

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

October 17, 2017

Mr. David Edgar Bailey US Army Corps of Engineers 3331 Heritage Trade Drive, Suite 105 Wake Forest, North Carolina 27587

RE: Request for Preliminary Jurisdictional Determination

U-2412 A New Location and Improvements to Greensboro-High Point Road (SR 4121) Guilford County, North Carolina

Dear Mr. Bailey

AECOM has completed a delineation of streams and wetlands for the above referenced project. The attached information, including required forms, tables, and figures, is submitted for your review and determination of jurisdiction under the Clean Water Act (CWA).

As shown in Figure 1, the New Location and Improvements to Greensboro-High Point Road (SR 4121) (TIP U-2412A) is located in Guilford County, NC within the Cape Fear River Basin (USGS HUC 03030003). This delineation was performed in compliance with methodology set forth in the U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual (USACE 1987) and subsequent guidance including the Eastern Mountains and Piedmont Regional Supplement. Streams were assessed for jurisdiction under the Clean Water Act using field indications of ordinary high water mark and the NC Division of Water Quality (NCDWQ) Stream Identification Form Version 4.11.

We respectfully request your review of this information, so that a preliminary jurisdictional determination under the CWA may be obtained. If you have any questions, or need additional information, please contact me at maturchy@ncdot.gov at your convenience.

Telephone: (919) 707-6000

Fax: (919) 212-5785

Customer Service: 1-877-368-4968

Website: www.ncdot.gov

Sincerely,

Michael Turchy, Environmental Coordinator

NCDOT Environmental Analysis Unit

Michael Ch

Attachments:

- Jurisdictional Determination (JD) Request Form
- Preliminary Jurisdictional Determination Form
- Figure 1: Vicinity map
- Figure 2: USGS map
- Figure 3: Jurisdictional Features map
- Stream and Wetland Data Forms



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

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

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

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.

<u>NOTE TO CONSULTANTS AND AGENCIES:</u> 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.

<u>NOTE ON PART D - NCDOT REQUESTS:</u> 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.

A.	PARCEL INFORM Street Address:		12 Improvements to SR 4131		
	City, State:		point, NC		
	County:		ord County		
	Parcel Index Number				
В.	REQUESTOR INF	ORMAT	TION Michael Turchy		
	Mailing Address:		1598 Mail Service Center		
	Ç		Raleigh, NC 27699-1598		
	Telephone Number:		919-707-6157		
	Electronic Mail Add	lress:	maturchy@ncdot.gov		
	I am the curr	ent prope	erty owner.		
	I am an Auth	orized A	gent or Environmental Consultant ¹		
	Interested Buyer or Under Contract to Purchase				
	Other, please	e explain.	NCDOT Project Manager		
C.	PROPERTY OWN Name:	ER INFO	ORMATION ² N/A		
	Mailing Address:				
	Telephone Number:				
	Electronic Mail Add	lress:			

Page 2 Version: May 2017

Must provide completed Agent Authorization Form/Letter.
 Documentation of ownership also needs to be provided with request (copy of Deed, County GIS/Parcel/Tax Record).

PROPERTY ACCESS CERTIFICATION^{3,4} D.

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 onsite 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 Nan	ne
Capacity:	Owner Authorized Agent ⁵
Date	
Signature	
E. R	EASON FOR JD REQUEST: (Check as many as applicable)
	end to construct/develop a project or perform activities on this parcel which would be to avoid all aquatic resources.
I int	end to construct/develop a project or perform activities on this parcel which would be to avoid all jurisdictional aquatic resources under Corps authority.
I in	tend to construct/develop a project or perform activities on this parcel which may
-	uthorization from the Corps, and the JD would be used to avoid and minimize o jurisdictional aquatic resources and as an initial step in a future permitting
process.	o jurisdictional aquatic resources and as an initial step in a future permitting
	end to construct/develop a project or perform activities on this parcel which may
	uthorization from the Corps; this request is accompanied by my permit application
	D is to be used in the permitting process. tend to construct/develop a project or perform activities in a navigable water of the
	ch is included on the district Section 10 list and/or is subject to the ebb and flow of
the tide.	on is meraded on the district section to hist and of is subject to the cos and now of
□ A C	Corps JD is required in order obtain my local/state authorization.
	tend to contest jurisdiction over a particular aquatic resource and request the Corps
	that jurisdiction does/does not exist over the aquatic resource on the parcel.
	lieve that the site may be comprised entirely of dry land.
Oth	CI
For NCDO	Γ requests following the current NCDOT/USACE protocols, skip to Part E.

Page 3 Version: May 2017

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).

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

H. REQUESTS FROM CONSULTANTS

Project Coordinates (Decimal Degrees): Latitude: 35.986218

Longitude: <u>-79.941675</u>



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/

	Completed appropriate Jurisdictional Determination form
	• PJDs, please complete a Preliminary Jurisdictional Determination Form and include the
	Aquatic Resource Table
	 AJDs, please complete an <u>Approved Jurisdictional Determination Form⁸</u>
V	Vicinity Map
<u>✓</u>	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

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.

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/

Appendix 2 - PRELIMINARY JURISDICTIONAL DETERMINATION (PJD) FORM

BACKGROUND INFORMATION

- A. REPORT COMPLETION DATE FOR PJD:
- B. NAME AND ADDRESS OF PERSON REQUESTING PJD: Michael Turchy, NCDOT, 1598 Mail Service Center, Raleigh NC 27699
- C. DISTRICT OFFICE, FILE NAME, AND NUMBER: Raleigh Regional Office, Wilmington District
- 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: Highpoint
Center coordinates of site (lat/long in degree decimal format):
Lat.: 35.986218 Long.: -79.941675
Universal Transverse Mercator:
Name of nearest waterbody: Deep River

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 table				

- 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 "preconstruction 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)

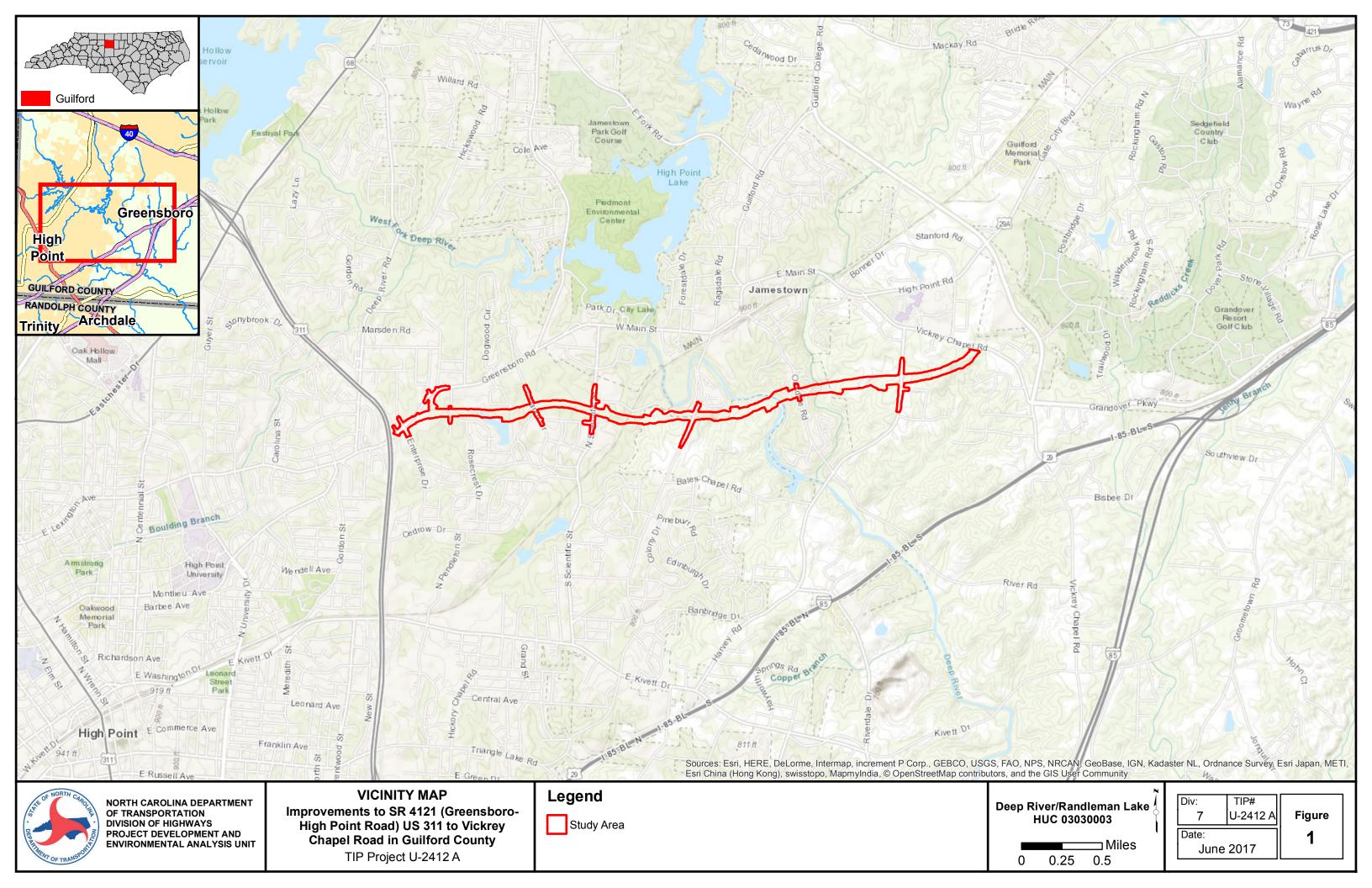
Checked items should be included in subject file. Appropriately reference sources below where indicated for all checked items: Maps, plans, plots or plat submitted by or on behalf of the PJD requestor: ■ Data sheets prepared/submitted by or on behalf of the PJD requestor. Office concurs with data sheets/delineation 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: Highpoint East, NC 1:24000 100-year Floodplain Elevation is: ______.(National Geodetic Vertical Datum of 1929) Photographs: Aerial (Name & Date): NC One Map Orthoimagery 2014 Other (Name & Date): ______ Previous determination(s). File no. and date of response letter: ID No. 200021876, Feb 20, 2002 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. Neihar El 10/16/2017 Signature and date of Signature and date of Regulatory staff member person requesting PJD

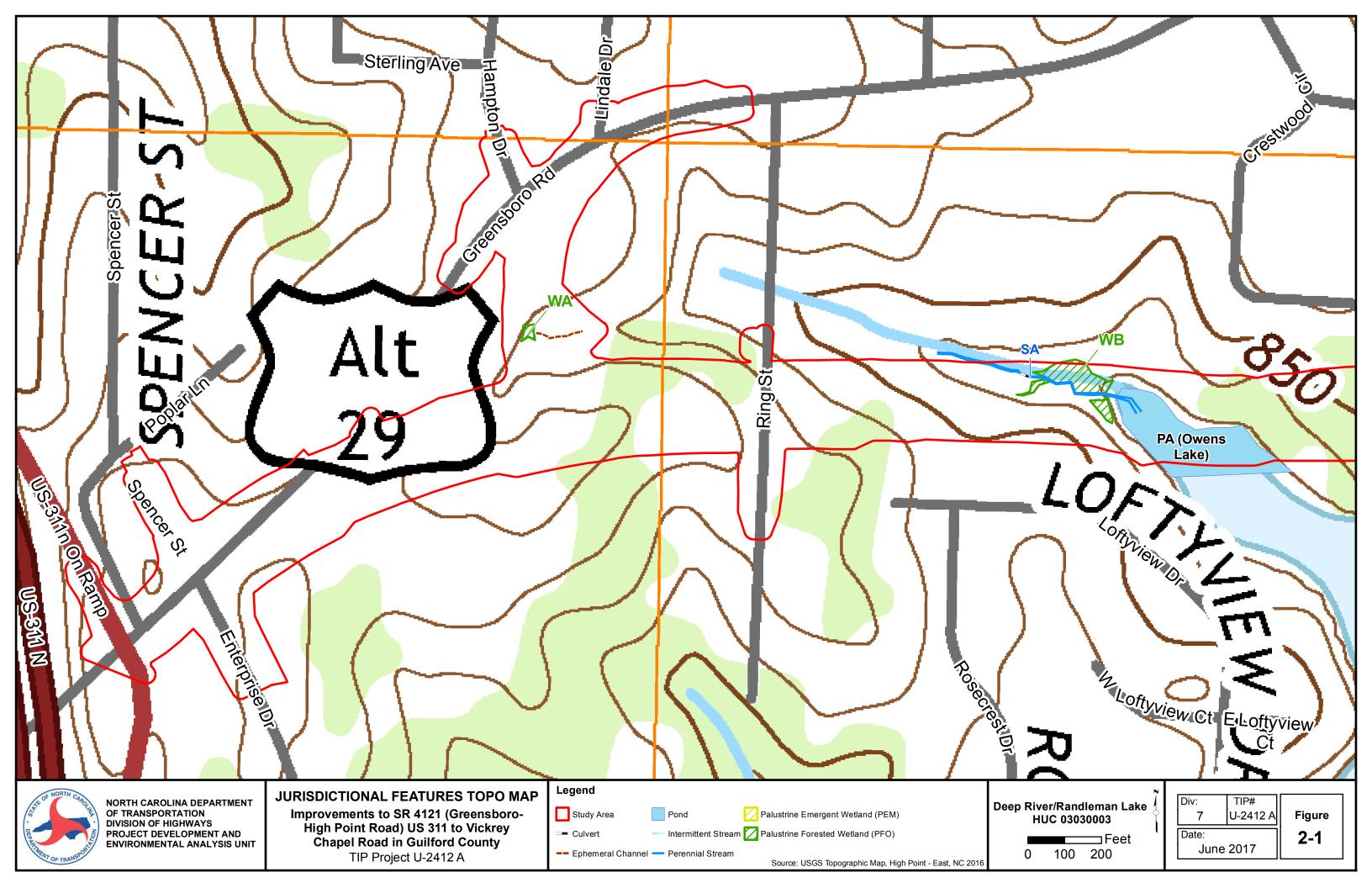
(REQUIRED, unless obtaining the signature is impracticable)¹

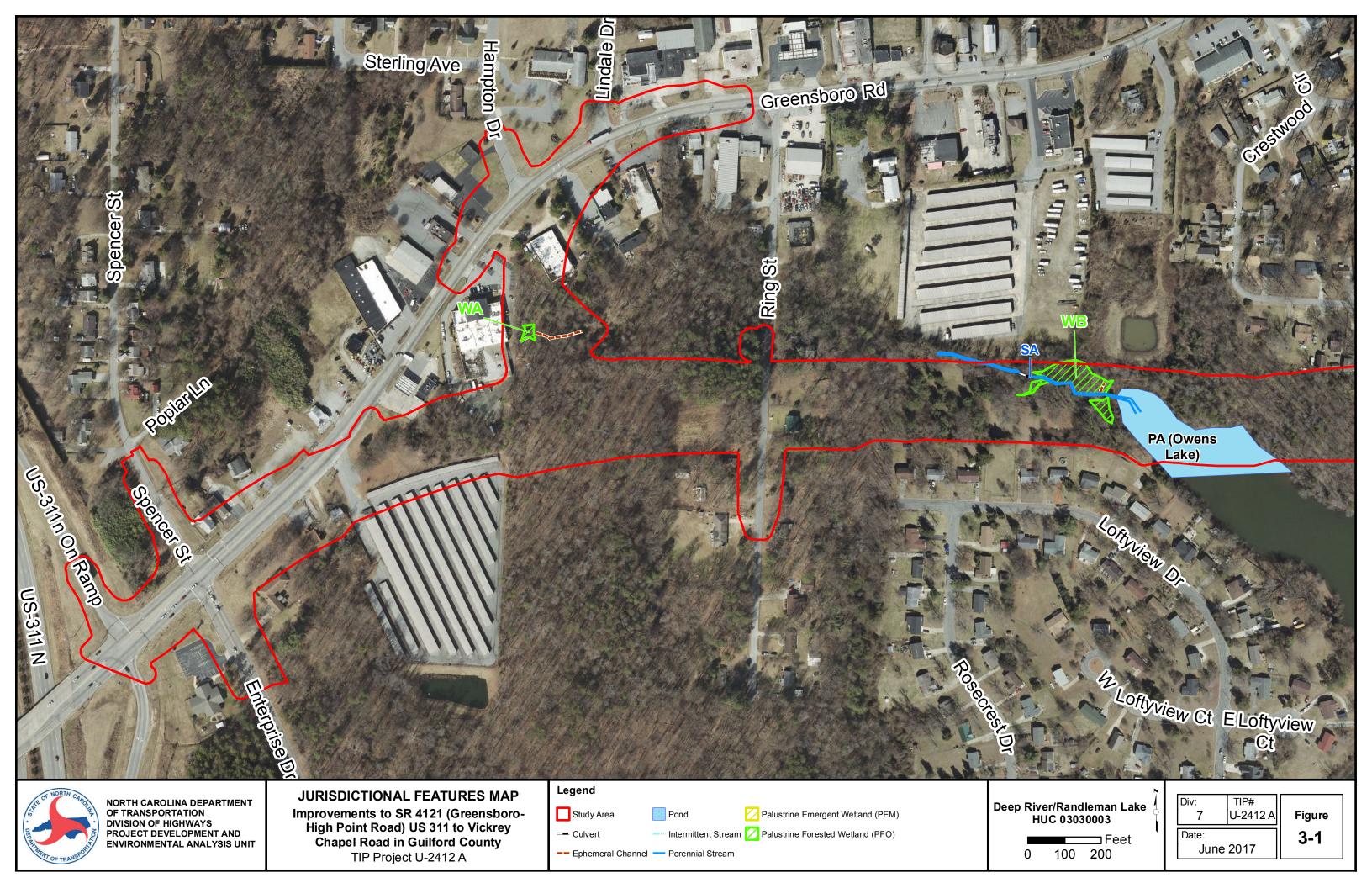
completing PJD

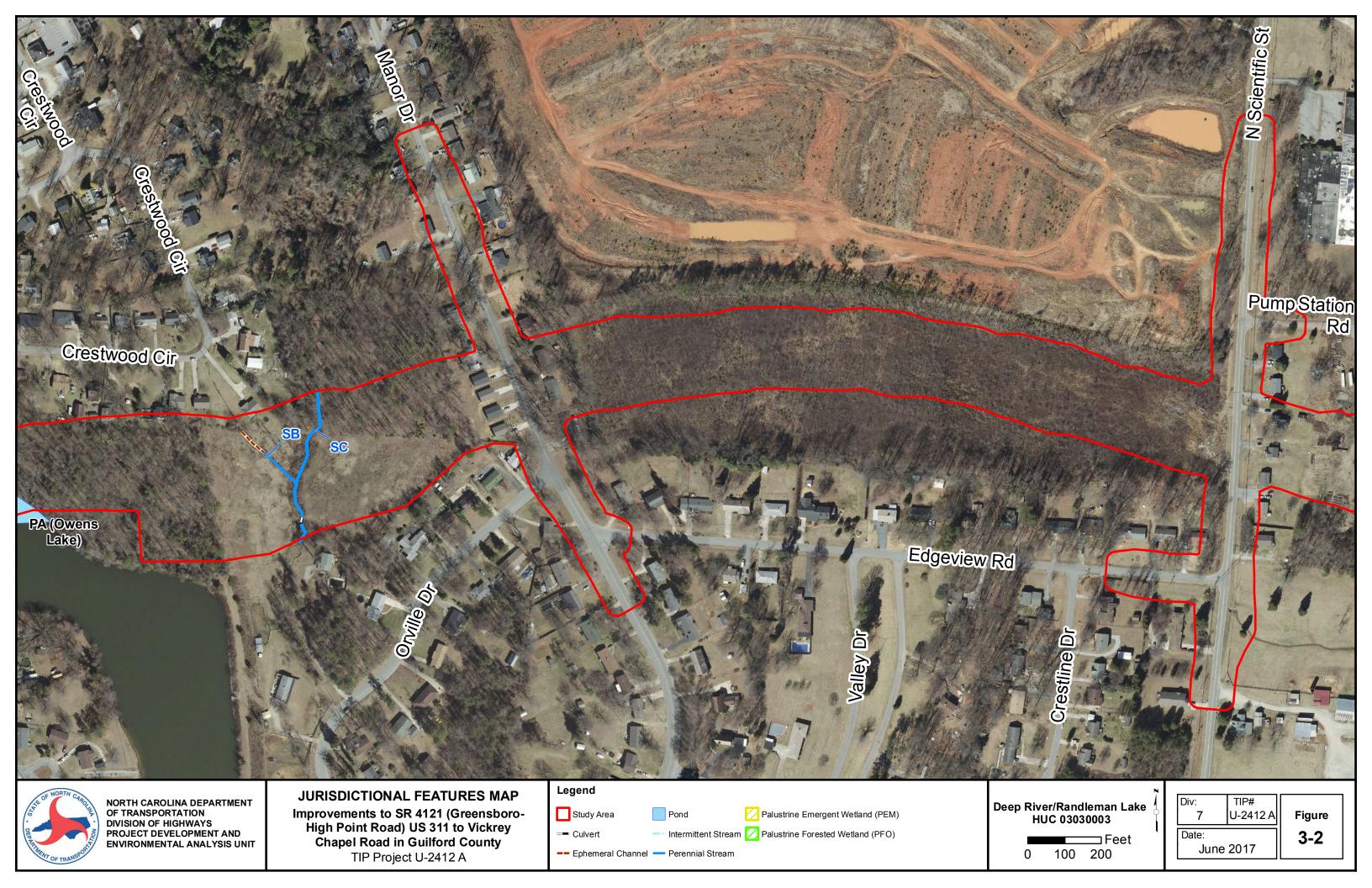
¹ Districts may establish timeframes for requestor to return signed PJD forms. If the requestor does not respond within the established time frame, the district may presume concurrence and no additional follow up is necessary prior to finalizing an action.

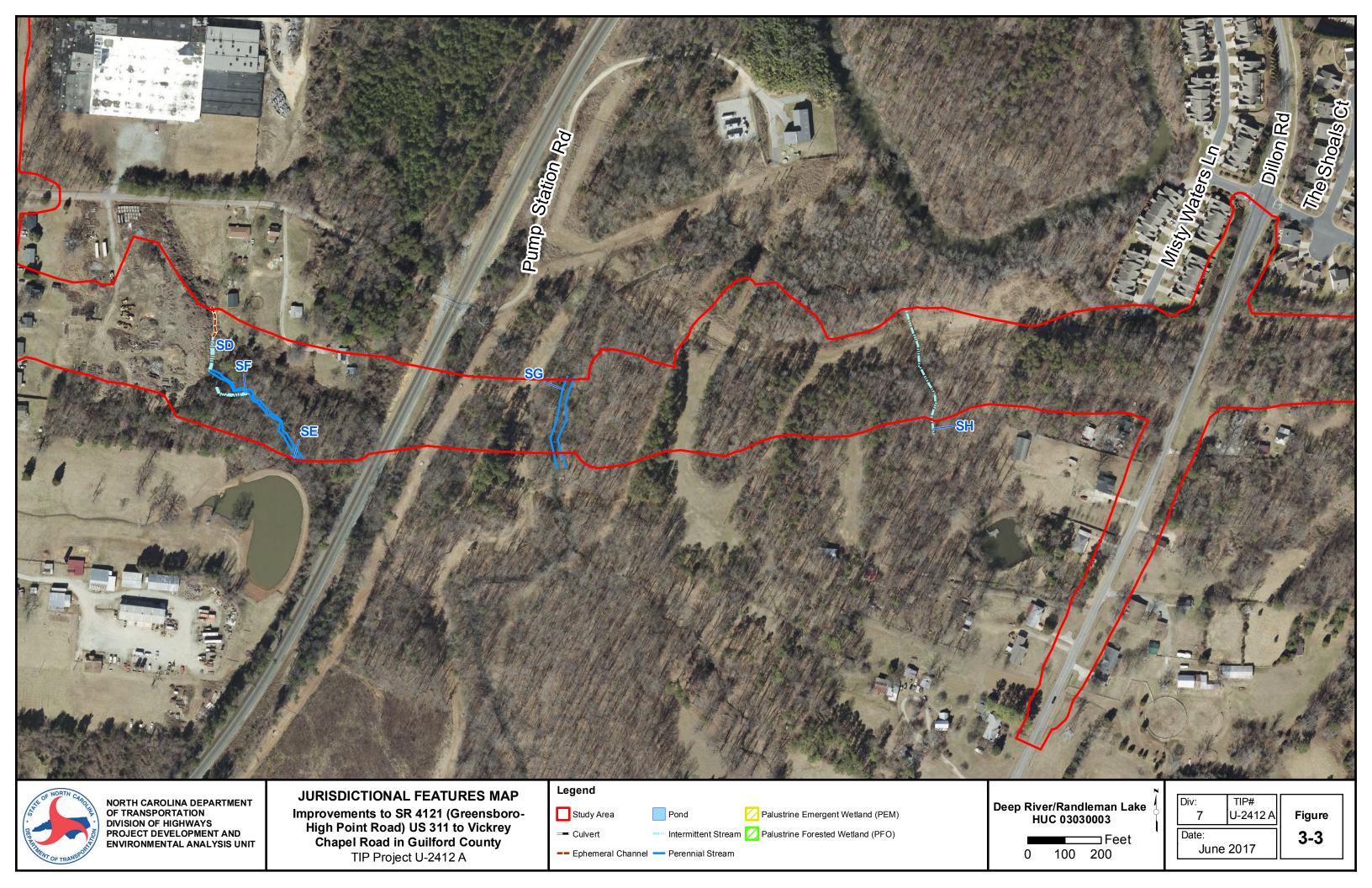
				Estimated amount of	
Site Number	Latitude	Longitude	Cowardin Class	aquatic resource in	Class of aquatic resource
				review area	
					Non-Section 10, non-
Deep River	35.986673	-79.93132	R5UB	421' long x 85' wide	wetland
					Non-Section 10, non-
Bull Run	35.987484	-79.92663	R2SB1	383' long x 25' wide	wetland
					Non-Section 10, non-
SA (perennial)	35.985122	-79.96409	R2UB2	464' long x 5' wide	wetland
					Non-Section 10, non-
SB (perennial)	35.985011	-79.96042	R2UB2	120' long x 5' wide	wetland
					Non-Section 10, non-
SC (perennial)	35.985221	-79.96017	R2UB2	420' long x 3' wide	wetland
					Non-Section 10, non-
SD (perennial)	35.984309	-79.94886	R2UB2	374' long x 10' wide	wetland
					Non-Section 10, non-
SD (intermittent)	35.984975	-79.94957	R2SB3	95' long x 5' wide	wetland
					Non-Section 10, non-
SE (perennial)	35.984197	-79.9488	R2UB2	29' long x 3' wide	wetland
67 (1				4041	Non-Section 10, non-
SF (intermittent)	35.984667	-79.94939	R2SB5	104' long x 4' wide	wetland
			501154		Non-Section 10, non-
SG (perennial)	35.984489	-79.94631	R2UB1	211' long x 25' wide	wetland
CII (into monitto mt)	05 00 4000	70.04000	D2CD2	0041	Non-Section 10, non-
SH (intermittent)	35.984893	-79.94302	R2SB3	321' long x 3' wide	wetland
CI (mananaial)	05 00 4000	70 00750	D211D2	4001 100	Non-Section 10, non-
SI (perennial)	35.984889	-79.93753	R2UB2	466' long x 5' wide	wetland Non-Section 10, non-
(CL/intermittent)	35.985134	-79.93745	R2SB4	FF! long v 2! wide	wetland
SJ (intermittent)	35.965134	-79.93745	K23B4	55' long x 3' wide	Non-Section 10, non-
SK (perennial)	35.987203	-79.92565	R2UB2	33' long x 9' wide	wetland
SK (perennal)	33.967203	-19.92505	NZUBZ	33 long x 9 wide	Non-Section 10, non-
SL (perennial)	35.988774	-79.9184	R2UB2	367' long x 10' wide	wetland
SE (perennar)	33.300774	73.3104	RZOBZ	307 long x 10 wide	Non-Section 10, non-
SM (perennial)	35.989714	-79.91746	R2UB2	293' long x 1' wide	wetland
WA	35.985584	-79.96958	PFO	0.02 acres	Wetland
WB	35.985219	-79.9649	PFO	0.3 acres	Wetland
WC	35.985435	-79.93704	PEM	0.7 acres	Wetland
WD			PEIVI		Wetland
	35.986841	-79.93143		0.8 acres	
WE	35.987859	-79.92049	PFO	0.1 acres	Wetland
WF	35.988518	-79.91883	PFO	0.2 acres	Wetland

