ATTACHMENT H

Natural Resources Technical Report Update
June 2023

FINAL

NATURAL RESOURCES TECHNICAL REPORT UPDATE

Mid-Currituck Bridge
Currituck and Dare Counties, North Carolina

STIP R-2576
Federal Aid Project No. BRSTP-000S (494)
WBS Element No. 34470.1.TA1

NORTH CAROLINA TURNPIKE AUTHORITY
a division of the North Carolina Department of Transportation

June 2023

1.0 INTRODUCTION

The North Carolina Turnpike Authority (NCTA) proposes construction of a 4.7-mile-long, two lane toll bridge (the Mid-Currituck Bridge) across Currituck Sound between the communities of Aydlett on the mainland and Corolla on the Outer Banks, an interchange between US 158 and the mainland approach road to the bridge, a bridge across Maple Swamp as part of the mainland approach road, limited improvements to existing NC 12 and US 158, and primarily reversing the center turn lane on US 158 to improve hurricane clearance times (STIP R-2576) in Currituck and Dare Counties. The study area for this project as addressed in this technical report is found in Figure 1. The following Natural Resources Technical Report (NRTR) update serves to update the wetland delineation and federally protected species evaluation from the 2 March 2019 Reevaluation of the Final Environmental Impact Statement and has been prepared to assist in the preparation of the appropriate environmental documentation.

2.0 METHODOLOGY

Pre-field work and field work was conducted in accordance with the NCDOT Environmental Coordination and Permitting's Preparing Natural Resources Technical Reports Procedure and the latest NRTR Template September 2021, as appropriate. Field work was conducted on 27 February through 1 March 2023. A Preliminary Jurisdictional Determination (PJD) package was submitted to the U.S. Army Corps of Engineers (USACE) and the North Carolina Division of Water Resources (NCDWR) on 25 April 2023 requesting verification of water resources identified in the study area. The principal personnel contributing to the field work and document is provided in the appendix.

3.0 PROTECTED SPECIES

3.1 Endangered Species Act Protected Species

The United States Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration (NOAA) list the following federally protected species as potentially occurring within the study area, under the Endangered Species Act (ESA) (Table 1). For each species, a discussion of the presence or absence of habitat is included below along with the Biological Conclusion rendered based on available information and results of surveys for species and/or potentially suitable habitat in the study area.

Table 1. ESA federally protected species potentially within the study area[1]

Scientific Name	Common Name	Federal Status[2]	Habitat Present	Biological Conclusion[3]	
				USFWS Jurisdictional Species	NMFS Jurisdictional Species
Myotis sepentrionalis	northern long-eared bat	T	Yes	MA-LAA	NA

Scientific Name	Common Name	Federal Status[2]	Habitat Present	Biological Conclusion[3]	
				USFWS Jurisdictional Species	NMFS Jurisdictional Species
Canis rufus	red wolf	E-EXPN	Yes	No Effect	NA
Perimyotis subflavus	tricolored bat	PE	Yes	Undetermined	Unresolved
Trichechus manatus	west Indian manatee	T	Yes	MA-NLAA	NA
Laterallus jamaicensis ssp. jamaicensis	eastern black rail	T	No	No Effect	NA
Charadrius melodus	piping plover	T	No	No Effect	NA
Calidris canutus rufa	red knot	T	No	No Effect	NA
Picoides borealis	red-cockaded woodpecker	E	Yes	No Effect	NA
Alligator mississippiensis	American alligator	T(S/A)	Yes	Not Required	NA
Chelonia mydas	green sea turtle	T	Yes	No Effect	No Effect
Eretmochelys imbricata	hawksbill sea turtle	E	No	No Effect	No Effect
Lepidochelys kempii	Kemp's ridley sea turtle	E	Yes	No Effect	No Effect
Dermochelys coriacea	leatherback sea turtle	E	No	No Effect	No Effect
Caretta caretta	loggerhead sea turtle	T	Yes	No Effect	No Effect
Acipenser brevirostrum	shortnose sturgeon	E	Yes	NA	No Effect
Acipenser oxyrhynchus oxyrhynchus	Atlantic sturgeon	E	Yes	NA	MA-NLAA
Amaranthus pumilus	seabeach amaranth	T	No	No Effect	NA

[1] USFWS IPaC data checked on 10 March 2023
[2] E - Endangered
PE – Proposed Endangered
T - Threatened
T(S/A) - Threatened due to similarity of appearance
EXPN – Experimental population, Non-essential
[3] MA-NLAA - May Affect – Not Likely to Adversely Affect
MA-LAA - May Affect – Likely to Adversely Affect
NA – Not applicable; no biological conclusion required

Northern long-eared bat
USFWS optimal survey window: Year-round

Biological Conclusion: May Affect, Likely to Adversely Affect

Northern long-eared bats (NLEB) roost in dead and live trees during the summer months and hibernate in caves or mines during the winter months. Caves and mines are not present in the Currituck Sound region, but parts of the study area have forested areas that could be potential habitat for the NLEB. The US Fish and Wildlife Service has issued a programmatic biological opinion (PBO) in conjunction with the Federal Highway Administration (FHWA), the USACE, and NCDOT for the northern long-eared bat (*Myotis septentrionalis*) in eastern North Carolina. The PBO covers the entire NCDOT program in Divisions 1-8, including all NCDOT projects and activities. Although the PBO covers Divisions 1-8, the USFWS only considers NLEBs to be known or potentially found in 30 counties within Divisions 1-8. NCDOT, FHWA, and USACE have agreed to two conservation measures that 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 31 December 2030) for all NCDOT projects with a federal nexus in Divisions 1-8, which includes Currituck and Dare Counties, where R-2576 is located. A review of NCNHP records on 10 March 2023 indicated no known occurrences of this species within 1.0 mile of the study area.

Red wolf
USFW optimal survey window: Year-round

Biological Conclusion: No Effect

The swamp forests associated with Maple Swamp provide potential habitat for the red wolf. However, it is unlikely that the reintroduced population in Alligator River National Wildlife Refuge (ARNWR) will cross large waterbodies (Albemarle, Roanoke, and/or Croatan sounds) and reach the study area. The low likelihood of occurrence within the project area, combined with the close management of this experimental population by the USFWS, does not support establishment of this species in the study area. A review of NCNHP records on 10 March 2023 indicated no known occurrences of this species within 1.0 mile of the study area.

Tricolored bat
USFWS optimal survey window: Year-round

Biological Conclusion: Unresolved

On 14 September 2022, the U.S. Fish and Wildlife Service announced a proposal to list the tricolored bat (*Perimyotis subflavus* - PESU) as endangered under the

Endangered Species Act. Given the proposal to list PESU as Federally Endangered, NCDOT and its federal partners, FHWA and USACE, are initiating a conference programmatic consultation to address impacts on this species. USFWS has not provided an official effective listing date, but it is anticipated to occur in the second half of 2023. Upon listing, USFWS is expected to provide habitat descriptions and an area of influence/distribution range for PESU. When this information is provided, it will help to inform NCDOT's determinations on habitat that could be impacted by NCDOT actions. A review of NCNHP records on 10 March 2023 indicated no known occurrences of this species within 1.0 mile of the study area.

West Indian manatee
USFWS optimal survey window: Year-round

Biological Conclusion: May Affect, Not Likely to Adversely Affect

West Indian manatees are found in marine water, brackish water, estuaries, river mouths, and bays at shallow depths estimated around 9 to 16 feet deep. They forage on SAV beds, which can be found within the Currituck Sound. But, the lower water temperatures of the northern North Carolina region prevent the species from commonly occurring in the area. A review of NCNHP records on 10 March 2023 indicated no known occurrences of this species within 1.0 mile of the study area.

Eastern black rail
USFWS optimal survey window: April 1-June 30

Biological Conclusion: No Effect

In North Carolina, the Eastern black rail resides and nests in dense vegetation cover within brackish marshes and freshwater wetlands. Shoreline areas in the study area lack suitable marsh for this species. Photographs depicting shoreline areas within the study area are included in the attached appendix. There is no suitable habitat within the study area to support this species, and a review of NCNHP records on 10 March 2023 indicated no known occurrences of this species within 1.0 mile of the study area.

Piping plover
USFWS optimal survey window: Year-round

Biological Conclusion: No Effect

Suitable habitat for the piping plover includes areas around inlets and sandy beaches along the coastline, which do not occur in the study area. In addition, a review of NCNHP records on 10 March 2023 indicated no known occurrences of this species within 1.0 mile of the study area.

Red knot
USFWS optimal survey window: Year-round

Biological Conclusion: No Effect

In North Carolina, red knots forage and roost primarily during migration and early winter months along beaches, mudflats, lagoons, and estuary edges. The absence of exposed muddy/sandy shorelines in the study area limits suitable habitat for this species; and, a review of NCNHP records on 10 March 2023 indicated no known occurrences of this species within 1.0 mile of the study area.

Red-cockaded woodpecker
USFWS optimal survey window: November-early March

Biological Conclusion: No Effect

The red-cockaded woodpecker (RCW) occurs in open, mature stands of primarily pine forests for foraging and requires older pine trees for nesting/roosting habitat; however, in northeastern North Carolina, RCWs occur in a wide variety of upland and wetland habitats and can utilize habitats dominated by hardwoods and/or with dense midstories (USACE 2022). A review of NCNHP records on 10 March 2023 indicated a known occurrence of this species within 1.0 mile of the western portion of the study area near Coinjock. The determination for this species is based on the 31 January 2023 Biological Assessment (NCTA 2023). Aerial surveys were conducted by JCA, Inc. on 2-4 November 2022. No RCW cavity trees will be removed or impacted by the proposed project and no active RCW cavity trees were found within 0.5 mile of the proposed clearing limits.

American alligator
USFWS optimal survey window: Year-round; only warm days in winter

Biological Conclusion: Not Required

While American alligators reside on the Dare County mainland, it is near the northern extreme range of this species. Although appropriate habitat for the American alligator is present in the study area, the species is rare north of Alligator River National Wildlife Refuge and not expected in the study area. This species is on the protected species list because of its similarity in appearance to the endangered American crocodile. A review of NCNHP records on 10 March 2023 indicated no known occurrences of this species within 1.0 mile of the study area.

Green sea turtle
USFWS optimal survey window: April-August for beach surveys

Biological Conclusion: No Effect

In North Carolina, green sea turtles are found in shallow waters along the coastline and in lagoons, reefs, bays, and inlets where an abundance of SAVs can be found. They nest on sandy beaches along the coastline. Currituck Sound could provide suitable habitat for the sea turtle due to the abundant SAV available; however, nesting would not occur in the study area due to the absence of beach habitat within site boundaries. A review of NCNHP records on 10 March 2023 indicated a known occurrence of this species within 1.0 mile of the two Outer Banks study areas near Corolla (HWY 12 site and Albacore Street site).

Hawksbill sea turtle
USFWS optimal survey window: April-August for beach surveys

Biological Conclusion: No Effect

Hawksbill sea turtles are found in coastal waters near estuaries, coral reefs, and lagoons. They nest on sandy beaches along the coastline, but juveniles can be found offshore and in sounds. Currituck Sound could provide suitable habitat for juveniles and adults, but nesting would not occur in the study area due to the absence of beach habitat within site boundaries. A review of NCNHP records on 10 March 2023 indicated no known occurrences of this species within 1.0 mile of the study area.

Kemp's ridley sea turtle
USFWS optimal survey window: April-August for beach surveys

Biological Conclusion: No Effect

Kemp's ridley sea turtles are found in coastal habitats with muddy or sandy bottoms near shore. Currituck Sound could provide suitable habitat for the Kemp's ridley sea turtle due to the abundant SAV available; however, nesting would not occur in the study area due to the absence of beach habitat within site boundaries. A review of NCNHP records on 10 March 2023 indicated a known occurrence of this species within 1.0 mile of the two Outer Banks study areas near Corolla (HWY 12 site and Albacore Street site).

Leatherback sea turtle
USFWS optimal survey window: April-August for beach surveys

Biological Conclusion: No Effect

Leatherback sea turtles are found in the open water and at times offshore to forage on jellyfish. They nest on sandy beaches along the coastline. The Currituck Sound could provide suitable habitat for a potential food source; however, nesting would not occur in the study area due to the absence of beach habitat within site boundaries. However, a review of NHP records on 10 March 2023 indicated a known occurrence of this species within 1.0 mile of the HWY158 study areas near Kitty Hawk.

Loggerhead sea turtle
USFWS optimal survey window: April-August for beach surveys

Biological Conclusion: No Effect

Loggerhead sea turtles are found in shallow waters along the coastline inshore where abundance of SAVs can be found. They nest on sandy beaches along the coastline. Currituck Sound could provide suitable habitat for this turtle due to the abundant SAV available. However, nesting would not occur in the study area due to the absence of beach habitat within site boundaries A review of NHP records on 10 March 2023 indicated a known occurrence of this species within 1.0 mile of the two Outer Banks study areas near Corolla (HWY 12 site and Albacore Street site).

Shortnose sturgeon
USFWS optimal survey window: Not required

Biological Conclusion: No Effect

The estuarine waters, soft-bottom substrate, and submerged aquatic vegetation beds in Currituck Sound provide potential foraging habitat for the shortnose sturgeon. Any potential occurrence of this species within the study area would likely be short-term and in conjunction with annual spring migrations. A review of NCNHP records on 10 March 2023 indicated no known occurrences of this species within 1.0 mile of the study area.

