



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J. ERIC BOYETTE
SECRETARY

March 17, 2022

U.S. Army Corps of Engineers
Raleigh Regulatory Field Office
ATTN: David Bailey
3331 Heritage Trade Drive, Suite 105
Wake Forest, North Carolina 27587

SUBJECT: Preliminary Jurisdictional Determination (PJD) Package for the following Natural Resources Technical Report: NCDOT WBS No. 50338: Boom Roadway Access and Connectivity Project in Greensboro, Guilford County, North Carolina.

The North Carolina Department of Transportation (NCDOT) proposes to conduct roadway construction activities associated with the Boom Roadway Access and Connectivity Project in Greensboro, Guilford County, North Carolina (WBS No. 50338; Appendix A, Figure 1). Below and attached are a brief description of the project, figures depicting all features, and appropriate forms.

Three Oaks Engineering, Inc. (Three Oaks) staff members Nathan Howell (MS, PWS), Trevor Hall, Byron Levan (MS), Hayley Wood, and Mark Guerard conducted a site investigation within the study area on March 2-3, 2022. Forty-one potential jurisdictional features (12 streams, 14 wetlands, and 15 surface waters [i.e., ponds, basins, and/or tributaries]) were identified within the study area (Tables 1-3; Appendix A, Figures 2-4). This project is located in the Cape Fear River Basin (United States Geological Survey [USGS] Hydrologic Unit Code [HUC] 03030002).

North Carolina Division of Water Resources (NCDWR) Stream Identification forms were completed for streams where jurisdictionality was in question. North Carolina Stream Assessment Method (NCSAM) forms were completed for streams possessing characteristics conducive to them receiving lower mitigation ratios and/or functional rating values. United States Army Corps of Engineers (USACE) Wetland Determination forms (wetland and upland) were completed that represent each wetland within the project study area. North Carolina Wetland Assessment Method (NCWAM) forms were completed for wetlands possessing characteristics conducive to them receiving lower mitigation/functional rating values (Appendix B). A USACE ORM Data Entry form, USACE Jurisdictional Determination Request form, USACE PJD form, and a USACE Waters Upload Spreadsheet (January 30, 2022 version) are also included with this submittal (Appendix C).

Please see the following PJD Package:

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION 7
PO BOX 14996
GREENSBORO, NC 27415-4996

Telephone: (336) 487-0000
Customer Service: 1-877-368-4968

Website: www.ncdot.gov

Location:
1584 YANCEYVILLE STREET
GREENSBORO, NC 27415

Table 1. Potential jurisdictional streams in the study area

Stream Name	Map ID	NCDWR Index Number	Best Usage Classification	Classification	On Topo or Soil Survey?	NCSAM Rating ¹	Length
Unnamed Tributary to Brush Creek	SA	16-11-4-(1)	WS-III; NSW	Intermittent	Neither	*	174
UT to Brush Creek	SB	16-11-4-(1)	WS-III; NSW	Perennial	Topo and Soil Survey	Low ²	3,680
UT to Brush Creek	SC	16-11-4-(1)	WS-III; NSW	Perennial	Neither	*	93
UT to Brush Creek	SD	16-11-4-(1)	WS-III; NSW	Perennial	Neither	*	556
UT to Brush Creek	SE	16-11-4-(1)	WS-III; NSW	Intermittent	Neither	*	50
UT to Brush Creek	SF	16-11-4-(1)	WS-III; NSW	Intermittent	Neither	*	368
				Perennial		*	242
UT to Brush Creek	SG	16-11-4-(1)	WS-III; NSW	Intermittent	Soil Survey	*	110
				Perennial		*	182
UT to Brush Creek	SH	16-11-4-(1)	WS-III; NSW	Intermittent	Soil Survey	*	741
Brush Creek	SI	16-11-4-(1)	WS-III; NSW	Perennial	Topo and Soil Survey	*	307
UT to Brush Creek	SJ	16-11-4-(1)	WS-III; NSW	Perennial	Neither	*	170
UT to Brush Creek	SK	16-11-4-(1)	WS-III; NSW	Intermittent	Neither	*	308
UT to Brush Creek	SL	16-11-4-(1)	WS-III; NSW	Intermittent	Neither	*	54
						Total	7,035

¹ Medium to high quality streams did not have a NCSAM form completed for them. These features are represented by an asterisk (*).

² A portion of the stream was assessed with NCSAM methodology. See the stream specific NCSAM data form for assessment reach/location details.

Table 2. Potential jurisdictional wetlands in the study area

Map ID	NCWAM Classification	NCWAM Rating¹	Hydrologic Classification	Area
WA	Floodplain Pool	*	Riparian	0.01
WB	Headwater Forest/Floodplain Pool	*	Riparian	0.03
WC	Bottomland Hardwood Forest	*	Riparian	1.44
WD	Bottomland Hardwood Forest	*	Riparian	0.06
WE	Headwater Forest	*	Riparian	0.02
WF	Headwater Forest	*	Riparian	0.03
WG	Headwater Forest	*	Riparian	0.01
WH	Headwater Forest	*	Riparian	0.06
WI	Headwater Forest	Low	Riparian	0.02
WJ	Headwater Forest	Low	Riparian	0.14
WK	Non-tidal Freshwater Marsh	Low	Riparian	0.24
WL	Headwater Forest	*	Riparian	0.08
WM	Headwater Forest	Low	Riparian	0.05
WN	Headwater Forest	Low	Riparian	0.22
			Total	2.41

¹ Medium to high quality wetlands did not have a NCWAM form completed for them. These features are represented by an asterisk (*).

Table 3. Potential surface waters in the study area

Map ID	Jurisdictional?	Connection	Area (ac.)
BA	No	None	0.22
BB	No	None	0.06
BC	No	None	0.03
BD	No	None	0.2
BE	No	None	0.01
BF	No	None	0.05
BG	No	None	0.03
BH	No	None	0.05
BI	No	None	0.04
BJ	No	None	0.13
BK	No	None	0.04
BL	No	None	0.02
BM	No	None	0.12
BN	No	None	0.04
BO	Undetermined	WK/SK	0.04
Total			1.08

If you have any questions, require additional information, or would like to schedule a site visit, please contact me by phone at (336) 256-2063 or email at japarker3@ncdot.gov. Alternatively, you may also contact James Mason at Three Oaks by phone at (704) 604-8358 or email at james.mason@threeoaksengineering.com. Three Oaks is submitting this request on behalf of NCDOT. We appreciate your assistance on this project.

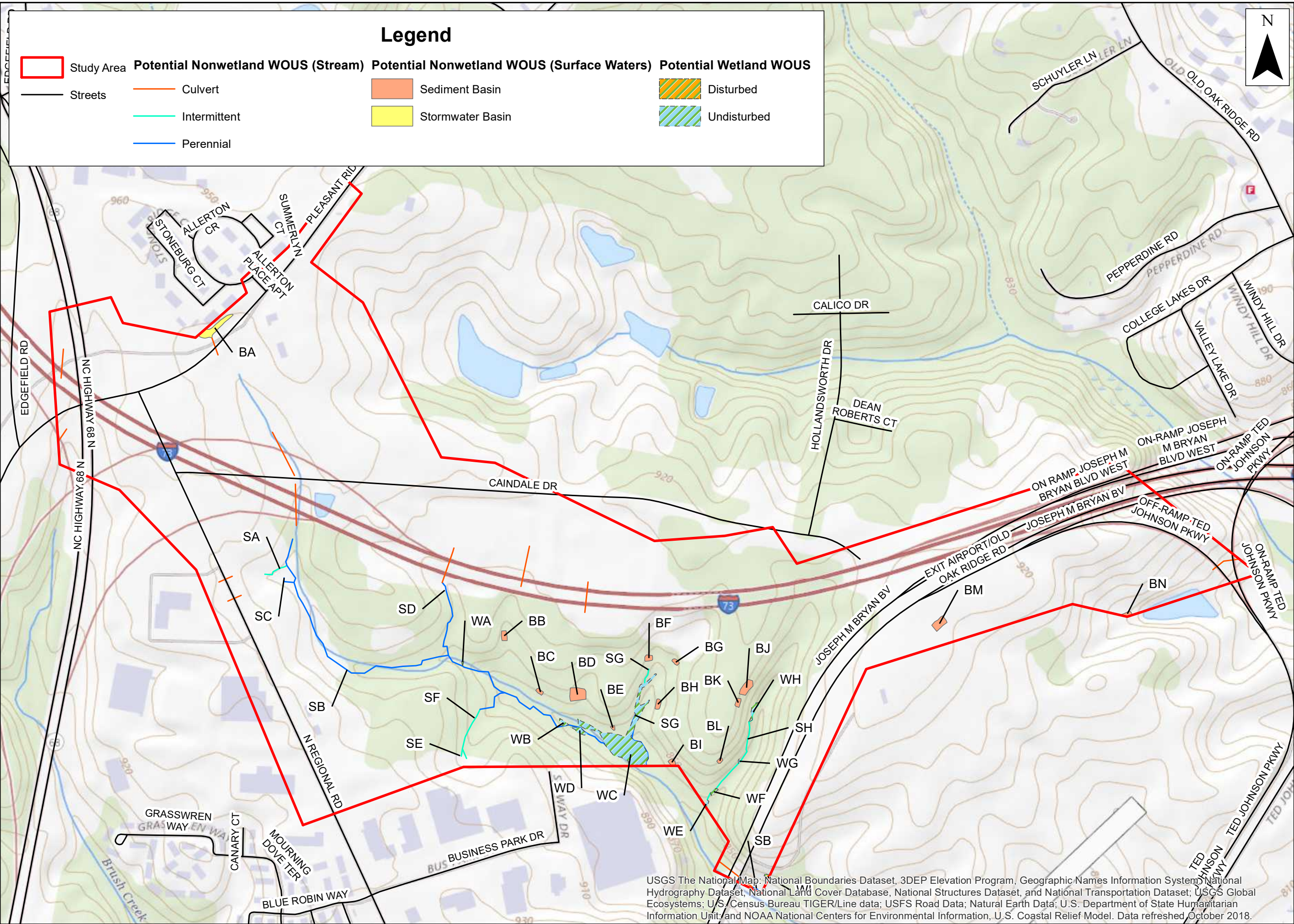
Sincerely,

Jerry Parker
North Carolina Department of Transportation
Highway Division 7
Division Environmental Supervisor

Cc: Dave Wanucha, NCDWR
Ryan Conchilla, NCDWR

Appendix A

Figures



Prepared For:



BOOM Roadway Access and Connectivity Project

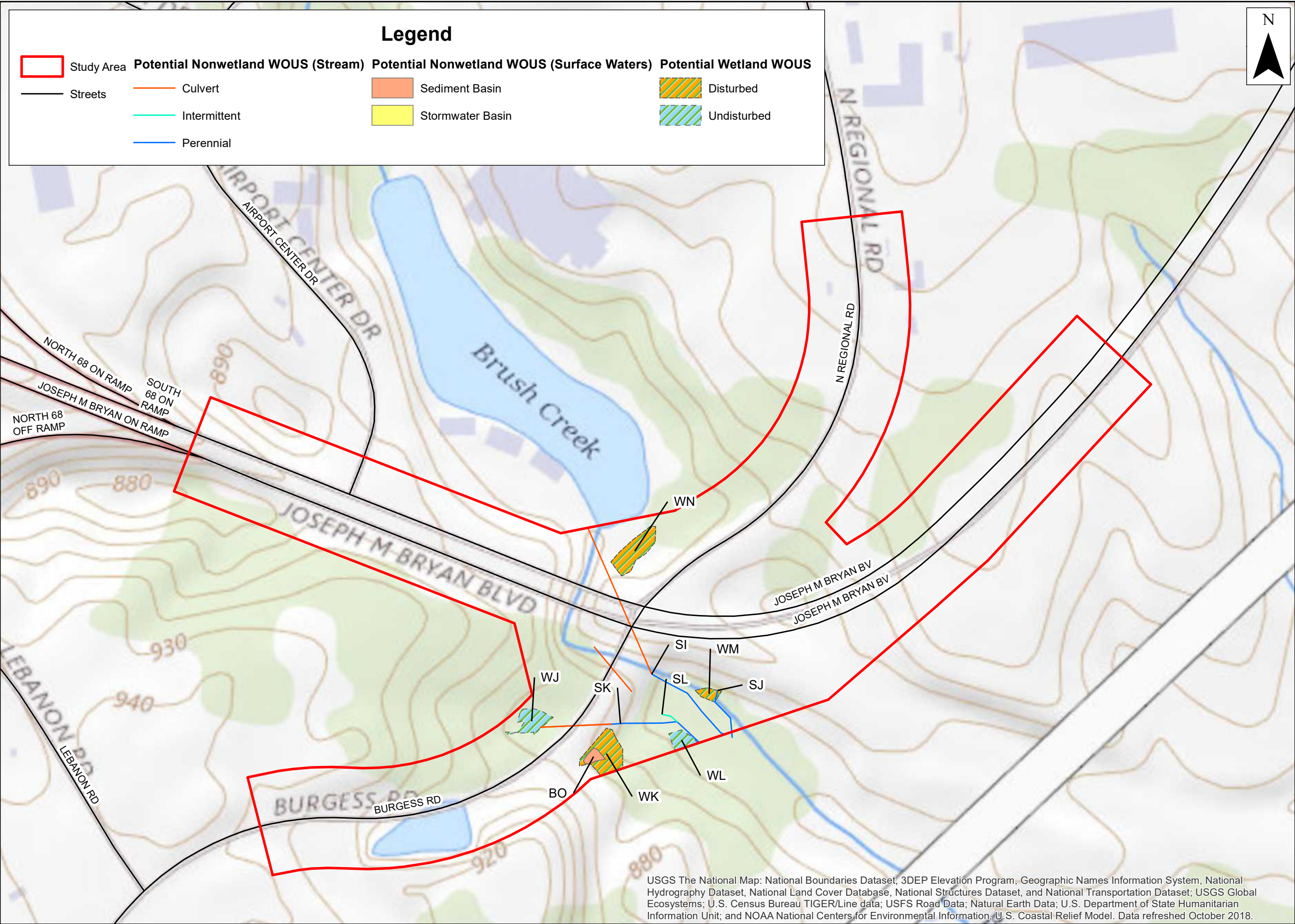
Jurisdictional Features Map

Guilford County
North Carolina

Date:	March 2022
Scale:	0 250 500 Ft
Job No.:	22-107
Drawn By:	NDH
Checked By:	JSM

Figure
2-1

USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed October 2018.



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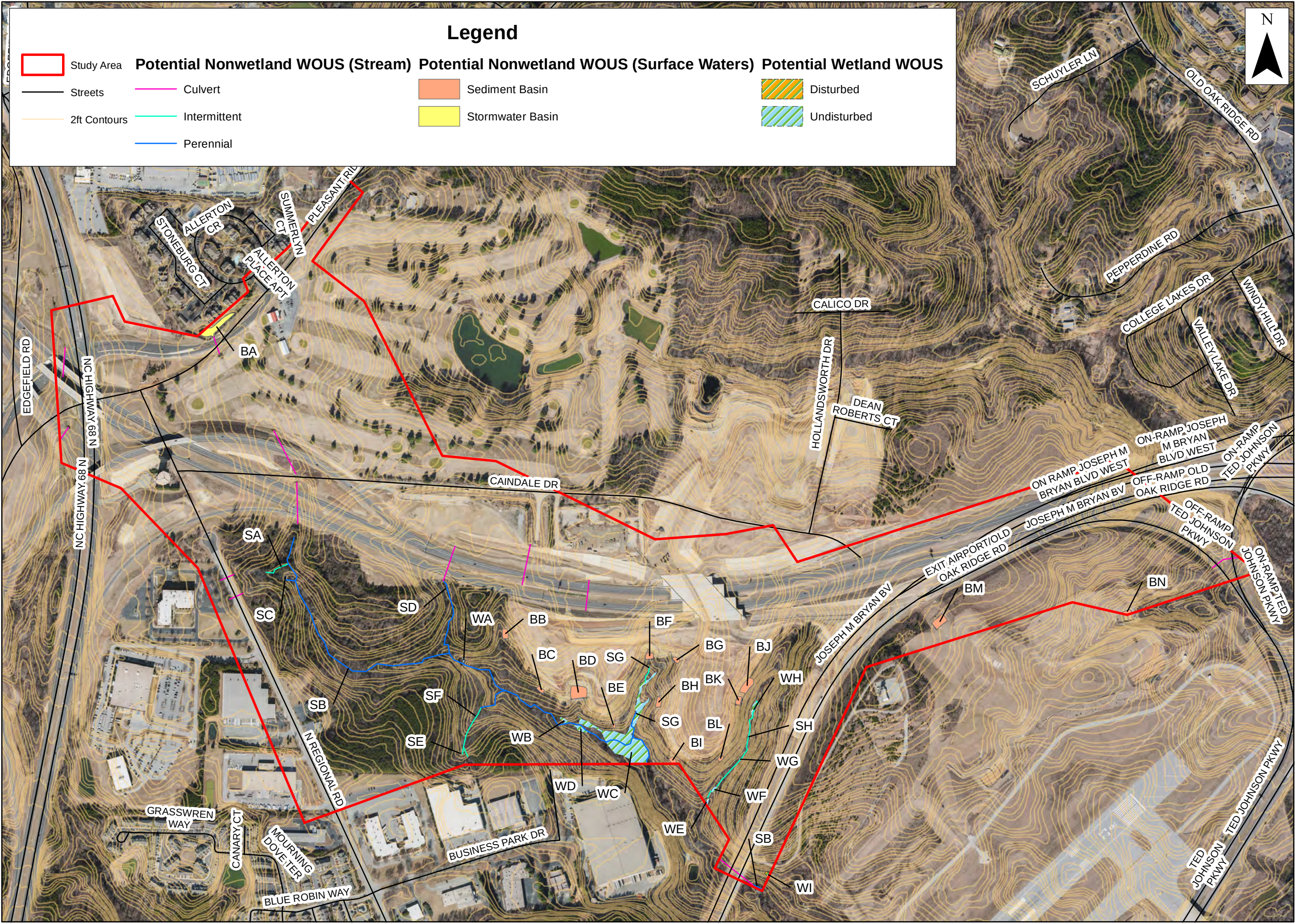
**Jurisdictional
Features
Map**

**Guilford County
North Carolina**

Date:	March 2022		
Scale:	0	115	230 Ft
Job No.:	22-107		
Drawn By:	NDH	Checked By:	JSM

Figure
2-2

USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed October 2018.



Prepared For:



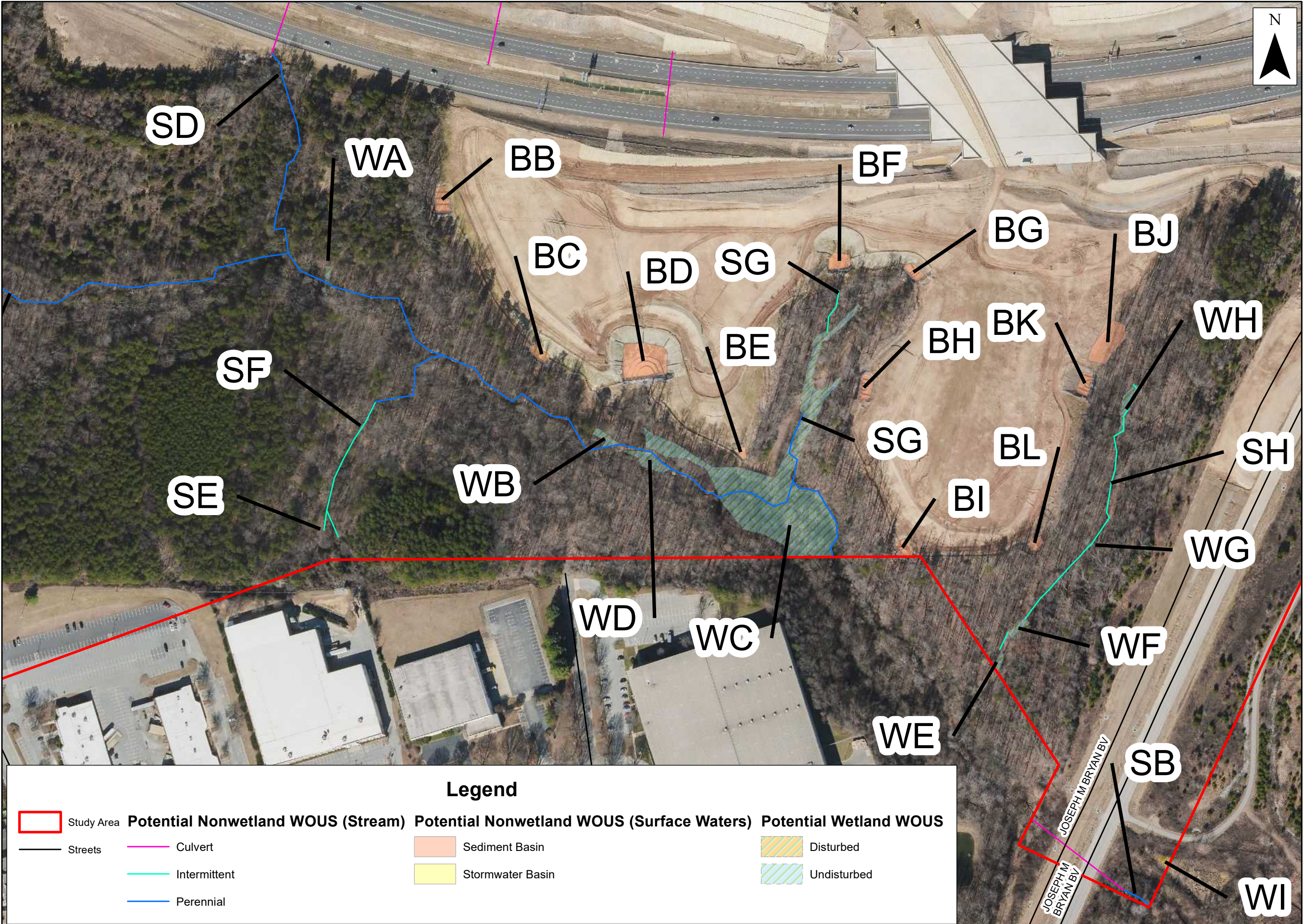
BOOM Roadway Access and Connectivity Project

Jurisdictional Features Map

Guilford County
North Carolina

Date:	March 2022
Scale:	0 250 500 Ft
Job No.:	22-107
Drawn By:	NDH
Checked By:	JSM

Figure
3-1



Prepared For:



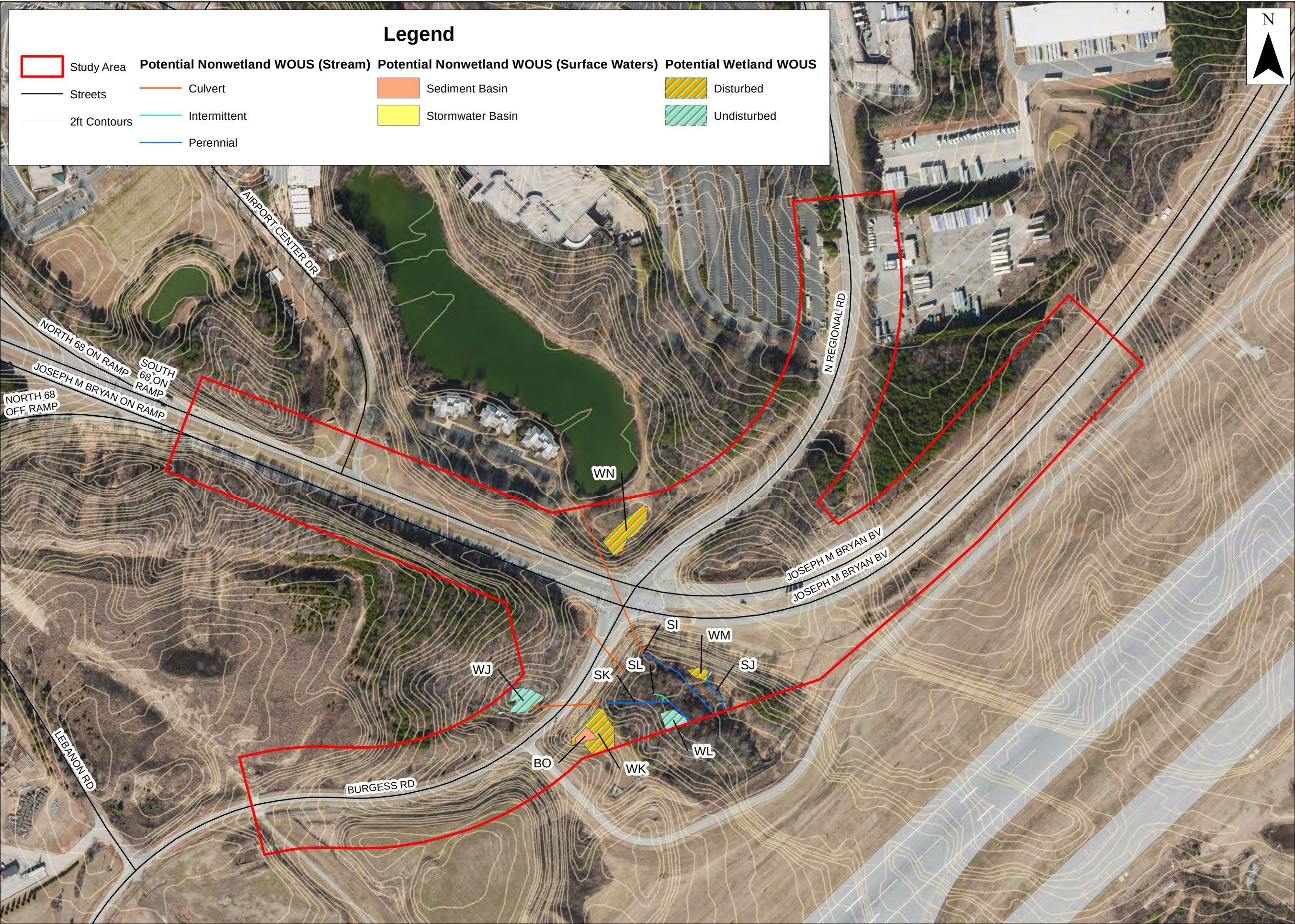
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**Jurisdictional
Features
Map**

**Guilford County
North Carolina**

Date:	March 2022
Scale:	0 90 180 Ft
Job No.:	22-107
Drawn By:	NDH
Checked By:	JSM

Figure
3-1
Zoom



Prepared For:



