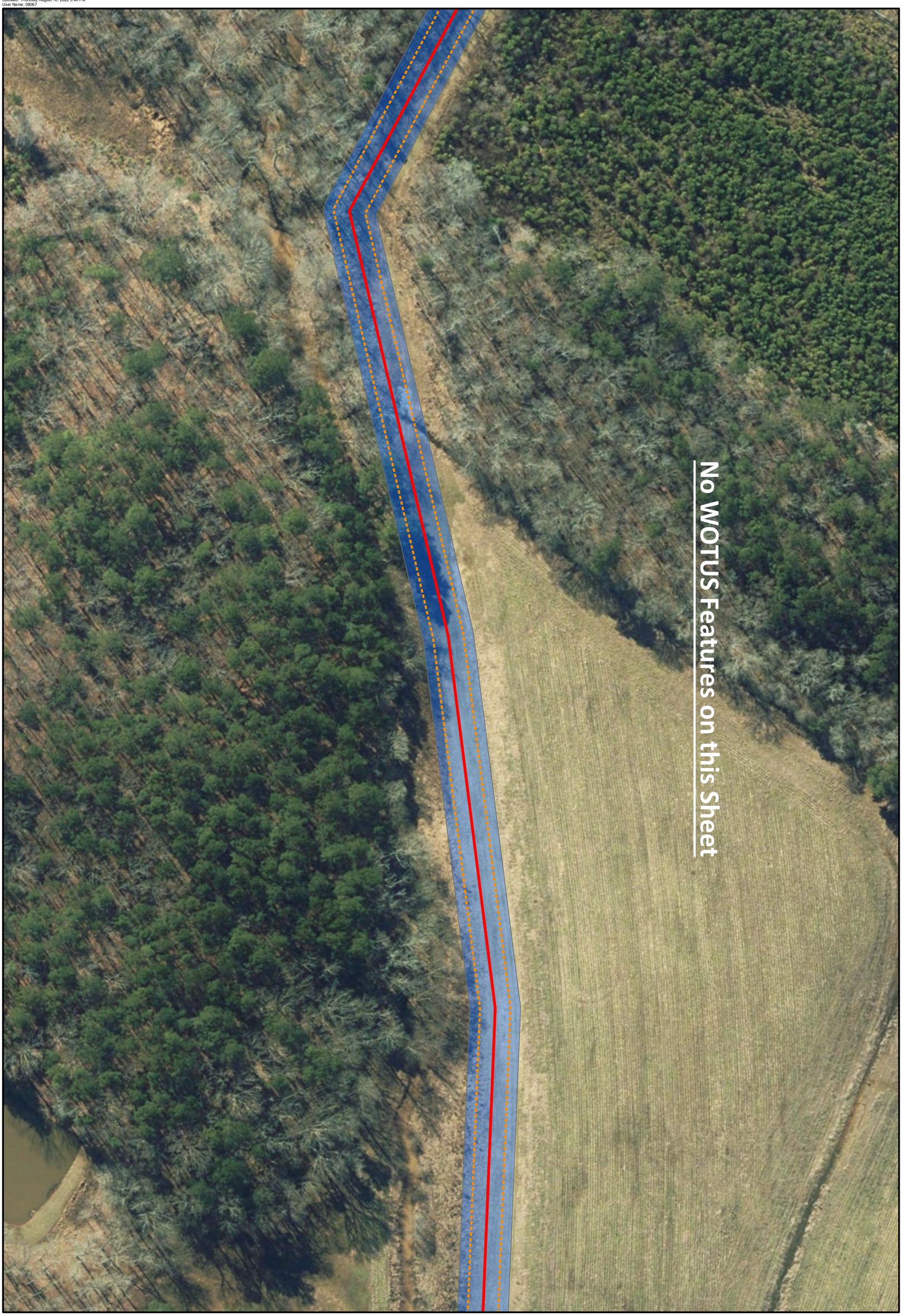

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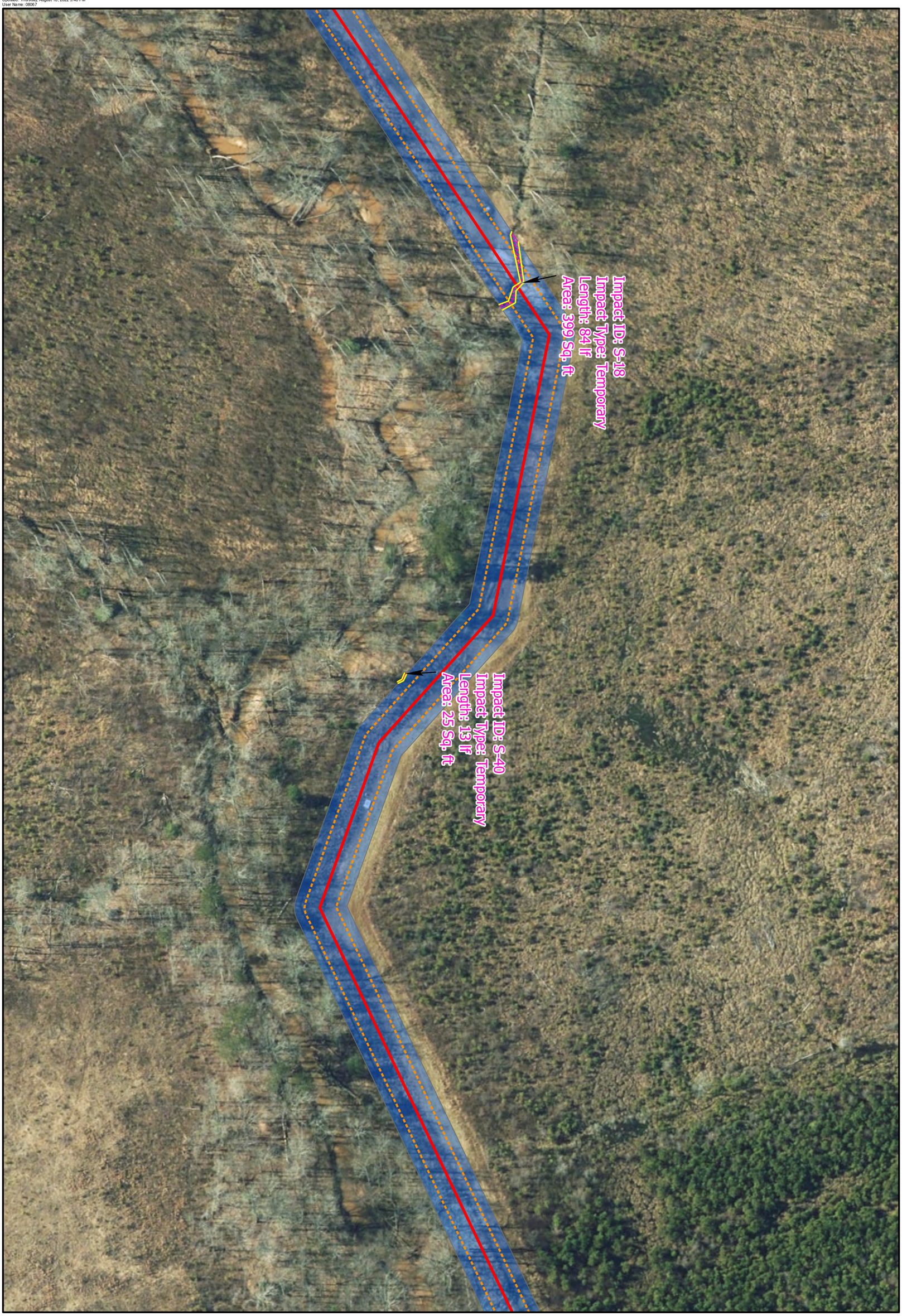

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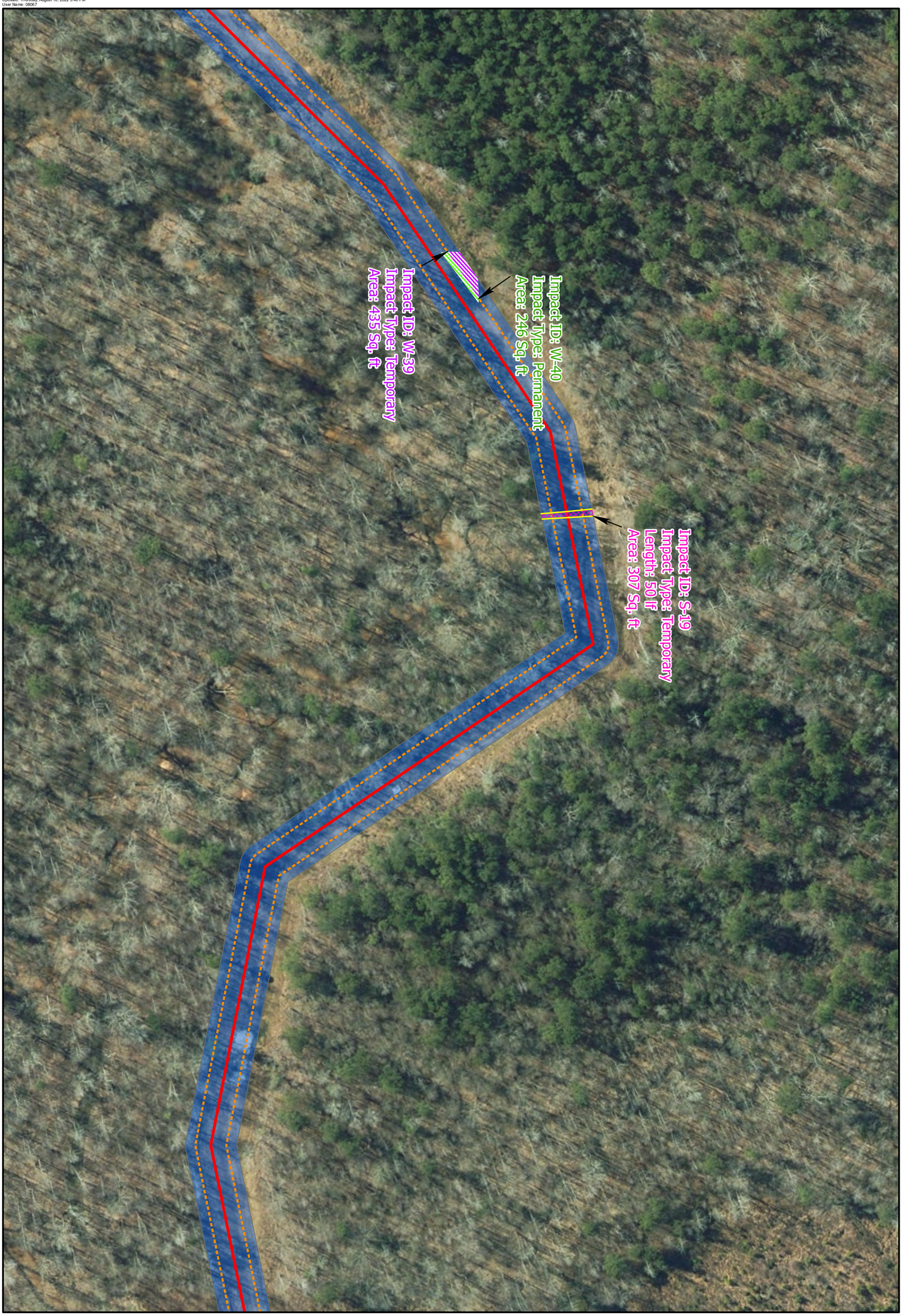

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CITY OF SANFORD

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PHASE II SEWER LINE

- Streams
- Stream Impact Area
- Permanent Impacts
- Temporary Impacts
- Phase II Sewer Line
- Phase II Water Line
- Temporary Construction Easement
- Phase II Sewer Permanent Access Corridor
- Phase II Water Permanent Access Corridor

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SCALE IN FEET

SANFORD NORTH CAROLINA
FREESE NICHOLS

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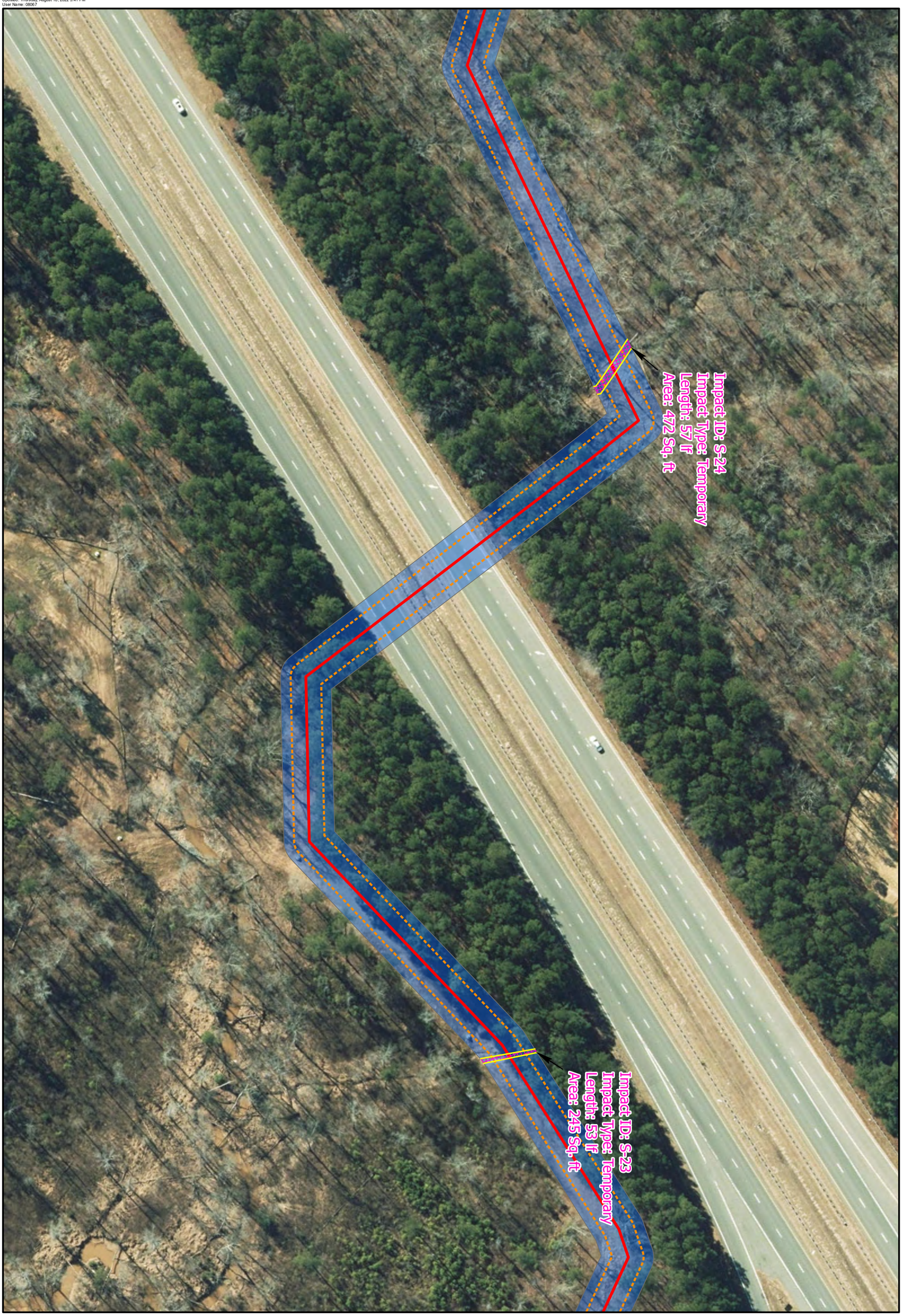