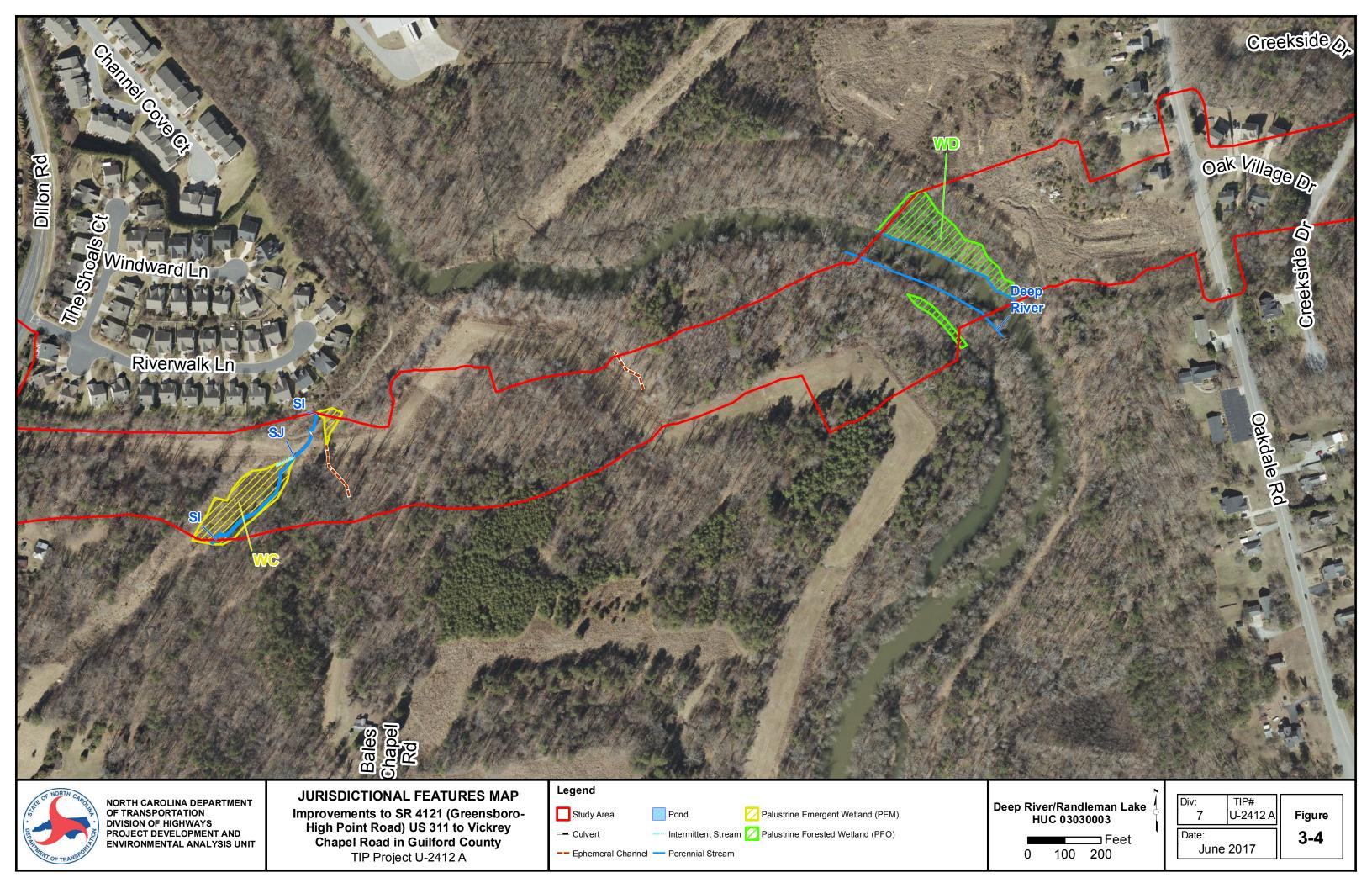


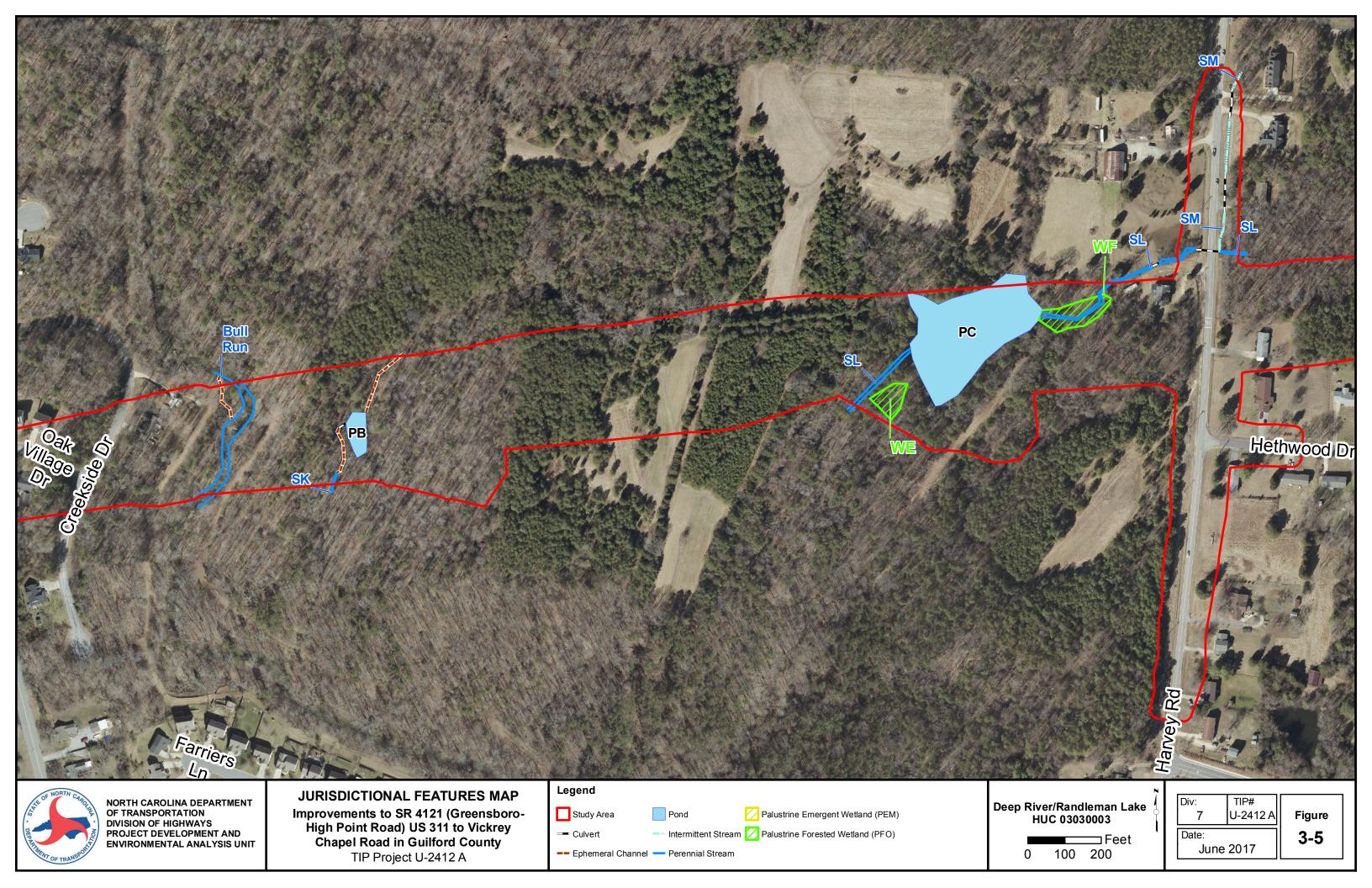


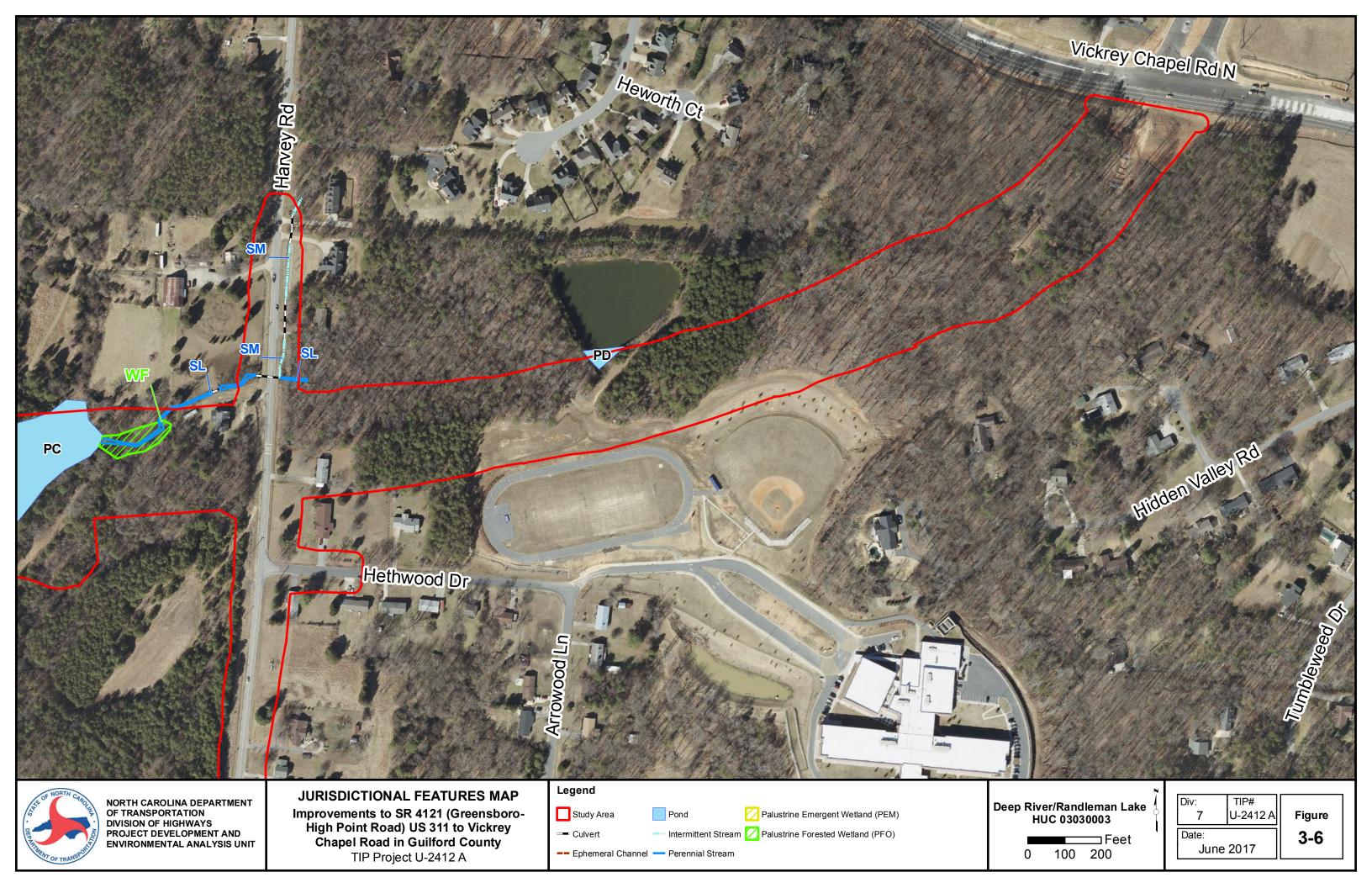


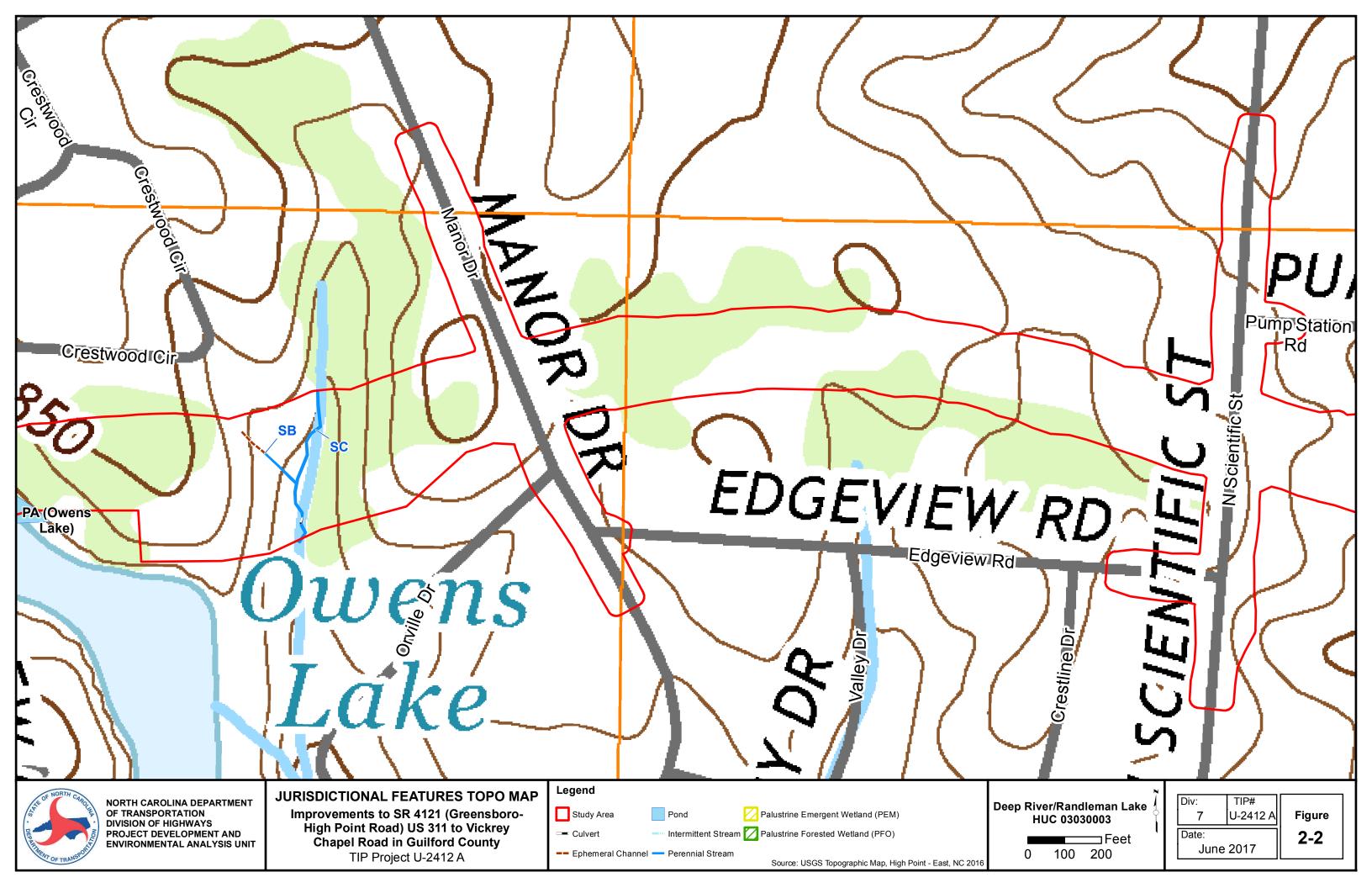


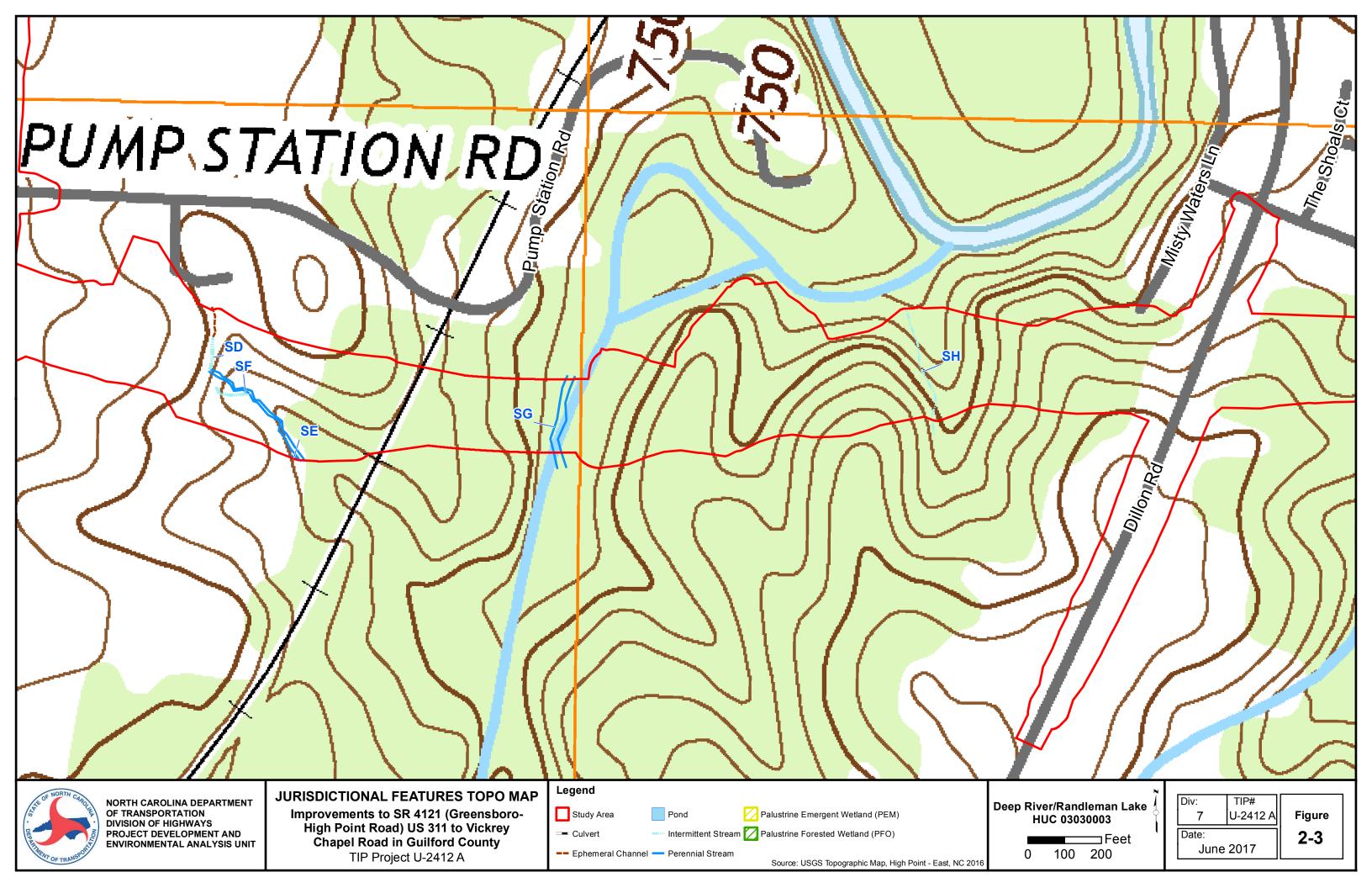


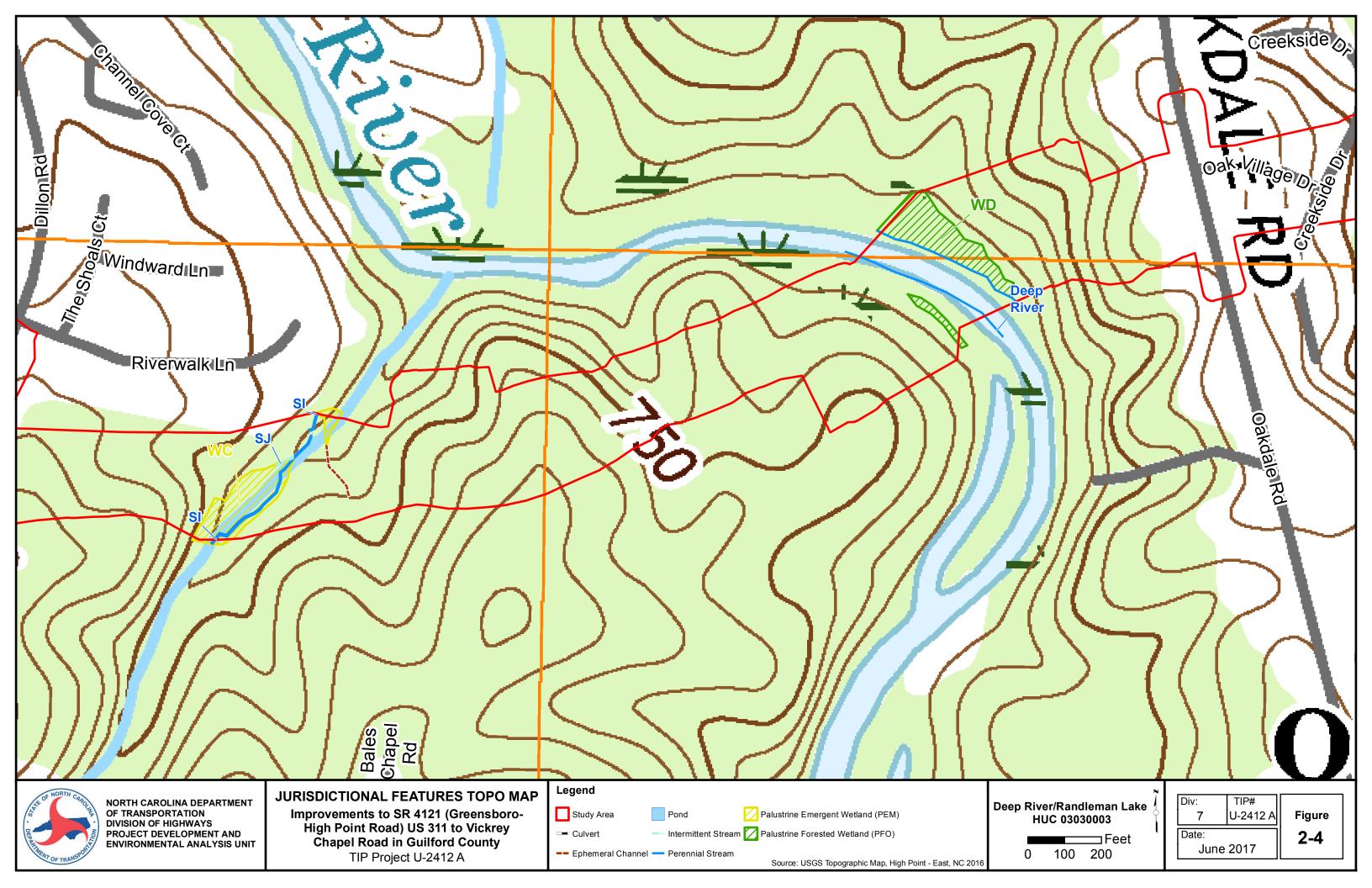


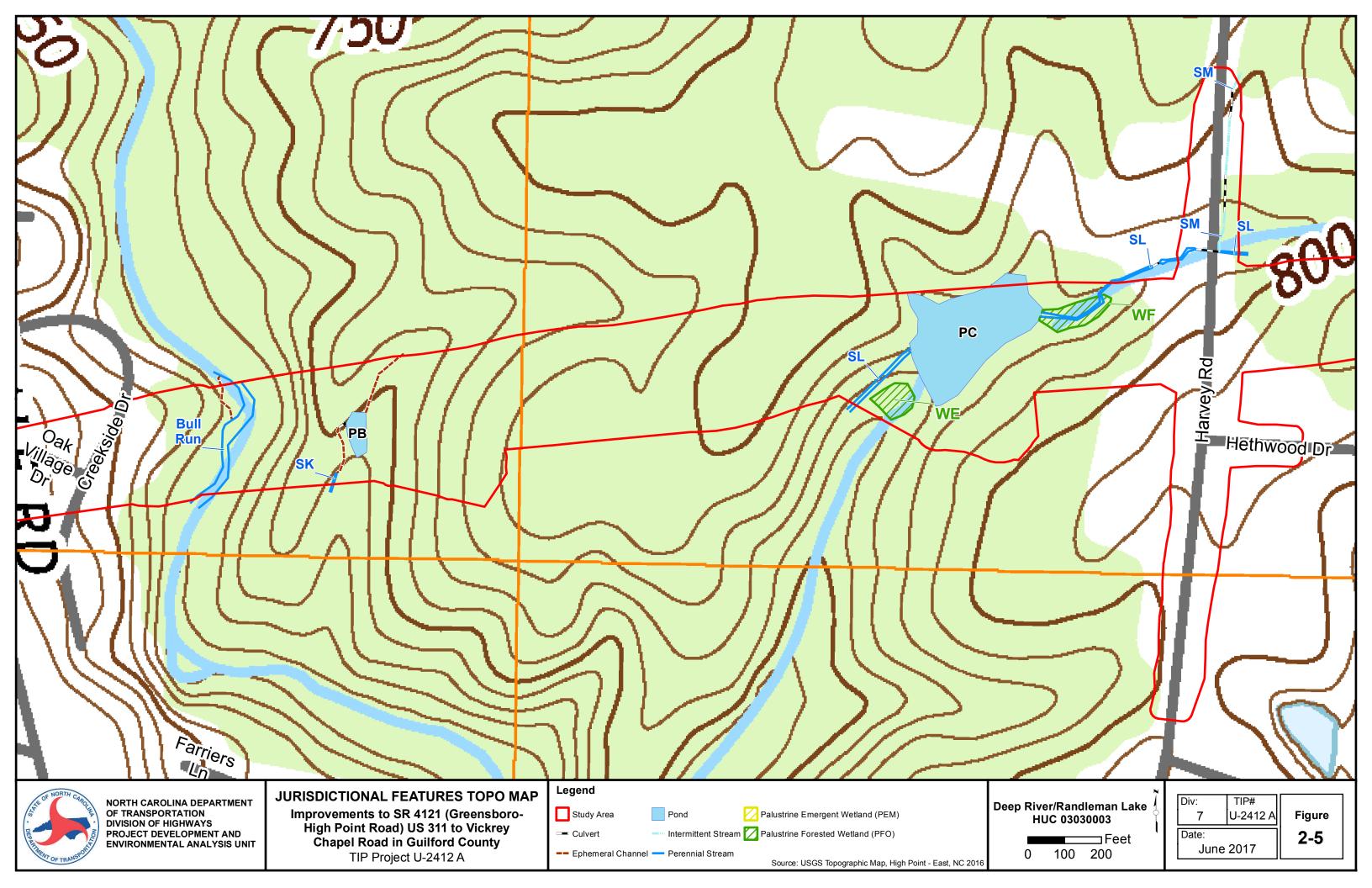


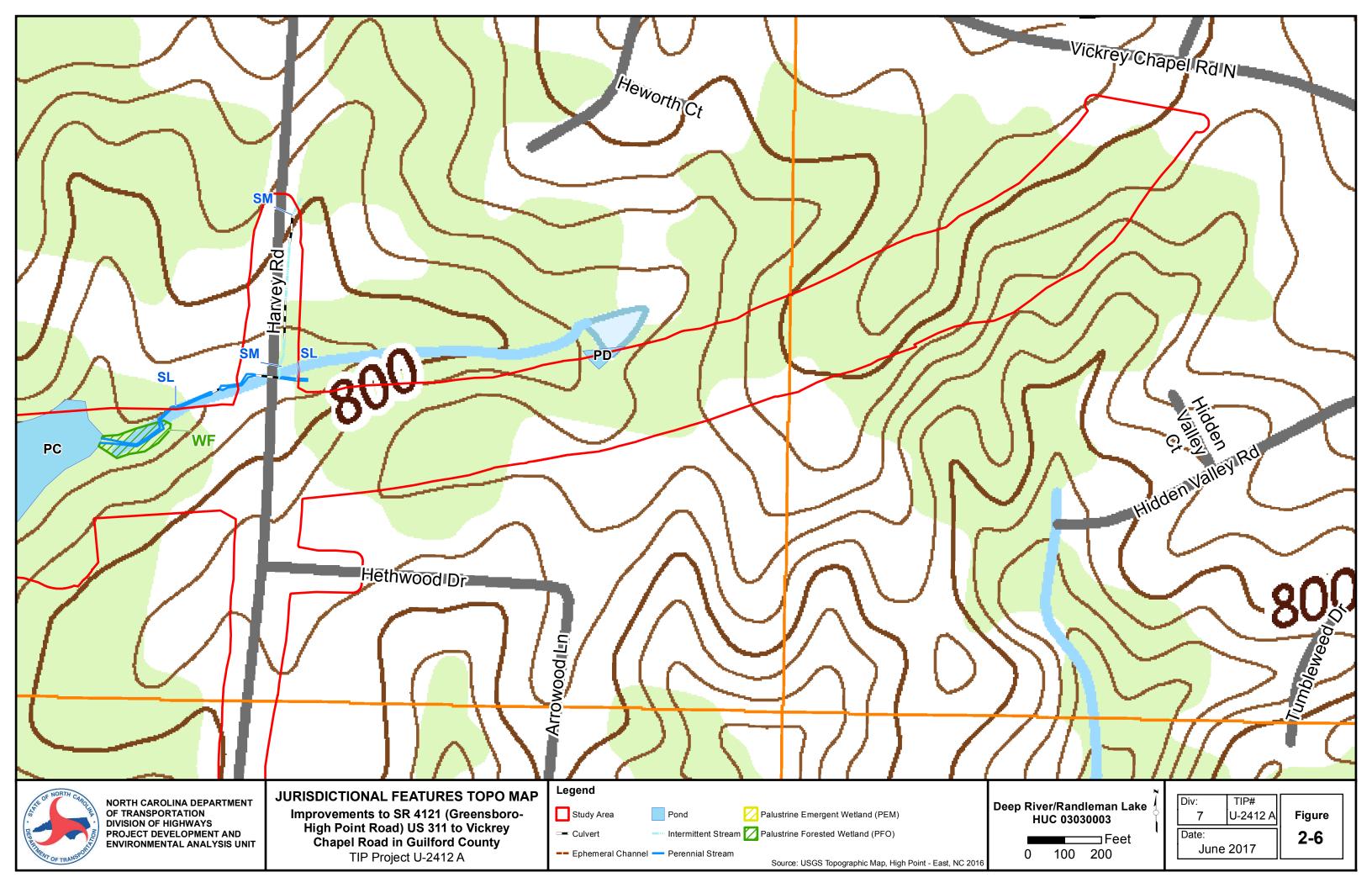












SA – UT to Deep River

Date: 4/11/2017	Project/Site: U-2412A Latitude: 35.985279						
Evaluator: R. Johnson/ AECOM	County: Guilford County Longitude: -79.964833			9.964833			
Total Points: Stream is at least intermittent if \geq 19 or perennial if \geq 30*	Stream Determination (circle one) Ephemeral Intermittent Perennial e.g. Quad Name: High Point Ea						
A. Geomorphology (Subtotal = 21)	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			
 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	N	o = 0	Yes = 3				
^a artificial ditches are not rated; see discussions in manual	ficial ditches are not rated; see discussions in manual						
B. Hydrology (Subtotal = 8.5)							
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?	N	o = 0	Yes = 3				
C. Biology (Subtotal = 4.25)	•	·					
18. Fibrous roots in streambed	3	2	1	0			
19. Rooted upland plants in streambed	3	2	1	0			
20. Macrobenthos (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; OBI	L = 1.5 Other =	0			
*perennial streams may also be identified using other methods	. See p. 35 of manua	al.					
Notes:							
Sketch:							

SB – UT to Deep River

Absent	weak 1 1 1 1 1 1 1 1 0.5 0.5	Congitude: -79 Other e.g. Quad Name: Moderate 2 2 2 2 2 2 1 1 Yes	Strong	
Absent	Weak	Moderate 2 2 2 2 2 2 1	Strong	
0 0 0 0 0 0 0 0 0 0 0	1 1 1 1 1 1 1 1 1 0.5	2 2 2 2 2 2 2 2 2 1	3 3 3 3 3 3 3 3 1.5 1.5	
0 0 0 0 0 0 0 0 0	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2 2 2 2 2 2 2 2 1	3 3 3 3 3 3 3 1.5	
0 0 0 0 0 0 0 0	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2 2 2 2 2 2 2 1	3 3 3 3 3 3 1.5	
0 0 0 0 0 0 0 0 0	1 1 1 1 1 1 0.5	2 2 2 2 2 1	3 3 3 3 1.5 1.5	
0 0 0 0 0 0 0 N	1 1 1 1 0.5 0.5	2 2 2 2 1	3 3 3 1.5 1.5	
0 0 0 0 0 0 No	1 1 1 1 0.5 0.5 0.5	2 2 2 1	3 3 3 1.5 1.5	
0 0 0 0 0 No	1 1 0.5 0.5	2 2 1	3 3 1.5 1.5	
0 0 0 0 No	0.5 0.5	2 1 1	3 1.5 1.5	
0 0 N	0.5	1	1.5 1.5	
0 N	0.5	1	1.5	
0			1	
0	o = 0	Yes	= 3	
	1	2	3	
0	1	2	3	
1.5	1	0.5	0	
0	0.5	1	1.5	
0	0.5	1	1.5	
N	o = 0	Yes = 3		
3	2	1	0	
3	2	1	0	
0	1	2	3	
0	1	2	3	
0	0.5	1	1.5	
0	0.5	1	1.5	
0	0.5	1	1.5	
0	0.5	1	1.5	
FACW = 0.75; OBL = 1.5 Other = 0				
ee p. 35 of manua	al.			
nnel and flows in	to SC.			
	0 N	0 0.5 No = 0 3 2 3 2 0 1 0 1 0 0.5 0 0.5 0 0.5 0 0.5 0 0.5	0 0.5 1 Yes No = 0 Yes 3 2 1 1 0 1 2 0 1 2 0 0.5 1 0 0.5 1 0 0.5 1 0 0.5 1 0 0.5 1 0 0.5 1 0 0.5 1 0 0.5 1 0 0.5 1 0 0.5 1 0 0.5 1 0 0.5 1 0 0.5 1 0 0.5 1	

SC – UT to Deep River

Guilford County Determination (circle oral Intermittent Perent Weak 1 1 1 1 1 1 1 1 0.5 No = 0	Moderate	79.960209 e: High Point East Strong 3 3 3 3 1.5 1.5 5 = 3
ral Intermittent Peren ent Weak 1 1 1 1 1 1 1 0.5 No = 0	Moderate	Strong
1 1 1 1 1 1 1 1 1 1 1 0.5 No = 0	2 2 2 2 2 2 2 2 2 1 1 1 Yes	3 3 3 3 3 3 3 1.5 1.5 1.5 3 3
1 1 1 1 1 1 1 1 1 1 1 0.5 0.5 No = 0	2 2 2 2 2 2 2 1 1 1 Yes	3 3 3 3 3 3 3 1.5 1.5 5 = 3
1 1 1 1 1 1 1 0.5 0.5 No = 0	2 2 2 2 2 2 1 1 1 Yes	3 3 3 3 3 1.5 1.5 5 = 3
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2 2 2 2 1 1 1 Yes	3 3 3 3 1.5 1.5 5 = 3
1 1 1 1 0.5 No = 0 1 1 5 1 0.5	2 2 2 1 1 1 Yes 2 2 2 2 0.5	3 3 3 1.5 1.5 5 = 3
1 1 0.5 0.5 No = 0 1 1 5 1 0.5	2 2 2 1 1 1 Yes	3 3 1.5 1.5 5 = 3
1 0.5 0.5 No = 0	2 2 1 1 1 Yes	3 3 1.5 1.5 5 = 3
1 0.5 0.5 No = 0	2 1 1 Yes	3 1.5 1.5 5 = 3
0.5 0.5 No = 0	1 1 Yes	1.5 1.5 s = 3
0.5 No = 0	1 1 Yes	1.5 1.5 s = 3
0.5 No = 0	2 2 0.5	3 3
No = 0 1 1 5 1 0.5	2 2 0.5	3 3
1 1 5 1 0.5	2 2 0.5	3 3
5 1 0.5	2 0.5	3
5 1 0.5	2 0.5	3
5 1 0.5	0.5	
0.5		0
	1	1.5
0.5	1	1.5
No = 0	Yes	s = 3
2	1	0
2	1	0
1	2	3
<u> 1</u>	2	3
0.5	1	1.5
0.5	1	1.5
0.5	1	1.5
_	1	1.5
FACW = 0.75	; OBL = 1.5 Other =	: 0
		<u> </u>
	2 2 1 1 0.5 0.5 0.5	2 1 2 1 2 1 1 2 1 2 1 1 2 1 1 2 1 0.5 1 0.5 1 0.5 1 0.5 1 FACW = 0.75; OBL = 1.5 Other =

SD-int – UT to Deep River

Date: 4/12/2017	Project/Site: U-2412A Latitude: 35.984975					
Evaluator: R. Johnson/ AECOM	County: Guilford	County: Guilford County Longitude: -79.949553				
Total Points: Stream is at least intermittent 21.5 if ≥ 19 or perennial if $\geq 30^*$	Stream Determination (circle one) Ephemeral Intermittent Perennial e.g. Quad Name: High			: High Point East		
A. Geomorphology (Subtotal =7)	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		
In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3		
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	N	o = 0	Yes	= 3		
^a artificial ditches are not rated; see discussions in manual						
B. Hydrology (Subtotal =8)						
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?	N	o = 0	Yes = 3			
C. Biology (Subtotal = <u>6.5</u>)						
18. Fibrous roots in streambed	3	2	1	0		
19. Rooted upland plants in streambed	3	2	1	0		
20. Macrobenthos (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; OE	3L = 1.5 Other = 0	0		
*perennial streams may also be identified using other method	ls. See p. 35 of manua	al.				
Notes: Upper intermittent portion of SD, at the base of a	steep man made hil	l. Stream is deeply inci	sed and there are lo	ts of obtructions		
in the channel such as old farm equipment and tir	es.					
Sketch:						

SD-per – UT to Deep River

	Project/Site: U-2412A Latitude: 35.984634					
Pr: R. Johnson/ AECOM	County: Guilford County Longitude: -79.949189					
	Stream Determination (circle one) Ephemeral Intermittent Perennial Other e.g. Quad Name: High Po			High Point East		
morphology (Subtotal = 19)	Absent	Weak	Moderate	Strong		
nuity of channel bed and bank	0	1	2	3		
sity of channel along thalweg	0	1	2	3		
nnel structure: ex. riffle-pool, step-pool, pool sequence	0	1	2	3		
e size of stream substrate	0	1	2	3		
/relict floodplain	0	1	2	3		
itional bars or benches	0	1	2	3		
t alluvial deposits	0	1	2	3		
cuts	0	1	2	3		
control	0	0.5	1	1.5		
ral valley	0	0.5	1	1.5		
nd or greater order channel	No	o = 0	Yes	= 3		
ditches are not rated; see discussions in manual	•					
B. Hydrology (Subtotal =8)						
ence of Baseflow	0	1	2	3		
oxidizing bacteria	0	1	2	3		
litter	1.5	1	0.5	0		
ment on plants or debris	0	0.5	1	1.5		
nic debris lines or piles	0	0.5	1	1.5		
pased evidence of high water table?	No.	0 = 0	Yes = 3			
ogy (Subtotal = <u>7.5</u>)						
us roots in streambed	3	2	1	0		
ed upland plants in streambed	3	2	1	0		
obenthos (note diversity and abundance)	0	1	2	3		
tic Mollusks	0	1	2	3		
	0	0.5	1	1.5		
fish	0	0.5	1	1.5		
nibians	0	0.5	1	1.5		
9	0	0.5	1	1.5		
and plants in streambed	FACW = 0.75; OBL = 1.5 Other = 0					
al streams may also be identified using other methods.	See p. 35 of manua	al.				
Lower perennial portion of SD, stream is moderately	incised.					
and plants in streambed	See p. 35 of manua	FACW = 0.75; OB	L =			

SE – UT to Deep River

Date: 4/12/2017	Project/Site: U-2412A Latitude: 35.984203				
valuator: R. Johnson/ AECOM	County: Guilford County Longitude: -79.948799				
Total Points: Stream is at least intermittent 28 i≥ 19 or perennial if ≥ 30*	Stream Determi Ephemeral Inte	ination (circle one) ermittent Perennial	Other e.g. Quad Name: High Point E		
A. Geomorphology (Subtotal = 12)	Absent	Weak	Moderate	Strong	
a. Continuity of channel bed and bank	0	1	2	3	
. Sinuosity of channel along thalweg	0	1	2	3	
. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3	
. Particle size of stream substrate	0	1	2	3	
. Active/relict floodplain	0	1	2	3	
. Depositional bars or benches	0	1	2	3	
. Recent alluvial deposits	0	1	2	3	
. Headcuts	0	1	2	3	
. Grade control	0	0.5	1	1.5	
0. Natural valley	0	0.5	1	1.5	
Second or greater order channel	No	o = 0	Yes = 3		
artificial ditches are not rated; see discussions in manual					
B. Hydrology (Subtotal = <u>10</u>)					
2. Presence of Baseflow	0	1	2	3	
Iron oxidizing bacteria	0	1	2	3	
4. Leaf litter	1.5	1	0.5	0	
5. Sediment on plants or debris	0	0.5	1	1.5	
6. Organic debris lines or piles	0	0.5	1	1.5	
7. Soil-based evidence of high water table?	No	o = 0	Yes	= 3	
C. Biology (Subtotal = <u>6</u>)					
8. Fibrous roots in streambed	3	2	1	0	
Rooted upland plants in streambed	3	2	1	0	
Macrobenthos (note diversity and abundance)	0	1	2	3	
Aquatic Mollusks	0	1	2	3	
2. Fish	0	0.5	1	1.5	
3. Crayfish	0	0.5	1	1.5	
4. Amphibians	0	0.5	1	1.5	
5. Algae		0.5	1	1.5	
Wetland plants in streambed		FACW = 0.75; OB	3L = 1.5 Other = 0)	
	ds See n 35 of manua	al.			
*perennial streams may also be identified using other metho	•				
*perennial streams may also be identified using other metho lotes: Very short stream that appears to have an under top of the ridge. This stream flows into SD.	•	th a hill, possibly from	the pond outside th	ne study area on	

SF – UT to Deep River

Date: 4/12/2017	Project/Site: U-2412A Latitude: 35.984665						
Evaluator: R. Johnson/ AECOM	County: Guilford	d County	Longitude: -79	Longitude: -79.949363			
Total Points:	Stream Determination (circle one)		Other				
Stream is at least intermittent 19 if \geq 19 or perennial if \geq 30*		ermittent Perennial	e.g. Quad Name:	: High Point East			
A. Geomorphology (Subtotal = 5.5)	Absent	Weak	Moderate	Strong			
1 ^{a.} Continuity of channel bed and bank	0	1	2	3			
Sinuosity of channel along thalweg	0	1	2	3			
In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3			
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	N	o = 0	Yes = 3				
^a artificial ditches are not rated; see discussions in manual							
B. Hydrology (Subtotal = 7.5)							
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			= 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. Macrobenthos (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	2 25 (FACW = 0.75; OB	L = 1.5 Other = 0)]			
*perennial streams may also be identified using other methods	· ·						
Notes: SF has almost no flow and appears to be almost a s	tagnant pool of irol	n oxidizing bacteria. SF	tiows underground	and then into SD.			
Sketch:							

SH – UT to Deep River

Date: 4/12/2017	Project/Site: U-	Project/Site: U-2412A County: Guilford County		Latitude: 35.984941 Longitude: -79.943049	
Evaluator: R. Johnson/ AECOM	County: Guilfor				
Total Points: Stream is at least intermittent if ≥ 19 or perennial if $\geq 30^*$	Stream Determination (circle one) Ephemeral Intermittent Perennial		Other e.g. Quad Name: High Point East		
A. Geomorphology (Subtotal = 13.5)	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	
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	N	o = 0	Yes	= 3	
^a artificial ditches are not rated; see discussions in manual					
B. Hydrology (Subtotal =0)					
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?	N	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. Macrobenthos (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; OI	BL = 1.5 Other = 0)	
*perennial streams may also be identified using other method	ods. See p. 35 of manu	al.			
Notes: Intermittent stream that flows into Deep River.	Middle section of stre	am was not restored p	roperly when sewer	easement was	
installed.					
Ckataba					
Sketch:					

SI – UT to Deep River

Date: 4/18/2017	Project/Site: U-2412A County: Guilford County		Latitude: 35.985239 Longitude: -79.937275		
Evaluator: R. Johnson/ AECOM					
Total Points: Stream is at least intermittent 33 if ≥ 19 or perennial if ≥ 30*	Stream Determination (circle one) Ephemeral Intermittent Perennial		Other e.g. Quad Name: High Point Eas		
A. Geomorphology (Subtotal = 16.5)	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	
In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3	
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	o = 0	Yes = 3		
^a artificial ditches are not rated; see discussions in manual	<u> </u>				
B. Hydrology (Subtotal = 9.5					
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			= 3	
C. Biology (Subtotal =7)					
18. Fibrous roots in streambed	3	2	1	0	
19. Rooted upland plants in streambed	3	2	1	0	
20. Macrobenthos (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; OBI	L = 1.5 Other =		
*perennial streams may also be identified using other metho	ds. See p. 35 of manua		-	<u> </u>	
perennial streams may also be identified using other metho					

SJ – UT to Deep River

Date: 4/18/2017	Project/Site: U-	2412A	Latitude: 35.98	5132	
Evaluator: R. Johnson/ AECOM	County: Guilford County		Longitude: -79.937455		
Total Points:	Stream Determ	ination (circle one)	Other	Other	
Stream is at least intermittent 14.5 if \geq 19 or perennial if \geq 30*	Ephemeral Intermittent Perennial		e.g. Quad Name: High Point East		
A. Geomorphology (Subtotal = 6	Absent	Weak	Moderate	Strong	
1ª. Continuity of channel bed and bank	0	1	2	3	
Sinuosity of channel along thalweg	0	1	2	3	
In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3	
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	N	o = 0	Yes	= 3	
a artificial ditches are not rated; see discussions in manual					
B. Hydrology (Subtotal = 6)					
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?	N	o = 0	Yes	= 3	
C. Biology (Subtotal = 2.5					
18. Fibrous roots in streambed	3	2	1	0	
19. Rooted upland plants in streambed	3	2	1	0	
20. Macrobenthos (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; OB	L = 1.5 Other = 0	<u>) </u>	
*perennial streams may also be identified using other methods.	<u> </u>				
Notes: SJ is a small intermittent stream that flows through	wetland WC in a n	nanaged transmission I	ine right-of-way.		
Sketch:					