Atlantic sturgeon
USFWS optimal survey window: Not required

Biological Conclusion: May Affect, Not Likely to Adversely Affect

Atlantic sturgeon is assumed to occur and forage in the Currituck Sound portions of the study area; however few impacts are expected due to the mobility of this species and its anticipated avoidance of construction/disturbance areas in the Currituck Sound. A review of NCNHP records on 10 March 2023 indicated one known occurrence of this species within 1.0 mile of the study area in the Currituck Sound. The project may affect the Atlantic sturgeon due to proximity of known spawning grounds in the Albemarle Sound; however, the project is not likely to adversely affect or jeopardize the continued existence of the Atlantic sturgeon.

Seabeach amaranth
USFWS optimal survey window: July-October

Biological Conclusion: No Effect

Suitable habitat (coastal dunes, especially overwash areas near inlets) for seabeach amaranth is not located within the study area. In addition, a review of NCNHP records on 10 March 2023 indicated no known occurrences of this species within 1.0 mile of the study area.

3.2 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.

The determination for this species is based on the 31 January 2023 Biological Assessment (NCTA 2023). Aerial surveys were conducted by JCA, Inc. on 2-4 November 2022. One water body, Currituck Sound, large enough or sufficiently open to be considered potential feeding source was identified. No bald eagles or nests were detected within the 660 ft. radius eagle survey corridor during ground or aerial surveys conducted by JCA, Inc. on 2-4 November 2022. A review of the NHP database on 10 March 2023 revealed no known occurrences of this species within 1.0 mile of the study area.

4.0 REGULATORY CONSIDERATIONS

4.1 Clean Water Act Waters of the U.S.

Nine surface water areas were identified in the study area (Table 2). The locations of each surface water are shown on Figures 2-4.

Table 2. Surface waters in the study area

Surface Water	Connection	Area (ac) in Study Area
PB	Adjacent to Jean Guite Creek	<0.1
PC	Adjacent to Currituck Sound	<0.1
PD	Adjacent to Jean Guite Creek	<0.1
EA	Currituck Sound	0.9
EB	Currituck Sound	<0.1
EC1	Abuts Jean Guite Creek	<0.1
EC2	Abuts Jean Guite Creek	<0.1
EC3	Abuts Jean Guite Creek	<0.1
ED1	Currituck Sound	<0.1
ED2	Currituck Sound	<0.1
SA	Intracoastal Waterway	0.1
D1	Ditch within wetland WD	<0.1

Two streams were identified in the study area (Table 3). The locations of these streams are shown on Figures 2-4. NCDWR stream identification forms are included in a separate Jurisdictional Determination (JD) Package. All streams in the study area have been designated as warm water streams for the purposes of stream mitigation.

Table 3. Status of streams in the study area

Map ID	Length (ft.)	Classification	Compensatory Mitigation Required	River Basin Buffer
SA	234	Perennial	Yes	NA
S1A	200	Intermittent	Yes	NA
S1B	59	Perennial	Yes	NA
Total	**493**			

Fourteen different wetland polygons were identified within the study area (Table 4). The locations of these wetland polygons are shown on Figures 2-4. All wetlands in the study area are located within the Pasquotank River basin [USGS Hydrologic Unit 03010205]. USACE wetland determination forms and N.C. Wetland Assessment Method (NCWAM) forms for each site are included in a separate JD Package.

Table 4. Characteristics of wetlands in the study area

Map ID	NCWAM Classification	Forested	NCWAM Rating	Hydrologic Classification	404/401 or 401	Area (ac.) in Study Area
EWB1	Basin Wetland	N	Low*	Non-riparian	404/401	0.06
EWB2	Basin Wetland	Y	Medium	Non-riparian	404/401	0.18
EWC1	Basin Wetland	Y	High*	Non-riparian	404/401	0.01
EWC2	Basin Wetland	Y	High*	Non-riparian	404/401	0.01
EWD	Basin Wetland	Y	Medium*	Non-riparian	404/401	0.19
EWE	Basin Wetland	Y	Medium*	Non-riparian	404/401	0.07
EWF	Basin Wetland	Y	High*	Non-riparian	404/401	0.27
FWB	Basin Wetland	N	Low	Non-riparian	404/401	0.02
WA1	Hardwood Flat	Y	High	Non-riparian	404/401	18.92
WA2	Hardwood Flat	Y	High	Non-riparian	404/401	6.54
WB1	Non-Riverine Swamp Forest	Y	High	Non-riparian	404/401	0.46
WB2	Non-Riverine Swamp Forest	Y	High	Non-riparian	404/401	0.04
WB3	Non-Riverine Swamp Forest	N	High	Non-riparian	404/401	0.08
WB4	Non-Riverine Swamp Forest	N	Low	Non-riparian	404/401	0.20
WB5	Non-Riverine Swamp Forest	N	Low	Non-riparian	404/401	0.15
WB6	Non-Riverine Swamp Forest	N	Low	Non-riparian	404/401	<0.01
WB7	Non-Riverine Swamp Forest	N	Low	Non-riparian	404/401	<0.01
WB8	Non-Riverine Swamp Forest	N	Low	Non-riparian	404/401	0.01
WB9	Non-Riverine Swamp Forest	Y	Medium	Non-riparian	404/401	0.09
WB10	Non-Riverine Swamp Forest	Y	Medium	Non-riparian	404/401	0.26

Map ID	NCWAM Classification	Forested	NCWAM Rating	Hydrologic Classification	404/401 or 401	Area (ac.) in Study Area
WC	Non-Riverine Swamp Forest	Y	High	Non-riparian	404/401	12.71
WD	Non-Riverine Swamp Forest	Y	High	Non-riparian	404/401	0.86
WE	Non-Riverine Swamp Forest	Y/N	Medium*	Non-riparian	404/401	0.60
WF	Hardwood Flat	Y/N	Low	Non-riparian	404/401	1.05
WG1	Headwater Forest	Y	Medium*	Non-riparian	404/401	0.02
WG2	Headwater Forest	Y	Medium*	Non-riparian	404/401	0.13
WH	Basin Wetland	Y	Medium	Non-riparian	404/401	0.14
WH2	Basin Wetland	Y	Medium	Non-riparian	404/401	0.36
WI1	Basin Wetland	N	Medium*	Non-riparian	404/401	0.03
WI2	Basin Wetland	N	Medium*	Non-riparian	404/401	0.04
					Total	**43.45**

* NCWAM rating completed during the 2017 delineation.

4.2 Rivers and Harbors Act Section 10 Navigable Waters

Currituck Sound has been designated by the USACE as a Navigable Water under Section 10 of the Rivers and Harbors Act.

4.3 Coastal Area Management Act Areas of Environmental Concern

Public Trust Waters under jurisdiction of the Coastal Area Management Act (CAMA) Areas of Environmental Concern (AEC) were identified in the study area and include the Currituck Sound (map IDs: of EA, EB, ED), Jean Guite Creek (map ID: EC), and the Intracoastal Waterway (map ID: SA) as shown on Figures 2-4.

7.0 REFERENCES

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U.S. Fish and Wildlife Service (USFWS). Piping Plover. https://www.fws.gov/species/piping-plover-charadrius-melodus

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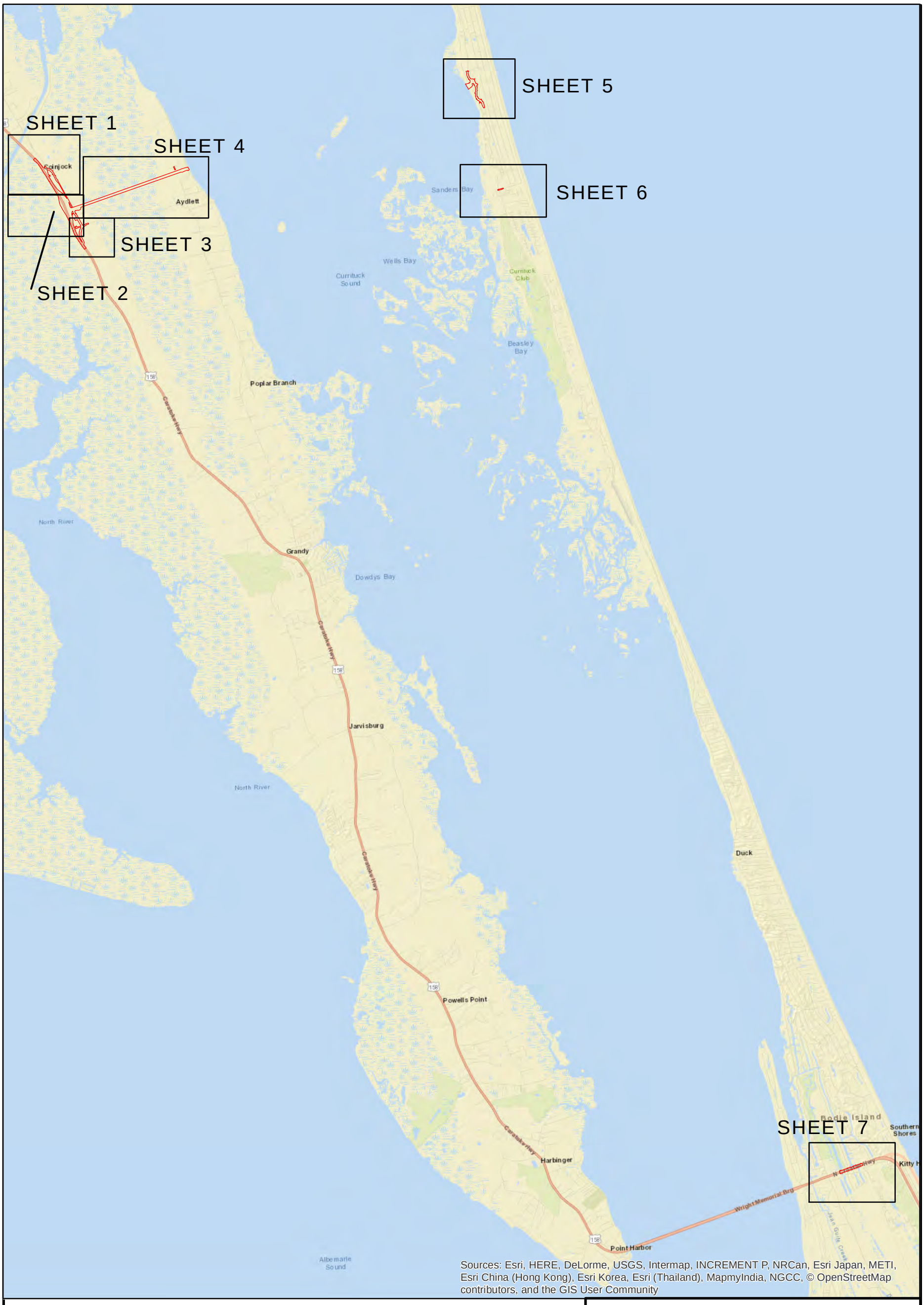


SOURCE:

PROJECT BOUNDARY PROVIDED BY: HW LOCHNER
2840 PLAZA PLACE, SUITE 202, RALEIGH, NC 27612

0 4,000 8,000 16,000

Scale in Feet

VICINITY MAP

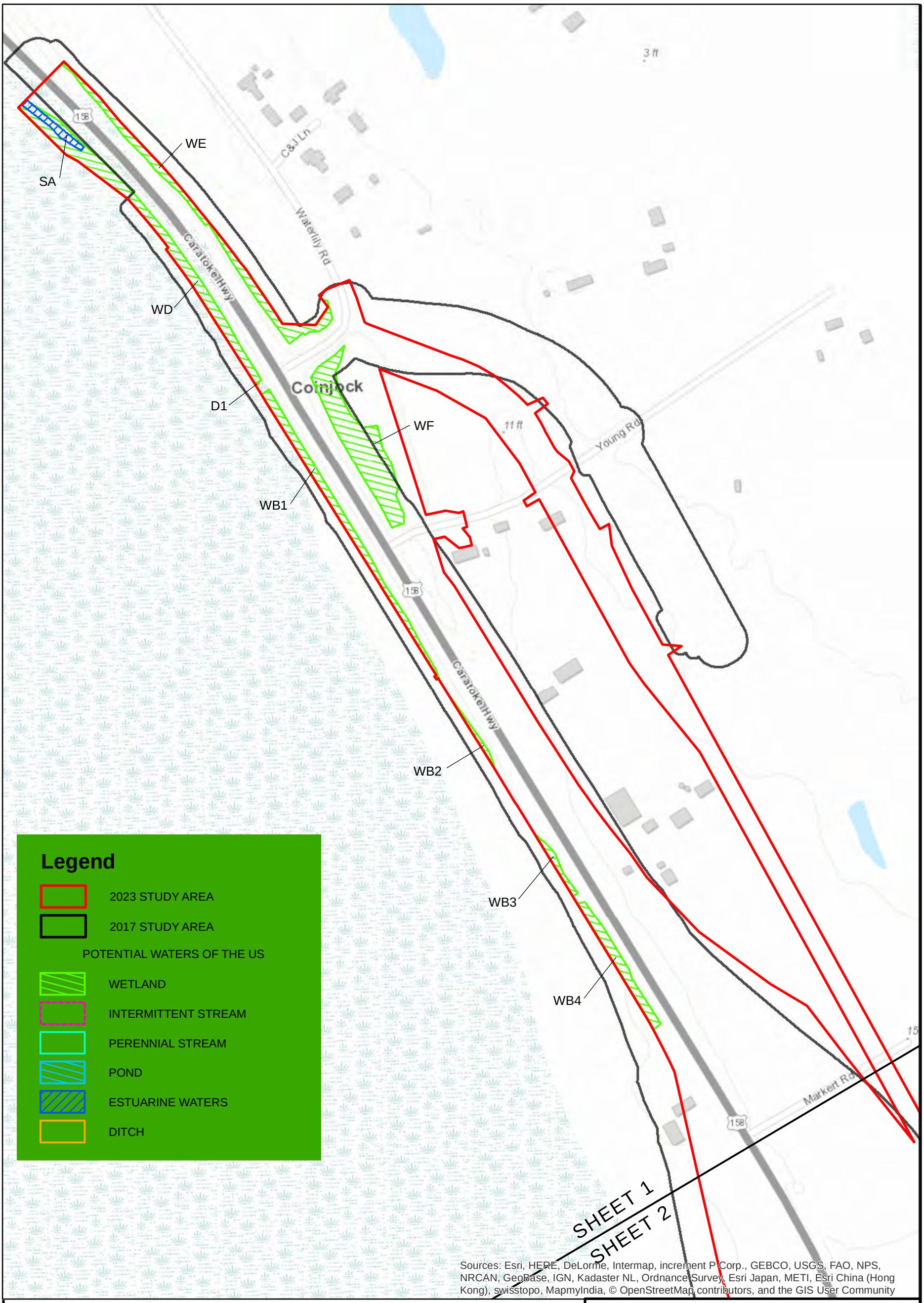
R-2576 MID-CURRITUCK BRIDGE

SCALE: AS SHOWN	APPROVED BY: MKS	DRAWN BY: TLJ
DATE: 06/12/23		FILE: 212126_KEY_.MXD

CZR ENVIRONMENTAL CONSULTANTS
4709 COLLEGE ACRES DRIVE
SUITE 2
WILMINGTON, NC 28403
TEL: 910/392-9253
FAX: 910/392-9139

CP#2121.26

FIGURE 1



SOURCE:

PROJECT BOUNDARY PROVIDED BY: HW LOCHNER
2840 PLAZA PLACE, SUITE 202, RALEIGH, NC 27612

0 150 300 600
Scale in Feet

USGS TOPOGRAPHIC

R-2576 MID-CURRITUCK BRIDGE

SCALE: AS SHOWN	APPROVED BY: MKS	DRAWN BY: TLJ
DATE: 06/12/23		FILE: 212126_USGS_SHT 1.MXD

CZR ENVIRONMENTAL CONSULTANTS
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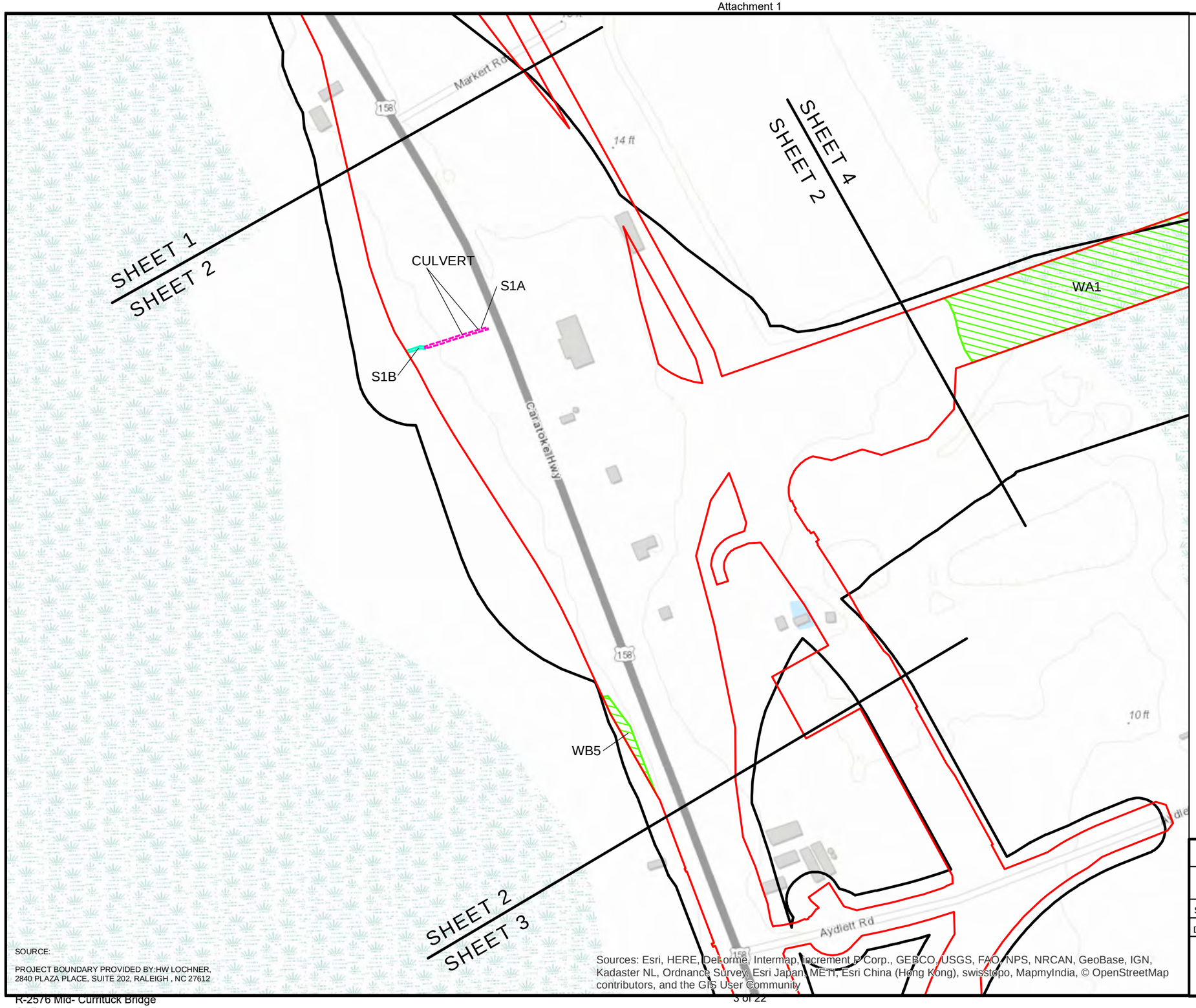
CP#2121.26

FIGURE 2
SHEET 1 OF 7



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

Legend

- 2023 STUDY AREA
- 2017 STUDY AREA

POTENTIAL WATERS OF THE US

- WETLAND
- INTERMITTENT STREAM
- PERENNIAL STREAM
- POND
- ESTUARINE WATERS
- DITCH

0 150 300 600

Scale in Feet

SOURCE:

PROJECT BOUNDARY PROVIDED BY:HW LOCHNER, 2840 PLAZA PLACE, SUITE 202, RALEIGH , NC 27612

USGS TOPOGRAPHIC

R-2576 MID-CURRITUCK BRIDGE

SCALE: AS SHOWN	APPROVED BY:	DRAWN BY: TLJ
DATE: 06/12/23		FILE: 2121226_USGS_SHT2.MXD

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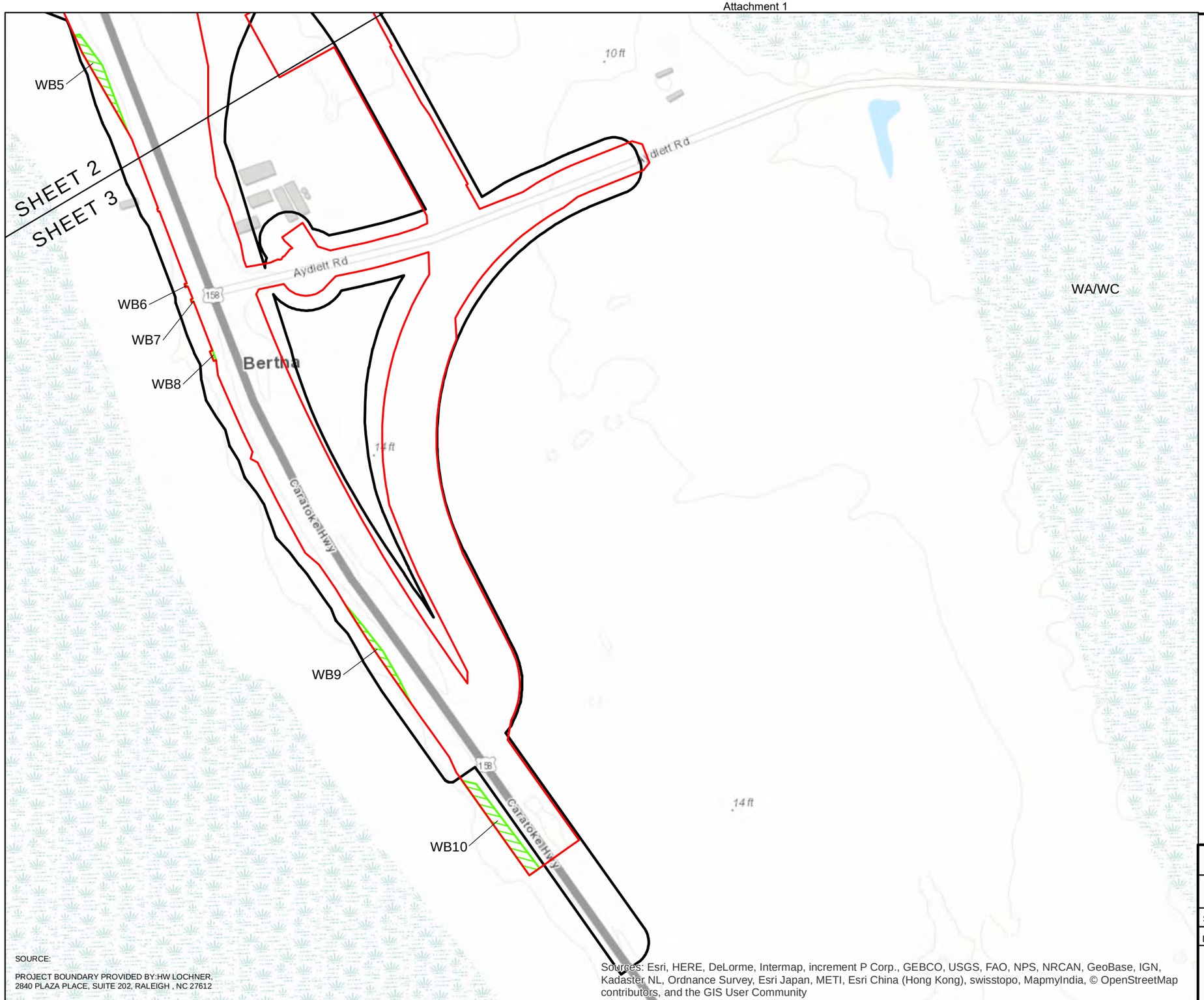
CP#2121.26

FIGURE 1
SHEET 2 OF 7



Legend

- 2023 STUDY AREA
- 2017 STUDY AREA

POTENTIAL WATERS OF THE US

- WETLAND
- INTERMITTENT STREAM
- PERENNIAL STREAM
- POND
- ESTUARINE WATERS
- DITCH

0 150 300 600

Scale in Feet

SOURCE:

PROJECT BOUNDARY PROVIDED BY:HW LOCHNER,
2840 PLAZA PLACE, SUITE 202, RALEIGH , NC 27612

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

USGS TOPOGRAPHIC

R-2576 MID-CURRITUCK BRIDGE

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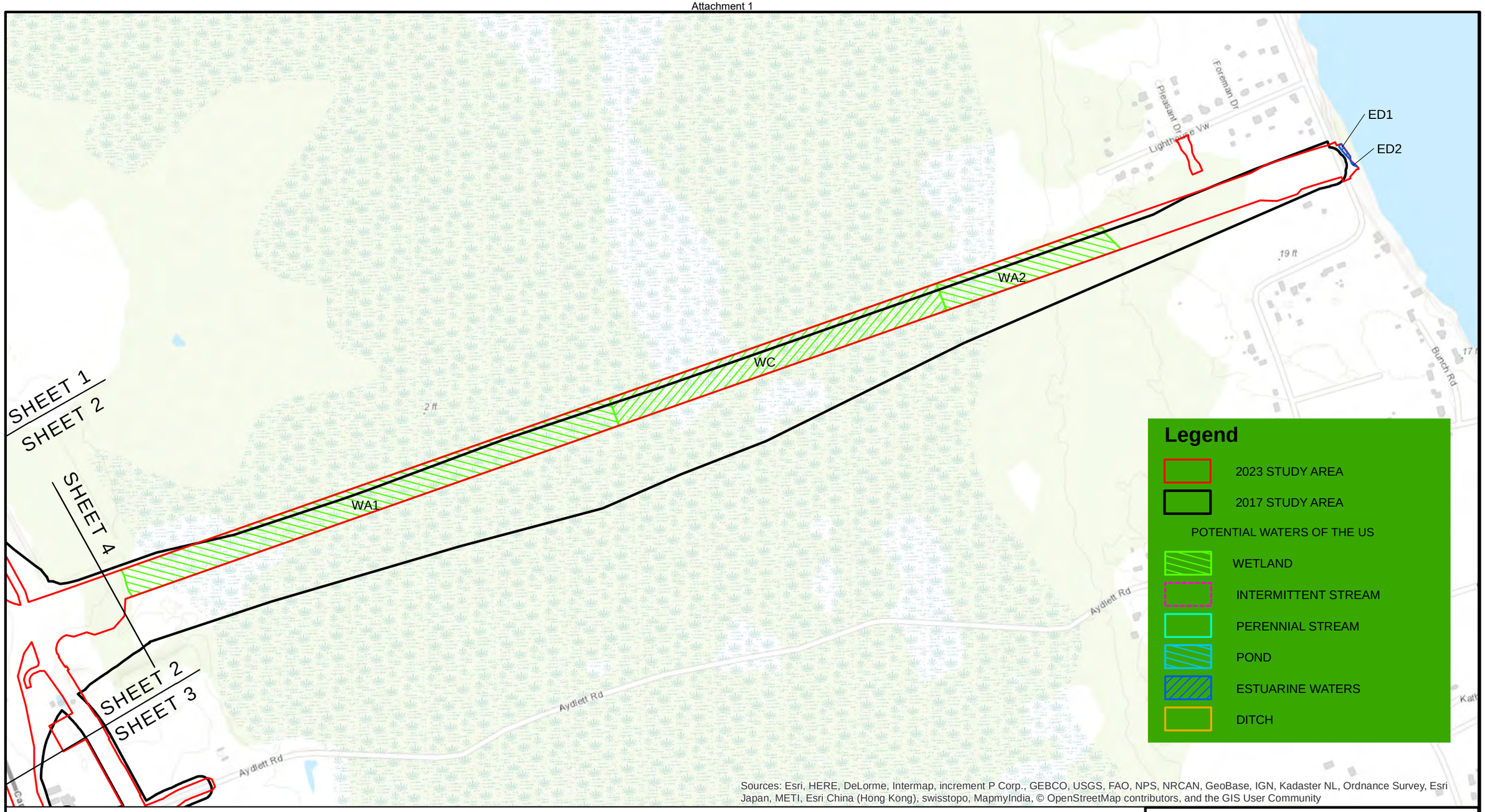
FIGURE 2
SHEET 3 OF 7



SOURCE:

PROJECT BOUNDARY PROVIDED BY:HW LOCHNER,
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USGS TOPOGRAPHIC

R-2576 MID-CURRITUCK BRIDGE

SCALE: AS SHOWN	APPROVED BY:	DRAWN BY: TLJ
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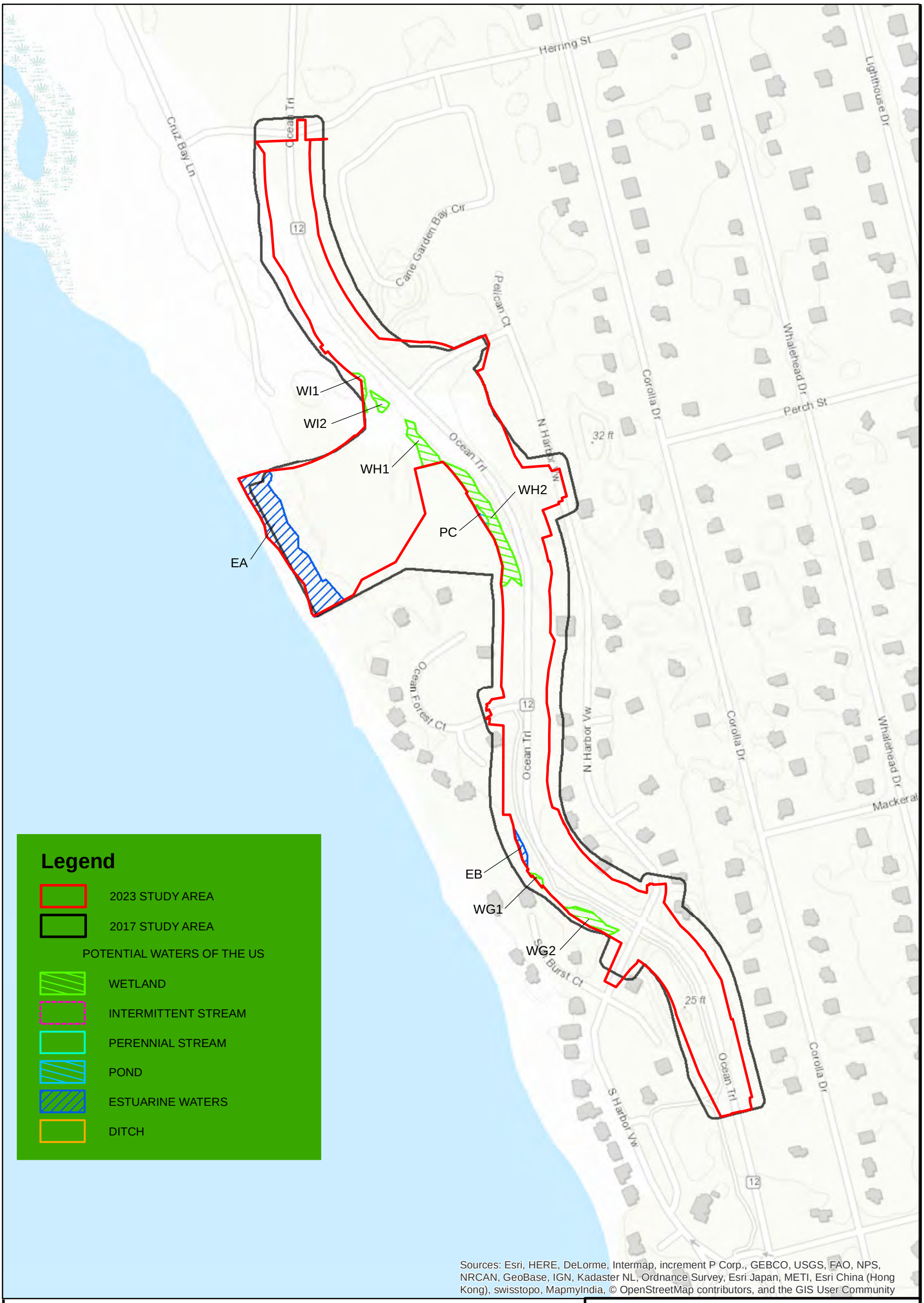
FIGURE 2
SHEET 4 OF 7



SOURCE:

PROJECT BOUNDARY PROVIDED BY: HW LOCHNER
2840 PLAZA PLACE, SUITE 202, RALEIGH, NC 27612

0 150 300 600
Scale in Feet

USGS TOPOGRAPHIC

R-2576 MID-CURRITUCK BRIDGE

SCALE: AS SHOWN	APPROVED BY: MKS	DRAWN BY: TLJ
DATE: 06/12/23		FILE: 212126_USGS_SHT 5

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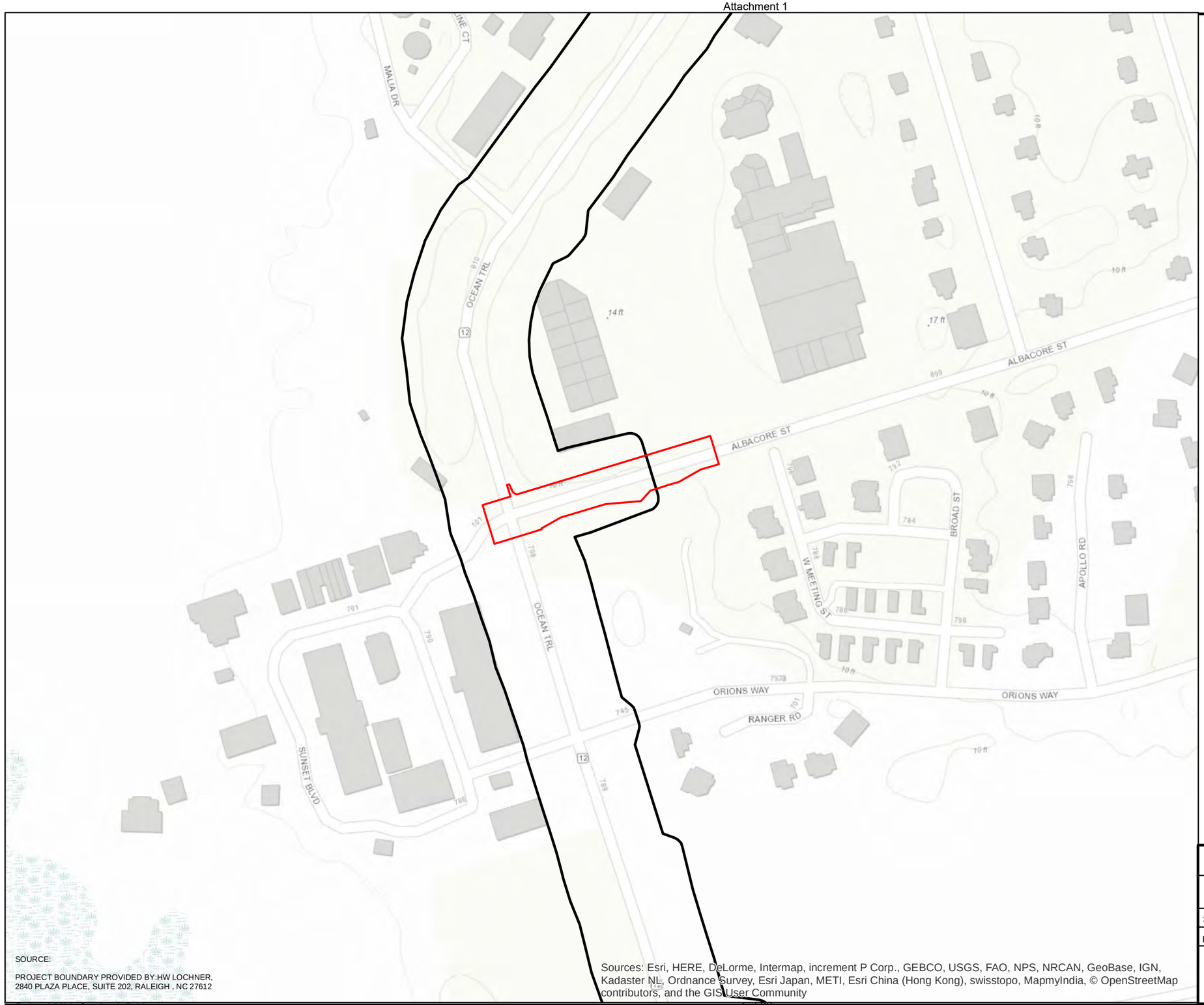
CP#2121.26

FIGURE 2
SHEET 5 OF 7



Legend

- 2023 STUDY AREA
- 2017 STUDY AREA

POTENTIAL WATERS OF THE US

- WETLAND
- INTERMITTENT STREAM
- PERENNIAL STREAM
- POND
- ESTUARINE WATERS
- DITCH

0 100 200 400

Scale in Feet

SOURCE:

PROJECT BOUNDARY PROVIDED BY:HW LOCHNER,
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USGS TOPOGRAPHIC

R-2576 MID-CURRITUCK BRIDGE

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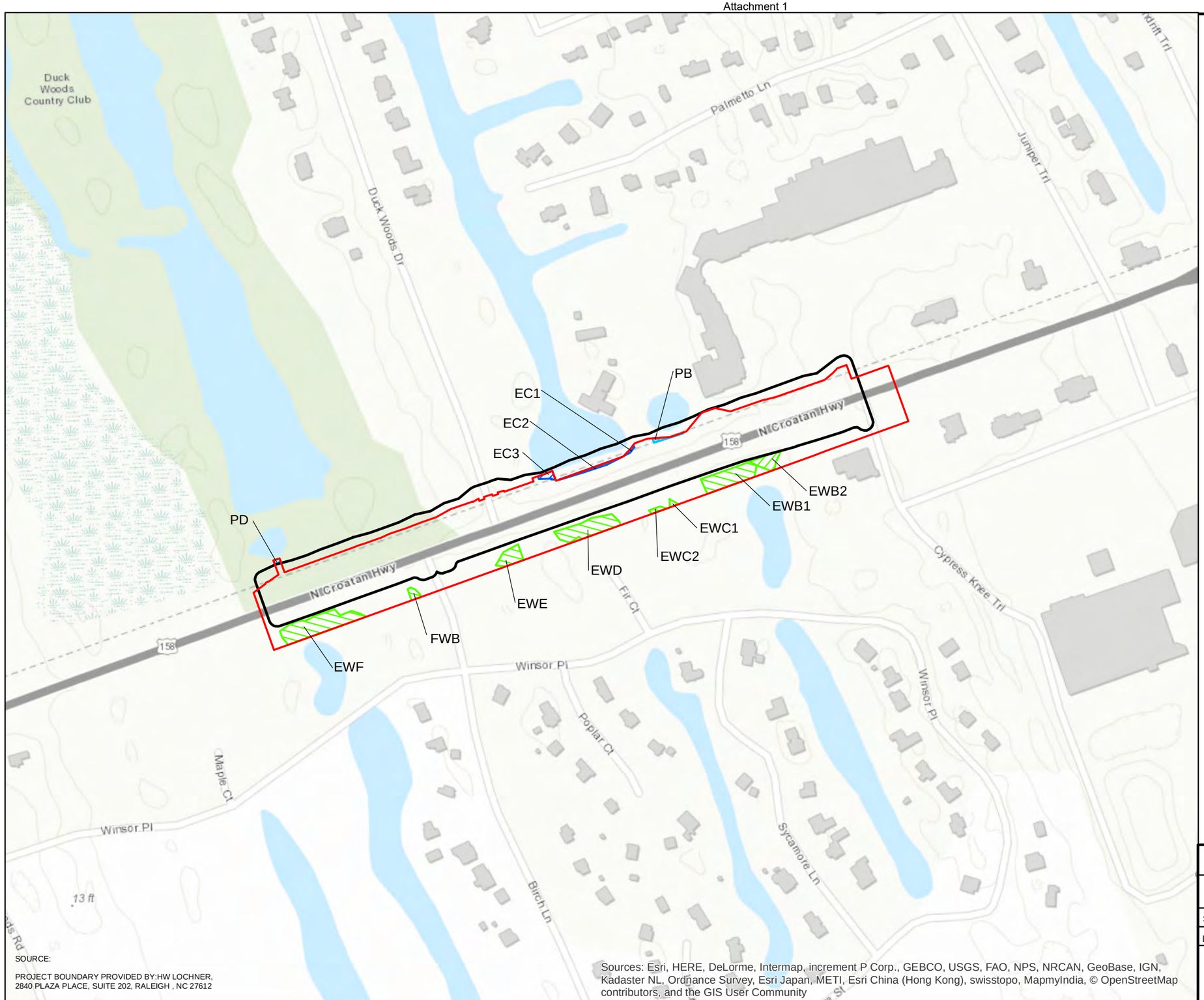
FIGURE 2
SHEET 6 OF 7



Legend

- 2023 STUDY AREA
- 2017 STUDY AREA

POTENTIAL WATERS OF THE US

- WETLAND
- INTERMITTENT STREAM
- PERENNIAL STREAM
- POND
- ESTUARINE WATERS
- DITCH

0 150 300 600

Scale in Feet

SOURCE:

PROJECT BOUNDARY PROVIDED BY:HW LOCHNER, 2840 PLAZA PLACE, SUITE 202, RALEIGH , NC 27612

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

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R-2576 MID-CURRITUCK BRIDGE

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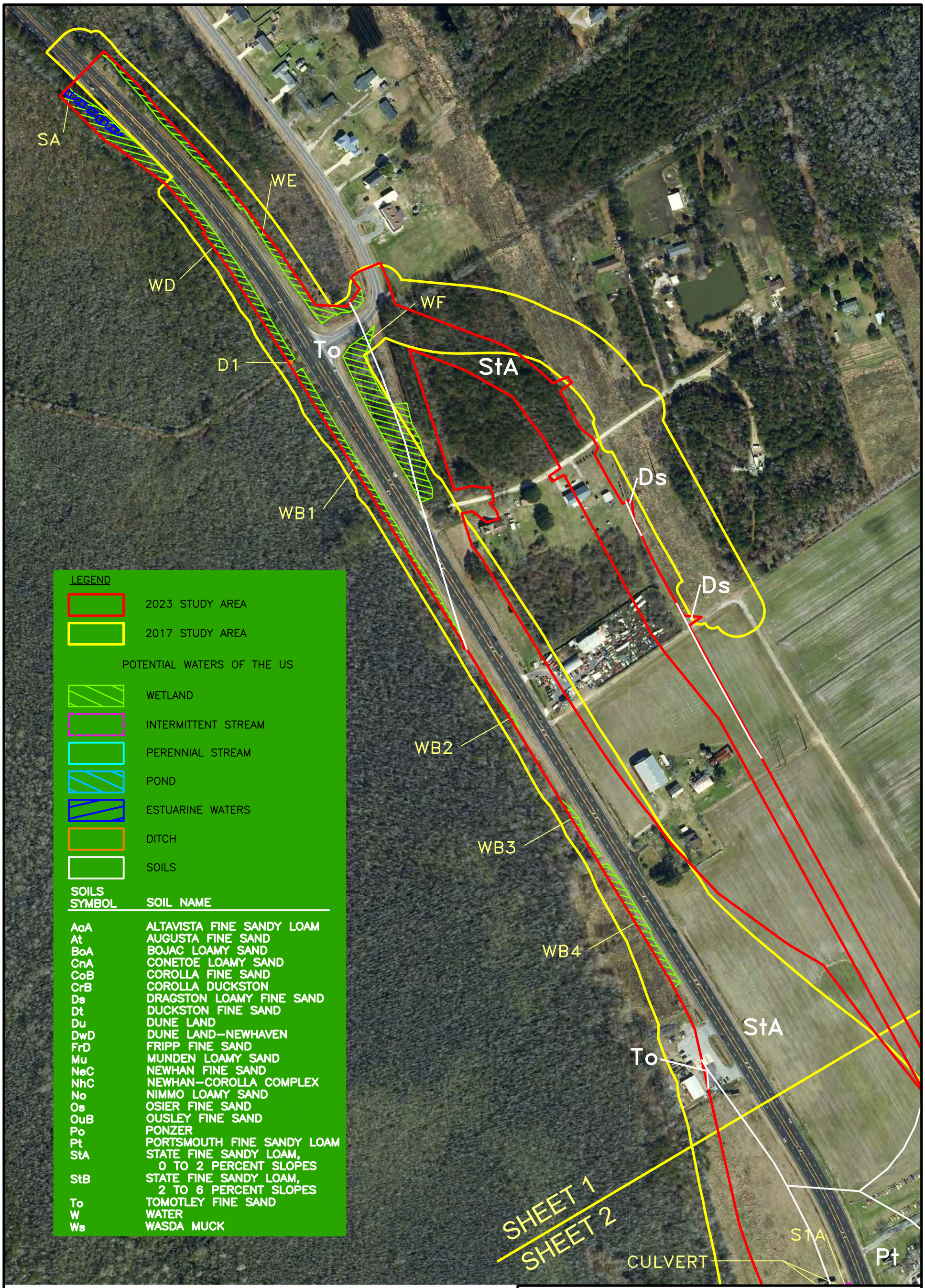
FIGURE 2
SHEET 7 OF 7



SOURCE:
AERIAL IMAGE FROM: NC ONEMAP GEOGRAPHIC DATA, 2020, NORTH CAROLINE STATE PLANE, NAD1983 FEET
WEBSITE: WWW.NCONEMAP.COM

PROJECT AREA PROVIDED BY: HW LOCHNER, 2840 PLAZA PLACE, SUITE 202, RALEIGH, NC 27612

0 150 300 600
SCALE IN FEET

SOILS

R-2576 MID-CURRITUCK BRIDGE

SCALE: AS SHOWN	APPROVED BY:	DRAWN BY: TLJ
DATE: 03/29/23		FILE: 212126_AERIAL

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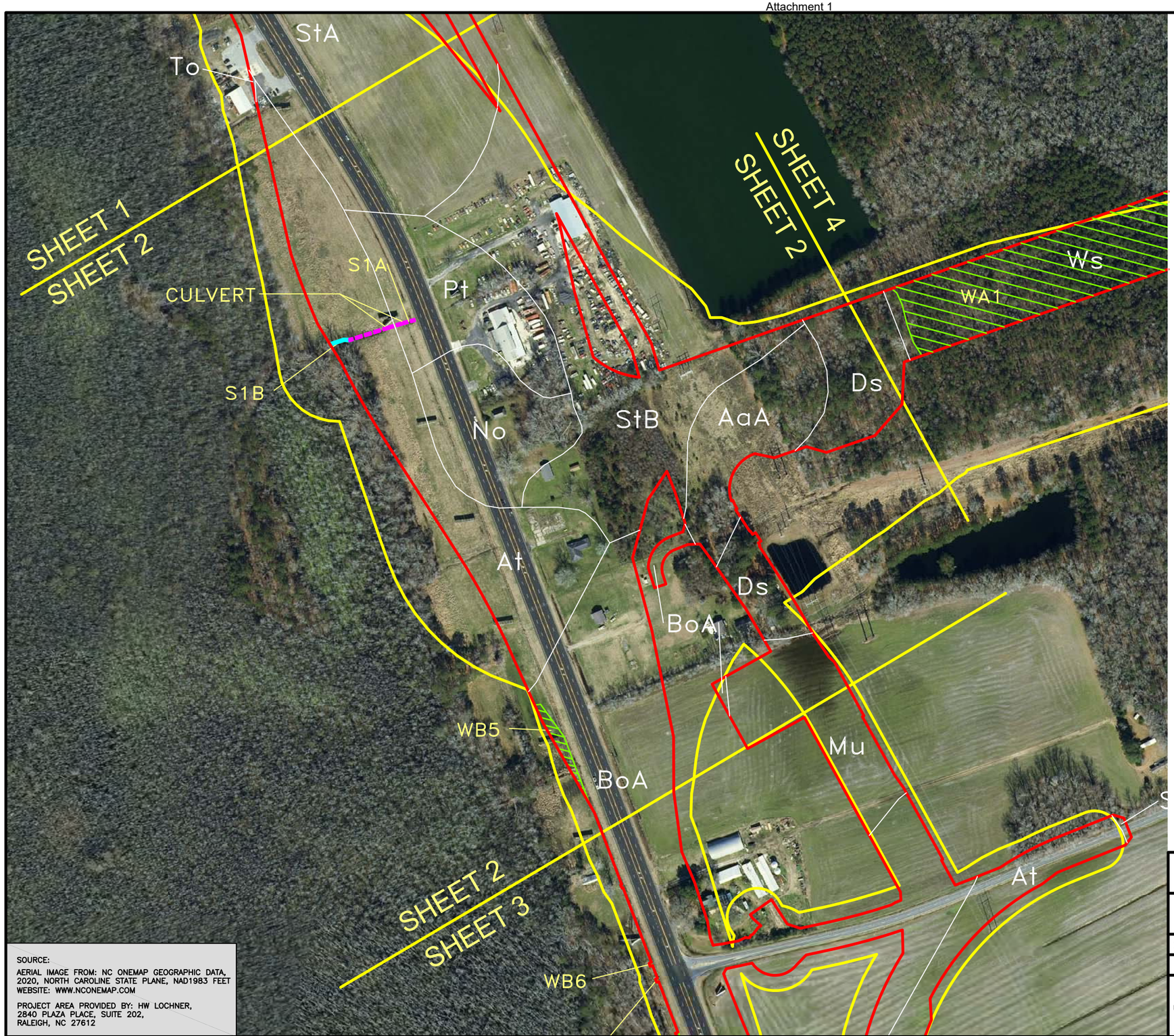
CP#2121.26

FIGURE 3
SHEET 1 OF 7



SOURCE:
AERIAL IMAGE FROM: NC ONEMAP GEOGRAPHIC DATA, 2020, NORTH CAROLINE STATE PLANE, NAD1983 FEET
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LEGEND

- 2023 STUDY AREA
- 2017 STUDY AREA

POTENTIAL WATERS OF THE US

- WETLAND
- INTERMITTENT STREAM
- PERENNIAL STREAM
- POND
- ESTUARINE WATERS
- DITCH
- SOILS

SOILS SYMBOL	SOIL NAME
AaA	ALTAVISTA FINE SANDY LOAM
At	AUGUSTA FINE SAND
BoA	BOJAC LOAMY SAND
CnA	CONETOE LOAMY SAND
CoB	COROLLA FINE SAND
CrB	COROLLA DUCKSTON
Ds	DRAGSTON LOAMY FINE SAND
Dt	DUCKSTON FINE SAND
Du	DUNE LAND
DwD	DUNE LAND–NEWHAVEN
FrD	FRIPP FINE SAND
Mu	MUNDEN LOAMY SAND
NeC	NEWHAN FINE SAND
NhC	NEWHAN–COROLLA COMPLEX
No	NIMMO LOAMY SAND
Os	OSIER FINE SAND
OuB	OUSLEY FINE SAND
Po	PONZER
Pt	PORTSMOUTH FINE SANDY LOAM
StA	STATE FINE SANDY LOAM, 0 TO 2 PERCENT SLOPES
StB	STATE FINE SANDY LOAM, 2 TO 6 PERCENT SLOPES
To	TOMOTLEY FINE SAND
W	WATER
Ws	WASDA MUCK

0 150 300 600
SCALE IN FEET

SOILS

R-2576 MID-CURRITUCK BRIDGE

SCALE: AS SHOWN	APPROVED BY:	DRAWN BY: TLJ
DATE: 06/12/23		FILE: 212126_AERIAL

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FIGURE 3
SHEET 2 OF 7

SOURCE:
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LEGEND

- 2023 STUDY AREA
- 2017 STUDY AREA

POTENTIAL WATERS OF THE US

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To	TOMOTLEY FINE SAND
W	WATER
Ws	WASDA MUCK