CITY OF SANFORD

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CITY OF SANFORD

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CITY OF SANFORD

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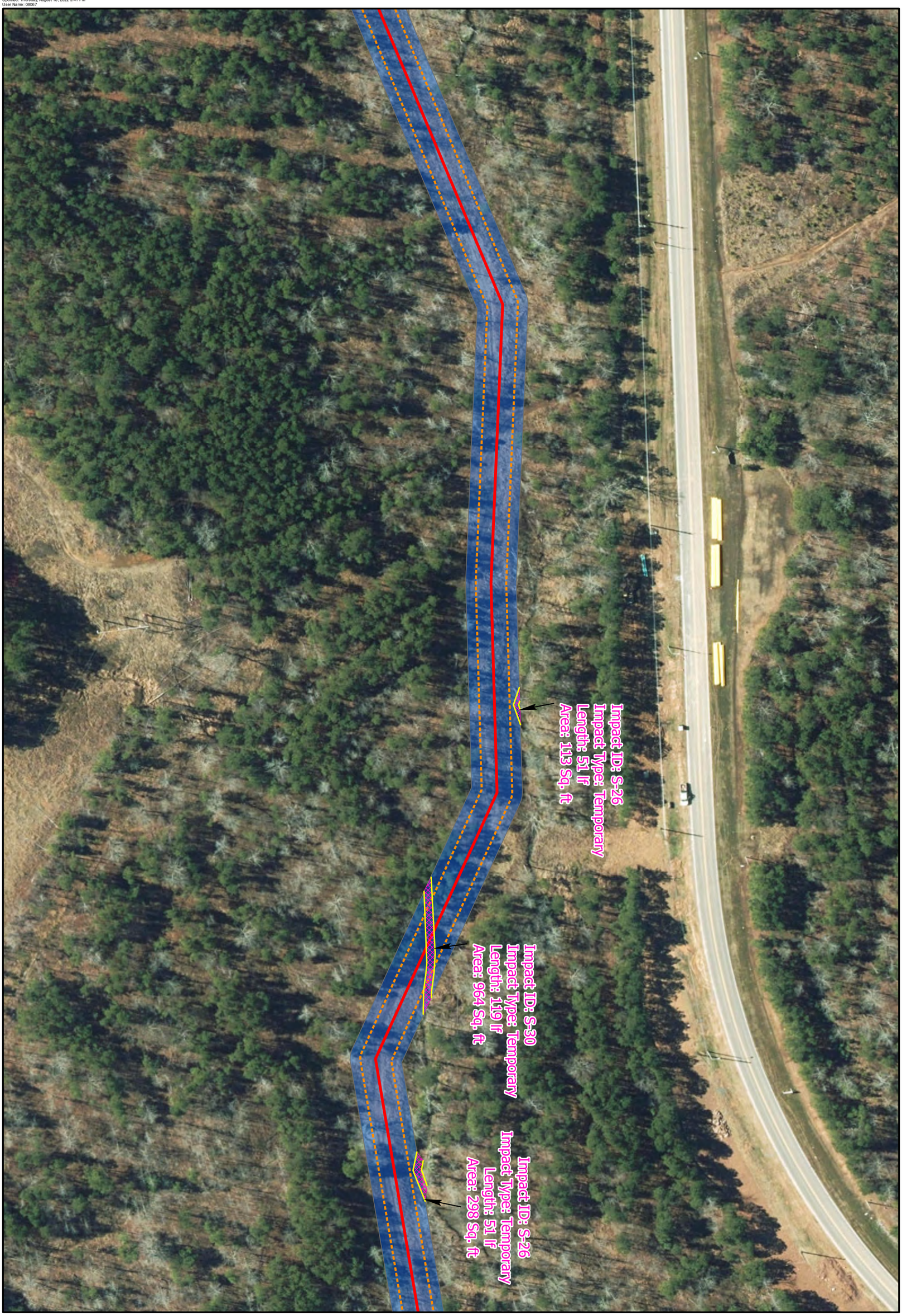

CITY OF SANFORD

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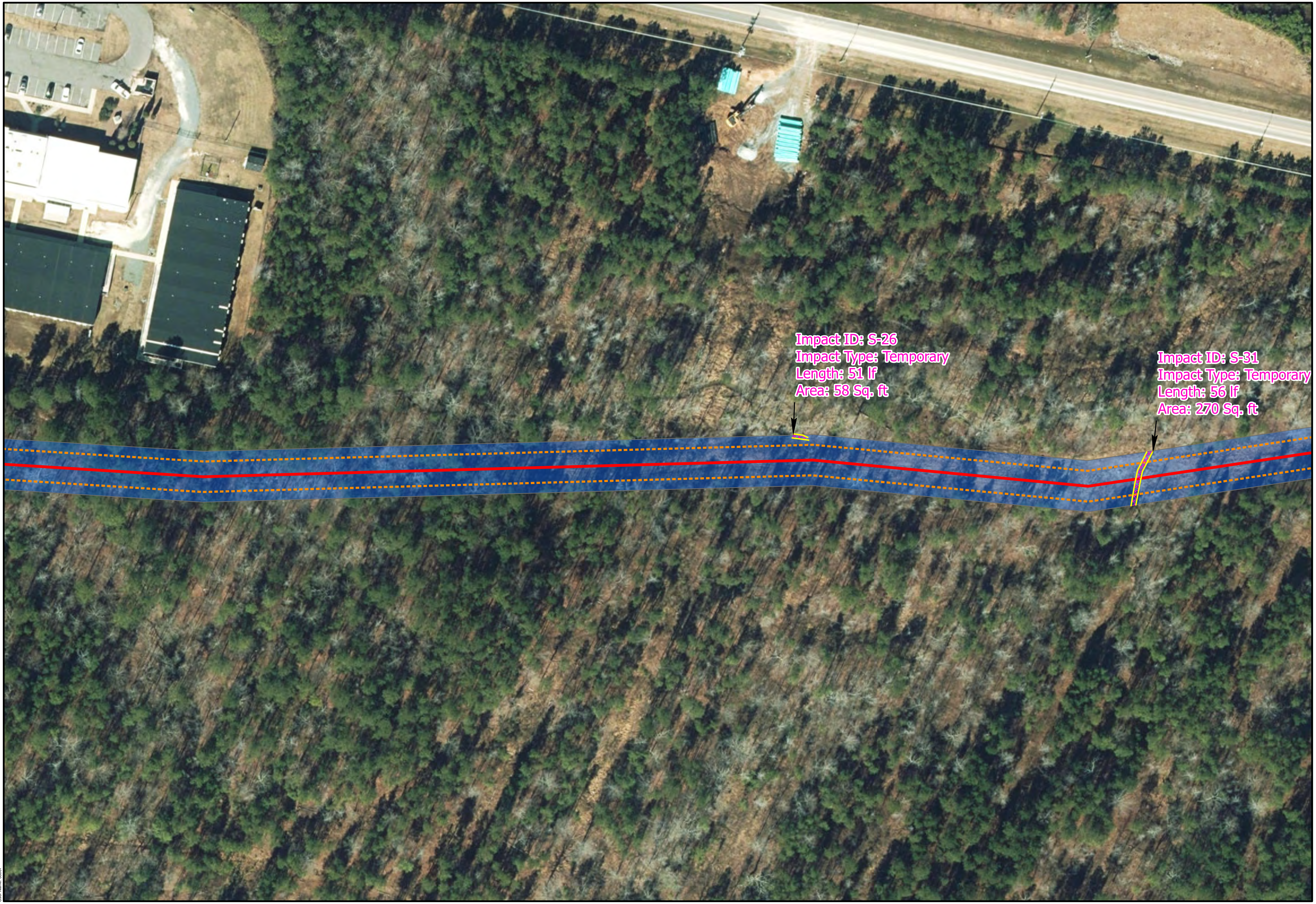

SANFORD NORTH CAROLINA

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Phase II Water Line
Temporary Construction Easement
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Streams
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SANFORD-TIP

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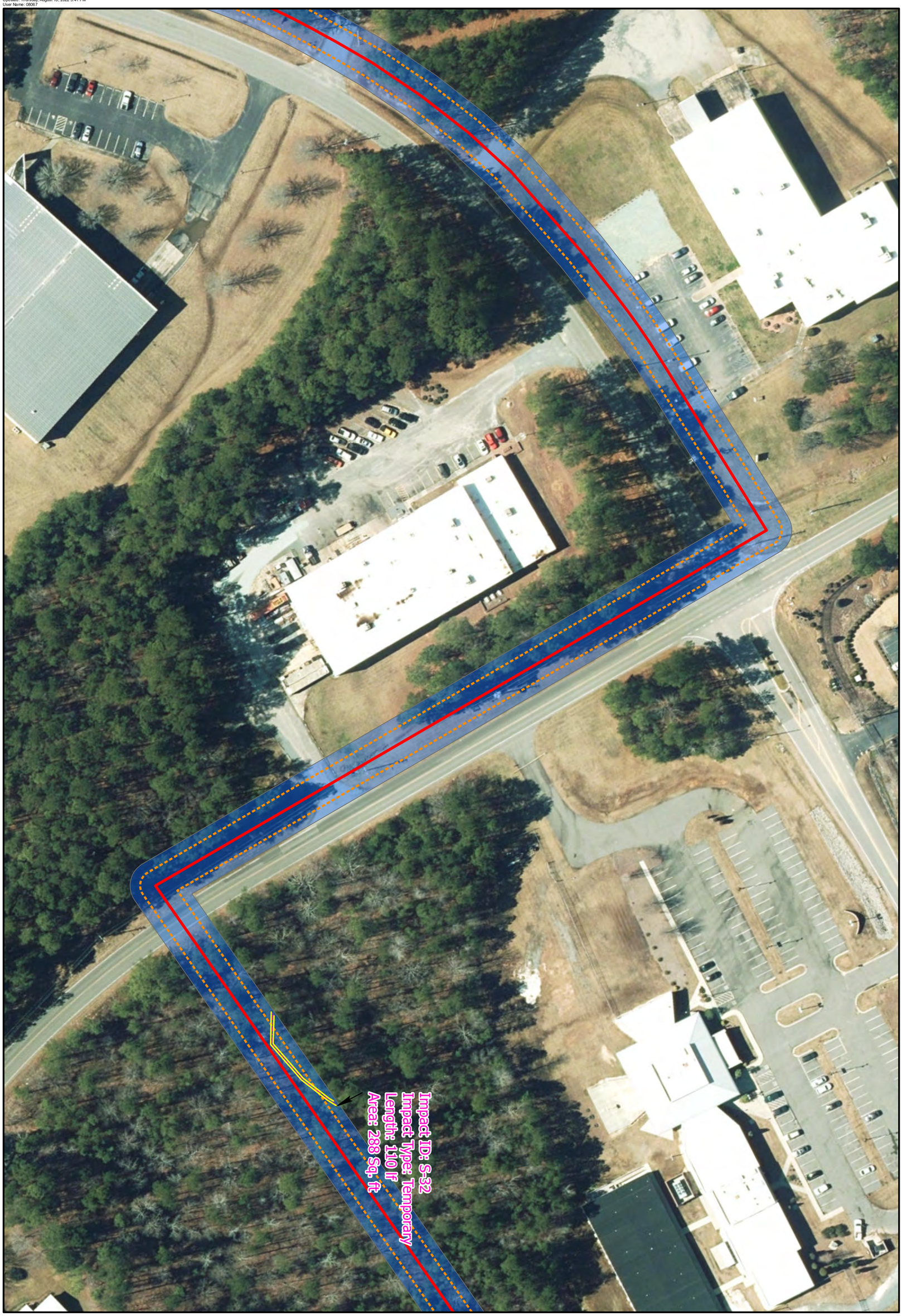

CITY OF SANFORD

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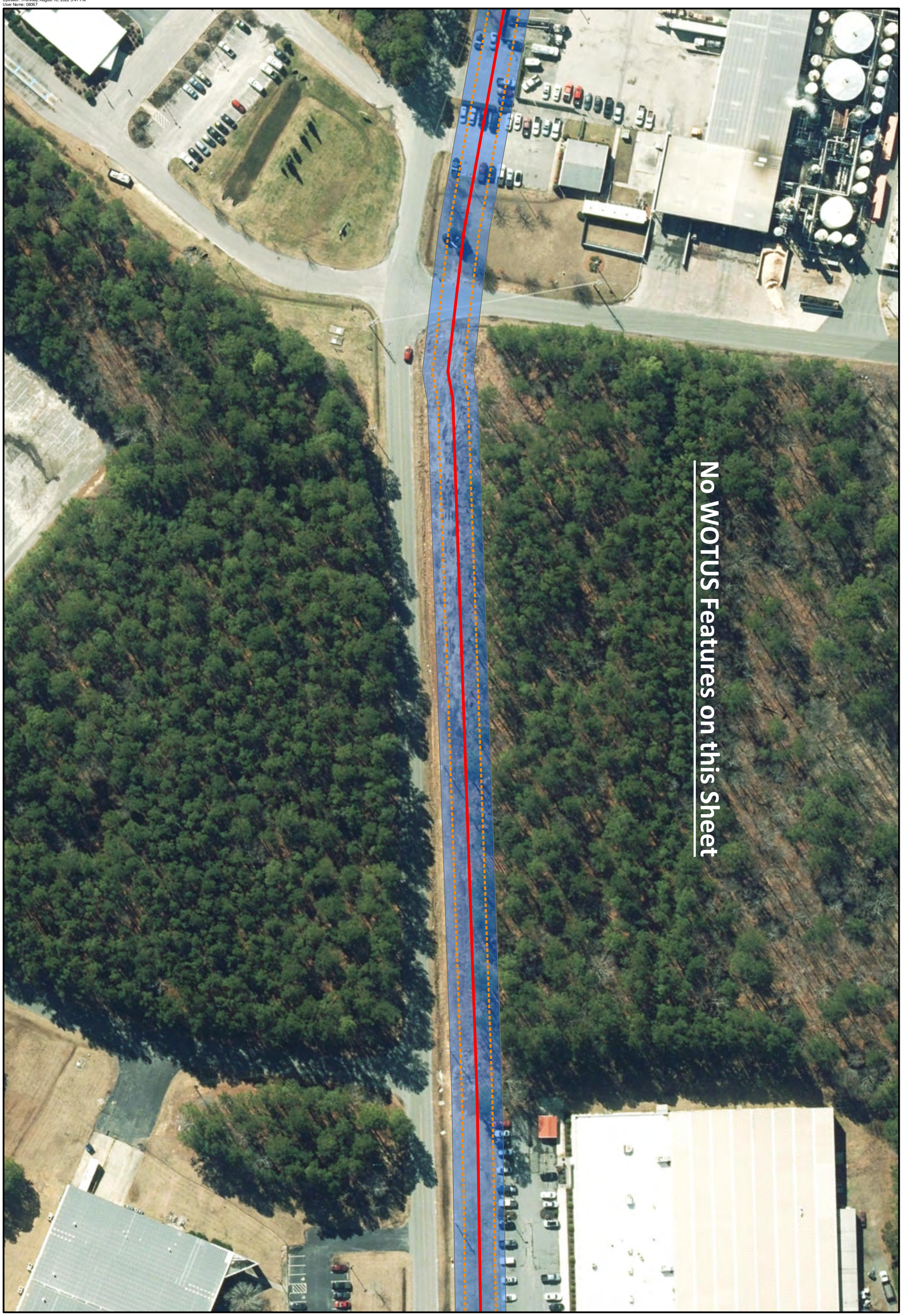

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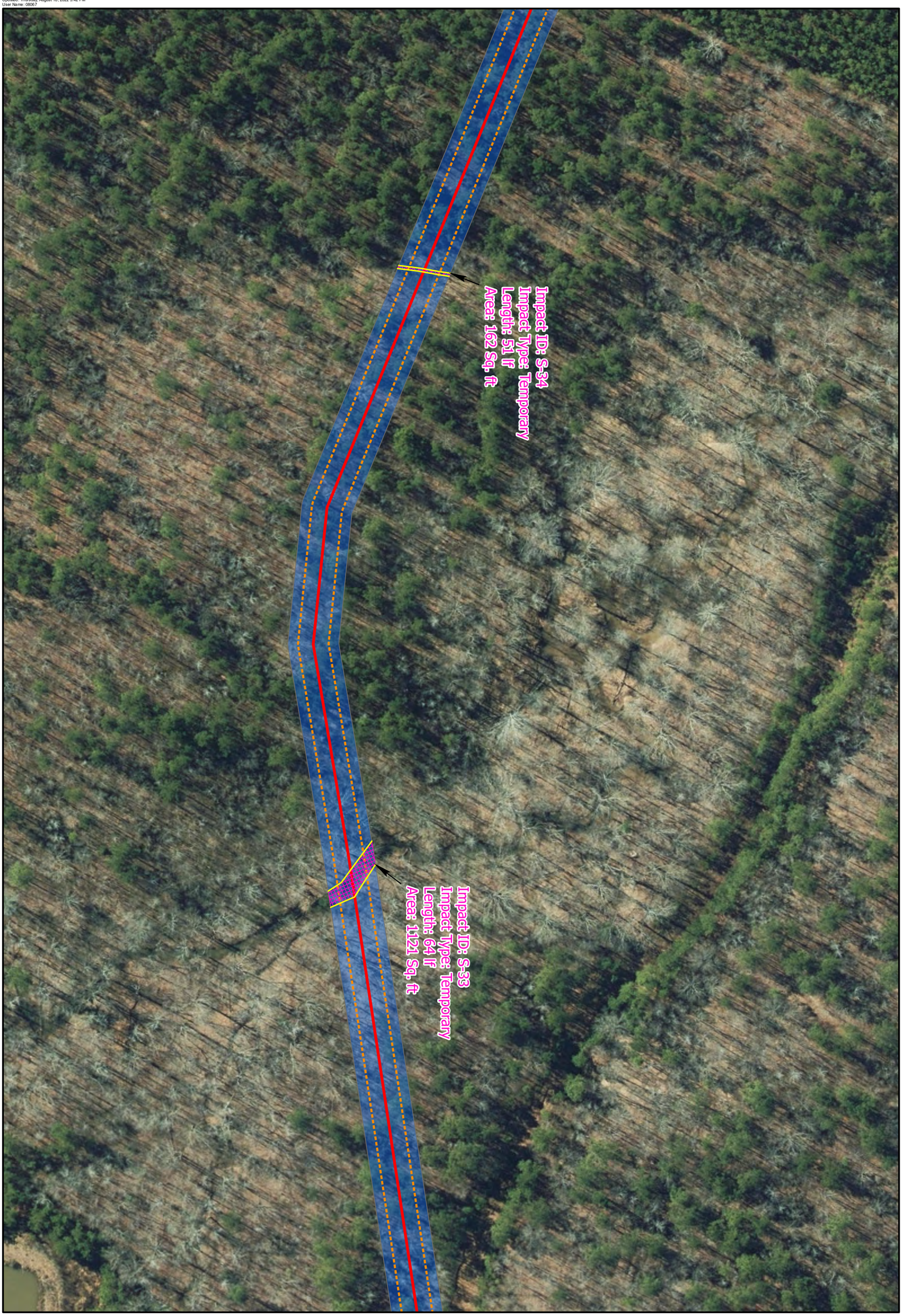