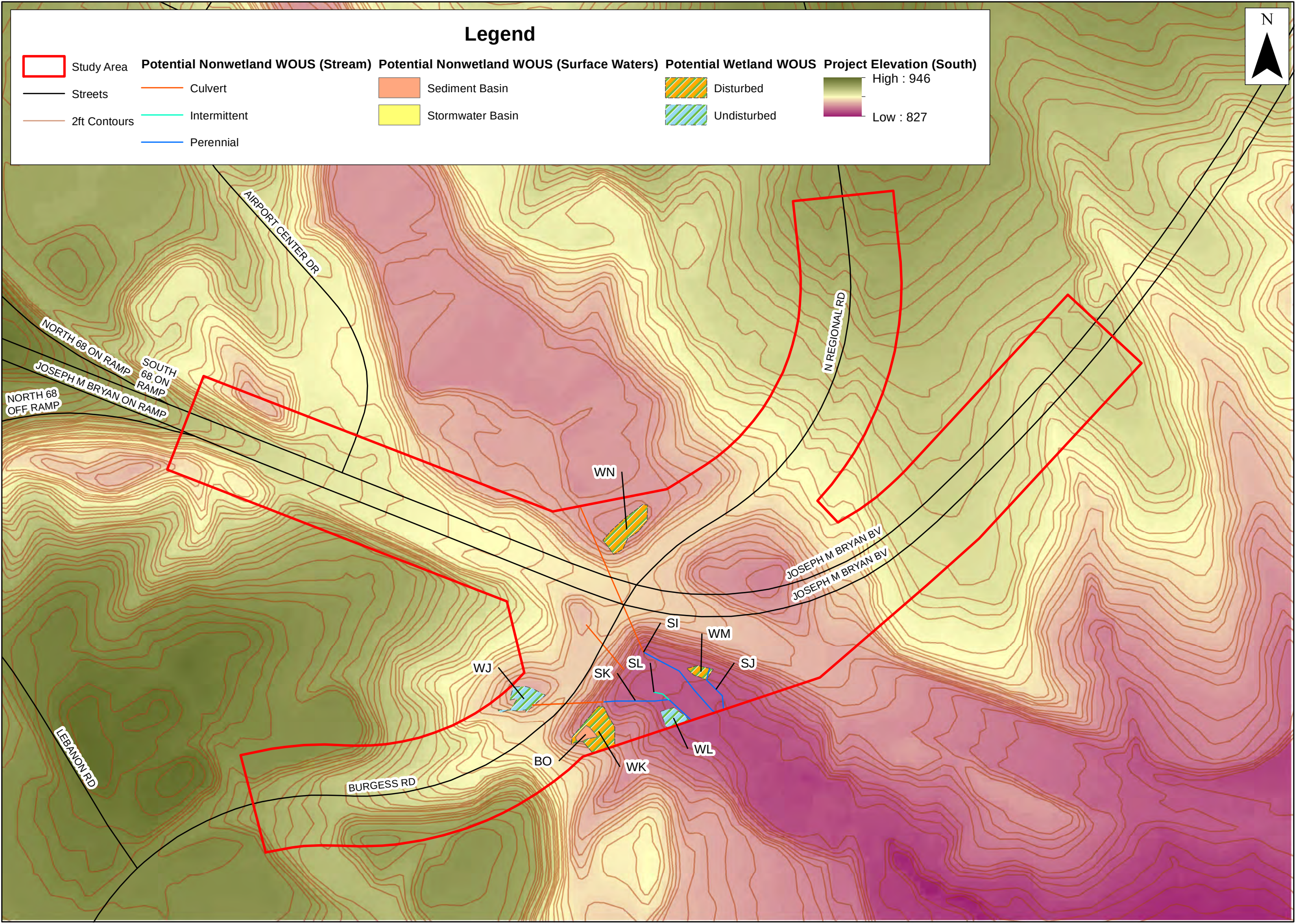
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Project**

**Jurisdictional
Features Map**

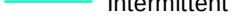
**Guilford County
North Carolina**

Date:	March 2022		
Scale:	0	125	250 Ft
Job No.:	22-107		
Drawn By:	NDH		Checked By: JSM

Figure
3-2



Legend

	Study Area	Potential Nonwetland WOUS (Stream)	Potential Nonwetland WOUS (Surface Waters)	Potential Wetland WOUS	Project Elevation (South)
	Streets				
	2ft Contours				
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					
					



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**Jurisdictional
Features Map**

**Guilford County
North Carolina**

Date:	March 2022
Scale:	0 125 250 Ft
Job No.:	22-107
Drawn By:	NDH
Checked By:	JSM

Figure
4-2

Appendix B

Stream and Wetland Forms

SA (51-1 → 51-5)

NC DWQ Stream Identification Form Version 4.11

Date: 3/2/22	Project/Site: Boom	Latitude: 36.120637
Evaluator: Nathan Howell & Byron Loran	County: Guilford	Longitude: -79.957066
Total Points: Stream is at least intermittent if ≥ 19 or perennial if ≥ 30* 23	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other e.g. Quad Name: Guilford

A. Geomorphology (Subtotal = 15.5)

	Absent	Weak	Moderate	Strong
1 ^a . Continuity of channel bed and bank	0	1	2	3
2. Sinuosity of channel along thalweg	0	1	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3
4. Particle size of stream substrate	0	1	2	3
5. Active/relict floodplain	0	1	2	3
6. Depositional bars or benches	0	1	2	3
7. Recent alluvial deposits	0	1	2	3
8. Headcuts	0	1	2	3
9. Grade control	0	0.5	1	1.5
10. Natural valley	0	0.5	1	1.5
11. Second or greater order channel	No = 0		Yes = 3	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 2.5)

12. Presence of Baseflow	0	1	2	3
13. Iron oxidizing bacteria	0	1	2	3
14. Leaf litter	1.5	1	0.5	0
15. Sediment on plants or debris	0	0.5	1	1.5
16. Organic debris lines or piles	0	0.5	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3	

C. Biology (Subtotal = 5)

18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macroinvertebrates (note diversity and abundance)	0	1	2	3
21. Aquatic Mollusks	0	1	2	3
22. Fish	0	0.5	1	1.5
23. Crayfish	0	0.5	1	1.5
24. Amphibians	0	0.5	1	1.5
25. Algae	0	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75; OBL = 1.5 Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes: Stream receives significant stormwater sheet flow from roadside culverts upslope.

Sketch:

USGS - NO
NRCS - NO

Bank Height: 0.5 - 1.5
Bank Width: 2-3
Water Depth: 0-2"
Channel Substrate: Clay, Silt, Sand, Gravel, Cobble, Bedrock
Velocity: None
Clarity: Clear in Pools

SE (55)

NC DWQ Stream Identification Form Version 4.11

Date: 3/2/22	Project/Site: Boom	Latitude: 36.117270
Evaluator: Nathan Howell & Byron Lewan	County: Guilford	Longitude: -79.952729
Total Points: Stream is at least intermittent if ≥ 19 or perennial if $\geq 30^*$ 18-19	Stream Determination (circle one) Ephemeral <u>Intermittent</u> Perennial	Other e.g. Quad Name: Guilford

A. Geomorphology (Subtotal = 8.5)

	Absent	Weak	Moderate	Strong
1 ^a . Continuity of channel bed and bank	0	1	2	3
2. Sinuosity of channel along thalweg	0	1	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3
4. Particle size of stream substrate	0	1	2	3
5. Active/relict floodplain	0	1	2	3
6. Depositional bars or benches	0	1	2	3
7. Recent alluvial deposits	0	1	2	3
8. Headcuts	0	1	2	3
9. Grade control	0	0.5	1	1.5
10. Natural valley	0	0.5	1	1.5
11. Second or greater order channel	No = 0		Yes = 3	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 3.5)

12. Presence of Baseflow	0	1	2	3
13. Iron oxidizing bacteria	0	1	2	3
14. Leaf litter	1.5	1	0.5	0
15. Sediment on plants or debris	0	0.5	1	1.5
16. Organic debris lines or piles	0	0.5	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3	

C. Biology (Subtotal = 6)

18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macroinvertebrates (note diversity and abundance)	0	1	2	3
21. Aquatic Mollusks	0	1	2	3
22. Fish	0	0.5	1	1.5
23. Crayfish	0	0.5	1	1.5
24. Amphibians	0	0.5	1	1.5
25. Algae	0	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75; OBL = 1.5 Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

 USGS - NO
 NRCS - NO

 Bank Height: 1-2
 Bank Width: 2-3
 Water Depth: 0-4"
 Channel Substrate: Clay, Silt, Sand, Gravel, Cobble, Bedrock
 Velocity: None
 Clarity: Clear in Pools

SF (56)

NC DWQ Stream Identification Form Version 4.11

Date: <u>3/2/22</u>	Project/Site: <u>Boom</u>	Latitude: <u>36.117640</u>
Evaluator: <u>Nathan Howell & Byron Levan</u>	County: <u>Guilford</u>	Longitude: <u>-79.952610</u>
Total Points: Stream is at least intermittent if ≥ 19 or perennial if $\geq 30^*$ <u>27</u>	Stream Determination (circle one) Ephemeral <u>Intermittent</u> Perennial	Other e.g. Quad Name: <u>Guilford</u>

A. Geomorphology (Subtotal = 17.5)

	Absent	Weak	Moderate	Strong
1*. Continuity of channel bed and bank	0	1	2	<u>3</u>
2. Sinuosity of channel along thalweg	0	1	<u>2</u>	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	<u>2</u>	3
4. Particle size of stream substrate	0	<u>1</u>	2	3
5. Active/relict floodplain	0	<u>1</u>	2	3
6. Depositional bars or benches	0	<u>1</u>	2	3
7. Recent alluvial deposits	0	<u>1</u>	2	3
8. Headcuts	0	1	<u>2</u>	3
9. Grade control	<u>0</u>	0.5	1	1.5
10. Natural valley	0	0.5	1	<u>1.5</u>
11. Second or greater order channel	No = 0		Yes = <u>3</u>	

*artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 3.5)

12. Presence of Baseflow	0	<u>1</u>	2	3
13. Iron oxidizing bacteria	<u>0</u>	1	2	3
14. Leaf litter	<u>1.5</u>	1	0.5	0
15. Sediment on plants or debris	0	<u>0.5</u>	1	1.5
16. Organic debris lines or piles	0	<u>0.5</u>	1	1.5
17. Soil-based evidence of high water table?	No = <u>0</u>		Yes = 3	

C. Biology (Subtotal = 6)

18. Fibrous roots in streambed	<u>3</u>	2	1	0
19. Rooted upland plants in streambed	<u>3</u>	2	1	0
20. Macroinvertebrates (note diversity and abundance)	0	1	2	3
21. Aquatic Mollusks	0	1	2	3
22. Fish	0	0.5	1	1.5
23. Crayfish	0	0.5	1	1.5
24. Amphibians	0	0.5	1	1.5
25. Algae	0	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75; OBL = 1.5 Other = <u>0</u>			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

USGS - NO

NRCS - NO

Bank Height: 1-4Bank Width: 2-5Water Depth: 0-6"Channel Substrate: Clay, Silt, Sand, Gravel, Cobble, BedrockVelocity: NoneClarity: clear in pools

56 (57)

NC DWQ Stream Identification Form Version 4.11

Date: 3/2/22	Project/Site: Boom	Latitude: 36.118722
Evaluator: Nathan Howell & Byron Lewan	County: Guilford	Longitude: -79.948495
Total Points: Stream is at least intermittent if ≥ 19 or perennial if $\geq 30^*$ 22-23	Stream Determination (circle one) Ephemeral <u>Intermittent</u> Perennial	Other e.g. Quad Name: Guilford

A. Geomorphology (Subtotal = 10.5)

	Absent	Weak	Moderate	Strong
1 ^a Continuity of channel bed and bank	0	1	2	3
2. Sinuosity of channel along thalweg	0	1	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3
4. Particle size of stream substrate	0	1	2	3
5. Active/relict floodplain	0	1	2	3
6. Depositional bars or benches	0	1	2	3
7. Recent alluvial deposits	0	1	2	3
8. Headcuts	0	1	2	3
9. Grade control	0	0.5	1	1.5
10. Natural valley	0	0.5	1	1.5
11. Second or greater order channel	No = 0		Yes = 3	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 5.5-6.5)

12. Presence of Baseflow	0	1	2	3
13. Iron oxidizing bacteria	0	1	2	3
14. Leaf litter	1.5	1	0.5	0
15. Sediment on plants or debris	0	0.5	1	1.5
16. Organic debris lines or piles	0	0.5	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3	

C. Biology (Subtotal = 6)

18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macroinvertebrates (note diversity and abundance)	0	1	2	3
21. Aquatic Mollusks	0	1	2	3
22. Fish	0	0.5	1	1.5
23. Crayfish	0	0.5	1	1.5
24. Amphibians	0	0.5	1	1.5
25. Algae	0	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75; OBL = 1.5 Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

USGS - No
NRCS - Yes

Bank Height: 1-3
Bank Width: 2-3
Water Depth: 0-2"
Channel Substrate: Clay, Silt, Sand, Gravel, Cobble, Bedrock
Velocity: Clear
Clarity: Slow

NC DWQ Stream Identification Form Version 4.11

SH

Date: Mar 3, 2022		Project/Site: Boom Roadway Access and Connectivity Project	Latitude: 36.117309
Evaluator: Byron Levan		County: Guilford	Longitude: -79.946185
Total Points: Stream is at least intermittent if ≥ 19 or perennial if ≥ 30	23.25	Stream Determination: Intermittent	Other: Guilford e.g. Quad Name:

A. Geomorphology (Subtotal = 10.5)

	Absent	Weak	Moderate	Strong	SCORE
1 ^a . Continuous bed and bank	0	1	2	3	1
2. Sinuosity of channel along thalweg	0	1	2	3	2
3. In-Channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3	1
4. Particle size of stream substrate	0	1	2	3	1
5. Active/relic floodplain	0	1	2	3	2
6. Depositional bars or benches	0	1	2	3	1
7. Recent alluvial deposits	0	1	2	3	1
8. Headcuts	0	1	2	3	0
9. Grade controls	0	0.5	1	1.5	0
10. Natural valley	0	0.5	1	1.5	1.5
11. Second or greater order channel	No = 0		Yes = 3		0

^a artificial ditches are not rated; see discussions in manual.

B. Hydrology (Subtotal = 7)

	Absent	Weak	Moderate	Strong	SCORE
12. Presence of Baseflow	0	1	2	3	1
13. Iron oxidizing bacteria	0	1	2	3	1
14. Leaf litter	1.5	1	0.5	0	1
15. Sediment on plants or debris	0	0.5	1	1.5	0.5
16. Organic debris lines or piles	0	0.5	1	1.5	0.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3		3

C. Biology (Subtotal = 5.75)

	Absent	Weak	Moderate	Strong	SCORE
18. Fibrous roots in streambed	3	2	1	0	1
19. Rooted upland plants in streambed	3	2	1	0	3
20. Macroinvertebrates (note diversity and abundance)	0	1	2	3	0
21. Aquatic Mollusks	0	1	2	3	0
22. Fish	0	0.5	1	1.5	0
23. Crayfish	0	0.5	1	1.5	0.5
24. Amphibians	0	0.5	1	1.5	0.5
25. Algae	0	0.5	1	1.5	0
26. Wetland plants in streambed	FACW=0.75; OBL=1.5 Other=0				0.75

*perennial stream may also be identified using other methods. See p.35 of manual.

Notes:

-Crayfish burrows and adult frogs seen on exposed bank. Stream is weak and goes underground before joining SB, but channel remains above ground in several areas with evidence of at least periodic above ground flow.

Bank Height (feet)	1
Bankfull Width (feet)	.25
Water Depth (inches)	2-4
Channel Substrate	Sand
Velocity:	Slow
Clarity:	Clear

~~Sketch:~~

NC DWQ Stream Identification Form Version 4.11

SJ

Date: Mar 3, 2022		Project/Site: Boom Roadway Access and Connectivity Project	Latitude: 36.106048
Evaluator: Trevor Hall		County: Guilford	Longitude: -79.954411
Total Points: Stream is at least intermittent if ≥ 19 or perennial if ≥ 30	31	Stream Determination: Perennial	Other: Guilford e.g. Quad Name:

A. Geomorphology (Subtotal = 12.5)

	Absent	Weak	Moderate	Strong	SCORE
1 ^a . Continuous bed and bank	0	1	2	3	3
2. Sinuosity of channel along thalweg	0	1	2	3	2
3. In-Channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3	1
4. Particle size of stream substrate	0	1	2	3	2
5. Active/relic floodplain	0	1	2	3	1
6. Depositional bars or benches	0	1	2	3	0
7. Recent alluvial deposits	0	1	2	3	1
8. Headcuts	0	1	2	3	2
9. Grade controls	0	0.5	1	1.5	0
10. Natural valley	0	0.5	1	1.5	0.5
11. Second or greater order channel	No = 0		Yes = 3		0

^a artificial ditches are not rated; see discussions in manual.

B. Hydrology (Subtotal = 9.5)

	Absent	Weak	Moderate	Strong	SCORE
12. Presence of Baseflow	0	1	2	3	3
13. Iron oxidizing bacteria	0	1	2	3	2
14. Leaf litter	1.5	1	0.5	0	1
15. Sediment on plants or debris	0	0.5	1	1.5	0.5
16. Organic debris lines or piles	0	0.5	1	1.5	0
17. Soil-based evidence of high water table?	No = 0		Yes = 3		3

C. Biology (Subtotal = 9)

	Absent	Weak	Moderate	Strong	SCORE
18. Fibrous roots in streambed	3	2	1	0	3
19. Rooted upland plants in streambed	3	2	1	0	3
20. Macroinvertebrates (note diversity and abundance)	0	1	2	3	1
21. Aquatic Mollusks	0	1	2	3	0
22. Fish	0	0.5	1	1.5	0.5
23. Crayfish	0	0.5	1	1.5	0.5
24. Amphibians	0	0.5	1	1.5	1
25. Algae	0	0.5	1	1.5	0
26. Wetland plants in streambed	FACW=0.75; OBL=1.5 Other=0				0

*perennial stream may also be identified using other methods. See p.35 of manual.

Notes: -Gambusia in pools -Crayfish burrows and adult frogs seen on exposed banks	Bank Height (feet)	8
	Bankfull Width (feet)	4
	Water Depth (inches)	2-4
	Channel Substrate	Pebble/Sand
	Velocity:	Fast
	Clarity:	Clear
Sketch:		

NC DWQ Stream Identification Form Version 4.11

SL

Date: Mar 3, 2022		Project/Site: Boom Roadway Access and Connectivity Project	Latitude: 36.106011
Evaluator: Trevor Hall		County: Guilford	Longitude: -79.954999
Total Points: Stream is at least intermittent if ≥ 19 or perennial if ≥ 30	22	Stream Determination: Intermittent	Other: Guilford <i>e.g. Quad Name:</i>

A. Geomorphology (Subtotal = 6.5)

	Absent	Weak	Moderate	Strong	SCORE
1 ^a . Continuous bed and bank	0	1	2	3	2
2. Sinuosity of channel along thalweg	0	1	2	3	1
3. In-Channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3	0
4. Particle size of stream substrate	0	1	2	3	1
5. Active/relic floodplain	0	1	2	3	0
6. Depositional bars or benches	0	1	2	3	0
7. Recent alluvial deposits	0	1	2	3	1
8. Headcuts	0	1	2	3	1
9. Grade controls	0	0.5	1	1.5	0
10. Natural valley	0	0.5	1	1.5	0.5
11. Second or greater order channel	No = 0		Yes = 3		0

^a artificial ditches are not rated; see discussions in manual.

B. Hydrology (Subtotal = 8.5)

	Absent	Weak	Moderate	Strong	SCORE
12. Presence of Baseflow	0	1	2	3	1
13. Iron oxidizing bacteria	0	1	2	3	3
14. Leaf litter	1.5	1	0.5	0	0.5
15. Sediment on plants or debris	0	0.5	1	1.5	1
16. Organic debris lines or piles	0	0.5	1	1.5	0
17. Soil-based evidence of high water table?	No = 0		Yes = 3		3

C. Biology (Subtotal = 7)

	Absent	Weak	Moderate	Strong	SCORE
18. Fibrous roots in streambed	3	2	1	0	2
19. Rooted upland plants in streambed	3	2	1	0	3
20. Macroinvertebrates (note diversity and abundance)	0	1	2	3	1
21. Aquatic Mollusks	0	1	2	3	0
22. Fish	0	0.5	1	1.5	0
23. Crayfish	0	0.5	1	1.5	0
24. Amphibians	0	0.5	1	1.5	0
25. Algae	0	0.5	1	1.5	1
26. Wetland plants in streambed	FACW=0.75; OBL=1.5 Other=0				0

*perennial stream may also be identified using other methods. See p.35 of manual.

Notes: -Midges in stream	Bank Height (feet)	6
	Bankfull Width (feet)	3
	Water Depth (inches)	2
	Channel Substrate	Sand
	Velocity:	Moderate
	Clarity:	Clear
Sketch: 		

NC SAM FIELD ASSESSMENT RESULTS
Accompanies User Manual Version 2.1

USACE AID #:		NCDWR #:	
INSTRUCTIONS: Attach a sketch of the assessment area and photographs. Attach a copy of the USGS 7.5-minute topographic quadrangle, and circle the location of the stream reach under evaluation. If multiple stream reaches will be evaluated on the same property, identify and number all reaches on the attached map, and include a separate form for each reach. See the NC SAM User Manual for detailed descriptions and explanations of requested information. Record in the "Notes/Sketch" section if supplementary measurements were performed. See the NC SAM User Manual for examples of additional measurements that may be relevant.			
NOTE EVIDENCE OF STRESSORS AFFECTING THE ASSESSMENT AREA (do not need to be within the assessment area).			
PROJECT/SITE INFORMATION:			
1. Project name (if any):		2. Date of evaluation:	
Boom Roadway Access and Connectivity Project		3/2/2022	
3. Applicant/owner name:		4. Assessor name/organization:	
NCDOT		Nathan Howell - Three Oaks Engineering	
5. County:		6. Nearest named water body on USGS 7.5-minute quad:	
Guilford		Brush Creek	
7. River basin:			
Cape Fear			
8. Site coordinates (decimal degrees, at lower end of assessment reach):		36.119113, -79.955876	
STREAM INFORMATION: (depth and width can be approximations)			
9. Site number (show on attached map):		10. Length of assessment reach evaluated (feet):	
SB		1,604	
11. Channel depth from bed (in riffle, if present) to top of bank (feet):		☐ Unable to assess channel depth.	
5-20			
12. Channel width at top of bank (feet):		13. Is assessment reach a swamp stream? ☐ Yes ☐ No	
5-15			
14. Feature type: ☒ Perennial flow ☐ Intermittent flow ☐ Tidal Marsh Stream			
STREAM CATEGORY INFORMATION:			
15. NC SAM Zone: ☐ Mountains (M) ☒ Piedmont (P) ☐ Inner Coastal Plain (I) ☐ Outer Coastal Plain (O)			
 ☒ A (more sinuous stream, flatter valley slope)  ☐ B (less sinuous stream, steeper valley slope)			
16. Estimated geomorphic valley shape (skip for Tidal Marsh Stream):			
17. Watershed size: (skip for Tidal Marsh Stream) ☐ Size 1 (< 0.1 mi ²) ☒ Size 2 (0.1 to < 0.5 mi ²) ☐ Size 3 (0.5 to < 5 mi ²) ☐ Size 4 (≥ 5 mi ²)			
ADDITIONAL INFORMATION:			
18. Were regulatory considerations evaluated? ☒ Yes ☐ No If Yes, check all that apply to the assessment area.			
☐ Section 10 water ☐ Classified Trout Waters ☐ Water Supply Watershed (☐ I ☐ II ☒ III ☐ IV ☐ V)			
☐ Essential Fish Habitat ☐ Primary Nursery Area ☐ High Quality Waters/Outstanding Resource Waters			
☐ Publicly owned property ☐ NCDWR Riparian buffer rule in effect ☒ Nutrient Sensitive Waters			
☐ Anadromous fish ☐ 303(d) List ☐ CAMA Area of Environmental Concern (AEC)			
☐ Documented presence of a federal and/or state listed protected species within the assessment area.			
List species: _____			
☐ Designated Critical Habitat (list species) _____			
19. Are additional stream information/supplementary measurements included in "Notes/Sketch" section or attached? ☒ Yes ☐ No			

1. **Channel Water – assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams)**
 - ☒ A Water throughout assessment reach.
 - ☐ B No flow, water in pools only.
 - ☐ C No water in assessment reach.
2. **Evidence of Flow Restriction – assessment reach metric**
 - ☐ A At least 10% of assessment reach in-stream habitat or riffle-pool sequence is severely affected by a flow restriction or a channel choked with aquatic macrophytes or ponded water or impoundment on flood or ebb within the assessment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates, debris jams, beaver dams).
 - ☒ B Not A
3. **Feature Pattern – assessment reach metric**
 - ☐ A A majority of the assessment reach has altered pattern (examples: straightening, modification above or below culvert).
 - ☒ B Not A
4. **Feature Longitudinal Profile – assessment reach metric**
 - ☒ A Majority of assessment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming, over widening, active aggradation, dredging, and excavation where appropriate channel profile has not reformed from any of these disturbances).
 - ☐ B Not A
5. **Signs of Active Instability – assessment reach metric**

Consider only current instability, not past events from which the stream has currently recovered. Examples of instability include active bank failure, active channel down-cutting (head-cut), active widening, and artificial hardening (such as concrete, gabion, rip-rap).

 - ☐ A < 10% of channel unstable
 - ☐ B 10 to 25% of channel unstable
 - ☒ C > 25% of channel unstable

6. Streamside Area Interaction – streamside area metric

Consider for the Left Bank (LB) and the Right Bank (RB).

- | | | |
|---------------------------------------|---------------------------------------|---|
| LB | RB | |
| ☐ A | ☐ A | Little or no evidence of conditions that adversely affect reference interaction |
| ☐ B | ☐ B | Moderate evidence of conditions (examples: berms, levees, down-cutting, aggradation, dredging) that adversely affect reference interaction (examples: limited streamside area access, disruption of flood flows through streamside area, leaky or intermittent bulkheads, causeways with floodplain constriction, minor ditching [including mosquito ditching]) |
| ☒ C | ☒ C | Extensive evidence of conditions that adversely affect reference interaction (little to no floodplain/intertidal zone access [examples: causeways with floodplain and channel constriction, bulkheads, retaining walls, fill, stream incision, disruption of flood flows through streamside area] <u>or</u> too much floodplain/intertidal zone access [examples: impoundments, intensive mosquito ditching]) <u>or</u> floodplain/intertidal zone unnaturally absent <u>or</u> assessment reach is a man-made feature on an interstream divide |

7. Water Quality Stressors – assessment reach/intertidal zone metric

Check all that apply.

- ☐A Discolored water in stream or intertidal zone (milky white, blue, unnatural water discoloration, oil sheen, stream foam)
- ☒B Excessive sedimentation (burying of stream features or intertidal zone)
- ☐C Noticeable evidence of pollutant discharges entering the assessment reach and causing a water quality problem
- ☐D Odor (not including natural sulfide odors)
- ☐E Current published or collected data indicating degraded water quality in the assessment reach. Cite source in "Notes/Sketch" section.
- ☐F Livestock with access to stream or intertidal zone
- ☐G Excessive algae in stream or intertidal zone
- ☐H Degraded marsh vegetation in the intertidal zone (removal, burning, regular mowing, destruction, etc)
- ☐I Other: _____ (explain in "Notes/Sketch" section)
- ☐J Little to no stressors

8. Recent Weather – watershed metric (skip for Tidal Marsh Streams)

For Size 1 or 2 streams, D1 drought or higher is considered a drought; for Size 3 or 4 streams, D2 drought or higher is considered a drought.

- ☐A Drought conditions and no rainfall or rainfall not exceeding 1 inch within the last 48 hours
- ☐B Drought conditions and rainfall exceeding 1 inch within the last 48 hours
- ☒C No drought conditions

9. Large or Dangerous Stream – assessment reach metric

- ☐Yes ☒No Is stream is too large or dangerous to assess? If Yes, skip to Metric 13 (Streamside Area Ground Surface Condition).