0 150 300 600
SCALE IN FEET

SOILS

R-2576 MID-CURRITUCK BRIDGE

SCALE: AS SHOWN	APPROVED BY:	DRAWN BY: TLJ
DATE: 03/29/23		FILE: 212126_AERIAL

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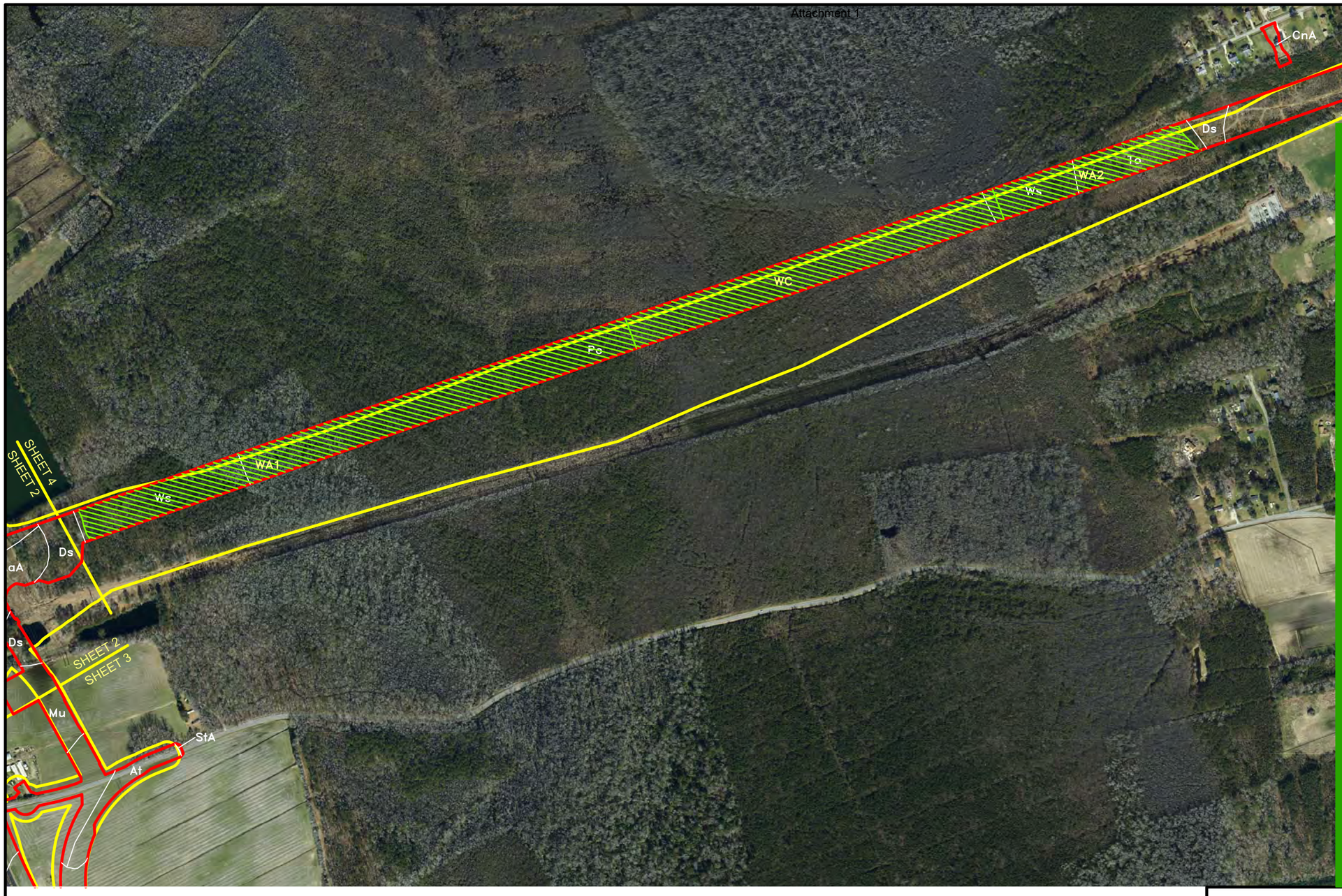
FIGURE 3
SHEET 3 OF 7



LEGEND

- 2023 STUDY AREA
- 2017 STUDY AREA

POTENTIAL WATERS OF THE US

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NhC	NEWHAN–COROLLA COMPLEX
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StB	STATE FINE SANDY LOAM, 2 TO 6 PERCENT SLOPES
To	TOMOTLEY FINE SAND
W	WATER
Ws	WASDA MUCK

SOURCE:

AERIAL IMAGE FROM: NC ONEMAP GEOGRAPHIC DATA, 2020, NORTH CAROLINE STATE PLANE, NAD1983 FEET
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0 150 300 600

SCALE IN FEET

SOILS

R-2576 MID-CURRITUCK BRIDGE

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DATE: 06/12/23		FILE: 212126_AERIAL

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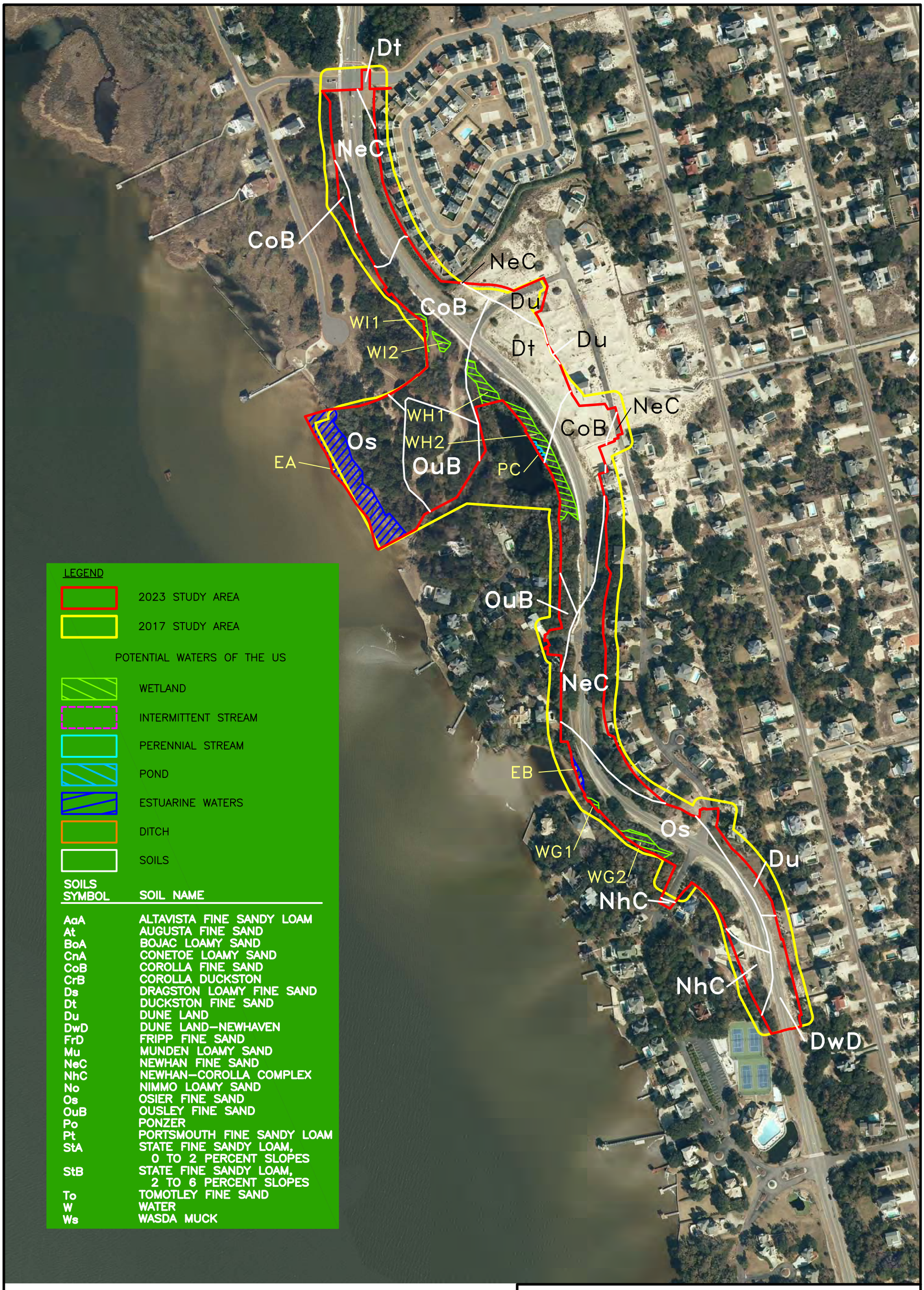
CP#2121.26

FIGURE 3
SHEET 4 OF 7



SOURCE:

AERIAL IMAGE FROM: NC ONEMAP GEOGRAPHIC DATA, 2020, NORTH CAROLINE STATE PLANE, NAD1983 FEET
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0 150 300 600

SCALE IN FEET

SOILS

R-2576 MID-CURRITUCK BRIDGE

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FIGURE 3
SHEET 5 OF 7

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LEGEND

- 2023 STUDY AREA
- 2017 STUDY AREA

POTENTIAL WATERS OF THE US

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W	WATER
Ws	WASDA MUCK

0 150 300 600
SCALE IN FEET

SOILS

R-2576 MID-CURRITUCK BRIDGE

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DATE: 03/29/23		FILE: 212126_AERIAL

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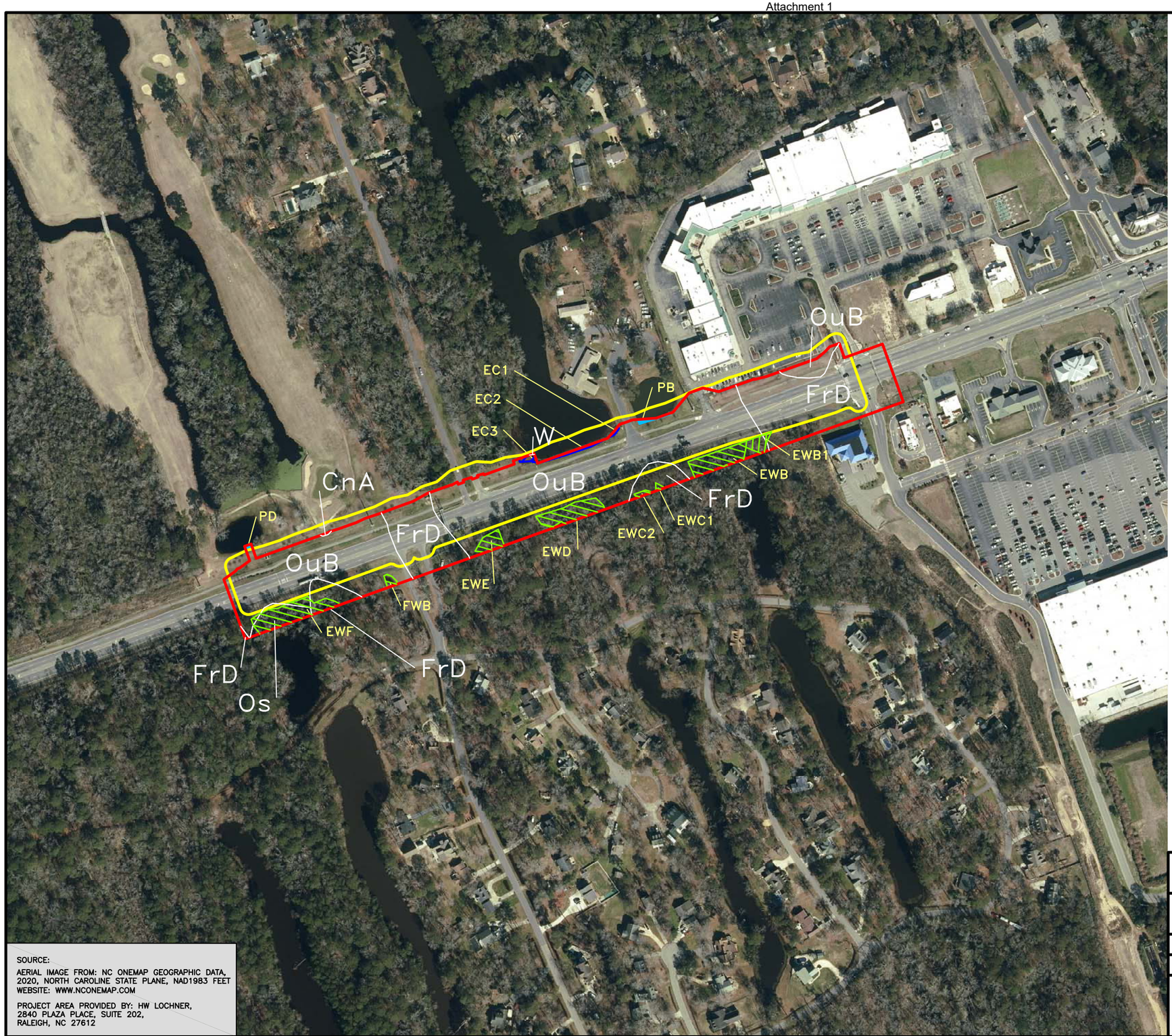
FIGURE 3
SHEET 6 OF 7