CITY OF SANFORD

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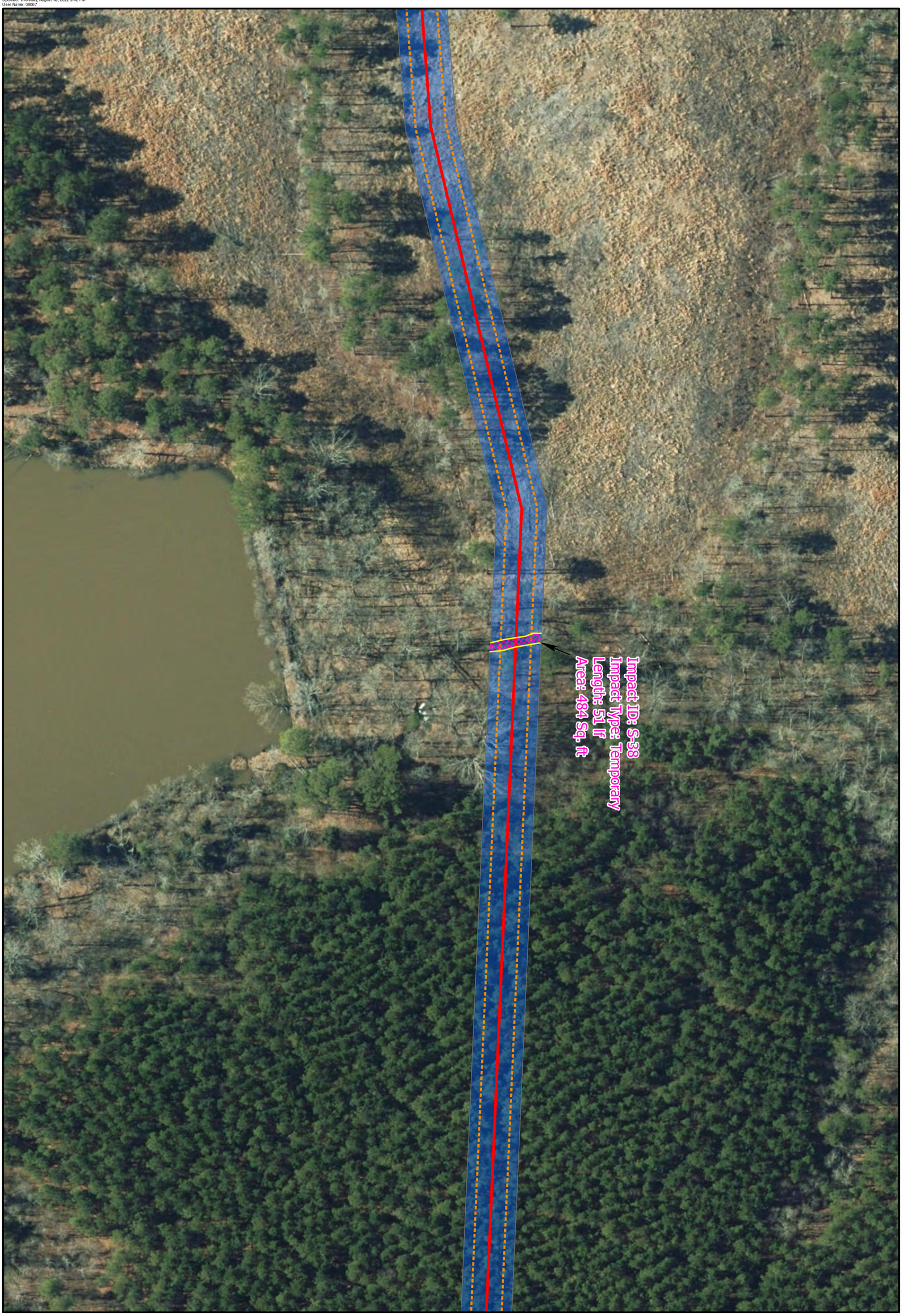

CITY OF SANFORD

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SCALE IN FEET

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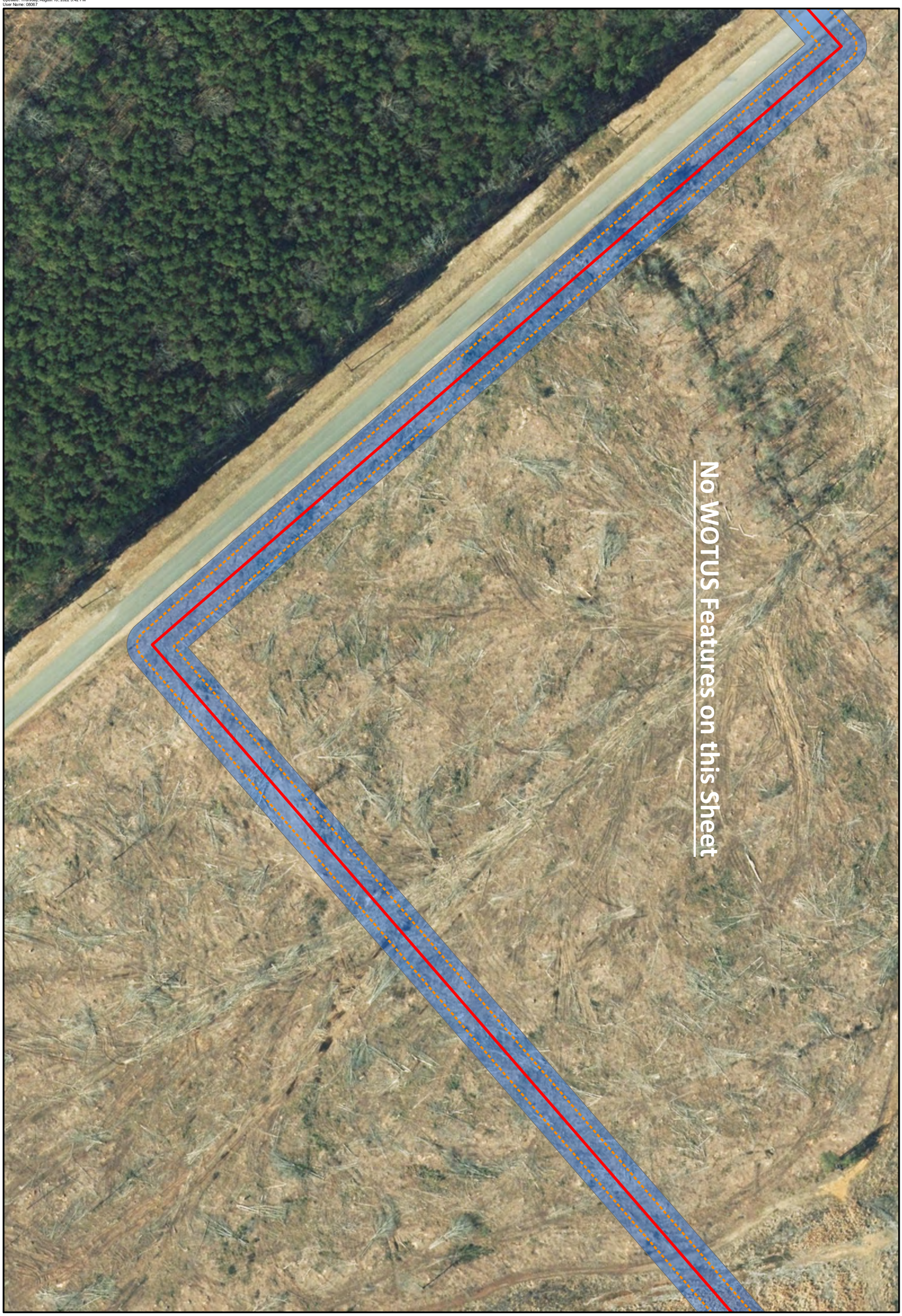

CITY OF SANFORD
SANFORD-TIP
PHASE II SEWER LINE

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SCALE IN FEET

SANFORD NORTH CAROLINA
FREESE NICHOLS

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CITY OF SANFORD

SANFORD-TIP
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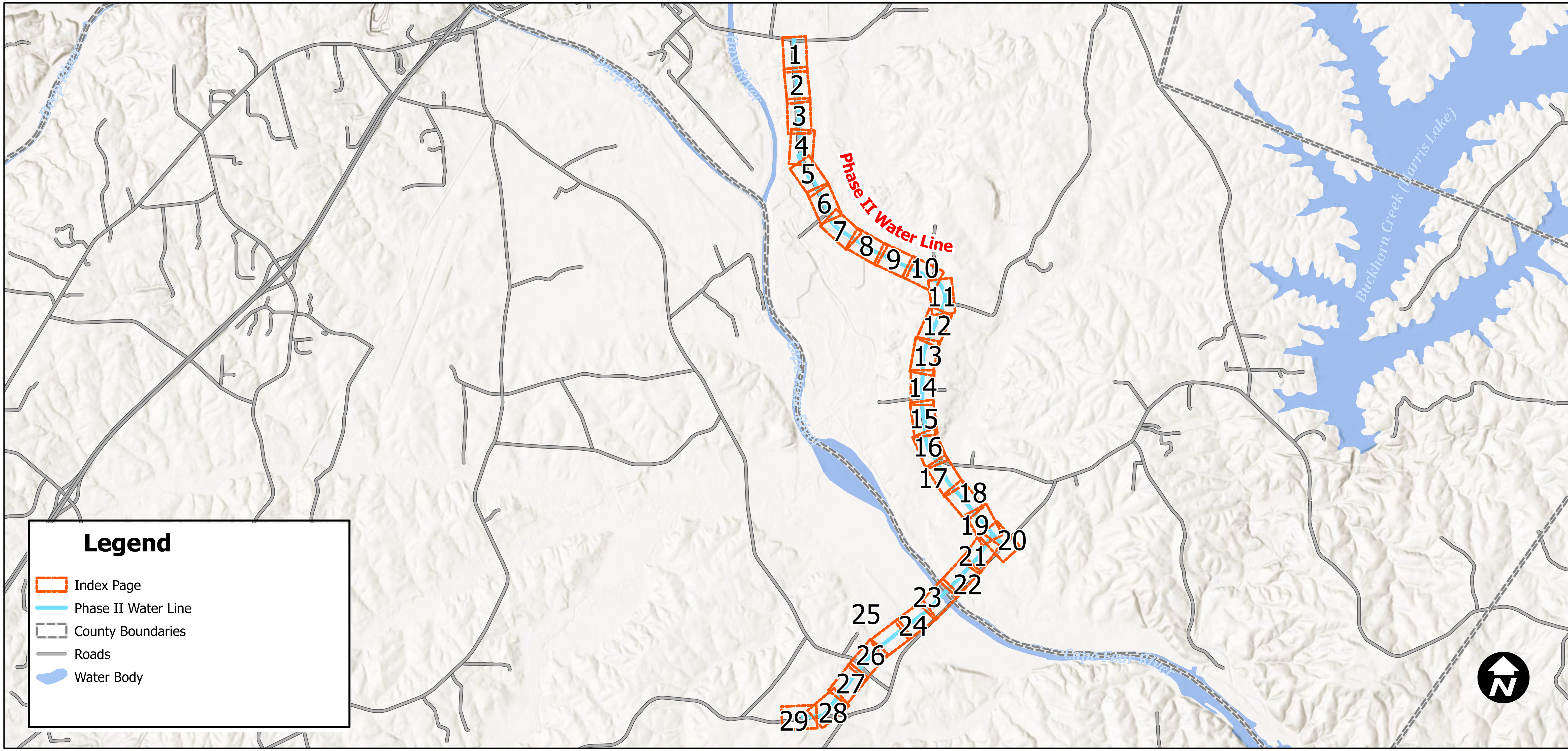
SCALE IN FEET

SANFORD NORTH CAROLINA
FREESE NICHOLS

CITY OF SANFORD

SANFORD - TIP WATER AND SEWER IMPROVEMENTS

PHASE II WATER LINE WOTUS IMPACTS



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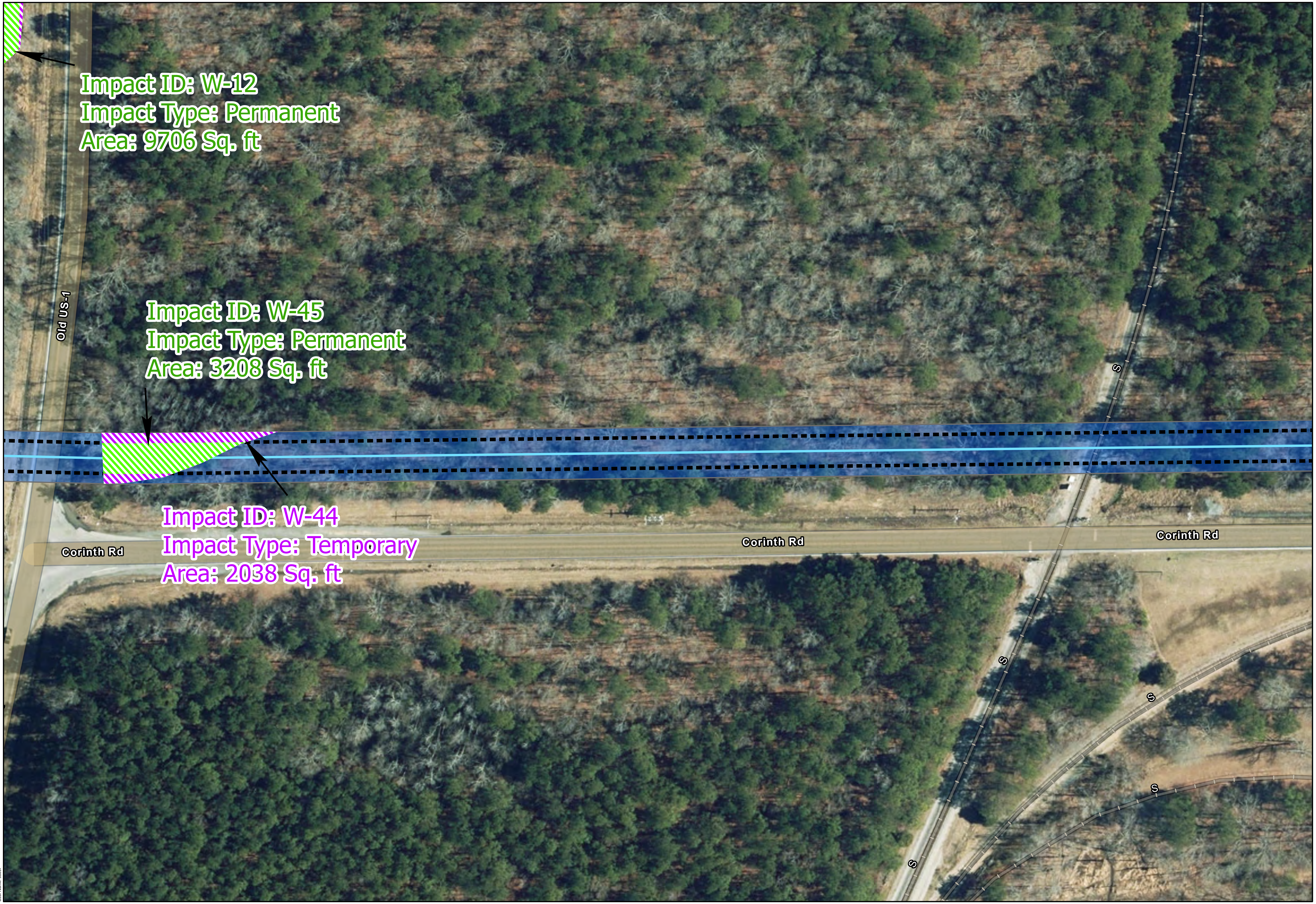

SANFORD NORTH CAROLINA
FREESE NICHOLS

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SCALE IN FEET

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Temporary Construction Easement
Phase II Sewer Permanent Access Corridor
Phase II Water Permanent Access Corridor

Streams
Stream Impact Area
Permanent Impacts
Temporary Impacts
Phase II Water Line
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CITY OF SANFORD
SANFORD-TIP
PHASE II WATER LINE