SK – UT to Bull Run

Date: 4/20/2017	Project/Site: U-2412A		Latitude: 35.987207	
Evaluator: R. Johnson/ AECOM	County: Guilford County		Longitude: -79.925664	
Total Points: Stream is at least intermittent 36.5 f ≥ 19 or perennial if ≥ 30*		ination (circle one) ermittent Perennial	Other e.g. Quad Name: High Point Eas	
A. Geomorphology (Subtotal = 20.5)	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
3. 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	N	o = 0	Yes	= 3
artificial ditches are not rated; see discussions in manual				
B. Hydrology (Subtotal = <u>8.5</u>)				
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 = 7.5)				
18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macrobenthos (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
,		0.5	1	1.5
24. Amphibians	0	0.5		
24. Amphibians 25. Algae	0	0.5	11	1.5
24. Amphibians 25. Algae 26. Wetland plants in streambed	0	0.5 FACW = 0.75; OBI		1.5
24. Amphibians 25. Algae	0	0.5 FACW = 0.75; OBI		1.5

SL-downstream – UT to Bull Run

Date: 4/20/2017	Project/Site: U-2412A		Latitude: 35.988075		
Evaluator: R. Johnson/ AECOM	County: Guilford	d County	Longitude: -79.920559		
		ination (circle one) ermittent Perennial	Other e.g. Quad Name: High Point East		
A. Geomorphology (Subtotal = <u>18</u>)	Absent	Weak	Moderate	Strong	
a. Continuity of channel bed and bank	0	1	2	3	
2. Sinuosity of channel along thalweg	0	1	2	3	
B. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3	
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	
B. Headcuts	0	1	2	3	
). Grade control	0	0.5	1	1.5	
0. Natural valley	0	0.5	1	1.5	
Second or greater order channel	No	o = 0	Yes		
artificial ditches are not rated; see discussions in manual					
3. Hydrology (Subtotal =6)					
2. Presence of Baseflow	0	1	2	3	
3. Iron oxidizing bacteria	0	1	2	3	
4. Leaf litter	1.5	1	0.5	0	
5. Sediment on plants or debris	0	0.5	1	1.5	
6. Organic debris lines or piles	0	0.5	1	1.5	
7. Soil-based evidence of high water table?	No = 0		Yes = 3		
C. Biology (Subtotal = <u>6.5</u>)					
8. Fibrous roots in streambed	3	2	1	0	
9. Rooted upland plants in streambed	3	2	1	0	
20. Macrobenthos (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; OB	L = 1.5 Other = 0	<u>.</u>	
*perennial streams may also be identified using other methods.	See p. 35 of manua	al.			
Notes: The downstream portion of SL is deeply incised and I	ittle flow was obs	erved. SL and pond PC	have been impacte	d by a beaver	
dam, which recently washed out.				-	
Sketch:					

SL-upstream – UT to Bull Run

NC DWQ Stream Identification Form Version 4.11

Date: 4/20/2017	Project/Site: U-2	412A	Latitude: 35.9	88783
Evaluator: R. Johnson/ AECOM	County: Guilford	County	Longitude: -79	9.918387
Fotal Points: Stream is at least intermittent 26.5 f ≥ 19 or perennial if ≥ 30*		nation (circle one) rmittent Perennial	Other e.g. Quad Name	: High Point East
A. Geomorphology (Subtotal = <u>14</u>)	Absent	Weak	Moderate	Strong
a. Continuity of channel bed and bank	0	1	2	3
2. Sinuosity of channel along thalweg	0	1	2	3
B. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3
. 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
B. Headcuts	0	1	2	3
9. Grade control	0	0.5	1	1.5
0. Natural valley	0	0.5	1	1.5
Second or greater order channel	No	= 0	Yes	= 3
artificial ditches are not rated; see discussions in manual				
3. Hydrology (Subtotal = <u>9</u>)				_
2. Presence of Baseflow	0	1	2	3
3. Iron oxidizing bacteria	0	1	2	3
4. Leaf litter	1.5	1	0.5	0
5. Sediment on plants or debris	0	0.5	1	1.5
6. Organic debris lines or piles	0	0.5	1	1.5
7. Soil-based evidence of high water table?	No	= 0	Yes	= 3
C. Biology (Subtotal = 3.5)				
8. Fibrous roots in streambed	3	2	1	0
9. Rooted upland plants in streambed	3	2	1	0
20. Macrobenthos (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
*	s. See p. 35 of manual			
*perennial streams may also be identified using other method		nto a nasture with hors	ses. The horses ha	ave markedly
*Perennial streams may also be identified using other method Notes: The upstream portion of SL flows from pond PD, u	<u>ınder Harvey Rd and i</u>	into a pasture with hors		are manneary

SM – UT to Bull Run

NC DWQ Stream Identification Form Version 4.11

Date: 4/18/2017	Project/Site: ∪-	2412A	Latitude: 35.98	39131
Evaluator: R. Johnson/ AECOM	County: Guilford	d County	Longitude: -79	0.917501
Total Points: Stream is at least intermittent 19 if ≥ 19 or perennial if $\geq 30^*$		ination (circle one) ermittent Perennial		: High Point East
A. Geomorphology (Subtotal = 7.5)	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
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	N	o = 0	Yes	= 3
^a artificial ditches are not rated; see discussions in manual				
B. Hydrology (Subtotal =8)				
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?	N	o = 0	Yes	= 3
C. Biology (Subtotal = 3.5				
18. Fibrous roots in streambed	3	2	1	0
19. Rooted upland plants in streambed	3	2	1	0
20. Macrobenthos (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; O	BL = 1.5 Other = 0	0
*perennial streams may also be identified using other methods	. See p. 35 of manu	al.		
Notes: SM is an intermittent stream on a roadside (Harvey		nanipulated. Some po	rtions have large am	ounts of granite
cobble and vegetation where it flows in front of a r	esidence.			
Sketch:				

INST	CE AID	J #.	NCDWR #:
			ach a sketch of the assessment area and photographs. Attach a copy of the USGS 7.5-minute topographic
	_		the location of the stream reach under evaluation. If multiple stream reaches will be evaluated on the same
	•	,	number all reaches on the attached map, and include a separate form for each reach. See the NC SAM User
			criptions and explanations of requested information. Record in the "Notes/Sketch" section if any supplementary
			formed. See the NC SAM User Manual for examples of additional measurements that may be relevant.
			TRESSORS AFFECTING THE ASSESSMENT AREA (do not need to be within the assessment area).
		/ SITE INFO	
	•	ame (if any) t/owner nam	
	ounty:	(Owner nam	Guilford 6. Nearest named water body
	iver Ba	sin:	Cape Fear on USGS 7.5-minute quad: Deep River
			imal degrees, at lower end of assessment reach): 35.985279; -79.964833
STR	EAM IN	NFORMATIC	N: (depth and width can be approximations)
			n attached map): SA 10. Length of assessment reach evaluated (feet): 591
		•	bed (in riffle, if present) to top of bank (feet):
			of bank (feet): 5 13. Is assessment reach a swamp stream?
	Eature	RATING INFO	
		M Zone:	Mountains (M) Piedmont (P) Inner Coastal Plain (I) Outer Coastal Plain (O)
		200.	and seem to the se
16. E	Estimat	ed geomorp	
	•	shape (skip	
		Marsh Strea	
		hed size: (sl	
	IOI IIO	dal Marsh St	really
ADD	OTION/	AL INFORM	ATION:
			siderations evaluated? (a) Yes (b) No If Yes, check all that appy to the assessment area.
		tion 10 wate	
1	Esse	ential Fish H	abitat Primary Nursery Area High Quality Waters/Outstanding Resource Waters
		licly owned	
	•	dromous fisl	
,		sumentea pre species:	sence of a federal and/or state listed protected species within the assessment area.
ī		· -	cal Habitat (list species):
		•	n information/supplementary measurements included in "Notes/Sketch" section or attached?
			in information/supplementary incastricties included in Trotes/exector section of attached:
1			
		nel Water – a	ssessment reach metric (skip for Size 1 streams and Tidal Marsh Streams)
	Chann	nel Water – a Water thro	
(Chann	nel Water – a Water thro No flow, wa	ssessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) ughout assessment reach.
1	Chann A B C C	water – a Water thro No flow, wa No water ir	ssessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) aghout assessment reach. ter in pools only. assessment reach.
2.	Chann A B C C C C C C C C C C C C C C C C C C	Mater – a Water thro No flow, wa No water in	ssessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) aghout assessment reach. ter in pools only. assessment reach. Restriction – assessment reach metric
2.	Chann A B C C	water thro No flow, wa No water ir nce of Flow At least 10	ssessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) aghout assessment reach. ter in pools only. assessment reach.
2.	Chann A B C C C C C C C C C C C C C C C C C C	water thro No flow, wa No water in No e of Flow At least 10 point of obs	ssessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) Ighout assessment reach. Iter in pools only. assessment reach. Restriction – assessment reach metric of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the
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2.	Chann	Water - a Water thro No flow, wa No water in nce of Flow At least 10 point of ob- the assess Not A re Pattern -	ssessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) ighout assessment reach. iter in pools only. assessment reach. Restriction – assessment reach metric for assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the structing flow or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within ment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates). assessment reach metric
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2. 3.	Chann A B C C Evider A B Featur A B B Featur B B B B B B	Water – a Water Howard Water Howard No flow, wa No water in nce of Flow At least 10 point of ob- the assess Not A Te Pattern – A majority Not A.	ssessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) Inghout assessment reach. Iter in pools only. Identify assessment reach. Restriction – assessment reach metric Identify of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the structing flow or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within ment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates). In assessment reach metric In the assessment reach metric of the assessment reach has altered pattern (examples: straightening, modification above or below culvert).
2. 3.	Chann A B C C Evider A B Featur A B Featur	Mater – a Water How No flow, wa No water in noce of Flow At least 10 point of ob- the assess Not A re Pattern – A majority Not A. re Longitudi	ssessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) ighout assessment reach. iter in pools only. assessment reach. Restriction – assessment reach metric of of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the structing flow or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within ment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates). assessment reach metric of the assessment reach has altered pattern (examples: straightening, modification above or below culvert).
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2. 3. 4.	Chann A B C Evider A B Featur A B Featur A B Featur A B Featur	Mater — a Water Howard Water Howard No water in No water in No water in No eof Flow At least 10 point of ob- the assess Not A The Pattern — A majority Not A. The Longitudi Majority of over widen these distured	In section of the assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) Iter in pools only.
2. 3. 4. 55.	Chann A B C Evider A B Featur A B Featur A B Featur A B Featur B Foatur B	Mater — a Water thro No flow, wa No water in nce of Flow At least 10 point of ob- the assess Not A re Pattern — A majority Not A. re Longitudi Majority of over widen those distu	ssessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) Inghout assessment reach. Iter in pools only. Iter in pool on pools
2. 3. 4. 5.	Chann A B C Evider A B Featur A B Featur A B Foatur A B Foatur C A Signs Consider	Mater — a Water thro No flow, wa No water in Mater of Flow At least 10 point of ob- the assess Not A The Pattern — A majority Not A. The Longitudi Majority of over widen these distu Not A of Active In der only cui	In section of the assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) Iter in pools only.
2. 3. 4. 5.	Chann A B C Evider A B Featur A B Featur A B Foatur A B Foatur C A Signs Consider	nel Water – a Water thro No flow, wa No water in nce of Flow At least 10 point of ob- the assess Not A re Pattern – A majority Not A. re Longitudi Majority of over widen these distu Not A of Active In der only cui bank failure,	In the control of the assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) In pools only. In pools only
3. 4. 5.	Chann A B C Evider A B Featur A B Featur A B Signs Consider	water – a Water har water in No flow, wa No water in No e of Flow At least 10 point of ob- the assess Not A re Pattern – A majority Not A. re Longitudi Majority of over widen these distu Not A of Active In der only cur bank failure, < 10% of c	Iter in pools only. assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) assessment reach. Restriction – assessment reach metric of of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the structing flow or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within ment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates). assessment reach metric of the assessment reach has altered pattern (examples: straightening, modification above or below culvert). and Profile – assessment reach metric assessment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming, and, active aggradation, dredging, and excavation where appropriate channel profile has not reformed from any of chances). stability – assessment reach metric rent instability, not past events from which the stream has currently recovered. Examples of instability include active channel down-cutting (head-cut), active widening, and artificial hardening (such as concrete, gabion, rip-rap).
2. 3. 4. 5.	Chann A B C Evider A B Featur A B B Featur A B Signs Consider C A	Mater – a Water harmonic of Flow At least 10 point of ob- the assess Not A The Pattern – A majority of over widen these distu Not A of Active In der only cur bank failure, < 10% of c 10 to 25%	In the sessessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) In pools only. In assessment reach. Restriction – assessment reach metric In of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the structing flow or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within ment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates). In assessment reach metric In the assessment reach has altered pattern (examples: straightening, modification above or below culvert). In all Profile – assessment reach metric assessment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming, ng, active aggradation, dredging, and excavation where appropriate channel profile has not reformed from any of chances). In a sessment reach metric rent instability, not past events from which the stream has currently recovered. Examples of instability include active channel down-cutting (head-cut), active widening, and artificial hardening (such as concrete, gabion, rip-rap).
2. 3. 4. 5.	Chann A B C Evider A B Featur A B Signs Consider A B C C C C C C C C C C C C C C C C C C	nel Water – a Water thro No flow, wa No water ir nce of Flow At least 10 point of ob- the assess Not A re Pattern – A majority Not A. re Longitudi Majority of over widen these distu Not A of Active In der only cur bank failure, < 10% of c 10 to 25% > 25% of c	In the sessessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) In pools only. assessment reach. Restriction – assessment reach metric In grant of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the structing flow or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within ment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates). In assessment reach metric In the assessment reach has altered pattern (examples: straightening, modification above or below culvert). In all Profile – assessment reach metric assessment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming, and, active aggradation, dredging, and excavation where appropriate channel profile has not reformed from any of bances). In a sessessment reach metric rent instability, not past events from which the stream has currently recovered. Examples of instability include active channel down-cutting (head-cut), active widening, and artificial hardening (such as concrete, gabion, rip-rap). In annel unstable of channel unstable in annel unstable in a stranger and a stranger an
2. 3. 4. 5. 6.	Chann A B C Evider A B Featur A B Signs Consider C C C C C C C C C C C C C C C C C C C	water – a Water har water in Water show water in May be show a tree of Flow At least 10 point of ob- the assess Not A The Pattern – A majority Not A. The Longitudi Majority of over widen these distu Not A of Active In der only cur bank failure, < 10% of c 10 to 25% > 25% of c Inside Area I	In the sessessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) In pools only. In assessment reach. Restriction — assessment reach metric In of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the structing flow or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within ment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates). In assessment reach metric In the assessment reach has altered pattern (examples: straightening, modification above or below culvert). In all Profile — assessment reach metric In assessment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming, ng, active aggradation, dredging, and excavation where appropriate channel profile has not reformed from any of chances). In a sessesment reach metric In a sessesment r
2. 3. 4. 5. 6.	Chann A B C Evider A B Featur A B Signs Consider C C C C C C C C C C C C C C C C C C C	water – a Water har water in Water show water in May be show a tree of Flow At least 10 point of ob- the assess Not A The Pattern – A majority Not A. The Longitudi Majority of over widen these distu Not A of Active In der only cur bank failure, < 10% of c 10 to 25% > 25% of c Inside Area I	In the sessessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) In pools only. In assessment reach. Restriction – assessment reach metric In assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the structing flow or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within ment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates). In assessment reach metric In the assessment reach has altered pattern (examples: straightening, modification above or below culvert). In all Profile – assessment reach metric assessment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming, and, active aggradation, dredging, and excavation where appropriate channel profile has not reformed from any of the chances). In a stability – assessment reach metric rent instability, not past events from which the stream has currently recovered. Examples of instability include active channel down-cutting (head-cut), active widening, and artificial hardening (such as concrete, gabion, rip-rap). In annel unstable of channel unstable interaction – streamside area metric
2. 3. 4. 55. 66.	Chann A B C Evider A B Featur A B Signs Consider CA B CStrean Consider	water – a Water har water in No flow, wa No water in No flow, wa No water in No e of Flow At least 10 point of ob- the assess Not A The Pattern – A majority of over widen these distu Not A of Active In der only cur bank failure, < 10% of c 10 to 25% > 25% of c mside Area I der for the I RB	In the sessessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) In pools only. In assessment reach. Restriction – assessment reach metric In assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the structing flow or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within ment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates). In assessment reach metric In the assessment reach has altered pattern (examples: straightening, modification above or below culvert). In all Profile – assessment reach metric assessment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming, and, active aggradation, dredging, and excavation where appropriate channel profile has not reformed from any of the chances). In a stability – assessment reach metric rent instability, not past events from which the stream has currently recovered. Examples of instability include active channel down-cutting (head-cut), active widening, and artificial hardening (such as concrete, gabion, rip-rap). In annel unstable of channel unstable interaction – streamside area metric
2. 3. 4. 55. 66.	Chann A B C Evider A B Featur A B Signs Consid active A B C Strean Consid	water – a Water har water in No water in No water in nee of Flow At least 10 point of obthe assess Not A re Pattern – A majority Not A. re Longitudi Majority of over widen these disturbed A company curbank failure, < 10% of c 10 to 25% > 25% of c mside Area I der for the I RB RB A Litt B Mo	ssessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) Ighout assessment reach. Restriction – assessment reach metric So of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the structing flow or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within ment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates). Assessment reach metric of the assessment reach has altered pattern (examples: straightening, modification above or below culvert). In all Profile – assessment reach metric assessment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming, ng, active aggradation, dredging, and excavation where appropriate channel profile has not reformed from any of chances). In all profile – assessment reach metric assessment reach metric rent instability – assessment reach metric rent instability – assessment reach metric rent instability, not past events from which the stream has currently recovered. Examples of instability include active channel down-cutting (head-cut), active widening, and artificial hardening (such as concrete, gabion, rip-rap). In all profile – assessment reach metric rent instability, not past events from which the stream has currently recovered. Examples of instability include active channel down-cutting (head-cut), active widening, and artificial hardening (such as concrete, gabion, rip-rap). In all profile – assessment reach metric rent instabile area metric rent instabile area metric rent instable and the Right Bank (RB). The rent instabile rent reach metric reference interaction derate evidence of conditions that adversely affect reference interaction derate evidence of conditions (examples: berms, levees, down-cutting, aggradation, dredging) that adversely affect
2. 3. 4. 55. 66.	Chann A B C Evider A B Featur A B Signs Consid active A B C Strean Consid	Water – a Water to No flow, wa No water in nce of Flow At least 10 point of ob- the assess Not A re Pattern – A majority of over widen those disturbed the failure, 	ssessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) Ighout assessment reach. Restriction – assessment reach metric If of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the structing flow or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within ment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates). Ressessment reach metric If the assessment reach has altered pattern (examples: straightening, modification above or below culvert). In all Profile – assessment reach metric assessment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming, ng, active aggradation, dredging, and excavation where appropriate channel profile has not reformed from any of bances). In all Profile – assessment reach metric assessment reach metric rent instability, not past events from which the stream has currently recovered. Examples of instability include active channel down-cutting (head-cut), active widening, and artificial hardening (such as concrete, gabion, rip-rap). In all profile – assessment reach metric examples of instability include active channel down-cutting (head-cut), active widening, and artificial hardening (such as concrete, gabion, rip-rap). In all profile – assessment reach metric examples of channel unstable annel unstable annel unstable are metric eff Bank (LB) and the Right Bank (RB).

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 <u>and</u> causing a water quality problem Odor (not including natural sulfide odors)
	E Current published or collected data indicating degraded water quality in the assessment reach. Cite source in the "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 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 <u>and</u> no rainfall or rainfall not exceeding 1 inch within the last 48 hours B Drought conditions <u>and</u> 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 ত পু [F 5% oysters or other natural hard bottoms
	A Multiple aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats) ▼
	▼B Multiple sticks and/or leaf packs and/or emergent jo ボラー H Low-tide refugia (pools) vegetation
	vegetation ਤੁੰਦੂ ਨੂੰ □I Sand bottom ▼C Multiple snags and logs (including lap trees) ਉੱਲੂ □J 5% vertical bank along the marsh
	D 5% undercut banks and/or root mats and/or roots
	in banks extend to the normal wetted perimeter
	E Little or no habitat

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 riffles 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
	
	○ ○ ● ○ ○ Gravel (2 – 64 mm)
	○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○
	○
	O O Artificial (rip-rap, concrete, etc.)
	11d. Tyes 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 Size 4 Coastal Plain streams and Tidal Marsh Streams) 12a. (7) Yes No Was an in-stream aquatic life assessment performed as described in the User Manual?
	12a. C 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. O No Water O Other:
	12b. Tes 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)

			Beetl	es (inclu-	ding water pennies)
			Cado	lisfly larv	ae (Trichoptera [T])
				n clam (C	Corbicula)
			Crus	tacean (is	sopod/amphipod/crayfish/shrimp)
			□ Dam	selfly and	l dragonfly larvae
			Dipte	erans (tru	e flies)
		Πİ	□ Mayf	ly larvae	(Ephemeroptera [E])
				,	alderfly, fishfly, dobsonfly larvae)
					uito larvae
		•			(Gambusia) or mud minnows (Umbra pygmaea)
		•			is (not Corbicula)
			Othe		o (not considua)
					radpoles
		_:			taupoies
			Snail		(8)
					e (Plecoptera [P])
				id larvae	
			Worr	ns/leeche	35
13	Stros	meida	Aros Gr	ound Si	rface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types)
13.					LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and
		nd runof		nt Bank (22) and the right bank (12). Consider delage capacity man regard to be in order and
	LB	RB	٠.		
	© A		Little	or no alt	pration to water storage capacity ever a majority of the streamside area
					eration to water storage capacity over a majority of the streamside area
	-	O B			ration to water storage capacity over a majority of the streamside area
	C C	O C			ion to water storage capacity over a majority of the streamside area (examples include: ditches, fill,
			soil,	compacti	on, livestock disturbance, buildings, man-made levees, drainage pipes)
14	Stres	amsida	Area W	ater Stor	age – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types)
17.					LB) and the Right Bank (RB) of the streamside area.
	LB	RB	i tile Le	it Dalik (Ed) and the right bank (rd) of the streamside area.
			Maia		page ide and with depressions able to pand water > C inches does
		O A		•	eamside area with depressions able to pond water ≥ 6 inches deep
		B		•	eamside area with depressions able to pond water 3 to 6 inches deep
		O C	Majo	rity of str	eamside area with depressions able to pond water < 3 inches deep
15	Wetl	and Pro	sanca -	- stream	side area metric (skip for Tidal Marsh Streams)
10.					LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the
				-	sessment reach.
	LB	RB	u penin	ster or as	Sessifient reach.
	© Y		۸ ۱۰	مام مرملام،	properties the extremely property
			Are v	velianus	present in the streamside area?
	I IN	O N			
16.	Base	flow C	ontribut	ors – as	sessment reach metric (skip for size 4 streams and Tidal Marsh Streams)
					n the assessment reach or within view of <u>and</u> draining to the assessment reach.
	▼ A				ps (jurisdictional discharges)
	□В				stention basins; do not include sediment basins or dry detention basins)
	:				
				-	es some flow during low-flow periods within assessment area (beaver dam, bottom-release dam)
					page or sweating (iron oxidizing bacteria in water indicates seepage)
					oil reduced (dig through deposited sediment if present)
	□F	None	of the a	above	
17.	Base	flow D	etractor	s – asse	ssment area metric (skip for Tidal Marsh Streams)
			at apply		,
	ΠA				al water withdrawals from the assessment reach (includes areas excavated for pump installation)
	ГВ				ng flow during low flow periods affecting the assessment reach (ex: watertight dam, sediment deposit)
					impervious surface for watershed)
					am-side area has been modified resulting in accelerated drainage into the assessment reach
					ocated to valley edge
	F	None	e of the a	above	
18.	Shac	ling – a	ssessm	ent reac	h metric (skip for Tidal Marsh Streams)
		_			eaf-on" condition.
	(a) A				propriate for stream category (may include gaps associated with natural processes)
	O B				scattered trees)
	O C	_			ne or largely absent
	UC	Sile	ani Snau	ing is goi	e or largery absent
19.	Buffe	er Widtl	n – strea	amside a	rea metric (skip for Tidal Marsh Streams)
					and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top
			-	rst breal	
		tated	Woo		
	LB	RB	LB	RB	
					> 100 feet wide or extends to the edge of the watershed
		_		_	≥ 100-feet wide <u>or</u> extends to the edge of the watershed
	○ B				From 50 to < 100-feet wide
	@ C	Ō C		Ō C	From 30 to < 50-feet wide
	O D	O D		O D	From 10 to < 30-feet wide
	\bigcirc E	O E	O E	O E	< 10-feet wide or no trees
20	D	Dr C4	turo -	troop!	do area metric (ckin for Tidal March Streams)
∠0.					de area metric (skip for Tidal Marsh Streams)
				лк (ГВ) 8	and right bank (RB) for Metric 19 ("Vegetated" Buffer Width).
	LB	R	>		

	♠ A♠ B♠ C♠ C♠ D♠ C♠ E♠ C	B Non-mature woody vegetation <u>or</u> modified vegetation structure C Herbaceous vegetation with or without a strip of trees < 10 feet wide D Maintained shrubs
21.	Check all ap is within 30 fe If none of the Abuts LB RB	B B B B Maintained turf C C C C C Pasture (no livestock)/commercial horticulture
22.		A Medium to high stem density B Low stem density
23.		A The total length of buffer breaks is < 25 percent. B The total length of buffer breaks is between 25 and 50 percent.
24.	Evaluate the	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 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 or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees.
25.	25a. 🗇 Yes	
No	25b. Check t	he box corresponding to the conductivity measurement (units of microsiemens per centimeter). <46
	tes/Sketch: rennial stream	that flows into Owens Lake (PA).

Stream Site Name U-2412A	Date of Evaluation	4/11	/2017
Stream Category Pa1	Assessor Name/Organization	C. Inscor	e/AECOM
Notes of Field Assessment Form (Y/N)			YES
Presence of regulatory considerations (Y/N)			YES
Additional stream information/supplementary measurements includ	ed (Y/N)		YES
NC SAM feature type (perennial, intermittent, Tidal Marsh Stream)			Perennial

Function	Class Rating Summary	USACE/ All Streams	NCDWR Intermitten
(1) Hydro	-	HIGH	
	(2) Baseflow	HIGH	
	(2) Flood Flow	HIGH	
	(3) Streamside Area Attenuation	HIGH	
	(4) Floodplain Access	HIGH	
	(4) Wooded Riparian Buffer	HIGH	
	(4) Microtopography	HIGH	
	(3) Stream Stability	MEDIUM	
	(4) Channel Stability	LOW	
	(4) Sediment Transport	MEDIUM	
	(4) Stream Geomorphology	HIGH	
	(2) Stream/Intertidal Zone Interaction	NA NA	
	(2) Longitudinal Tidal Flow	NA NA	
	(2) Tidal Marsh Stream Stability	NA NA	
	(3) Tidal Marsh Channel Stability	NA NA	
	(3) Tidal Marsh Stream Geomorphology	NA NA	
(1) Water		HIGH	
(1) Water	(2) Baseflow	HIGH	
		MEDIUM	
	(2) Streamside Area Vegetation	-	
	(3) Upland Pollutant Filtration	MEDIUM	
	(3) Thermoregulation	HIGH	
	(2) Indicators of Stressors	NO	
	(2) Aquatic Life Tolerance	HIGH	
	(2) Intertidal Zone Filtration	NA	
(1) Habita	at	HIGH	
	(2) In-stream Habitat	MEDIUM	
	(3) Baseflow	HIGH	
	(3) Substrate	MEDIUM	
	(3) Stream Stability	LOW	
	(3) In-stream Habitat	MEDIUM	
	(2) Stream-side Habitat	HIGH	
	(3) Stream-side Habitat (3) Thermoregulation	MEDIUM	
	(2) Tidal Marsh In-stream Habitat	NA 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 Habitat	NA	
Overall		HIGH	

00/	ACE AID #:	NCDWR #:
INS	TRUCTIONS:	Attach a sketch of the assessment area and photographs. Attach a copy of the USGS 7.5-minute topographic
qua	adrangle, and	circle the location of the stream reach under evaluation. If multiple stream reaches will be evaluated on the same
		and number all reaches on the attached map, and include a separate form for each reach. See the NC SAM User
		descriptions and explanations of requested information. Record in the "Notes/Sketch" section if any supplementary
		re performed. See the NC SAM User Manual for examples of additional measurements that may be relevant.
		OF STRESSORS AFFECTING THE ASSESSMENT AREA (do not need to be within the assessment area).
		NFORMATION:
	Project name (if	
	Applicant/owner	
	County: River Basin:	Guilford 6. Nearest named water body Cape Fear on USGS 7.5-minute quad: Deep River
		Cape Fear on USGS 7.5-minute quad: Deep River (decimal degrees, at lower end of assessment reach): 35.985011, -79.960417
		ATION: (depth and width can be approximations)
		ow on attached map): SB 10. Length of assessment reach evaluated (feet): 120
	,	from bed (in riffle, if present) to top of bank (feet): 2 Unable to assess channel depth.
	•	at top of bank (feet): 5 13. Is assessment reach a swamp stream? © Yes © No
14.	Feature type:	Perennial flow
		INFORMATION:
15.	NC SAM Zone:	Mountains (M) Piedmont (P) Inner Coastal Plain (I) Outer Coastal Plain (O)
		\ /
10	Estimated asset	morphic /
10.	Estimated geor valley shape (
	Tidal Marsh S	
17.	Watershed size	
	for Tidal Mars	
		·
ADI	DITIONAL INFO	DRMATION:
18.	Were regulator	y considerations evaluated? 🕟 Yes ု No 🏻 If Yes, check all that appy to the assessment area.
	Section 10	
	Essential Fi	
	Publicly own	
	Anadromou	• • • • • • • • • • • • • • • • • • • •
	List species	d presence of a federal and/or state listed protected species within the assessment area.
1		
	Designated	Critical Habitat (list species):
		Critical Habitat (list species): stream information/supplementary measurements included in "Notes/Sketch" section or attached? © Yes © No
19.	Are additional s	stream information/supplementary measurements included in "Notes/Sketch" section or attached? © Yes © No
	Are additional s	er – assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams)
19.	Channel Water	stream information/supplementary measurements included in "Notes/Sketch" section or attached? © Yes © No
19.	Channel Water A Water B No floor	er – assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) throughout assessment reach.
19. 1.	Channel Water A Water B No floo	etream information/supplementary measurements included in "Notes/Sketch" section or attached? • Yes • No er – assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) throughout assessment reach. w, water in pools only. ter in assessment reach.
19. 1.	Channel Water A Water B No flor C No wa	etream information/supplementary measurements included in "Notes/Sketch" section or attached? • Yes • No er – assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) throughout assessment reach. w, water in pools only. ter in assessment reach. Flow Restriction – assessment reach metric
19. 1.	Are additional s Channel Water A Water B No flor C No wa Evidence of F A At lease	etream information/supplementary measurements included in "Notes/Sketch" section or attached? • Yes • No er – assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) throughout assessment reach. w, water in pools only. ter in assessment reach.
19. 1.	Are additional s Channel Water A Water B No flor C No wa Evidence of F A At leas point of	etream information/supplementary measurements included in "Notes/Sketch" section or attached? • Yes • No er – assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) throughout assessment reach. w, water in pools only. ter in assessment reach. Flow Restriction – assessment reach metric st 10% of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the
19. 1.	Are additional s Channel Water A Water B No flor C No wa Evidence of F A At leas point of	etream information/supplementary measurements included in "Notes/Sketch" section or attached? • Yes No et - assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) throughout assessment reach. w, water in pools only. ter in assessment reach. • Iow Restriction - assessment reach metric st 10% of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the of obstructing flow or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within
19 1. 2.	Are additional s Channel Wate A Water B No floo C No wa Evidence of F A At least point of the as B Not A	etream information/supplementary measurements included in "Notes/Sketch" section or attached? • Yes • No er – assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) throughout assessment reach. w, water in pools only. ter in assessment reach. Flow Restriction – assessment reach metric st 10% of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the of obstructing flow or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within sessment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates).
19 1. 2.	Are additional s Channel Wate A Water B No floo C No wa Evidence of F A At least point of the as B Not A Feature Patte	etream information/supplementary measurements included in "Notes/Sketch" section or attached? • Yes No er – assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) throughout assessment reach. w, water in pools only. ter in assessment reach. Flow Restriction – assessment reach metric st 10% of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the of obstructing flow or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within sessment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates).
19 1. 2.	Are additional s Channel Wate A Water B No floo C No wa Evidence of F A At leas point of the as B Not A Feature Patte A A majo	etream information/supplementary measurements included in "Notes/Sketch" section or attached? • Yes No er – assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) throughout assessment reach. w, water in pools only. ter in assessment reach. Flow Restriction – assessment reach metric st 10% of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the of obstructing flow or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within sessment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates). ern – assessment reach metric ority of the assessment reach has altered pattern (examples: straightening, modification above or below culvert).
19. 1. 2.	Are additional s Channel Wate A Water B No floo C No wa Evidence of F A At leas point of the as B Not A Feature Patte A maje B Not A.	er – assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) throughout assessment reach. w, water in pools only. ter in assessment reach. Flow Restriction – assessment reach metric st 10% of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the of obstructing flow or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within sessment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates). ern – assessment reach metric or the assessment reach has altered pattern (examples: straightening, modification above or below culvert).
19. 1. 2.	Are additional s Channel Wate A Water B No flow C No wa Evidence of F A At leas point a s Eature Patte A A maja B Not A Feature Long	extream information/supplementary measurements included in "Notes/Sketch" section or attached? • Yes • No ex - assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) throughout assessment reach. w, water in pools only. ter in assessment reach. Flow Restriction - assessment reach metric st 10% of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the of obstructing flow or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within sessment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates). extra - assessment reach metric cority of the assessment reach has altered pattern (examples: straightening, modification above or below culvert).
19. 1. 2.	Are additional s Channel Wate A Water B No floo C No wa Evidence of F A At least point of the as B Not A Feature Patte A A majori B Not A. Feature Long A Majori	extream information/supplementary measurements included in "Notes/Sketch" section or attached? • Yes • No ex - assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) throughout assessment reach. w, water in pools only. ter in assessment reach. Flow Restriction - assessment reach metric st 10% of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the of obstructing flow or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within sessment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates). extra - assessment reach metric cority of the assessment reach has altered pattern (examples: straightening, modification above or below culvert). itudinal Profile - assessment reach metric ty of assessment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming,
19. 1. 2.	Are additional s Channel Wate A Water B No floo C No wa Evidence of F A At leas point of the as B Not A Feature Patte A A majori over w	stream information/supplementary measurements included in "Notes/Sketch" section or attached? • Yes • No rer – assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) throughout assessment reach. w, water in pools only. ter in assessment reach. Flow Restriction – assessment reach metric at 10% of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the of obstructing flow or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within sessment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates). rn – assessment reach metric ority of the assessment reach has altered pattern (examples: straightening, modification above or below culvert). itudinal Profile – assessment reach metric by of assessment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming, ridening, active aggradation, dredging, and excavation where appropriate channel profile has not reformed from any of
19. 1. 2.	Are additional s Channel Wate A Water B No floo C No wa Evidence of F A At leas point of the as B Not A Feature Patte A A majori over w these	extream information/supplementary measurements included in "Notes/Sketch" section or attached? • Yes • No ex - assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) throughout assessment reach. w, water in pools only. ter in assessment reach. Flow Restriction - assessment reach metric st 10% of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the of obstructing flow or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within sessment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates). extra - assessment reach metric cority of the assessment reach has altered pattern (examples: straightening, modification above or below culvert). itudinal Profile - assessment reach metric ty of assessment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming,
19. 1. 2.	Are additional s Channel Wate A Water B No floo C No wa Evidence of F A At leas point of the as B Not A Feature Patte A A majori over w	stream information/supplementary measurements included in "Notes/Sketch" section or attached? • Yes • No rer – assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) throughout assessment reach. w, water in pools only. ter in assessment reach. Flow Restriction – assessment reach metric at 10% of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the of obstructing flow or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within sessment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates). rn – assessment reach metric ority of the assessment reach has altered pattern (examples: straightening, modification above or below culvert). itudinal Profile – assessment reach metric by of assessment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming, ridening, active aggradation, dredging, and excavation where appropriate channel profile has not reformed from any of
19. 1. 2.	Are additional s Channel Wate A Water B No floo C No wa Evidence of F A At leas point of the as B Not A Feature Patte A A majori over wathese B Not A Signs of Active Signs of Active Signs of Active	er – assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) throughout assessment reach. W, water in pools only. ter in assessment reach metric tot 10% of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the of obstructing flow or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within sessment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates). In assessment reach metric ority of the assessment reach has altered pattern (examples: straightening, modification above or below culvert). Itudinal Profile – assessment reach metric ty of assessment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming, ridening, active aggradation, dredging, and excavation where appropriate channel profile has not reformed from any of disturbances).
19. 1. 2. 3.	Are additional s Channel Wate A Water B No floo C No wa Evidence of F A At least point of the as B Not A Feature Patte A A majori over wathese B Not A Signs of Activ Consider only	er – assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) throughout assessment reach. w, water in pools only. ter in assessment reach metric st 10% of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the of obstructing flow or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within sessment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates). The assessment reach metric ority of the assessment reach has altered pattern (examples: straightening, modification above or below culvert). itudinal Profile – assessment reach metric by of assessment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming, idening, active aggradation, dredging, and excavation where appropriate channel profile has not reformed from any of disturbances). We Instability – assessment reach metric or current instability, not past events from which the stream has currently recovered. Examples of instability include
19. 1. 2. 3.	Are additional s Channel Water B No floo C No wa Evidence of F A At least point of the as B Not A Feature Patte A A major OVER WATER A Majori over w these B Not A Signs of Activ Consider only active bank fa	er – assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams) throughout assessment reach. w, water in pools only. ter in assessment reach metric to 10% of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the of obstructing flow or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within sessment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates). The assessment reach metric ority of the assessment reach has altered pattern (examples: straightening, modification above or below culvert). Itudinal Profile – assessment reach metric ority of the assessment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming, indening, active aggradation, dredging, and excavation where appropriate channel profile has not reformed from any of disturbances). We Instability – assessment reach metric or current instability, not past events from which the stream has currently recovered. Examples of instability include flure, active channel down-cutting (head-cut), active widening, and artificial hardening (such as concrete, gabion, rip-rap).
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7.	Water Quality Stressors – assessment reach/intertidal zone metric
	Check all that apply. I Discolored water in stream or intertidal zone (milky white, blue, unnatural water discoloration, oil sheen, stream foam)
	Excessive sedimentation (burying of stream features or intertidal zone)
	Noticeable evidence of pollutant discharges entering the assessment reach and causing a water quality problem Odor (not including natural sulfide odors)
	Current published or collected data indicating degraded water quality in the assessment reach. Cite source in the "Notes/Sketch"
	section. IF Livestock with access to stream or intertidal zone
	G Excessive algae in stream or intertidal zone
	Degraded marsh vegetation in the intertidal zone (removal, burning, regular mowing, destruction, etc.)
	☐ Other:(explain in "Notes/Sketch" section) ☐ Little to no stressors
8.	Recent Weather – watershed metric
	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. C 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
10.	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)
	ା B Multiple sticks and/or leaf packs and/or emergent ଧୁ ଓ ଅନୁ ଅନୁ ଧାରଣ (pools) vegetation
	C Multiple snags and logs (including lap trees)
	D 5% undercut banks and/or root mats and/or roots in banks extend to the normal wetted perimeter
	✓ E Little or no habitat