SOURCE:
AERIAL IMAGE FROM: NC ONEMAP GEOGRAPHIC DATA, 2020, NORTH CAROLINE STATE PLANE, NAD1983 FEET
WEBSITE: WWW.NCONEMAP.COM

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LEGEND

- 2023 STUDY AREA
- 2017 STUDY AREA

POTENTIAL WATERS OF THE US

- WETLAND
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DwD	DUNE LAND–NEWHAVEN
FrD	FRIPP FINE SAND
Mu	MUNDEN LOAMY SAND
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0 150 300 600
SCALE IN FEET

SOILS

R-2576 MID-CURRITUCK BRIDGE

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DATE: 06/12/23		FILE: 212126_AERIAL

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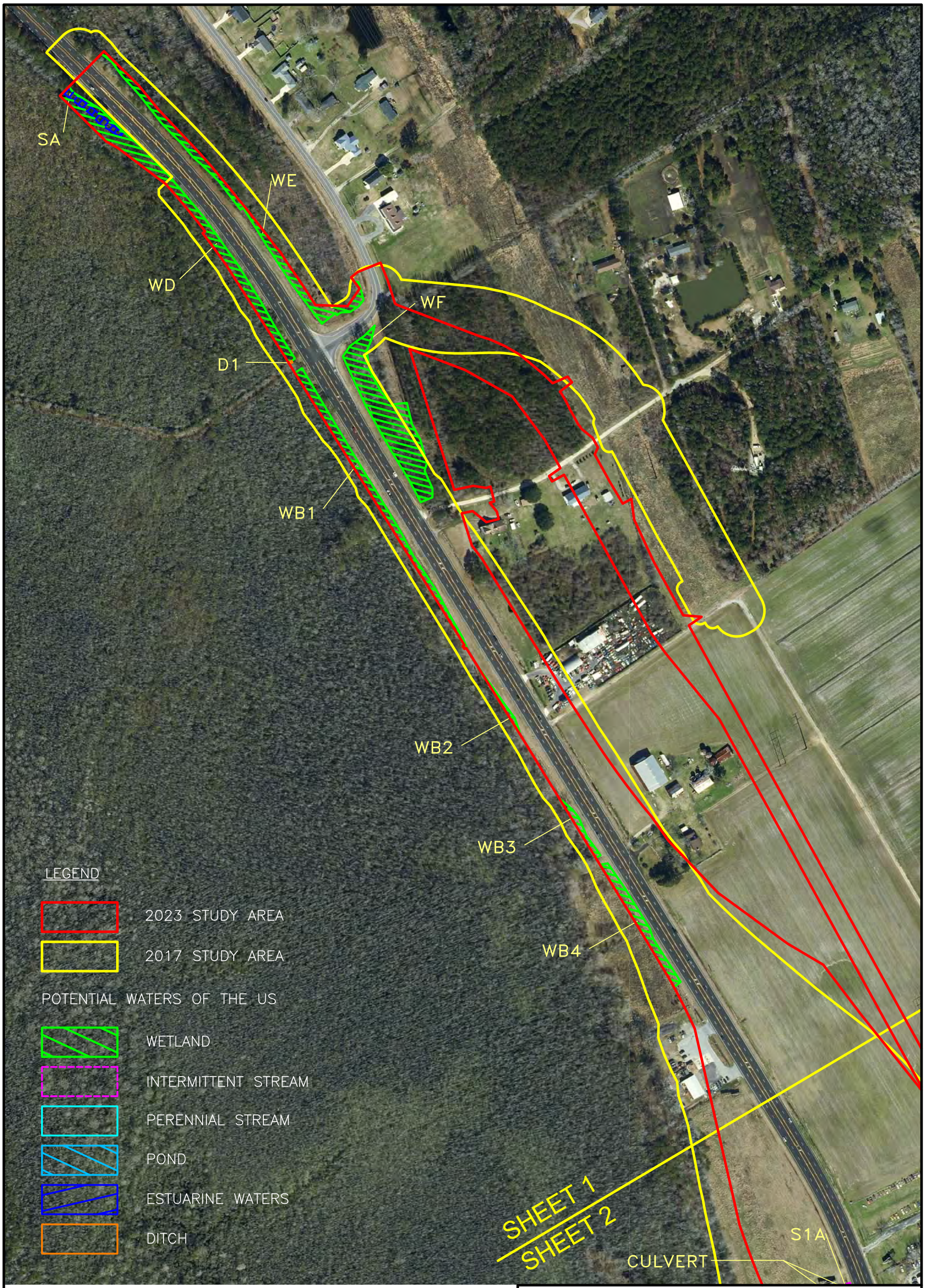
CP#2121.26

FIGURE 3
SHEET 7 OF 7



SOURCE:
AERIAL IMAGE FROM: NC ONEMAP GEOGRAPHIC DATA, 2020, NORTH CAROLINE STATE PLANE, NAD1983 FEET
WEBSITE: WWW.NCONEMAP.COM

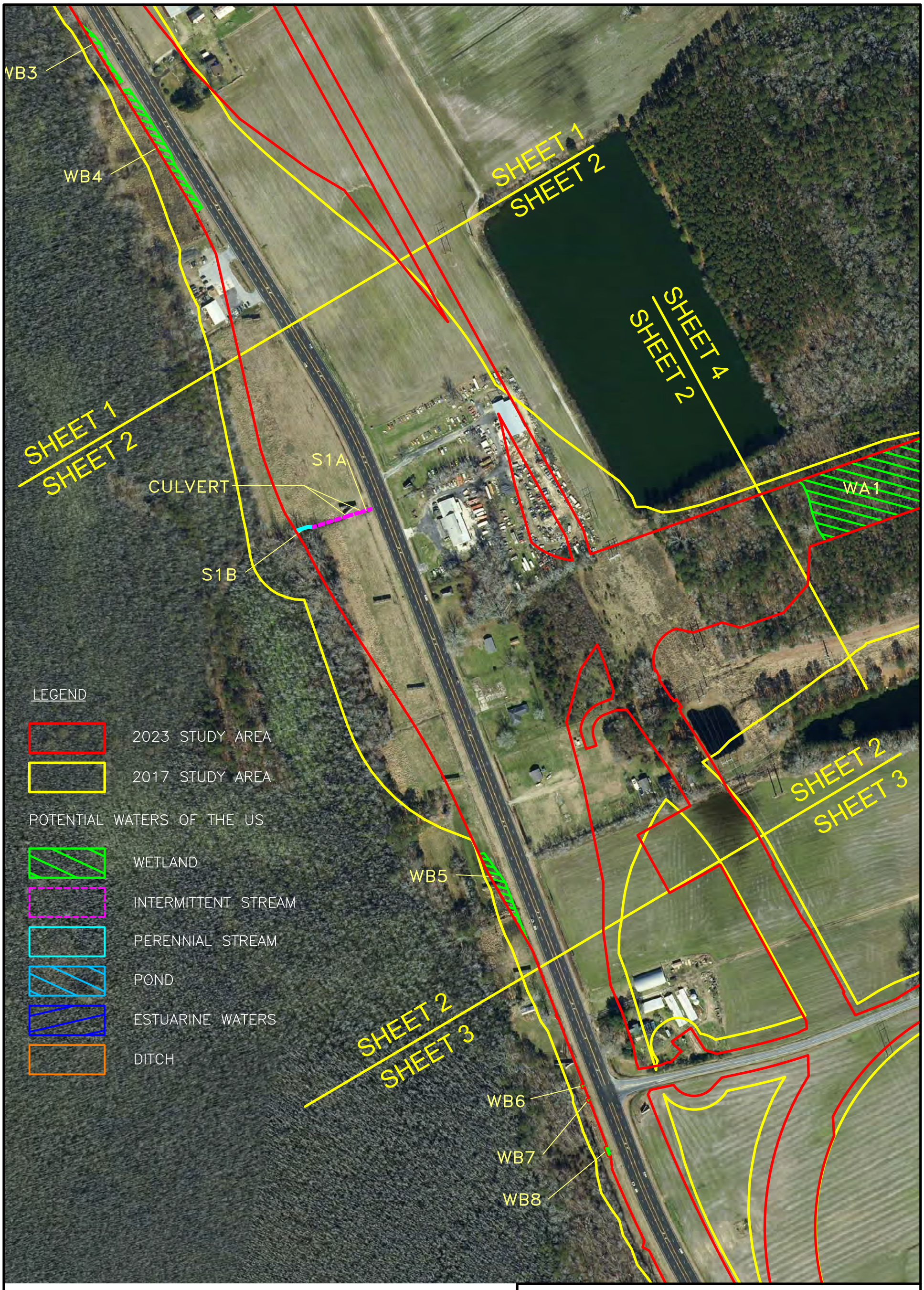
PROJECT AREA PROVIDED BY: HW LOCHNER, 2840 PLAZA PLACE, SUITE 202, RALEIGH, NC 27612

0 150 300 600
SCALE IN FEET

POTENTIAL WATERS OF THE US

R-2576 MID-CURRITUCK BRIDGE

SCALE: AS SHOWN	APPROVED BY:	DRAWN BY: TLJ
DATE: 06/12/23		FILE: 212126_AERIAL
CZR ENVIRONMENTAL CONSULTANTS		CP#2121.26
		FIGURE 4 SHEET 1 OF 7



SOURCE:
AERIAL IMAGE FROM: NC ONEMAP GEOGRAPHIC DATA, 2020, NORTH CAROLINE STATE PLANE, NAD1983 FEET
WEBSITE: WWW.NCONEMAP.COM

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0 150 300 600
SCALE IN FEET

POTENTIAL WATERS OF THE US

R-2576 MID-CURRITUCK BRIDGE

SCALE: AS SHOWN	APPROVED BY:	DRAWN BY: TLJ
DATE: 06/07/23		FILE: 212126_AERIAL

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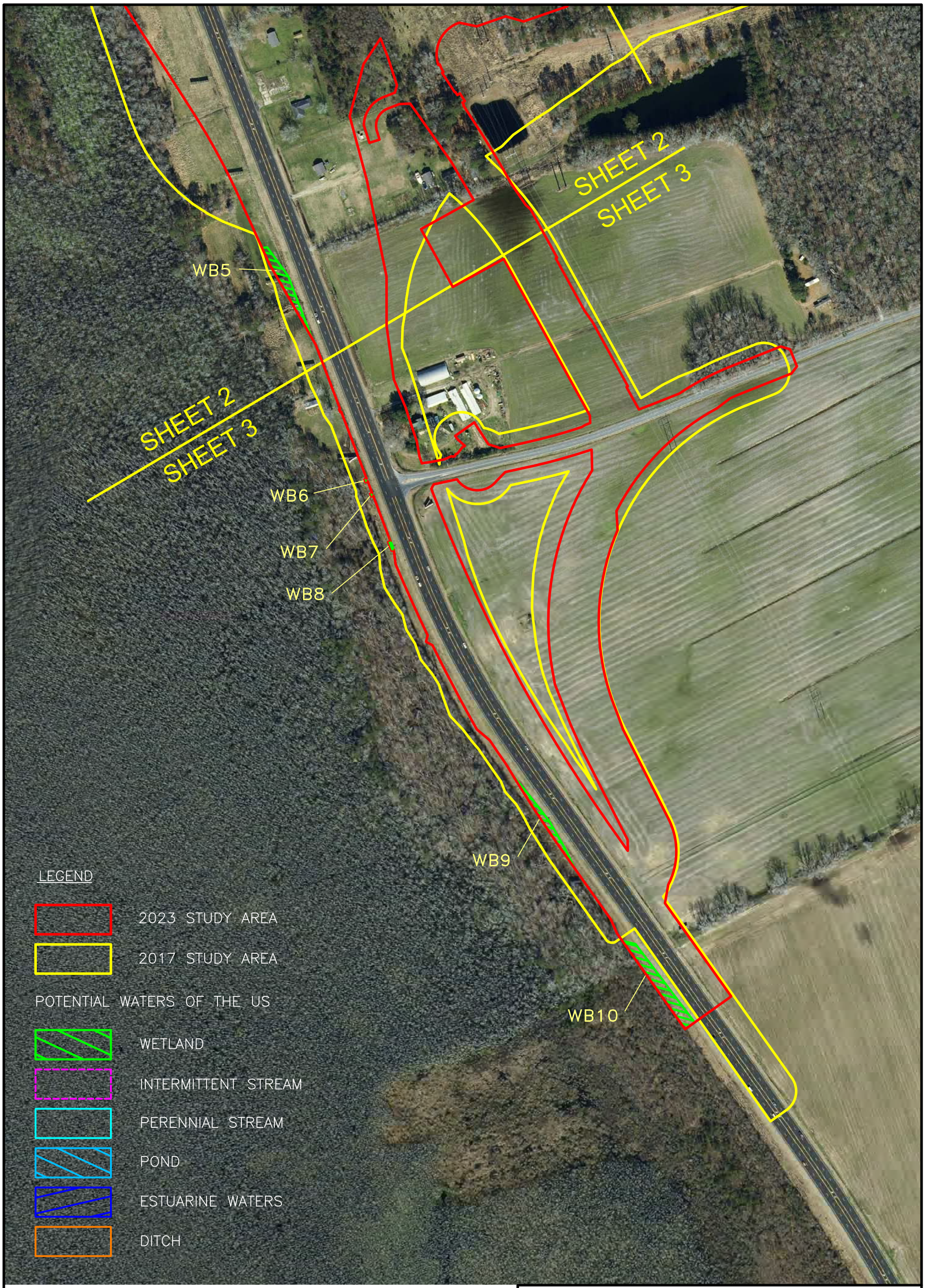
FAX 910/392-9139