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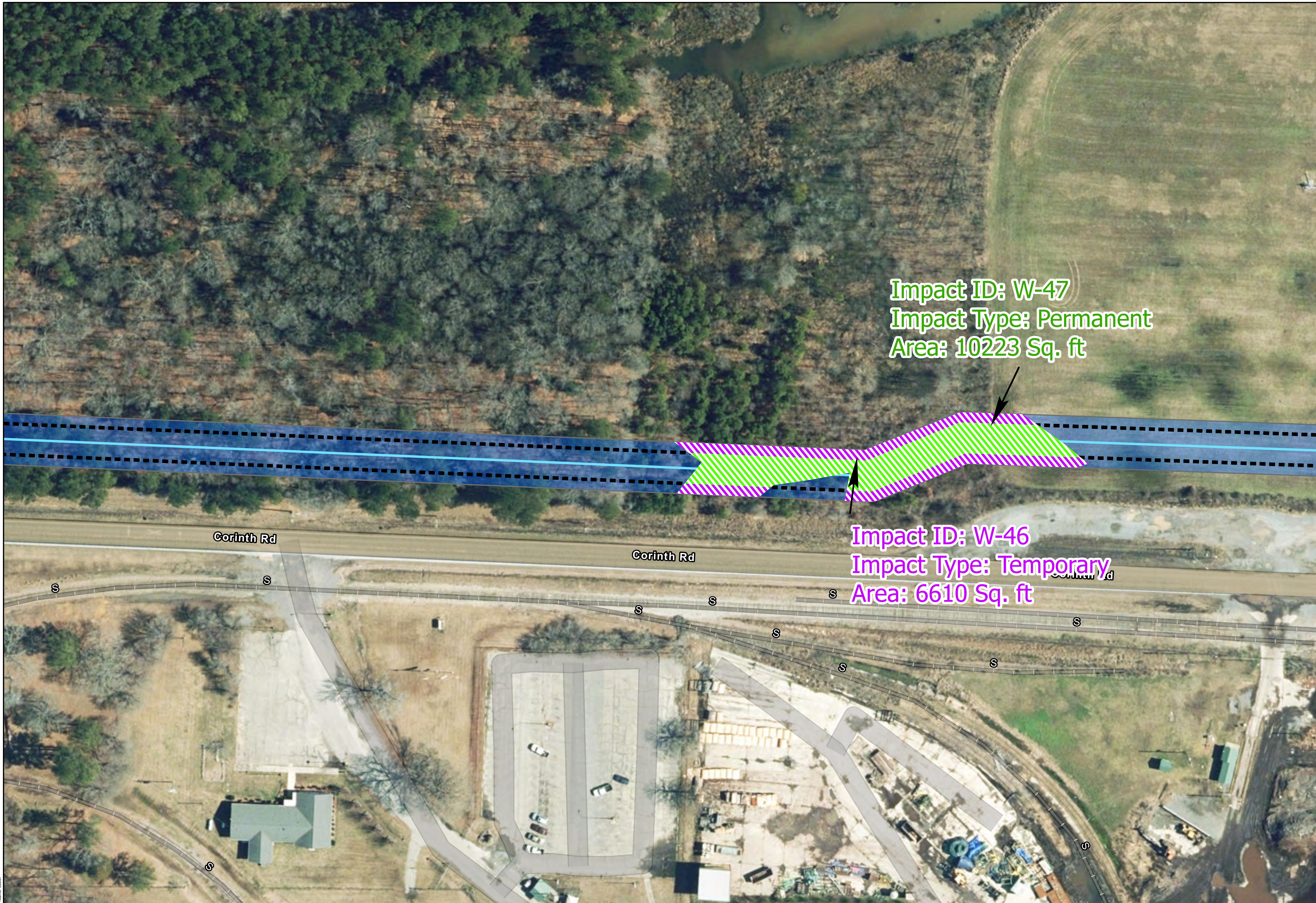

SANFORD NORTH CAROLINA

FREESE NICHOLS

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SCALE IN FEET

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Temporary Construction Easement
Phase II Sewer Permanent Access Corridor
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CITY OF SANFORD
SANFORD-TIP
PHASE II WATER LINE

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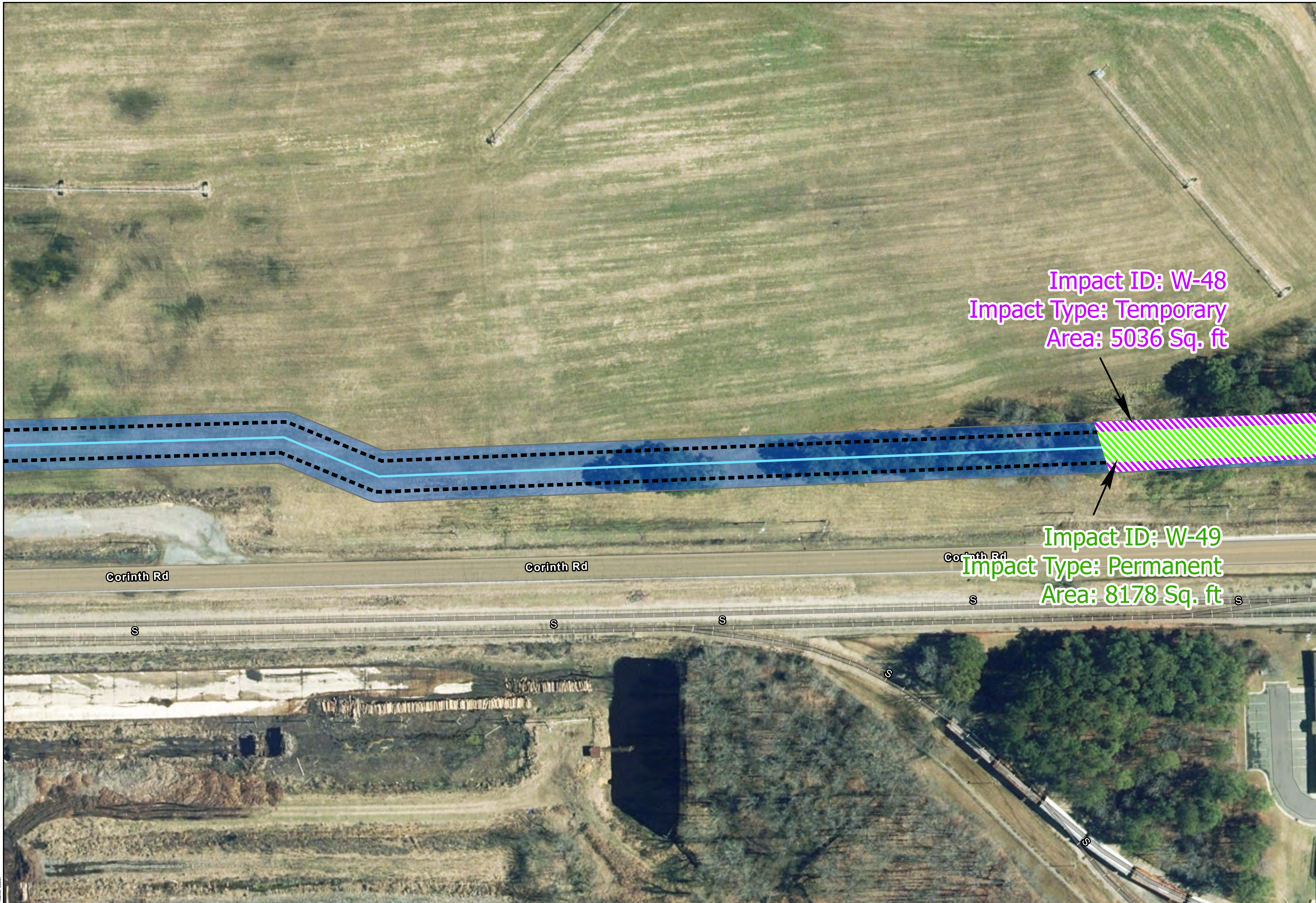

SANFORD NORTH CAROLINA

FREESE NICHOLS

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Phase II Water Permanent Access Corridor
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CITY OF SANFORD

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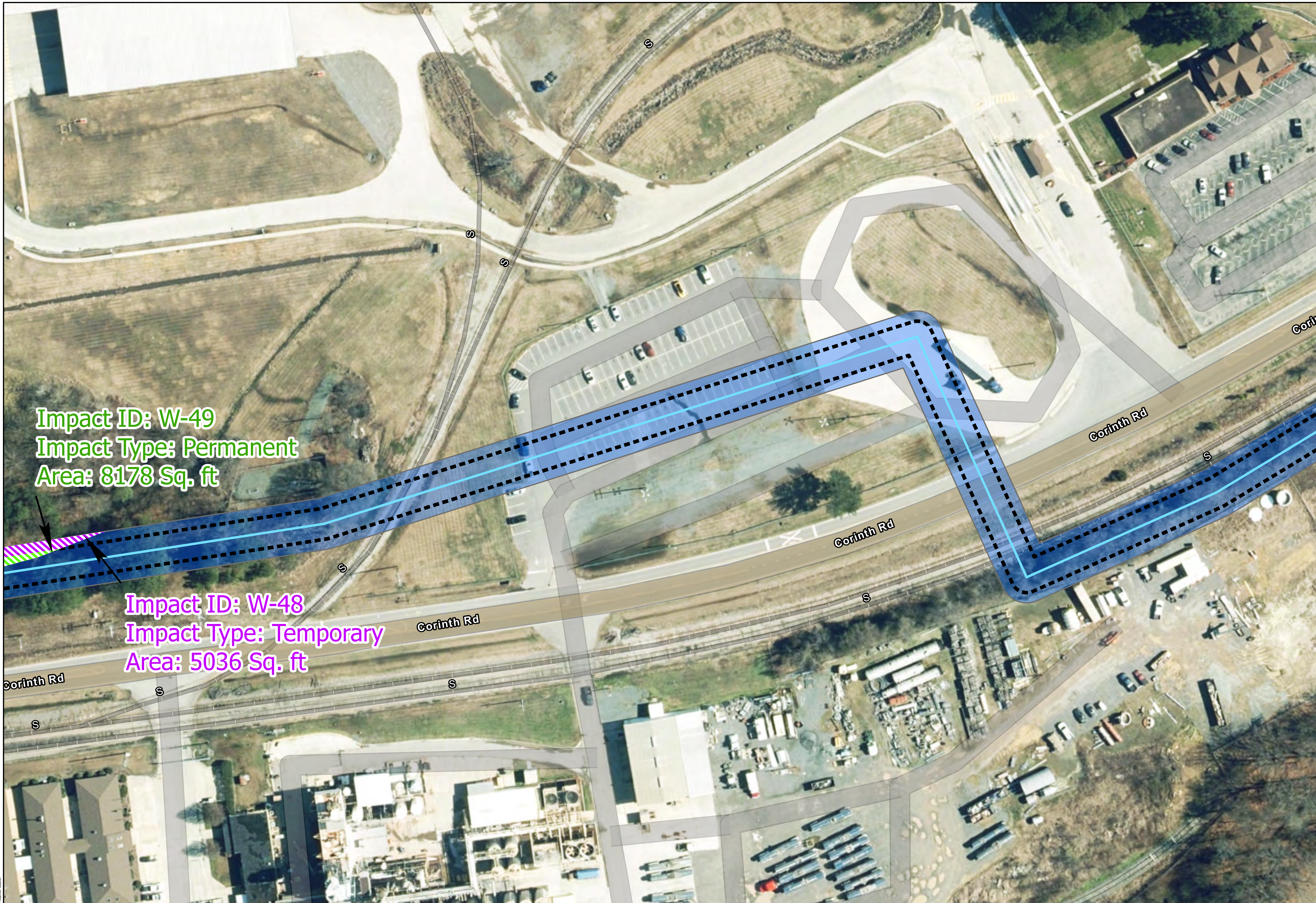

SANFORD NORTH CAROLINA
FREESE NICHOLS

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SCALE IN FEET

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Phase II Sewer Permanent Access Corridor
Phase II Water Permanent Access Corridor
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Stream Impact Area
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CITY OF SANFORD
SANFORD-TIP
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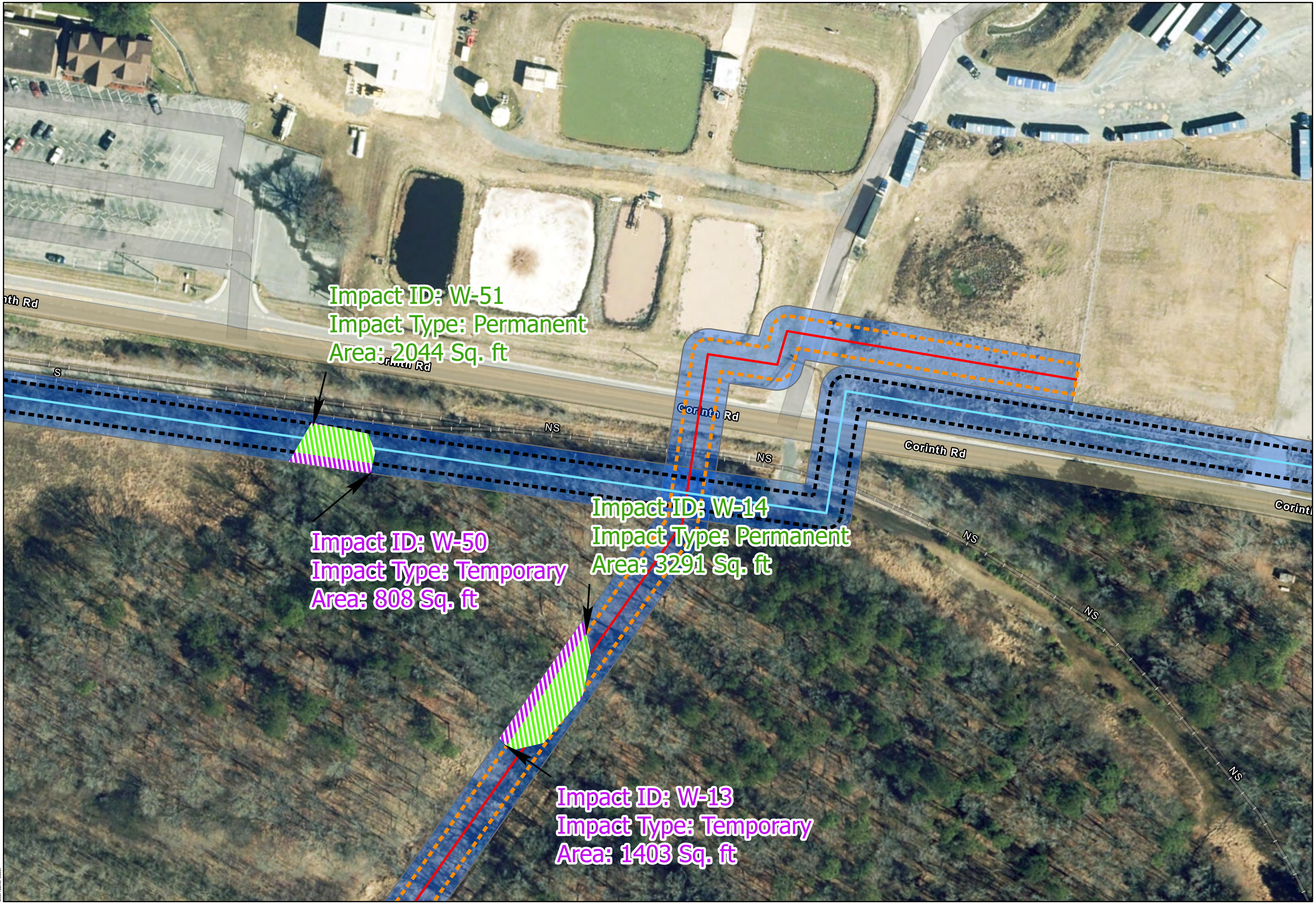

SANFORD
FREESE NICHOLS

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SCALE IN FEET

Temporary Construction Easement
Phase II Sewer Permanent Access Corridor
Phase II Water Permanent Access Corridor

Streams
Stream Impact Area
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CITY OF SANFORD
SANFORD-TIP
PHASE II WATER LINE

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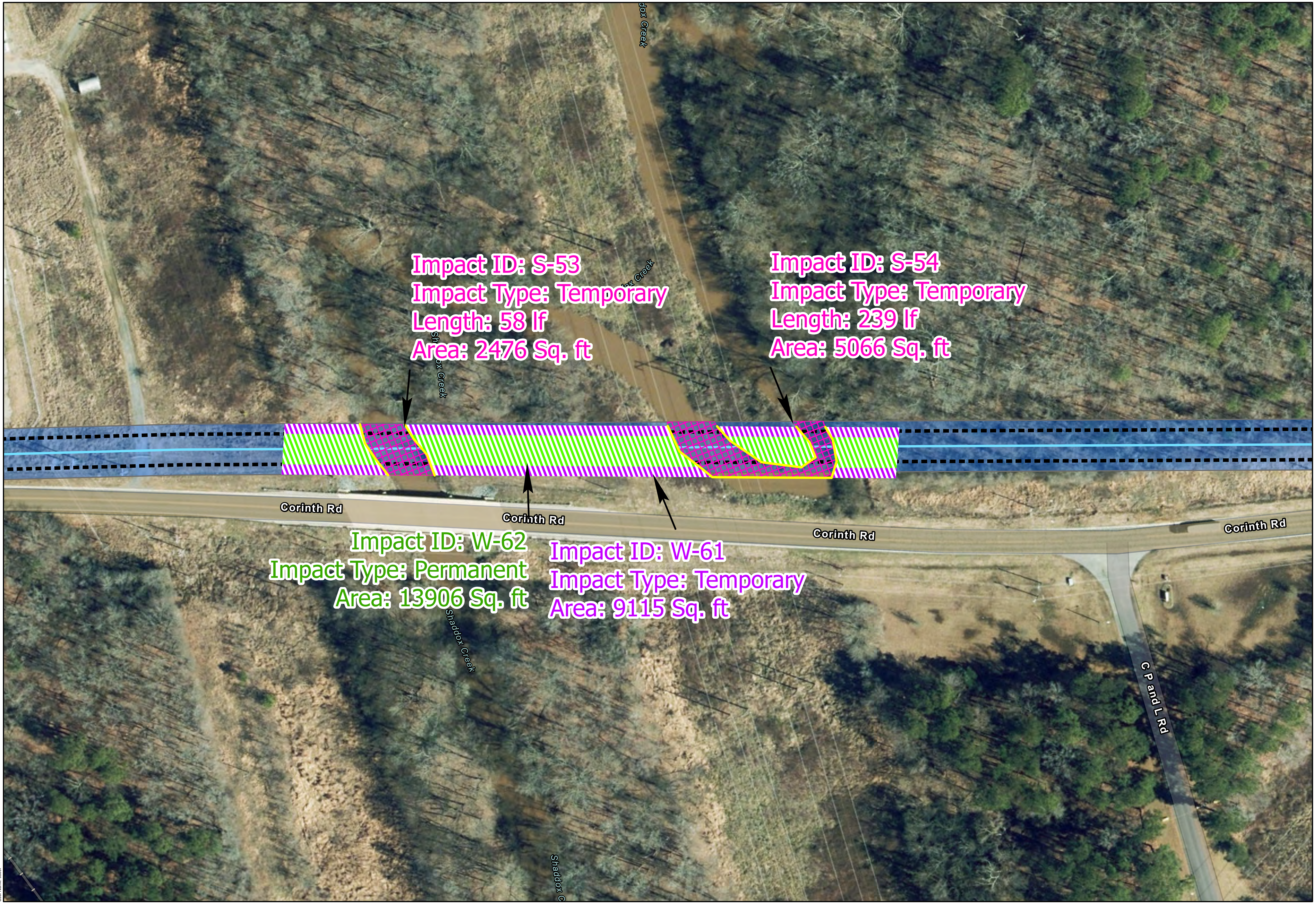