10. Natural In-stream Habitat Types – assessment reach metric

- 10a. ☐Yes ☐No Degraded in-stream habitat over majority of the assessment reach (examples of stressors include excessive sedimentation, mining, excavation, in-stream hardening [for example, rip-rap], recent dredging, and snagging) (evaluate for Size 4 Coastal Plain streams only, then skip to Metric 12)

10b. Check all that occur (occurs if > 5% coverage of assessment reach) (skip for Size 4 Coastal Plain streams)

- | | | |
|---|------------------------------------|---|
| ☐ A Multiple aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats) | Check for Tidal Marsh Streams Only | ☐ F 5% oysters or other natural hard bottoms |
| ☐ B Multiple sticks and/or leaf packs and/or emergent vegetation | | ☐ G Submerged aquatic vegetation |
| ☐ C Multiple snags and logs (including lap trees) | | ☐ H Low-tide refugia (pools) |
| ☐ D 5% undercut banks and/or root mats and/or roots in banks extend to the normal wetted perimeter | | ☐ I Sand bottom |
| ☒ E Little or no habitat | | ☐ J 5% vertical bank along the marsh |
| | | ☐ K Little or no habitat |

*****REMAINING QUESTIONS ARE NOT APPLICABLE FOR TIDAL MARSH STREAMS*****

11. Bedform and Substrate – assessment reach metric (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams)

- 11a. ☐Yes ☒No Is assessment reach in a natural sand-bed stream? (skip for Coastal Plain streams)

11b. Bedform evaluated. Check the appropriate box(es).

- ☒A Riffle-run section (evaluate 11c)
- ☐B Pool-glide section (evaluate 11d)
- ☐C Natural bedform absent (skip to Metric 12, Aquatic Life)

- 11c. In riffle sections, check all that occur below the normal wetted perimeter of the assessment reach – whether or not submerged. **Check at least one box in each row (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams).** Not Present (NP) = absent, Rare (R) = present but ≤ 10%, Common (C) = > 10-40%, Abundant (A) = > 40-70%, Predominant (P) = > 70%. Cumulative percentages should not exceed 100% for each assessment reach.

- | NP | R | C | A | P | |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------------------|
| ☒ | ☐ | ☐ | ☐ | ☐ | Bedrock/saprolite |
| ☒ | ☐ | ☐ | ☐ | ☐ | Boulder (256 – 4096 mm) |
| ☐ | ☒ | ☐ | ☐ | ☐ | Cobble (64 – 256 mm) |
| ☐ | ☐ | ☒ | ☐ | ☐ | Gravel (2 – 64 mm) |
| ☐ | ☐ | ☐ | ☒ | ☐ | Sand (.062 – 2 mm) |
| ☐ | ☐ | ☒ | ☐ | ☐ | Silt/clay (< 0.062 mm) |
| ☐ | ☒ | ☐ | ☐ | ☐ | Detritus |
| ☒ | ☐ | ☐ | ☐ | ☐ | Artificial (rip-rap, concrete, etc.) |

- 11d. ☐Yes ☐No Are pools filled with sediment? (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams)

12. Aquatic Life – assessment reach metric (skip for Tidal Marsh Streams)

12a. ☒ Yes ☐ No Was an in-stream aquatic life assessment performed as described in the User Manual?

If No, select one of the following reasons and skip to Metric 13. ☐ No Water ☐ Other: _____

12b. ☐ Yes ☒ No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all that apply. If No, skip to Metric 13.

1 >1 Numbers over columns refer to "individuals" for Size 1 and 2 streams and "taxa" for Size 3 and 4 streams.

- | | | |
|--------------------------|--------------------------|--|
| ☐ | ☐ | Adult frogs |
| ☐ | ☐ | Aquatic reptiles |
| ☐ | ☐ | Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats) |
| ☐ | ☐ | Beetles |
| ☐ | ☐ | Caddisfly larvae (T) |
| ☐ | ☐ | Asian clam (<i>Corbicula</i>) |
| ☐ | ☐ | Crustacean (isopod/amphipod/crayfish/shrimp) |
| ☐ | ☐ | Damselfly and dragonfly larvae |
| ☐ | ☐ | Dipterans |
| ☐ | ☐ | Mayfly larvae (E) |
| ☐ | ☐ | Megaloptera (alderfly, fishfly, dobsonfly larvae) |
| ☐ | ☐ | Midges/mosquito larvae |
| ☐ | ☐ | Mosquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea</i>) |
| ☐ | ☐ | Mussels/Clams (not <i>Corbicula</i>) |
| ☐ | ☐ | Other fish |
| ☐ | ☐ | Salamanders/tadpoles |
| ☐ | ☐ | Snails |
| ☐ | ☐ | Stonefly larvae (P) |
| ☐ | ☐ | Tipulid larvae |
| ☐ | ☐ | Worms/leeches |

13. Streamside Area Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types)

Consider for the Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runoff.

- | LB | RB | |
|---------------------------------------|---------------------------------------|--|
| ☒ A | ☒ A | Little or no alteration to water storage capacity over a majority of the streamside area |
| ☐ B | ☐ B | Moderate alteration to water storage capacity over a majority of the streamside area |
| ☐ C | ☐ C | Severe alteration to water storage capacity over a majority of the streamside area (examples: ditches, fill, soil compaction, livestock disturbance, buildings, man-made levees, drainage pipes) |

14. Streamside Area Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types)

Consider for the Left Bank (LB) and the Right Bank (RB) of the streamside area.

- | LB | RB | |
|---------------------------------------|---------------------------------------|--|
| ☐ A | ☐ A | Majority of streamside area with depressions able to pond water $\geq$ 6 inches deep |
| ☐ B | ☐ B | Majority of streamside area with depressions able to pond water 3 to 6 inches deep |
| ☒ C | ☒ C | Majority of streamside area with depressions able to pond water < 3 inches deep |

15. Wetland Presence – streamside area metric (skip for Tidal Marsh Streams)

Consider for the Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the normal wetted perimeter of assessment reach.

- | LB | RB | |
|---------------------------------------|---------------------------------------|--|
| ☐ Y | ☐ Y | Are wetlands present in the streamside area? |
| ☒ N | ☒ N | |

16. Baseflow Contributors – assessment reach metric (skip for Size 4 streams and Tidal Marsh Streams)

Check all contributors within the assessment reach or within view of and draining to the assessment reach.

- | | |
|---------------------------------------|---|
| ☒ A | Streams and/or springs (jurisdictional discharges) |
| ☐ B | Ponds (include wet detention basins; do not include sediment basins or dry detention basins) |
| ☐ C | Obstruction passing flow during low-flow periods within the assessment area (beaver dam, leaky dam, bottom-release dam, weir) |
| ☒ D | Evidence of bank seepage or sweating (iron in water indicates seepage) |
| ☒ E | Stream bed or bank soil reduced (dig through deposited sediment if present) |
| ☐ F | None of the above |

17. Baseflow Detractors – assessment area metric (skip for Tidal Marsh Streams)

Check all that apply.

- | | |
|---------------------------------------|--|
| ☐ A | Evidence of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) |
| ☐ B | Obstruction not passing flow during low-flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) |
| ☐ C | Urban stream ($\geq$ 24% impervious surface for watershed) |
| ☒ D | Evidence that the streamside area has been modified resulting in accelerated drainage into the assessment reach |
| ☐ E | Assessment reach relocated to valley edge |
| ☐ F | None of the above |

18. Shading – assessment reach metric (skip for Tidal Marsh Streams)

Consider aspect. Consider "leaf-on" condition.

- | | |
|---------------------------------------|--|
| ☒ A | Stream shading is appropriate for stream category (may include gaps associated with natural processes) |
| ☐ B | Degraded (example: scattered trees) |
| ☐ C | Stream shading is gone or largely absent |

19. Buffer Width – streamside area metric (skip for Tidal Marsh Streams)

Consider “vegetated buffer” and “wooded buffer” separately for left bank (LB) and right bank (RB) starting at the top of bank out to the first break.

Vegetated		Wooded		
LB	RB	LB	RB	
☒ A	☒ A	☒ A	☒ A	≥ 100 feet wide <u>or</u> extends to the edge of the watershed
☐ B	☐ B	☐ B	☐ B	From 50 to < 100 feet wide
☐ C	☐ C	☐ C	☐ C	From 30 to < 50 feet wide
☐ D	☐ D	☐ D	☐ D	From 10 to < 30 feet wide
☐ E	☐ E	☐ E	☐ E	< 10 feet wide <u>or</u> no trees

20. Buffer Structure – streamside area metric (skip for Tidal Marsh Streams)

Consider for left bank (LB) and right bank (RB) for Metric 19 (“Vegetated” Buffer Width).

LB	RB	
☒ A	☒ A	Mature forest
☐ B	☐ B	Non-mature woody vegetation <u>or</u> modified vegetation structure
☐ C	☐ C	Herbaceous vegetation with or without a strip of trees < 10 feet wide
☐ D	☐ D	Maintained shrubs
☐ E	☐ E	Little or no vegetation

21. Buffer Stressors – streamside area metric (skip for Tidal Marsh Streams)

Check all appropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is within 30 feet of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet).

If none of the following stressors occurs on either bank, check here and skip to Metric 22: ☒

Abuts		< 30 feet		30-50 feet		
LB	RB	LB	RB	LB	RB	
☐ A	☐ A	☐ A	☐ A	☐ A	☐ A	Row crops
☐ B	☐ B	☐ B	☐ B	☐ B	☐ B	Maintained turf
☐ C	☐ C	☐ C	☐ C	☐ C	☐ C	Pasture (no livestock)/commercial horticulture
☐ D	☐ D	☐ D	☐ D	☐ D	☐ D	Pasture (active livestock use)

22. Stem Density – streamside area metric (skip for Tidal Marsh Streams)

Consider for left bank (LB) and right bank (RB) for Metric 19 (“Wooded” Buffer Width).

LB	RB	
☒ A	☒ A	Medium to high stem density
☐ B	☐ B	Low stem density
☐ C	☐ C	No wooded riparian buffer <u>or</u> predominantly herbaceous species <u>or</u> bare ground

23. Continuity of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams)

Consider whether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10 feet wide.

LB	RB	
☒ A	☒ A	The total length of buffer breaks is < 25 percent.
☐ B	☐ B	The total length of buffer breaks is between 25 and 50 percent.
☐ C	☐ C	The total length of buffer breaks is > 50 percent.

24. Vegetative Composition – streamside area metric (skip for Tidal Marsh Streams)

Evaluate the dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to assessment reach habitat.

LB	RB	
☐ A	☐ A	Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species, with non-native invasive species absent or sparse.
☒ B	☒ B	Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native species. This may include communities of weedy native species that develop after clear-cutting or clearing <u>or</u> communities with non-native invasive species present, but not dominant, over a large portion of the expected strata <u>or</u> communities missing understory but retaining canopy trees.
☐ C	☐ C	Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent <u>or</u> communities with non-native invasive species dominant over a large portion of expected strata <u>or</u> communities composed of planted stands of non-characteristic species <u>or</u> communities inappropriately composed of a single species <u>or</u> no vegetation.

25. Conductivity – assessment reach metric (skip for all Coastal Plain streams)

25a. ☐Yes ☒No Was conductivity measurement recorded?
If No, select one of the following reasons. ☐No Water ☐Other: _____

25b. Check the box corresponding to the conductivity measurement (units of microsiemens per centimeter).

☐A < 46 ☐B 46 to < 67 ☐C 67 to < 79 ☐D 79 to < 230 ☐E ≥ 230

Notes/Sketch:

This form represents roughly the upper third of Stream SB. This reach is severely incised and unstable. It receives significant sotmrwater flow from surrounding developed uplands and roadways.

Draft NC SAM Stream Rating Sheet
Accompanies User Manual Version 2.1

Stream Site Name	Boom Roadway Access and Connectivity Project	Date of Assessment	3/2/2022
Stream Category	Pa2	Assessor Name/Organization	Nathan Howell - Three Oaks Engineering

Notes of Field Assessment Form (Y/N)	NO
Presence of regulatory considerations (Y/N)	YES
Additional stream information/supplementary measurements included (Y/N)	YES
NC SAM feature type (perennial, intermittent, Tidal Marsh Stream)	Perennial

Function Class Rating Summary	USACE/ All Streams	NCDWR Intermittent
(1) Hydrology	LOW	
(2) Baseflow	MEDIUM	
(2) Flood Flow	LOW	
(3) Streamside Area Attenuation	LOW	
(4) Floodplain Access	LOW	
(4) Wooded Riparian Buffer	HIGH	
(4) Microtopography	LOW	
(3) Stream Stability	LOW	
(4) Channel Stability	LOW	
(4) Sediment Transport	MEDIUM	
(4) Stream Geomorphology	MEDIUM	
(2) Stream/Intertidal Zone Interaction	NA	
(2) Longitudinal Tidal Flow	NA	
(2) Tidal Marsh Stream Stability	NA	
(3) Tidal Marsh Channel Stability	NA	
(3) Tidal Marsh Stream Geomorphology	NA	
(1) Water Quality	MEDIUM	
(2) Baseflow	MEDIUM	
(2) Streamside Area Vegetation	HIGH	
(3) Upland Pollutant Filtration	HIGH	
(3) Thermoregulation	HIGH	
(2) Indicators of Stressors	YES	
(2) Aquatic Life Tolerance	HIGH	
(2) Intertidal Zone Filtration	NA	
(1) Habitat	LOW	
(2) In-stream Habitat	LOW	
(3) Baseflow	MEDIUM	
(3) Substrate	MEDIUM	
(3) Stream Stability	LOW	
(3) In-stream Habitat	LOW	
(2) Stream-side Habitat	HIGH	
(3) Stream-side Habitat	MEDIUM	
(3) Thermoregulation	HIGH	
(2) Tidal Marsh In-stream Habitat	NA	
(3) Flow Restriction	NA	
(3) Tidal Marsh Stream Stability	NA	
(4) Tidal Marsh Channel Stability	NA	
(4) Tidal Marsh Stream Geomorphology	NA	
(3) Tidal Marsh In-stream Habitat	NA	
(2) Intertidal Zone	NA	
Overall	LOW	

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R	<i>OMB Control #: 0710-xxxx, Exp: Pending</i> <i>Requirement Control Symbol EXEMPT:</i> <i>(Authority: AR 335-15, paragraph 5-2a)</i>
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Project/Site: Boom Roadway Access and Connectivity Project City/County: Guilford Sampling Date: 3/2/22
 Applicant/Owner: NCDOT State: NC Sampling Point: WA (W1)Wet
 Investigator(s): Nathan Howell & Byron Levan Section, Township, Range: Greensboro
 Landform (hillside, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRR or MLRA): LRR P, MLRA 136 Lat: 36.118959 Long: -79.952731 Datum: NAD 83
 Soil Map Unit Name: Poplar Forest sandy loam, 15-35% slopes NWI classification: PEM
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	<table style="width: 100%;"> <tr> <td style="width: 60%;">Is the Sampled Area within a Wetland?</td> <td style="width: 40%;">Yes <u>X</u> No <u> </u></td> </tr> </table>	Is the Sampled Area within a Wetland?	Yes <u>X</u> No <u> </u>
Is the Sampled Area within a Wetland?	Yes <u>X</u> No <u> </u>		
Remarks: NCWAM: Floodplain Pool.			

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ☒ Surface Water (A1) ☐ True Aquatic Plants (B14) ☒ High Water Table (A2) ☐ Hydrogen Sulfide Odor (C1) ☒ Saturation (A3) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Water Marks (B1) ☐ Presence of Reduced Iron (C4) ☐ Sediment Deposits (B2) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Drift Deposits (B3) ☐ Thin Muck Surface (C7) ☐ Algal Mat or Crust (B4) ☐ Other (Explain in Remarks) ☐ Iron Deposits (B5) ☐ Inundation Visible on Aerial Imagery (B7) ☒ Water-Stained Leaves (B9) ☐ Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> ☐ Surface Soil Cracks (B6) ☒ Sparsely Vegetated Concave Surface (B8) ☒ Drainage Patterns (B10) ☐ Moss Trim Lines (B16) ☐ Dry-Season Water Table (C2) ☐ Crayfish Burrows (C8) ☐ Saturation Visible on Aerial Imagery (C9) ☐ Stunted or Stressed Plants (D1) ☒ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ Microtopographic Relief (D4) ☐ FAC-Neutral Test (D5)		
Field Observations: Surface Water Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>3</u> Water Table Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>0</u> Saturation Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>0</u> (includes capillary fringe)	<table style="width: 100%;"> <tr> <td style="width: 60%;">Wetland Hydrology Present?</td> <td style="width: 40%;">Yes <u>X</u> No <u> </u></td> </tr> </table>	Wetland Hydrology Present?	Yes <u>X</u> No <u> </u>
Wetland Hydrology Present?	Yes <u>X</u> No <u> </u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:			

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WA (W1)Wet

Tree Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Absent</u>	<u>0</u>			Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>0</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)																
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
=Total Cover				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: _____ (A)</td> <td>_____ (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species _____	x 3 = _____	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: _____ (A)	_____ (B)	Prevalence Index = B/A = _____	
Total % Cover of:	Multiply by:																			
OBL species _____	x 1 = _____																			
FACW species _____	x 2 = _____																			
FAC species _____	x 3 = _____																			
FACU species _____	x 4 = _____																			
UPL species _____	x 5 = _____																			
Column Totals: _____ (A)	_____ (B)																			
Prevalence Index = B/A = _____																				
50% of total cover: _____ 20% of total cover: _____																				
Sapling/Shrub Stratum (Plot size: <u>15' radius</u>)																				
1. <u>Absent</u>	<u>0</u>			Hydrophytic Vegetation Indicators: _____ 1 - Rapid Test for Hydrophytic Vegetation _____ 2 - Dominance Test is >50% _____ 3 - Prevalence Index is ≤3.0 ¹ _____ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
=Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Herb Stratum (Plot size: <u>5' radius</u>)																				
1. <u>Absent</u>	<u>0</u>			Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody Vine – All woody vines greater than 3.28 ft in height.																
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
=Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Woody Vine Stratum (Plot size: <u>30' radius</u>)																				
1. <u>Absent</u>	<u>0</u>			Hydrophytic Vegetation Present? Yes _____ No <u>X</u>																
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
=Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Remarks: (Include photo numbers here or on a separate sheet.) No vegetation present within wetland (Sparsely vegetated concave surface).																				

SOIL

Sampling Point: WA (W1)Wet**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 4/1	90	7.5YR 4/6	10	C	M	Loamy/Clayey	Prominent redox concentrations

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

☐ Histosol (A1)	☐ Polyvalue Below Surface (S8) (MLRA 147, 148)
☐ Histic Epipedon (A2)	☐ Thin Dark Surface (S9) (MLRA 147, 148)
☐ Black Histic (A3)	☐ Loamy Mucky Mineral (F1) (MLRA 136)
☐ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)
☐ Stratified Layers (A5)	☒ Depleted Matrix (F3)
☐ 2 cm Muck (A10) (LRR N)	☐ Redox Dark Surface (F6)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)
☐ Sandy Mucky Mineral (S1)	☐ Iron-Manganese Masses (F12) (LRR N, MLRA 136)
☐ Sandy Gleyed Matrix (S4)	☐ Umbric Surface (F13) (MLRA 122, 136)
☐ Sandy Redox (S5)	☐ Piedmont Floodplain Soils (F19) (MLRA 148)
☐ Stripped Matrix (S6)	☐ Red Parent Material (F21) (MLRA 127, 147, 148)
☐ Dark Surface (S7)	

Indicators for Problematic Hydric Soils³:

☐ 2 cm Muck (A10) (MLRA 147)
☐ Coast Prairie Redox (A16)
☐ (MLRA 147, 148)
☐ Piedmont Floodplain Soils (F19)
☐ (MLRA 136, 147)
☐ Red Parent Material (F21)
☐ (outside MLRA 127, 147, 148)
☐ Very Shallow Dark Surface (F22)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**Type: _____
Depth (inches): _____Hydric Soil Present? Yes ☒ No ☐

Remarks:

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R	<i>OMB Control #: 0710-xxxx, Exp: Pending</i> <i>Requirement Control Symbol EXEMPT:</i> <i>(Authority: AR 335-15, paragraph 5-2a)</i>
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Project/Site: Boom Roadway Access and Connectivity Project City/County: Guilford Sampling Date: 3/2/22
 Applicant/Owner: NCDOT State: NC Sampling Point: WB (W2) Wet
 Investigator(s): Nathan Howell & Byron Levan Section, Township, Range: Greensboro
 Landform (hillside, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRR or MLRA): LRR P, MLRA 136 Lat: 36.117846 Long: -79.950395 Datum: NAD 83
 Soil Map Unit Name: Poplar Forest sandy loam, 15-35% slopes NWI classification: PEM
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	<table style="width: 100%;"> <tr> <td style="width: 60%;">Is the Sampled Area within a Wetland?</td> <td style="width: 40%;">Yes <u>X</u> No <u> </u></td> </tr> </table>	Is the Sampled Area within a Wetland?	Yes <u>X</u> No <u> </u>
Is the Sampled Area within a Wetland?	Yes <u>X</u> No <u> </u>		
Remarks: NCWAM: Headwater Forest/Floodplain Pool			

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ☐ Surface Water (A1) ☒ High Water Table (A2) ☒ Saturation (A3) ☐ Water Marks (B1) ☐ Sediment Deposits (B2) ☐ Drift Deposits (B3) ☐ Algal Mat or Crust (B4) ☐ Iron Deposits (B5) ☐ Inundation Visible on Aerial Imagery (B7) ☒ Water-Stained Leaves (B9) ☐ Aquatic Fauna (B13) ☐ True Aquatic Plants (B14) ☐ Hydrogen Sulfide Odor (C1) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Presence of Reduced Iron (C4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Thin Muck Surface (C7) ☐ Other (Explain in Remarks)	<u>Secondary Indicators (minimum of two required)</u> ☐ Surface Soil Cracks (B6) ☒ Sparsely Vegetated Concave Surface (B8) ☒ Drainage Patterns (B10) ☐ Moss Trim Lines (B16) ☐ Dry-Season Water Table (C2) ☐ Crayfish Burrows (C8) ☐ Saturation Visible on Aerial Imagery (C9) ☐ Stunted or Stressed Plants (D1) ☒ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ Microtopographic Relief (D4) ☒ FAC-Neutral Test (D5)		
Field Observations: Surface Water Present? Yes <u> </u> No <u>X</u> Depth (inches): <u>0</u> Water Table Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>1</u> Saturation Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>0</u> (includes capillary fringe)	<table style="width: 100%;"> <tr> <td style="width: 60%;">Wetland Hydrology Present?</td> <td style="width: 40%;">Yes <u>X</u> No <u> </u></td> </tr> </table>	Wetland Hydrology Present?	Yes <u>X</u> No <u> </u>
Wetland Hydrology Present?	Yes <u>X</u> No <u> </u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:			

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WB (W2) Wet

Tree Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Absent</u>	<u>0</u>			Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
=Total Cover				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: _____ (A)</td> <td>_____ (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species _____	x 3 = _____	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: _____ (A)	_____ (B)	Prevalence Index = B/A = _____	
Total % Cover of:	Multiply by:																			
OBL species _____	x 1 = _____																			
FACW species _____	x 2 = _____																			
FAC species _____	x 3 = _____																			
FACU species _____	x 4 = _____																			
UPL species _____	x 5 = _____																			
Column Totals: _____ (A)	_____ (B)																			
Prevalence Index = B/A = _____																				
50% of total cover: _____ 20% of total cover: _____																				
Sapling/Shrub Stratum (Plot size: <u>15' radius</u>)																				
1. <u>Absent</u>	<u>0</u>			Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u>Problematic Hydrophytic Vegetation¹ (Explain)</u> ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
=Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Herb Stratum (Plot size: <u>5' radius</u>)																				
1. <u>Juncus effusus</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody Vine – All woody vines greater than 3.28 ft in height.																
2. <u>Carex lurida</u>	<u>1</u>	<u>No</u>	<u>OBL</u>																	
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
=Total Cover																				
50% of total cover: <u>6</u> 20% of total cover: <u>3</u>																				
Woody Vine Stratum (Plot size: <u>30' radius</u>)																				
1. <u>Absent</u>	<u>0</u>			Hydrophytic Vegetation Present? Yes <u>X</u> No _____																
2. _____																				
3. _____																				
4. _____																				
5. _____																				
=Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

SOIL

Sampling Point: WB (W2) Wet**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 4/1	80	7.5YR 4/6	20	C	M	Loamy/Clayey	Prominent redox concentrations

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

☐ Histosol (A1)	☐ Polyvalue Below Surface (S8) (MLRA 147, 148)
☐ Histic Epipedon (A2)	☐ Thin Dark Surface (S9) (MLRA 147, 148)
☐ Black Histic (A3)	☐ Loamy Mucky Mineral (F1) (MLRA 136)
☐ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)
☐ Stratified Layers (A5)	☒ Depleted Matrix (F3)
☐ 2 cm Muck (A10) (LRR N)	☐ Redox Dark Surface (F6)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)
☐ Sandy Mucky Mineral (S1)	☐ Iron-Manganese Masses (F12) (LRR N, MLRA 136)
☐ Sandy Gleyed Matrix (S4)	☐ Umbric Surface (F13) (MLRA 122, 136)
☐ Sandy Redox (S5)	☐ Piedmont Floodplain Soils (F19) (MLRA 148)
☐ Stripped Matrix (S6)	☐ Red Parent Material (F21) (MLRA 127, 147, 148)
☐ Dark Surface (S7)	

Indicators for Problematic Hydric Soils³:

☐ 2 cm Muck (A10) (MLRA 147)
☐ Coast Prairie Redox (A16)
☐ (MLRA 147, 148)
☐ Piedmont Floodplain Soils (F19)
☐ (MLRA 136, 147)
☐ Red Parent Material (F21)
☐ (outside MLRA 127, 147, 148)
☐ Very Shallow Dark Surface (F22)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**Type: _____
Depth (inches): _____Hydric Soil Present? Yes ☒ No ☐

Remarks:

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R	<i>OMB Control #: 0710-xxxx, Exp: Pending</i> <i>Requirement Control Symbol EXEMPT:</i> <i>(Authority: AR 335-15, paragraph 5-2a)</i>
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Project/Site: Boom Roadway Access and Connectivity Project City/County: Guilford Sampling Date: 3/2/22
 Applicant/Owner: NCDOT State: NC Sampling Point: WC (W3) Wet
 Investigator(s): Nathan Howell & Byron Levan Section, Township, Range: Greensboro
 Landform (hillside, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRR or MLRA): LRR P, MLRA 136 Lat: 36.117568 Long: -79.948952 Datum: NAD 83
 Soil Map Unit Name: Poplar Forest sandy loam, 15-35% slopes NWI classification: PFO
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	<table style="width: 100%;"> <tr> <td style="width: 60%;">Is the Sampled Area within a Wetland?</td> <td style="width: 40%;">Yes <u>X</u> No <u> </u></td> </tr> </table>	Is the Sampled Area within a Wetland?	Yes <u>X</u> No <u> </u>
Is the Sampled Area within a Wetland?	Yes <u>X</u> No <u> </u>		
Remarks: NCWAM: Bottomland Hardwood Forest. Wetland WD (W4) is simply an extension of WC. It possesses a similar landscape position, as well as edaphic, hydrologic and floristic properties. As a result, it is also represented by this form.			