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).
	Natural bedform absent (skip to Metric 12, Aquatic Life)
	11c. In riffles 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 \leq 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
	 C C Boulder (256 – 4096 mm) C Cobble (64 – 256 mm)
	○ ○ ● ○ ○ Gravel (2 – 64 mm)
	○ ○ ● ○ ○ Sand (.062 – 2 mm)
	○ ○ ● ○ ○ Silt/clay (< 0.062 mm)
	C C C Detritus C C Artificial (rip-rap, concrete, etc.)
	11d. (a) Yes (b) 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 Size 4 Coastal Plain streams and Tidal Marsh Streams)
12.	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.
	12b. Tes 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 (including water pennies)	
	Caddisfly larvae (Trichoptera [T])	
	Asian clam (Corbicula)	
	Crustacean (isopod/amphipod/crayfish/shrimp)	
	Damselfly and dragonfly larvae	
	Dipterans (true flies)	
	Mayfly larvae (Ephemeroptera [E])	
	Megaloptera (alderfly, fishfly, dobsonfly larvae)	
	Midges/mosquito larvae	
	Mosquito fish (Gambusia) or mud minnows (Umbra pygmaea)	
	Mussels/Clams (not Corbicula)	
	☐ ☐ Other fish ☐ ☐ Salamanders/tadpoles	
	Salamanders/tadpoles Snails	
	Stonefly larvae (Plecoptera [P])	
	☐ ☐ Tipulid larvae	
	□ □ Worms/leeches	
13.	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 include: 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	
	○ B ○ B Majority of streamside area with depressions able to pond water 3 to 6 inches deep	
15.	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.	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 <u>and</u> 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 that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam)	
	D Evidence of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage)	
	E Stream bed or bank soil reduced (dig through deposited sediment if present)	
	F None of the above	
17	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 (≥ 24% impervious surface for watershed)	
	D Evidence that the stream-side area has been modified resulting in accelerated drainage into the assessment reach	
	E Assessment reach relocated to valley edge	
	F None of the above	
10	9 Shading - assessment reach metric (skin for Tidal March Streams)	
10.	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.	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	
	O A O A O A ≥ 100-feet wide <u>or</u> extends to the edge of the watershed	
	⊕ B ⊕ B ⊕ B From 50 to < 100-feet wide	
	C C C C From 30 to < 50-feet wide	
	○ D ○ D ○ D From 10 to < 30-feet wide	
	○ E ○ E ● E < 10-feet wide <u>or</u> no trees	
20.	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).	
	IB RB	

Check all approprise within 30 feet of If none of the fold Abuts < LB RB LI A A A C B B B C C C C D D C C C C C C C C C C	A A A A A A A A A A A A A A A A A A A
D D C B C C C C C C C C C C C C C C C C	Maintained shrubs Little or no vegetation — streamside area metric (skip for Tidal Marsh Streams) priate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but if stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). Iowing stressors occurs on either bank, check here and skip to Metric 22: 30 feet 30-50 feet 30 RB LB RB A A A A A A Row crops B B B B B Maintained turf C C C Pasture (no livestock)/commercial horticulture D D D D Pasture (active livestock use) streamside area metric (skip for Tidal Marsh Streams) bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). Medium to high stem density
21. Buffer Stressors Check all appropis within 30 feet of the foldowing stressors LB RB LI A A A C B B B C C C C D D D C 22. Stem Density – s Consider for left LB RB A A A B B B C C C C	Little or no vegetation - streamside area metric (skip for Tidal Marsh Streams) oriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but if stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). lowing stressors occurs on either bank, check here and skip to Metric 22: 30 feet 30-50 feet 3 RB LB RB A A A A A A A Row crops B B B B B B B B B B B B B B B B B B B
21. Buffer Stressors Check all appropis within 30 feet of the foldowing stressors LB RB LL A A A C B B B C C C C D D D C 22. Stem Density — S Consider for left LB RB A A A B B B B C	- streamside area metric (skip for Tidal Marsh Streams) riate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but if stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). Iowing stressors occurs on either bank, check here and skip to Metric 22:
Check all approprise within 30 feet of If none of the fold Abuts < LB RB LI A A A C B B B C C C C D D C C C C C C C C C C	priate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but if stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). lowing stressors occurs on either bank, check here and skip to Metric 22:
C C C C C C C C C C C C C C C C C C C	C C C Pasture (no livestock)/commercial horticulture D D D D D Pasture (active livestock use) streamside area metric (skip for Tidal Marsh Streams) bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). Medium to high stem density
22. Stem Density – s Consider for left LB RB A A A B B B C C C C	D O D D Pasture (active livestock use) streamside area metric (skip for Tidal Marsh Streams) bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). Medium to high stem density
22. Stem Density – s Consider for left LB RB A A A B B B C C C C	treamside area metric (skip for Tidal Marsh Streams) bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). Medium to high stem density
	Low stem density No wooded riparian buffer <u>or</u> predominantly herbaceous species <u>or</u> bare ground
23. Continuity of Ve	getated Buffer – streamside area metric (skip for Tidal Marsh Streams)
-	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.
OB OB	The total length of buffer breaks is between 25 and 50 percent.
©c ⊕c	The total length of buffer breaks is > 50 percent.
to assessment re LB RB A A A B B B B	inant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes ach habitat. 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. 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 or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees. Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent or communities with non-native invasive species dominant over a large portion of expected strata or communities composed of planted stands of non-characteristic species or communities inappropriately composed of a single species or no vegetation.
25. Conductivity – a	ssessment reach metric (skip for all Coastal Plain streams)
	No Was a conductivity measurement recorded? one of the following reasons. One Water Other:
25b. Check the b	ox corresponding to the conductivity measurement (units of microsiemens per centimeter). © B 46 to < 67 © C 67 to < 79 © D 79 to < 230 © E ≥ 230
Notes/Sketch:	
₩	© B 46 to < 67

Stream Site Name U-2412A	_ Date of Evaluation _		
Stream Category Pa1	Assessor Name/Organization	C. Inscore	/AECOM
	_		
Notes of Field Assessment Form (Y/N)			NO
Presence of regulatory considerations (Y/N)			YES
Additional stream information/supplementary measurements includ	ed (Y/N)		YES
NC SAM feature type (perennial, intermittent, Tidal Marsh Stream)		F	Perennial

Function Class Rating Summary	USACE/ All Streams	NCDWR Intermitten
(1) Hydrology	HIGH	
(2) Baseflow	HIGH	
(2) Flood Flow	HIGH	
(3) Streamside Area Attenuation	HIGH	
(4) Floodplain Access	HIGH	
(4) Wooded Riparian Buffer	LOW	
(4) Microtopography	HIGH	
(3) Stream Stability	HIGH	
(4) Channel Stability	HIGH	
(4) Sediment Transport	MEDIUM	
(4) Stream Geomorphology	HIGH	
(2) Stream/Intertidal Zone Interaction	NA NA	
(2) Longitudinal Tidal Flow	NA NA	
	NA NA	
(2) Tidal Marsh Stream Stability	NA NA	
(3) Tidal Marsh Channel Stability		
(3) Tidal Marsh Stream Geomorphology	NA NA	
(1) Water Quality	LOW	
(2) Baseflow	HIGH	
(2) Streamside Area Vegetation	LOW	
(3) Upland Pollutant Filtration	LOW	
(3) Thermoregulation	LOW	
(2) Indicators of Stressors	NO	
(2) Aquatic Life Tolerance	LOW	
(2) Intertidal Zone Filtration	NA	
(1) Habitat	LOW	
(2) In-stream Habitat	LOW	
(3) Baseflow	HIGH	
(3) Substrate	MEDIUM	
(3) Stream Stability	HIGH	
(3) In-stream Habitat	LOW	
(2) Stream-side Habitat	LOW	
(3) Stream-side Habitat	LOW	
(3) Thermoregulation	LOW	
(2) Tidal Marsh In-stream Habitat (3) Flow Restriction	NA NA	
(3) Tidal Marsh Stream Stability	NA NA	
(3) Fidal Marsh Steam Stability (4) Tidal Marsh Channel Stability	NA NA	
(4) Tidal Marsh Stream Geomorphology	NA NA	
(3) Tidal Marsh In-stream Habitat	NA NA	
(2) Intertidal Zone Habitat	NA	
Overall	LOW	

USACE AID #:	NCDWR #:
	the assessment area and photographs. Attach a copy of the USGS 7.5-minute topographic
	ne stream reach under evaluation. If multiple stream reaches will be evaluated on the same
1 1 37	s on the attached map, and include a separate form for each reach. See the NC SAM User
1	ations of requested information. Record in the "Notes/Sketch" section if any supplementary
•	C SAM User Manual for examples of additional measurements that may be relevant. CTING THE ASSESSMENT AREA (do not need to be within the assessment area).
PROJECT / SITE INFORMATION:	THE THE TOOLSOME IT THE THOU IS NOW TO BE WITHIN THE GOODSHICK GIVEN).
1. Project name (if any): U-2412A	2. Date of evaluation: 4/12/2017
3. Applicant/owner name: NCDOT	4. Assessor name/organization: C. Inscore/AECOM
5. County: Guilford	6. Nearest named water body
7. River Basin: Cape Fear	on USGS 7.5-minute quad: Deep River
8. Site coordinates (decimal degrees, at low	
STREAM INFORMATION: (depth and wide	··· · · · · · · · · · · · · · · · · ·
9. Site number (show on attached map):11. Channel depth from bed (in riffle, if pres	SC 10. Length of assessment reach evaluated (feet): 438 ent) to top of bank (feet): 0.5-3 Unable to assess channel depth.
12. Channel width at top of bank (feet):	1-3 13. Is assessment reach a swamp stream? Yes No
14. Feature type: Perennial flow	Intermittent flow Tidal Marsh Stream
STREAM RATING INFORMATION:	-
15. NC SAM Zone: Mountains	s (M) Piedmont (P) Inner Coastal Plain (I) Outer Coastal Plain (O)
16 Felimeted geometric	
16. Estimated geomorphic valley shape (skip for	
7	us stream, flatter valley slope) (less sinuous stream, steeper valley slope)
17. Watershed size: (skip	
for Tidal Marsh Stream)	
,	
ADDITIONAL INFORMATION:	
18. Were regulatory considerations evaluate	
	sified Trout Waters Water Supply Watershed (I I I I I I I I I I I I I I I I I I
	ary Nursery Area High Quality Waters/Outstanding Resource Waters WR riparian buffer rule in effect Nutrient Sensitive Waters
Anadromous fish	·
	and/or state listed protected species within the assessment area.
List species:	
Designated Critical Habitat (list spec	
19. Are additional stream information/supple	ementary measurements included in "Notes/Sketch" section or attached?
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 – asses	ssment reach metric
	ach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the
	nannel choked with aquatic macrophytes <u>or</u> ponded water <u>or</u> impounded on flood or ebb within
	es: undersized or perched culverts, causeways that constrict the channel, tidal gates).
B Not A	
3. Feature Pattern – assessment reach	metric
, ,	each has altered pattern (examples: straightening, modification above or below culvert).
B Not A.	
4. Feature Longitudinal Profile – asses	sment reach metric
	has a substantially altered stream profile (examples: channel down-cutting, existing damming,
	ion, dredging, and excavation where appropriate channel profile has not reformed from any of
these disturbances).	
B Not A	
5. Signs of Active Instability – assessm	nent reach metric
-	t past events from which the stream has currently recovered. Examples of instability include
	n-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 – stream	nside area metric
Consider for the Left Bank (LB) and	the Right Bank (RB).
LB RB	
	conditions that adversely affect reference interaction
	conditions (examples: berms, levees, down-cutting, aggradation, dredging) that adversely affect
	examples: limited streamside area access, disruption of flood flows through streamside area, Ikheads, causeways with floodplain constriction, minor ditching [including mosquito ditching])
	conditions that adversely affect reference interaction (little to no floodplain/intertidal zone access
	•

7.	Water Quality Stressors – assessment reach/intertidal zone metric Check all that apply.
	□ Discolored water in stream or intertidal zone (milky white, blue, unnatural water discoloration, oil sheen, stream foam) □ B
	Noticeable evidence of pollutant discharges entering the assessment reach and causing a water quality problem Odor (not including natural sulfide odors)
	Current published or collected data indicating degraded water quality in the assessment reach. Cite source in the "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.) Other: (explain in "Notes/Sketch" section)
	✓ J Little to no stressors
8.	Recent Weather – watershed metric 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 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)
	(include liverworts, lichens, and algal mats)
	図 Multiple sticks and/or leaf packs and/or emergent yegetation
	୍ରାପ Multiple snags and logs (including lap trees) ଥିଲି ସୁ ର 5% vertical bank along the marsh Swaper shape
	in banks extend to the normal wetted perimeter E Little or no habitat

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 riffles 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 \leq 10%, Common (C) = > 10-40%, Abundant (A) = > 40-70%, Predominant (P) = > 70%. Cumulative percentages should not exceed 100% for each assessment reach.
	NPRCAP
	 Bedrock/saprolite Boulder (256 – 4096 mm)
	 Cobble (64 – 256 mm) Gravel (2 – 64 mm)
	Sand (.062 – 2 mm) Sitt/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 Size 4 Coastal Plain streams and 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 (including water pennies)
			Caddisfly larvae (Trichoptera [T])
			Asian clam (Corbicula)
		~	Crustacean (isopod/amphipod/crayfish/shrimp)
			Damselfly and dragonfly larvae
			Dipterans (true flies)
			Mayfly larvae (Ephemeroptera [E])
		i 🗆	Megaloptera (alderfly, fishfly, dobsonfly larvae)
			Midges/mosquito larvae
			Mosquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea</i>)
			Mussels/Clams (not Corbicula)
			Other fish
		•	Salamanders/tadpoles
			Snails
		•	Stonefly larvae (Plecoptera [P])
			Tipulid larvae
		•	Worms/leeches
		-	, wo make called
13.	Consi upland	der for to runoff.	ea Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types) he Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and
	LB	RB	
	_		Little or no alteration to water storage capacity over a majority of the streamside area
		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 include: ditches, fill,
			soil, compaction, livestock disturbance, buildings, man-made levees, drainage pipes)
14.	Consi	der for	ea Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types) he Left Bank (LB) and the Right Bank (RB) of the streamside area.
	LB	RB.	
	ΩΑ	O A	Majority of streamside area with depressions able to pond water ≥ 6 inches deep
		🔘 В	Majority of streamside area with depressions able to pond water 3 to 6 inches deep
	C C	O C	Majority of streamside area with depressions able to pond water < 3 inches deep
15.			ence – streamside area metric (skip for Tidal Marsh Streams) he Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the
	norma	l wetted	perimeter of assessment reach.
	LB	RB	
	O N	Y N	Are wetlands present in the streamside area?
16			tributors – assessment reach metric (skin for size 4 streams and Tidal March Streams)
16.	Basef	low Cor	tributors – assessment reach metric (skip for size 4 streams and Tidal Marsh Streams)
16.	Basef Check	low Cor	ributors within the assessment reach or within view of <u>and</u> draining to the assessment reach.
16.	Basef Check	low Cor all con Strean	ributors within the assessment reach or within view of <u>and</u> draining to the assessment reach. s and/or springs (jurisdictional discharges)
16.	Basef Check ✓ A	low Cor all con Strean Ponds	ributors within the assessment reach or within view of <u>and</u> draining to the assessment reach. s and/or springs (jurisdictional discharges) (include wet detention basins; do not include sediment basins or dry detention basins)
16.	Basef Check ▼ A □ B □ C	low Cor call con Stream Ponds Obstru	tributors within the assessment reach or within view of <u>and</u> draining to the assessment reach. s and/or springs (jurisdictional discharges) (include wet detention basins; do not include sediment basins or dry detention basins) ction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam)
16.	Basef Check ✓ A ☐ B ☐ C ☐ D	low Cor call con Strean Ponds Obstru Evider	tributors within the assessment reach or within view of <u>and</u> draining to the assessment reach. s and/or springs (jurisdictional discharges) (include wet detention basins; do not include sediment basins or dry detention basins) ction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam) ce of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage)
	Basef Check ▼ A □ B □ C □ D □ E	low Cor call con Strean Ponds Obstru Evider Strean	iributors within the assessment reach or within view of and draining to the assessment reach. s and/or springs (jurisdictional discharges) (include wet detention basins; do not include sediment basins or dry detention basins) ction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam) ce of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present)
	Basef Check ✓ A ☐ B ☐ C ☐ D	low Cor call con Strean Ponds Obstru Evider Strean	tributors within the assessment reach or within view of <u>and</u> draining to the assessment reach. s and/or springs (jurisdictional discharges) (include wet detention basins; do not include sediment basins or dry detention basins) ction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam) ce of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage)
	Basef Check ▼ A □ B □ C □ D □ E □ F	low Cor call con Strean Ponds Obstru Evider Strean None o	tributors within the assessment reach or within view of and draining to the assessment reach. s and/or springs (jurisdictional discharges) (include wet detention basins; do not include sediment basins or dry detention basins) ction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam) ce of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) f the above
	Basef Check I A I B I C I D I E I F Basef	low Cor call con Strean Ponds Obstru Evider Strean None c	tributors within the assessment reach or within view of and draining to the assessment reach. s and/or springs (jurisdictional discharges) (include wet detention basins; do not include sediment basins or dry detention basins) ction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam) ce of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) f the above actors – assessment area metric (skip for Tidal Marsh Streams)
	Basef Check V A □ B □ C □ D □ E □ F Basef Check	low Cor call con Strean Ponds Obstru Evider Strean None call that	tributors within the assessment reach or within view of and draining to the assessment reach. s and/or springs (jurisdictional discharges) (include wet detention basins; do not include sediment basins or dry detention basins) ction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam) ce of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) f the above actors – assessment area metric (skip for Tidal Marsh Streams) apply.
	Basef Check ✓ A ☐ B ☐ C ☐ D ☐ E ☐ F Basef Check	low Cor call con Stream Ponds Obstru- Evider Stream None of	tributors within the assessment reach or within view of and draining to the assessment reach. s and/or springs (jurisdictional discharges) (include wet detention basins; do not include sediment basins or dry detention basins) ction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam) ce of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) if the above actors – assessment area metric (skip for Tidal Marsh Streams) apply. ce of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation)
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	Basef Check V A B C C D E F Basef Check A B C	c all con Strean Ponds Obstru Evider Strean None of low Det c all that Evider Obstru Urban Evider	ributors within the assessment reach or within view of and draining to the assessment reach. s and/or springs (jurisdictional discharges) (include wet detention basins; do not include sediment basins or dry detention basins) ction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam) ce of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) If the above actors − assessment area metric (skip for Tidal Marsh Streams) apply. ce of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) ction not passing flow during low flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) stream (≥ 24% impervious surface for watershed) ce that the stream-side area has been modified resulting in accelerated drainage into the assessment reach
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	Basef Check V A B C C D E F Basef Check A B C	low Cor c all con Strean Ponds Obstru Evider Strean None of low Det c all that Evider Obstru Urban Evider Assess	ributors within the assessment reach or within view of and draining to the assessment reach. s and/or springs (jurisdictional discharges) (include wet detention basins; do not include sediment basins or dry detention basins) ction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam) ce of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) If the above actors − assessment area metric (skip for Tidal Marsh Streams) apply. ce of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) ction not passing flow during low flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) stream (≥ 24% impervious surface for watershed) ce that the stream-side area has been modified resulting in accelerated drainage into the assessment reach
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17.	Basef Check V A B C D D E F Basef Check A B B C D D E F S S S S S S S S S S S S S S S S S S	low Correct all connections of the content of the c	ributors within the assessment reach or within view of and draining to the assessment reach. s and/or springs (jurisdictional discharges) (include wet detention basins; do not include sediment basins or dry detention basins) ction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam) be of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) if the above actors − assessment area metric (skip for Tidal Marsh Streams) apply. be of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) ction not passing flow during low flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) stream (≥ 24% impervious surface for watershed) be that the stream-side area has been modified resulting in accelerated drainage into the assessment reach ment reach relocated to valley edge if the above essment reach metric (skip for Tidal Marsh Streams) ct. Consider "leaf-on" condition.
17.	Basef Check V A B C D E F Basef Check A B B Consid	low Cor call con Strean Ponds Obstru Evider Strean None call that Evider Obstru Urban Evider Asses: None call Strean Degrae	ributors within the assessment reach or within view of and draining to the assessment reach. s and/or springs (jurisdictional discharges) (include wet detention basins; do not include sediment basins or dry detention basins) ction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam) ce of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) If the above actors − assessment area metric (skip for Tidal Marsh Streams) apply. ce of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) ction not passing flow during low flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) stream (≥ 24% impervious surface for watershed) ce that the stream-side area has been modified resulting in accelerated drainage into the assessment reach ment reach relocated to valley edge If the above essment reach metric (skip for Tidal Marsh Streams) ct. Consider "leaf-on" condition. shading is appropriate for stream category (may include gaps associated with natural processes)
17. 18.	Basef Check V A B C D E F Basef Check A B C Consid A B C	low Cor (all con Stream Ponds Obstru Evider Stream None (low Det (all that Evider Obstru Urban Evider Asses: None (or asseder aspe Stream Degraes Stream	ributors within the assessment reach or within view of and draining to the assessment reach. s and/or springs (jurisdictional discharges) (include wet detention basins; do not include sediment basins or dry detention basins) ction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam) ce of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) if the above actors − assessment area metric (skip for Tidal Marsh Streams) apply. ce of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) ction not passing flow during low flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) stream (≥ 24% impervious surface for watershed) ce that the stream-side area has been modified resulting in accelerated drainage into the assessment reach ment reach relocated to valley edge if the above essment reach metric (skip for Tidal Marsh Streams) ct. Consider "leaf-on" condition. shading is appropriate for stream category (may include gaps associated with natural processes) led (example: scattered trees) shading is gone or largely absent
17. 18.	Basef Check A B C D E F Basef Check A B C C D E F Shadi C onsid	low Correct all connections of the content of the c	inibutors within the assessment reach or within view of and draining to the assessment reach. s and/or springs (jurisdictional discharges) (include wet detention basins; do not include sediment basins or dry detention basins) ction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam) ce of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) if the above actors – assessment area metric (skip for Tidal Marsh Streams) apply. ce of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) ction not passing flow during low flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) stream (≥ 24% impervious surface for watershed) ce that the stream-side area has been modified resulting in accelerated drainage into the assessment reach ment reach relocated to valley edge if the above essment reach metric (skip for Tidal Marsh Streams) ct. Consider "leaf-on" condition. shading is appropriate for stream category (may include gaps associated with natural processes) led (example: scattered trees) shading is gone or largely absent estreamside area metric (skip for Tidal Marsh Streams)
17. 18.	Basef Check A B C D E F Basef Check A B C C D E F Shadi Consider A B C C D E F Shadi Consider Co	low Cor call con Stream Ponds Obstru Evider Stream None call that Evider Obstru Urban Evider Assess None call der aspe	inibutors within the assessment reach or within view of and draining to the assessment reach. s and/or springs (jurisdictional discharges) (include wet detention basins; do not include sediment basins or dry detention basins) ction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam) ce of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) if the above actors – assessment area metric (skip for Tidal Marsh Streams) apply. ce of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) ction not passing flow during low flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) stream (≥ 24% impervious surface for watershed) ce that the stream-side area has been modified resulting in accelerated drainage into the assessment reach ment reach relocated to valley edge if the above essment reach metric (skip for Tidal Marsh Streams) ct. Consider "leaf-on" condition. shading is appropriate for stream category (may include gaps associated with natural processes) led (example: scattered trees) shading is gone or largely absent estreamside area metric (skip for Tidal Marsh Streams) testated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top
17. 18.	Basef Check A B C D E F Basef Check A B C C D E F Shadi Consid	low Cor call con Strean Ponds Obstru Evider Strean None call that Evider Obstru Urban Evider Asses: None call Strean Degrae Strean Degrae Strean Cor Call Call Call Call Call Call Call Cal	inibutors within the assessment reach or within view of and draining to the assessment reach. s and/or springs (jurisdictional discharges) (include wet detention basins; do not include sediment basins or dry detention basins) ction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam) ce of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) if the above actors – assessment area metric (skip for Tidal Marsh Streams) apply. ce of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) ction not passing flow during low flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) stream (≥ 24% impervious surface for watershed) ce that the stream-side area has been modified resulting in accelerated drainage into the assessment reach ment reach relocated to valley edge if the above essment reach metric (skip for Tidal Marsh Streams) ct. Consider "leaf-on" condition. shading is appropriate for stream category (may include gaps associated with natural processes) led (example: scattered trees) shading is gone or largely absent - streamside area metric (skip for Tidal Marsh Streams) letated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top the first break.
17. 18.	Basef Check A B C D E F Basef Check A B C C D E F Shadi Consider A B C C D E F Shadi Consider Co	low Cor call con Strean Ponds Obstru Evider Strean None call that Evider Obstru Urban Evider Asses: None call Strean Degrae Strean Degrae Strean Cor Call Call Call Call Call Call Call Cal	inibutors within the assessment reach or within view of and draining to the assessment reach. s and/or springs (jurisdictional discharges) (include wet detention basins; do not include sediment basins or dry detention basins) ction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam) ce of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) if the above actors – assessment area metric (skip for Tidal Marsh Streams) apply. ce of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) ction not passing flow during low flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) stream (≥ 24% impervious surface for watershed) ce that the stream-side area has been modified resulting in accelerated drainage into the assessment reach ment reach relocated to valley edge if the above essment reach metric (skip for Tidal Marsh Streams) ct. Consider "leaf-on" condition. shading is appropriate for stream category (may include gaps associated with natural processes) led (example: scattered trees) shading is gone or largely absent estreamside area metric (skip for Tidal Marsh Streams) testated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top
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17. 18.	Basef Check A B C D E F Basef Check A B Check A B Check A B Check A B Check Ch	low Corr c all con Stream Ponds Obstru Evider Stream None o low Det c all that Evider Obstru Urban Evider Asses: None o stream Degra Stream c Width der "veg alted RB	inibutors within the assessment reach or within view of and draining to the assessment reach. s and/or springs (jurisdictional discharges) (include wet detention basins; do not include sediment basins or dry detention basins) ction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam) ce of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) if the above actors − assessment area metric (skip for Tidal Marsh Streams) apply. ce of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) ction not passing flow during low flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) stream (≥ 24% impervious surface for watershed) ce that the stream-side area has been modified resulting in accelerated drainage into the assessment reach ment reach relocated to valley edge if the above essment reach metric (skip for Tidal Marsh Streams) t. Consider "leaf-on" condition. shading is appropriate for stream category (may include gaps associated with natural processes) led (example: scattered trees) shading is gone or largely absent streamside area metric (skip for Tidal Marsh Streams) letated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top the first break. Wooded LB RB
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17. 18.	Basef Check A B C D E F Basef Check A B C C D E F Shadii Consider Consider Consider Consider A B C B C Consider A B C B C B C C C B C C C C C C C C C	Iow Cor call con Stream Ponds Obstru Evider Stream None call that Evider Costru Urban Evider Assess None call Costru Urban Evider Assess Acream Degrae Stream Costream Costrea	inibutors within the assessment reach or within view of and draining to the assessment reach. s and/or springs (jurisdictional discharges). cition that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam) one of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) f the above actors – assessment area metric (skip for Tidal Marsh Streams) apply. co of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) cition not passing flow during low flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) stream (2 24% impervious surface for watershed) coe that the stream-side area has been modified resulting in accelerated drainage into the assessment reach ment reach relocated to valley edge f the above essment reach metric (skip for Tidal Marsh Streams) st. Consider "leaf-on" condition. shading is appropriate for stream category (may include gaps associated with natural processes) ed (example: scattered trees) shading is appropriate for stream category (may include gaps associated with natural processes) ed (example: scattered trees) shading is gone or largely absent - streamside area metric (skip for Tidal Marsh Streams) letated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top the first break. Wooded LB RB A A > 100-feet wide or extends to the edge of the watershed B B B From 50 to < 100-feet wide C From 30 to < 50-feet wide From 50 to < 100-feet wide From 50 to < 50-feet wide
17. 18.	Basef Check A B C D E F Basef Check A B C D E F Shadi Consider On B C D E F Shadi C D E F C D E D E D E D E D D E D	low Correct all constructions of the construction of the construct	ributors within the assessment reach or within view of and draining to the assessment reach. s and/or springs (jurisdictional discharges) (include wet detention basins; do not include sediment basins or dry detention basins) ction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam) co of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) if the above actors − assessment area metric (skip for Tidal Marsh Streams) apply. ce of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) ction not passing flow during low flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) stream (≥ 24% impervious surface for watershed) ce that the stream-side area has been modified resulting in accelerated drainage into the assessment reach ment reach relocated to valley edge if the above essment reach metric (skip for Tidal Marsh Streams) tt. Consider "leaf-on" condition. shading is appropriate for stream category (may include gaps associated with natural processes) led (example: scattered trees) shading is appropriate for stream category (may include gaps associated with natural processes) led (example: scattered trees) shading is one or largely absent streamside area metric (skip for Tidal Marsh Streams) letated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top the first break. Wooded LB RB A A ≥ 100-feet wide or extends to the edge of the watershed B B B From 50 to < 100-feet wide C C C From 30 to < 50-feet wide C C C From 30 to < 50-feet wide
17. 18.	Basef Check A B C D E F Basef Check A B C D E F Consider Consider C D E E Consider C D E E E E E E E E E	low Correct all construction of all construction of all construction of all that Evider Obstruction of all that Evider Assessive None of Stream Degram of Width All Color of the construction of the construct	s and/or springs (jurisdictional discharges) (include wet detention basins; do not include sediment basins or dry detention basins) (include wet detention basins; do not include sediment basins or dry detention basins) (include wet detention basins; do not include sediment basins or dry detention basins) (include wet detention basins; do not include sediment basins or dry detention basins) (include wet detention basins; do not include sediment basins or dry detention basins) (include wet detention basins; do not include sediment dicates seepage) bed or bank soil reduced (dig through deposited sediment if present) if the above actors – assessment area metric (skip for Tidal Marsh Streams) apply. ce of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) ction not passing flow during low flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) stream (≥ 24% impervious surface for watershed) ce that the stream-side area has been modified resulting in accelerated drainage into the assessment reach ment reach relocated to valley edge if the above essment reach metric (skip for Tidal Marsh Streams) t. Consider "leaf-on" condition. shading is appropriate for stream category (may include gaps associated with natural processes) ied (example: scattered trees) shading is appropriate for stream category (may include gaps associated with natural processes) ied dexample: scattered trees) shading is appropriate for stream category for left bank (LB) and right bank (RB) starting at the top the first break. Wooded LB RB A ≥ 100-feet wide or extends to the edge of the watershed B B From 50 to < 100-feet wide C C From 30 to < 50-feet wide C From 30 to < 50-feet wide C From 50 to < 100-feet wide
17. 18.	Basef Check A B C D E F Basef Check A B C D E F Consider Consider C D E E Consider C D E E E E E E E E E	low Correct all construction of all construction of all construction of all that Evider Obstruction of all that Evider Assessive None of Stream Degram of Width All Color of the construction of the construct	ributors within the assessment reach or within view of and draining to the assessment reach. s and/or springs (jurisdictional discharges) (include wet detention basins; do not include sediment basins or dry detention basins) ction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam) co of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) if the above actors − assessment area metric (skip for Tidal Marsh Streams) apply. ce of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) ction not passing flow during low flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) stream (≥ 24% impervious surface for watershed) ce that the stream-side area has been modified resulting in accelerated drainage into the assessment reach ment reach relocated to valley edge if the above essment reach metric (skip for Tidal Marsh Streams) tt. Consider "leaf-on" condition. shading is appropriate for stream category (may include gaps associated with natural processes) led (example: scattered trees) shading is appropriate for stream category (may include gaps associated with natural processes) led (example: scattered trees) shading is one or largely absent streamside area metric (skip for Tidal Marsh Streams) letated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top the first break. Wooded LB RB A A ≥ 100-feet wide or extends to the edge of the watershed B B B From 50 to < 100-feet wide C C C From 30 to < 50-feet wide C C C From 30 to < 50-feet wide

A B C D E	A Mature forest B Non-mature woody vegetation or modified vegetation structure C Herbaceous vegetation with or without a strip of trees < 10 feet wide D Maintained shrubs E Little or no vegetation	
Check a is within	B B B Maintained turf C C C C Pasture (no livestock)/commercial horticulture	
	ty – streamside area metric (skip for Tidal Marsh Streams) r left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). B A Medium to high stem density B Low stem density C No wooded riparian buffer or predominantly herbaceous species or bare ground	
	of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams) ether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10-feet wide. B The total length of buffer breaks is < 25 percent. B The total length of buffer breaks is between 25 and 50 percent. C The total length of buffer breaks is > 50 percent.	
Evaluate	Composition – First 100 feet of streamside area metric (skip for Tidal Marsh Streams) dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes ent reach habitat. B 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 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 or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees.	
25a. 🧻 `	C Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent or communities with non-native invasive species dominant over a large portion of expected strata or communities composed of planted stands of non-characteristic species or communities inappropriately composed of a single species or no vegetation. Y – assessment reach metric (skip for all Coastal Plain streams) No Was a conductivity measurement recorded? elect one of the following reasons. No Water	
	the box corresponding to the conductivity measurement (units of microsiemens per centimeter). <46 B 46 to < 67 C 67 to < 79 D 79 to < 230 E ≥ 230	
	surrounded by fallow pasture with small tree buffer.	_

Stream Site Name U-2412A	Date of Evaluation	4/12/2017
Stream Category Pa1	Assessor Name/Organization	C. Inscore/AECOM
	_	
Notes of Field Assessment Form (Y/N)		YES
Presence of regulatory considerations (Y/N)		YES
Additional stream information/supplementary measurements include	ed (Y/N)	YES
NC SAM feature type (perennial, intermittent, Tidal Marsh Stream)		Perennial

Function Class Rating Summary	USACE/ All Streams	NCDWR Intermitten
(1) Hydrology	HIGH	
(2) Baseflow	HIGH	
(2) Flood Flow	HIGH	
(3) Streamside Area Attenuation	HIGH	
(4) Floodplain Access	HIGH	
(4) Wooded Riparian Buffer	MEDIUM	
(4) Microtopography	HIGH	
(3) Stream Stability	HIGH	
(4) Channel Stability	HIGH	
(4) Sediment Transport	MEDIUM	
(4) Stream Geomorphology	HIGH	
(2) Stream/Intertidal Zone Interaction	NA NA	
(2) Longitudinal Tidal Flow	NA NA	
(2) Tidal Marsh Stream Stability	NA NA	
(3) Tidal Marsh Channel Stability	NA NA	
(3) Tidal Marsh Stream Geomorphology	NA NA	
(1) Water Quality	LOW	
(2) Baseflow	HIGH	
(2) Streamside Area Vegetation	MEDIUM	
(2) Upland Pollutant Filtration	MEDIUM	
	MEDIUM	
(3) Thermoregulation	NO	
(2) Indicators of Stressors	LOW	
(2) Aquatic Life Tolerance	·	
(2) Intertidal Zone Filtration	NA .	
(1) Habitat	LOW	
(2) In-stream Habitat	LOW	
(3) Baseflow	HIGH	
(3) Substrate (3) Stream Stability	MEDIUM HIGH	
(3) In-stream Habitat	LOW	
(2) Stream-side Habitat	MEDIUM	
(3) Stream-side Habitat	MEDIUM	
(3) Thermoregulation	MEDIUM	
(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 Geomorpholo	gy NA	
(3) Tidal Marsh In-stream Habitat	NA	
(2) Intertidal Zone Habitat	NA	
Overall	LOW	