SANFORD
FREESE NICHOLS

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Phase II Sewer Permanent Access Corridor
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Streams
Stream Impact Area
Permanent Impacts
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Phase II Water Line
Phase II Sewer Line

CITY OF SANFORD
SANFORD-TIP
PHASE II WATER LINE

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SANFORD NORTH CAROLINA
FREESE NICHOLS

SCALE IN FEET
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Streams
Stream Impact Area
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CITY OF SANFORD
SANFORD-TIP
PHASE II WATER LINE

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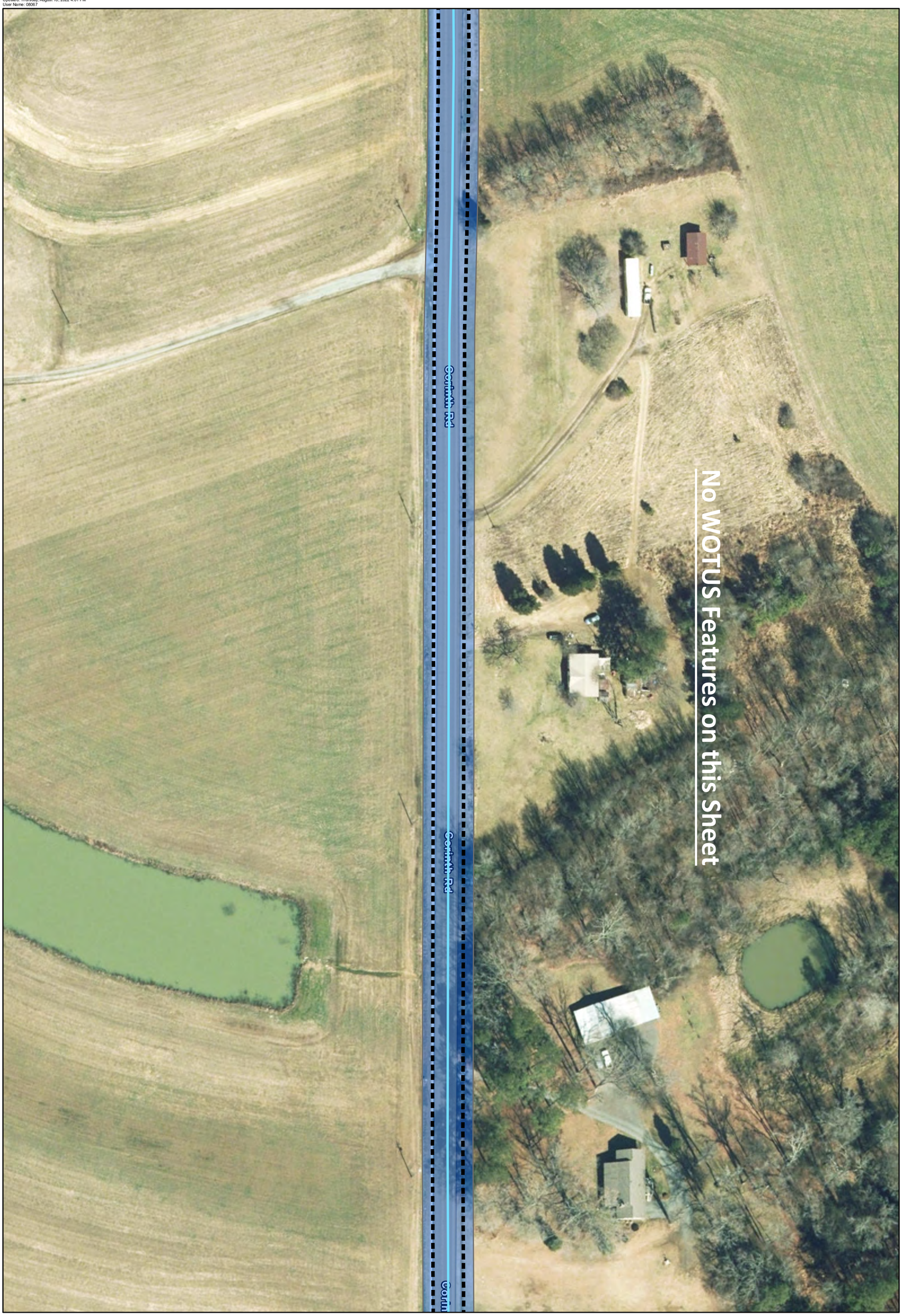

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CITY OF SANFORD

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CITY OF SANFORD

SANFORD-TIP
PHASE II WATER LINE

- Streams
- Stream Impact Area
- Permanent Impacts
- Temporary Impacts
- Phase II Water Line
- Phase II Sewer Line
- Temporary Construction Easement
- Phase II Sewer Permanent Access Corridor
- Phase II Water Permanent Access Corridor

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SANFORD NORTH CAROLINA
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SANFORD NORTH CAROLINA

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Temporary Construction Easement
Phase II Sewer Permanent Access Corridor
Phase II Water Permanent Access Corridor

Streams
Stream Impact Area
Permanent Impacts
Temporary Impacts
Phase II Water Line
Phase II Sewer Line

CITY OF SANFORD
SANFORD-TIP
PHASE II WATER LINE

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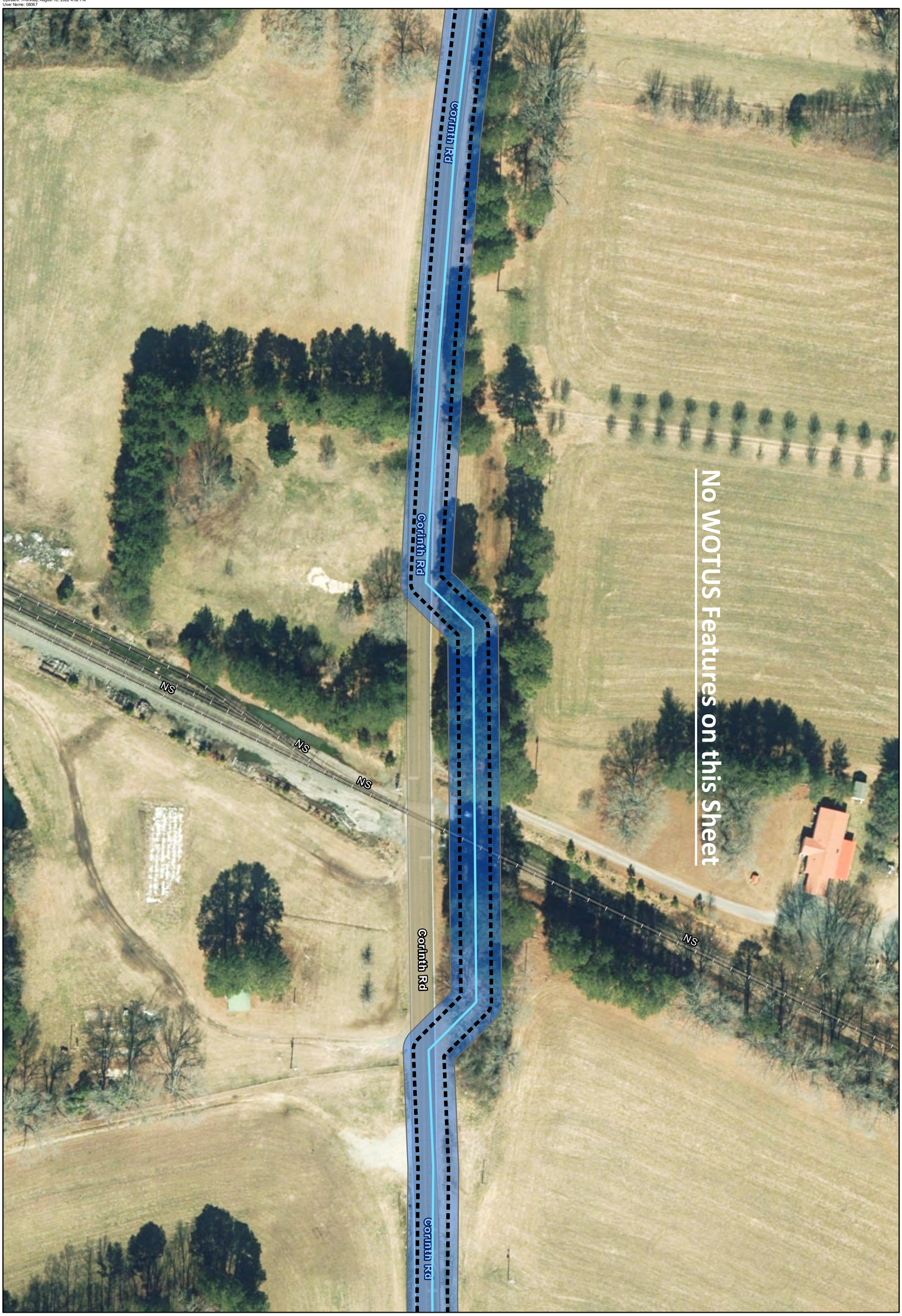

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CITY OF SANFORD

SANFORD-TIP
PHASE II WATER LINE

- Streams
- Stream Impact Area
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- Phase II Water Line
- Phase II Sewer Line
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CITY OF SANFORD

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SANFORD NORTH CAROLINA

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Temporary Construction Easement
Phase II Sewer Permanent Access Corridor
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CITY OF SANFORD

SANFORD-TIP
PHASE II WATER LINE

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Phase II Sewer Permanent Access Corridor
Phase II Water Permanent Access Corridor
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Temporary Impacts
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Phase II Sewer Line

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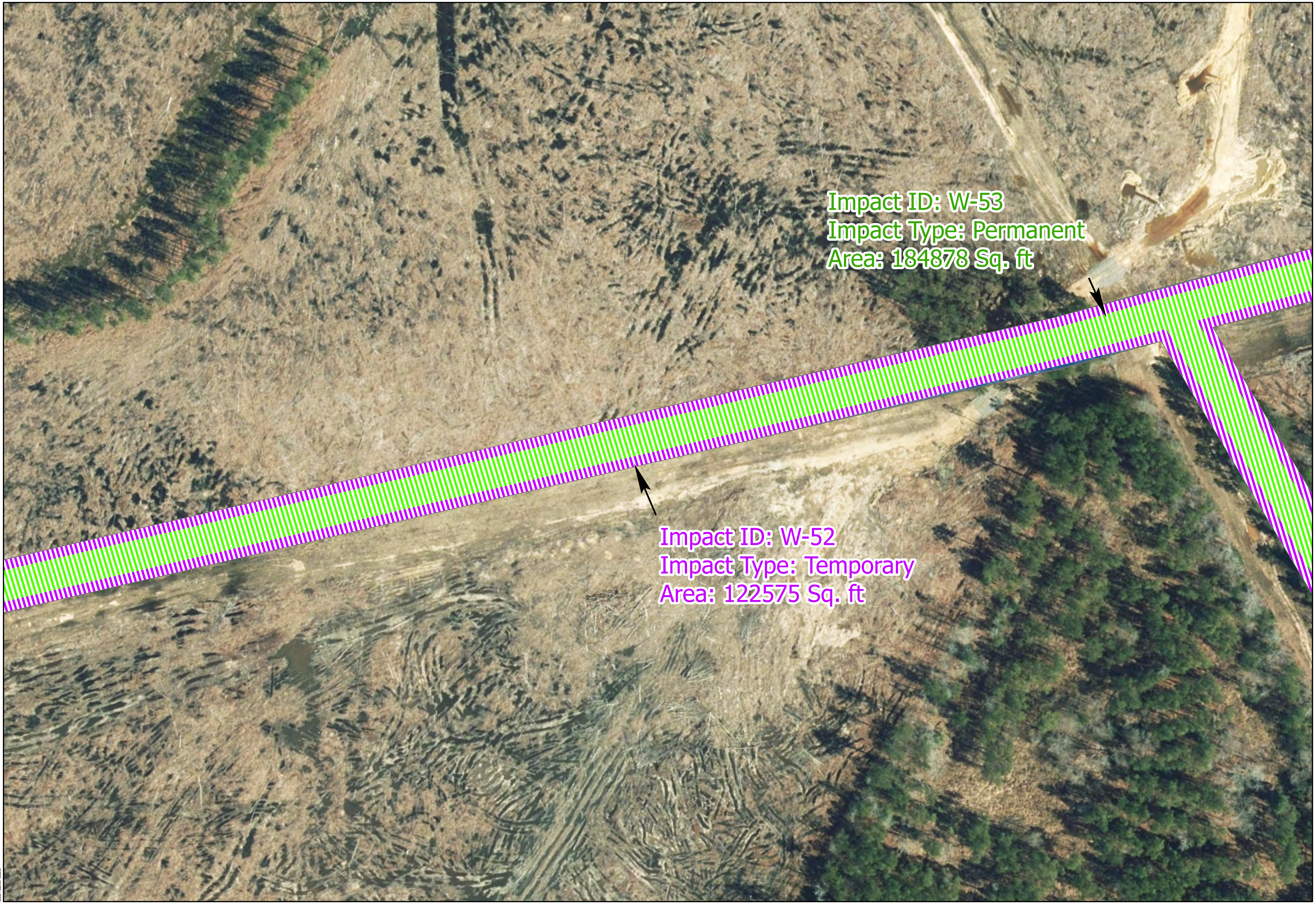

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Phase II Water Line
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Temporary Construction Easement
Phase II Sewer Permanent Access Corridor
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SANFORD NORTH CAROLINA
FREESE NICHOLS

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SANFORD-TIP
PHASE II WATER LINE

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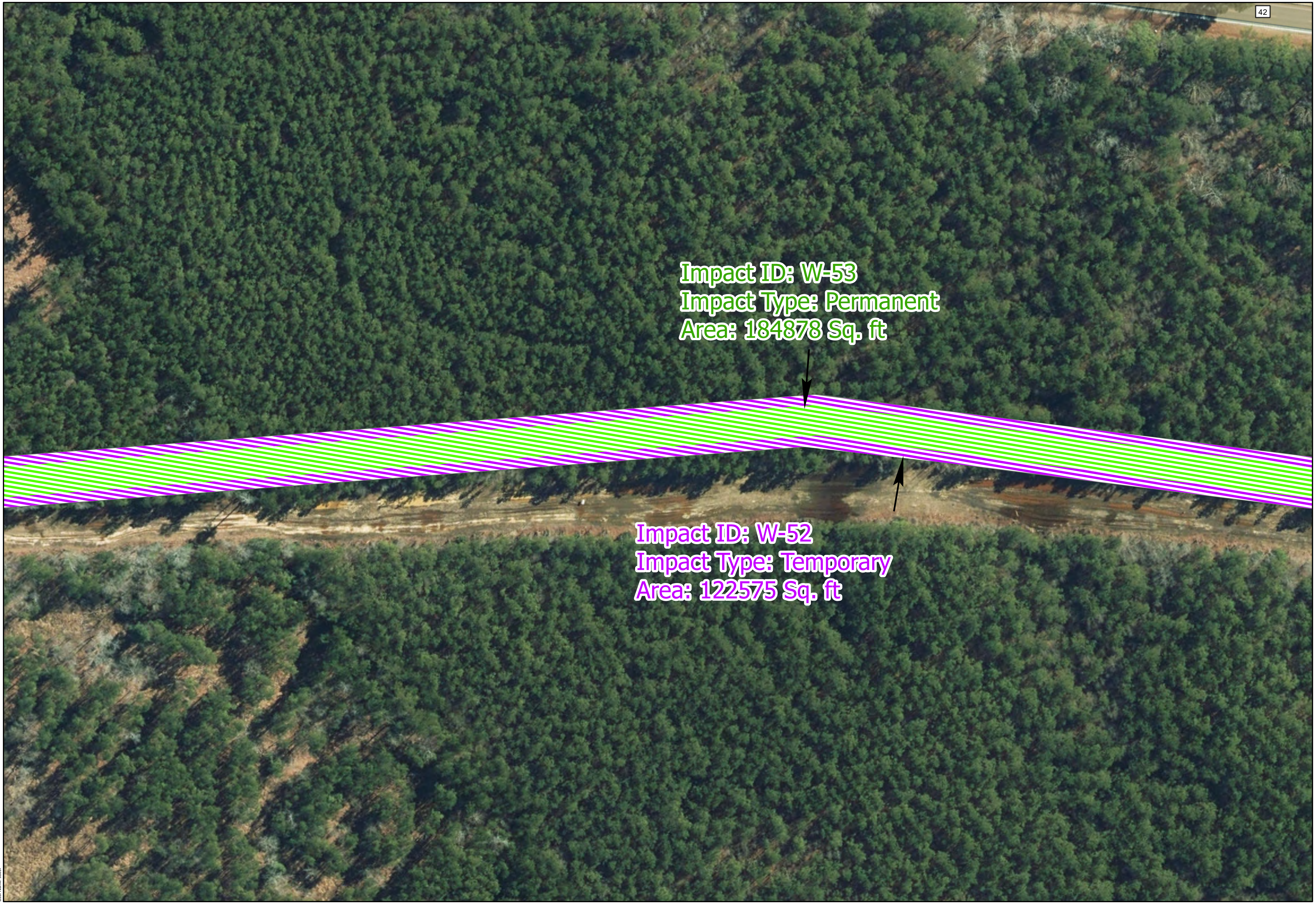