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ☒ Surface Water (A1) ☒ High Water Table (A2) ☒ Saturation (A3) ☐ Water Marks (B1) ☒ Sediment Deposits (B2) ☒ Drift Deposits (B3) ☐ Algal Mat or Crust (B4) ☐ Iron Deposits (B5) ☐ Inundation Visible on Aerial Imagery (B7) ☒ Water-Stained Leaves (B9) ☐ Aquatic Fauna (B13) ☐ True Aquatic Plants (B14) ☐ Hydrogen Sulfide Odor (C1) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Presence of Reduced Iron (C4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Thin Muck Surface (C7) ☐ Other (Explain in Remarks)	<u>Secondary Indicators (minimum of two required)</u> ☐ Surface Soil Cracks (B6) ☐ Sparsely Vegetated Concave Surface (B8) ☒ Drainage Patterns (B10) ☐ Moss Trim Lines (B16) ☐ Dry-Season Water Table (C2) ☐ Crayfish Burrows (C8) ☐ Saturation Visible on Aerial Imagery (C9) ☐ Stunted or Stressed Plants (D1) ☒ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ Microtopographic Relief (D4) ☒ FAC-Neutral Test (D5)		
Field Observations: Surface Water Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>1</u> Water Table Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>1</u> Saturation Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>0</u> (includes capillary fringe)	<table style="width: 100%;"> <tr> <td style="width: 60%;">Wetland Hydrology Present?</td> <td style="width: 40%;">Yes <u>X</u> No <u> </u></td> </tr> </table>	Wetland Hydrology Present?	Yes <u>X</u> No <u> </u>
Wetland Hydrology Present?	Yes <u>X</u> No <u> </u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: Surface water nearby.			

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WC (W3) Wet

Tree Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Fraxinus pennsylvanica</u>	30	Yes	FACW	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>7</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2. <u>Liquidambar styraciflua</u>	20	Yes	FAC																	
3. <u>Ulmus americana</u>	20	Yes	FACW																	
4. _____																				
5. _____																				
6. _____																				
7. _____																				
70 = Total Cover				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: _____ (A)</td> <td>_____ (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species _____	x 3 = _____	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: _____ (A)	_____ (B)	Prevalence Index = B/A = _____	
Total % Cover of:	Multiply by:																			
OBL species _____	x 1 = _____																			
FACW species _____	x 2 = _____																			
FAC species _____	x 3 = _____																			
FACU species _____	x 4 = _____																			
UPL species _____	x 5 = _____																			
Column Totals: _____ (A)	_____ (B)																			
Prevalence Index = B/A = _____																				
50% of total cover: <u>35</u> 20% of total cover: <u>14</u>																				
Sapling/Shrub Stratum (Plot size: <u>15' radius</u>)																				
1. <u>Alnus serrulata</u>	20	Yes	OBL	Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u>Salix nigra</u>	10	Yes	OBL																	
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
30 = Total Cover																				
50% of total cover: <u>15</u> 20% of total cover: <u>6</u>																				
Herb Stratum (Plot size: <u>5' radius</u>)																				
1. <u>Juncus effusus</u>	20	Yes	FACW	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody Vine – All woody vines greater than 3.28 ft in height.																
2. <u>Carex spp.</u>																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
20 = Total Cover																				
50% of total cover: <u>10</u> 20% of total cover: <u>4</u>																				
Woody Vine Stratum (Plot size: <u>30' radius</u>)																				
1. <u>Campsis radicans</u>	10	Yes	FAC	Hydrophytic Vegetation Present? Yes <u>X</u> No _____																
2. _____																				
3. _____																				
4. _____																				
5. _____																				
10 = Total Cover																				
50% of total cover: <u>5</u> 20% of total cover: <u>2</u>																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

SOIL

Sampling Point: WC (W3) Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 4/1	80	7.5YR 4/6	20	C	M	Loamy/Clayey	Prominent redox concentrations

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

☐ Histosol (A1)	☐ Polyvalue Below Surface (S8) (MLRA 147, 148)
☐ Histic Epipedon (A2)	☐ Thin Dark Surface (S9) (MLRA 147, 148)
☐ Black Histic (A3)	☐ Loamy Mucky Mineral (F1) (MLRA 136)
☐ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)
☐ Stratified Layers (A5)	☒ Depleted Matrix (F3)
☐ 2 cm Muck (A10) (LRR N)	☐ Redox Dark Surface (F6)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)
☐ Sandy Mucky Mineral (S1)	☐ Iron-Manganese Masses (F12) (LRR N, MLRA 136)
☐ Sandy Gleyed Matrix (S4)	☐ Umbric Surface (F13) (MLRA 122, 136)
☐ Sandy Redox (S5)	☐ Piedmont Floodplain Soils (F19) (MLRA 148)
☐ Stripped Matrix (S6)	☐ Red Parent Material (F21) (MLRA 127, 147, 148)
☐ Dark Surface (S7)	

Indicators for Problematic Hydric Soils³:

☐ 2 cm Muck (A10) (MLRA 147)
☐ Coast Prairie Redox (A16)
☐ (MLRA 147, 148)
☐ Piedmont Floodplain Soils (F19)
☐ (MLRA 136, 147)
☐ Red Parent Material (F21)
☐ (outside MLRA 127, 147, 148)
☐ Very Shallow Dark Surface (F22)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**Type: _____
Depth (inches): _____Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Boom Roadway Access and Connectivity Project City/County: Greensboro/ Guilford County Sampling Date: 03/03/2022
 Applicant/Owner: NCDOT State: NC Sampling Point: WE,WF-Wet
 Investigator(s): Byron Levan Section, Township, Range: Guilford
 Landform (hillslope, terrace, etc): Depression Local relief (concave, convex, none): concave Slope (%): 3
 Subregion (LRR or MLRA): MLRA-136 Lat: 36.11606178 Long: -79.9472449 Datum: NAD 83
 Soil Map Unit Name: Poplar Forest sandy loam, 15 to 35 percent slopes (PoE) NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil X, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Hydric Soil Present?	Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present?	Yes <u>X</u> No <u> </u>	
Remarks:		

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required: check all that apply) <u> </u> Surface Water (A1) <u> </u> High Water Table (A2) <u>X</u> Saturation (A3) <u> </u> Water Marks (B1) <u> </u> Sediment Deposits (B2) <u> </u> Drift Deposits (B3) <u> </u> Algal Mat or Crust (B4) <u> </u> Iron Deposits (B5) <u> </u> Inundation Visible on Aerial Imagery (B7) <u>X</u> Water-Stained Leaves (B9) <u> </u> Aquatic Fauna (B13)	Secondary Indicators (minimum of two required) <u> </u> True Aquatic Plants (B14) <u> </u> Hydrogen Sulfide Odor (C1) <u> </u> Oxidized Rhizospheres on Living Roots (C3) <u> </u> Presence of Reduced Iron (C4) <u> </u> Recent Iron Reduction in Tilled Soils (C6) <u> </u> Thin Muck Surface (C7) <u> </u> Other (Explain in Remarks) <u> </u> Surface Soil Cracks (B6) <u> </u> Sparsely Vegetated Concave Surface (B8) <u>X</u> Drainage Patterns (B10) <u> </u> Moss Trim Lines (B16) <u> </u> Dry-Season Water Table (C2) <u> </u> Crayfish Burrows (C8) <u> </u> Saturation Visible on Aerial Imagery (C9) <u> </u> Stunted or Stressed Plants (D1) <u>X</u> Geomorphic Position (D2) <u> </u> Shallow Aquitard (D3) <u> </u> Microtopographic Relief (D4) <u>X</u> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes <u> </u> No <u>X</u> Depth (inches): <u>0</u> Water Table Present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>12</u> Saturation Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>5</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No <u> </u>
--	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Hydrology is affected by surrounding grading and construction. Some sediment has reached the stream. Soils are a mix of piedmont floodplain and sandy alluvial deposits.
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VEGETATION (Five Strata) - Use scientific names of plants.

 Sampling Point: WE,WF-Wet

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30ft radius</u>)				
1. <u>Liquidambar styraciflua</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Acer rubrum</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Quercus nigra</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
4. <u>Asimina triloba</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
5. _____				
6. _____				
	<u>70</u>	<u>= Total Cover</u>		
50% of total cover: <u>35</u>		20% of total cover: <u>14</u>		
Sapling Stratum (Plot size: <u>30</u>)				
1. <u>Asimina triloba</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Liquidambar styraciflua</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Acer rubrum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	
4. _____				
5. _____				
6. _____				
	<u>55</u>	<u>= Total Cover</u>		
50% of total cover: <u>27</u>		20% of total cover: <u>11</u>		
Shrub Stratum (Plot size: <u>15ft radius</u>)				
1. <u>Lindera benzoin</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
	<u>15</u>	<u>= Total Cover</u>		
50% of total cover: <u>7</u>		20% of total cover: <u>3</u>		
Herb Stratum (Plot size: <u>5ft radius</u>)				
1. <u>Juncus effusus</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
	<u>10</u>	<u>= Total Cover</u>		
50% of total cover: <u>5</u>		20% of total cover: <u>2</u>		
Woody Vine Stratum (Plot size: <u>30ft radius</u>)				
1. <u>Toxicodendron radicans</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	
2. _____				
3. _____				
4. _____				
5. _____				
	<u>5</u>	<u>= Total Cover</u>		
50% of total cover: <u>2</u>		20% of total cover: <u>1</u>		

Remarks: (Include photo numbers here or on a separate sheet.)

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = <u>0</u>
FAC species _____	x 3 = <u>0</u>
FACU species _____	x 4 = <u>0</u>
UPL species _____	x 5 = <u>0</u>
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = 0.0

Hydrophytic Vegetation Indicators:

 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

 3 - Prevalence Index ≤3.0¹

 4 - Morphological Adaptations¹ (Provide supporting Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No _____

SOIL

Sampling Point: WE,WF-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0-4	2.5YR 4/3	80	2.5YR 4/6	20	C	M,PL	Sandy Loam	Piedmont floodplain soils
4-18	2.5YR 4/3	75	2.5YR 4/6	25	C	M,PL	Sndy Clay Lm	Piedmont floodplain soils

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- | | |
|--|---|
| ☐ Histosol (A1) | ☐ Dark Surface (S7) |
| ☐ Histic Epipedon (A2) | ☐ Polyvalue Below Surface (S8) (MLRA 147, 148) |
| ☐ Black Histic (A3) | ☐ Thin Dark Surface (S9) (MLRA 147, 148) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) | ☐ Depleted Matrix (F3) |
| ☐ 2 cm Muck (A10) (LRR N) | ☐ Redox Dark Surface (F6) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Iron-Manganese Masses (F12) |
| ☐ (LRR N, MLRA 147,148) | ☐ (LRR N, MLRA 136) |
| ☐ Sandy Gleyed Matrix (S4) | ☐ Umbric Surface (F13) (MLRA 136, 122) |
| ☐ Sandy Redox (S5) | ☒ Piedmont Floodplain Soils (F19) (MLRA 148) |
| ☐ Stripped Matrix (S6) | ☐ Red Parent Material (F21) (MLRA 127, 147) |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| ☐ 2 cm Muck (A10) (MLRA 147) |
| ☐ Coast Prairie Redox (A16) |
| ☐ (MLRA 147, 148) |
| ☒ Piedmont Floodplain Soils (F19) |
| ☐ (MLRA 136, 147) |
| ☐ Very Shallow Dark Surface (TF12) |
| ☐ Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present. unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Boom Roadway Access and Connectivity Project City/County: Greensboro/ Guilford County Sampling Date: 03/03/2022
 Applicant/Owner: NCDOT State: NC Sampling Point: WG-Wet
 Investigator(s): Byron Levan Section, Township, Range: Guilford
 Landform (hillslope, terrace, etc): Depression Local relief (concave, convex, none): concave Slope (%): 3
 Subregion (LRR or MLRA): LRR P, MLRA-136 Lat: 36.11724888 Long: -79.94624209 Datum: NAD 83
 Soil Map Unit Name: Poplar Forest sandy loam, 15 to 35 percent slopes (PoE) NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil X, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Hydric Soil Present?	Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present?	Yes <u>X</u> No <u> </u>	
Remarks:		

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required: check all that apply)	Secondary Indicators (minimum of two required)
☒ Surface Water (A1) ☒ High Water Table (A2) ☒ Saturation (A3) ☐ Water Marks (B1) ☐ Sediment Deposits (B2) ☐ Drift Deposits (B3) ☐ Algal Mat or Crust (B4) ☐ Iron Deposits (B5) ☐ Inundation Visible on Aerial Imagery (B7) ☒ Water-Stained Leaves (B9) ☐ Aquatic Fauna (B13)	☐ True Aquatic Plants (B14) ☐ Hydrogen Sulfide Odor (C1) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Presence of Reduced Iron (C4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☒ Thin Muck Surface (C7) ☐ Other (Explain in Remarks) ☐ Surface Soil Cracks (B6) ☐ Sparsely Vegetated Concave Surface (B8) ☒ Drainage Patterns (B10) ☐ Moss Trim Lines (B16) ☐ Dry-Season Water Table (C2) ☒ Crayfish Burrows (C8) ☐ Saturation Visible on Aerial Imagery (C9) ☐ Stunted or Stressed Plants (D1) ☒ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ Microtopographic Relief (D4) ☐ FAC-Neutral Test (D5)

Field Observations:		Wetland Hydrology Present? Yes <u>X</u> No <u> </u>
Surface Water Present?	Yes <u>X</u> No <u> </u> Depth (inches): <u>1</u>	
Water Table Present?	Yes <u>X</u> No <u> </u> Depth (inches): <u>0</u>	
Saturation Present? (includes capillary fringe)	Yes <u>X</u> No <u> </u> Depth (inches): <u>0</u>	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Hydrology is affected by surrounding grading and construction. Some sediment has reached the stream. Soils are a mix of piedmont floodplain and sandy alluvial deposits.

VEGETATION (Five Strata) - Use scientific names of plants.

 Sampling Point: WG-Wet

Tree Stratum (Plot size: <u>30ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Liquidambar styraciflua</u>	35	Yes	FAC	
2. <u>Acer rubrum</u>	15	Yes	FAC	
3. <u>Quercus nigra</u>	10	No	FAC	
4. _____				
5. _____				
6. _____				
	60	= Total Cover		
50% of total cover: <u>30</u>		20% of total cover: <u>12</u>		
Sapling Stratum (Plot size: <u>30</u>)				
1. <u>Liquidambar styraciflua</u>	15	Yes	FAC	
2. <u>Acer rubrum</u>	10	Yes	FAC	
3. <u>Quercus nigra</u>	10	Yes	FAC	
4. _____				
5. _____				
6. _____				
	35	= Total Cover		
50% of total cover: <u>17</u>		20% of total cover: <u>7</u>		
Shrub Stratum (Plot size: <u>15ft radius</u>)				
1. <u>Lindera benzoin</u>	15	Yes	FAC	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
	15	= Total Cover		
50% of total cover: <u>7</u>		20% of total cover: <u>3</u>		
Herb Stratum (Plot size: <u>5ft radius</u>)				
1. <u>Carex</u>	25	Yes	NI	
2. <u>Juncus effusus</u>	10	Yes	FACW	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
	35	= Total Cover		
50% of total cover: <u>17</u>		20% of total cover: <u>7</u>		
Woody Vine Stratum (Plot size: <u>30ft radius</u>)				
1. <u>Toxicodendron radicans</u>	5	Yes	FAC	
2. _____				
3. _____				
4. _____				
5. _____				
	5	= Total Cover		
50% of total cover: <u>2</u>		20% of total cover: <u>1</u>		

Remarks: (Include photo numbers here or on a separate sheet.)

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: 8 (A)

 Total Number of Dominant Species Across All Strata: 9 (B)

 Percent of Dominant Species That Are OBL, FACW, or FAC: 89.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = <u>0</u>
FAC species _____	x 3 = <u>0</u>
FACU species _____	x 4 = <u>0</u>
UPL species _____	x 5 = <u>0</u>
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = 0.0

Hydrophytic Vegetation Indicators:
 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
 3 - Prevalence Index ≤3.0¹
 4 - Morphological Adaptations¹ (Provide supporting Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No

SOIL

Sampling Point: WG-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)

	Dark Surface (S7)
	Polyvalue Below Surface (S8) (MLRA 147, 148)
	Thin Dark Surface (S9) (MLRA 147, 148)
	Loamy Gleyed Matrix (F2)
	Depleted Matrix (F3)
	Redox Dark Surface (F6)
	Depleted Dark Surface (F7)
	Redox Depressions (F8)
	Iron-Manganese Masses (F12)
	(LRR N, MLRA 136)
	Umbritic Surface (F13) (MLRA 136, 122)
X	Piedmont Floodplain Soils (F19) (MLRA 148)
	Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils³:

☐ 2 cm Muck (A10) **(MLRA 147)**
☐ Coast Prairie Redox (A16)
(MLRA 147, 148)
☒ Piedmont Floodplain Soils (F19)
(MLRA 136, 147)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:

Organic materials make up large portion of top 4" but then give way to the typical piedmont floodplain sandy clay loam below.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Boom Roadway Access and Connectivity Project City/County: Greensboro/ Guilford county Sampling Date: 03/03/2022
 Applicant/Owner: NCDOT State: NC Sampling Point: WH-Wet
 Investigator(s): Byron Levan Section, Township, Range: Guilford
 Landform (hillslope, terrace, etc): Depression Local relief (concave, convex, none): concave Slope (%): 3
 Subregion (LRR or MLRA): LRR P, MLRA-136 Lat: 36.11845005 Long: -79.94566709 Datum: NAD 83
 Soil Map Unit Name: Poplar Forest sandy loam, 15 to 35 percent slopes (PoE) NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil X, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one required: check all that apply)		Secondary Indicators (minimum of two required)	
<u>X</u> Surface Water (A1)	<u> </u> True Aquatic Plants (B14)	<u> </u> Surface Soil Cracks (B6)	
<u>X</u> High Water Table (A2)	<u> </u> Hydrogen Sulfide Odor (C1)	<u> </u> Sparsely Vegetated Concave Surface (B8)	
<u>X</u> Saturation (A3)	<u> </u> Oxidized Rhizospheres on Living Roots (C3)	<u>X</u> Drainage Patterns (B10)	
<u> </u> Water Marks (B1)	<u> </u> Presence of Reduced Iron (C4)	<u> </u> Moss Trim Lines (B16)	
<u> </u> Sediment Deposits (B2)	<u> </u> Recent Iron Reduction in Tilled Soils (C6)	<u> </u> Dry-Season Water Table (C2)	
<u> </u> Drift Deposits (B3)	<u> </u> Thin Muck Surface (C7)	<u>X</u> Crayfish Burrows (C8)	
<u> </u> Algal Mat or Crust (B4)	<u> </u> Other (Explain in Remarks)	<u> </u> Saturation Visible on Aerial Imagery (C9)	
<u> </u> Iron Deposits (B5)		<u> </u> Stunted or Stressed Plants (D1)	
<u> </u> Inundation Visible on Aerial Imagery (B7)		<u>X</u> Geomorphic Position (D2)	
<u>X</u> Water-Stained Leaves (B9)		<u> </u> Shallow Aquitard (D3)	
<u> </u> Aquatic Fauna (B13)		<u> </u> Microtopographic Relief (D4)	
		<u> </u> FAC-Neutral Test (D5)	

Field Observations: Surface Water Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>1</u> Water Table Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>0</u> Saturation Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No <u> </u>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Hydrology is affected by surrounding grading and construction. Some sediment has reached the stream. Soils are a mix of piedmont floodplain and sandy alluvial deposits.

VEGETATION (Four Strata) - Use scientific names of plants.

 Sampling Point: WH-Wet

Tree Stratum (Plot size: <u>30ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Liquidambar styraciflua</i>	35	Yes	FAC
2. <i>Acer rubrum</i>	15	Yes	FAC
3. <i>Quercus nigra</i>	10	No	FAC
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	60 = Total Cover		
50% of total cover: <u>30</u>	20% of total cover: <u>12</u>		

Sapling/Shrub Stratum (Plot size: <u>15ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Liquidambar styraciflua</i>	10	Yes	FAC
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
	10 = Total Cover		
50% of total cover: <u>5</u>	20% of total cover: <u>2</u>		

Herb Stratum (Plot size: <u>5ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Carex</i>	25	Yes	NI
2. <i>Juncus effusus</i>	10	Yes	FACW
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
	35 = Total Cover		
50% of total cover: <u>17</u>	20% of total cover: <u>7</u>		

Woody Vine Stratum (Plot size: <u>30ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Toxicodendron radicans</i>	5	Yes	FAC
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
	5 = Total Cover		
50% of total cover: <u>2</u>	20% of total cover: <u>1</u>		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83.3 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = <u>0</u>
FAC species _____	x 3 = <u>0</u>
FACU species _____	x 4 = <u>0</u>
UPL species _____	x 5 = <u>0</u>
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = 0.0

Hydrophytic Vegetation Indicators:

 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

 3 - Prevalence Index ≤3.0¹

 4 - Morphological Adaptations¹ (Provide supporting Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata

Tree - Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes X No

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WH-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)

	Dark Surface (S7)
	Polyvalue Below Surface (S8) (MLRA 147, 148)
	Thin Dark Surface (S9) (MLRA 147, 148)
	Loamy Gleyed Matrix (F2)
	Depleted Matrix (F3)
	Redox Dark Surface (F6)
	Depleted Dark Surface (F7)
	Redox Depressions (F8)
	Iron-Manganese Masses (F12)
	(LRR N, MLRA 136)
	Umbritic Surface (F13) (MLRA 136, 122)
X	Piedmont Floodplain Soils (F19) (MLRA 148)
	Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils³:

☐ 2 cm Muck (A10) **(MLRA 147)**
☐ Coast Prairie Redox (A16)
(MLRA 147, 148)
☒ Piedmont Floodplain Soils (F19)
(MLRA 136, 147)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Boom Roadway Access and Connectivity Project City/County: Greensboro/ Guilford County Sampling Date: 03/03/2022
 Applicant/Owner: NCDOT State: NC Sampling Point: WI-Wet
 Investigator(s): Byron Levan Section, Township, Range: Guilford
 Landform (hillslope, terrace, etc): Depression Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR or MLRA): LRR P, MLRA-136 Lat: 36.11492964 Long: -79.94550515 Datum: NAD 83
 Soil Map Unit Name: Poplar Forest clay loam, 10 to 15 percent slopes, moderately eroded (PpD2) NWI classification: PFO
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes No X
 Are Vegetation , Soil X, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Remarks: This is a retention basin that is now a functioning wetland	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required: check all that apply)		Secondary Indicators (minimum of two required)	
☒ Surface Water (A1) ☒ High Water Table (A2) ☒ Saturation (A3) ☐ Water Marks (B1) ☐ Sediment Deposits (B2) ☐ Drift Deposits (B3) ☐ Algal Mat or Crust (B4) ☐ Iron Deposits (B5) ☐ Inundation Visible on Aerial Imagery (B7) ☒ Water-Stained Leaves (B9) ☐ Aquatic Fauna (B13)	☒ True Aquatic Plants (B14) ☐ Hydrogen Sulfide Odor (C1) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Presence of Reduced Iron (C4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Thin Muck Surface (C7) ☐ Other (Explain in Remarks)	☐ Surface Soil Cracks (B6) ☐ Sparsely Vegetated Concave Surface (B8) ☐ Drainage Patterns (B10) ☐ Moss Trim Lines (B16) ☐ Dry-Season Water Table (C2) ☒ Crayfish Burrows (C8) ☐ Saturation Visible on Aerial Imagery (C9) ☐ Stunted or Stressed Plants (D1) ☒ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ Microtopographic Relief (D4) ☒ FAC-Neutral Test (D5)	
Field Observations: Surface Water Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>6</u> Water Table Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>0</u> Saturation Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>0</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 			
Remarks:			

VEGETATION (Four Strata) - Use scientific names of plants.

 Sampling Point: WI-Wet

Tree Stratum (Plot size: <u>30ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Liquidambar styraciflua</i>	35	Yes	FAC
2. <i>Platanus occidentalis</i>	15	Yes	FACW
3. <i>Acer rubrum</i>	15	Yes	FAC
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	65 = Total Cover		
50% of total cover: <u>32</u>	20% of total cover: <u>13</u>		

Sapling/Shrub Stratum (Plot size: <u>15ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Liquidambar styraciflua</i>	15	Yes	FAC
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
	15 = Total Cover		
50% of total cover: <u>7</u>	20% of total cover: <u>3</u>		

Herb Stratum (Plot size: <u>5ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Typha latifolia</i>	30	Yes	OBL
2. <i>Juncus effusus</i>	10	Yes	FACW
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
	40 = Total Cover		
50% of total cover: <u>20</u>	20% of total cover: <u>8</u>		

Woody Vine Stratum (Plot size: <u>30ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Absent</i>	0		
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
	0 = Total Cover		
50% of total cover: <u>0</u>	20% of total cover: <u>0</u>		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = <u>0</u>
FAC species _____	x 3 = <u>0</u>
FACU species _____	x 4 = <u>0</u>
UPL species _____	x 5 = <u>0</u>
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = 0.0

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- 3 - Prevalence Index ≤3.0¹
- 4 - Morphological Adaptations¹ (Provide supporting Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata

Tree - Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?

Yes X No

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WI-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ **(LRR N, MLRA 147,148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)

___	Dark Surface (S7)
___	Polyvalue Below Surface (S8) (MLRA 147, 148)
___	Thin Dark Surface (S9) (MLRA 147, 148)
___	Loamy Gleyed Matrix (F2)
___	Depleted Matrix (F3)
___	Redox Dark Surface (F6)
___	Depleted Dark Surface (F7)
___	Redox Depressions (F8)
___	Iron-Manganese Masses (F12)
___	(LRR N, MLRA 136)
___	Umbric Surface (F13) (MLRA 136, 122)
X	Piedmont Floodplain Soils (F19) (MLRA 148)
___	Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils³:

☐ 2 cm Muck (A10) **(MLRA 147)**
☐ Coast Prairie Redox (A16)
(MLRA 147, 148)
☒ Piedmont Floodplain Soils (F19)
(MLRA 136, 147)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Boom Roadway Access and Connectivity Project City/County: Greensboro/ Guilford County Sampling Date: 03/03/2022
 Applicant/Owner: NCDOT State: NC Sampling Point: WJ-Wet
 Investigator(s): Trevor Hall Section, Township, Range: Guilford
 Landform (hillslope, terrace, etc): Depression Local relief (concave, convex, none): concave Slope (%): 6
 Subregion (LRR or MLRA): LRR P, MLRA-136 Lat: 36.10593936 Long: -79.95660669 Datum: NAD 83
 Soil Map Unit Name: Hatboro loam, 0 to 2 percent slopes, frequently flooded (HdA NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Hydric Soil Present?	Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present?	Yes <u>X</u> No <u> </u>	
Remarks:		

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required: check all that apply)	Secondary Indicators (minimum of two required)
<u>X</u> Surface Water (A1)	<u> </u> True Aquatic Plants (B14)
<u>X</u> High Water Table (A2)	<u> </u> Hydrogen Sulfide Odor (C1)
<u>X</u> Saturation (A3)	<u> </u> Oxidized Rhizospheres on Living Roots (C3)
<u> </u> Water Marks (B1)	<u> </u> Presence of Reduced Iron (C4)
<u> </u> Sediment Deposits (B2)	<u> </u> Recent Iron Reduction in Tilled Soils (C6)
<u> </u> Drift Deposits (B3)	<u>X</u> Thin Muck Surface (C7)
<u> </u> Algal Mat or Crust (B4)	<u> </u> Other (Explain in Remarks)
<u> </u> Iron Deposits (B5)	<u>X</u> Crayfish Burrows (C8)
<u> </u> Inundation Visible on Aerial Imagery (B7)	<u> </u> Saturation Visible on Aerial Imagery (C9)
<u>X</u> Water-Stained Leaves (B9)	<u> </u> Stunted or Stressed Plants (D1)
<u> </u> Aquatic Fauna (B13)	<u> </u> Geomorphic Position (D2)
	<u> </u> Shallow Aquitard (D3)
	<u> </u> Microtopographic Relief (D4)
	<u> </u> FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>2</u> Water Table Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>0</u> Saturation Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No <u> </u>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) - Use scientific names of plants.