USA	CE AID) #:	NCDWR #:
INST	RUCT	IONS: A	Attach a sketch of the assessment area and photographs. Attach a copy of the USGS 7.5-minute topographic
	_		cle the location of the stream reach under evaluation. If multiple stream reaches will be evaluated on the same
		,	d number all reaches on the attached map, and include a separate form for each reach. See the NC SAM User
			escriptions and explanations of requested information. Record in the "Notes/Sketch" section if any supplementary
			performed. See the NC SAM User Manual for examples of additional measurements that may be relevant.
			STRESSORS AFFECTING THE ASSESSMENT AREA (do not need to be within the assessment area).
			ORMATION:
	•	ame (if any	
		/owner na	
	ounty:		Guilford 6. Nearest named water body
	ver Ba		Cape Feer on USGS 7.5-minute quad: Deep River ecimal degrees, at lower end of assessment reach): 35.984634, -79.949189
		,	10N: (depth and width can be approximations)
			on attached map): SD 10. Length of assessment reach evaluated (feet): 487
		,	m bed (in riffle, if present) to top of bank (feet): 3
		•	top of bank (feet): 5-10 13. Is assessment reach a swamp stream?
14. F	eature	type:	© Perennial flow ☐ Intermittent flow ☐ Tidal Marsh Stream
STRE	EAM R	ATING IN	FORMATION:
15. N	IC SAN	/I Zone:	Mountains (M) Piedmont (P) Inner Coastal Plain (I) Outer Coastal Plain (O)
46 -			
		ed geomor	
	•	shape (ski)	
		Marsh Stre ned size: (s	
		lal Marsh \$	
1	101 110	aı ıvıdı Sil i	Ju Gain)
ADD	ITION	AL INFORM	MATION:
			onsiderations evaluated? Yes No If Yes, check all that appy to the assessment area.
		tion 10 wat	
	Esse	ential Fish	Habitat ☐ Primary Nursery Area ☐ High Quality Waters/Outstanding Resource Waters
	Pub	licly owned	d property ▼ NCDWR riparian buffer rule in effect Nutrient Sensitive Waters
	_ Ana	dromous fi	ish 33(d) List CAMA Area of Environmental Concern (AEC)
	•		presence of a federal and/or state listed protected species within the assessment area.
-		species:	
		•	itical Habitat (list species): eam information/supplementary measurements included in "Notes/Sketch" section or attached? © Yes © No
19. A	ile auu	illoriai sire	am mormation/supplementary measurements included in Notes/Sketch Section of attached:
			- assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams)
	ΒA		roughout assessment reach.
	DΒ		water in pools only.
(С	no water	in assessment reach.
2.	Evider	nce of Flov	w Restriction – assessment reach metric
(ΩА		10% of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the
			ibstructing flow <u>or a</u> channel choked with aquatic macrophytes <u>or</u> ponded water <u>or</u> impounded on flood or ebb within
			ssment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates).
0	₿В	Not A	
3.	Featur	e Pattern	– assessment reach metric
	ДΑ		y of the assessment reach has altered pattern (examples: straightening, modification above or below culvert).
0	® B	Not A.	
, ,	Foat	a Longitu	dinal Profile – assessment reach metric
	reatur 🗅 A	_	dinal Profile – assessment reach metric of assessment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming,
,	- A		on assessment reach has a substantially aftered stream profile (examples: channel profile has not reformed from any of
			turbances).
6	®B	Not A	
	_		
	_		Instability – assessment reach metric
		-	urrent instability, not past events from which the stream has currently recovered. Examples of instability include
	_		e, active channel down-cutting (head-cut), active widening, and artificial hardening (such as concrete, gabion, rip-rap).
	. A □ B		channel unstable
	ОС		% of channel unstable channel unstable
		2070 UI	
(_ C		oralina distable
6.	Strean	nside Area	a Interaction – streamside area metric
6.	Strean Consid	nside Area der for the	
6.	Strean Consid	nside Area der for the RB	a Interaction – streamside area metric e Left Bank (LB) and the Right Bank (RB).
6.	Strean Consid LB	nside Area der for the RB A Li	a Interaction – streamside area metric e Left Bank (LB) and the Right Bank (RB). ittle or no evidence of conditions that adversely affect reference interaction
6.	Strean Consid	nside Area der for the RB (a) A Li (b) B M	a Interaction – streamside area metric be Left Bank (LB) and the Right Bank (RB). ittle or no evidence of conditions that adversely affect reference interaction Moderate evidence of conditions (examples: berms, levees, down-cutting, aggradation, dredging) that adversely affect
6. 3 1	Strean Consid LB	nside Area der for the RB A Li B M	a Interaction – streamside area metric e Left Bank (LB) and the Right Bank (RB). ittle or no evidence of conditions that adversely affect reference interaction

۲.		uality Stressor I that apply.	s – assessm	ent reach/intertidal zone metric
		,	in stream or in	tertidal zone (milky white, blue, unnatural water discoloration, oil sheen, stream foam)
	C			ng of stream features or intertidal zone)
		oticeable evider dor (not includin		t discharges entering the assessment reach <u>and</u> causing a water quality problem
		*	0	lata indicating degraded water quality in the assessment reach. Cite source in the "Notes/Sketch"
	se	ection.		
	-			or intertidal zone
		cessive algae i		tertidal zone he intertidal zone (removal, burning, regular mowing, destruction, etc.)
		ther:	vogotation in ti	(explain in "Notes/Sketch" section)
	▼ J Litt	ttle to no stresso	ors	
8.	Recent W	eather – water	shed metric	
		or 2 streams, [)1 drought or h	nigher is considered a drought; for Size 3 or 4 streams, D2 drought or higher is considered a
	drought.	ought condition	s and no rainfa	all or rainfall not exceeding 1 inch within the last 48 hours
	=	-		exceeding 1 inch within the last 48 hours
	C No	o drought condit	tions	
9	-	-	eam – assess	ment reach metric
	C Yes	No Is st	ream is too lar	ge or dangerous to assess? If Yes, skip to Metric 13 (Streamside Area Ground Surface Condition).
10.	Natural In	-stream Habita	at Types – ass	sessment reach metric
	10a. 🗇 Ye	es 🖲 No	•	stream habitat over majority of the assessment reach (examples of stressors include excessive
				n, mining, excavation, in-stream hardening [for example, rip-rap], recent dredging, and snagging) size 4 Coastal Plain streams only, then skip to Metric 12)
	10h Chas	-lll th-t	•	· · · · · · · · · · · · · · · · · · ·
	TIOD. Cnec		•	5% coverage of assessment reach) (skip for Size 4 Coastal Plain streams) tes and aquatic mosses கு ஜ F 5% oysters or other natural hard bottoms
			1 7	tes and aquatic mosses , and algal mats) packs and/or emergent pac
	□B		ks and/or leaf p	packs and/or emergent ပို့ နိုင်ငံး H Low-tide refugia (pools)
	FIC	vegetation	wa and lawa (in	الله الله الله الله الله الله الله الله
	□[C			root mats and/or roots Q
	, , ,			mal wetted perimeter
	▼ E	Little or no h	abitat	
	Bedform a	and Substrate	– assessment	t reach metric (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams)
	11a. 🔘 Ye			nt reach in a natural sand-bed stream? (skip for Coastal Plain streams)
			-	propriate box(es).
	▽ A □ B		ction (evaluate ection (evaluat	·
	Πic	•	,	kip to Metric 12, Aquatic Life)
	Chec	ck at least one	box in each re	cur below the normal wetted perimeter of the assessment reach – whether or not submerged. ow (skip for Size 4 Coastal Plain Streams and Tidal Marsh Streams). Not Present (NP) =
				0%, Common (C) = > 10-40%, Abundant (A) = > 40-70%, Predominant (P) = > 70%. Cumulative
	NP	R C	A P	0% for each assessment reach.
		0 0	0 0	Bedrock/saprolite
	0	• •	0 0	Boulder (256 – 4096 mm)
	<u> </u>		0 0	Cobble (64 – 256 mm)
	0		0 0	Gravel (2 – 64 mm) Sand (.062 – 2 mm)
	0	ŏ ĕ	0 0	Silt/clay (< 0.062 mm)
		0 @	0 0	Detritus
	0		0 0	Artificial (rip-rap, concrete, etc.)
	0	• 0		
			Are pools fille	d with sediment? (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams)
12.	11d. (*) Ye Aquatic Li 12a. (*) Ye	es (No life – assessme es (No	ent reach met Was an in-str	ric (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams) eam aquatic life assessment performed as described in the User Manual?
12.	11d. (*) Ye Aquatic Li 12a. (*) Ye	es C No life – assessme es C No	ent reach met Was an in-str	ric (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams)
12.	11d. (*) Ye Aquatic Li 12a. (*) Ye	es No ife – assessme es No , select one of t	ent reach metr Was an in-str he following re Are aquatic of	ric (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams) eam aquatic life assessment performed as described in the User Manual?
12.	11d. (a) Ye Aquatic Li 12a. (a) Ye If No, 12b. (a) Ye	es No ife – assessme es No , select one of t	ent reach metro Was an in-stro he following re Are aquatic of all that apply.	ric (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams) ream aquatic life assessment performed as described in the User Manual? reasons and skip to Metric 13. No Water Other: rganisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check
12.	C 11d. C Ye Aquatic Li 12a. Ye If No, 12b. Ye	es No ife – assessme es No , select one of t	was an in-strict he following re Are aquatic or all that apply. ers over columns	ric (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams) eam aquatic life assessment performed as described in the User Manual? easons and skip to Metric 13. No Water Other: rganisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check If No, skip to Metric 13.

	Beetles (including water pennies)
	Caddisfly larvae (Trichoptera [T])
	Asian clam (Corbicula)
	☐
	☐ ☐ Damselfly and dragonfly larvae
	Dipterans (true flies)
	Mayfly larvae (Ephemeroptera [E])
	Megaloptera (alderfly, fishfly, dobsonfly larvae)
	Midges/mosquito larvae
	☐ ☑ Mosquito fish (Gambusia) or mud minnows (Umbra pygmaea)
	Mussels/Clams (not <i>Corbicula</i>)
	Other fish
	Salamanders/tadpoles
	Snails
	Stonefly larvae (Plecoptera [P])
	☐ ☐ ☐ Tipulid larvae ☐ ☐ ☐ Worms/leeches
	LI LIWOTTIS/TEECTIES
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
	C 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 include: 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 Majority of streamside area with depressions able to pond water ≥ 6 inches deep
	© B Majority of streamside area with depressions able to pond water 3 to 6 inches deep
	© C
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
	CY CY Are wetlands present in the streamside area?
	® 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)
	Obstruction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam)
	D Evidence of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage)
	E Stream bed or bank soil reduced (dig through deposited sediment if present)
	▼ None of the above
47	Paraflew Patractors - accompand are matrix (oldin for Tidal March Streams)
17.	Baseflow Detractors – assessment area metric (skip for Tidal Marsh Streams) Check all that apply.
	Evidence of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) Obstruction not passing flow during low flow periods affecting the assessment reach (ex: watertight dam, sediment deposit)
	Urban stream (≥ 24% impervious surface for watershed)
	D Evidence that the stream-side area has been modified resulting in accelerated drainage into the assessment reach
	E Assessment reach relocated to valley edge
	✓ None of the above
	El. Tomos and discre
18.	Shading – assessment reach metric (skip for Tidal Marsh Streams)
	Consider aspect. Consider "leaf-on" condition.
	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
	C B C B C B From 50 to < 100-feet wide
	C C C C C From 30 to < 50-feet wide
	C D C D C D From 10 to < 30-feet wide
	CE CE CE <10-feet wide or 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

	ABCDE	♠ A○ B○ C○ D○ E	Mature forest Non-mature woody vegetation or modified vegetation structure Herbaceous vegetation with or without a strip of trees < 10 feet wide Maintained shrubs Little or no vegetation
	Check is with If none Abuts LB A A B B C C	all approints 30 feet of the formal RB LOOK ACT OF THE FORMAL ACT	s – streamside area metric (skip for Tidal Marsh Streams) priate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). ### Stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). ### Stream (< 30 feet)
22.		-	streamside area metric (skip for Tidal Marsh Streams) t bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width).
	LB A B C	RB A B C	Medium to high stem density Low stem density No wooded riparian buffer or predominantly herbaceous species or bare ground
23.	Consid LB	der whethe RB	egetated Buffer – streamside area metric (skip for Tidal Marsh Streams) er vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10-feet wide.
		® A ○ B ○ C	The total length of buffer breaks is < 25 percent. The total length of buffer breaks is between 25 and 50 percent. The total length of buffer breaks is > 50 percent.
4.	Evalua	ate the dor	iposition – First 100 feet of streamside area metric (skip for Tidal Marsh Streams) ninant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes each habitat.
	C A	O A	Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native
	⊚ B	® B	species, with non-native invasive species absent or sparse. 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 or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees.
	O 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.
!5.	25a. 🤇	Yes (assessment reach metric (skip for all Coastal Plain streams) No Was a conductivity measurement recorded? t one of the following reasons. No Water Other:
		heck the I	cox corresponding to the conductivity measurement (units of microsiemens per centimeter). \bigcirc B 46 to < 67 \bigcirc C 67 to < 79 \bigcirc D 79 to < 230 \bigcirc E \geq 230
	es/Sket rmittent		at becomes perennial approximately at woodline. The intermittent portion is at the base of a very steep and large man

Stream Site Name U-2412A	Date of Evaluation	4/	12/2017	
Stream Category Pa1	Assessor Name/Organization_	C. Insc	ore/AECOM	
Notes of Field Assessment Form (Y/N)		_	YES	
Presence of regulatory considerations (Y/N)		_	YES	
Additional stream information/supplementary measurements include	d (Y/N)	_	YES	
NC SAM feature type (perennial, intermittent, Tidal Marsh Stream)		_	Perennial	

Function Class Rating Summary	USACE/ All Streams	NCDWR Intermitten
(1) Hydrology	HIGH	
(2) Baseflow	HIGH	
(2) Flood Flow	HIGH	
(3) Streamside Area Attenuation	HIGH	
(4) Floodplain Access	HIGH	
(4) Wooded Riparian Buffer	HIGH	
(4) Microtopography	HIGH	
(3) Stream Stability	HIGH	
(4) Channel Stability	HIGH	
(4) Sediment Transport	MEDIUM	
(4) Stream Geomorphology	HIGH	
(2) Stream/Intertidal Zone Interaction	NA	
(2) Longitudinal Tidal Flow	NA NA	
• • •	NA NA	
(2) Tidal Marsh Stream Stability	NA NA	
(3) Tidal Marsh Channel Stability	NA NA	
(3) Tidal Marsh Stream Geomorphology		
(1) Water Quality	MEDIUM	
(2) Baseflow	HIGH	
(2) Streamside Area Vegetation	HIGH	
(3) Upland Pollutant Filtration	HIGH	
(3) Thermoregulation	HIGH	
(2) Indicators of Stressors	NO	
(2) Aquatic Life Tolerance	LOW	
(2) Intertidal Zone Filtration	NA	
(1) Habitat	LOW	
(2) In-stream Habitat	LOW	
(3) Baseflow	HIGH	
(3) Substrate	MEDIUM	
(3) Stream Stability	HIGH	
(3) In-stream Habitat	LOW	
(2) Stream-side Habitat	HIGH	
(3) Stream-side Habitat	HIGH	
(3) Thermoregulation	HIGH	
(2) Tidal Marsh In-stream Habitat	NA NA	
(3) Flow Restriction	NA NA	
(3) Tidal Marsh Stream Stability	NA NA	
(4) Tidal Marsh Channel Stability	NA NA	
(4) Tidal Marsh In atroom Habitet	NA NA	
(3) Tidal Marsh In-stream Habitat (2) Intertidal Zone Habitat	NA NA	
(2) Intertidal Zone Habitat Overall	MEDIUM	

USA	CE AII) #:	NCDWR #:
		IONS:	1 0 1
	_		circle the location of the stream reach under evaluation. If multiple stream reaches will be evaluated on the same
		,	and number all reaches on the attached map, and include a separate form for each reach. See the NC SAM User
			d descriptions and explanations of requested information. Record in the "Notes/Sketch" section if any supplementary
			re performed. See the NC SAM User Manual for examples of additional measurements that may be relevant.
			OF STRESSORS AFFECTING THE ASSESSMENT AREA (do not need to be within the assessment area).
			NFORMATION: 2. Data of evaluation: 4/12/2017
	•	name (if	any): U-2412A 2. Date of evaluation: 4/12/2017 name: NCDOT 4. Assessor name/organization: C. Inscore/AECOM
	ounty:	UOWITEI	Guilford 6. Nearest named water body
	iver Ba	sin:	Cape Fear on USGS 7.5-minute quad: Deep River
			(decimal degrees, at lower end of assessment reach): 35.984203, -79.948799
STR	EAM II	NFORM	ATION: (depth and width can be approximations)
			ow on attached map): SE10. Length of assessment reach evaluated (feet): 30
			from bed (in riffle, if present) to top of bank (feet): Unable to assess channel depth.
			at top of bank (feet): Perennial flow 13. Is assessment reach a swamp stream? Yes No Tidal Marsh Stream
		type:	Perennial flow Intermittent flow Tidal Marsh Stream INFORMATION:
		M Zone	
		00	and the second of the second o
16. E	Estimat	ted geo	morphic
	•		skip for a C b
			Stream): (more sinuous stream, flatter valley slope) (less sinuous stream, steeper valley slope)
			e: (skip
	IOF HI	ıaı ıvlar	sh Stream)
ADD	ITION	AL INF	DRMATION:
			y considerations evaluated? Yes C No If Yes, check all that appy to the assessment area.
		tion 10	
1	Ess	ential F	ish Habitat Primary Nursery Area High Quality Waters/Outstanding Resource Waters
		•	ned property NCDWR riparian buffer rule in effect Nutrient Sensitive Waters
	•	ıdromoı	
,		specie:	ed presence of a federal and/or state listed protected species within the assessment area.
Ī		•	s. I Critical Habitat (list species):
		•	stream information/supplementary measurements included in "Notes/Sketch" section or attached? © Yes © No
1	Chanr	nel Wat	er – assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams)
	© A		throughout assessment reach.
	ОВ		w, water in pools only.
	ОС		ater in assessment reach.
2	Fyide	nce of l	Flow Restriction – assessment reach metric
			st 10% of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the
	*62		of obstructing flow or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within
		the as	sessment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates).
	■ B	Not A	
3.	Featur	re Patte	ern – assessment reach metric
	C A		ority of the assessment reach has altered pattern (examples: straightening, modification above or below culvert).
	® B	Not A	
	Featui		jitudinal Profile – assessment reach metric ity of assessment reach metric ity of assessment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming,
	- A	-	ry or assessment reach has a substantially aftered stream profile (examples: channel down-cutting, existing damning, videning, active aggradation, dredging, and excavation where appropriate channel profile has not reformed from any of
			disturbances).
	B	Not A	· · · · · · · · · · · · · · · · · · ·
	_		un lundahilitu.
	_		ve Instability – assessment reach metric
			y current instability, not past events from which the stream has currently recovered. Examples of instability include illure, active channel down-cutting (head-cut), active widening, and artificial hardening (such as concrete, gabion, rip-rap).
	active		s of channel unstable
	ОВ		25% of channel unstable
	O C		5 of channel unstable
		neida /	Area Interaction – streamside area metric
			the Left Bank (LB) and the Right Bank (RB).
	LB	RB	zon zam (zo) und mo mym sam (ms).
	⊕ Α	(€) A	Little or no evidence of conditions that adversely affect reference interaction
	ОВ	οВ	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])
	് റ	\cap \cap	Extensive evidence of conditions that adversely affect reference interaction (little to no floodplain/intertidal zone access

7.	Water Quality Stressors – assessment reach/intertidal zone metric Check all that apply. Discolored water in stream or intertidal zone (milky white, blue, unnatural water discoloration, oil sheen, stream foam) Responsi
	B Excessive sedimentation (burying of stream features or intertidal zone) Noticeable evidence of pollutant discharges entering the assessment reach and causing a water quality problem Odor (not including natural sulfide odors)
	Current published or collected data indicating degraded water quality in the assessment reach. Cite source in the "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:
8.	Recent Weather – watershed metric
	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 <u>and</u> no rainfall or rainfall not exceeding 1 inch within the last 48 hours B Drought conditions <u>and</u> rainfall exceeding 1 inch within the last 48 hours
9	© C No drought conditions Large or Dangerous Stream – assessment reach metric
3	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)
	Multiple aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats) B Multiple sticks and/or leaf packs and/or emergent vegetation C Multiple snags and logs (including lap trees) D 5% undercut banks and/or root mats and/or roots F 5% oysters or other natural hard bottoms Submerged aquatic vegetation L Low-tide refugia (pools) Sand bottom J 5% vertical bank along the marsh K Little or no habitat
	☐B Multiple sticks and/or leaf packs and/or emergent operation
	C Multiple snags and logs (including lap trees)
	□D 5% undercut banks and/or root mats and/or roots in banks extend to the normal wetted perimeter O ≥ I□K Little or no habitat
	▼ E Little or no habitat

11.	Bedform and Substrate – assessment reach metric (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams) 11a. C 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 riffles 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 ■ C C Bedrock/saprolite
	○ ○ ○ ○ ○ ○ Cobble (64 – 256 mm)○ ○ ○ ○ ○ ○ Gravel (2 – 64 mm)
	○ ○ ● ○ ○ Sand (.062 – 2 mm)
	○ ○ ● ○ ○ Silt/clay (< 0.062 mm)
	C C Detritus C C 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 Size 4 Coastal Plain streams and Tidal Marsh Streams)
12.	12a. • Yes ONo 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. ONo 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 (including water pennies)	
	Caddisfly larvae (Trichoptera [T])	
	Asian clam (Corbicula)	
	☐	
	Damselfly and dragonfly larvae	
	Dipterans (true flies)	
	Mayfly larvae (Ephemeroptera [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 (Plecoptera [P])	
	☐ ☐ Tipulid larvae	
	☐ ☐ Worms/leeches	
	El Montaglectres	
13.	8. Streamside Area Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types	s)
	Consider for the Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and	d
	upland runoff.	
	LB RB	
	A	
	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 include: ditches	, fill,
	soil, compaction, livestock disturbance, buildings, man-made levees, drainage pipes)	, ,
14.	l. Streamside Area Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley t	ypes)
	Consider for the Left Bank (LB) and the Right Bank (RB) of the streamside area.	
	LB RB	
	○ A O A Majority of streamside area with depressions able to pond water ≥ 6 inches deep	
	○ B ○ B Majority of streamside area with depressions able to pond water 3 to 6 inches deep	
	© C	
45	Westend December of transmilde area matrix (alsin for Tidel March Streams)	
15.	5. Wetland Presence – streamside area metric (skip for Tidal Marsh Streams) Consider for the Left Bonk (LB) and the Bight Book (BB). Do not consider wetlands suitaide of the excesside area or with	in the
	Consider for the Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or with	in the
	normal wetted perimeter of assessment reach.	
	LB RB	
	CY CY Are wetlands present in the streamside area?	
	® N	
16	6. 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 <u>and</u> draining to the assessment reach.	
	A Stroams and/or enrings (jurisdictional discharges)	
	Streams and/or springs (jurisdictional discharges)	
	B Ponds (include wet detention basins; do not include sediment basins or dry detention basins)	,
	Ponds (include wet detention basins; do not include sediment basins or dry detention basins) Obstruction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam)
	B Ponds (include wet detention basins; do not include sediment basins or dry detention basins) C Obstruction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam D Evidence of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage))
	□ B Ponds (include wet detention basins; do not include sediment basins or dry detention basins) □ C Obstruction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam □ D Evidence of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage) □ E Stream bed or bank soil reduced (dig through deposited sediment if present))
	B Ponds (include wet detention basins; do not include sediment basins or dry detention basins) C Obstruction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam D Evidence of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage))
	□ B Ponds (include wet detention basins; do not include sediment basins or dry detention basins) □ C Obstruction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam □ D Evidence of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage) □ E Stream bed or bank soil reduced (dig through deposited sediment if present))
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	♠ A♠ A⊖ B⊖ C⊖ C⊖ C⊖ C⊖ D⊖ E	Mature forest Non-mature woody vegetation <u>or</u> modified vegetation structure Herbaceous vegetation with or without a strip of trees < 10 feet wide Maintained shrubs Little or no vegetation
21.	Check all approis within 30 feet of If none of the formula to the following the follow	s – streamside area metric (skip for Tidal Marsh Streams) priate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). Illowing stressors occurs on either bank, check here and skip to Metric 22: 30 feet 30-50 feet B RB LB RB A A A A A A A A A A A A A A A A A A A
22.	•	streamside area metric (skip for Tidal Marsh Streams) t bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). Medium to high stem density Low stem density No wooded riparian buffer or predominantly herbaceous species or bare ground
23.	-	r vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams) r vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10-feet wide. The total length of buffer breaks is < 25 percent. The total length of buffer breaks is between 25 and 50 percent. The total length of buffer breaks is > 50 percent.
24.	•	position – First 100 feet of streamside area metric (skip for Tidal Marsh Streams) hinant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes each habitat. 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. 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 or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees. Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent or communities with non-native invasive species dominant over a large portion of expected strata or communities composed of planted stands of non-characteristic species or communities inappropriately composed of a single species or no vegetation.
	25a. C Yes If No, select	Assessment reach metric (skip for all Coastal Plain streams) No Was a conductivity measurement recorded? one of the following reasons. No Water Other: Ox corresponding to the conductivity measurement (units of microsiemens per centimeter). B 46 to < 67 C 67 to < 79 D 79 to < 230 E ≥ 230
Sm	all perennial strear	n that flows into SD, originates from seep upslope.

Stream Site Name U-2412A	Date of Evaluation	4/	12/2017	
Stream Category Pa1	Assessor Name/Organization_	C. Insc	ore/AECOM	
Notes of Field Assessment Form (Y/N)		_	YES	
Presence of regulatory considerations (Y/N)		_	YES	
Additional stream information/supplementary measurements include	d (Y/N)	_	YES	
NC SAM feature type (perennial, intermittent, Tidal Marsh Stream)		_	Perennial	

Function Class Rating Summary	USACE/ All Streams	NCDWR Intermitten
(1) Hydrology	HIGH	
(2) Baseflow	HIGH	
(2) Flood Flow	HIGH	
(3) Streamside Area Attenuation	HIGH	
(4) Floodplain Access	HIGH	
(4) Wooded Riparian Buffer	HIGH	
(4) Microtopography	HIGH	
(3) Stream Stability	HIGH	
(4) Channel Stability	HIGH	
(4) Sediment Transport	MEDIUM	
(4) Stream Geomorphology	HIGH	
(2) Stream/Intertidal Zone Interaction	NA	
(2) Longitudinal Tidal Flow	NA NA	
• • •	NA NA	
(2) Tidal Marsh Stream Stability	NA NA	
(3) Tidal Marsh Channel Stability	NA NA	
(3) Tidal Marsh Stream Geomorphology		
(1) Water Quality	MEDIUM	
(2) Baseflow	HIGH	
(2) Streamside Area Vegetation	HIGH	
(3) Upland Pollutant Filtration	HIGH	
(3) Thermoregulation	HIGH	
(2) Indicators of Stressors	NO	
(2) Aquatic Life Tolerance	LOW	
(2) Intertidal Zone Filtration	NA	
(1) Habitat	LOW	
(2) In-stream Habitat	LOW	
(3) Baseflow	HIGH	
(3) Substrate	MEDIUM	
(3) Stream Stability	HIGH	
(3) In-stream Habitat	LOW	
(2) Stream-side Habitat	HIGH	
(3) Stream-side Habitat	HIGH	
(3) Thermoregulation	HIGH	
(2) Tidal Marsh In-stream Habitat	NA NA	
(3) Flow Restriction	NA NA	
(3) Tidal Marsh Stream Stability	NA NA	
(4) Tidal Marsh Channel Stability	NA NA	
(4) Tidal Marsh In atroom Habitet	NA NA	
(3) Tidal Marsh In-stream Habitat (2) Intertidal Zone Habitat	NA NA	
(2) Intertidal Zone Habitat Overall	MEDIUM	

INS	SACE AID #:		NCDWR #:
			a and photographs. Attach a copy of the USGS 7.5-minute topographic
	•		der evaluation. If multiple stream reaches will be evaluated on the same
			nap, and include a separate form for each reach. See the NC SAM User
			formation. Record in the "Notes/Sketch" section if any supplementary or examples of additional measurements that may be relevant.
	•		MENT AREA (do not need to be within the assessment area).
	ROJECT / SITE INFORM		,
	Project name (if any):	U-2412A	2. Date of evaluation: 4/12/2017
	Applicant/owner name:	NCDOT	4. Assessor name/organization: C. Inscore/AECOM
	County:	Guilford	6. Nearest named water body
	River Basin: Site coordinates (decim	Cape Fear al degrees, at lower end of assessment	on USGS 7.5-minute quad: Deep River treach): 35.984665, -79.949363
	,	: (depth and width can be approxima	
9. 8	Site number (show on a	ittached map): SF	10. Length of assessment reach evaluated (feet): 104
	•	ed (in riffle, if present) to top of bank (fe	·
	. Channel width at top o . Feature type:	f bank (feet): 4 Perennial flow Intermittent flow	13. Is assessment reach a swamp stream? Yes No No Tidal Marsh Stream
	REAM RATING INFOR		1 Tradit Marsh Ottean
	. NC SAM Zone:		mont (P)
			\ /
16	Estimated accompandia		
16.	 Estimated geomorphic valley shape (skip for 		
	Tidal Marsh Stream)		
17.	. Watershed size: (skip	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 (\geq 5 mi ²)
	for Tidal Marsh Stre	am)	
ΔΠ	DITIONAL INFORMAT	ION-	
	. Were regulatory consider		No If Yes, check all that appy to the assessment area.
'	Section 10 water	Classified Trout Waters	✓ Water Supply Watershed (O I O II
	Essential Fish Hab		☐ High Quality Waters/Outstanding Resource Waters
	Publicly owned pro		le in effect Nutrient Sensitive Waters
	Anadromous fish	□ 303(d) List ence of a federal and/or state listed prot	CAMA Area of Environmental Concern (AEC) ected species within the assessment area.
	List species:		
	Designated Critical		
19.	. Are additional stream i	ntormation/supplementary measureme	nts included in "Notes/Sketch" section or attached?
1.	_		1 streams and Tidal Marsh Streams)
		nout assessment reach.	
		r in pools only. ssessment reach.	
_	₩		
2.		estriction – assessment reach metric	or riffle-pool sequence is adversely affected by a flow restriction or fill to the
	point of obstru		uatic macrophytes or ponded water or impounded on flood or ebb within
	•	ucting flow <u>or a channel choked with aq</u>	
	•	ucting flow <u>or a channel choked with aq</u>	uatic macrophytes <u>or</u> ponded water <u>or</u> impounded on flood or ebb within
3.	the assessme	ucting flow <u>or a channel choked with aq</u>	uatic macrophytes <u>or</u> ponded water <u>or</u> impounded on flood or ebb within
3.	the assessme B Not A Feature Pattern – as A A majority of t	ucting flow <u>or a channel choked with aq</u> ent reach (examples: undersized or perd sessment reach metric	uatic macrophytes <u>or</u> ponded water <u>or</u> impounded on flood or ebb within
3.	the assessme B Not A Feature Pattern – as	ucting flow <u>or a channel choked with aq</u> ent reach (examples: undersized or perd sessment reach metric	uatic macrophytes <u>or</u> ponded water <u>or</u> impounded on flood or ebb within ched culverts, causeways that constrict the channel, tidal gates).
3. 4.	the assessme Not A Feature Pattern – as A A majority of to Not A.	ucting flow <u>or a channel choked with aq</u> ent reach (examples: undersized or perd sessment reach metric	uatic macrophytes <u>or</u> ponded water <u>or</u> impounded on flood or ebb within ched culverts, causeways that constrict the channel, tidal gates).
3. 4.	the assessme Not A Feature Pattern – as A A majority of the B Not A. Feature Longitudina	ucting flow or a channel choked with aq ent reach (examples: undersized or pero sessment reach metric the assessment reach has altered patte Il Profile – assessment reach metric	uatic macrophytes <u>or</u> ponded water <u>or</u> impounded on flood or ebb within ched culverts, causeways that constrict the channel, tidal gates).
3. 4.	the assessment Not A Feature Pattern – as A A majority of the B Not A. Feature Longitudina A Majority of assover widening	ucting flow or a channel choked with aquent reach (examples: undersized or perosessment reach metric the assessment reach has altered pattern assessment reach metric sessment reach has a substantially altern, active aggradation, dredging, and except the control of the control	uatic macrophytes or ponded water or impounded on flood or ebb within ched culverts, causeways that constrict the channel, tidal gates). ern (examples: straightening, modification above or below culvert).
3. 4.	the assessme Not A Feature Pattern – as A A majority of the B Not A. Feature Longitudina A Majority of as over widening these disturbations	ucting flow or a channel choked with aquent reach (examples: undersized or perosessment reach metric the assessment reach has altered pattern assessment reach metric sessment reach has a substantially altern, active aggradation, dredging, and except the control of the control	uatic macrophytes or ponded water or impounded on flood or ebb within ched culverts, causeways that constrict the channel, tidal gates). ern (examples: straightening, modification above or below culvert). ered stream profile (examples: channel down-cutting, existing damming,
	in the assessment in B Not A Feature Pattern – as in A A majority of the B Not A. Feature Longitudina in A Majority of as over widening these disturbed. in B Not A	sessment reach metric the assessment reach has altered pattern assessment reach has altered pattern assessment reach has a substantially altern, active aggradation, dredging, and excepts.	uatic macrophytes or ponded water or impounded on flood or ebb within ched culverts, causeways that constrict the channel, tidal gates). ern (examples: straightening, modification above or below culvert). ered stream profile (examples: channel down-cutting, existing damming,
3.4.5.	in the assessment in B Not A Feature Pattern – as in A A majority of the B Not A. Feature Longitudina in A Majority of assover widening these disturbed in B Not A Signs of Active Insta	ucting flow or a channel choked with aquent reach (examples: undersized or perdesessment reach metric the assessment reach has altered patterns assessment reach metric sessment reach has a substantially alterns, active aggradation, dredging, and examples.	uatic macrophytes or ponded water or impounded on flood or ebb within ched culverts, causeways that constrict the channel, tidal gates). ern (examples: straightening, modification above or below culvert). ered stream profile (examples: channel down-cutting, existing damming, cavation where appropriate channel profile has not reformed from any of
	in the assessme in B Not A Feature Pattern – as in A A majority of the B Not A. Feature Longitudina in A Majority of as over widening these disturbations in B Not A Signs of Active Insta Consider only current	ucting flow or a channel choked with aquent reach (examples: undersized or perdesessment reach metric the assessment reach has altered pattern assessment reach metric sessment reach has a substantially altern active aggradation, dredging, and excances). Ability – assessment reach metric assessment reach metric ant instability, not past events from whether the continuous active and the continuous active assessment reach metric ant instability, not past events from whether the continuous active assessment reach metric ant instability, not past events from whether the continuous active	uatic macrophytes or ponded water or impounded on flood or ebb within ched culverts, causeways that constrict the channel, tidal gates). ern (examples: straightening, modification above or below culvert). ered stream profile (examples: channel down-cutting, existing damming, cavation where appropriate channel profile has not reformed from any of
	in the assessme in B Not A Feature Pattern – as in A A majority of the B Not A. Feature Longitudina in A Majority of as over widening these disturbations in B Not A Signs of Active Insta Consider only current	ucting flow or a channel choked with aquent reach (examples: undersized or perosessment reach metric the assessment reach has altered pattern assessment reach has a substantially altern active aggradation, dredging, and excances). Ability – assessment reach metric interest passessment reach metric interest passes	uatic macrophytes or ponded water or impounded on flood or ebb within ched culverts, causeways that constrict the channel, tidal gates). ern (examples: straightening, modification above or below culvert). ered stream profile (examples: channel down-cutting, existing damming, cavation where appropriate channel profile has not reformed from any of
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	the assessme Not A Feature Pattern – as A A majority of the B Not A. Feature Longitudina A Majority of as over widening these disturbed by the B Not A. Signs of Active Instate Consider only currenative bank failure, active bank failur	sessment reach metric the assessment reach has altered patter I Profile – assessment reach metric sessment reach has a substantially alte g, active aggradation, dredging, and excances). Ability – assessment reach metric this instability, not past events from will ctive channel down-cutting (head-cut), a mel unstable channel unstable	uatic macrophytes or ponded water or impounded on flood or ebb within ched culverts, causeways that constrict the channel, tidal gates). ern (examples: straightening, modification above or below culvert). ered stream profile (examples: channel down-cutting, existing damming, cavation where appropriate channel profile has not reformed from any of
	in the assessme in B Not A Feature Pattern – as in A A majority of the B Not A. Feature Longitudina in A Majority of as over widening these disturbations of Active Instatement of the Consider only current active bank failure, as in A < 10% of chair B 10 to 25% of C > 25% of chair Consider only current of the Consider only current	sessment reach metric the assessment reach has altered patter I Profile – assessment reach metric sessment reach has a substantially alte g, active aggradation, dredging, and excances). Ability – assessment reach metric this instability, not past events from will ctive channel down-cutting (head-cut), a mel unstable channel unstable	uatic macrophytes or ponded water or impounded on flood or ebb within ched culverts, causeways that constrict the channel, tidal gates). ern (examples: straightening, modification above or below culvert). ered stream profile (examples: channel down-cutting, existing damming, cavation where appropriate channel profile has not reformed from any of
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5.	the assessme Not A Feature Pattern – as A A majority of the B Not A. Feature Longitudina A Majority of assover widening these disturbed by the B Not A. Signs of Active Instate Consider only currelective bank failure, active bank failu	sessment reach metric the assessment reach has altered patter J Profile – assessment reach metric sessment reach has a substantially alte g, active aggradation, dredging, and excepts. Ability – assessment reach metric active ances). Ability – assessment reach metric ant instability, not past events from will be tive channel down-cutting (head-cut), a annel unstable channel unstable annel unstable eraction – streamside area metric t Bank (LB) and the Right Bank (RB).	uatic macrophytes or ponded water or impounded on flood or ebb within ched culverts, causeways that constrict the channel, tidal gates). ern (examples: straightening, modification above or below culvert). ered stream profile (examples: channel down-cutting, existing damming, cavation where appropriate channel profile has not reformed from any of thich the stream has currently recovered. Examples of instability include active widening, and artificial hardening (such as concrete, gabion, rip-rap).
5.	the assessme Not A Feature Pattern – as A A majority of the B Not A. Feature Longitudina A Majority of assover widening these disturbed in the B Not A. Signs of Active Instatement of Consider only currely active bank failure, active b	sessment reach metric the assessment reach has altered patter I Profile – assessment reach metric sessment reach has a substantially alte graces). Ability – assessment reach metric ances). Ability – assessment reach metric ances). Ability – assessment reach metric ant instability, not past events from will be channel down-cutting (head-cut), a annel unstable channel unstable annel unstable	uatic macrophytes or ponded water or impounded on flood or ebb within ched culverts, causeways that constrict the channel, tidal gates). ern (examples: straightening, modification above or below culvert). ered stream profile (examples: channel down-cutting, existing damming, cavation where appropriate channel profile has not reformed from any of thich the stream has currently recovered. Examples of instability include active widening, and artificial hardening (such as concrete, gabion, rip-rap).
5.	the assessme Not A Feature Pattern – as A A majority of the B Not A. Feature Longitudina over widening these disturbation of the B Not A. Signs of Active Instate Consider only currel active bank failure, and A < 10% of chall B 10 to 25% of C > 25% of chall Consider for the Left LB RB A A A Little B B B Mode	sessment reach metric the assessment reach has altered patter sessment reach has altered patter the assessment reach has altered patter sessment reach has a substantially alter gracine aggradation, dredging, and exces ances). Ability – assessment reach metric nt instability, not past events from whether the sessment down-cutting (head-cut), and the channel unstable	uatic macrophytes or ponded water or impounded on flood or ebb within ched culverts, causeways that constrict the channel, tidal gates). ern (examples: straightening, modification above or below culvert). ered stream profile (examples: channel down-cutting, existing damming, cavation where appropriate channel profile has not reformed from any of thich the stream has currently recovered. Examples of instability include active widening, and artificial hardening (such as concrete, gabion, rip-rap).
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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)			
	Excessive sedimentation (burying of stream features or intertidal zone)			
	C Noticeable evidence of pollutant discharges entering the assessment reach <u>and</u> causing a water quality problem Odor (not including natural sulfide odors)			
	E Current published or collected data indicating degraded water quality in the assessment reach. Cite source in the "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.) Other: (explain in "Notes/Sketch" section)			
	✓ J Little to no stressors			
8.	Recent Weather – watershed metric			
	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 <u>and</u> no rainfall or rainfall not exceeding 1 inch within the last 48 hours			
	Drought conditions and rainfall exceeding 1 inch within the last 48 hours			
	© C No drought conditions			
9	Large or Dangerous Stream – assessment reach metric (i) Yes (ii) 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. Tyes 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 □ □ □ □ F 5% oysters or other natural hard bottoms			
	(include liverworts, lichens, and algal mats)			
	B Multiple sticks and/or leaf packs and/or emergent S			
	▼C Multiple snags and logs (including lap trees)			
	in banks extend to the normal wetted perimeter Little or no habitat			