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Temporary Construction Easement
Phase II Sewer Permanent Access Corridor
Phase II Water Permanent Access Corridor

Streams
Stream Impact Area
Permanent Impacts
Temporary Impacts
Phase II Water Line
Phase II Sewer Line

CITY OF SANFORD
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PHASE II WATER LINE

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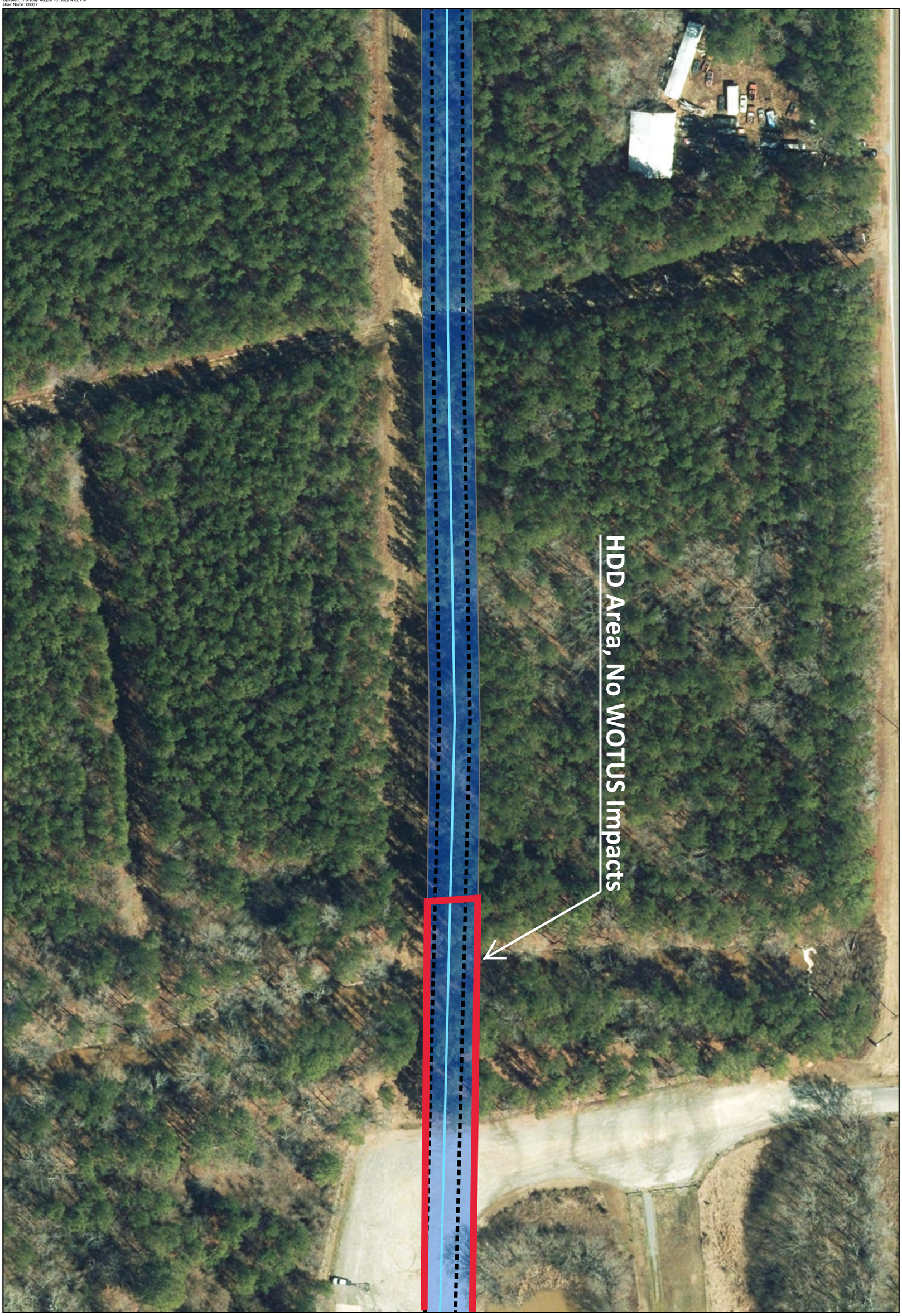

CITY OF SANFORD

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SANFORD NORTH CAROLINA

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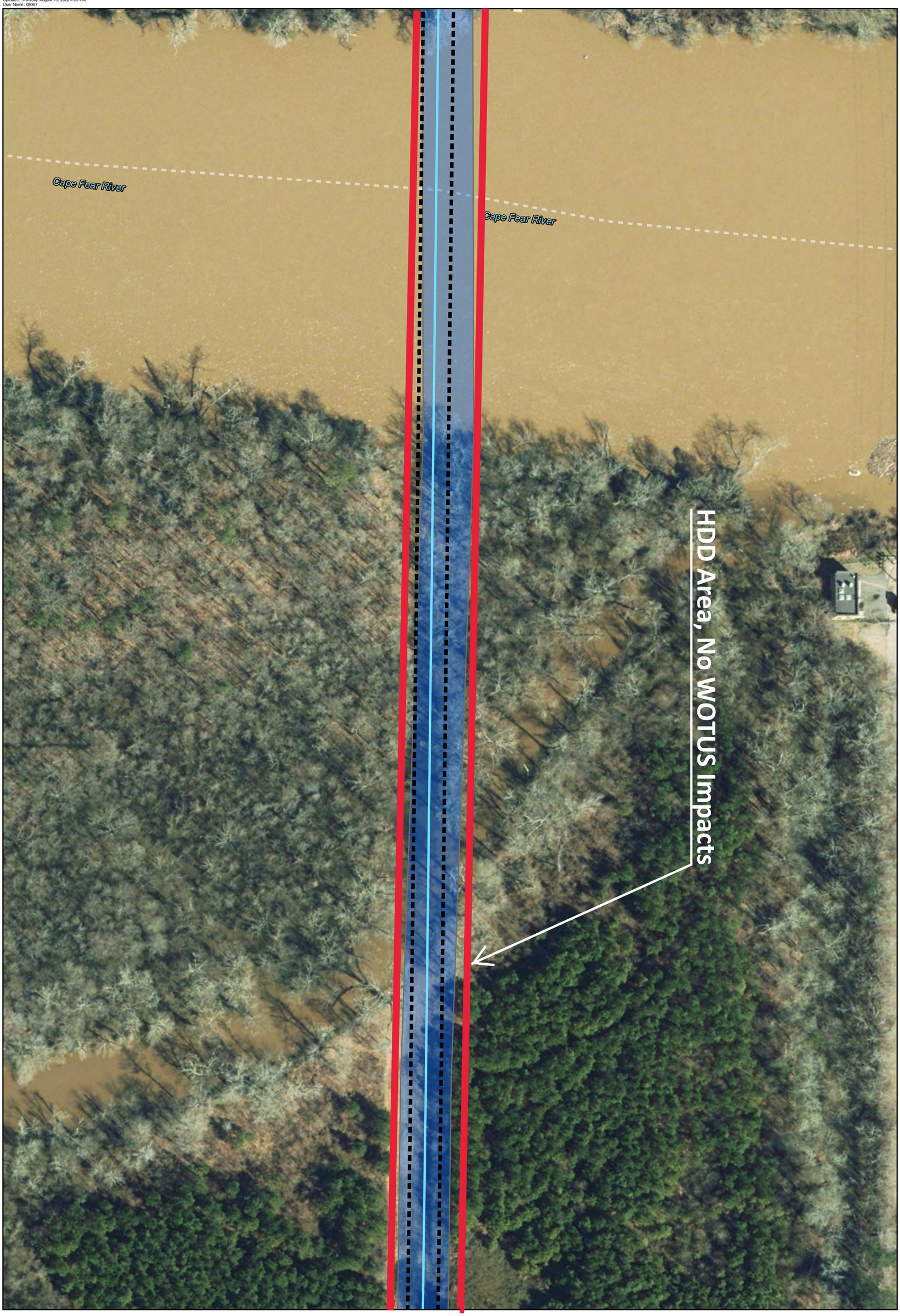

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CITY OF SANFORD

SANFORD-TIP
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SCALE IN FEET

SANFORD NORTH CAROLINA

FREESE NICHOLS

SANFORD
FREESE NICHOLS

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SCALE IN FEET

Temporary Construction Easement
Phase II Sewer Permanent Access Corridor
Phase II Water Permanent Access Corridor

Streams
Stream Impact Area
Permanent Impacts
Temporary Impacts
Phase II Water Line
Phase II Sewer Line

CITY OF SANFORD
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PHASE II WATER LINE

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CITY OF SANFORD

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CITY OF SANFORD

SANFORD-TIP PHASE II WATER LINE

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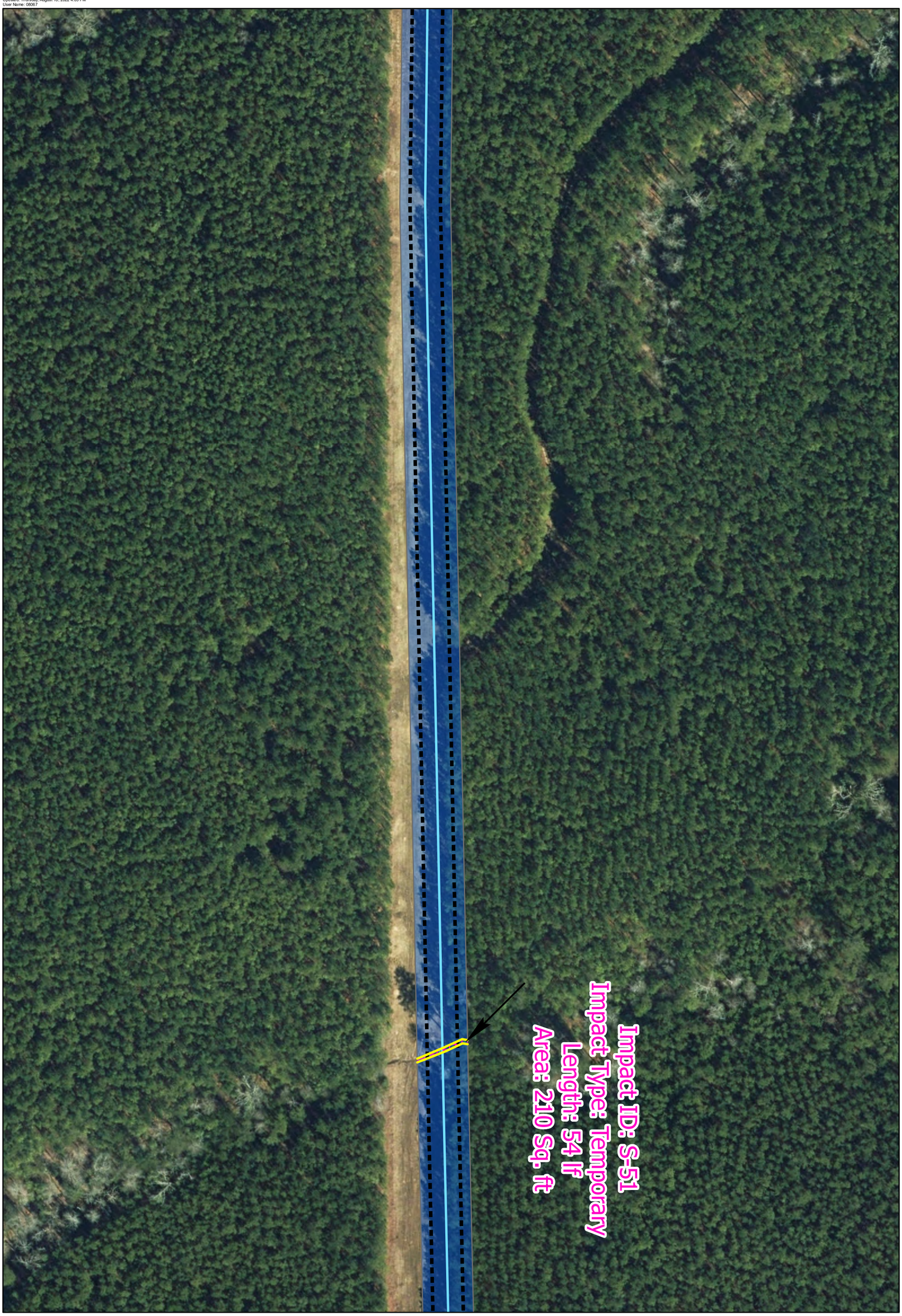

CITY OF SANFORD

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CITY OF SANFORD

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SCALE IN FEET

SANFORD NORTH CAROLINA

FREESE NICHOLS

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Temporary Construction Easement
Phase II Sewer Permanent Access Corridor
Phase II Water Permanent Access Corridor

Streams
Stream Impact Area
Permanent Impacts
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Phase II Water Line
Phase II Sewer Line

CITY OF SANFORD
SANFORD-TIP
PHASE II WATER LINE

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Legend

- Temporary Stream Impacts
- Temporary Wetland Impacts
- Temporary Construction Access
- Intermittent Streams
- Perennial Streams
- Wetlands
- Natural Gas Easement
- Chatham County Buffers
- Delineated Parcels

Impact Site NG-1
Stream S6A
20 LF Temporary Stream Impact

Impact Site NG-2
Stream S1
20 LF Temporary Stream Impact

Impact Site NG-3
Wetland W15
0.002 Temporary Wetland Impact

S6A
S18
S17
S6
S10
S1
S19
S14
S20
W7
W11
W12
W9
W10
W1
W15

Feet
0 600 1,200

Kimley»Horn

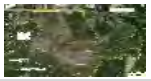
Appendix G: Natural Gas Permit Impact Drawings
Project Blue - Natural Gas
Chatham County, NC
October 2022

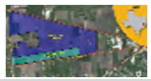
APPENDIX A
OFF-SITE PROJECT ALTERNATIVES

Summary (Preferred Sites)