 Sampling Point: WJ-Wet

Tree Stratum (Plot size: <u>30ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Liquidambar styraciflua</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

35 = Total Cover

50% of total cover: 17 20% of total cover: 7

Sapling/Shrub Stratum (Plot size: <u>15ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Fagus grandifolia</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____

10 = Total Cover

50% of total cover: 5 20% of total cover: 2

Herb Stratum (Plot size: <u>5ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Carex</u>	<u>25</u>	<u>Yes</u>	<u>NI</u>
2. <u>Juncus effusus</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____

35 = Total Cover

50% of total cover: 17 20% of total cover: 7

Woody Vine Stratum (Plot size: <u>30ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Absent</u>	<u>0</u>	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____

0 = Total Cover

50% of total cover: 0 20% of total cover: 0

Dominance Test worksheet:

Number of Dominant Species
That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant
Species Across All Strata: 3 (B)

Percent of Dominant Species
That Are OBL, FACW, or FAC: 66.7 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>10</u>	x 2 = <u>20</u>
FAC species <u>35</u>	x 3 = <u>105</u>
FACU species <u>10</u>	x 4 = <u>40</u>
UPL species <u>25</u>	x 5 = <u>125</u>
Column Totals: <u>80</u> (A)	<u>290</u> (B)

Prevalence Index = B/A = 3.63

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
 3 - Prevalence Index ≤3.0¹
 4 - Morphological Adaptations¹ (Provide supporting
 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata

Tree - Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

**Hydrophytic
Vegetation**

Present? Yes X No

Remarks: (Include photo numbers here or on a separate sheet.)

Beech saplings on small raised areas in wetland

SOIL

Sampling Point: WJ-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 3/2	100					Silt Loam	
4-18	10YR 5/1	85	10YR 5/4	15	C	M	Silt Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Muck (A10) **(LRR N)**
☒ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
(LRR N, MLRA 147, 148)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)

- ☐ Dark Surface (S7)
☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
☐ Loamy Gleyed Matrix (F2)
☒ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Iron-Manganese Masses (F12)
(LRR N, MLRA 136)
☐ Umbric Surface (F13) **(MLRA 136, 122)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**
☐ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils³:

- ☐ 2 cm Muck (A10) **(MLRA 147)**
☐ Coast Prairie Redox (A16)
(MLRA 147, 148)
☐ Piedmont Floodplain Soils (F19)
(MLRA 136, 147)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present. unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Boom Roadway Access and Connectivity Project City/County: Greensboro/ Guilford County Sampling Date: 03/03/2022
 Applicant/Owner: NCDOT State: NC Sampling Point: WK-Wet
 Investigator(s): Trevor Hall Section, Township, Range: Guilford
 Landform (hillslope, terrace, etc): Depression Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR or MLRA): LRR P, MLRA-136 Lat: 36.10555178 Long: -79.95564021 Datum: NAD 83
 Soil Map Unit Name: Poplar Forest sandy loam, 15 to 35 percent slopes (PoE) NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes No X
 Are Vegetation , Soil X, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Hydric Soil Present?	Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present?	Yes <u>X</u> No <u> </u>	
Remarks: This is a retention basin that is now a functioning wetland. The wetland is behind an airport fence where access was restricted to be able to pull soils. So, soils are assumed to be hydric.		

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required: check all that apply)		Secondary Indicators (minimum of two required)
<u>X</u> Surface Water (A1)	<u> </u> True Aquatic Plants (B14)	<u> </u> Surface Soil Cracks (B6)
<u>X</u> High Water Table (A2)	<u> </u> Hydrogen Sulfide Odor (C1)	<u> </u> Sparsely Vegetated Concave Surface (B8)
<u>X</u> Saturation (A3)	<u> </u> Oxidized Rhizospheres on Living Roots (C3)	<u> </u> Drainage Patterns (B10)
<u> </u> Water Marks (B1)	<u> </u> Presence of Reduced Iron (C4)	<u> </u> Moss Trim Lines (B16)
<u> </u> Sediment Deposits (B2)	<u> </u> Recent Iron Reduction in Tilled Soils (C6)	<u> </u> Dry-Season Water Table (C2)
<u> </u> Drift Deposits (B3)	<u> </u> Thin Muck Surface (C7)	<u>X</u> Crayfish Burrows (C8)
<u> </u> Algal Mat or Crust (B4)	<u>X</u> Other (Explain in Remarks)	<u>X</u> Saturation Visible on Aerial Imagery (C9)
<u> </u> Iron Deposits (B5)		<u> </u> Stunted or Stressed Plants (D1)
<u>X</u> Inundation Visible on Aerial Imagery (B7)		<u>X</u> Geomorphic Position (D2)
<u> </u> Water-Stained Leaves (B9)		<u> </u> Shallow Aquitard (D3)
<u> </u> Aquatic Fauna (B13)		<u> </u> Microtopographic Relief (D4)
		<u>X</u> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>2</u> Water Table Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>0</u> Saturation Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>0</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <u>X</u> No <u> </u>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 Hydrology is partially assumed. Evaluator was able to see wetland, but could not pull soils. As such, aerial imagery, plant comp, topography all point to this as being wet.

VEGETATION (Four Strata) - Use scientific names of plants.

 Sampling Point: WK-Wet

Tree Stratum	(Plot size: <u>30ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Absent</u>		<u>0</u>		
2.				
3.				
4.				
5.				
6.				
7.				
		<u>0</u> = Total Cover		
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		

Sapling/Shrub Stratum	(Plot size: <u>15ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Absent</u>		<u>0</u>		
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
		<u>0</u> = Total Cover		
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		

Herb Stratum	(Plot size: <u>5ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Carex / Sedge</u>		<u>40</u>	<u>Yes</u>	<u>NI</u>
2. <u>Juncus effusus / Common bog rush, Soft or lamp rush</u>		<u>20</u>	<u>Yes</u>	<u>FACW</u>
3. <u>Cyperus odoratus / Fragrant flatsedge</u>		<u>20</u>	<u>Yes</u>	<u>FACW</u>
4. <u>Typha latifolia / Broadleaf cattail, Broad-leaved cattail</u>		<u>15</u>	<u>No</u>	<u>OBL</u>
5.				
6.				
7.				
8.				
9.				
10.				
11.				
		<u>95</u> = Total Cover		
50% of total cover: <u>47</u>		20% of total cover: <u>19</u>		

Woody Vine Stratum	(Plot size: <u>30ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Absent</u>		<u>0</u>		
2.				
3.				
4.				
5.				
		<u>0</u> = Total Cover		
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		

Dominance Test worksheet:

Number of Dominant Species
That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant
Species Across All Strata: 3 (B)

Percent of Dominant Species
That Are OBL, FACW, or FAC: 66.7 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u> </u>	x 1 = <u> </u>
FACW species <u> </u>	x 2 = <u>0</u>
FAC species <u> </u>	x 3 = <u>0</u>
FACU species <u> </u>	x 4 = <u>0</u>
UPL species <u> </u>	x 5 = <u>0</u>
Column Totals: <u> </u> (A)	<u> </u> (B)

Prevalence Index = B/A = 0.0

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- 3 - Prevalence Index ≤3.0¹
- 4 - Morphological Adaptations¹ (Provide supporting
Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must
be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata

Tree - Woody plants, excluding vines, 3 in. (7.6 cm) or
more in diameter at breast height (DBH), regardless of
height.

Sapling/Shrub - Woody plants, excluding vines, less
than 3 in. DBH and greater than or equal to 3.28 ft (1 m)
tall.

Herb - All herbaceous (non-woody) plants, regardless of
size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in
height.

**Hydrophytic
Vegetation**

Present? Yes X No

Remarks: (Include photo numbers here or on a separate sheet.)

Area is being maintained and is modified from a natural state. Most plants are weedy, but still support the site's status as a wetland.

SOIL

Sampling Point: WK-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) (**LRR N**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ (**LRR N, MLRA 147,148**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)

Dark Surface (S7)

- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12)
- ___ **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils³:

___ 2 cm Muck (A10) **(MLRA 147)**
 ___ Coast Prairie Redox (A16)
 (MLRA 147, 148)
 ___ Piedmont Floodplain Soils (F19)
 (MLRA 136, 147)
 ___ Very Shallow Dark Surface (TF12)
 ___ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Soils are assumed wet based off of a variety of other features, but the evaluators were not able to assess directly. As such, no hydric soil indicator has been selected.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Boom Roadway Access and Connectivity Project City/County: Greensboro/ Guilford County Sampling Date: 03/03/2022
 Applicant/Owner: NCDOT State: NC Sampling Point: WL-wet
 Investigator(s): Trevor Hall Section, Township, Range: Guilford
 Landform (hillslope, terrace, etc): Floodplain Local relief (concave, convex, none): concave Slope (%): 3
 Subregion (LRR or MLRA): LRR P, MLRA-136 Lat: 36.10584817 Long: -79.95484142 Datum: NAD 83
 Soil Map Unit Name: Hatboro loam, 0 to 2 percent slopes, frequently flooded (HdA) NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Hydric Soil Present?	Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present?	Yes <u>X</u> No <u> </u>	
Remarks:		

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required: check all that apply)	Secondary Indicators (minimum of two required)
<u> </u> Surface Water (A1) <u>X</u> High Water Table (A2) <u>X</u> Saturation (A3) <u> </u> Water Marks (B1) <u> </u> Sediment Deposits (B2) <u> </u> Drift Deposits (B3) <u> </u> Algal Mat or Crust (B4) <u> </u> Iron Deposits (B5) <u> </u> Inundation Visible on Aerial Imagery (B7) <u> </u> Water-Stained Leaves (B9) <u> </u> Aquatic Fauna (B13)	<u> </u> True Aquatic Plants (B14) <u> </u> Hydrogen Sulfide Odor (C1) <u> </u> Oxidized Rhizospheres on Living Roots (C3) <u> </u> Presence of Reduced Iron (C4) <u> </u> Recent Iron Reduction in Tilled Soils (C6) <u> </u> Thin Muck Surface (C7) <u> </u> Other (Explain in Remarks) <u> </u> Surface Soil Cracks (B6) <u> </u> Sparsely Vegetated Concave Surface (B8) <u>X</u> Drainage Patterns (B10) <u> </u> Moss Trim Lines (B16) <u> </u> Dry-Season Water Table (C2) <u>X</u> Crayfish Burrows (C8) <u> </u> Saturation Visible on Aerial Imagery (C9) <u> </u> Stunted or Stressed Plants (D1) <u>X</u> Geomorphic Position (D2) <u> </u> Shallow Aquitard (D3) <u> </u> Microtopographic Relief (D4) <u>X</u> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <u> </u> No <u>X</u> Depth (inches): <u>0</u> Water Table Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>8</u> Saturation Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No <u> </u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION (Four Strata) - Use scientific names of plants.

 Sampling Point: WL-wet

Tree Stratum (Plot size: <u>30ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Carpinus caroliniana</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

20 = Total Cover

50% of total cover: 10 20% of total cover: 4

Sapling/Shrub Stratum (Plot size: <u>15ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Carpinus caroliniana</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____

20 = Total Cover

50% of total cover: 10 20% of total cover: 4

Herb Stratum (Plot size: <u>5ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Carex</u>	<u>20</u>	<u>Yes</u>	<u>NI</u>
2. <u>Juncus effusus</u>	<u>5</u>	<u>Yes</u>	<u>FACW</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____

25 = Total Cover

50% of total cover: 12 20% of total cover: 5

Woody Vine Stratum (Plot size: <u>30ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Smilax laurifolia</u>	<u>15</u>	<u>Yes</u>	<u>OBL</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____

15 = Total Cover

50% of total cover: 7 20% of total cover: 3

Dominance Test worksheet:

Number of Dominant Species
That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant
Species Across All Strata: 5 (B)

Percent of Dominant Species
That Are OBL, FACW, or FAC: 80.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = <u>0</u>
FAC species _____	x 3 = <u>0</u>
FACU species _____	x 4 = <u>0</u>
UPL species _____	x 5 = <u>0</u>
Column Totals: _____	(A) _____ (B)

Prevalence Index = B/A = 0.0

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
 3 - Prevalence Index ≤3.0¹
 4 - Morphological Adaptations¹ (Provide supporting
 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata

Tree - Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

**Hydrophytic
Vegetation**

Present? Yes X No

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WL-wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0-8	10YR 3/2	85	10YR 6/2	15	D	M	Silt Loam	
8-18	10YR 6/2	75	10YR 4/3	25	C	M	Silt Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Muck (A10) (**LRR N**)
☒ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
(LRR N, MLRA 147, 148)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)

- ☐ Dark Surface (S7)
☐ Polyvalue Below Surface (S8) (**MLRA 147, 148**)
☐ Thin Dark Surface (S9) (**MLRA 147, 148**)
☐ Loamy Gleyed Matrix (F2)
☒ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Iron-Manganese Masses (F12)
(LRR N, MLRA 136)
☐ Umbric Surface (F13) (**MLRA 136, 122**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 148**)
☐ Red Parent Material (F21) (**MLRA 127, 147**)

Indicators for Problematic Hydric Soils³:

- ☐ 2 cm Muck (A10) (**MLRA 147**)
☐ Coast Prairie Redox (A16)
(MLRA 147, 148)
☐ Piedmont Floodplain Soils (F19)
(MLRA 136, 147)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present. unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Boom Roadway Access and Connectivity Project City/County: Greensboro/ Guilford County Sampling Date: 03/03/2022
 Applicant/Owner: NCDOT State: NC Sampling Point: WM-Wet
 Investigator(s): Trevor Hall Section, Township, Range: Guilford
 Landform (hillslope, terrace, etc): Floodplain Local relief (concave, convex, none): concave Slope (%): 2
 Subregion (LRR or MLRA): LRR P, MLRA-136 Lat: 36.10615601 Long: -79.95463928 Datum: NAD 83
 Soil Map Unit Name: Hatboro loam, 0 to 2 percent slopes, frequently flooded (HdA) NWI classification: PEM/PSS

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Hydric Soil Present?	Yes <u>X</u> No <u> </u>	
Wetland Hydrology Present?	Yes <u>X</u> No <u> </u>	
Remarks: Part of wetland in sewer easement.		

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required: check all that apply)	Secondary Indicators (minimum of two required)
☒ Surface Water (A1) ☒ High Water Table (A2) ☒ Saturation (A3) ☐ Water Marks (B1) ☐ Sediment Deposits (B2) ☐ Drift Deposits (B3) ☐ Algal Mat or Crust (B4) ☐ Iron Deposits (B5) ☐ Inundation Visible on Aerial Imagery (B7) ☒ Water-Stained Leaves (B9) ☐ Aquatic Fauna (B13)	☐ True Aquatic Plants (B14) ☐ Hydrogen Sulfide Odor (C1) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Presence of Reduced Iron (C4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Thin Muck Surface (C7) ☐ Other (Explain in Remarks) ☐ Surface Soil Cracks (B6) ☐ Sparsely Vegetated Concave Surface (B8) ☒ Drainage Patterns (B10) ☐ Moss Trim Lines (B16) ☐ Dry-Season Water Table (C2) ☒ Crayfish Burrows (C8) ☐ Saturation Visible on Aerial Imagery (C9) ☐ Stunted or Stressed Plants (D1) ☒ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ Microtopographic Relief (D4) ☒ FAC-Neutral Test (D5)

Field Observations: Surface Water Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>1</u> Water Table Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>0</u> Saturation Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No <u> </u>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) - Use scientific names of plants.

 Sampling Point: WM-Wet

Tree Stratum	(Plot size: <u>30ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1.	<u>Absent</u>	<u>0</u>		
2.				
3.				
4.				
5.				
6.				
7.				

0 = Total Cover

50% of total cover: 0 20% of total cover: 0

Sapling/Shrub Stratum	(Plot size: <u>15ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1.	<u>Rubus pensilvanicus</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				

25 = Total Cover

50% of total cover: 12 20% of total cover: 5

Herb Stratum	(Plot size: <u>5ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1.	<u>Carex lurida</u>	<u>20</u>	<u>Yes</u>	<u>OBL</u>
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				

20 = Total Cover

50% of total cover: 10 20% of total cover: 4

Woody Vine Stratum	(Plot size: <u>30ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1.	<u>Smilax laurifolia</u>	<u>5</u>	<u>Yes</u>	<u>OBL</u>
2.				
3.				
4.				
5.				

5 = Total Cover

50% of total cover: 2 20% of total cover: 1

Dominance Test worksheet:

Number of Dominant Species
That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant
Species Across All Strata: 3 (B)

Percent of Dominant Species
That Are OBL, FACW, or FAC: 100.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 = <u>0</u>
FACW species	x 2 = <u>0</u>
FAC species	x 3 = <u>0</u>
FACU species	x 4 = <u>0</u>
UPL species	x 5 = <u>0</u>
Column Totals:	(A) <u>0</u> (B) <u>0</u>

Prevalence Index = B/A = 0.0

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
 3 - Prevalence Index ≤3.0¹
 4 - Morphological Adaptations¹ (Provide supporting
 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must
be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata

Tree - Woody plants, excluding vines, 3 in. (7.6 cm) or
more in diameter at breast height (DBH), regardless of
height.

Sapling/Shrub - Woody plants, excluding vines, less
than 3 in. DBH and greater than or equal to 3.28 ft (1 m)
tall.

Herb - All herbaceous (non-woody) plants, regardless of
size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in
height.

**Hydrophytic
Vegetation**

Present? Yes X No

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WM-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 3/3	100					Silt Loam	
6-18	10YR 4/3	75	10YR 5/4	20	C	M	Silt Loam	
			10YR 5/1	5	D	M		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- | | |
|--|--|
| ☐ Histosol (A1) | ☐ Dark Surface (S7) |
| ☐ Histic Epipedon (A2) | ☐ Polyvalue Below Surface (S8) (MLRA 147, 148) |
| ☐ Black Histic (A3) | ☐ Thin Dark Surface (S9) (MLRA 147, 148) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) | ☐ Depleted Matrix (F3) |
| ☐ 2 cm Muck (A10) (LRR N) | ☐ Redox Dark Surface (F6) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Iron-Manganese Masses (F12) |
| ☐ (LRR N, MLRA 147, 148) | ☐ (LRR N, MLRA 136) |
| ☐ Sandy Gleyed Matrix (S4) | ☐ Umbric Surface (F13) (MLRA 136, 122) |
| ☐ Sandy Redox (S5) | ☒ Piedmont Floodplain Soils (F19) (MLRA 148) |
| ☐ Stripped Matrix (S6) | ☐ Red Parent Material (F21) (MLRA 127, 147) |

Indicators for Problematic Hydric Soils³:

- | |
|---|
| ☐ 2 cm Muck (A10) (MLRA 147) |
| ☐ Coast Prairie Redox (A16) |
| ☐ (MLRA 147, 148) |
| ☐ Piedmont Floodplain Soils (F19) |
| ☐ (MLRA 136, 147) |
| ☐ Very Shallow Dark Surface (TF12) |
| ☐ Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present. unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Boom Roadway Access and Connectivity Project City/County: Greensboro/ Guilford County Sampling Date: 03/03/2022
 Applicant/Owner: NCDOT State: NC Sampling Point: WN-Wet
 Investigator(s): Trevor Hall Section, Township, Range: Guilford
 Landform (hillslope, terrace, etc): Floodplain Local relief (concave, convex, none): concave Slope (%): 2
 Subregion (LRR or MLRA): LRR P, MLRA-136 Lat: 36.10751155 Long: -79.955385 Datum: NAD 83
 Soil Map Unit Name: Hatboro loam, 0 to 2 percent slopes, frequently flooded (HdA) NWI classification: PEM/PSS

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u> Hydric Soil Present? Yes <u>X</u> No <u> </u> Wetland Hydrology Present? Yes <u>X</u> No <u> </u>	Is the Sampled Area within a Wetland? Yes <u>X</u> No <u> </u>
Remarks: Wetland with lots of storm water influence, partially maintained by mower.	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required: check all that apply)		Secondary Indicators (minimum of two required)
☒ Surface Water (A1) ☒ High Water Table (A2) ☒ Saturation (A3) ☐ Water Marks (B1) ☐ Sediment Deposits (B2) ☐ Drift Deposits (B3) ☐ Algal Mat or Crust (B4) ☐ Iron Deposits (B5) ☐ Inundation Visible on Aerial Imagery (B7) ☐ Water-Stained Leaves (B9) ☐ Aquatic Fauna (B13)	☐ True Aquatic Plants (B14) ☐ Hydrogen Sulfide Odor (C1) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Presence of Reduced Iron (C4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Thin Muck Surface (C7) ☐ Other (Explain in Remarks)	☐ Surface Soil Cracks (B6) ☐ Sparsely Vegetated Concave Surface (B8) ☐ Drainage Patterns (B10) ☐ Moss Trim Lines (B16) ☐ Dry-Season Water Table (C2) ☐ Crayfish Burrows (C8) ☐ Saturation Visible on Aerial Imagery (C9) ☐ Stunted or Stressed Plants (D1) ☒ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ Microtopographic Relief (D4) ☒ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>2</u> Water Table Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>0</u> Saturation Present? Yes <u>X</u> No <u> </u> Depth (inches): <u>0</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <u>X</u> No <u> </u>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) - Use scientific names of plants.

 Sampling Point: WN-Wet

Tree Stratum	(Plot size: <u>30ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Absent</u>		<u>0</u>		
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
		<u>0</u> = Total Cover		
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		

Sapling/Shrub Stratum	(Plot size: <u>15ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Rubus pensilvanicus</u>		<u>15</u>	<u>Yes</u>	<u>FAC</u>
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
		<u>15</u> = Total Cover		
50% of total cover: <u>7</u>		20% of total cover: <u>3</u>		

Herb Stratum	(Plot size: <u>5ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Carex</u>		<u>50</u>	<u>Yes</u>	<u>NI</u>
2. <u>Juncus effusus</u>		<u>20</u>	<u>Yes</u>	<u>FACW</u>
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
		<u>70</u> = Total Cover		
50% of total cover: <u>35</u>		20% of total cover: <u>14</u>		

Woody Vine Stratum	(Plot size: <u>30ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Absent</u>		<u>0</u>		
2. _____				
3. _____				
4. _____				
5. _____				
		<u>0</u> = Total Cover		
50% of total cover: <u>0</u>		20% of total cover: <u>0</u>		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = <u>0</u>
FAC species _____	x 3 = <u>0</u>
FACU species _____	x 4 = <u>0</u>
UPL species _____	x 5 = <u>0</u>
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = 0.0

Hydrophytic Vegetation Indicators:

 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

 3 - Prevalence Index ≤3.0¹

 4 - Morphological Adaptations¹ (Provide supporting Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata

Tree - Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation

Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WN-Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18	10YR 3/3	75	2.5YR 4/4	15	C	M	Silt Loam	
			10YR 5/1	10	D			

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Muck (A10) (**LRR N**)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ (**LRR N, MLRA 147,148**)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)

☐ Dark Surface (S7)
☐ Polyvalue Below Surface (S8) (**MLRA 147, 148**)
☐ Thin Dark Surface (S9) (**MLRA 147, 148**)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☒ Redox Depressions (F8)
☐ Iron-Manganese Masses (F12)
☐ (**LRR N, MLRA 136**)
☐ Umbric Surface (F13) (**MLRA 136, 122**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 148**)
☐ Red Parent Material (F21) (**MLRA 127, 147**)

Indicators for Problematic Hydric Soils³:

☐ 2 cm Muck (A10) (**MLRA 147**)
☐ Coast Prairie Redox (A16)
☐ (**MLRA 147, 148**)
☐ Piedmont Floodplain Soils (F19)
☐ (**MLRA 136, 147**)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present. unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Soil compacted by frequent mower activity.

U.S. Army Corps of Engineers WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R	<i>OMB Control #: 0710-xxxx, Exp: Pending Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)</i>
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Project/Site: Boom Roadway Access and Connectivity Project City/County: Guilford Sampling Date: 3/2/22
 Applicant/Owner: NCDOT State: NC Sampling Point: WA (W1) Upl
 Investigator(s): Nathan Howell & Byron Levan Section, Township, Range: Greensboro
 Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 0
 Subregion (LRR or MLRA): LRR P, MLRA 136 Lat: 36.118870 Long: -79.953094 Datum: NAD 83
 Soil Map Unit Name: Poplar Forest sandy loam, 15-35% slopes NWI classification: None
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u> Hydric Soil Present? Yes <u> </u> No <u>X</u> Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%; padding: 5px;"> Is the Sampled Area within a Wetland? </td> <td style="width: 40%; padding: 5px;"> Yes <u> </u> No <u>X</u> </td> </tr> </table>	Is the Sampled Area within a Wetland?	Yes <u> </u> No <u>X</u>
Is the Sampled Area within a Wetland?	Yes <u> </u> No <u>X</u>		
Remarks: The upland plots associated with wetlands WB-WD all occur in similar landscape positions and possess similar floristic, hydrologic and edaphic characteristics; as a result, they are also represented by this upland form.			

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <u> </u> Surface Water (A1) <u> </u> High Water Table (A2) <u> </u> Saturation (A3) <u> </u> Water Marks (B1) <u> </u> Sediment Deposits (B2) <u> </u> Drift Deposits (B3) <u> </u> Algal Mat or Crust (B4) <u> </u> Iron Deposits (B5) <u> </u> Inundation Visible on Aerial Imagery (B7) <u> </u> Water-Stained Leaves (B9) <u> </u> Aquatic Fauna (B13) <u> </u> True Aquatic Plants (B14) <u> </u> Hydrogen Sulfide Odor (C1) <u> </u> Oxidized Rhizospheres on Living Roots (C3) <u> </u> Presence of Reduced Iron (C4) <u> </u> Recent Iron Reduction in Tilled Soils (C6) <u> </u> Thin Muck Surface (C7) <u> </u> Other (Explain in Remarks)	<u>Secondary Indicators (minimum of two required)</u> <u> </u> Surface Soil Cracks (B6) <u> </u> Sparsely Vegetated Concave Surface (B8) <u> </u> Drainage Patterns (B10) <u> </u> Moss Trim Lines (B16) <u> </u> Dry-Season Water Table (C2) <u> </u> Crayfish Burrows (C8) <u> </u> Saturation Visible on Aerial Imagery (C9) <u> </u> Stunted or Stressed Plants (D1) <u> </u> Geomorphic Position (D2) <u> </u> Shallow Aquitard (D3) <u> </u> Microtopographic Relief (D4) <u> </u> FAC-Neutral Test (D5)		
Field Observations: Surface Water Present? Yes <u> </u> No <u>X</u> Depth (inches): <u>0</u> Water Table Present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>12</u> Saturation Present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>12</u> (includes capillary fringe)	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%; padding: 5px;"> Wetland Hydrology Present? </td> <td style="width: 40%; padding: 5px;"> Yes <u> </u> No <u>X</u> </td> </tr> </table>	Wetland Hydrology Present?	Yes <u> </u> No <u>X</u>
Wetland Hydrology Present?	Yes <u> </u> No <u>X</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WA (W1) Upl

Tree Stratum (Plot size: <u>30'</u> radius)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Quercus alba</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>9</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33.3%</u> (A/B)																
2. <u>Quercus coccinea</u>	<u>20</u>	<u>Yes</u>	<u>UPL</u>																	
3. <u>Pinus echinata</u>	<u>20</u>	<u>Yes</u>	<u>UPL</u>																	
4. <u>Juniperus virginiana</u>	<u>10</u>	<u>No</u>	<u>FACU</u>																	
5. <u>Oxydendrum arboreum</u>	<u>10</u>	<u>No</u>	<u>UPL</u>																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
<u>80</u> =Total Cover																				
50% of total cover: <u>40</u>		20% of total cover: <u>16</u>																		
Sapling/Shrub Stratum (Plot size: <u>15'</u> radius)																				
1. <u>Cornus florida</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: _____ (A)</td> <td>_____ (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = _____</td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species _____	x 3 = _____	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: _____ (A)	_____ (B)	Prevalence Index = B/A = _____	
Total % Cover of:	Multiply by:																			
OBL species _____	x 1 = _____																			
FACW species _____	x 2 = _____																			
FAC species _____	x 3 = _____																			
FACU species _____	x 4 = _____																			
UPL species _____	x 5 = _____																			
Column Totals: _____ (A)	_____ (B)																			
Prevalence Index = B/A = _____																				
2. <u>Cercis canadensis</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
<u>20</u> =Total Cover																				
50% of total cover: <u>10</u>		20% of total cover: <u>4</u>																		
Herb Stratum (Plot size: <u>5'</u> radius)																				
1. <u>Hexastylis arifolia</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u>Tipularia discolor</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
<u>20</u> =Total Cover																				
50% of total cover: <u>10</u>		20% of total cover: <u>4</u>																		
Woody Vine Stratum (Plot size: <u>30'</u> radius)																				
1. <u>Toxicodendron radicans</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody Vine – All woody vines greater than 3.28 ft in height.																
2. <u>Smilax rotundifolia</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
<u>20</u> =Total Cover																				
50% of total cover: <u>10</u>		20% of total cover: <u>4</u>																		
				Hydrophytic Vegetation Present? Yes <u> </u> No <u> X </u>																

 Remarks: (Include photo numbers here or on a separate sheet.)
 No vegetation present within wetland.