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-qlide section (evaluate 11d)			
	C Natural bedform absent (skip to Metric 12, Aquatic Life)			
	11c. In riffles 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 $\leq 10\%$, 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 ■ C C Bedrock/saprolite			
	 			
	○ ○ ○ ○ ○ Sand (.062 – 2 mm) ○ ○ ○ ○ ○ Silt/clay (< 0.062 mm)			
	C C Silt/clay (< 0.062 mm) C C Detritus			
	C C Artificial (rip-rap, concrete, etc.)			
	11d. Tyes 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 Size 4 Coastal Plain streams and Tidal Marsh Streams)			
12.	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.			
	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.			
	☐			
	Aquatic reptiles Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats)			

			Beetles (including water pennies)
			Caddisfly larvae (Trichoptera [T])
			Asian clam (<i>Corbicula</i>)
			Crustacean (isopod/amphipod/crayfish/shrimp)
			Damselfly and dragonfly larvae
			Dipterans (true flies)
			Mayfly larvae (Ephemeroptera [E])
			Megaloptera (alderfly, fishfly, dobsonfly larvae)
			Midges/mosquito larvae
			Mosquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea</i>)
	Πi	□i	Mussels/Clams (not <i>Corbicula</i>)
	Πİ	□i	Other fish
	Πİ	□i	Salamanders/tadpoles
	□i		Snails
			Stonefly larvae (Plecoptera [P])
	□i		Tipulid larvae
	□i		Worms/leeches
40	04	-:	County Courtes Condition at the small decrease the fact of the Tidel March Courtes and Decellerations
13.			ea Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types)
			e Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and
	upland i		
		RB	
			Little or no alteration to water storage capacity over a majority of the streamside area
	() B		Moderate alteration to water storage capacity over a majority of the streamside area
	OC (Severe alteration to water storage capacity over a majority of the streamside area (examples include: ditches, fill,
			soil, compaction, livestock disturbance, buildings, man-made levees, drainage pipes)
14.	Stream	side Are	a Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types)
			e Left Bank (LB) and the Right Bank (RB) of the streamside area.
	LB	RB	
	(A	OΑ	Majority of streamside area with depressions able to pond water ≥ 6 inches deep
	() B	ΟВ	Majority of streamside area with depressions able to pond water 3 to 6 inches deep
		€ C	Majority of streamside area with depressions able to pond water < 3 inches deep
45	Matlan	d Duana	and attenue ide and matrix (elsis for Tidal March Chromas)
15.			nce – streamside area metric (skip for Tidal Marsh Streams)
			e Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the
		welled p RB	erimeter of assessment reach.
		_	Are westende present in the etreameide erec?
	_	_	Are wetlands present in the streamside area?
	N □	■ N	
16.	Baseflo	w Cont	ributors – assessment reach metric (skip for size 4 streams and Tidal Marsh Streams)
	-		
	Check	all contr	ibutors within the assessment reach or within view of <u>and</u> draining to the assessment reach.
			
	\square A	Streams	ibutors within the assessment reach or within view of <u>and</u> draining to the assessment reach. and/or springs (jurisdictional discharges) nclude wet detention basins; do not include sediment basins or dry detention basins)
	□ A □ B	Streams Ponds (and/or springs (jurisdictional discharges)
	□ A □ B □ C	Streams Ponds (Obstruc	and/or springs (jurisdictional discharges) nclude wet detention basins; do not include sediment basins or dry detention basins)
	□ A □ B □ C □ D	Streams Ponds (Obstruc Evidence	and/or springs (jurisdictional discharges) Include wet detention basins; do not include sediment basins or dry detention basins) Ition that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam) It of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage)
	□ A □ B □ C □ D □ E	Streams Ponds (Obstruction of the contraction of t	and/or springs (jurisdictional discharges) Include wet detention basins; do not include sediment basins or dry detention basins) Ition that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam)
	□A □B □C □D □E □F	Streams Ponds (Obstruct Evidence Stream None of	and/or springs (jurisdictional discharges) include wet detention basins; do not include sediment basins or dry detention basins) tion that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam) e of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) the above
	□ A □ B □ C □ D □ E □ F Baseflo	Streams Ponds (Obstruct Evidence Stream None of	and/or springs (jurisdictional discharges) include wet detention basins; do not include sediment basins or dry detention basins) tion that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam) e of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) the above ictors – assessment area metric (skip for Tidal Marsh Streams)
	□A □B □C □D □E ▼F Baseflo	Streams Ponds (Obstruct Evidence Stream None of Ow Detra all that a	and/or springs (jurisdictional discharges) include wet detention basins; do not include sediment basins or dry detention basins) tion that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam) e of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) the above incrors – assessment area metric (skip for Tidal Marsh Streams) apply.
	□ A □ B □ C □ D □ E □ F Baseflo Check	Streams Ponds (Obstruct Evidence Stream None of Ow Detra all that a	and/or springs (jurisdictional discharges) include wet detention basins; do not include sediment basins or dry detention basins) tion that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam) e of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) the above increase assessment area metric (skip for Tidal Marsh Streams) apply. e of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation)
	□ A □ B □ C □ D □ E □ F Baseflo Check a □ A □ B	Streams Ponds (Obstruct Evidence Stream None of Ow Detra all that a Evidence Obstruct	and/or springs (jurisdictional discharges) include wet detention basins; do not include sediment basins or dry detention basins) tion that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam) e of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) the above incrors – assessment area metric (skip for Tidal Marsh Streams) apply. e of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) tion not passing flow during low flow periods affecting the assessment reach (ex: watertight dam, sediment deposit)
	A B C D E Baseflo Check a	Streams Ponds (Obstruct Evidence Stream None of None of Evidence Obstruct Urban s	and/or springs (jurisdictional discharges) include wet detention basins; do not include sediment basins or dry detention basins) tion that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam) e of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) the above ctors – assessment area metric (skip for Tidal Marsh Streams) apply. e of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) tion not passing flow during low flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) tream (≥ 24% impervious surface for watershed)
	□ A □ B □ C □ D □ E □ F Baseflo Check a □ A □ B □ C □ D	Streams Ponds (Obstruct Evidence Stream None of ow Detra all that a Evidence Obstruct Urban s Evidence	and/or springs (jurisdictional discharges) include wet detention basins; do not include sediment basins or dry detention basins) tion that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam) e of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage) bed or bank soil reduced (dig through deposited sediment if present) the above ctors – assessment area metric (skip for Tidal Marsh Streams) apply. e of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) tion not passing flow during low flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) tream (≥ 24% impervious surface for watershed) e that the stream-side area has been modified resulting in accelerated drainage into the assessment reach
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	A Mature forest B Non-mature woody vegetation or modified vegetation structure C C C Herbaceous vegetation with or without a strip of trees < 10 feet wide D Naintained shrubs E C E Little or no vegetation
21.	uffer Stressors – streamside area metric (skip for Tidal Marsh Streams) heck all appropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but within 30 feet of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). none of the following stressors occurs on either bank, check here and skip to Metric 22: V
22.	tem Density – streamside area metric (skip for Tidal Marsh Streams) consider for left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). B RB A IN A IN A Medium to high stem density B IN A IN A IN A B IN A IN A IN A IN A I
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. B RB A The total length of buffer breaks is < 25 percent. B C C C The total length of buffer breaks is > 50 percent.
24.	valuate the dominant vegetation within 100 feet of streamside area metric (skip for Tidal Marsh Streams) valuate the dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes of assessment reach habitat. B RB RB RB RB RB RB RB RB RB RB RB RB
25.	Tonductivity – assessment reach metric (skip for all Coastal Plain streams) 5a. ○ Yes No Was a conductivity measurement recorded? If No, select one of the following reasons. ○ No Water ○ Other: 5b. 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
	/Sketch: intermittent stream that drains to SD. Stream had almost no flow, was very mucky, and had large amounts of iron oxidizing bacteria.

Stream Site Name U-2412A	Date of Evaluation	4/12/2017
Stream Category Pa1	Assessor Name/Organization	C. Inscore/AECOM
Notes of Field Assessment Form (Y/N)		YES
Presence of regulatory considerations (Y/N)		YES
Additional stream information/supplementary measurements include	ed (Y/N)	YES
NC SAM feature type (perennial, intermittent, Tidal Marsh Stream)		Intermittent

Function Class Rating Summary	USACE/ All Streams	NCDWR Intermitter
(1) Hydrology	HIGH	HIGH
(2) Baseflow	HIGH	HIGH
(2) Flood Flow	HIGH	HIGH
(3) Streamside Area Attenuation	HIGH	HIGH
(4) Floodplain Access	HIGH	HIGH
(4) Wooded Riparian Buffer	HIGH	HIGH
(4) Microtopography	HIGH	HIGH
(3) Stream Stability	HIGH	HIGH
(4) Channel Stability	HIGH	HIGH
(4) Sediment Transport	LOW	LOW
	HIGH	HIGH
(4) Stream Geomorphology	NA NA	NA
(2) Stream/Intertidal Zone Interaction		
(2) Longitudinal Tidal Flow	NA NA	NA NA
(2) Tidal Marsh Stream Stability	NA NA	NA NA
(3) Tidal Marsh Channel Stability	NA NA	NA
(3) Tidal Marsh Stream Geomorphology		NA
(1) Water Quality	MEDIUM	MEDIUM
(2) Baseflow	HIGH	HIGH
(2) Streamside Area Vegetation	HIGH	HIGH
(3) Upland Pollutant Filtration	HIGH	HIGH
(3) Thermoregulation	HIGH	HIGH
(2) Indicators of Stressors	NO	NO
(2) Aquatic Life Tolerance	LOW	NA
(2) Intertidal Zone Filtration	NA	NA
(1) Habitat	LOW	HIGH
(2) In-stream Habitat	LOW	MEDIUM
(3) Baseflow	HIGH	HIGH
(3) Substrate	LOW	LOW
(3) Stream Stability	HIGH	HIGH
(3) In-stream Habitat	LOW	HIGH
(2) Stream-side Habitat	HIGH	HIGH
(3) Stream-side Habitat	HIGH	HIGH
(3) Thermoregulation	HIGH	HIGH
(2) Tidal Marsh In-stream Habitat	NA	NA
(3) Flow Restriction	NA	NA
(3) Tidal Marsh Stream Stability	NA	NA
(4) Tidal Marsh Channel Stab	· —	NA
(4) Tidal Marsh Stream Geom		NA
(3) Tidal Marsh In-stream Habitat	NA NA	NA
(2) Intertidal Zone Habitat	NA	NA
Overall	MEDIUM	HIGH

USACE AID) #:	NCDWR #:
INSTRUCTION	•	notographs. Attach a copy of the USGS 7.5-minute topographic
		ation. If multiple stream reaches will be evaluated on the same
	· ·	include a separate form for each reach. See the NC SAM User
	detailed descriptions and explanations of requested information.	
	ents were performed. See the NC SAM User Manual for example	· · · · · · · · · · · · · · · · · · ·
	DENCE OF STRESSORS AFFECTING THE ASSESSMENT ARI	EA (αο not need to be within the assessment area).
	/ SITE INFORMATION:	
1. Project na		Date of evaluation: 4/12/2017
		Assessor name/organization: C. Inscore/AECOM
5. County:		Nearest named water body on USGS 7.5-minute quad: Deep River
River BasiSite coord	sin: Cape Fear dinates (decimal degrees, at lower end of assessment reach):	on USGS 7.5-minute quad: <u>Deep River</u> 35.984489, -79.946309
	NFORMATION: (depth and width can be approximations)	30.001100, 10.040000
	` ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '	gth of assessment reach evaluated (feet): 265
	el depth from bed (in riffle, if present) to top of bank (feet):	Unable to assess channel depth.
12. Channel		ssessment reach a swamp stream? 💮 Yes 💮 No
14. Feature t	••	Marsh Stream
	ATING INFORMATION:	
15. NC SAM	M Zone:	C Inner Coastal Plain (I) Outer Coastal Plain (O)
		\ /
16 Eatimate	and geometric	
	ed geomorphic shape (skip for a	C b
-	shape (skip for a a war and a shape (skip for a (more sinuous stream, flatter valley slope)	(less sinuous stream, steeper valley slope)
	hed size: (skip Size 1 (< 0.1 mi ²) Size 2 (0.1 to <	
	lal Marsh Stream)	, &
	······································	
ADDITIONAL	AL INFORMATION:	
		s, check all that appy to the assessment area.
□ Section	tion 10 water Classified Trout Waters	✓ Water Supply Watershed (◯ I ◯ II ◯ III ● IV ◯ V)
Essei	ential Fish Habitat	☐ High Quality Waters/Outstanding Resource Waters
	licly owned property NCDWR riparian buffer rule in effect	
	dromous fish 303(d) List	CAMA Area of Environmental Concern (AEC)
	umented presence of a federal and/or state listed protected spe-	cies within the assessment area.
	species: ignated Critical Habitat (list species):	
	ignated Critical Habitat (list species): litional stream information/supplementary measurements include	ed in "Notes/Sketch" section or attached?
_	nel Water – assessment reach metric (skip for Size 1 streams	s and Tidal Marsh Streams)
	Water throughout assessment reach.	
=	No flow, water in pools only. No water in assessment reach.	
	nce of Flow Restriction – assessment reach metric	
	•	ol sequence is adversely affected by a flow restriction or fill to the
	point of obstructing flow or a channel choked with aquatic mac	
	the assessment reach (examples: undersized or perched culve	erts, causeways that constrict the channel, tidal gates).
B	Not A	
3. Feature	re Pattern – assessment reach metric	
	A majority of the assessment reach has altered pattern (examp	oles: straightening, modification above or below culvert).
	Not A.	
4. Feature	re Longitudinal Profile – assessment reach metric	
	Majority of assessment reach has a substantially altered strear	n profile (examples: channel down-cutting, existing damming
	over widening, active aggradation, dredging, and excavation w	1 (1
	these disturbances).	The state of the s
_	Not A	
-	of Active Instability – assessment reach metric	trees has assessed [Franchis of Section 1996, Sect. 1
		stream has currently recovered. Examples of instability include
_	bank failure, active channel down-cutting (head-cut), active wide < 10% of channel unstable	ening, and artificial hardening (such as concrete, gabion, rip-rap).
	< 10% of channel unstable 10 to 25% of channel unstable	
=	> 25% of channel unstable	
_		
	nside Area Interaction – streamside area metric	
	der for the Left Bank (LB) and the Right Bank (RB).	
	RB	
	Little or no evidence of conditions that adversely affect Moderate evidence of conditions (everyless berrye less	
() B (vees, down-cutting, aggradation, dredging) that adversely affect
		ea access, disruption of flood flows through streamside area, lain constriction, minor ditching [including mosquito ditching])
OC (reference interaction (little to no floodplain/intertidal zone access
3 U	= = = = = = = = = = = = = = = = = = =	

A Discolared water in stream or insended zone (miley white, blue, unnatural water discolaration, of sheep, stream foam)	7.	Water Quality Stressors – assessment reach/intertidal zone metric Check all that apply.
Recent Weather — valerable widedness of pollulatin discharges entering the assessment reach and causing a water quality problem		
D		
Comment published or collected data indicating degraded water quality in the assessment reach. Cite source in the "Notes/Sketch" section. Four Evestock with access to stream or intertical zone Four Evestock with access to stream or intertical zone Four Evestock with access to stream or intertical zone Four Evestock with access to stream or intertical zone Four Evestock with a property Four Fo		
F Livestock with access to alream or intentidal zone		
G Excessive algae in stream or interficial zone Compared mansh vegetation in the interficial zone Compared mansh vegetation in the interficial zone Compared mansh vegetation Compared man		
Comparison Com		
Recent Weather — watershed metric For Size 1 or 2 streams, D1 drought or higher is considered a drought; For Size 1 or 2 streams, D1 drought or higher is considered a drought. A Drought conditions and no rainfall not exceeding 1 inch within the last 48 hours B Drought conditions and no rainfall exceeding 1 inch within the last 48 hours C N drought conditions and no rainfall exceeding 1 inch within the last 48 hours C N drought conditions and no rainfall exceeding 1 inch within the last 48 hours C N drought conditions and a provided in the last 48 hours C N drought conditions and no rainfall exceeding 1 inch within the last 48 hours C N drought conditions and no rainfall exceeding 1 inch within the last 48 hours C R or Obarger Size 4 Coastal Plain streams and the last 48 hours N to stream habitat Types — assessment reach metric 10a. Yes No Is stream is too large or dangerous to assess? If Yes, skip to Metric 13 (Streamside Area Ground Surface Condition). 10b. Check all that occur (cours if 5% coverage of assessment reach (exception) (volutate for size 4 Coastal Plain streams only, then sky to Metric 12) 10b. Check all that occur (cours if 5% coverage of assessment reach), then provided excessive sent and the size of coastal Plain streams and the provided in the size of t		
8. Recent Weather – watershed metric 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. C		
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; conditions and no rainfall or exceeding 1 inch within the last 48 hours © C No drought conditions and no rainfall acceeding 1 inch within the last 48 hours © C No drought conditions and a provided in the last 48 hours © C No drought conditions and provided in the last 48 hours © C No drought conditions and provided in the last 48 hours P Large or Dangerous Stream – assessment reach metric Yes © No Isotromity to Degraded in-stream habitat over majority of the assessment reach (examples of stressors include excessive sedimentation, mining, excavation, in-stream hardening flor 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 it) = 5% coverage of assessment reach (skip for Size 4 Coastal Plain streams) Nulliple aquatic macrophytes and aquatic mosses (notuce levelworts, lichers, and sigal mats) F 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	8.	
A Drought conditions and no rainfall or exceeding 1 inch within the last 48 hours ■ C No drought conditions and rainfall exceeding 1 inch within the last 48 hours ■ C No drought conditions ■ 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 □ 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) □ No Check all that occur (occurs if > 5% coverage of assessment reach (skip for Size 4 Coastal Plain streams) □ No Check all that occur (occurs if > 5% coverage of assessment reach) (skip for Size 4 Coastal Plain streams) □ No Check all that occur (occurs if > 5% coverage of assessment reach) (skip for Size 4 Coastal Plain streams) □ No Multiple sticks and/or leaf packs and/or remergent to the stream of the provided explains (such and such assessment reach) (skip for Size 4 Coastal Plain streams) □ No Multiple snags and logs (including lap trees) □ No Multiple snags and logs (including lap trees) □ No Six undercut banks and/or root mats and/or roots □ No baltstate - assessment reach metric (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams) □ No Six undercut banks and/or root mats and/or roots □ No Redform and Substrate - assessment reach metric (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams) □ No Redform absent (skip to Metric 12, Aquatic Life) □ No No No No No No No No No No No No No		
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 ② No Is stream is too large or dangerous to assess? If Yes, skip to Metric 13 (Streamside Area Ground Surface Condition). 10. Natural Instream Habitat Types – assessment reach metric 10a. ○ Yes ③ No Degraded in-stream habitat over majority of the assessment reach (examples of stressors include excessive seminaria. 10a. ○ Yes ④ No Degraded in-stream habitat over majority of the assessment reach (examples of stressors include excessive seminaria. 10b. Check all that occur (occurs if > 5% coverage of assessment reach), then skip to Metric 12) 10c. Check all that occur (occurs if > 5% coverage of assessment reach) (skip for Size 4 Coastal Plain streams (nclude liverworts, lichens, and sigal max). ○ A Multiple satisfies and/or leaf packs and/or energent vegetation. ○ Wiltiple snages and logs (including lap tress). ○ D S W. undercurb banks and/or root mats and/or roots in banks extend to the normal wetted perimeter. □ E Little or no habitat 11b. Bedform and Substrate – assessment reach metric (skip for Size 4 Coastal Plain streams) 11c. ○ Yes ⑥ No Is assessment reach metric (skip for Size 4 Coastal Plain streams) 11d. ○ Yes ⑥ No Is assessment reach metric (skip for Size 4 Coastal Plain streams) 11d. ○ Yes ⑥ No Is assessment reach metric (skip for Size 4 Coastal Plain streams) 11d. ○ Yes ⑥ No Is assessment reach metric (skip for Size 4 Coastal Plain streams) 11d. ○ Yes ⑥ No Is assessment reach metric (skip for Size 4 Coastal Plain streams) 11d. ○ Yes ⑥ No Is assessment reach metric (skip for Size 4 Coastal Plain streams) 11d. ○ Yes ⑥ No Is assessment reach metric (skip for Size 4 Coastal Plain streams) 11d. ○ Yes ⑥ No Is assessment reach metric (skip for Size 4 Coastal Plain Streams) 11d. ○ Yes ○ No Is assessment reach metric (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams) 12d. ○ Ø O O O O O O O O O O O O O O O		
9 Large or Dangerous Stream – assessment reach metric Yes		
Natural In-stream Habitat Types — assessment reach metric		© C No drought conditions
10. Natural In-stream Habitat Types – assessment reach metric 10a.	9	
10a.		
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 invervorts, lichens, and algal mats) For size 4 Coastal Plain streams	10.	5:
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) F		
Multiple aquatic macrophytes and aquatic mosses (include fiverworts, lichens, and algal mats) F S S S S S S S S S		(evaluate for size 4 Coastal Plain streams only, then skip to Metric 12)
in banks extend to the normal wetted perimeter E		10b. Check all that occur (occurs if > 5% coverage of assessment reach) (skip for Size 4 Coastal Plain streams)
in banks extend to the normal wetted perimeter E		A Multiple aquatic macrophytes and aquatic mosses
in banks extend to the normal wetted perimeter E		Image: Section of the control of t
in banks extend to the normal wetted perimeter E		vegetation $\frac{1}{8}$ Sand bottom
in banks extend to the normal wetted perimeter E		✓ Multiple snags and logs (including lab frees) ✓ D 5% undercut banks and/or root mats and/or roots ✓ E g J 5% Vertical bank along the marsh
### 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.		in banks extend to the normal wetted perimeter
11. Bedform and Substrate – assessment reach metric (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams) 11a.		
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 11c) C Natural bedform absent (skip to Metric 12, Aquatic Life) 11c. In riffles 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		**************************************
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 riffles 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	11.	
▼ A Riffle-run section (evaluate 11c) B Pool-glide section (evaluate 11d) C Natural bedform absent (skip to Metric 12, Aquatic Life) 11c. In riffles 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 C C Bedrock/saprolite C C Boulder (256 – 4096 mm) C C C Gravel (2 – 64 mm) C C Gravel (2 – 64 mm) C C Stift/clay (< 0.062 mm) C C Stift/clay (< 0.062 mm) C C Detritus C C Artificial (rip-rap, concrete, etc.) 11d. Yes No Are pools filled with sediment? (skip for Size 4 Coastal Plain streams and 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. V		• • •
C Natural bedform absent (skip to Metric 12, Aquatic Life) 11c. In riffles 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) C C B C C B C C B C C C B C C C C C C		
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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) C Cobble (64 – 256 mm) G Gravel (2 – 64 mm) C G Gravel (2 – 64 mm) C G Gravel (2 – 64 mm) C G Gravel (2 – 64 mm) C G Gravel (2 – 64 mm) C G Gravel (2 – 64 mm) C G Gravel (2 – 64 mm) C G Gravel (2 – 64 mm) C G Gravel (2 – 64 mm) C G G Gravel (2 – 64 mm) C G G Gravel (2 – 64 mm) C G G Gravel (2 – 64 mm) C G G Gravel (2 – 64 mm) C G G G Gravel (2 – 64 mm) C G G Gravel (2 – 64 mm) C G G Gravel (2 – 64 mm) C G G Gravel (2 – 64 mm) C G G Gravel (2 – 64 mm) C G G G Gravel (2 – 64 mm) C G G G Gravel (2 – 64 mm) C G G G G G G G G G G G G G G G G G G G		
NP R C A P		
Bedrock/saprolite Boulder (256 – 4096 mm) Cobble (64 – 256 mm) Gravel (2 – 64 mm) Gravel (2 – 64 mm) Sand (.062 – 2 mm) Cobble (64 – 256 mm) Cobble (64 – 25		· · · · · · · · · · · · · · · · · · ·
Cobble (64 – 256 mm) Cravel (2 – 64 mm) Cravel (3 – 64 mm) Cravel (4 – 64 mm) Cravel (4 – 64 mm) Cravel (4 – 64 mm) Cravel (4 – 64 mm) Cravel (4 – 64 mm) Cravel (4 – 64 mm) Cravel (4 – 64 mm) Cravel (4 – 64 mm) Cravel (4 – 64 mm) Cravel (6 –		
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) 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 Numbers over columns refer to "individuals" for size 1 and 2 streams and "taxa" for size 3 and 4 streams. Adult frogs Aquatic reptiles		
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) 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 Numbers over columns refer to "individuals" for size 1 and 2 streams and "taxa" for size 3 and 4 streams. Adult frogs		
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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 Size 4 Coastal Plain streams and 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		
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1 >1 Numbers over columns refer to "individuals" for size 1 and 2 streams and "taxa" for size 3 and 4 streams. Adult frogs		
✓ Adult frogs Aquatic reptiles		
Aquatic reptiles		

			Beetles (including water pennies)
			Caddisfly larvae (Trichoptera [T])
			Asian clam (Corbicula)
			Crustacean (isopod/amphipod/crayfish/shrimp)
			Damselfly and dragonfly larvae
			Dipterans (true flies)
			Mayfly larvae (Ephemeroptera [E])
			Megaloptera (alderfly, fishfly, dobsonfly larvae)
			Midges/mosquito larvae
			Mosquito fish (Gambusia) or mud minnows (Umbra pygmaea)
			Mussels/Clams (not Corbicula)
			Other fish Salamanders/tadpoles
			Snails
			Stonefly larvae (Plecoptera [P])
			Tipulid larvae
			Worms/leeches
	•		
13.		er for t	rea Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types) he Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and
		RB	
		ΘA	Little or no alteration to water storage capacity over a majority of the streamside area
	ÖВ (ОВ	Moderate alteration to water storage capacity over a majority of the streamside area
	O C	ĊС	Severe alteration to water storage capacity over a majority of the streamside area (examples include: ditches, fill, soil, compaction, livestock disturbance, buildings, man-made levees, drainage pipes)
14.			rea Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types) he Left Bank (LB) and the Right Bank (RB) of the streamside area.
		RB	
	O A		Majority of streamside area with depressions able to pond water ≥ 6 inches deep
	OB (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.	Consid	er for t	ence – streamside area metric (skip for Tidal Marsh Streams) he Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the perimeter of assessment reach.
		welled RB	perimeter of assessment reach.
		ŌΥ	Are wetlands present in the streamside area?
	N		All Manarao process in the december of the
16.			tributors – assessment reach metric (skip for size 4 streams and Tidal Marsh Streams)
			tributors within the assessment reach or within view of <u>and</u> draining to the assessment reach.
			ns and/or springs (jurisdictional discharges)
	•		(include wet detention basins; do not include sediment basins or dry detention basins) ction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam)
			ce of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage)
			n bed or bank soil reduced (dig through deposited sediment if present)
			of the above
	•		
17.			actors – assessment area metric (skip for Tidal Marsh Streams)
	Check		·····
			ce of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation)
	7		ction not passing flow during low flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) stream (≥ 24% impervious surface for watershed)
			ce that the stream-side area has been modified resulting in accelerated drainage into the assessment reach
			ce that the stream-side area has been modified resulting in accelerated dramage into the assessment reach
			of the above
	J. Cont.	140110	1 110 10010
40			
10.		-	sessment reach metric (skip for Tidal Marsh Streams)
10.	Conside	er aspe	ct. Consider "leaf-on" condition.
10.	Conside	er aspe Stream	ct. Consider "leaf-on" condition. In shading is appropriate for stream category (may include gaps associated with natural processes)
10.	Consider A	er aspe Stream Degrad	ct. Consider "leaf-on" condition. In shading is appropriate for stream category (may include gaps associated with natural processes) Ided (example: scattered trees)
10.	Consider A	er aspe Stream Degrad	ct. Consider "leaf-on" condition. In shading is appropriate for stream category (may include gaps associated with natural processes)
	Conside A B C	er aspe Stream Degrad Stream	ct. Consider "leaf-on" condition. In shading is appropriate for stream category (may include gaps associated with natural processes) Ided (example: scattered trees)
	Consider A B Buffer N	er aspe Stream Degrad Stream	ct. Consider "leaf-on" condition. In shading is appropriate for stream category (may include gaps associated with natural processes) It ded (example: scattered trees) In shading is gone or largely absent
	Consider N	er aspe Stream Degrad Stream Width - er "veg	ct. Consider "leaf-on" condition. In shading is appropriate for stream category (may include gaps associated with natural processes) Ided (example: scattered trees) In shading is gone or largely absent In streamside area metric (skip for Tidal Marsh Streams)
	Consider N	er aspe Stream Degrad Stream Width - er "veg cout to	ct. Consider "leaf-on" condition. In shading is appropriate for stream category (may include gaps associated with natural processes) Ided (example: scattered trees) In shading is gone or largely absent In streamside area metric (skip for Tidal Marsh Streams) In streamside area metric (skip for Tidal Marsh Streams) In streamside area metric (skip for Tidal Marsh Streams)
	Consider A B C C Buffer N Consider of bank Vegetat	er aspe Stream Degrad Stream Width - er "veg	ct. Consider "leaf-on" condition. In shading is appropriate for stream category (may include gaps associated with natural processes) Ided (example: scattered trees) In shading is gone or largely absent In streamside area metric (skip for Tidal Marsh Streams) Igetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top Ithe first break. Wooded LB RB
	Consider N Consider N	er aspe Stream Degrad Stream Width - er "veg cout to ted RB	ct. Consider "leaf-on" condition. a shading is appropriate for stream category (may include gaps associated with natural processes) ded (example: scattered trees) a shading is gone or largely absent - streamside area metric (skip for Tidal Marsh Streams) getated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top the first break. Wooded LB RB A A ≥ 100-feet wide or extends to the edge of the watershed
	Consider A B C C Buffer I Consider Of bank Vegetat LB A B B	er aspe Stream Degrad Stream Width - er "veg cout to ted RB © A	ct. Consider "leaf-on" condition. a shading is appropriate for stream category (may include gaps associated with natural processes) ded (example: scattered trees) a shading is gone or largely absent - streamside area metric (skip for Tidal Marsh Streams) getated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top the first break. Wooded LB RB A A A ≥ 100-feet wide or extends to the edge of the watershed B B From 50 to < 100-feet wide
	Consider N Consider N	er aspe Stream Degrad Stream Width - er "veg c out to ded RB © A © B	ct. Consider "leaf-on" condition. a shading is appropriate for stream category (may include gaps associated with natural processes) ded (example: scattered trees) a shading is gone or largely absent - streamside area metric (skip for Tidal Marsh Streams) getated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top the first break. Wooded LB RB A A ≥ 100-feet wide or extends to the edge of the watershed B B B From 50 to < 100-feet wide C C From 30 to < 50-feet wide
	Consider A B C C Buffer V Consider Of bank Vegetat LB B C C D C D	er aspe Stream Degrad Stream Width - er "veg c out to ded RB © A © B	ct. Consider "leaf-on" condition. a shading is appropriate for stream category (may include gaps associated with natural processes) ded (example: scattered trees) a shading is gone or largely absent - streamside area metric (skip for Tidal Marsh Streams) getated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top the first break. Wooded LB RB A A A ≥ 100-feet wide or extends to the edge of the watershed B B B From 50 to < 100-feet wide C C C From 30 to < 50-feet wide D From 10 to < 30-feet wide
	Consider A B C C Buffer V Consider Of bank Vegetat LB B C C D C D	er aspe Stream Degrad Stream Width - er "veg c out to ded RB © A © B	ct. Consider "leaf-on" condition. a shading is appropriate for stream category (may include gaps associated with natural processes) ded (example: scattered trees) a shading is gone or largely absent - streamside area metric (skip for Tidal Marsh Streams) getated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top the first break. Wooded LB RB A A A ≥ 100-feet wide or extends to the edge of the watershed B B B From 50 to < 100-feet wide C C C From 30 to < 50-feet wide D From 10 to < 30-feet wide
19.	Consider A B C C Buffer V Consider Vegetat LB A C C D C C C C C C C C C C C C C C C C	er aspe Stream Degrad Stream Width - er "veg cout to ed RB A B C C C D C E	ct. Consider "leaf-on" condition. In shading is appropriate for stream category (may include gaps associated with natural processes) Ided (example: scattered trees) In shading is gone or largely absent - streamside area metric (skip for Tidal Marsh Streams) Idea to streamside a
19.	Consider A B C C Buffer N Consider S C B C C C B C C C C C C C C C C C C C	er aspe Stream Degrad Stream Width - er "veg cout to ed RB A B C C D D E Structu	ct. Consider "leaf-on" condition. a shading is appropriate for stream category (may include gaps associated with natural processes) ded (example: scattered trees) a shading is gone or largely absent - streamside area metric (skip for Tidal Marsh Streams) getated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top the first break. Wooded LB RB A A A ≥ 100-feet wide or extends to the edge of the watershed B B B From 50 to < 100-feet wide C C C From 30 to < 50-feet wide D From 10 to < 30-feet wide

	● A ● A Mature forest ○ B ○ B Non-mature woody vegetation or 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 CA CA CA CA CA CA CA CA CA CA CA CA CA C
	© 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 B Low stem density C C C No wooded riparian buffer or predominantly herbaceous species or 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 C B The total length of buffer breaks is between 25 and 50 percent. C C C The total length of buffer breaks is > 50 percent.
24.	. Vegetative Composition – First 100 feet of 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 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. 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 or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees.
	© 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 a conductivity measurement recorded? If No, select one of the following reasons. No Water Cother:
	25b. Check the box corresponding to the conductivity measurement (units of microsiemens per centimeter). \bigcirc A <46 \bigcirc B 46 to < 67 \bigcirc C 67 to < 79 \bigcirc D 79 to < 230 \bigcirc E \geq 230
	ites/Sketch: rge perennial stream that drains into the deep river.