Exceeds | Desirable | Acceptable | Marginal | Fatal Flaw | N/R

NR = Not Rated at this time

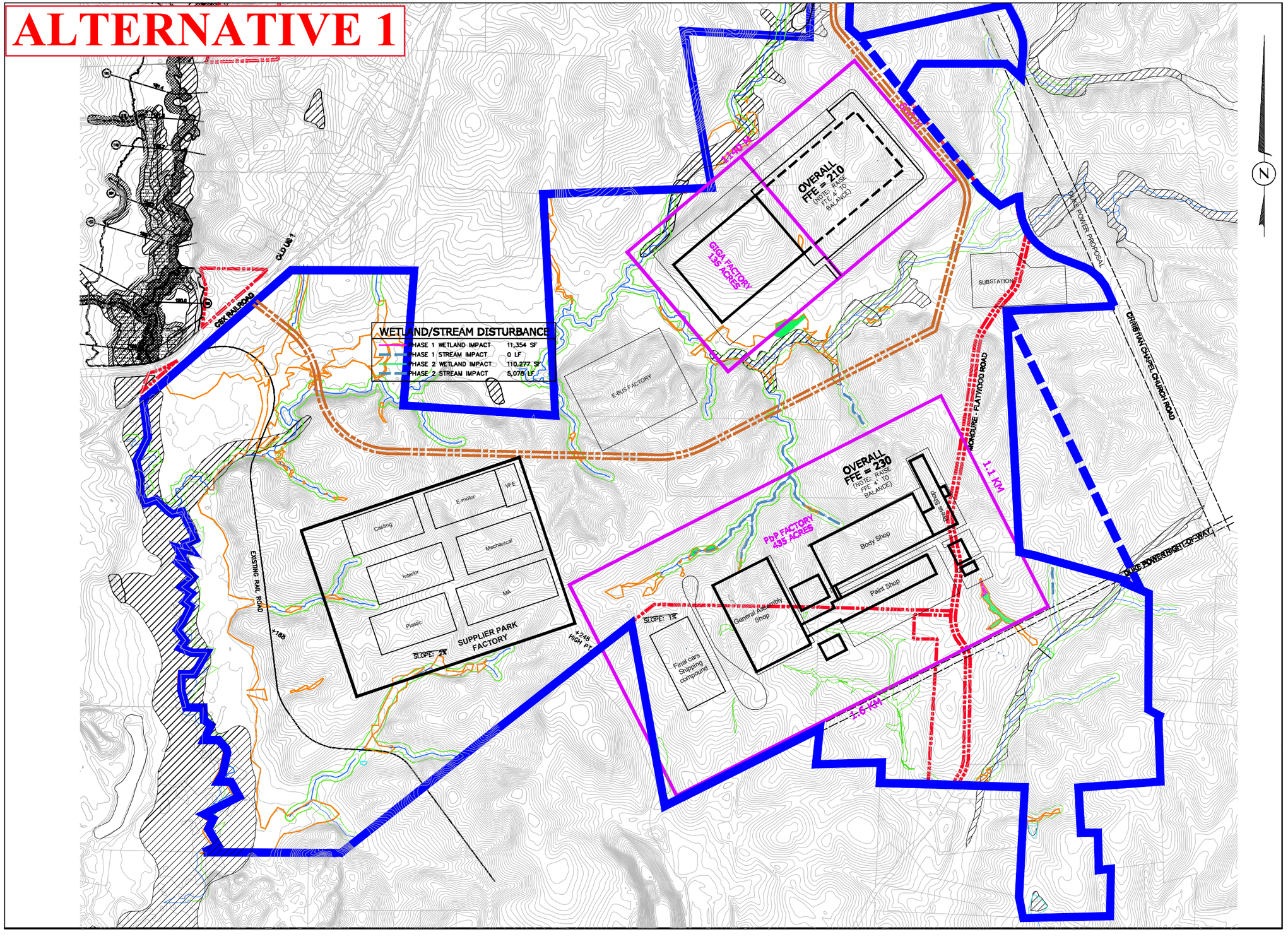



		Alabama (Mobile)	Georgia (Savannah)	Mississippi (Memphis)	North Carolina (Raleigh)	Texas (Houston) (Promising New Submission)
Location	Proximate to labor	56 km to Mobile, AL	41 km to Savannah, GA	59 km to Memphis, TN	32 km to Raleigh, Durham and Chapel Hill	61km to Houston, TX
Ownership	Public	Government owned	Government owned	Single private owner	Government owned	Union Pacific (timing unknown)
Size / Shape	+331 ha (+818 ac),	Desirable size and shape with expansion	Desirable size and shape with expansion	Desirable size and shape with expansion	Desirable size and shape with expansion	Desirable size and shape with expansion
Zoning	Permits Use	Un-zoned	Heavy Industrial	Advanced Manufacturing	Heavy Industrial	No county restrictions
Geotechnical	150-250kn/m2	TBD	TBD	TBD	TBD	TBD
Environmental	Clean	Clean site	Clean site	Clean site	Clean site	TBD
Electricity	+408MW	Ability to supply by SOP	Ability to supply by SOP	Ability to scale close to requirement. Ultimate supply after SOP	Existing powerlines on site to be relocated (18-24mo.) Long-term capacity available before SOP	TBD
Gas	1.1M m^3 per mo.	Ability to supply by SOP	Ability to supply by SOP	Ability to supply by SOP	Ability to supply by SOP	TBD
Water	9,000 m^3/day	Ability to supply by SOP	Ability to supply by SOP	Ability to supply by SOP	Ability to supply by SOP	TBD
Wastewater	7,200 m^3/day	Ability to supply by SOP	Ability to supply by SOP	Ability to supply by SOP	Ability to supply by SOP	TBD
Transportation	Proximate to all modes	• Highway: Adjacent • Rail: On site • Airport: Proximate • Port: 51 km, direct access	• Highway: Adjacent • Rail: On site • Airport: Proximate • Port: 37 km, direct access	• Highway: Adjacent • Rail: Proximate (TBD on site) • Airport: Proximate • Port: 570 km	• Highway: Proximate • Rail: On site • Airport: Proximate • Port: 209 km	• Highway: Proximate • Rail: On site • Airport: Proximate • Port: 77 km
Telecom	High bandwidth	Available	Available	Available	Available	Available
Population	Within 60 mi	• Regional population: 1.3M • Regional workforce: 600k	• Regional population: 1M • Regional workforce: 400K	• Regional population: 1.6M • Regional workforce: 800K	Regional population: 3.8M Regional workforce: 1.8M	• Regional population: 7.2M • Regional workforce: 3.4M
Other	Notes	• Site appears to be feasible although 5-7 months site prep require	Flat site, timeline to construction and SOP appears to be achievable	Infrastructure and site preparation timing concerns	Requires relocation of power lines (18-24 mo)	Union Pacific owns site (unknown timing to sell)

APPENDIX B
ON-SITE PROJECT ALTERNATIVES

ALTERNATIVE 1



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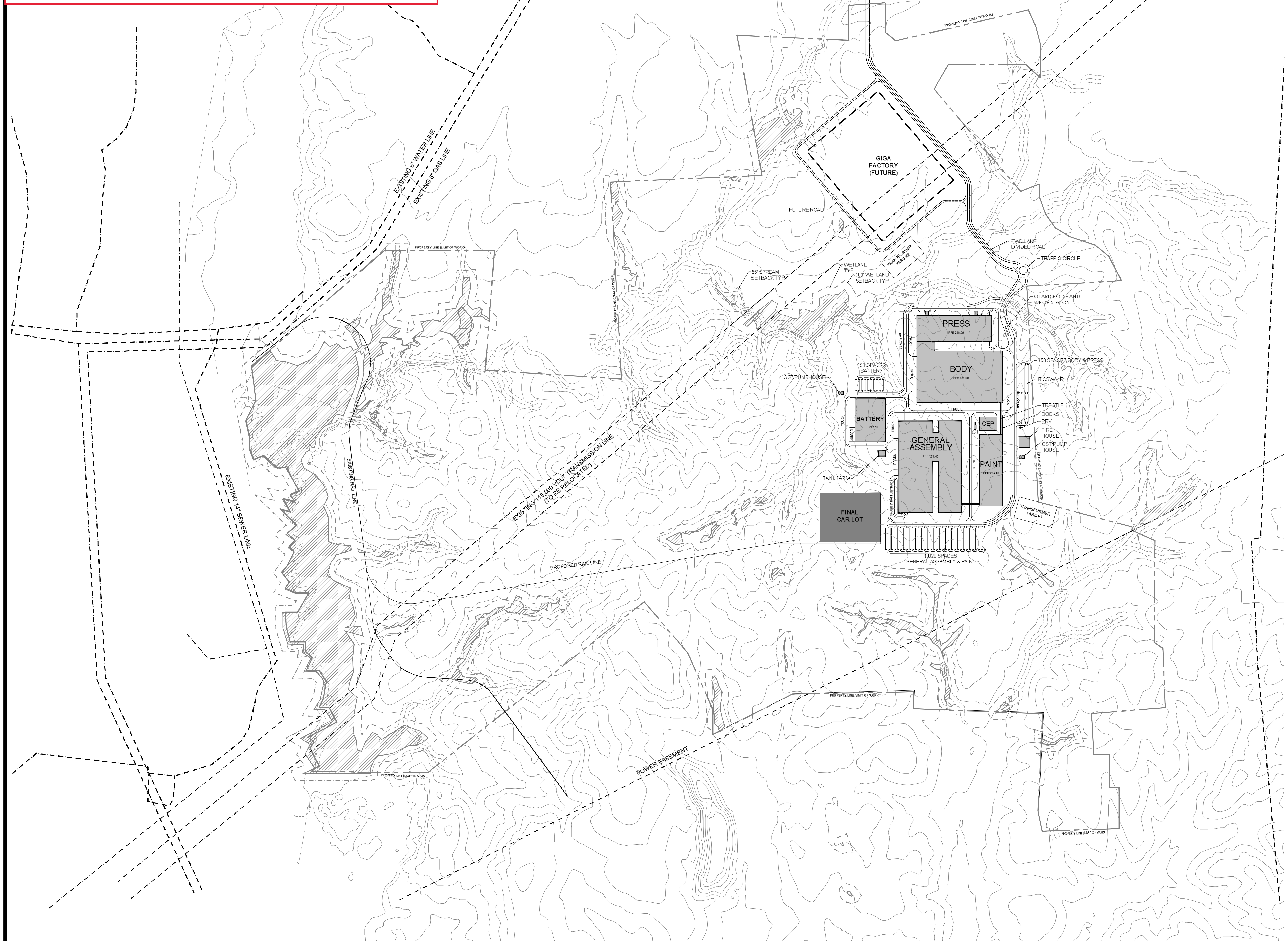

1 OVERALL SITE PLAN
1" = 200'-0"

NORTH

albert KAHN

Albert Kahn Associates, Inc.
The Fisher Building
3011 W. Grand Blvd., Suite 1800
Detroit, Michigan 48202-3000

Issue History

No.	Description	Date
	SD REVIEW	05/16/22

Refer To Sheet Index For Complete Issue History

Registration Seal

REVIEW ONLY
NOT FOR
CONSTRUCTION

Key Plan

VINFAST
VINFAST USA NEW MFG FACILITY
MONCURE, NC

In Charge S.WHITE
Designed RMP
Drawn By RMP, IMM
Checked SAW
Approved Date 05/24/22
Sheet Title

OVERALL SITE PLAN

Job No. 3423-00
Sheet No. LS-100

Date Plotted: 5/12/2022 5:53:33 PM
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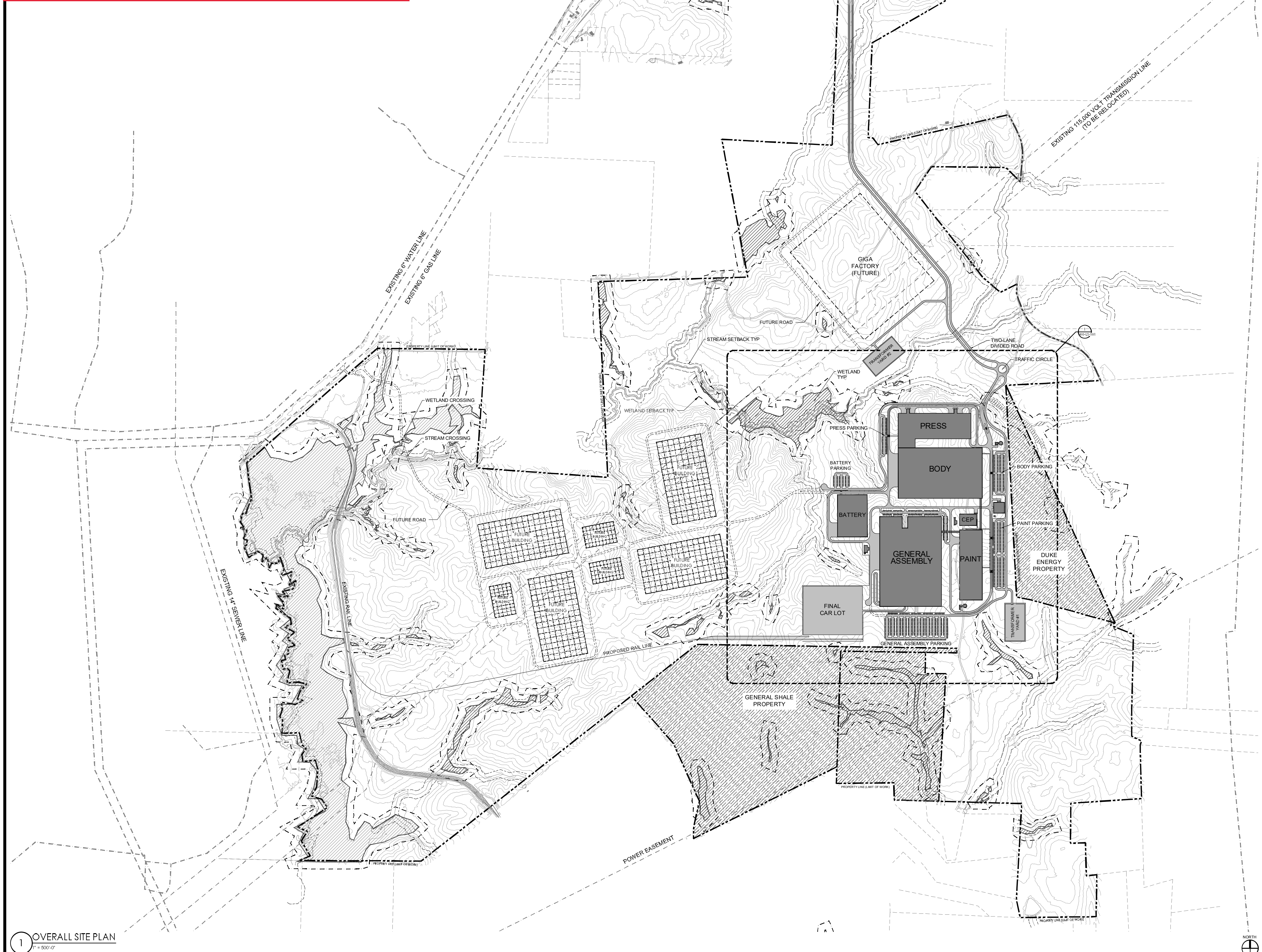

1 OVERALL SITE PLAN
1" = 500'-0"

NORTH

albert KAHN

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The Fisher Building
3011 W. Grand Blvd., Suite 1800
Detroit, Michigan 48202-3000

Issue History

No.	Description	Date
	PRELIM DD REVIEW	06-16-2022
	SD REVIEW	05-16-2022

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VINFAST
VINFAST USA NEW MFG FACILITY
MONCURE, NC

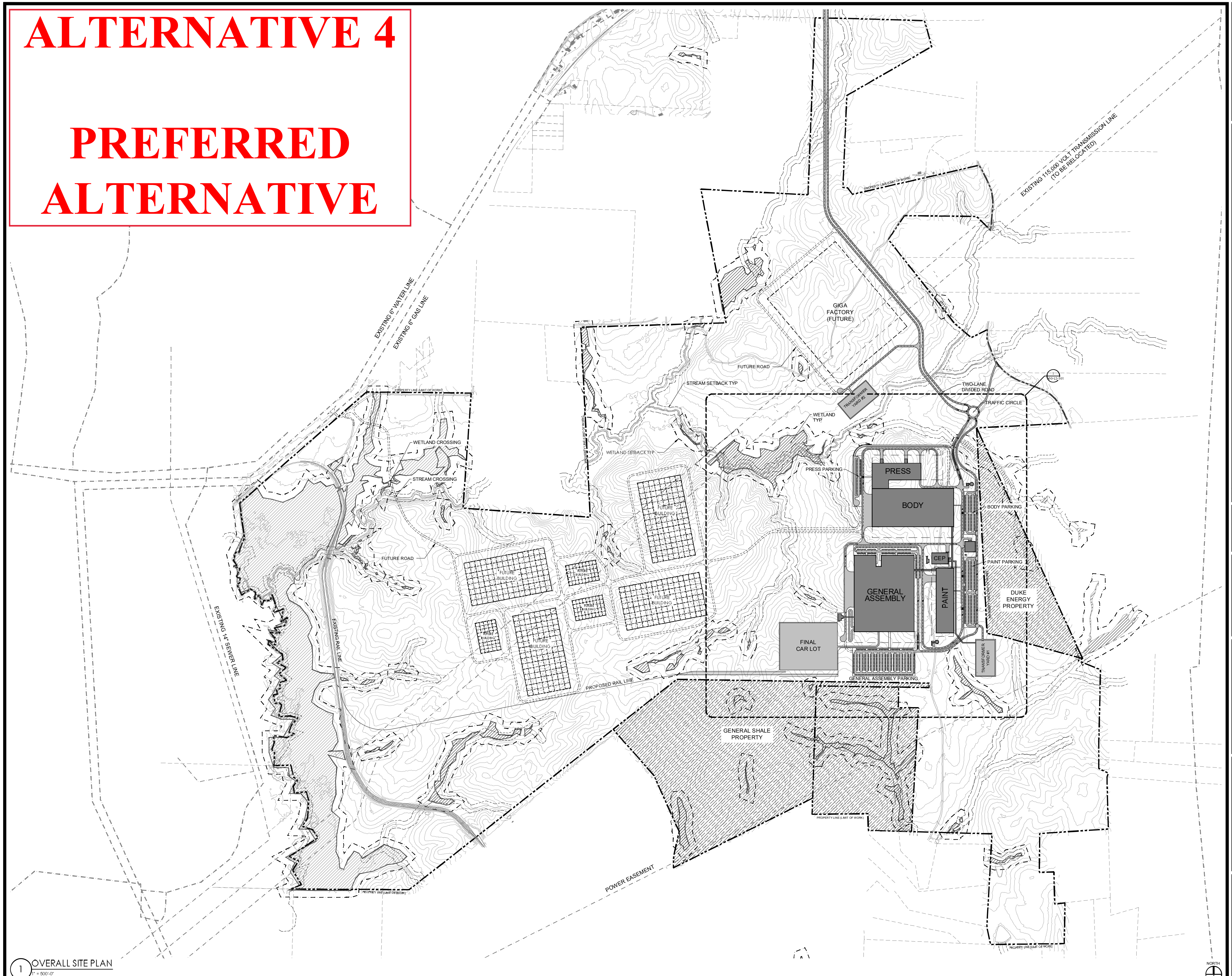
In Charge S.WHITE
Designed RMP
Drawn By RMP
Checked SAW
Approved
Date
Sheet Title

OVERALL SITE PLAN

Job No. 3423-00
Sheet No. 00-LS-100

ALTERNATIVE 4

PREFERRED ALTERNATIVE



1 OVERALL SITE PLAN
1" = 500'-0"

NORTH

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No.	Description	Date
	STRUCT & MEP UTILITY LOADS	07-12-2022
	PRELIM DD REVIEW	06-16-2022
	SD REVIEW	05-16-2022

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Registration Seal

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Key Plan

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VINFAST USA NEW MFG FACILITY
MONCURE, NC