CP#2121.26

FIGURE 4
SHEET 2 OF 7



SOURCE:
AERIAL IMAGE FROM: NC ONEMAP GEOGRAPHIC DATA, 2020, NORTH CAROLINE STATE PLANE, NAD1983 FEET
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PROJECT AREA PROVIDED BY: HW LOCHNER, 2840 PLAZA PLACE, SUITE 202, RALEIGH, NC 27612

0 150 300 600
SCALE IN FEET

POTENTIAL WATERS OF THE US

R-2576 MID-CURRITUCK BRIDGE

SCALE: AS SHOWN	APPROVED BY:	DRAWN BY: TLJ
DATE: 06/12/23		FILE: 212126_AERIAL

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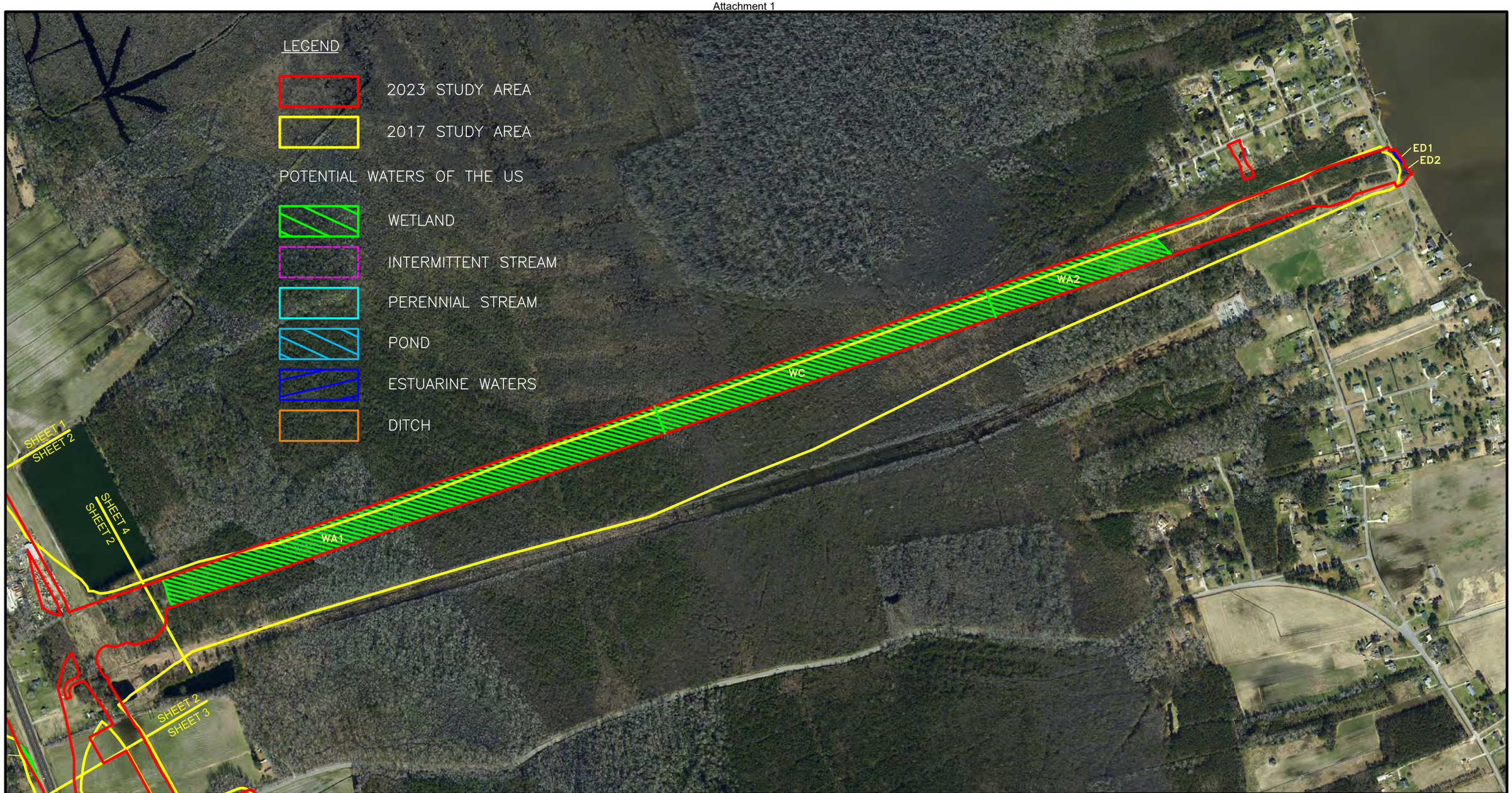
WILMINGTON, NC 28403
TEL 910/392-9253
FAX 910/392-9139

CP#2121.26

FIGURE 4
SHEET 3 OF 7



SOURCE:

AERIAL IMAGE FROM: NC ONEMAP GEOGRAPHIC DATA, 2020, NORTH CAROLINE STATE PLANE, NAD1983 FEET
WEBSITE: WWW.NCONEMAP.COM

PROJECT AREA PROVIDED BY: HW LOCHNER, 2840 PLAZA PLACE, SUITE 202, RALEIGH, NC 27612

0 150 300 600

SCALE IN FEET

POTENTIAL WATERS OF THE US

R-2576 MID-CURRITUCK BRIDGE

SCALE: AS SHOWN	APPROVED BY:	DRAWN BY: TLJ
DATE: 06/12/23		FILE: 212126_AERIAL

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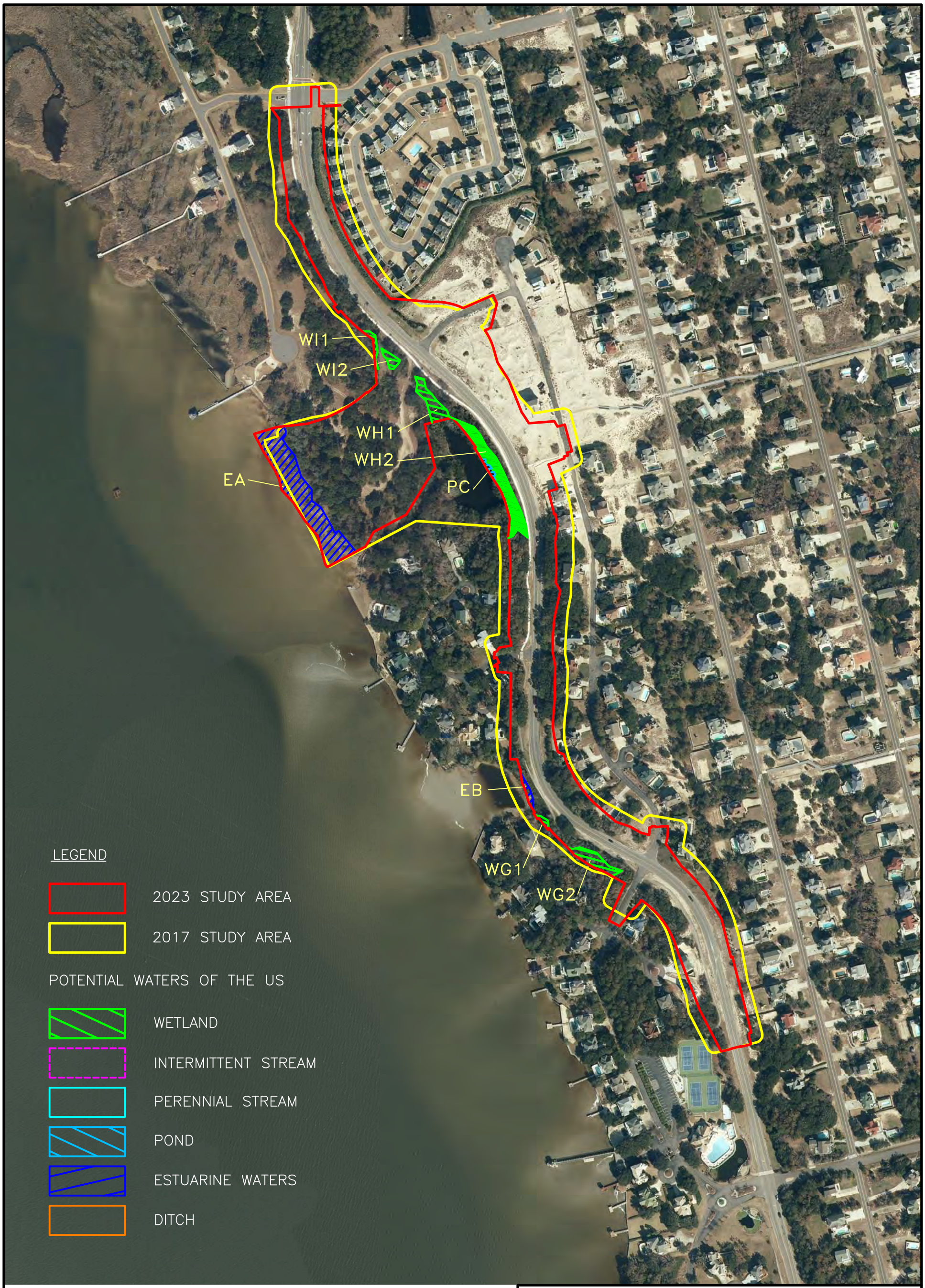
FIGURE 4
SHEET 4 OF 7



SOURCE:
AERIAL IMAGE FROM: NC ONEMAP GEOGRAPHIC DATA, 2020, NORTH CAROLINE STATE PLANE, NAD1983 FEET
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0 150 300 600
SCALE IN FEET

POTENTIAL WATERS OF THE US

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FIGURE 4
SHEET 5 OF 7

SOURCE:
AERIAL IMAGE FROM: NC ONEMAP GEOGRAPHIC DATA, 2020, NORTH CAROLINE STATE PLANE, NAD1983 FEET
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0 150 300 600
SCALE IN FEET

POTENTIAL WATERS OF THE US

R-2576 MID-CURRITUCK BRIDGE

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FIGURE 4
SHEET 6 OF 7

SOURCE:
AERIAL IMAGE FROM: NC ONEMAP GEOGRAPHIC DATA, 2020, NORTH CAROLINE STATE PLANE, NAD1983 FEET
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0 150 300 600
SCALE IN FEET

POTENTIAL WATERS OF THE US

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FIGURE 4
SHEET 7 OF 7

Shoreline Areas Within the Study Area Photos

Photo 1 – View of Currituck Sound (EA) looking north from northern study area boundary on 27 February 2023.

Photo 2 – View of Currituck Sound (EA) looking south from northern study area boundary on 27 February 2023.

Photo 3 – View of Currituck Sound (EA) looking south southern study area boundary on 27 February 2023.

Photo 4 – View of Currituck Sound (EA) looking north from southern study area boundary on 27 February 2023.

Photo 5 – View of Currituck Sound (EB) looking northwest
on 27 February 2023.

Photo 6 – View of Currituck Sound (EB) looking north
on 27 February 2023.

Photo 7 – View of Currituck Sound (EB) looking south on 27 February 2023.

Photo 8 – View of Currituck Sound (EB) looking southwest on 27 February 2023.

Photo 1 –View of tributary to Jean Guite Creek (EC) looking northeast on 27 February 2023.

Photo 12 – View of Currituck Sound (ED) looking north from the northern study area boundary on 01 March 2023.

Photo 13 – View of Currituck Sound (ED) looking south from the northern study area boundary on 01 March 2023.

Photo 14 – View of Currituck Sound (ED) looking south from the southern study area boundary on 01 March 2023.

Photo 15 – View of Currituck Sound (ED) looking north from the southern study area boundary on 01 March 2023.

Qualifications of Contributors

Principal Investigator:	Matt Smith
Education:	B.S. Marine Biology, 1994
Experience:	Sr. Environmental Scientist, CZR Incorporated, 2020-present Senior Scientist, ESI (Terracon), 1998-2020
Responsibilities:	T/E species assessment, wetland and stream delineation, document preparation
Investigator:	Sam Cooper
Education:	B.S. Biology, 1985 M.S. Marine Biology, 1988
Experience:	Technical Director and Sr. Environmental Scientist, CZR Incorporated, 1988 - present
Responsibilities:	document preparation and review
Investigator:	Hayden Slater
Education:	B.S. Environmental Science, Ecology
Experience:	Biologist, CZR Incorporated, 2020-present
Responsibilities:	T/E species assessment, wetland and stream delineation
Investigator:	Kayla Hess
Education:	B.S. Natural Resources Management, 2016 M.S. Forestry, Fisheries, and Geomatic Sciences, 2019
Experience:	Biologist, CZR Incorporated, 2020-present Research Technician/Graduate Assistant, University of Florida, 2018-2019
Responsibilities:	document preparation