Stream Site Name U-2412 A	_ Date of Evaluation _	4/1	2/2017	
Stream Category Pa3 Assessor Name/Organization C.		C. Insc	ore/AECOM	
Notes of Field Assessment Form (Y/N)		_	YES	
Presence of regulatory considerations (Y/N)				
Additional stream information/supplementary measurements included (Y/N)				
IC SAM feature type (perennial, intermittent, Tidal Marsh Stream)				

Function Class Rating Summary	USACE/ All Streams	NCDWR Intermitten
(1) Hydrology	HIGH	
(2) Baseflow	HIGH	
(2) Flood Flow	HIGH	
(3) Streamside Area Attenuation	HIGH	
(4) Floodplain Access	HIGH	
(4) Wooded Riparian Buffer	HIGH	
(4) Microtopography	LOW	
(3) Stream Stability	HIGH	
(4) Channel Stability	HIGH	
(4) Sediment Transport	MEDIUM	
(4) Stream Geomorphology	HIGH	
(2) Stream/Intertidal Zone Interaction	NA NA	
(2) Longitudinal Tidal Flow	NA NA	
(2) Tidal Marsh Stream Stability	NA NA	
(2) Tidal Marsh Channel Stability	NA NA	
•	NA NA	
(3) Tidal Marsh Stream Geomorphology		
(1) Water Quality	HIGH	
(2) Baseflow	HIGH	
(2) Streamside Area Vegetation	HIGH	
(3) Upland Pollutant Filtration	HIGH	
(3) Thermoregulation	HIGH	
(2) Indicators of Stressors	NO NO	
(2) Aquatic Life Tolerance	MEDIUM	
(2) Intertidal Zone Filtration	NA	
(1) Habitat	HIGH	
(2) In-stream Habitat	HIGH	
(3) Baseflow	HIGH	
(3) Substrate	MEDIUM	
(3) Stream Stability	HIGH	
(3) In-stream Habitat	HIGH	
(2) Stream-side Habitat	HIGH	
(3) Stream-side Habitat	HIGH	
(3) Thermoregulation	HIGH	
(2) Tidal Marsh In-stream Habitat	NA NA	
(3) Flow Restriction (3) Tidal Marsh Stream Stability	NA NA	
(3) Fluar Marsh Stream Stability (4) Tidal Marsh Channel Stabilit		
(4) Tidal Marsh Stream Geomor		
(3) Tidal Marsh In-stream Habitat	NA	
(2) Intertidal Zone Habitat	NA NA	
Overall	HIGH	

USACE /	AID #:	NCDWR #:
INSTRU	CTIONS: Attac	h a sketch of the assessment area and photographs. Attach a copy of the USGS 7.5-minute topographic
	•	he location of the stream reach under evaluation. If multiple stream reaches will be evaluated on the same
	•	mber all reaches on the attached map, and include a separate form for each reach. See the NC SAM User
		ptions and explanations of requested information. Record in the "Notes/Sketch" section if any supplementary
	•	ormed. See the NC SAM User Manual for examples of additional measurements that may be relevant.
		RESSORS AFFECTING THE ASSESSMENT AREA (do not need to be within the assessment area).
	T / SITE INFORM	
	t name (if any):	U-2412A 2. Date of evaluation: 4/12/2017
5. Count	ant/owner name:	NCDOT 4. Assessor name/organization: C. Inscore/AECOM Guilford 6. Nearest named water body
7. River I	•	Cape Fear on USGS 7.5-minute quad: Deep River
		al degrees, at lower end of assessment reach): 35.984941, -79.943049
	,	: (depth and width can be approximations)
9. Site nu	umber (show on a	attached map): SH10. Length of assessment reach evaluated (feet): 369
11. Chan	inel depth from be	ed (in riffle, if present) to top of bank (feet): 0.5 Unable to assess channel depth.
	nel width at top o	, ,
14. Featu	, ·	Perennial flow Intermittent flow Tidal Marsh Stream
	I RATING INFOR AM Zone:	MATION: © Mountains (M) © Piedmont (P) © Inner Coastal Plain (I) © Outer Coastal Plain (O)
15. NC 3	AW ZONE.	(intercoastal Figure 1) Surface (in Coastal Figure 1) Surface (in Coastal Figure 1)
16. Estim	nated geomorphic	
	ey shape (skip fo	
Tida	ıl Marsh Stream)	(less sinuous stream, steeper valley slope) (less sinuous stream, steeper valley slope)
17. Wate	ershed size: (skip	⑤ Size 1 (< 0.1 mi²)
for	Tidal Marsh Stre	am)
A D D :=: -	MAL INFORMA	lan.
	NAL INFORMAT	
	ection 10 water	derations evaluated?
	ection to water ssential Fish Hab	
	ublicly owned pro	
	nadromous fish	□ 303(d) List □ CAMA Area of Environmental Concern (AEC)
		ence of a federal and/or state listed protected species within the assessment area.
	ist species:	
		Habitat (list species):
19. Are a	idditional stream	information/supplementary measurements included in "Notes/Sketch" section or attached? © Yes © No
1. Cha	nnel Water – ass	sessment reach metric (skip for Size 1 streams and Tidal Marsh Streams)
A		hout assessment reach.
O B		r in pools only.
() C	No water in a	ssessment reach.
2. Evic	lence of Flow Re	estriction – assessment reach metric
(A	At least 10%	of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the
	point of obstru	ucting flow <u>or a</u> channel choked with aquatic macrophytes <u>or</u> ponded water <u>or</u> impounded on flood or ebb within
		ent reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates).
	Not A	
3. Fea	ture Pattern – as	sessment reach metric
A		the assessment reach has altered pattern (examples: straightening, modification above or below culvert).
ÖВ		- -
4. Feat	ture I ongitudina	Il Profile – assessment reach metric
4. Fea	_	sessment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming,
***		g, active aggradation, dredging, and excavation where appropriate channel profile has not reformed from any of
	these disturba	
ΟВ		
5 Ci	ne of Active Inch	ability – assessment reach metric
-		ability – assessment reach metric nt instability, not past events from which the stream has currently recovered. Examples of instability include
	-	ctive channel down-cutting (head-cut), active widening, and artificial hardening (such as concrete, gabion, rip-rap).
(■) A		
ÖВ		channel unstable
Õ C		
_		praction – straamsida araa matric
		eraction – streamside area metric 't Bank (LB) and the Right Bank (RB).
LB	RB	t balik (Lb) alla tile kiglit balik (kb).
O A		or no evidence of conditions that adversely affect reference interaction
(B		rate evidence of conditions (examples: berms, levees, down-cutting, aggradation, dredging) that adversely affect
		, , , , , , , , , , , , , , , , , , ,
		ence interaction (examples: limited streamside area access, disruption of flood flows through streamside area,
	refere	ence interaction (examples: limited streamside area access, disruption of flood flows through streamside area, or intermittent bulkheads, causeways with floodplain constriction, minor ditching [including mosquito ditching])

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 tourying of stream features or intertidal zone) Noticeable evidence of poliulant discharges entering the assessment reach and causing a water quality problem Oxfor (not including natural sulfide oxfore) Code (not including natural sulfide oxfore) Code (not including natural sulfide oxfore) Code (not including natural sulfide oxfore) Code (not including natural sulfide oxfore) Code (not including natural sulfide oxfore) Livestock with access to stream or intertidal zone H b Degraded marsh vegetation in the intertidal zone (removal, burning, regular mowing, destruction, etc.) United to no stressors Recent Weather — watersted matric 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 in ot exceeding 1 inch within the last 48 hours © C No drought conditions Large or Dangerous Stream — assessment reach matric (No Size 1 or 2 streams habitat Types — assessment reach matric (No Size 1 or 2 streams) No begraded in-stream habitat vower majority of the assessment reach (examples of stressors include excessive sedimentation, mining, excavation, in-stream hadering (for example, rip-rap), ricent dredging, and snagging) (evaluate for size 4 Casstal Plain streams only, then skip to Metric 12) 10b. Check all that occur (occur if 5 5% coverage of assessment reach) (skip for Size 4 Casstal Plain streams)			•		s – ass	essme	nt reach/intertidal zone metric
B Excessive sedimentation (burying of stream features or intertidal zone) C Noticeable evidence of politish discharges entering the assessment reach and causing a water quality problem Odor (not including natural sulfide odors) C Current published or collected data indicating degraded water quality in the assessment reach. Cite source in the "Notes/Sketch" section. F Livestock with access to stream or intertidal zone G Excessive algae in stream or intertidal zone G Excessive algae in stream or intertidal zone (removal, burning, regular mowing, destruction, etc.) Other:					n strean	n or inte	rtidal zone (milky white, blue, unnatural water discoloration, oil sheep, stream foam)
Do Odor (not including natural sulfide odors) E Current published or collected data indicating degraded water quality in the assessment reach. Cite source in the "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 (emoval, burning, regular mowing, destruction, etc.) Other: (explain in "Notes/Sketch' section) 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 reinfall 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 N Drought conditions and rainfall 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 and rainfall 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 Large or Dangerous Stream – assessment reach metric C Yes ■ No Is alternal is loo large or dangerous to assess? If Yes, skip to Metric 13 (Streamside Area Ground Surface Condition) Natural In-attream Habitat Types — assessment reach metric 10a. C Yes ■ No Degraded in-stream habitat over majority of the assessment reach (excessive sedimentation, mining, accessation, thereas majority in the assessment reach (except figure 4). Natural In-attream Habitat Types — assessment reach metric in the assessment reach (except figure 4) in the assessment reach (except figure 4). 10b. Check all that occur (occur if > Sect Accessate Plain streams and reach (except figure 4). Natural beafform and Substrate — assessment reach metric (exip for Size 4 Coastal Plain streams and Tidal Marsh Streams) 11b. Bedform and Substrate — assessment reach metric (exip for Size 4 Coastal Plain streams and Tidal Marsh Streams) 11c. Natural beafform about (except looks							
Current published or collected data indicating degraded water quality in the assessment reach. Cite source in the "Notes/Sketch" section. F Livestock with access to stream or intentidal zone G Excessive algae in stream or intentidal zone H Degraded marsh vegetation in the intentidal zone (explain in "Notes/Sketch" section.) Utilite to no stressors (explain in "Notes/Sketch" section.) Utilite to no stressors (explain in "Notes/Sketch" section.) Utilite to no stressors (explain in "Notes/Sketch" section.) Utilite to no stressors (explain in "Notes/Sketch" section.) Utilite to no stressors (explain in "Notes/Sketch" section.) Utilite to no stressors (explain in "Notes/Sketch" section.) Utilite to no stressors (explain in "Notes/Sketch" section.) Utilite to no stressors (explain in "Notes/Sketch" section.) Utilite to no stressors (explain in "Notes/Sketch" section.) Utilite to no stressors (explain in "Notes/Sketch" section.) Utility of the stressor (explain in "Notes/Sketch" section.) Utility of the stressor (explain in "Notes/Sketch" section.) Utility of the stressor (explain in "Notes/Sketch" section.] Utility o							
Section: Section:			,	,			,
Excessive algae in stream or intentidal zone (removal, burning, regular mowing, destruction, etc.) Other:				DIIOITOG	01 00110	otou uut	a maloating adjuded water quality in the addedenion reach. One beared in the reaction
Degraded marsh vegetation in the intertidal zone (removal, burning, regular mowing, destruction, etc.) Other Oth	-						
Other:				_			
Recent Weather – watershed metric 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 D Drought conditions and no rainfall or rainfall not exceeding 1 inch within the last 48 hours No drought conditions and no rainfall or rainfall exceeding 1 inch within the last 48 hours No drought conditions 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 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 5% coverage of assessment reach) (skip for Size 4 Coastal Plain streams) A Multiple adjustic macrophytes and aquatic mosses (include liveworks, lichens, and algula mats) B Multiple sticks and/or leaf packs and/or root mats and/or roots in banks extend to the normal wetted perimeter Ver Etitle or no habitat TREMAINING QUESTIONS ARE NOT APPLICABLE FOR TIDAL MARSH STREAMS** REMAINING QUESTIONS ARE NOT APPLICABLE FOR TIDAL MARSH STREAMS** 11a. Yes No is assessment reach in a natural sand-bed stream? (skip for Coastal Plain streams) 11b. In riffles 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 s 10%, Common (C) = 10-40%, Abundant (A) = > 40-70%, Predominant (P) = > 70%. Cumulative percentages should not exceed 100% for each assessment reach. No No a		_			-9		
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 conditions and no rainfall or rainfall not exceeding 1 inch within the last 48 hours © C No drought conditions and rainfall exceeding 1 inch within the last 48 hours © C No drought conditions 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 Natural In-stream Habitat Types – assessment reach metric 10a. (**O'es** ® No Is stream is too large or dangerous to assess? If Yes, skip to Metric 13 (Streamside Area Ground Surface Condition Natural In-stream Habitat Types – assessment reach metric 10a. (**O'es** ® No Is stream habitat over majority of the assessment reach (examples of stressors include excessive semination, 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 Muttiple aquate macrophyres and aquatic mosses (including lapt reas)	✓ J	Little	to no	stresso	rs		
C							
C 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 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) 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 liverwords, lichens, and algal mats) B Multiple aquatic macrophytes and aquatic mosses (include liverwords, lichens, and algal mats) B Multiple stocks and/or leaf packs and/or emergent vegetation C Multiple sanges and logs (including lap trees) D S windercut banks and/or root mats and/or roots in banks extend to the normal wetted perimeter F E Little or no habitat REMAINING QUESTIONS ARE NOT APPLICABLE FOR TIDAL MARSH STREAMS REMAINING QUESTIONS ARE NOT APPLICABLE FOR TIDAL MARSH STREAMS 11a. C Yes ® No Is assessment reach metric (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams) 11b. Bedform evaluated. Check the appropriate box(es). P A Riffle-run section (evaluate 11c) B Podo-poligide section (evaluate 11c) C Natural bedform absent (skip to Metric 12, Aquatic Life) 11c. In riffles sections, check all that occur below the normal wetted perimeter of the assessment reach — whether or not submerged. Check ta least one box in each row (skip for Size 4 Coastal Plain Streams and Tidal Marsh Streams). Not Present (NP) = absent, Rare (R) = present Dut ≤ 10%. Common (C) = > 10.40%, Abundant (A) =			r 2 stre	eams, D	1 aroug	gnt or nig	gner is considered a drought; for Size 3 or 4 streams, D2 drought or higher is considered a
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 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 mosesses [For Size 4 Coastal Plain streams] □ B Multiple aquatic macrophytes and aquatic mosesses [For Size 4 Coastal Plain streams] □ B Multiple squate macrophytes and aquatic mosesses [For Size 4 Coastal Plain streams] □ B Multiple squate macrophytes and aquatic mosesses [For Size 4 Coastal Plain streams] □ C Multiple squate macrophytes and aquatic mosesses [For Size 4 Coastal Plain streams] □ D 5% undercut banks and/or root mats and/or roots in banks extend to the normal wetted perimeter [For Size 4 Coastal Plain streams] ■ Bedform and Substrate — assessment reach metric (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams) 11a. ○ Yes ● No Is assessment reach metric (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams) 11a. ○ Yes ● No Is assessment reach metric (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams) 11b. Bedform evaluated. Check the appropriate box(es). □ A Riffle-run section (evaluate 11d) □ C Natural bedform absent (skip to Metric 12, Aquatic Life) 11c. In riffles 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) not Present (NP) = absent, Rare (R) = present but ± 10%, Common (C) = > 10-40%, Abundant (A) = > 40-70%, Predo	ΘA	Drou	-				
Large or Dangerous Stream – assessment reach metric (**) Notarial In-stream Habitat Types – assessment reach metric (**) Natural In-stream Habitat Types – assessment reach metric (**) Natural In-stream Habitat Types – assessment reach metric (**) 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) Multiple aquatic macrophytes and aquatic mosses (include livervovins, lichens, and algal mats) 5% coverage of assessment reach) (skip for Size 4 Coastal Plain streams) Multiple sicks and/or leaf packs and/or emergent vegetation 5% vortices of other natural hard bottom (include livervovins, lichens, and/or root mats and/or root mats and/or root mats and/or root mats and/or root in banks extend to the normal wetted perimeter 5			-			infall ex	ceeding 1 inch within the last 48 hours
Natural In-stream Habitat Types – assessment reach metric 10a. ○ Yes No			_				
Natural In-stream Habitat Types – assessment reach metric 10a. ○ Yes	_	_	-				
10a. C Yes	_	_				_	
(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) B Multiple sticks and/or leaf packs and/or emergent vegetation C Multiple snags and logs (including lap trees) We regetation C Multiple snags and logs (including lap trees) D 5% undercut banks and/or root mats and/or roots in banks extend to the normal wetted perimeter FIE Little or no habitat ***REMAINING QUESTIONS ARE NOT APPLICABLE FOR TIDAL MARSH STREAMS** ***Bedform and Substrate − assessment reach metric (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams) 11a. ○ Yes No Is assessment reach metric 12, Aquatic Life) 11b. Bedform evaluated. Check the appropriate box(es), Fig. Pool-glide section (evaluate 11d) C Natural bedform absent (skip to Metric 12, Aquatic Life) 11c. In riffles 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 C G Bedrock/saprolite C G G Bedrock/saprolite C G G Bedrock/saprolite C G G G Sill/clay (< 0.062 mm) C G G G Sill/clay (< 0.062 mm) C G G G Sill/clay (< 0.062 mm) C G G G Sill/clay (< 0.062 mm) C G G G Sill/clay (< 0.062 mm) C G G G Sill/clay (< 0.062 mm) C G G G G Sill/clay (< 0.062 mm) C G G G Sill/clay (< 0.062 mm) C G G G Sill/clay (< 0.062 mm) C G G G G G G G G G G G G G G G G G G		_	_				
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 F 5% coysters or other natural hard bottoms (include liverworts, lichens, and algal mats) F 5% coysters or other natural hard bottoms (include liverworts, lichens, and algal mats) F 5% coysters or other natural hard bottoms (include liverworts, lichens, and algal mats) F 5% coysters or other natural hard bottoms (include liverworts, lichens, and algal mats) F 5% coysters or other natural hard bottoms (include liverworts, lichens, and algal mats) F 5% coysters or other natural hard bottoms (include liverworts, lichens, and algal mats) F 5% coysters or other natural hard bottoms (include liverworts, lichens, and algal mats) F 5% coysters or other natural hard bottoms (including lap trees) F 5% coysters or other natural hard bottoms (including lap trees) F 5% coysters or other natural hard bottoms (including lap trees) F 5% coysters or other natural hard bottoms (including lap trees) F 5% coysters or other natural hard bottoms (including lap trees) F 5% coysters or other natural hard bottoms (including lap trees) F 5% coysters or other natural hard bottoms (including lap trees) F 5% coysters or other natural hard bottoms (including lap trees) F 5% coysters or other natural hard bottoms (including lap trees) F 5% coysters or other natural hard bottoms (including lap trees) F 5% coysters or other natural hard bottoms (including lap trees) F 5% coysters or other natural hard bottoms (including lap trees) F 5% coysters or other natural hard bottoms (including lap trees) F 5% coysters or other natural hard bottoms (including hard breams) F 5% coysters or other natural hard bottoms (including hard breams) F 5% coysters or other natural hard bottoms (including hard breams) F 5% coysters or other natural hard bottoms (including hard breams) F 5% coysters or othe							5
A Multiple aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats) F S S S S S S S S S					(evalua	ate for s	ize 4 Coastal Plain streams only, then skip to Metric 12)
in banks extend to the normal wetted perimeter E							6 coverage of assessment reach) (skip for Size 4 Coastal Plain streams)
in banks extend to the normal wetted perimeter E		ПА					and algal mats) and algal mats) G G G G G G G G G G G G G
in banks extend to the normal wetted perimeter E		□ B			s and/o	r leaf pa	ıcks and/or emergent jo to communication in the communication is a second control of the communication in the communication
in banks extend to the normal wetted perimeter E			_		ic and l	ogs (incl	प्रवीकृत lan troop) See of I Sand bottom
in banks extend to the normal wetted perimeter E				_		-	bot mats and/or roots OS
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 riffles 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 N Bedrock/saprolite ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑			in bar	nks exte	end to th	ne norma	•
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 riffles 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 A P Bedrock/saprolite Boulder (256 – 4096 mm)		✓ E	Little	or no ha	abitat		
11c. In riffles 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) C Cobble (64 – 256 mm) C Gravel (2 – 64 mm) C Gravel (2 – 64 mm) C Gravel (2 – 64 mm) C Atflicial (rip-rap, concrete, etc.) 11d. Yes No Are pools filled with sediment? (skip for Size 4 Coastal Plain streams and 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 Cother: 12b. Yes No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check	11a. 11b.	. C Yes Bedford ☑A ☐B	m eval Riffle- Pool-	No uated. -run sec glide se	Is assest Check stion (evection (e	ssment the app valuate 1 valuate	reach in a natural sand-bed stream? (skip for Coastal Plain streams) ropriate box(es). 1c) 11d)
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			Natur	ai bedic	orm abs	ent (ski)	p to Metric 12, Aquatic Lite)
Bedrock/saprolite Boulder (256 – 4096 mm) Cobble (64 – 256 mm) Gravel (2 – 64 mm) Cobble (64 – 256 mm) Cobble (64		Check absent percen	at leas , Rare tages s	st one I (R) = pr should r	box in e resent b not exce	each rov out ≤ 10% eed 100%	w (skip for Size 4 Coastal Plain Streams and Tidal Marsh Streams). Not Present (NP) = %, Common (C) = > 10-40%, Abundant (A) = > 40-70%, Predominant (P) = > 70%. Cumulative
Boulder (256 – 4096 mm) Cobble (64 – 256 mm) Cobble							Redrock/caprolite
Cobble (64 – 256 mm) Gravel (2 – 64 mm) Sand (.062 – 2 mm) Sand (.062 – 2 mm) Silt/clay (< 0.062 mm) Detritus Note that the color 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			\circ		Ö		·
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) Aquatic Life – assessment reach metric (skip for Size 4 Coastal Plain streams and 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			0	•	0	0	Cobble (64 – 256 mm)
C C 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) Aquatic Life – assessment reach metric (skip for Size 4 Coastal Plain streams and 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		0	0	0			
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) Aquatic Life – assessment reach metric (skip for Size 4 Coastal Plain streams and 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		Ö	ŏ	ŏ			
11d. © Yes © No Are pools filled with sediment? (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams) Aquatic Life – assessment reach metric (skip for Size 4 Coastal Plain streams and 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		0	0		0	0	Detritus
. Aquatic Life – assessment reach metric (skip for Size 4 Coastal Plain streams and 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				0	0	0	Artificial (rip-rap, concrete, etc.)
12a. C 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 C Other: 12b. C Yes No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check	11d.	Tes Yes	@ I	No	Are poo	ols filled	with sediment? (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams)
12b. Tes No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check	12a.	C Yes	(€) I	No	Was an	n in-strea	am aquatic life assessment performed as described in the User Manual?
an that apply. If the, only to motion to.		,	_	No	Are aqu	uatic org	anisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check
1 >1 Numbers over columns refer to "individuals" for size 1 and 2 streams and "taxa" for size 3 and 4 streams.		4	>1 I	Numbor			refer to "individuals" for size 1 and 2 streams and "taya" for size 2 and 4 streams
Adult frogs		1		MULLIDE	S OVEL (columns	relet to individuals for size i and 2 streams and taxa for size 3 and 4 streams.
Aquatic reptiles Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats)			Ad	ult frogs	3	columns	refer to individuals for size i and 2 streams and taxa for size 3 and 4 streams.

			Beetle	es (includ	ding water pennies)	
	Γ		Caddi	sfly larva	ae (Trichoptera [T])	
	Γ		Asian	clam (C	Porbicula)	
	Γ	Ti 1	Crusta	acean (is	sopod/amphipod/crayfish/shrimp)	
		- 3			l dragonfly larvae	
				ans (true		
					(Ephemeroptera [E])	
					alderfly, fishfly, dobsonfly larvae)	
					uito larvae	
					(Gambusia) or mud minnows (Umbra pygmaea)	
	- 1				s (not Corbicula)	
	Г		Other	fish		
	Γ		Salam	nanders/f	tadpoles	
	Г		Snails	j		
	Г	Ti 1	Stone	fly larvae	e (Plecoptera [P])	
			Tipulio			
				s/leeche	25	
13.	Strea	mside A	Area Gro	ound Su	rface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types)	
	Cons	ider for	the Left	Bank (I	LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and	
	uplan	d runoff.				
	LB	RB				
	A	A	Little o	or no alte	eration to water storage capacity over a majority of the streamside area	
		ОВ			ration to water storage capacity over a majority of the streamside area	
	_	ÖC			ion to water storage capacity over a majority of the streamside area (examples include: ditches, fill,	
	1_ C	(_, C			on, livestock disturbance, buildings, man-made levees, drainage pipes)	
			SOII, C	Jiiipaciic	on, livestock disturbance, buildings, man-made levees, dramage pipes)	
14.	Strea	mside A	rea Wa	ter Stora	age – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types)	
					LB) and the Right Bank (RB) of the streamside area.	
	LB	RB		(-	, (, (,	
			Maiori	ity of stre	eamside area with depressions able to pond water ≥ 6 inches deep	
		O B		•	earnside area with depressions able to pond water 2 of inches deep	
	_	_	•	•	· · · · · · · · · · · · · · · · · · ·	
			iviajori	ty of stre	eamside area with depressions able to pond water < 3 inches deep	
15.	Wetla	nd Pres	ence –	streams	side area metric (skip for Tidal Marsh Streams)	
					LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the	
				-	sessment reach.	
	LB	RB	pomino	tor or as	Sessificiti readii.	
	O Y		Aro	otlanda r	propert in the etraphicide grap?	
			Are w	etianas p	present in the streamside area?	
	N	N				
16	Raset	flow Co	ntributo	re _ 2ee	sessment reach metric (skip for size 4 streams and Tidal Marsh Streams)	
10.						
					n the assessment reach or within view of <u>and</u> draining to the assessment reach.	
					s (jurisdictional discharges)	
	□В				etention basins; do not include sediment basins or dry detention basins)	
		Obstr	uction th	at passe	es some flow during low-flow periods within assessment area (beaver dam, bottom-release dam)	
		Evide	nce of b	ank seep	page or sweating (iron oxidizing bacteria in water indicates seepage)	
	□ E	Stream	m bed o	r bank so	oil reduced (dig through deposited sediment if present)	
	V F	None	of the al	oove		
17.					ssment area metric (skip for Tidal Marsh Streams)	
	Chec	k all tha	t apply.			
	$\square A$	Evide	nce of s	ubstantia	al water withdrawals from the assessment reach (includes areas excavated for pump installation)	
	\Box B				ng flow during low flow periods affecting the assessment reach (ex: watertight dam, sediment deposit)	
	□[C	Urban	stream	(≥ 24%	impervious surface for watershed)	
	□jɒ	Evide	nce that	the stream	am-side area has been modified resulting in accelerated drainage into the assessment reach	
	□İE	Asses	sment r	each rele	ocated to valley edge	
	▼ F		of the al			
18.	Shad	ing – as	sessme	nt reacl	h metric (skip for Tidal Marsh Streams)	
	Consi	der aspe	ect. Cor	nsider "le	eaf-on" condition.	
	A	Stream	m shadir	ng is app	propriate for stream category (may include gaps associated with natural processes)	
	ОВ	Degra	ided (ex	ample: s	cattered trees)	
	ОС	Stream	m shadir	na is aor	ne or largely absent	
	_			0 0	• /	
19.	Buffe	r Width	– streaı	nside aı	rea metric (skip for Tidal Marsh Streams)	
	Cons	ider "ve	getated	buffer"	and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top	
	of ba	nk out t	o the fir	st break	c.	
	Veget	tated	Wood	ed		
	LB	RB	LB	RB		
	. A	(■) A	(■) A	(■) A	> 100-feet wide or extends to the edge of the watershed	
					≥ 100-feet wide or extends to the edge of the watershed	
	_	O B		ΩВ	From 50 to < 100-feet wide	
		ÕĈ	⊙ c	ÕĈ	From 30 to < 50-feet wide	
	O D	O D	Ō D	O D	From 10 to < 30-feet wide	
	O E	○ E	O E	O E	< 10-feet wide <u>or</u> no trees	
20	D	. C4		room of d	la area matria (akin far Tidal Marah Stroama)	
20.					le area metric (skip for Tidal Marsh Streams)	
				к (LB) а	and right bank (RB) for Metric 19 ("Vegetated" Buffer Width).	
	LB	RB				

() B () C () D () E	© A O B O C O D O E	Mature forest Non-mature woody vegetation <u>or</u> modified vegetation structure Herbaceous vegetation with or without a strip of trees < 10 feet wide Maintained shrubs Little or no vegetation
Check is within If none Abuts LB A B C C C C C C C C C C C C C C C C C	all appro	
	-	streamside area metric (skip for Tidal Marsh Streams) t bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). Medium to high stem density Low stem density No wooded riparian buffer or predominantly herbaceous species or bare ground
	-	r vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams) r vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10-feet wide. The total length of buffer breaks is < 25 percent. The total length of buffer breaks is between 25 and 50 percent. The total length of buffer breaks is > 50 percent.
Evaluat	te the don	position – First 100 feet of streamside area metric (skip for Tidal Marsh Streams) ninant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes each habitat. 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.
		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 or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees. Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent or communities with non-native invasive species dominant over a large portion of expected strata or communities composed of planted
25a. 🧖 If	Yes (E No, select	stands of non-characteristic species or communities inappropriately composed of a single species or no vegetation. Inspection of the following reasons. In

Stream Site Name U-2412A	Date of Evaluation	4/12/2017		
Stream Category Pa1 Assessor Name/Organization		C. Inscore/AECOM		
	_			
Notes of Field Assessment Form (Y/N)		YES		
Presence of regulatory considerations (Y/N)				
dditional stream information/supplementary measurements included (Y/N)				
IC SAM feature type (perennial, intermittent, Tidal Marsh Stream)				

Function Class Rating Summary	USACE/ All Streams	NCDWR Intermitten
(1) Hydrology	MEDIUM	MEDIUM
(2) Baseflow	HIGH	HIGH
(2) Flood Flow	MEDIUM	MEDIUM
(3) Streamside Area Attenuation	HIGH	HIGH
(4) Floodplain Access	MEDIUM	MEDIUM
(4) Wooded Riparian Buffer	HIGH	HIGH
(4) Microtopography	HIGH	HIGH
(3) Stream Stability	LOW	LOW
(4) Channel Stability	HIGH	HIGH
(4) Sediment Transport	LOW	LOW
	LOW	LOW
(4) Stream Geomorphology	NA NA	
(2) Stream/Intertidal Zone Interaction	-	NA NA
(2) Longitudinal Tidal Flow	NA NA	NA NA
(2) Tidal Marsh Stream Stability	NA NA	NA NA
(3) Tidal Marsh Channel Stability	NA NA	NA
(3) Tidal Marsh Stream Geomorphology	NA	NA
(1) Water Quality	MEDIUM	MEDIUM
(2) Baseflow	HIGH	HIGH
(2) Streamside Area Vegetation	HIGH	HIGH
(3) Upland Pollutant Filtration	HIGH	HIGH
(3) Thermoregulation	HIGH	HIGH
(2) Indicators of Stressors	NO	NO
(2) Aquatic Life Tolerance	LOW	NA
(2) Intertidal Zone Filtration	NA	NA
(1) Habitat	LOW	LOW
(2) In-stream Habitat	LOW	LOW
(3) Baseflow	HIGH	HIGH
(3) Substrate	LOW	LOW
(3) Stream Stability	MEDIUM	MEDIUM
(3) In-stream Habitat	LOW	LOW
(2) Stream-side Habitat	HIGH	HIGH
(3) Stream-side Habitat	HIGH	HIGH
(3) Thermoregulation	HIGH	HIGH
(2) Tidal Marsh In-stream Habitat	NA	NA
(3) Flow Restriction	NA	NA
(3) Tidal Marsh Stream Stability	NA	NA
(4) Tidal Marsh Channel Stability	NA	NA
(4) Tidal Marsh Stream Geomorphology	NA	NA
(3) Tidal Marsh In-stream Habitat	NA	NA
(2) Intertidal Zone Habitat	NA	NA
Overall	MEDIUM	MEDIUM

USACE A	ND #:	NCDWR #:
INSTRUC		a sketch of the assessment area and photographs. Attach a copy of the USGS 7.5-minute topographic
		e location of the stream reach under evaluation. If multiple stream reaches will be evaluated on the same
,	,	mber all reaches on the attached map, and include a separate form for each reach. See the NC SAM User
		stions and explanations of requested information. Record in the "Notes/Sketch" section if any supplementary
	•	med. See the NC SAM User Manual for examples of additional measurements that may be relevant. ESSORS AFFECTING THE ASSESSMENT AREA (do not need to be within the assessment area).
	T / SITE INFORM	·
	name (if any):	U-2412A 2. Date of evaluation: 4/18/2017
	ant/owner name:	NCDOT 4. Assessor name/organization: C. Inscore/AECOM
5. County		Guilford 6. Nearest named water body
7. River E	Basin:	Cape Fear on USGS 7.5-minute quad: Deep River
	,	al degrees, at lower end of assessment reach): 35.985239, -79.937275
		(depth and width can be approximations)
	mber (show on a	tached map): SI 10. Length of assessment reach evaluated (feet): 486 d (in riffle, if present) to top of bank (feet): 1-2 Unable to assess channel depth.
	nel width at top o	
14. Featu	· ·	Perennial flow Intermittent flow Tidal Marsh Stream
STREAM	RATING INFOR	MATION:
15. NC S	AM Zone:	○ Mountains (M)
16 Ection	atad gaama==k:-	
	ated geomorphic y shape (skip for	
	i Marsh Stream)	
	rshed size: (skip	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 (\geq 5 mi ²)
for T	idal Marsh Strea	
	NAL INFORMATI	
	• .	lerations evaluated? • Yes O No If Yes, check all that appy to the assessment area.
	ection 10 water ssential Fish Hab	□ Classified Trout Waters □ Water Supply Watershed (□ I □ III □ IV □ V tat □ Primary Nursery Area □ High Quality Waters/Outstanding Resource Waters
	ublicly owned pro	
	nadromous fish	□ 303(d) List □ CAMA Area of Environmental Concern (AEC)
		nce of a federal and/or state listed protected species within the assessment area.
	st species:	
		Habitat (list species):
19. Are a	dditional stream i	nformation/supplementary measurements included in "Notes/Sketch" section or attached? © Yes © No
	nnel Water – ass	essment reach metric (skip for Size 1 streams and Tidal Marsh Streams)
(■) A	•	out assessment reach.
() B () C	No flow, water	
U	NO water in as	sessment reach.
		striction – assessment reach metric
O A		of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the
	•	cting flow <u>or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within</u>
@ B	Not A	nt reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates).
		sessment reach metric
() A		ne assessment reach has altered pattern (examples: straightening, modification above or below culvert).
⊕ B	Not A.	
_	_	Profile – assessment reach metric
ΘA		sessment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming,
		, active aggradation, dredging, and excavation where appropriate channel profile has not reformed from any of
(€) B	these disturba Not A	nues).
_		
-		bility – assessment reach metric
	-	nt instability, not past events from which the stream has currently recovered. Examples of instability include
activ	e bank failure, ac	tive channel down-cutting (head-cut), active widening, and artificial hardening (such as concrete, gabion, rip-rap).
(B) A		channel unstable
ÖC	> 25% of char	
_		
		raction – streamside area metric Rank (LR) and the Bight Bank (PR)
LB	RB	Bank (LB) and the Right Bank (RB).
(€) A		or no evidence of conditions that adversely affect reference interaction
ÕВ		ate evidence of conditions (examples: berms, levees, down-cutting, aggradation, dredging) that adversely affect
		nce 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])
O C	C Exten	sive evidence of conditions that adversely affect reference interaction (little to no floodplain/intertidal zone access

7.	Water Quality Stressors – assessment reach/intertidal zone metric Check all that apply.
	Discolored water in stream or intertidal zone (milky white, blue, unnatural water discoloration, oil sheen, stream foam) Excessive sedimentation (burying of stream features or intertidal zone)
	Noticeable evidence of pollutant discharges entering the assessment reach and causing a water quality problem
	Odor (not including natural sulfide odors) Current published or collected data indicating degraded water quality in the assessment reach. Cite source in the "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.)
	□ Other:
8.	Recent Weather – watershed metric
0.	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. C 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
10.	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 □ 2 □ F 5% oysters or other natural hard bottoms
	(include liverworts, lichens, and algal mats) ☐ G Submerged aquatic vegetation ☐ B Multiple sticks and/or leaf packs and/or emergent 등 등 등 ☐ H Low-tide refugia (pools)
	vegetation Sandror lear packs and/or emergent 50 % = I Sand bottom
	Multiple aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats) B Multiple sticks and/or leaf packs and/or emergent vegetation C Multiple snags and logs (including lap trees) D 5% undercut banks and/or root mats and/or roots F 5% oysters or other natural hard bottoms Submerged aquatic vegetation L Low-tide refugia (pools) Sand bottom J 5% vertical bank along the marsh K Little or no habitat
	in banks extend to the normal wetted perimeter
	▼ E Little or no habitat

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 riffles 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 \leq 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
	 C C Boulder (256 – 4096 mm) C Cobble (64 – 256 mm)
	○ ○ ● ○ ○ Gravel (2 – 64 mm)
	○ ○ ○ ● ○ Sand (.062 – 2 mm)
	○ ○ ○ ○ ○ Silt/clay (< 0.062 mm)
	C
	11d. (2) Yes (2) 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 Size 4 Coastal Plain streams and 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.
	12b. Yes \(\bigcap\) 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.
	☐
	☐ ☐ Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats)

	Beetles (including water pennies)	
	☐ ☐ Caddisfly larvae (Trichoptera [T])	
	Asian clam (Corbicula)	
	☐ ☐ Crustacean (isopod/amphipod/crayfish/shrimp)	
	Damselfly and dragonfly larvae	
	Dipterans (true flies)	
	Mayfly larvae (Ephemeroptera [E])	
	Megaloptera (alderfly, fishfly, dobsonfly larvae)	
	Midges/mosquito larvae	
	☐ ☐ Mosquito fish (Gambusia) or mud minnows (Umbra pygmaea)	
	Mussels/Clams (not Corbicula)	
	☐	
	□ □ Salamanders/tadpoles □ □ Snails	
	Stonefly larvae (Plecoptera [P])	
	Tipulid larvae	
	_, _,	
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	
	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 include: 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 	
	C C C Majority of streamside area with depressions able to pond water < 3 inches deep	
45		
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	
	X	
	CN CN	
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 <u>and</u> draining to the assessment reach.	
	Streams and/or springs (jurisdictional discharges)	
	Ponds (include wet detention basins; do not include sediment basins or dry detention basins) Obstruction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam)	
	Obstruction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam) Evidence of bank seepage or sweating (iron oxidizing bacteria 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.	
	Evidence of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation)	
	□ Obstruction not passing flow during low flow periods affecting the assessment reach (ex: watertight dam, sediment deposit) □ Urban stream (≥ 24% impervious surface for watershed)	
	Evidence that the stream-side area has been modified resulting in accelerated drainage into the assessment reach Assessment reach relocated to valley edge	
	✓ Rosessifient reach relocated to valley edge	
	El. Hallo di dia datore	
18.	. Shading – assessment reach metric (skip for Tidal Marsh Streams)	
	Consider aspect. Consider "leaf-on" condition.	
	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	
	© B ○ B ○ B From 50 to < 100-feet wide	
	CCCCCFrom 30 to < 50-feet wide	
	CD CD CD From 10 to < 30-feet wide	
	○ 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).	
	IR RR	

	O A	Mature forest Non-mature woody vegetation or modified vegetation structure Herbaceous vegetation with or without a strip of trees < 10 feet wide Maintained shrubs Little or no vegetation
21.	Check all approis within 30 feet If none of the fabuts LB RB A A A A A A A A A A A A A A A A A A A	rs – streamside area metric (skip for Tidal Marsh Streams) opriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). ollowing stressors occurs on either bank, check here and skip to Metric 22: < 30 feet
22.	•	streamside area metric (skip for Tidal Marsh Streams) ft bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). Medium to high stem density Low stem density No wooded riparian buffer or predominantly herbaceous species or bare ground
23.	•	egetated Buffer – streamside area metric (skip for Tidal Marsh Streams) er vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10-feet wide. The total length of buffer breaks is < 25 percent. The total length of buffer breaks is between 25 and 50 percent. The total length of buffer breaks is > 50 percent.
24.	-	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. 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 or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees.
25.	25a. 🗘 Yes If No, selec	assessment reach metric (skip for all Coastal Plain streams) No Was a conductivity measurement recorded? to one of the following reasons. No Water Other: box corresponding to the conductivity measurement (units of microsiemens per centimeter). B 46 to < 67 OC 67 to < 79 OD 79 to < 230 OE ≥ 230
	es/Sketch: ennial stream tha	at drains into Deep River, runs through PEM wetland WC. Within powerline ROW.