SOIL

Sampling Point: WA (W1) Upl

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 5/6	100					Loamy/Clayey	
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.						² Location: PL=Pore Lining, M=Matrix.		
Hydric Soil Indicators:						Indicators for Problematic Hydric Soils³:		
☐ Histosol (A1)			☐ Polyvalue Below Surface (S8) (MLRA 147, 148)			☐ 2 cm Muck (A10) (MLRA 147)		
☐ Histic Epipedon (A2)			☐ Thin Dark Surface (S9) (MLRA 147, 148)			☐ Coast Prairie Redox (A16)		
☐ Black Histic (A3)			☐ Loamy Mucky Mineral (F1) (MLRA 136)			☐ (MLRA 147, 148)		
☐ Hydrogen Sulfide (A4)			☐ Loamy Gleyed Matrix (F2)			☐ Piedmont Floodplain Soils (F19)		
☐ Stratified Layers (A5)			☐ Depleted Matrix (F3)			☐ (MLRA 136, 147)		
☐ 2 cm Muck (A10) (LRR N)			☐ Redox Dark Surface (F6)			☐ Red Parent Material (F21)		
☐ Depleted Below Dark Surface (A11)			☐ Depleted Dark Surface (F7)			☐ (outside MLRA 127, 147, 148)		
☐ Thick Dark Surface (A12)			☐ Redox Depressions (F8)			☐ Very Shallow Dark Surface (F22)		
☐ Sandy Mucky Mineral (S1)			☐ Iron-Manganese Masses (F12) (LRR N, MLRA 136)			☐ Other (Explain in Remarks)		
☐ Sandy Gleyed Matrix (S4)			☐ Umbric Surface (F13) (MLRA 122, 136)			³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.		
☐ Sandy Redox (S5)			☐ Piedmont Floodplain Soils (F19) (MLRA 148)					
☐ Stripped Matrix (S6)			☐ Red Parent Material (F21) (MLRA 127, 147, 148)					
☐ Dark Surface (S7)								
Restrictive Layer (if observed):								
Type: _____						Hydric Soil Present? Yes _____ No <u> X </u>		
Depth (inches): _____								
Remarks:								

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Boom Roadway Access and Connectivity Project City/County: Greensboro/ Guilford County Sampling Date: 03/03/2022
 Applicant/Owner: NCDOT State: NC Sampling Point: WE-WI-Up
 Investigator(s): Byron Levan Section, Township, Range: Guilford
 Landform (hillslope, terrace, etc): Hillslope Local relief (concave, convex, none): convex Slope (%): 6
 Subregion (LRR or MLRA): LRR P, MLRA-136 Lat: 36.11644259 Long: -79.94658038 Datum: NAD 83
 Soil Map Unit Name: Poplar Forest sandy loam, 15 to 35 percent slopes (PoE) NWI classification: None
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present?	Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present?	Yes <u> </u> No <u>X</u>	
Remarks:		

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one required: check all that apply)		Secondary Indicators (minimum of two required)
☐ Surface Water (A1) ☐ High Water Table (A2) ☐ Saturation (A3) ☐ Water Marks (B1) ☐ Sediment Deposits (B2) ☐ Drift Deposits (B3) ☐ Algal Mat or Crust (B4) ☐ Iron Deposits (B5) ☐ Inundation Visible on Aerial Imagery (B7) ☐ Water-Stained Leaves (B9) ☐ Aquatic Fauna (B13)	☐ True Aquatic Plants (B14) ☐ Hydrogen Sulfide Odor (C1) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Presence of Reduced Iron (C4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Thin Muck Surface (C7) ☐ Other (Explain in Remarks)	☐ Surface Soil Cracks (B6) ☐ Sparsely Vegetated Concave Surface (B8) ☐ Drainage Patterns (B10) ☐ Moss Trim Lines (B16) ☐ Dry-Season Water Table (C2) ☐ Crayfish Burrows (C8) ☐ Saturation Visible on Aerial Imagery (C9) ☐ Stunted or Stressed Plants (D1) ☐ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ Microtopographic Relief (D4) ☐ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <u> </u> No <u>X</u> Depth (inches): <u>0</u> Water Table Present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>12</u> Saturation Present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>12</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <u> </u> No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION (Four Strata) - Use scientific names of plants.

 Sampling Point: WE-WI-Up

Tree Stratum (Plot size: <u>30ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Fagus grandifolia</i>	40	Yes	FACU
2. <i>Pinus taeda</i>	20	Yes	FAC
3. <i>Quercus alba</i>	10	No	FACU
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

70 = Total Cover

 50% of total cover: 35 20% of total cover: 14

Sapling/Shrub Stratum (Plot size: <u>15ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Fagus grandifolia</i>	30	Yes	FACU
2. <i>Ilex opaca</i>	10	Yes	FACU
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____

40 = Total Cover

 50% of total cover: 20 20% of total cover: 8

Herb Stratum (Plot size: <u>5ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Carex flaccosperma</i>	5	Yes	FAC
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____

5 = Total Cover

 50% of total cover: 2 20% of total cover: 1

Woody Vine Stratum (Plot size: <u>30ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Toxicodendron radicans</i>	5	Yes	FAC
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____

5 = Total Cover

 50% of total cover: 2 20% of total cover: 1
Dominance Test worksheet:

 Number of Dominant Species
That Are OBL, FACW, or FAC: 3 (A)

 Total Number of Dominant
Species Across All Strata: 6 (B)

 Percent of Dominant Species
That Are OBL, FACW, or FAC: 50.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>0</u>	x 2 = <u>0</u>
FAC species <u>30</u>	x 3 = <u>90</u>
FACU species <u>90</u>	x 4 = <u>360</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>120</u>	(A) <u>450</u> (B)

 Prevalence Index = B/A = 3.75
Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
☐ 2 - Dominance Test is >50%
☐ 3 - Prevalence Index ≤3.0¹
☐ 4 - Morphological Adaptations¹ (Provide supporting
 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata
Tree - Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic
Vegetation

 Present? Yes No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WE-WI-Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18	2.5YR 4/4	100					Sandy Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Muck (A10) **(LRR N)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
(LRR N, MLRA 147,148)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)

- ☐ Dark Surface (S7)
☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Iron-Manganese Masses (F12)
(LRR N, MLRA 136)
☐ Umbric Surface (F13) **(MLRA 136, 122)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**
☐ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils³:

- ☐ 2 cm Muck (A10) **(MLRA 147)**
☐ Coast Prairie Redox (A16)
(MLRA 147, 148)
☐ Piedmont Floodplain Soils (F19)
(MLRA 136, 147)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present. unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Boom Roadway Access and Connectivity Project City/County: Greensboro/ Guilford County Sampling Date: 03/03/2022
 Applicant/Owner: NCDOT State: NC Sampling Point: WJ-WN-Up
 Investigator(s): Trevor Hall Section, Township, Range: Guilford
 Landform (hillslope, terrace, etc): Hillslope Local relief (concave, convex, none): convex Slope (%): 6
 Subregion (LRR or MLRA): LRR P, MLRA-136 Lat: 36.10619326 Long: -79.95653731 Datum: NAD 83
 Soil Map Unit Name: Poplar Forest clay loam, 15 to 25 percent slopes, eroded (PpE2) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u> </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present?	Yes <u> </u> No <u>X</u>	
Wetland Hydrology Present?	Yes <u> </u> No <u>X</u>	
Remarks:		

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required: check all that apply)	Secondary Indicators (minimum of two required)
☐ Surface Water (A1) ☐ High Water Table (A2) ☐ Saturation (A3) ☐ Water Marks (B1) ☐ Sediment Deposits (B2) ☐ Drift Deposits (B3) ☐ Algal Mat or Crust (B4) ☐ Iron Deposits (B5) ☐ Inundation Visible on Aerial Imagery (B7) ☐ Water-Stained Leaves (B9) ☐ Aquatic Fauna (B13)	☐ True Aquatic Plants (B14) ☐ Hydrogen Sulfide Odor (C1) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Presence of Reduced Iron (C4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Thin Muck Surface (C7) ☐ Other (Explain in Remarks) ☐ Surface Soil Cracks (B6) ☐ Sparsely Vegetated Concave Surface (B8) ☐ Drainage Patterns (B10) ☐ Moss Trim Lines (B16) ☐ Dry-Season Water Table (C2) ☐ Crayfish Burrows (C8) ☐ Saturation Visible on Aerial Imagery (C9) ☐ Stunted or Stressed Plants (D1) ☐ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ Microtopographic Relief (D4) ☐ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <u> </u> No <u>X</u> Depth (inches): <u>0</u> Water Table Present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>12</u> Saturation Present? Yes <u> </u> No <u>X</u> Depth (inches): <u>>12</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u> </u> No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION (Four Strata) - Use scientific names of plants.

 Sampling Point: WJ-WN-Up

Tree Stratum (Plot size: <u>30ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Fagus grandifolia</i>	40	Yes	FACU
2. <i>Pinus taeda</i>	20	Yes	FAC
3. <i>Carpinus caroliniana</i>	10	No	FAC
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

_____ = Total Cover

 50% of total cover: 35 20% of total cover: 14

Sapling/Shrub Stratum (Plot size: <u>15ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Fagus grandifolia</i>	30	Yes	FACU
2. <i>Ilex opaca</i>	10	Yes	FACU
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____

_____ = Total Cover

 50% of total cover: 20 20% of total cover: 8

Herb Stratum (Plot size: <u>5ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Absent</i>	0	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____

_____ = Total Cover

 50% of total cover: 0 20% of total cover: 0

Woody Vine Stratum (Plot size: <u>30ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <i>Toxicodendron radicans</i>	5	Yes	FAC
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____

_____ = Total Cover

 50% of total cover: 2 20% of total cover: 1
Dominance Test worksheet:

 Number of Dominant Species
That Are OBL, FACW, or FAC: 2 (A)

 Total Number of Dominant
Species Across All Strata: 5 (B)

 Percent of Dominant Species
That Are OBL, FACW, or FAC: 40.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>0</u>	x 1 = <u>0</u>
FACW species <u>0</u>	x 2 = <u>0</u>
FAC species <u>35</u>	x 3 = <u>105</u>
FACU species <u>80</u>	x 4 = <u>320</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>115</u> (A)	<u>425</u> (B)

 Prevalence Index = B/A = 3.7
Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
☐ 2 - Dominance Test is >50%
☐ 3 - Prevalence Index ≤3.0¹
☐ 4 - Morphological Adaptations¹ (Provide supporting
 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata
Tree - Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic
Vegetation

 Present? Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WJ-WN-Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18	10YR 4/3	100					Sandy Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Muck (A10) **(LRR N)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
(LRR N, MLRA 147,148)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)

☐ Dark Surface (S7)
☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Iron-Manganese Masses (F12)
(LRR N, MLRA 136)
☐ Umbric Surface (F13) **(MLRA 136, 122)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**
☐ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils³:

☐ 2 cm Muck (A10) **(MLRA 147)**
☐ Coast Prairie Redox (A16)
(MLRA 147, 148)
☐ Piedmont Floodplain Soils (F19)
(MLRA 136, 147)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present. unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

NC WAM FIELD ASSESSMENT FORM
Accompanies User Manual Version 5.0

USACE AID #		NCDWR#	
Project Name	Boom Roadway Access and Connectivity Project	Date of Evaluation	03/03/2022
Applicant/Owner Name	NCDOT	Wetland Site Name	WI
Wetland Type	Headwater Forest	Assessor Name/Organization	Byron Levan/Three Oaks Engineering
Level III Ecoregion	Piedmont	Nearest Named Water Body	Brush Creek
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030004
County	Guilford	NCDWR Region	Winston-Salem
☐ Yes ☒ No	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	36.115012, -79.945762

Evidence of stressors affecting the assessment area (may not be within the assessment area)

Please circle and/or make note on the last page if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following.

- Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? ☒ Yes ☐ No

Regulatory Considerations - Were regulatory considerations evaluated? ☒ Yes ☐ No If Yes, check all that apply to the assessment area.

- ☐ Anadromous fish
- ☐ Federally protected species or State endangered or threatened species
- ☒ NCDWR riparian buffer rule in effect
- ☐ Abuts a Primary Nursery Area (PNA)
- ☐ Publicly owned property
- ☐ N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
- ☐ Abuts a stream with a NCDWQ classification of SA or supplemental classifications of HQW, ORW, or Trout
- ☐ Designated NCNHP reference community
- ☐ Abuts a 303(d)-listed stream or a tributary to a 303(d)-listed stream

What type of natural stream is associated with the wetland, if any? (check all that apply)

- ☐ Blackwater
- ☒ Brownwater
- ☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☐ Yes ☒ No

Does the assessment area experience overbank flooding during normal rainfall conditions? ☐ Yes ☒ No

1. Ground Surface Condition/Vegetation Condition – assessment area condition metric

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual). If a reference is not applicable, then rate the assessment area based on evidence an effect.

- | | | |
|---------------------------------------|---------------------------------------|--|
| GS | VS | |
| ☐ A | ☐ A | Not severely altered |
| ☒ B | ☒ B | Severely altered over a majority of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], hydrologic alteration) |

2. Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

- | | | |
|---------------------------------------|---------------------------------------|--|
| Surf | Sub | |
| ☐ A | ☐ A | Water storage capacity and duration are not altered. |
| ☐ B | ☐ B | Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation). |
| ☒ C | ☒ C | Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: draining, flooding, soil compaction, filling, excessive sedimentation, underground utility lines). |

3. Water Storage/Surface Relief – assessment area/wetland type condition metric (skip for all marshes)

Check a box in each column. Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

- | | | | |
|-----|---|---------------------------------------|---|
| | AA | WT | |
| 3a. | ☒ A | ☒ A | Majority of wetland with depressions able to pond water > 1 deep |
| | ☐ B | ☐ B | Majority of wetland with depressions able to pond water 6 inches to 1 foot deep |
| | ☐ C | ☐ C | Majority of wetland with depressions able to pond water 3 to 6 inches deep |
| | ☐ D | ☐ D | Depressions able to pond water < 3 inches deep |
| 3b. | ☐ A Evidence that maximum depth of inundation is greater than 2 feet | | |
| | ☒ B Evidence that maximum depth of inundation is between 1 and 2 feet | | |
| | ☐ C Evidence that maximum depth of inundation is less than 1 foot | | |

4. Soil Texture/Structure – assessment area condition metric (skip for all marshes)

Check a box from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for regional indicators.

- 4a. ☐A Sandy soil
☒B Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres)
☐C Loamy or clayey soils not exhibiting redoximorphic features
☐D Loamy or clayey gleyed soil
☐E Histosol or histic epipedon
- 4b. ☒A Soil ribbon < 1 inch
☐B Soil ribbon ≥ 1 inch
- 4c. ☒A No peat or muck presence
☐B A peat or muck presence

5. Discharge into Wetland – opportunity metric

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.

- | Surf | Sub | |
|---------------------------------------|---------------------------------------|---|
| ☒ A | ☒ A | Little or no evidence of pollutants or discharges entering the assessment area |
| ☐ B | ☐ B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| ☐ C | ☐ C | Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation, odor) |

6. Land Use – opportunity metric (skip for non-riparian wetlands)

Check all that apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M).

- | WS | 5M | 2M | |
|---------------------------------------|---------------------------------------|---------------------------------------|---|
| ☒ A | ☒ A | ☒ A | ≥ 10% impervious surfaces |
| ☐ B | ☒ B | ☒ B | Confined animal operations (or other local, concentrated source of pollutants) |
| ☐ C | ☐ C | ☐ C | ≥ 20% coverage of pasture |
| ☐ D | ☐ D | ☐ D | ≥ 20% coverage of agricultural land (regularly plowed land) |
| ☐ E | ☐ E | ☐ E | ≥ 20% coverage of maintained grass/herb |
| ☒ F | ☒ F | ☒ F | ≥ 20% coverage of clear-cut land |
| ☒ G | ☒ G | ☒ G | Little or no opportunity to improve water quality. Lack of opportunity may result from little or no disturbance in the watershed <u>or</u> hydrologic alterations that prevent drainage <u>and/or</u> overbank flow from affecting the assessment area. |

7. Wetland Acting as Vegetated Buffer – assessment area/wetland complex condition metric (skip for non-riparian wetlands)

- 7a. Is assessment area within 50 feet of a tributary or other open water?
☐Yes ☒No If Yes, continue to 7b. If No, skip to Metric 8.
Wetland buffer need only be present on one side of the water body. Make buffer judgment based on the average width of wetland. Record a note if a portion of the buffer has been removed or disturbed.
- 7b. How much of the first 50 feet from the bank is wetland? (Wetland buffer need only be present on one side of the water body. Make buffer judgment based on the average width of wetland. Record a note if a portion of the buffer has been removed or disturbed.)
☐A ≥ 50 feet
☐B From 30 to < 50 feet
☐C From 15 to < 30 feet
☐D From 5 to < 15 feet
☒E < 5 feet or buffer bypassed by ditches
- 7c. Tributary width. If the tributary is anastomosed, combine widths of channels/braids for a total width.
☐≤ 15-feet wide ☐ > 15-feet wide ☒ Other open water (no tributary present)
- 7d. Do roots of assessment area vegetation extend into the bank of the tributary/open water?
☐Yes ☒No
- 7e. Is stream or other open water sheltered or exposed?
☒Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
☐Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic.

8. Wetland Width at the Assessment Area – wetland type/wetland complex condition metric (evaluate WT for all marshes and Estuarine Woody Wetland only; evaluate WC for Bottomland Hardwood Forest, Headwater Forest, and Riverine Swamp Forest only)

Check a box in each column for riverine wetlands only. Select the average width for the wetland type at the assessment area (WT) and the wetland complex at the assessment area (WC). See User Manual for WT and WC boundaries.

- | WT | WC | |
|----------------------------|---------------------------------------|-----------------------|
| ☐ A | ☐ A | ≥ 100 feet |
| ☐ B | ☐ B | From 80 to < 100 feet |
| ☐ C | ☐ C | From 50 to < 80 feet |
| ☐ D | ☒ D | From 40 to < 50 feet |
| ☐ E | ☐ E | From 30 to < 40 feet |
| ☐ F | ☐ F | From 15 to < 30 feet |
| ☐ G | ☐ G | From 5 to < 15 feet |
| ☐ H | ☐ H | < 5 feet |

9. Inundation Duration – assessment area condition metric (skip for non-riparian wetlands)

Answer for assessment area dominant landform.

- ☐A Evidence of short-duration inundation (< 7 consecutive days)
☐B Evidence of saturation, without evidence of inundation
☒C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric (skip for non-riparian wetlands and all marshes)

Consider recent deposition only (no plant growth since deposition).

- ☐A Sediment deposition is not excessive, but at approximately natural levels.
☒B Sediment deposition is excessive, but not overwhelming the wetland.
☐C Sediment deposition is excessive and is overwhelming the wetland.

11. Wetland Size – wetland type/wetland complex condition metric

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column.

- | WT | WC | FW (if applicable) |
|---------------------------------------|---------------------------------------|---|
| ☐ A | ☐ A | ☐ A ≥ 500 acres |
| ☐ B | ☐ B | ☐ B From 100 to < 500 acres |
| ☐ C | ☐ C | ☐ C From 50 to < 100 acres |
| ☐ D | ☐ D | ☐ D From 25 to < 50 acres |
| ☐ E | ☐ E | ☐ E From 10 to < 25 acres |
| ☐ F | ☐ F | ☐ F From 5 to < 10 acres |
| ☐ G | ☐ G | ☐ G From 1 to < 5 acres |
| ☐ H | ☐ H | ☐ H From 0.5 to < 1 acre |
| ☒ I | ☒ I | ☐ I From 0.1 to < 0.5 acre |
| ☐ J | ☐ J | ☒ J From 0.01 to < 0.1 acre |
| ☐ K | ☐ K | ☐ K < 0.01 acre <u>or</u> assessment area is clear-cut |

12. Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)

- ☐A Pocosin is the full extent (≥ 90%) of its natural landscape size.
☐B Pocosin type is < 90% of the full extent of its natural landscape size.

13. Connectivity to Other Natural Areas – landscape condition metric

13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This metric evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility line corridors the width of a four-lane road or wider, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide.

- | Well | Loosely |
|---------------------------------------|---|
| ☐ A | ☐ A ≥ 500 acres |
| ☐ B | ☐ B From 100 to < 500 acres |
| ☐ C | ☒ C From 50 to < 100 acres |
| ☒ D | ☐ D From 10 to < 50 acres |
| ☐ E | ☐ E < 10 acres |
| ☐ F | ☐ F Wetland type has a poor or no connection to other natural habitats |

13b. Evaluate for marshes only.

- ☐Yes ☐No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.

14. Edge Effect – wetland type condition metric (skip for all marshes and Estuarine Woody Wetland)

May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors, and clear-cuts. Consider the eight main points of the compass. Artificial edge occurs within 150 feet in how many directions? If the assessment area is clear cut, select option "C."

- ☐A 0
☐B 1 to 4
☒C 5 to 8

15. Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)

- ☐A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
☐B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
☒C Vegetation severely altered from reference in composition, or expected species are unnaturally absent (planted stands of non-characteristic species or at least one stratum inappropriately composed of a single species), or exotic species are dominant in at least one stratum.

16. Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)

- ☐A Vegetation diversity is high and is composed primarily of native species (< 10% cover of exotics).
☒B Vegetation diversity is low or has > 10% to 50% cover of exotics.
☐C Vegetation is dominated by exotic species (> 50 % cover of exotics).

17. Vegetative Structure – assessment area/wetland type condition metric

17a. Is vegetation present?

☒ Yes ☐ No If Yes, continue to 17b. If No, skip to Metric 18.

17b. Evaluate percent coverage of assessment area vegetation **for all marshes only**. Skip to 17c for non-marsh wetlands.

☐ A ≥ 25% coverage of vegetation
☐ B < 25% coverage of vegetation

17c. **Check a box in each column for each stratum.** Evaluate this portion of the metric **for non-marsh wetlands**. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

Canopy	AA	WT	
	☐ A	☐ A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
	☒ B	☒ B	Canopy present, but opened more than natural gaps
	☐ C	☐ C	Canopy sparse or absent
Mid-Story	☐ A	☐ A	Dense mid-story/sapling layer
	☒ B	☒ B	Moderate density mid-story/sapling layer
	☐ C	☐ C	Mid-story/sapling layer sparse or absent
Shrub	☐ A	☐ A	Dense shrub layer
	☐ B	☐ B	Moderate density shrub layer
	☒ C	☒ C	Shrub layer sparse or absent
Herb	☐ A	☐ A	Dense herb layer
	☒ B	☒ B	Moderate density herb layer
	☐ C	☐ C	Herb layer sparse or absent

18. Snags – wetland type condition metric (skip for all marshes)

☐ A Large snags (more than one) are visible (> 12 inches DBH, or large relative to species present and landscape stability).
☒ B Not A

19. Diameter Class Distribution – wetland type condition metric (skip for all marshes)

☐ A Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.
☐ B Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12 inch DBH.
☒ C Majority of canopy trees are < 6 inches DBH or no trees.

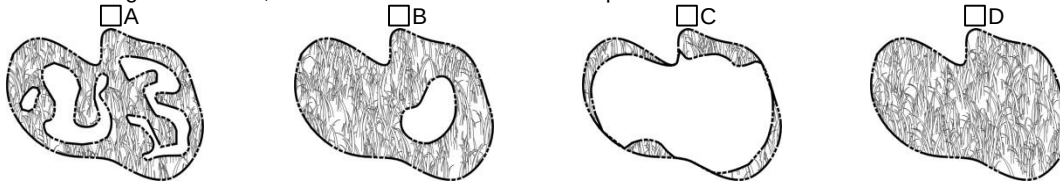
20. Large Woody Debris – wetland type condition metric (skip for all marshes)

Include both natural debris and man-placed natural debris.

☐ A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).
☒ B Not A

21. Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)

Select the figure that best describes the amount of interspersions between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.



22. Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands and Salt/Brackish Marsh only)

Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision. Documentation required if evaluated as B, C, or D.

☒ A Overbank and overland flow are not severely altered in the assessment area.
☐ B Overbank flow is severely altered in the assessment area.
☐ C Overland flow is severely altered in the assessment area.
☐ D Both overbank and overland flow are severely altered in the assessment area.

Notes

NC WAM Wetland Rating Sheet

Accompanies User Manual Version 5.0

Wetland Site Name WI Date of Assessment 03/03/2022
 Wetland Type Headwater Forest Assessor Name/Organization Byron Levan/Three Oaks Engineering

Notes on Field Assessment Form (Y/N) NO
 Presence of regulatory considerations (Y/N) YES
 Wetland is intensively managed (Y/N)
 Assessment area is located within 50 feet of a natural tributary or other open water (Y/N) NO
 Assessment area is substantially altered by beaver (Y/N) NO
 Assessment area experiences overbank flooding during normal rainfall conditions (Y/N) NO
 Assessment area is on a coastal island (Y/N) NO

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	LOW
	Sub-surface Storage and Retention	Condition	LOW
Water Quality	Pathogen Change	Condition	LOW
		Condition/Opportunity	LOW
		Opportunity Presence (Y/N)	NO
	Particulate Change	Condition	MEDIUM
		Condition/Opportunity	NA
		Opportunity Presence (Y/N)	NA
	Soluble Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
		Opportunity Presence (Y/N)	NO
	Physical Change	Condition	LOW
		Condition/Opportunity	LOW
		Opportunity Presence (Y/N)	NO
	Pollution Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence (Y/N)	NA
Habitat	Physical Structure	Condition	LOW
	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	LOW

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	LOW
Water Quality	Condition	LOW
	Condition/Opportunity	LOW
	Opportunity Presence (Y/N)	NO
Habitat	Condition	LOW

Overall Wetland Rating LOW

NC WAM FIELD ASSESSMENT FORM
Accompanies User Manual Version 5.0

USACE AID #		NCDWR#	
Project Name	Boom Roadway Access and Connectivity Project	Date of Evaluation	03/03/2022
Applicant/Owner Name	NCDOT	Wetland Site Name	WJ,WM,WN
Wetland Type	Floodplain Pool	Assessor Name/Organization	Trevor Hall/ Three Oaks Engineering
Level III Ecoregion	Piedmont	Nearest Named Water Body	East Fork Deep River/ Brush Creek
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030003
County	Guilford	NCDWR Region	Winston-Salem
☐ Yes ☒ No	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	36.106307, -79.954693

Evidence of stressors affecting the assessment area (may not be within the assessment area)

Please circle and/or make note on the last page if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following.

- Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? ☒ Yes ☐ No

Regulatory Considerations - Were regulatory considerations evaluated? ☒ Yes ☐ No If Yes, check all that apply to the assessment area.

- ☐ Anadromous fish
- ☐ Federally protected species or State endangered or threatened species
- ☒ NCDWR riparian buffer rule in effect
- ☐ Abuts a Primary Nursery Area (PNA)
- ☐ Publicly owned property
- ☐ N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
- ☐ Abuts a stream with a NCDWQ classification of SA or supplemental classifications of HQW, ORW, or Trout
- ☐ Designated NCNHP reference community
- ☐ Abuts a 303(d)-listed stream or a tributary to a 303(d)-listed stream

What type of natural stream is associated with the wetland, if any? (check all that apply)

- ☐ Blackwater
- ☒ Brownwater
- ☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☐ Yes ☒ No

Does the assessment area experience overbank flooding during normal rainfall conditions? ☐ Yes ☒ No

1. Ground Surface Condition/Vegetation Condition – assessment area condition metric

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual). If a reference is not applicable, then rate the assessment area based on evidence an effect.

- | | | |
|---------------------------------------|---------------------------------------|--|
| GS | VS | |
| ☐ A | ☒ A | Not severely altered |
| ☒ B | ☐ B | Severely altered over a majority of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], hydrologic alteration) |

2. Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

- | | | |
|---------------------------------------|---------------------------------------|--|
| Surf | Sub | |
| ☒ A | ☒ A | Water storage capacity and duration are not altered. |
| ☐ B | ☐ B | Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation). |
| ☐ C | ☐ C | Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: draining, flooding, soil compaction, filling, excessive sedimentation, underground utility lines). |

3. Water Storage/Surface Relief – assessment area/wetland type condition metric (skip for all marshes)

Check a box in each column. Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

- | | | | |
|-----|---------------------------------------|---------------------------------------|---|
| | AA | WT | |
| 3a. | ☐ A | ☐ A | Majority of wetland with depressions able to pond water > 1 deep |
| | ☐ B | ☒ B | Majority of wetland with depressions able to pond water 6 inches to 1 foot deep |
| | ☒ C | ☐ C | Majority of wetland with depressions able to pond water 3 to 6 inches deep |
| | ☐ D | ☐ D | Depressions able to pond water < 3 inches deep |
| 3b. | ☐ A | | Evidence that maximum depth of inundation is greater than 2 feet |
| | ☐ B | | Evidence that maximum depth of inundation is between 1 and 2 feet |
| | ☒ C | | Evidence that maximum depth of inundation is less than 1 foot |

4. Soil Texture/Structure – assessment area condition metric (skip for all marshes)

Check a box from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for regional indicators.

- 4a. ☐A Sandy soil
☒B Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres)
☐C Loamy or clayey soils not exhibiting redoximorphic features
☐D Loamy or clayey gleyed soil
☐E Histosol or histic epipedon
- 4b. ☐A Soil ribbon < 1 inch
☒B Soil ribbon ≥ 1 inch
- 4c. ☒A No peat or muck presence
☐B A peat or muck presence

5. Discharge into Wetland – opportunity metric

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.

- | Surf | Sub | |
|---------------------------------------|---------------------------------------|---|
| ☐ A | ☐ A | Little or no evidence of pollutants or discharges entering the assessment area |
| ☒ B | ☒ B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| ☐ C | ☐ C | Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation, odor) |

6. Land Use – opportunity metric (skip for non-riparian wetlands)

Check all that apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M).

- | WS | 5M | 2M | |
|---------------------------------------|---------------------------------------|---------------------------------------|---|
| ☒ A | ☒ A | ☒ A | ≥ 10% impervious surfaces |
| ☐ B | ☐ B | ☐ B | Confined animal operations (or other local, concentrated source of pollutants) |
| ☐ C | ☐ C | ☐ C | ≥ 20% coverage of pasture |
| ☒ D | ☒ D | ☒ D | ≥ 20% coverage of agricultural land (regularly plowed land) |
| ☐ E | ☐ E | ☐ E | ≥ 20% coverage of maintained grass/herb |
| ☒ F | ☒ F | ☒ F | ≥ 20% coverage of clear-cut land |
| ☐ G | ☐ G | ☐ G | Little or no opportunity to improve water quality. Lack of opportunity may result from little or no disturbance in the watershed <u>or</u> hydrologic alterations that prevent drainage <u>and/or</u> overbank flow from affecting the assessment area. |

7. Wetland Acting as Vegetated Buffer – assessment area/wetland complex condition metric (skip for non-riparian wetlands)

- 7a. Is assessment area within 50 feet of a tributary or other open water?
☒Yes ☐No If Yes, continue to 7b. If No, skip to Metric 8.
Wetland buffer need only be present on one side of the water body. Make buffer judgment based on the average width of wetland. Record a note if a portion of the buffer has been removed or disturbed.
- 7b. How much of the first 50 feet from the bank is wetland? (Wetland buffer need only be present on one side of the water body. Make buffer judgment based on the average width of wetland. Record a note if a portion of the buffer has been removed or disturbed.)
☐A ≥ 50 feet
☐B From 30 to < 50 feet
☒C From 15 to < 30 feet
☐D From 5 to < 15 feet
☐E < 5 feet or buffer bypassed by ditches
- 7c. Tributary width. If the tributary is anastomosed, combine widths of channels/braids for a total width.
☒≤ 15-feet wide ☐ > 15-feet wide ☐ Other open water (no tributary present)
- 7d. Do roots of assessment area vegetation extend into the bank of the tributary/open water?
☐Yes ☒No
- 7e. Is stream or other open water sheltered or exposed?
☒Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
☐Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic.

8. Wetland Width at the Assessment Area – wetland type/wetland complex condition metric (evaluate WT for all marshes and Estuarine Woody Wetland only; evaluate WC for Bottomland Hardwood Forest, Headwater Forest, and Riverine Swamp Forest only)

Check a box in each column for riverine wetlands only. Select the average width for the wetland type at the assessment area (WT) and the wetland complex at the assessment area (WC). See User Manual for WT and WC boundaries.

- | WT | WC | |
|---------------------------------------|---------------------------------------|-----------------------|
| ☐ A | ☐ A | ≥ 100 feet |
| ☐ B | ☐ B | From 80 to < 100 feet |
| ☐ C | ☐ C | From 50 to < 80 feet |
| ☒ D | ☐ D | From 40 to < 50 feet |
| ☐ E | ☐ E | From 30 to < 40 feet |
| ☐ F | ☒ F | From 15 to < 30 feet |
| ☐ G | ☐ G | From 5 to < 15 feet |
| ☐ H | ☐ H | < 5 feet |

9. Inundation Duration – assessment area condition metric (skip for non-riparian wetlands)

Answer for assessment area dominant landform.

- ☒A Evidence of short-duration inundation (< 7 consecutive days)
☐B Evidence of saturation, without evidence of inundation
☐C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric (skip for non-riparian wetlands and all marshes)

Consider recent deposition only (no plant growth since deposition).

- ☐A Sediment deposition is not excessive, but at approximately natural levels.
☒B Sediment deposition is excessive, but not overwhelming the wetland.
☐C Sediment deposition is excessive and is overwhelming the wetland.

11. Wetland Size – wetland type/wetland complex condition metric

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column.

- | WT | WC | FW (if applicable) |
|---------------------------------------|---------------------------------------|--|
| ☐ A | ☐ A | ☐ A ≥ 500 acres |
| ☐ B | ☐ B | ☐ B From 100 to < 500 acres |
| ☐ C | ☐ C | ☐ C From 50 to < 100 acres |
| ☐ D | ☐ D | ☐ D From 25 to < 50 acres |
| ☐ E | ☐ E | ☐ E From 10 to < 25 acres |
| ☐ F | ☐ F | ☐ F From 5 to < 10 acres |
| ☐ G | ☐ G | ☐ G From 1 to < 5 acres |
| ☐ H | ☐ H | ☐ H From 0.5 to < 1 acre |
| ☒ I | ☐ I | ☐ I From 0.1 to < 0.5 acre |
| ☐ J | ☐ J | ☐ J From 0.01 to < 0.1 acre |
| ☐ K | ☒ K | ☒ K < 0.01 acre <u>or</u> assessment area is clear-cut |

12. Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)

- ☐A Pocosin is the full extent (≥ 90%) of its natural landscape size.
☐B Pocosin type is < 90% of the full extent of its natural landscape size.

13. Connectivity to Other Natural Areas – landscape condition metric

13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This metric evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility line corridors the width of a four-lane road or wider, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide.

- | Well | Loosely |
|---------------------------------------|---|
| ☐ A | ☐ A ≥ 500 acres |
| ☐ B | ☐ B From 100 to < 500 acres |
| ☐ C | ☐ C From 50 to < 100 acres |
| ☐ D | ☒ D From 10 to < 50 acres |
| ☒ E | ☐ E < 10 acres |
| ☐ F | ☐ F Wetland type has a poor or no connection to other natural habitats |

13b. Evaluate for marshes only.

- ☐Yes ☐No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.

14. Edge Effect – wetland type condition metric (skip for all marshes and Estuarine Woody Wetland)

May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors, and clear-cuts. Consider the eight main points of the compass. Artificial edge occurs within 150 feet in how many directions? If the assessment area is clear cut, select option "C."

- ☐A 0
☒B 1 to 4
☐C 5 to 8

15. Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)

- ☐A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
☐B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
☒C Vegetation severely altered from reference in composition, or expected species are unnaturally absent (planted stands of non-characteristic species or at least one stratum inappropriately composed of a single species), or exotic species are dominant in at least one stratum.

16. Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)

- ☐A Vegetation diversity is high and is composed primarily of native species (< 10% cover of exotics).
☐B Vegetation diversity is low or has > 10% to 50% cover of exotics.
☐C Vegetation is dominated by exotic species (> 50 % cover of exotics).

17. Vegetative Structure – assessment area/wetland type condition metric

17a. Is vegetation present?

☒ Yes ☐ No If Yes, continue to 17b. If No, skip to Metric 18.

17b. Evaluate percent coverage of assessment area vegetation **for all marshes only**. Skip to 17c for non-marsh wetlands.

☐ A ≥ 25% coverage of vegetation
☐ B < 25% coverage of vegetation

17c. **Check a box in each column for each stratum.** Evaluate this portion of the metric **for non-marsh wetlands**. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

Canopy	AA	WT	
	☐ A	☒ A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
	☐ B	☐ B	Canopy present, but opened more than natural gaps
	☒ C	☐ C	Canopy sparse or absent
Mid-Story	☐ A	☐ A	Dense mid-story/sapling layer
	☒ B	☒ B	Moderate density mid-story/sapling layer
	☐ C	☐ C	Mid-story/sapling layer sparse or absent
Shrub	☐ A	☐ A	Dense shrub layer
	☒ B	☒ B	Moderate density shrub layer
	☐ C	☐ C	Shrub layer sparse or absent
Herb	☐ A	☐ A	Dense herb layer
	☐ B	☒ B	Moderate density herb layer
	☒ C	☐ C	Herb layer sparse or absent

18. Snags – wetland type condition metric (skip for all marshes)

☐ A Large snags (more than one) are visible (> 12 inches DBH, or large relative to species present and landscape stability).
☒ B Not A

19. Diameter Class Distribution – wetland type condition metric (skip for all marshes)

☐ A Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.
☐ B Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12 inch DBH.
☒ C Majority of canopy trees are < 6 inches DBH or no trees.

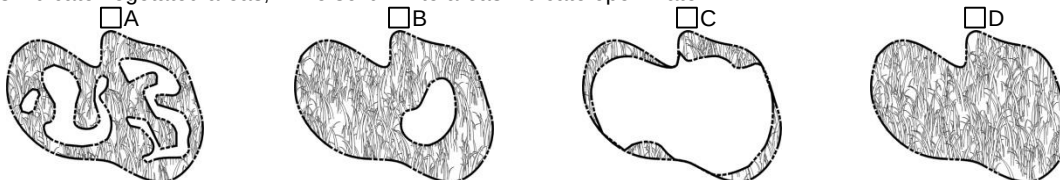
20. Large Woody Debris – wetland type condition metric (skip for all marshes)

Include both natural debris and man-placed natural debris.

☐ A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).
☒ B Not A

21. Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)

Select the figure that best describes the amount of interspersions between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.



22. Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands and Salt/Brackish Marsh only)

Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision. Documentation required if evaluated as B, C, or D.

☐ A Overbank and overland flow are not severely altered in the assessment area.
☐ B Overbank flow is severely altered in the assessment area.
☒ C Overland flow is severely altered in the assessment area.
☐ D Both overbank and overland flow are severely altered in the assessment area.

Notes

NC WAM Wetland Rating Sheet

Accompanies User Manual Version 5.0

Wetland Site Name WJ,WM,WN Date of Assessment 03/03/2022
Wetland Type Floodplain Pool Assessor Name/Organization Trevor Hall/ Three Oaks Engineering

Notes on Field Assessment Form (Y/N) NO
Presence of regulatory considerations (Y/N) YES
Wetland is intensively managed (Y/N) YES
Assessment area is located within 50 feet of a natural tributary or other open water (Y/N) YES
Assessment area is substantially altered by beaver (Y/N) NO
Assessment area experiences overbank flooding during normal rainfall conditions (Y/N) NO
Assessment area is on a coastal island (Y/N) NO

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	LOW
	Sub-surface Storage and Retention	Condition	NA
Water Quality	Pathogen Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
		Opportunity Presence (Y/N)	NO
	Particulate Change	Condition	LOW
		Condition/Opportunity	LOW
		Opportunity Presence (Y/N)	NO
	Soluble Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
		Opportunity Presence (Y/N)	NO
	Physical Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence (Y/N)	NA
	Pollution Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence (Y/N)	NA
Habitat	Physical Structure	Condition	MEDIUM
	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	LOW

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	LOW
Water Quality	Condition	LOW
	Condition/Opportunity	LOW
	Opportunity Presence (Y/N)	NO
Habitat	Condition	LOW

Overall Wetland Rating LOW

NC WAM FIELD ASSESSMENT FORM
Accompanies User Manual Version 5.0

USACE AID #		NCDWR#	
Project Name	Boom Roadway Access and Connectivity Project	Date of Evaluation	03/03/2022
Applicant/Owner Name	NCDOT	Wetland Site Name	WK
Wetland Type	Floodplain Pool	Assessor Name/Organization	Trevor Hall/ Three Oaks Engineering
Level III Ecoregion	Piedmont	Nearest Named Water Body	East Fork Deep River/ Brush Creek
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030003
County	Guilford	NCDWR Region	Winston-Salem
☐ Yes ☒ No	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	36.106307, -79.954693

Evidence of stressors affecting the assessment area (may not be within the assessment area)

Please circle and/or make note on the last page if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following.

- Hydrological modifications (examples: ditches, dams, beaver dams, dikes, berms, ponds, etc.)
- Surface and sub-surface discharges into the wetland (examples: discharges containing obvious pollutants, presence of nearby septic tanks, underground storage tanks (USTs), hog lagoons, etc.)
- Signs of vegetation stress (examples: vegetation mortality, insect damage, disease, storm damage, salt intrusion, etc.)
- Habitat/plant community alteration (examples: mowing, clear-cutting, exotics, etc.)

Is the assessment area intensively managed? ☒ Yes ☐ No

Regulatory Considerations - Were regulatory considerations evaluated? ☒ Yes ☐ No If Yes, check all that apply to the assessment area.

- ☐ Anadromous fish
- ☐ Federally protected species or State endangered or threatened species
- ☒ NCDWR riparian buffer rule in effect
- ☐ Abuts a Primary Nursery Area (PNA)
- ☐ Publicly owned property
- ☐ N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
- ☐ Abuts a stream with a NCDWQ classification of SA or supplemental classifications of HQW, ORW, or Trout
- ☐ Designated NCNHP reference community
- ☐ Abuts a 303(d)-listed stream or a tributary to a 303(d)-listed stream

What type of natural stream is associated with the wetland, if any? (check all that apply)

- ☐ Blackwater
- ☐ Brownwater
- ☐ Tidal (if tidal, check one of the following boxes) ☐ Lunar ☐ Wind ☐ Both

Is the assessment area on a coastal island? ☐ Yes ☒ No

Is the assessment area's surface water storage capacity or duration substantially altered by beaver? ☐ Yes ☒ No

Does the assessment area experience overbank flooding during normal rainfall conditions? ☐ Yes ☒ No

1. Ground Surface Condition/Vegetation Condition – assessment area condition metric

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual). If a reference is not applicable, then rate the assessment area based on evidence an effect.

- | | | |
|---------------------------------------|---------------------------------------|--|
| GS | VS | |
| ☐ A | ☐ A | Not severely altered |
| ☒ B | ☒ B | Severely altered over a majority of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], hydrologic alteration) |

2. Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

- | | | |
|---------------------------------------|---------------------------------------|--|
| Surf | Sub | |
| ☐ A | ☐ A | Water storage capacity and duration are not altered. |
| ☐ B | ☐ B | Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation). |
| ☒ C | ☒ C | Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: draining, flooding, soil compaction, filling, excessive sedimentation, underground utility lines). |

3. Water Storage/Surface Relief – assessment area/wetland type condition metric (skip for all marshes)

Check a box in each column. Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

- | | | | |
|-----|---------------------------------------|---------------------------------------|---|
| | AA | WT | |
| 3a. | ☐ A | ☐ A | Majority of wetland with depressions able to pond water > 1 deep |
| | ☒ B | ☒ B | Majority of wetland with depressions able to pond water 6 inches to 1 foot deep |
| | ☐ C | ☐ C | Majority of wetland with depressions able to pond water 3 to 6 inches deep |
| | ☐ D | ☐ D | Depressions able to pond water < 3 inches deep |
| 3b. | ☐ A | | Evidence that maximum depth of inundation is greater than 2 feet |
| | ☐ B | | Evidence that maximum depth of inundation is between 1 and 2 feet |
| | ☒ C | | Evidence that maximum depth of inundation is less than 1 foot |

4. Soil Texture/Structure – assessment area condition metric (skip for all marshes)

Check a box from each of the three soil property groups below. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for regional indicators.

- 4a. ☐A Sandy soil
☒B Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres)
☐C Loamy or clayey soils not exhibiting redoximorphic features
☐D Loamy or clayey gleyed soil
☐E Histosol or histic epipedon
- 4b. ☐A Soil ribbon < 1 inch
☒B Soil ribbon ≥ 1 inch
- 4c. ☒A No peat or muck presence
☐B A peat or muck presence

5. Discharge into Wetland – opportunity metric

Check a box in each column. Consider surface pollutants or discharges (Surf) and sub-surface pollutants or discharges (Sub). Examples of sub-surface discharges include presence of nearby septic tank, underground storage tank (UST), etc.

- | Surf | Sub | |
|---------------------------------------|---------------------------------------|---|
| ☒ A | ☐ A | Little or no evidence of pollutants or discharges entering the assessment area |
| ☐ B | ☒ B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| ☐ C | ☐ C | Noticeable evidence of pollutants or discharges (pathogen, particulate, or soluble) entering the assessment area and potentially overwhelming the treatment capacity of the wetland (water discoloration, dead vegetation, excessive sedimentation, odor) |

6. Land Use – opportunity metric (skip for non-riparian wetlands)

Check all that apply (at least one box in each column). Evaluation involves a GIS effort with field adjustment. Consider sources draining to assessment area within entire upstream watershed (WS), within 5 miles and within the watershed draining to the assessment area (5M), and within 2 miles and within the watershed draining to the assessment area (2M).

- | WS | 5M | 2M | |
|---------------------------------------|---------------------------------------|---------------------------------------|---|
| ☒ A | ☒ A | ☒ A | ≥ 10% impervious surfaces |
| ☐ B | ☐ B | ☐ B | Confined animal operations (or other local, concentrated source of pollutants) |
| ☐ C | ☐ C | ☐ C | ≥ 20% coverage of pasture |
| ☒ D | ☒ D | ☒ D | ≥ 20% coverage of agricultural land (regularly plowed land) |
| ☐ E | ☐ E | ☐ E | ≥ 20% coverage of maintained grass/herb |
| ☒ F | ☒ F | ☒ F | ≥ 20% coverage of clear-cut land |
| ☐ G | ☐ G | ☐ G | Little or no opportunity to improve water quality. Lack of opportunity may result from little or no disturbance in the watershed <u>or</u> hydrologic alterations that prevent drainage <u>and/or</u> overbank flow from affecting the assessment area. |

7. Wetland Acting as Vegetated Buffer – assessment area/wetland complex condition metric (skip for non-riparian wetlands)

- 7a. Is assessment area within 50 feet of a tributary or other open water?
☐Yes ☒No If Yes, continue to 7b. If No, skip to Metric 8.
Wetland buffer need only be present on one side of the water body. Make buffer judgment based on the average width of wetland. Record a note if a portion of the buffer has been removed or disturbed.
- 7b. How much of the first 50 feet from the bank is wetland? (Wetland buffer need only be present on one side of the water body. Make buffer judgment based on the average width of wetland. Record a note if a portion of the buffer has been removed or disturbed.)
☐A ≥ 50 feet
☐B From 30 to < 50 feet
☐C From 15 to < 30 feet
☐D From 5 to < 15 feet
☐E < 5 feet or buffer bypassed by ditches
- 7c. Tributary width. If the tributary is anastomosed, combine widths of channels/braids for a total width.
☐≤ 15-feet wide ☐ > 15-feet wide ☐ Other open water (no tributary present)
- 7d. Do roots of assessment area vegetation extend into the bank of the tributary/open water?
☐Yes ☐No
- 7e. Is stream or other open water sheltered or exposed?
☐Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
☐Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic.

8. Wetland Width at the Assessment Area – wetland type/wetland complex condition metric (evaluate WT for all marshes and Estuarine Woody Wetland only; evaluate WC for Bottomland Hardwood Forest, Headwater Forest, and Riverine Swamp Forest only)

Check a box in each column for riverine wetlands only. Select the average width for the wetland type at the assessment area (WT) and the wetland complex at the assessment area (WC). See User Manual for WT and WC boundaries.

- | WT | WC | |
|----------------------------|----------------------------|-----------------------|
| ☐ A | ☐ A | ≥ 100 feet |
| ☐ B | ☐ B | From 80 to < 100 feet |
| ☐ C | ☐ C | From 50 to < 80 feet |
| ☐ D | ☐ D | From 40 to < 50 feet |
| ☐ E | ☐ E | From 30 to < 40 feet |
| ☐ F | ☐ F | From 15 to < 30 feet |
| ☐ G | ☐ G | From 5 to < 15 feet |
| ☐ H | ☐ H | < 5 feet |

9. Inundation Duration – assessment area condition metric (skip for non-riparian wetlands)

Answer for assessment area dominant landform.

- ☐A Evidence of short-duration inundation (< 7 consecutive days)
☐B Evidence of saturation, without evidence of inundation
☒C Evidence of long-duration inundation or very long-duration inundation (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric (skip for non-riparian wetlands and all marshes)

Consider recent deposition only (no plant growth since deposition).

- ☐A Sediment deposition is not excessive, but at approximately natural levels.
☒B Sediment deposition is excessive, but not overwhelming the wetland.
☐C Sediment deposition is excessive and is overwhelming the wetland.

11. Wetland Size – wetland type/wetland complex condition metric

Check a box in each column. Involves a GIS effort with field adjustment. This metric evaluates three aspects of the wetland area: the size of the wetland type (WT), the size of the wetland complex (WC), and the size of the forested wetland (FW) (if applicable, see User Manual). See the User Manual for boundaries of these evaluation areas. If assessment area is clear-cut, select "K" for the FW column.

- | WT | WC | FW (if applicable) |
|---------------------------------------|---------------------------------------|--|
| ☐ A | ☐ A | ☐ A ≥ 500 acres |
| ☐ B | ☐ B | ☐ B From 100 to < 500 acres |
| ☐ C | ☐ C | ☐ C From 50 to < 100 acres |
| ☐ D | ☐ D | ☐ D From 25 to < 50 acres |
| ☐ E | ☐ E | ☐ E From 10 to < 25 acres |
| ☐ F | ☐ F | ☐ F From 5 to < 10 acres |
| ☐ G | ☐ G | ☐ G From 1 to < 5 acres |
| ☐ H | ☐ H | ☐ H From 0.5 to < 1 acre |
| ☒ I | ☐ I | ☐ I From 0.1 to < 0.5 acre |
| ☐ J | ☐ J | ☐ J From 0.01 to < 0.1 acre |
| ☐ K | ☒ K | ☒ K < 0.01 acre <u>or</u> assessment area is clear-cut |

12. Wetland Intactness – wetland type condition metric (evaluate for Pocosins only)

- ☐A Pocosin is the full extent (≥ 90%) of its natural landscape size.
☐B Pocosin type is < 90% of the full extent of its natural landscape size.

13. Connectivity to Other Natural Areas – landscape condition metric

13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This metric evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate). Boundaries are formed by four-lane roads, regularly maintained utility line corridors the width of a four-lane road or wider, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide.

- | Well | Loosely |
|---------------------------------------|---|
| ☐ A | ☐ A ≥ 500 acres |
| ☐ B | ☐ B From 100 to < 500 acres |
| ☐ C | ☐ C From 50 to < 100 acres |
| ☐ D | ☐ D From 10 to < 50 acres |
| ☐ E | ☒ E < 10 acres |
| ☒ F | ☐ F Wetland type has a poor or no connection to other natural habitats |

13b. Evaluate for marshes only.

- ☐Yes ☐No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands.

14. Edge Effect – wetland type condition metric (skip for all marshes and Estuarine Woody Wetland)

May involve a GIS effort with field adjustment. Estimate distance from wetland type boundary to artificial edges. Artificial edges include non-forested areas ≥ 40 feet wide such as fields, development, roads, regularly maintained utility line corridors, and clear-cuts. Consider the eight main points of the compass. Artificial edge occurs within 150 feet in how many directions? If the assessment area is clear cut, select option "C."

- ☐A 0
☐B 1 to 4
☒C 5 to 8

15. Vegetative Composition – assessment area condition metric (skip for all marshes and Pine Flat)

- ☐A Vegetation is close to reference condition in species present and their proportions. Lower strata composed of appropriate species, with exotic plants absent or sparse within the assessment area.
☐B Vegetation is different from reference condition in species diversity or proportions, but still largely composed of native species characteristic of the wetland type. This may include communities of weedy native species that develop after clearcutting or clearing. It also includes communities with exotics present, but not dominant, over a large portion of the expected strata.
☒C Vegetation severely altered from reference in composition, or expected species are unnaturally absent (planted stands of non-characteristic species or at least one stratum inappropriately composed of a single species), or exotic species are dominant in at least one stratum.

16. Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)

- ☐A Vegetation diversity is high and is composed primarily of native species (< 10% cover of exotics).
☐B Vegetation diversity is low or has > 10% to 50% cover of exotics.
☐C Vegetation is dominated by exotic species (> 50 % cover of exotics).

17. Vegetative Structure – assessment area/wetland type condition metric

17a. Is vegetation present?

☒ Yes ☐ No If Yes, continue to 17b. If No, skip to Metric 18.

17b. Evaluate percent coverage of assessment area vegetation **for all marshes only**. Skip to 17c for non-marsh wetlands.