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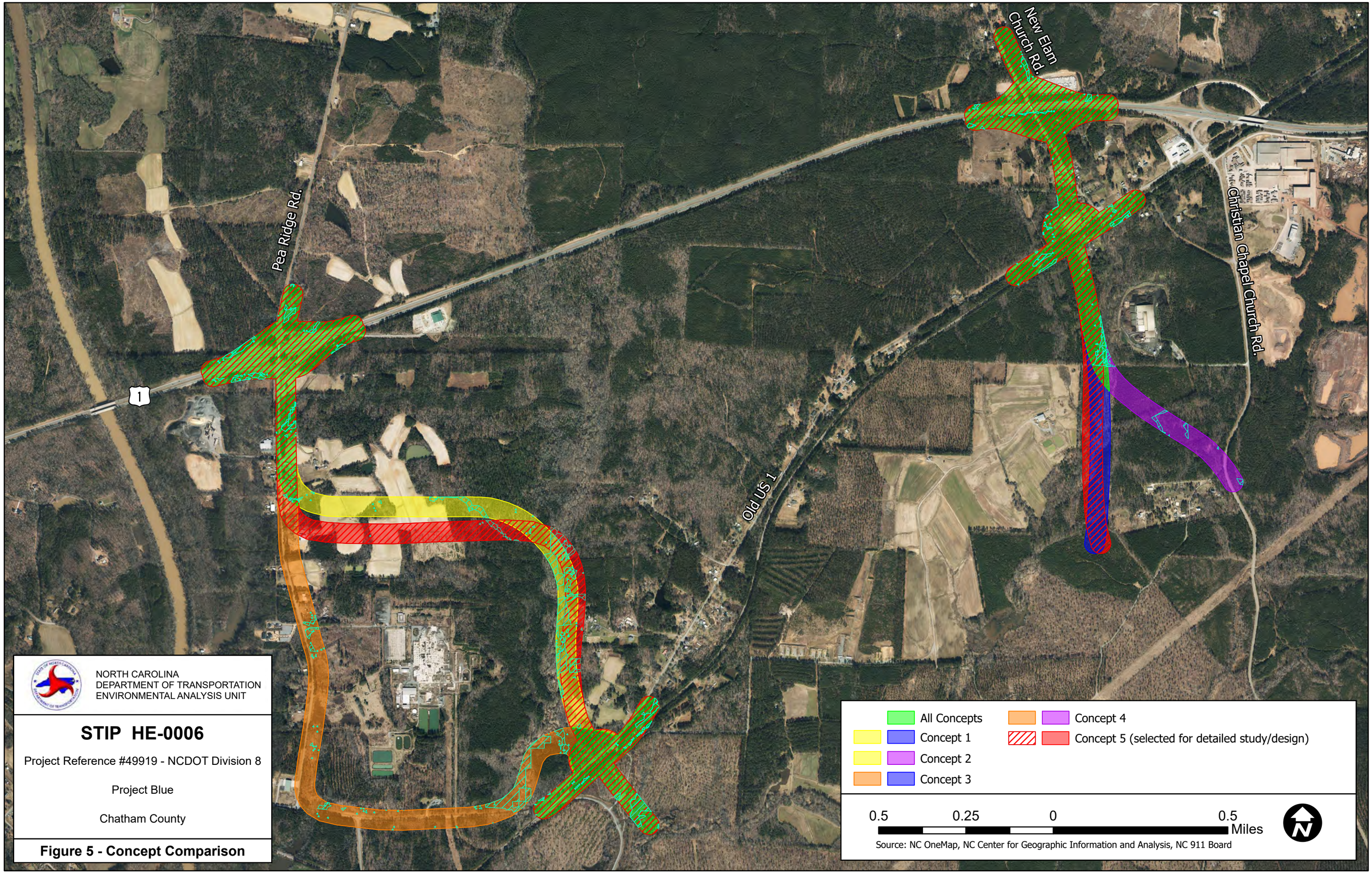
Designed RMP
Drawn By RMP
Checked SAW
Approved
Date
Sheet Title

OVERALL SITE PLAN

Job No. 3423-00
Sheet No. 00-LS-100

APPENDIX C
STIP# HE-0006 – ALTERNATIVES



NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ENVIRONMENTAL ANALYSIS UNIT

STIP HE-0006

Project Reference #49919 - NCDOT Division 8

Project Blue

Chatham County

Figure 5 - Concept Comparison

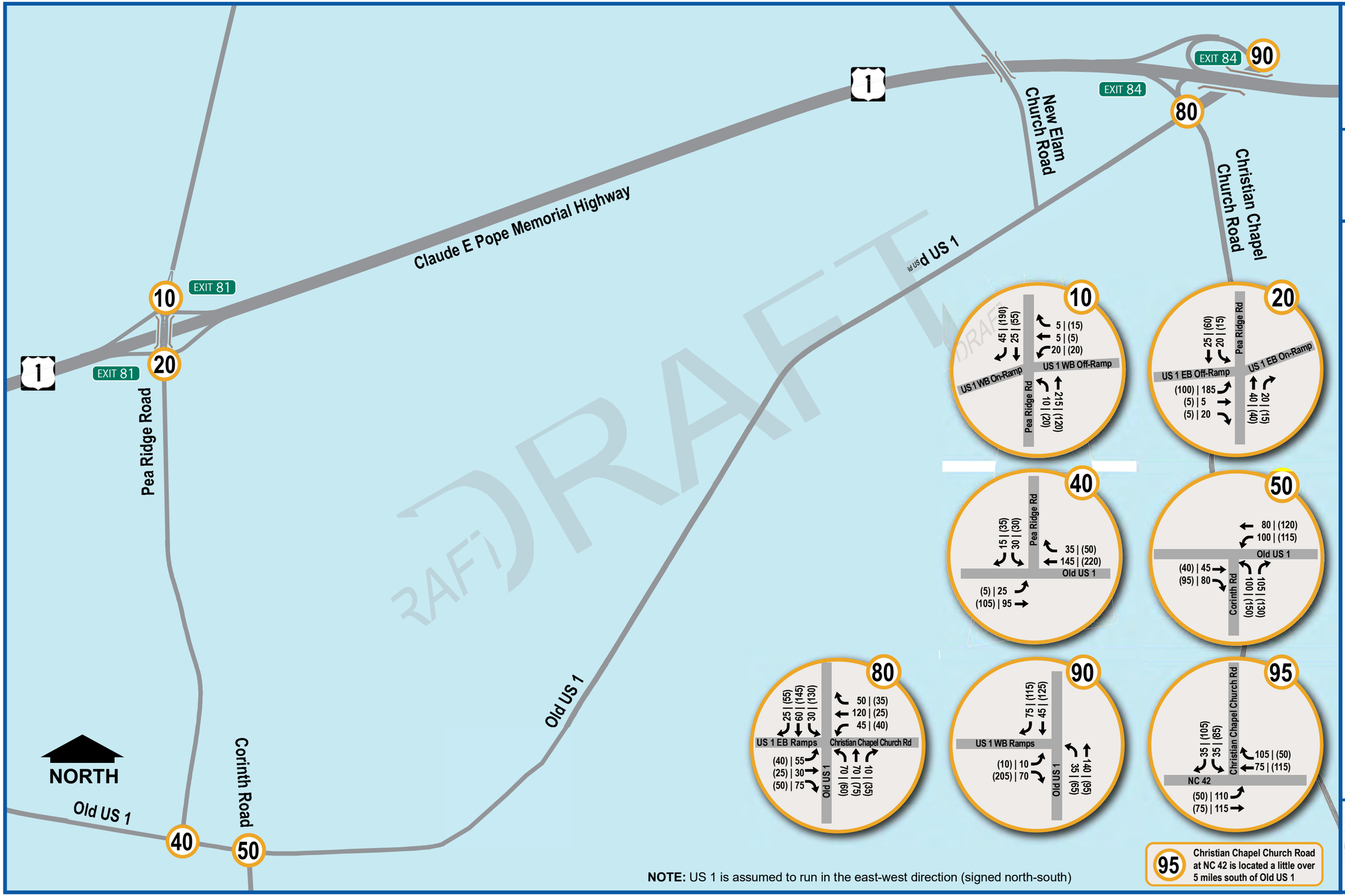
APPENDIX D
TRAFFIC DATA

Roadway	Segment	BY 2022 NB[1]	Conservancy Trips	TIP West Trips	FY 2050 NB[2]	TIP East Trips	FY 2050 Build[3]
US 1	East of Old US 1	36,600	7,900	6,200	62,500	15,400	77,900
	West of New Elam Church Road	35,000	4,800	6,200	57,300	10,200	67,500
	West of Pea Ridge Road	36,600	4,800	2,800	56,000	6,900	62,900
Old US 1	North of US 1	2,700	12,700	800	17,100	1,800	18,900
	South of US 1/ CCC Road	2,100	4,800	2,200	9,800	7,000	16,800
	West of New Elam Church Road	1,600	-	2,200	4,300	10,400	14,700
	East of Pea Ridge Road	3,600	-	2,800	7,600	3,400	11,000
	West of Pea Ridge Road	3,100	-	1,400	5,500	3,400	8,900
Pea Ridge Road	North of US 1	3,800	-	-	5,100	-	5,100
	South of US 1	1,300	-	800	2,600	2,100	4,700
	North of Old US 1	1,300	-	9,600	11,400	18,600	30,000
New Elam Church Road	South of US 1	-	-	4,200	4,200	-	4,200
TIP Truck Entrance New Roadway	TIP Entrance South of Old US 1	-	4,800	0	4,800	3,800	8,600
New Roadway (Near Pea Ridge Road)	North of Old US 1	-	-	-	-	800	800
	South of Old US 1	-	-	-	-	18,600	18,600
FedEx Entrance	East of Pea Ridge Road	-	-	-	-	34,000	34,000

[1] *BY 2022 NB includes existing conditions and calculated 2022 existing AADT.*

[2] *FY 2050 NB includes projected 2050 traffic volumes from existing conditions, the Jordan Lake Conservancy development, and the FedEx development ("TIP West").*

[3] *FY 2050 Build includes full build-out of the TIP development..*

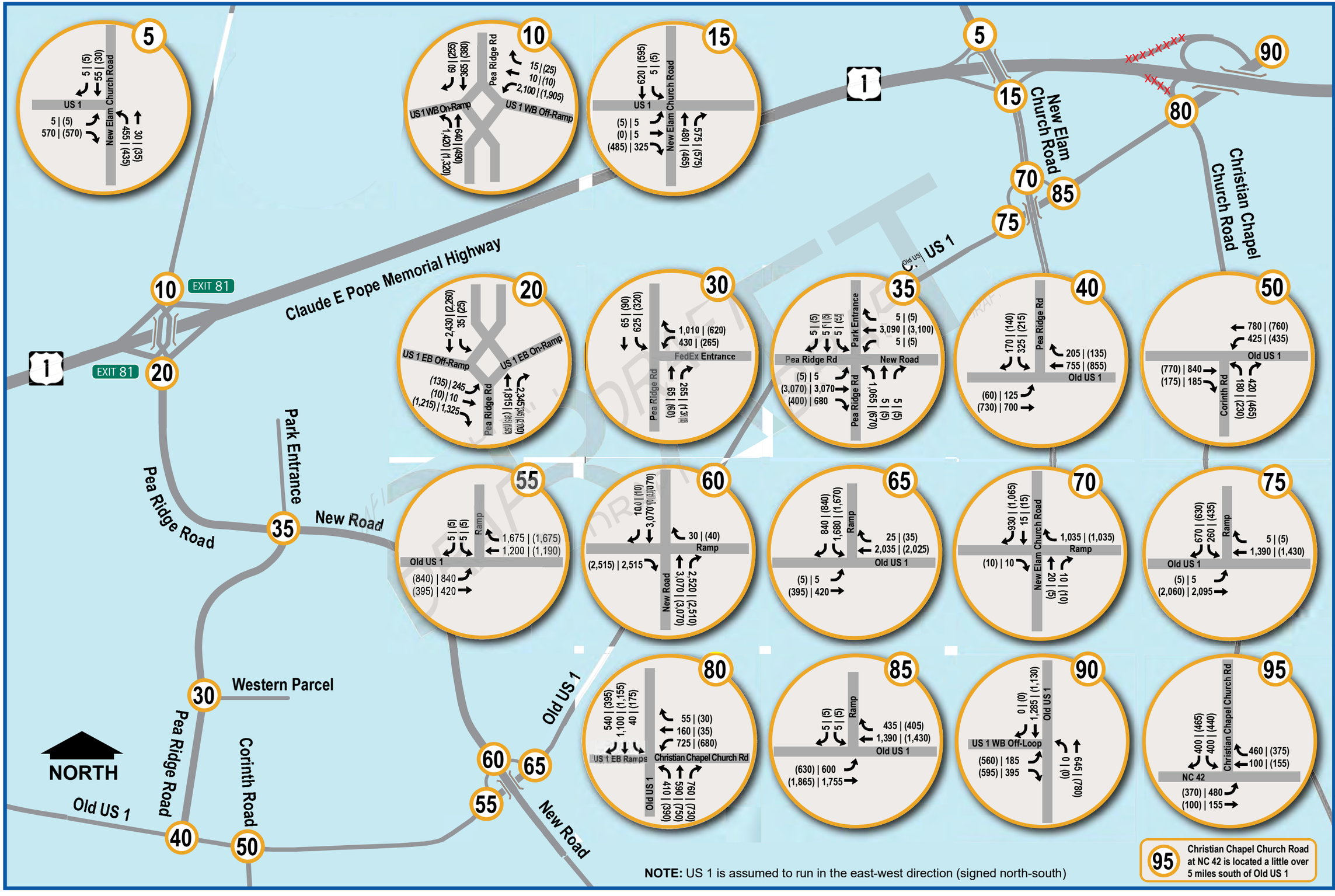


September 2022

RK&K

Legend: ## | (##) = AM | (PM)

Triangle Innovation Point Roadway Network Improvements
Chatham County, NC - Division 8 - HE-0006
Traffic Volumes - 2022 BY No-Build



September 2022

RK&K

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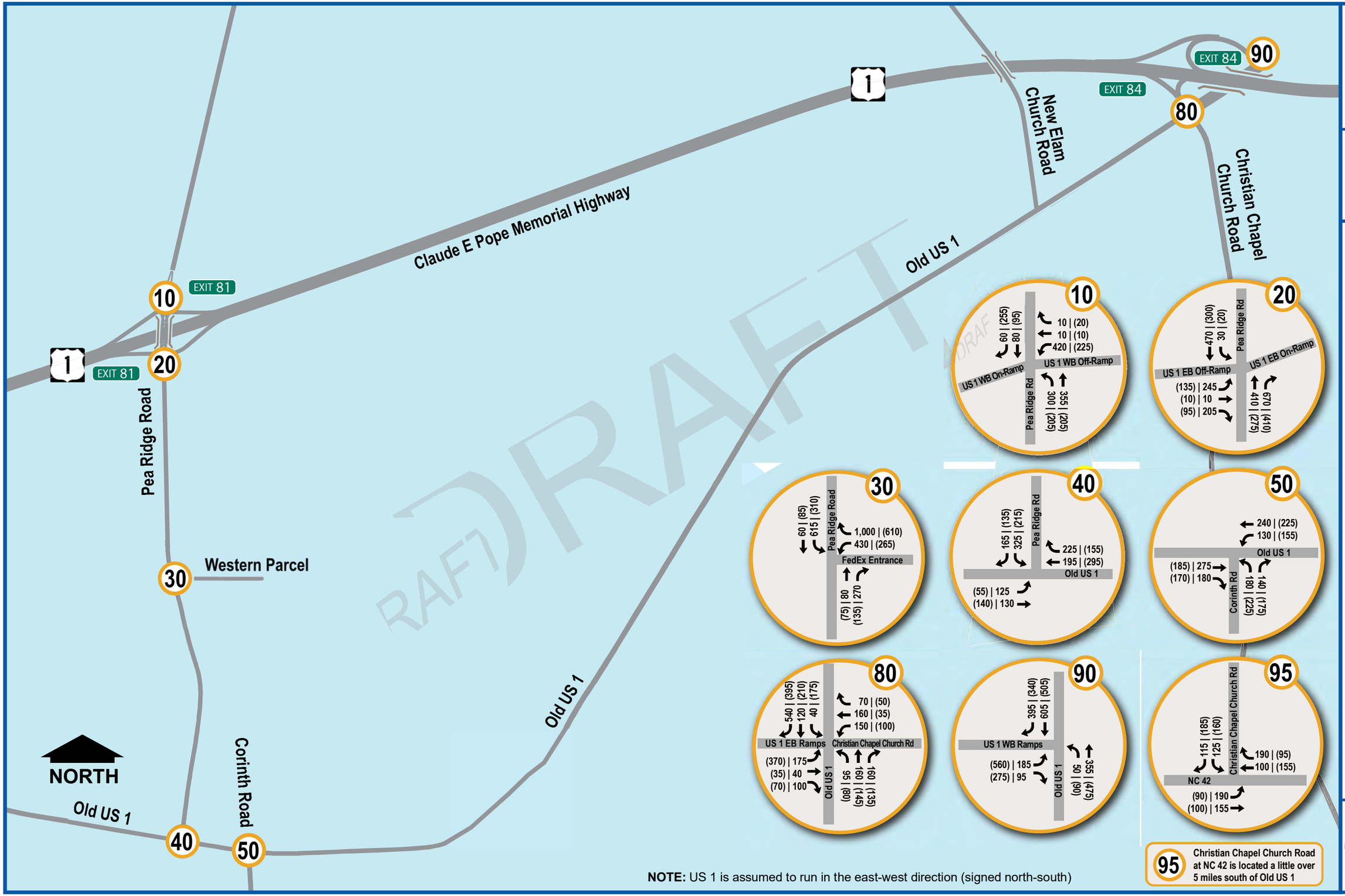
Triangle Innovation Point Roadway Network Improvements

Chatham County, NC - Division 8 - HE-0006

Traffic Volumes - 2050 FY Build



September 2022

Legend: ## | (##) = AM | (PM)

Triangle Innovation Point Roadway Network Improvements
Chatham County, NC - Division 8 - HE-0006
Traffic Volumes - 2050 FY No-Build