☐ A ≥ 25% coverage of vegetation
☐ B < 25% coverage of vegetation

17c. **Check a box in each column for each stratum.** Evaluate this portion of the metric **for non-marsh wetlands**. Consider structure in airspace above the assessment area (AA) and the wetland type (WT) separately.

Canopy	AA	WT	
	☐ A	☒ A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
	☐ B	☐ B	Canopy present, but opened more than natural gaps
	☒ C	☐ C	Canopy sparse or absent
Mid-Story	☐ A	☐ A	Dense mid-story/sapling layer
	☐ B	☒ B	Moderate density mid-story/sapling layer
	☒ C	☐ C	Mid-story/sapling layer sparse or absent
Shrub	☐ A	☐ A	Dense shrub layer
	☐ B	☒ B	Moderate density shrub layer
	☒ C	☐ C	Shrub layer sparse or absent
Herb	☐ A	☐ A	Dense herb layer
	☒ B	☒ B	Moderate density herb layer
	☐ C	☐ C	Herb layer sparse or absent

18. Snags – wetland type condition metric (skip for all marshes)

☐ A Large snags (more than one) are visible (> 12 inches DBH, or large relative to species present and landscape stability).
☒ B Not A

19. Diameter Class Distribution – wetland type condition metric (skip for all marshes)

☐ A Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.
☐ B Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12 inch DBH.
☒ C Majority of canopy trees are < 6 inches DBH or no trees.

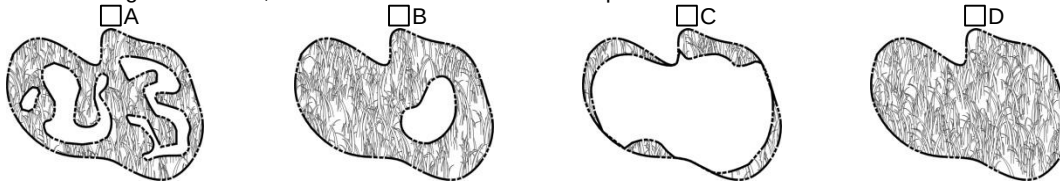
20. Large Woody Debris – wetland type condition metric (skip for all marshes)

Include both natural debris and man-placed natural debris.

☐ A Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability).
☒ B Not A

21. Vegetation/Open Water Dispersion – wetland type/open water condition metric (evaluate for Non-Tidal Freshwater Marsh only)

Select the figure that best describes the amount of interspersions between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.



22. Hydrologic Connectivity – assessment area condition metric (evaluate for riparian wetlands and Salt/Brackish Marsh only)

Examples of activities that may severely alter hydrologic connectivity include intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, and stream incision. Documentation required if evaluated as B, C, or D.

☐ A Overbank and overland flow are not severely altered in the assessment area.
☐ B Overbank flow is severely altered in the assessment area.
☐ C Overland flow is severely altered in the assessment area.
☒ D Both overbank and overland flow are severely altered in the assessment area.

Notes

NC WAM Wetland Rating Sheet

Accompanies User Manual Version 5.0

Wetland Site Name WK Date of Assessment 03/03/2022
Wetland Type Floodplain Pool Assessor Name/Organization Trevor Hall/ Three Oaks Engineering

Notes on Field Assessment Form (Y/N) NO
Presence of regulatory considerations (Y/N) YES
Wetland is intensively managed (Y/N) YES
Assessment area is located within 50 feet of a natural tributary or other open water (Y/N) NO
Assessment area is substantially altered by beaver (Y/N) NO
Assessment area experiences overbank flooding during normal rainfall conditions (Y/N) NO
Assessment area is on a coastal island (Y/N) NO

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	LOW
	Sub-surface Storage and Retention	Condition	NA
Water Quality	Pathogen Change	Condition	LOW
		Condition/Opportunity	LOW
		Opportunity Presence (Y/N)	NO
	Particulate Change	Condition	LOW
		Condition/Opportunity	LOW
		Opportunity Presence (Y/N)	NO
	Soluble Change	Condition	LOW
		Condition/Opportunity	LOW
		Opportunity Presence (Y/N)	NO
	Physical Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence (Y/N)	NA
	Pollution Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence (Y/N)	NA
Habitat	Physical Structure	Condition	LOW
	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	LOW

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	LOW
Water Quality	Condition	LOW
	Condition/Opportunity	LOW
	Opportunity Presence (Y/N)	NO
Habitat	Condition	LOW

Overall Wetland Rating LOW

Appendix C

Agent Authorization Form
Preliminary ORM Data Sheet
JD Request Form
PJD Form
Waters Upload Sheet

Preliminary ORM Data Entry Fields for New Actions

SAW – 202 2 -

BEGIN DATE [Received Date]:

Prepare file folder ☐

☐

1. **Project Name** [PCN Form A2a]: Proposed Boom Roadway Access and Connectivity Project in Greensboro, NC

2. **Work Type:** Private ☐ Institutional ☐ Government ☒ Commercial ☐

3. **Project Description / Purpose** [PCN Form B3d and B3e]:

Proposed Boom Roadway Access and Connectivity Project in Greensboro, NC

4. **Property Owner / Applicant** [PCN Form A3 or A4]: Multiple / NCDOT

5. **Agent / Consultant** [PCN Form A5 – or ORM Consultant ID Number]: Jerry Parker - NCDOT/James Mason- Three Oaks Eng.

6. **Related Action ID Number(s)** [PCN Form B5b]: NCDOT Project I-5110/PTI Project SAW-2012-01547

7. **Project Location - Coordinates, Street Address, and/or Location Description** [PCN Form B1b]:

36.120658, -79.951074

8. **Project Location - Tax Parcel ID** [PCN Form B1a]: Multiple

9. **Project Location – County** [PCN Form A2b]: Guilford

10. **Project Location – Nearest Municipality or Town** [PCN Form A2c]: Greensboro

11. **Project Information – Nearest Waterbody** [PCN Form B2a]: Brush Creek

12. **Watershed / 8-Digit Hydrologic Unit Code** [PCN Form B2c]: 03030002

Authorization:

Section 10

☐

Section 404

☒

Section 10 & 404

☐

Regulatory Action Type:

☐

Standard Permit

☐

Nationwide Permit #

☐

Regional General Permit #

☒

Jurisdictional Determination Request

☐

Pre-Application Request

☐

Unauthorized Activity

☐

Compliance

☐

No Permit Required

Jurisdictional Determination Request



**US Army Corps
of Engineers**
Wilmington District

This form is intended for use by anyone requesting a jurisdictional determination (JD) from the U.S. Army Corps of Engineers, Wilmington District (Corps). Please include all supporting information, as described within each category, with your request. You may submit your request via mail, electronic mail, or facsimile. Requests should be sent to the appropriate project manager of the county in which the property is located. A current list of project managers by assigned counties can be found on-line at:

<http://www.saw.usace.army.mil/Missions/RegulatoryPermitProgram/Contact/CountyLocator.aspx>, by calling 910-251-4633, or by contacting any of the field offices listed below. Once your request is received you will be contacted by a Corps project manager.

ASHEVILLE & CHARLOTTE REGULATORY FIELD OFFICES

US Army Corps of Engineers
151 Patton Avenue, Room 208
Asheville, North Carolina 28801-5006
General Number: (828) 271-7980
Fax Number: (828) 281-8120

WASHINGTON REGULATORY FIELD OFFICE

US Army Corps of Engineers
2407 West Fifth Street
Washington, North Carolina 27889
General Number: (910) 251-4610
Fax Number: (252) 975-1399

RALEIGH REGULATORY FIELD OFFICE

US Army Corps of Engineers
3331 Heritage Trade Drive, Suite 105
Wake Forest, North Carolina 27587
General Number: (919) 554-4884
Fax Number: (919) 562-0421

WILMINGTON REGULATORY FIELD OFFICE

US Army Corps of Engineers
69 Darlington Avenue
Wilmington, North Carolina 28403
General Number: 910-251-4633
Fax Number: (910) 251-4025

INSTRUCTIONS:

All requestors must complete Parts A, B, C, D, E, F and G.

NOTE TO CONSULTANTS AND AGENCIES: If you are requesting a JD on behalf of a paying client or your agency, please note the specific submittal requirements in **Part H**.

NOTE ON PART D – PROPERTY OWNER AUTHORIZATION: Please be aware that all JD requests must include the current property owner authorization for the Corps to proceed with the determination, which may include inspection of the property when necessary. This form must be signed by the current property owner(s) or the owner(s) authorized agent to be considered a complete request.

NOTE ON PART D - NCDOT REQUESTS: Property owner authorization/notification for JD requests associated with North Carolina Department of Transportation (NCDOT) projects will be conducted according to the current NCDOT/USACE protocols.

NOTE TO USDA PROGRAM PARTICIPANTS: A Corps approved or preliminary JD may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA Program participants, or anticipate participation in USDA programs, you should also request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

Jurisdictional Determination Request

A. PARCEL INFORMATION

Street Address: Multiple Parcels

City, State: Greensboro, NC 27409

County: Guilford

Parcel Index Number(s) (PIN): Multiple PIN No.'s

B. REQUESTOR INFORMATION

Name: Jerry Parker, NCDOT Division 7 DES

Mailing Address: PO Box 14996
Greensboro, NC 27415-4996

Telephone Number: (336) 256-2063

Electronic Mail Address: japarker3@ncdot.gov

Select one:

☐

I am the current property owner.

☐

I am an Authorized Agent or Environmental Consultant¹

☐

Interested Buyer or Under Contract to Purchase

☒

Other, please explain. NCDOT Project

C. PROPERTY OWNER INFORMATION²

Name: Multiple Property Owners

Mailing Address: Multiple Addresses
Greensboro, NC 27409

Telephone Number: Multiple

Electronic Mail Address: Multiple

¹ Must provide completed Agent Authorization Form/Letter.

² Documentation of ownership also needs to be provided with request (copy of Deed, County GIS/Parcel/Tax Record).

Jurisdictional Determination Request

D. PROPERTY ACCESS CERTIFICATION^{3,4}

By signing below, I authorize representatives of the Wilmington District, U.S. Army Corps of Engineers (Corps) to enter upon the property herein described for the purpose of conducting on-site investigations, if necessary, and issuing a jurisdictional determination pursuant to Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act of 1899. I, the undersigned, am either a duly authorized owner of record of the property identified herein, or acting as the duly authorized agent of the owner of record of the property.

Print Name

Capacity: ☐ Owner ☐ Authorized Agent⁵

Date

Signature

E. REASON FOR JD REQUEST: (Check as many as applicable)

- ☐ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all aquatic resources.
- ☐ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all jurisdictional aquatic resources under Corps authority.
- ☒ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps, and the JD would be used to avoid and minimize impacts to jurisdictional aquatic resources and as an initial step in a future permitting process.
- ☐ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps; this request is accompanied by my permit application and the JD is to be used in the permitting process.
- ☐ I intend to construct/develop a project or perform activities in a navigable water of the U.S. which is included on the district Section 10 list and/or is subject to the ebb and flow of the tide.
- ☐ A Corps JD is required in order obtain my local/state authorization.
- ☐ I intend to contest jurisdiction over a particular aquatic resource and request the Corps confirm that jurisdiction does/does not exist over the aquatic resource on the parcel.
- ☐ I believe that the site may be comprised entirely of dry land.
- ☐ Other: _____

³ For NCDOT requests following the current NCDOT/USACE protocols, skip to Part E.

⁴ If there are multiple parcels owned by different parties, please provide the following for each additional parcel on a continuation sheet.

⁵ Must provide agent authorization form/letter signed by owner(s).

Jurisdictional Determination Request

F. JURISDICTIONAL DETERMINATION (JD) TYPE (Select One)



I am requesting that the Corps provide a preliminary JD for the property identified herein.

A Preliminary Jurisdictional Determination (PJD) provides an indication that there may be “waters of the United States” or “navigable waters of the United States” on a property. PJDs are sufficient as the basis for permit decisions. For the purposes of permitting, all waters and wetlands on the property will be treated as if they are jurisdictional “waters of the United States”. PJDs cannot be appealed (33 C.F.R. 331.2); however, a PJD is “preliminary” in the sense that an approved JD can be requested at any time. PJDs do not expire.



I am requesting that the Corps provide an approved JD for the property identified herein.

An Approved Jurisdictional Determination (AJD) is a determination that jurisdictional “waters of the United States” or “navigable waters of the United States” are either present or absent on a site. An approved JD identifies the limits of waters on a site determined to be jurisdictional under the Clean Water Act and/or Rivers and Harbors Act. Approved JDs are sufficient as the basis for permit decisions. AJDs are appealable (33 C.F.R. 331.2). The results of the AJD will be posted on the Corps website. A landowner, permit applicant, or other “affected party” (33 C.F.R. 331.2) who receives an AJD may rely upon the AJD for five years (subject to certain limited exceptions explained in Regulatory Guidance Letter 05-02).



I am unclear as to which JD I would like to request and require additional information to inform my decision.

G. ALL REQUESTS



Map of Property or Project Area. This Map must clearly depict the boundaries of the review area.



Size of Property or Review Area 361.3 acres.



The property boundary (or review area boundary) is clearly physically marked on the site.

Jurisdictional Determination Request

H. REQUESTS FROM CONSULTANTS



Project Coordinates (Decimal Degrees): Latitude: 36.120658

Longitude: -79.951074



A legible delineation map depicting the aquatic resources and the property/review area. Delineation maps must be no larger than 11x17 and should contain the following: (Corps signature of submitted survey plats will occur after the submitted delineation map has been reviewed and approved).⁶

- North Arrow
- Graphical Scale
- Boundary of Review Area
- Date
- Location of data points for each Wetland Determination Data Form or tributary assessment reach.

For Approved Jurisdictional Determinations:

- Jurisdictional wetland features should be labeled as Wetland Waters of the US, 404 wetlands, etc. Please include the acreage of these features.
- Jurisdictional non-wetland features (i.e. tidal/navigable waters, tributaries, impoundments) should be labeled as Non-Wetland Waters of the US, stream, tributary, open water, relatively permanent water, pond, etc. Please include the acreage or linear length of each of these features as appropriate.
- Isolated waters, waters that lack a significant nexus to navigable waters, or non-jurisdictional upland features should be identified as Non-Jurisdictional. Please include a justification in the label regarding why the feature is non-jurisdictional (i.e. “Isolated”, “No Significant Nexus”, or “Upland Feature”). Please include the acreage or linear length of these features as appropriate.

For Preliminary Jurisdictional Determinations:

- Wetland and non-wetland features should not be identified as Jurisdictional, 404, Waters of the United States, or anything that implies jurisdiction. These features can be identified as Potential Waters of the United States, Potential Non-wetland Waters of the United States, wetland, stream, open water, etc. Please include the acreage and linear length of these features as appropriate.



Completed Wetland Determination Data Forms for appropriate region
(at least one wetland and one upland form needs to be completed for each wetland type)

⁶ Please refer to the guidance document titled “Survey Standards for Jurisdictional Determinations” to ensure that the supplied map meets the necessary mapping standards. <http://www.saw.usace.army.mil/Missions/Regulatory-Permit-Program/Jurisdiction/>

Jurisdictional Determination Request

- ☒ Completed appropriate Jurisdictional Determination form
 - **PJDs**, please complete a Preliminary Jurisdictional Determination Form⁷ and include the Aquatic Resource Table
 - **AJDs**, please complete an Approved Jurisdictional Determination Form⁸
- ☒ Vicinity Map
- ☒ Aerial Photograph
- ☒ USGS Topographic Map
- ☐ Soil Survey Map
- ☒ Other Maps, as appropriate (e.g. National Wetland Inventory Map, Proposed Site Plan, previous delineation maps, LIDAR maps, FEMA floodplain maps)
- ☐ Landscape Photos (if taken)
- ☒ NCSAM and/or NCWAM Assessment Forms and Rating Sheets
- ☒ NC Division of Water Resources Stream Identification Forms
- ☐ Other Assessment Forms

⁷ www.saw.usace.army.mil/Portals/59/docs/regulatory/regdocs/JD/RGL_08-02_App_A_Prelim_JD_Form_fillable.pdf

⁸ Please see <http://www.saw.usace.army.mil/Missions/Regulatory-Permit-Program/Jurisdiction/>

Principal Purpose: The information that you provide will be used in evaluating your request to determine whether there are any aquatic resources within the project area subject to federal jurisdiction under the regulatory authorities referenced above.

Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public, and may be made available as part of a public notice as required by federal law. Your name and property location where federal jurisdiction is to be determined will be included in the approved jurisdictional determination (AJD), which will be made available to the public on the District's website and on the Headquarters USAGE website.

Disclosure: Submission of requested information is voluntary; however, if information is not provided, the request for an AJD cannot be evaluated nor can an AJD be issued.

Appendix 2 - PRELIMINARY JURISDICTIONAL DETERMINATION (PJD) FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PJD:

B. NAME AND ADDRESS OF PERSON REQUESTING PJD: Jerry Parker, PO Box 14996 , Greensboro, NC 27415-4996

C. DISTRICT OFFICE, FILE NAME, AND NUMBER:

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:

(USE THE TABLE BELOW TO DOCUMENT MULTIPLE AQUATIC RESOURCES AND/OR AQUATIC RESOURCES AT DIFFERENT SITES)

State: NC County/parish/borough: Guilford City: Greensboro

Center coordinates of site (lat/long in degree decimal format):

Lat.: 36.120658 Long.: -79.951074

Universal Transverse Mercator: 17

Name of nearest waterbody: Brush Creek

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:

☐ Field Determination. Date(s):

TABLE OF AQUATIC RESOURCES IN REVIEW AREA WHICH "MAY BE" SUBJECT TO REGULATORY JURISDICTION.

Site number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resource in review area (acreage and linear feet, if applicable)	Type of aquatic resource (i.e., wetland vs. non-wetland waters)	Geographic authority to which the aquatic resource "may be" subject (i.e., Section 404 or Section 10/404)
		See	Attached	List	

- 1) The Corps of Engineers believes that there may be jurisdictional aquatic resources in the review area, and the requestor of this PJD is hereby advised of his or her option to request and obtain an approved JD (AJD) for that review area based on an informed decision after having discussed the various types of JDs and their characteristics and circumstances when they may be appropriate.
- 2) In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an AJD for the activity, the permit applicant is hereby made aware that: (1) the permit applicant has elected to seek a permit authorization based on a PJD, which does not make an official determination of jurisdictional aquatic resources; (2) the applicant has the option to request an AJD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an AJD could possibly result in less compensatory mitigation being required or different special conditions; (3) the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) undertaking any activity in reliance upon the subject permit authorization without requesting an AJD constitutes the applicant's acceptance of the use of the PJD; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a PJD constitutes agreement that all aquatic resources in the review area affected in any way by that activity will be treated as jurisdictional, and waives any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an AJD or a PJD, the JD will be processed as soon as practicable. Further, an AJD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331. If, during an administrative appeal, it becomes appropriate to make an official determination whether geographic jurisdiction exists over aquatic resources in the review area, or to provide an official delineation of jurisdictional aquatic resources in the review area, the Corps will provide an AJD to accomplish that result, as soon as is practicable. This PJD finds that there "*may be*" waters of the U.S. and/or that there "*may be*" navigable waters of the U.S. on the subject review area, and identifies all aquatic features in the review area that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for PJD (check all that apply)

Checked items should be included in subject file. Appropriately reference sources below where indicated for all checked items:

- ☒ Maps, plans, plots or plat submitted by or on behalf of the PJD requestor:
Map: Vicinity Map, Topo Map, Aerial Map, LiDAR Map.
- ☒ Data sheets prepared/submitted by or on behalf of the PJD requestor.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report. Rationale: _____.
- ☐ Data sheets prepared by the Corps: _____.
- ☐ Corps navigable waters' study: _____.
- ☐ U.S. Geological Survey Hydrologic Atlas: _____.
☐ USGS NHD data.
☐ USGS 8 and 12 digit HUC maps.
- ☒ U.S. Geological Survey map(s). Cite scale & quad name: 1:24,000 1997 Guilford, NC.
- ☒ Natural Resources Conservation Service Soil Survey. Citation: 1977 Guilford County Soil Survey.
- ☐ National wetlands inventory map(s). Cite name: _____.
- ☐ State/local wetland inventory map(s): _____.
- ☐ FEMA/FIRM maps: _____.
- ☐ 100-year Floodplain Elevation is: _____.(National Geodetic Vertical Datum of 1929)
- ☒ Photographs: ☒ Aerial (Name & Date): NCOneMap Orthoimagery.
or ☐ Other (Name & Date): _____.
- ☒ Previous determination(s). File no. and date of response letter: NCDOT Project I-5110/PTI Project SAW-2012-01547.
- ☐ Other information (please specify): _____.

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Signature and date of
Regulatory staff member
completing PJD

Signature and date of
person requesting PJD
(REQUIRED, unless obtaining
the signature is impracticable)¹

¹ Districts may establish timeframes for requestor to return signed PJD forms. If the requestor does not respond within the established time frame, the district may presume concurrence and no additional follow up is necessary prior to finalizing an action.

Waters_Name	State	Cowardin_Code	HGM_Code	Meas_Type	Amount	Units	Waters_Type	Latitude	Longitude	Local_Waterway
SA	NORTH CAROLINA	R4SB	RIVERINE	Linear	174	FOOT	DELINEATE	36.120637	-79.957066	Brush Creek
SB	NORTH CAROLINA	R5UB	RIVERINE	Linear	3680	FOOT	DELINEATE	36.118979	-79.952972	Brush Creek
SC	NORTH CAROLINA	R5UB	RIVERINE	Linear	93	FOOT	DELINEATE	36.120427	-79.956783	Brush Creek
SD	NORTH CAROLINA	R5UB	RIVERINE	Linear	556	FOOT	DELINEATE	36.119725	-79.953022	Brush Creek
SE	NORTH CAROLINA	R4SB	RIVERINE	Linear	50	FOOT	DELINEATE	36.117270	-79.952729	Brush Creek
SF-I	NORTH CAROLINA	R4SB	RIVERINE	Linear	368	FOOT	DELINEATE	36.117640	-79.952610	Brush Creek
SF-P	NORTH CAROLINA	R5UB	RIVERINE	Linear	242	FOOT	DELINEATE	36.118190	-79.951997	Brush Creek
SG-I	NORTH CAROLINA	R4SB	RIVERINE	Linear	110	FOOT	DELINEATE	36.118722	-79.948495	Brush Creek
SG-P	NORTH CAROLINA	R5UB	RIVERINE	Linear	182	FOOT	DELINEATE	36.117783	-79.948842	Brush Creek
SH	NORTH CAROLINA	R4SB	RIVERINE	Linear	741	FOOT	DELINEATE	36.117309	-79.946185	Brush Creek
SI	NORTH CAROLINA	R5UB	RIVERINE	Linear	307	FOOT	DELINEATE	36.106167	-79.954773	Brush Creek
SJ	NORTH CAROLINA	R5UB	RIVERINE	Linear	170	FOOT	DELINEATE	36.106048	-79.954411	Brush Creek
SK	NORTH CAROLINA	R4SB	RIVERINE	Linear	308	FOOT	DELINEATE	36.105949	-79.955130	Brush Creek
SL	NORTH CAROLINA	R4SB	RIVERINE	Linear	54	FOOT	DELINEATE	36.106011	-79.954999	Brush Creek
WA	NORTH CAROLINA	PEM	RIVERINE	Area	0.01	ACRE	DELINEATE	36.118959	-79.952731	Brush Creek
WB	NORTH CAROLINA	PEM	RIVERINE	Area	0.03	ACRE	DELINEATE	36.117846	-79.950395	Brush Creek
WC	NORTH CAROLINA	PFO	RIVERINE	Area	1.44	ACRE	DELINEATE	36.117568	-79.948952	Brush Creek
WD	NORTH CAROLINA	PFO	RIVERINE	Area	0.06	ACRE	DELINEATE	36.117697	-79.950021	Brush Creek
WE	NORTH CAROLINA	PFO	RIVERINE	Area	0.02	ACRE	DELINEATE	36.116353	-79.947076	Brush Creek
WF	NORTH CAROLINA	PFO	RIVERINE	Area	0.03	ACRE	DELINEATE	36.116587	-79.946916	Brush Creek
WG	NORTH CAROLINA	PFO	RIVERINE	Area	0.01	ACRE	DELINEATE	36.117157	-79.946342	Brush Creek
WH	NORTH CAROLINA	PFO	RIVERINE	Area	0.06	ACRE	DELINEATE	36.118106	-79.946022	Brush Creek
WI	NORTH CAROLINA	PFO	RIVERINE	Area	0.02	ACRE	DELINEATE	36.115012	-79.945672	Brush Creek
WJ	NORTH CAROLINA	PFO	RIVERINE	Area	0.14	ACRE	DELINEATE	36.105959	-79.956481	Brush Creek
WK	NORTH CAROLINA	PEM	RIVERINE	Area	0.24	ACRE	DELINEATE	36.105679	-79.955678	Brush Creek
WL	NORTH CAROLINA	PFO	RIVERINE	Area	0.08	ACRE	DELINEATE	36.105803	-79.954874	Brush Creek
WM	NORTH CAROLINA	PSS	RIVERINE	Area	0.05	ACRE	DELINEATE	36.106208	-79.954584	Brush Creek
WN	NORTH CAROLINA	PSS	RIVERINE	Area	0.22	ACRE	DELINEATE	36.107445	-79.955400	Brush Creek
BA	NORTH CAROLINA	U	DEPRESS	Area	0.22	ACRE	DELINEATE	36.125153	-79.958528	Brush Creek
BB	NORTH CAROLINA	U	DEPRESS	Area	0.06	ACRE	DELINEATE	36.119459	-79.951779	Brush Creek
BC	NORTH CAROLINA	U	DEPRESS	Area	0.03	ACRE	DELINEATE	36.118422	-79.950952	Brush Creek
BD	NORTH CAROLINA	U	DEPRESS	Area	0.20	ACRE	DELINEATE	36.118378	-79.950077	Brush Creek
BE	NORTH CAROLINA	U	DEPRESS	Area	0.01	ACRE	DELINEATE	36.117758	-79.949251	Brush Creek
BF	NORTH CAROLINA	U	DEPRESS	Area	0.05	ACRE	DELINEATE	36.119067	-79.948449	Brush Creek
BG	NORTH CAROLINA	U	DEPRESS	Area	0.03	ACRE	DELINEATE	36.119001	-79.947825	Brush Creek
BH	NORTH CAROLINA	U	DEPRESS	Area	0.05	ACRE	DELINEATE	36.118206	-79.948220	Brush Creek
BI	NORTH CAROLINA	U	DEPRESS	Area	0.04	ACRE	DELINEATE	36.117121	-79.947883	Brush Creek
BJ	NORTH CAROLINA	U	DEPRESS	Area	0.13	ACRE	DELINEATE	36.118534	-79.946190	Brush Creek
BK	NORTH CAROLINA	U	DEPRESS	Area	0.04	ACRE	DELINEATE	36.118250	-79.946378	Brush Creek
BL	NORTH CAROLINA	U	DEPRESS	Area	0.02	ACRE	DELINEATE	36.117163	-79.946783	Brush Creek
BM	NORTH CAROLINA	U	DEPRESS	Area	0.12	ACRE	DELINEATE	36.119766	-79.941758	Brush Creek
BN	NORTH CAROLINA	U	DEPRESS	Area	0.04	ACRE	DELINEATE	36.119972	-79.937434	Brush Creek
BO	NORTH CAROLINA	U	DEPRESS	Area	0.04	ACRE	DELINEATE	36.105650	-79.955818	Brush Creek