Stream Site Name U-2412A	Date of Evaluation	4/18/2017
Stream Category Pa2	Assessor Name/Organization	C. Inscore/AECOM
Notes of Field Assessment Form (Y/N)		YES
Presence of regulatory considerations (Y/N)		YES
Additional stream information/supplementary measurements include	ed (Y/N)	YES
NC SAM feature type (perennial, intermittent, Tidal Marsh Stream)		Perennial

Function Class Rating Summary	USACE/ All Streams	NCDWR Intermitten
(1) Hydrology	HIGH	
(2) Baseflow	HIGH	
(2) Flood Flow	HIGH	
(3) Streamside Area Attenuation	HIGH	
(4) Floodplain Access	HIGH	
(4) Wooded Riparian Buffer	MEDIUM	
(4) Microtopography	MEDIUM	
(3) Stream Stability	HIGH	
(4) Channel Stability	HIGH	
(4) Sediment Transport	LOW	
(4) Stream Geomorphology	HIGH	
(2) Stream/Intertidal Zone Interaction	NA NA	
(2) Longitudinal Tidal Flow	NA NA	
(2) Tidal Marsh Stream Stability	NA NA	
(3) Tidal Marsh Channel Stability	NA NA	
(3) Tidal Marsh Stream Geomorphology	NA NA	
(1) Water Quality	LOW	
(2) Baseflow	HIGH	
	LOW	
(2) Streamside Area Vegetation		
(3) Upland Pollutant Filtration	LOW	
(3) Thermoregulation	LOW	
(2) Indicators of Stressors	NO	
(2) Aquatic Life Tolerance	LOW	
(2) Intertidal Zone Filtration	NA	
(1) Habitat	LOW	
(2) In-stream Habitat	LOW	
(3) Baseflow	HIGH	
(3) Substrate	LOW	
(3) Stream Stability	HIGH	
(3) In-stream Habitat	LOW MEDIUM	
(2) Stream-side Habitat (3) Stream-side Habitat	MEDIUM	
(3) Thermoregulation	MEDIUM	
(2) Tidal Marsh In-stream Habitat	NA 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 Habitat	NA	
Overall	LOW	

USACE AID #:		NCDWR #:
INSTRUCTIONS: Attac	h a sketch of the assessment area and ph	otographs. Attach a copy of the USGS 7.5-minute topographic
	·	tion. If multiple stream reaches will be evaluated on the same
property, identify and nu	ımber all reaches on the attached map, and in	nclude a separate form for each reach. See the NC SAM User
Manual for detailed descri	ptions and explanations of requested information.	Record in the "Notes/Sketch" section if any supplementary
measurements were perfo	ormed. See the NC SAM User Manual for example	es of additional measurements that may be relevant.
NOTE EVIDENCE OF STI	RESSORS AFFECTING THE ASSESSMENT ARE	A (do not need to be within the assessment area).
PROJECT / SITE INFORM	MATION:	
1. Project name (if any):	U-2412A 2. I	Date of evaluation: 4/18/2017
3. Applicant/owner name:	NCDOT 4. /	Assessor name/organization: C. Inscore/AECOM
5. County:	Guilford 6. I	Nearest named water body
7. River Basin:	Cape Fear	on USGS 7.5-minute quad: Deep River
8. Site coordinates (decim	nal degrees, at lower end of assessment reach):	35.985132, -79.937455
STREAM INFORMATION	: (depth and width can be approximations)	
9. Site number (show on a	attached map): SJ 10. Leng	gth of assessment reach evaluated (feet): 55
•	ed (in riffle, if present) to top of bank (feet): 1-2	
12. Channel width at top of		ssessment reach a swamp stream? Tyes No
		Marsh Stream
STREAM RATING INFOR		
15. NC SAM Zone:	Mountains (M) Piedmont (P)	Inner Coastal Plain (I) Outer Coastal Plain (O)
16 Estimated assemblish		
16. Estimated geomorphic		
valley shape (skip fo		(less sinuous stream, steener valley slone)
Tidal Marsh Stream) 17. Watershed size: (skip)		(less sinuous stream, steeper valley slope) 0.5 mi^2) Size 3 (0.5 to < 5 mi ²) Size 4 (\geq 5 mi ²)
for Tidal Marsh Stre		5.5 m / 5126 4 (2 5 m)
ioi iluai maisii sile	aiii)	
ADDITIONAL INFORMAT	ION:	
18. Were regulatory consi		s, check all that appy to the assessment area.
Section 10 water	Classified Trout Waters	✓ Water Supply Watershed (
Essential Fish Hab	• • • • • • • • • • • • • • • • • • •	High Quality Waters/Outstanding Resource Waters
Publicly owned pro		
Anadromous fish	[303(d) List	CAMA Area of Environmental Concern (AEC)
•	ence of a federal and/or state listed protected spec	•
List species:		
Designated Critical	I Habitat (list species):	
19. Are additional stream	information/supplementary measurements include	ed in "Notes/Sketch" section or attached?
4 Channal Water and		and Tidal March Chroma
	sessment reach metric (skip for Size 1 streams	and ridal marsh Streams)
= *	hout assessment reach. er in pools only.	
	ssessment reach.	
		
	estriction – assessment reach metric	
	·	ol sequence is adversely affected by a flow restriction or fill to the
		ophytes <u>or</u> ponded water <u>or</u> impounded on flood or ebb within
	ent reach (examples: undersized or perched culver	rts, causeways that constrict the channel, tidal gates).
B Not A		
3. Feature Pattern – as	ssessment reach metric	
		les: straightening, modification above or below culvert).
B Not A.		5 · 5, · · · · · · · · · · · · · · · · ·
		
	al Profile – assessment reach metric	
		n profile (examples: channel down-cutting, existing damming,
		nere appropriate channel profile has not reformed from any of
these disturba	ances).	
B Not A		
5. Signs of Active Insta	ability – assessment reach metric	
•	•	tream has currently recovered. Examples of instability include
-		ning, and artificial hardening (such as concrete, gabion, rip-rap).
	nnel unstable	
	channel unstable	
C > 25% of cha		
	eraction – streamside area metric	
	ft Bank (LB) and the Right Bank (RB).	
LB RB	or no oxidence of conditions that I am I am	reference interestion
	or no evidence of conditions that adversely affect i	
	· · · · · · · · · · · · · · · · · · ·	rees, down-cutting, aggradation, dredging) that adversely affect
		a access, disruption of flood flows through streamside area,
-		ain constriction, minor ditching [including mosquito ditching]) eference interaction (little to no floodplain/intertidal zone access
man. man. exten	isive evidence of conditions that adversely affect fr	ererence interaction tiltile to no noodblam/interidal zone access

7.	Water Quality Stressors – assessment reach/intertidal zone metric Check all that apply.
	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
	Odor (not including natural sulfide odors) Current published or collected data indicating degraded water quality in the assessment reach. Cite source in the "Notes/Sketch"
	section.
	F Livestock with access to stream or intertidal zone G Excessive algae in stream or intertidal zone
	Degraded marsh vegetation in the intertidal zone (removal, burning, regular mowing, destruction, etc.) Other: (explain in "Notes/Sketch" section)
	✓ J Little to no stressors
8.	Recent Weather – watershed metric
	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.
	Drought conditions and no rainfall or rainfall not exceeding 1 inch within the last 48 hours 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 □ E 5% oysters or other natural hard bottoms
	A Multiple aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats) F Sw oysters or other natural hard bottoms Submerged aquatic vegetation G Submerged aquatic vegetation H Low-tide refugia (pools) Sand bottom J Sw vertical bank along the marsh J Sw vertical bank along the marsh Little or no habitat Little o
	vegetation Sand bottom
	☐C Multiple snags and logs (including lap trees) ☐D 5% undercut banks and/or root mats and/or roots ☐
	in banks extend to the normal wetted perimeter ▼E Little or no habitat

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 riffles 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 \leq 10%, Common (C) = > 10-40%, Abundant (A) = > 40-70%, Predominant (P) = > 70%. Cumulative percentages should not exceed 100% for each assessment reach.
	NPRCAP
	 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 Size 4 Coastal Plain streams and 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 (including water pennies)			
		Caddisfly larvae (Trichoptera [T])			
		Asian clam (Corbicula)			
		Crustacean (isopod/amphipod/crayfish/shrimp)			
		Damselfly and dragonfly larvae			
		Dipterans (true flies)			
		Mayfly larvae (Ephemeroptera [E])			
		Megaloptera (alderfly, fishfly, dobsonfly larvae)			
		Midges/mosquito larvae			
		Mosquito fish (Gambusia) or mud minnows (Umbra pygmaea)			
		Mussels/Clams (not Corbicula)			
	:	Other fish			
		Salamanders/tadpoles			
		Snails			
		Stonefly larvae (Plecoptera [P])			
		Tipulid larvae			
		Worms/leeches			
12	Ctroomo	ide Area Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types)			
	upland ru LB R	r for the Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and inoff. B Little or no alteration to water storage capacity over a majority of the streamside area Moderate alteration to water storage capacity over a majority of the streamside area Severe alteration to water storage capacity over a majority of the streamside area (examples include: ditches, fill, soil, compaction, livestock disturbance, buildings, man-made levees, drainage pipes)			
14.		ide Area Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types) r for the Left Bank (LB) and the Right Bank (RB) of the streamside area.			
		BB			
	A	A Majority of streamside area with depressions able to pond water ≥ 6 inches deep			
		B Majority of streamside area with depressions able to pond water 3 to 6 inches deep			
		C Majority of streamside area with depressions able to pond water < 3 inches deep			
15.	Conside	Presence – streamside area metric (skip for Tidal Marsh Streams) r for the Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the			
		etted perimeter of assessment reach.			
		B			
		Y Are wetlands present in the streamside area?			
	ON C	N			
16	Baseflov	v Contributors – assessment reach metric (skip for size 4 streams and Tidal Marsh Streams)			
10.		I contributors within the assessment reach or within view of <u>and</u> draining to the assessment reach.			
		treams and/or springs (jurisdictional discharges)			
	•	londs (include wet detention basins; do not include sediment basins or dry detention basins)			
		bastruction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam)			
		vidence of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage)			
		tream bed or bank soil reduced (dig through deposited sediment if present)			
	V F N	lone of the above			
17	Racoflov	v Detractors – assessment area metric (skip for Tidal Marsh Streams)			
.,.		/ Deliacions = assessment area metric (skip for maar marsh streams)			
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		l that apply.			
		I that apply. ividence of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation)			
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19.	B C C S S Buffer W Consider of bank of bank of D C C S Buffer S B C C C S C C C C C C C C C C C C C C	I that apply. Ividence of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation) Indicates the stream (≥ 24% impervious surface for watershed) Ividence that the stream-side area has been modified resulting in accelerated drainage into the assessment reach usessment reach relocated to valley edge Ione of the above - assessment reach metric (skip for Tidal Marsh Streams) aspect. Consider "leaf-on" condition. Idram shading is appropriate for stream category (may include gaps associated with natural processes) Indicates the stream shading is gone or largely absent Indicates the stream side area metric (skip for Tidal Marsh Streams) Indicates the stream shading is gone or largely absent Indicates the stream shading is gone or largely absent Indicates the stream shading is gone or largely absent Indicates the stream shading is gone or largely absent Indicates the stream shading is gone or largely absent Indicates the stream shading is gone or largely absent Indicates the stream shading is gone or largely absent Indicates the stream shading is gone or largely absent Indicates the stream shading is gone or largely absent Indicates the stream shading is gone or largely absent Indicates the stream shading is gone or largely absent Indicates the stream shading is gone or largely absent Indicates the stream shading is gone or largely absent Indicates the stream shading is gone or largely absent Indicates the stream shading is gone or largely absent Indicates the stream shading is gone or largely absent Indicates the stream shading in accelerated drainage into the assessment reach (ex: watering the position of the assessment reach (ex: watering the assessment reach (ex: watering the position of the assessment reach (ex: watering the position of the assessment reach reach session of the assessment reach drainage into the assessment reach drainage into the assessment reach drainage into the assessment reach drainage into the assessment reach drainage			

	A D D D D D D D D D D D D D D D D D D D	Non-mature woody vegetation or modified vegetation structure Herbaceous vegetation with or without a strip of trees < 10 feet wide Maintained shrubs
21.	Check all ap	sors – streamside area metric (skip for Tidal Marsh Streams) propriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but set of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). If following stressors occurs on either bank, check here and skip to Metric 22: If a stream (Abuts), does not abut but set of stream (30-50 feet). If a stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). If a stream (Abuts), does not abut but set of stream (Abuts), does not abut but set of stream (Abuts), does not abut but set of stream (Abuts), does not abut but set of stream (Abuts), does not abut but set of stream (Abuts), does not abut but set of stream (Abuts), does not abut but set of stream (Abuts), does not abut but set of stream (Abuts), does not abut but set of stream (Abuts), does not abut but set of stream (Abuts), does not abut but set of stream (Abuts), does not abut but set of stream (Abuts), does not abut stream
22.		A Medium to high stem density B Low stem density
23.	-	A The total length of buffer breaks is < 25 percent. B The total length of buffer breaks is between 25 and 50 percent.
	Evaluate the	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. 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 or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees.
Not	25a. Yes If No, se 25b. Check th A es/Sketch:	assessment reach metric (skip for all Coastal Plain streams) No Was a conductivity measurement recorded? Section of the following reasons. No Water ☐ Other: Debox corresponding to the conductivity measurement (units of microsiemens per centimeter). Section 1. Section 2. Section 3

Date of Evaluation	4/	18/2017	
Assessor Name/Organization	C. Insc	ore/AECOM	
	_	YES	
	_	YES	
I (Y/N)	_	YES	
	_	Intermittent	
		Assessor Name/Organization C. Insc	Assessor Name/Organization C. Inscore/AECOM YES YES 4 (Y/N) YES

Function Class Beting Summers	USACE/	NCDWR	
Function Class Rating Summary	All Streams	Intermitte	
(1) Hydrology	HIGH	HIGH	
(2) Baseflow	HIGH	HIGH	
(2) Flood Flow	HIGH	HIGH	
(3) Streamside Area Attenuation	HIGH	HIGH	
(4) Floodplain Access	HIGH	HIGH	
(4) Wooded Riparian Buffer	LOW	LOW	
(4) Microtopography	HIGH	HIGH	
(3) Stream Stability	HIGH	HIGH	
(4) Channel Stability	HIGH	HIGH	
(4) Sediment Transport	LOW	LOW	
(4) Stream Geomorphology	HIGH	HIGH	
(2) Stream/Intertidal Zone Interaction	NA	NA	
(2) Longitudinal Tidal Flow	NA	NA	
(2) Tidal Marsh Stream Stability	NA	NA	
(3) Tidal Marsh Channel Stability	NA	NA	
(3) Tidal Marsh Stream Geomorphology	NA	NA	
(1) Water Quality	HIGH	HIGH	
(2) Baseflow	HIGH	HIGH	
(2) Streamside Area Vegetation	MEDIUM	MEDIUM	
(3) Upland Pollutant Filtration	HIGH	HIGH	
(3) Thermoregulation	LOW	LOW	
(2) Indicators of Stressors	NO	NO	
(2) Aquatic Life Tolerance	HIGH	NA	
(2) Intertidal Zone Filtration	NA	NA	
(1) Habitat	LOW	LOW	
(2) In-stream Habitat	LOW	LOW	
(3) Baseflow	HIGH	HIGH	
(3) Substrate	LOW	LOW	
(3) Stream Stability	HIGH	HIGH	
(3) In-stream Habitat	LOW	LOW	
(2) Stream-side Habitat	LOW	LOW	
(3) Stream-side Habitat	LOW	LOW	
(3) Thermoregulation	LOW	LOW	
(2) Tidal Marsh In-stream Habitat	NA	NA	
(3) Flow Restriction	NA	NA	
(3) Tidal Marsh Stream Stability	NA	NA	
(4) Tidal Marsh Channel Stability	NA	NA	
(4) Tidal Marsh Stream Geomorphology	/ NA	NA	
(3) Tidal Marsh In-stream Habitat	NA	NA	
(2) Intertidal Zone Habitat	NA	NA	

USACE AID #:	NCDWR #:	
INSTRUCTIONS: A	Attach a sketch of the assessment area and photographs. Attach	a copy of the USGS 7.5-minute topographic
	cle the location of the stream reach under evaluation. If multiple st	
property, identify and	nd number all reaches on the attached map, and include a separate	form for each reach. See the NC SAM User
	lescriptions and explanations of requested information. Record in the "Note	
	performed. See the NC SAM User Manual for examples of additional measurements	* ''
•	F STRESSORS AFFECTING THE ASSESSMENT AREA (do not need to I	<u> </u>
PROJECT / SITE INFO	FORMATION:	,
Project name (if any		4/20/2017
3. Applicant/owner nai	**	
5. County:	Guilford 6. Nearest named water	
7. River Basin:	on USGS 7.5-minut	•
8. Site coordinates (de	decimal degrees, at lower end of assessment reach): 35.987207; -79.9	25664
STREAM INFORMAT	TION: (depth and width can be approximations)	
9. Site number (show	v on attached map): SK 10. Length of assessment re	each evaluated (feet): 57
11. Channel depth from	om bed (in riffle, if present) to top of bank (feet): 8	Unable to assess channel depth.
12. Channel width at to		wamp stream? 🌘 Yes 🎧 No
14. Feature type:	Perennial flow Intermittent flow Tidal Marsh Stream	
STREAM RATING INF		
15. NC SAM Zone:	Mountains (M) Piedmont (P) Inner Coa	stal Plain (I) Outer Coastal Plain (O)
16 Estimated asser-	orphio /	
16. Estimated geomor		
valley shape (ski		
Tidal Marsh Stre 17. Watershed size: (s		ess sinuous stream, steeper valley slope) ize 3 (0.5 to < 5 mi²) Size 4 (≥ 5 mi²)
for Tidal Marsh		20 5 (5.0 to 10 mm)
ioi Tiuai WatSN S	oncum	
ADDITIONAL INFORM	RMATION:	
	considerations evaluated?	to the assessment area.
Section 10 wat		
Essential Fish	11.	aters/Outstanding Resource Waters
Publicly owned		=
Anadromous fi		Environmental Concern (AEC)
	presence of a federal and/or state listed protected species within the asses	, ,
List species:		
Designated Cri	Critical Habitat (list species):	
19. Are additional stre	eam information/supplementary measurements included in "Notes/Sketch"	section or attached?
1. Channel Water -	- assessment reach metric (skip for Size 1 streams and Tidal Marsh S	reams)
	nroughout assessment reach.	,
	water in pools only.	
	r in assessment reach.	
2. Evidence of Flow	ow Restriction – assessment reach metric	
	10% of assessment reach in-stream habitat or riffle-pool sequence is adver	solv affected by a flow restriction or fill to the
	obstructing flow or a channel choked with aguatic macrophytes or ponded v	, , , , <u>–</u>
	obstructing flow <u>or a chariner choked with aquatic macrophytes or portided v</u> essment reach (examples: undersized or perched culverts, causeways that o	_ ·
B Not A	that i	somethic the chamber, total gates).
E D NOLA		
	n – assessment reach metric	
	ity of the assessment reach has altered pattern (examples: straightening, m	odification above or below culvert).
B Not A.		
4. Feature Longitue	udinal Profile – assessment reach metric	
_	of assessment reach has a substantially altered stream profile (examples:	channel down-cutting existing damming
	lening, active aggradation, dredging, and excavation where appropriate cha	
	sturbances).	p. 1.00 has het reienhou hom ung of
B Not A	,	
		
-	Instability – assessment reach metric	
Consider only cu	current instability, not past events from which the stream has currently	
a ating the selection of	use positive absorbed device cutting (board and) and the cutting and a 100 of 111	
	re, active channel down-cutting (head-cut), active widening, and artificial ha	irdening (such as concrete, gabion, rip-rap).
A < 10% of	f channel unstable	irdening (such as concrete, gabion, rip-rap).
A < 10% ofB 10 to 25%	of channel unstable % of channel unstable	roening (such as concrete, gabion, rip-rap).
A < 10% ofB 10 to 25%	f channel unstable	roening (such as concrete, gabion, rip-rap).
A < 10% ofB 10 to 25%C > 25% of	of channel unstable % of channel unstable	roening (such as concrete, gabion, rip-rap).
A < 10% of B 10 to 25% C > 25% of C	of channel unstable % of channel unstable f channel unstable	rdening (such as concrete, gabion, rip-rap).
A < 10% of B 10 to 25% C > 25% of C	of channel unstable % of channel unstable of channel unstable that the channel unstable that the channel unstable that the channel unstable area metric	rdening (such as concrete, gabion, rip-rap).
 A < 10% of B 10 to 25% C > 25% of Streamside Area Consider for the LB RB 	of channel unstable % of channel unstable of channel unstable that the channel unstable that the channel unstable that the channel unstable area metric	
■ A < 10% of ■ B 10 to 25% ■ C > 25% of 6. Streamside Area Consider for the LB RB ■ A ■ A Li	of channel unstable % of channel unstable of channel unstable ea Interaction – streamside area metric ee Left Bank (LB) and the Right Bank (RB).	
■ A < 10% of ■ B 10 to 25% ■ C > 25% of 6. Streamside Area Consider for the LB RB ■ A A Li ■ B ■ B M	of channel unstable % of channel unstable of channel unstable of channel unstable of a Interaction – streamside area metric of e Left Bank (LB) and the Right Bank (RB). Little or no evidence of conditions that adversely affect reference interaction	ggradation, dredging) that adversely affect
■ A < 10% of ■ B 10 to 25% ■ C > 25% of 6. Streamside Area Consider for the LB RB ■ A A Li ■ B ■ B M re	of channel unstable % of channel unstable of channel unstable of channel unstable of channel unstable of channel unstable of channel unstable of channel unstable of channel unstable of channel unstable of Left Bank (LB) and the Right Bank (RB). Little or no evidence of conditions that adversely affect reference interaction Moderate evidence of conditions (examples: berms, levees, down-cutting, a	ggradation, dredging) that adversely affect of flood flows through streamside area,

7.	Water Quality Stressors – assessment reach/intertidal zone metric Check all that apply.
	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) Noticeable evidence of pollutant discharges entering the assessment reach and causing a water quality problem
	Odor (not including natural sulfide odors) Current published or collected data indicating degraded water quality in the assessment reach. Cite source in the "Notes/Sketch"
	section.
	F Livestock with access to stream or intertidal zone G Excessive algae in stream or intertidal zone
	Degraded marsh vegetation in the intertidal zone (removal, burning, regular mowing, destruction, etc.)
	☐ Other:(explain in "Notes/Sketch" section) ☐ J Little to no stressors
8.	Recent Weather – watershed metric
	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 Drought conditions and rainfall exceeding 1 inch within the last 48 hours 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 கு த [F 5% oysters or other natural hard bottoms
	Multiple aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats) B Multiple sticks and/or leaf packs and/or emergent vegetation C Multiple snags and logs (including lap trees) D 5% undercut banks and/or root mats and/or roots F 5% oysters or other natural hard bottoms Submerged aquatic vegetation L Low-tide refugia (pools) Sand bottom J 5% vertical bank along the marsh K Little or no habitat
	☐B Multiple sticks and/or leaf packs and/or emergent operation
	C Multiple snags and logs (including lap trees)
	□D 5% undercut banks and/or root mats and/or roots in banks extend to the normal wetted perimeter O ≥ I □K Little or no habitat
	✓ E Little or no habitat

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)
	☐B Pool-glide section (evaluate 11d) ☐C Natural bedform absent (skip to Metric 12, Aquatic Life)
	11c. In riffles 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.
	NPRCAP
	 Bedrock/saprolite Boulder (256 – 4096 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 Size 4 Coastal Plain streams and 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 (including water pennies)	
	Caddisfly larvae (Trichoptera [T])	
	Asian clam (Corbicula)	
	☐ ☐ Crustacean (isopod/amphipod/crayfish/shrimp)	
	Damselfly and dragonfly larvae	
	Dipterans (true flies)	
	Mayfly larvae (Ephemeroptera [E])	
	Midges/mosquito larvae	
	Mussels/Clams (not Corbicula)	
	Other fish	
	Salamanders/tadpoles	
	Snails	
	Stonefly larvae (Plecoptera [P])	
	Tipulid larvae	
	☐ ☐ ☐ Worms/leeches	
12	Streamside Area Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types)	
13.	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	
	Severe alteration to water storage capacity over a majority of the streamside area (examples include: 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 Majority of streamside area with depressions able to pond water ≥ 6 inches deep	
	B Majority of streamside area with depressions able to pond water 3 to 6 inches deep	
	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?	
	ON ON	
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 <u>and</u> draining to the assessment reach.	
	A Streams and/or springs (jurisdictional discharges)	
	IV B Ponds (include wet detention basins; do not include sediment basins or dry detention basins)	
	C Obstruction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam)	
	D Evidence of bank seepage or sweating (iron oxidizing bacteria 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.	
	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 (≥ 24% impervious surface for watershed)	
	Library Evidence that the stream-side area has been modified resulting in accelerated drainage into the assessment reach	
	Sassesment reach relocated to valley edge	
	▼ F None of the above	
18	Shading – assessment reach metric (skip for Tidal Marsh Streams)	
10.	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	
	and the state of t	
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	
	B B B From 50 to < 100-feet wide	
	B B B From 50 to < 100-feet wide C C C From 30 to < 50-feet wide	
	B B B From 50 to < 100-feet wide C C C From 30 to < 50-feet wide D D D D From 10 to < 30-feet wide	
	B B B From 50 to < 100-feet wide C C C C From 30 to < 50-feet wide	
20	B B B B From 50 to < 100-feet wide 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 or no trees	
20.	B B B B From 50 to < 100-feet wide 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 or no trees Buffer Structure – streamside area metric (skip for Tidal Marsh Streams)	
20.	B B B B From 50 to < 100-feet wide 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 or no trees	

OA BC OD OB	ABCDDE	Non-mature woody vegetation or modified vegetation structure Herbaceous vegetation with or without a strip of trees < 10 feet wide Maintained shrubs
Check is with	all app in 30 fee	ors – streamside area metric (skip for Tidal Marsh Streams) ropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but set of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). following stressors occurs on either bank, check here and skip to Metric 22: < 30 feet
Consi LB A B C	der for I RB () A () B () C	Low stem density No wooded riparian buffer <u>or</u> predominantly herbaceous species <u>or</u> bare ground
	-	The total length of buffer breaks is between 25 and 50 percent.
Evalua	ate the d	species, with non-native invasive species absent or sparse. 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 or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees.
_	uctivity -	with non-native invasive species dominant over a large portion of expected strata or communities composed of planted stands of non-characteristic species or communities inappropriately composed of a single species or no vegetation. - assessment reach metric (skip for all Coastal Plain streams) No Was a conductivity measurement recorded?
25b. C	No, selection of the children	ect one of the following reasons. No Water Other: be box corresponding to the conductivity measurement (units of microsiemens per centimeter). 6

Stream Site Name U-2412A	Date of Evaluation	4/:	20/2017	
Stream Category Pa1	Assessor Name/Organization	C. Insc	core/AECOM	
Notes of Field Assessment Form (Y/N)			YES	
Presence of regulatory considerations (Y/N)			YES	
Additional stream information/supplementary measurements included	d (Y/N)		YES	
NC SAM feature type (perennial, intermittent, Tidal Marsh Stream)			Perennial	

Function Class Rating Summary	USACE/ All Streams	NCDWR Intermitten
(1) Hydrology	HIGH	
(2) Baseflow	HIGH	
(2) Flood Flow	HIGH	
(3) Streamside Area Attenuation	HIGH	
(4) Floodplain Access	MEDIUM	
(4) Wooded Riparian Buffer	HIGH	
	HIGH	
(4) Microtopography	-	
(3) Stream Stability	MEDIUM	
(4) Channel Stability	HIGH	
(4) Sediment Transport	LOW	
(4) Stream Geomorphology	MEDIUM	
(2) Stream/Intertidal Zone Interaction	NA 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	HIGH	
(2) Streamside Area Vegetation	HIGH	
(3) Upland Pollutant Filtration	HIGH	
(3) Thermoregulation	HIGH	
(2) Indicators of Stressors	NO	
(2) Aquatic Life Tolerance	LOW	
(2) Intertidal Zone Filtration	NA	
(1) Habitat	HIGH	
(2) In-stream Habitat	MEDIUM	
(3) Baseflow	HIGH	
(3) Substrate	HIGH	
(3) Stream Stability	MEDIUM	
(3) In-stream Habitat	LOW	
(2) Stream-side Habitat	HIGH	
(3) Stream-side Habitat	HIGH	
(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 Habitat	NA	
Overall	HIGH	

INICTOLICTIONS		
INSTRUCTIONS: Atta	ch a sketch of the assessment area and ph	otographs. Attach a copy of the USGS 7.5-minute topographic
		tion. If multiple stream reaches will be evaluated on the same
property, identify and n	umber all reaches on the attached map, and i	include a separate form for each reach. See the NC SAM User
Manual for detailed desc	riptions and explanations of requested information.	Record in the "Notes/Sketch" section if any supplementary
measurements were per	formed. See the NC SAM User Manual for example	es of additional measurements that may be relevant.
NOTE EVIDENCE OF ST	TRESSORS AFFECTING THE ASSESSMENT ARE	EA (do not need to be within the assessment area).
PROJECT / SITE INFOR	MATION:	
1. Project name (if any):	U-2412A 2.	Date of evaluation: 4/20/2017
3. Applicant/owner name	: NCDOT 4.	Assessor name/organization: C. Inscore/AECOM
5. County:	Guilford 6.	Nearest named water body
7. River Basin:	Cape Fear	on USGS 7.5-minute quad: Deep Run
•	nal degrees, at lower end of assessment reach):	35.988075, -79.920559
	N: (depth and width can be approximations)	-th -f 040
9. Site number (show on	attached map): SL 10. Len bed (in riffle, if present) to top of bank (feet): 1-:	gth of assessment reach evaluated (feet): 810 Unable to assess channel depth.
12. Channel width at top	· / / · / · · · / —	ssessment reach a swamp stream? Yes No
		Marsh Stream
STREAM RATING INFO		
15. NC SAM Zone:	Mountains (M) Piedmont (P)	Inner Coastal Plain (I) Outer Coastal Plain (O)
		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
16. Estimated geomorph		_ \
valley shape (skip f		D b
Tidal Marsh Stream		(less sinuous stream, steeper valley slope)
17. Watershed size: (ski		50.5 mi^2 Size 3 (0.5 to < 5 mi ²) Size 4 (\geq 5 mi ²)
for Tidal Marsh Str	eam)	
ADDITIONAL INFORMA	TION·	
18. Were regulatory cons		s, check all that appy to the assessment area.
Section 10 water	Classified Trout Waters	Water Supply Watershed (I I I III III IV IV)
Essential Fish Ha		High Quality Waters/Outstanding Resource Waters
Publicly owned pr		
Anadromous fish	303(d) List	CAMA Area of Environmental Concern (AEC)
	sence of a federal and/or state listed protected spec	
List species:	·	
Designated Critic	al Habitat (list species):	
10 Are additional stream		
19. Are additional Steam	information/supplementary measurements include	ed in "Notes/Sketch" section or attached?
	· · · · · · · · · · · · · · · · · · ·	
1. Channel Water – as	sessment reach metric (skip for Size 1 streams sphout assessment reach.	
1. Channel Water – as	ssessment reach metric (skip for Size 1 streams	
1. Channel Water – as A Water through B No flow, wat	ssessment reach metric (skip for Size 1 streams ghout assessment reach.	
1. Channel Water – as A Water through B No flow, water in	ssessment reach metric (skip for Size 1 streams ghout assessment reach. er in pools only. assessment reach.	
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7.	Water Quality Stressors – assessment reach/intertidal zone metric Check all that apply. A
8.	Recent Weather – watershed metric 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 Drought conditions and rainfall exceeding 1 inch within the last 48 hours OC 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) B Multiple sticks and/or leaf packs and/or emergent vegetation C Multiple snags and logs (including lap trees) D 5% undercut banks and/or root mats and/or roots in banks extend to the normal wetted perimeter E Little or no habitat Size 4 Coastal Plain streams) F 5% oysters or other natural hard bottoms Submerged aquatic vegetation H Low-tide refugia (pools) Sand bottom J 5% vertical bank along the marsh Little or no habitat Li
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 riffles 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.)
12.	Aquatic Life – assessment reach metric (skip for Size 4 Coastal Plain streams and 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.

	☐
	☐ ☐ Caddisfly larvae (Trichoptera [T])
	Asian clam (Corbicula)
	Crustacean (isopod/amphipod/crayfish/shrimp)
	Damselfly and dragonfly larvae
	Dipterans (true flies)
	Mayfly larvae (Ephemeroptera [E])
	Megaloptera (alderfly, fishfly, dobsonfly larvae)
	Midges/mosquito larvae
	✓ Mosquito fish (Gambusia) or mud minnows (Umbra pygmaea)
	Mussels/Clams (not Corbicula)
	☐ ☑Other fish
	Salamanders/tadpoles
	Snails
	Stonefly larvae (Plecoptera [P])
	Tipulid larvae
	□
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 Little or no alteration to water storage capacity over a majority of the streamside area
	B Moderate alteration to water storage capacity over a majority of the streamside area
	C Severe alteration to water storage capacity over a majority of the streamside area (examples include: ditches, fill,
	soil, compaction, livestock disturbance, buildings, man-made levees, drainage pipes)
4.4	Stronmoide Area Water Stronge - stronmoide area matrix (akin for Size 4 stronge - Tidel March Stronge and Divelley types)
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 Majority of streamside area with depressions able to pond water ≥ 6 inches deep
	B Majority of streamside area with depressions able to pond water 3 to 6 inches deep
	C Majority of streamside area with depressions able to pond water < 3 inches deep
	majority of streamstre area with depressions able to point water 13 mones 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 PY Are wetlands present in the streamside area?
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 <u>and</u> 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 that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam)
	D Evidence of bank seepage or sweating (iron oxidizing bacteria 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.
	Evidence of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation)
	Obstruction not passing flow during low flow periods affecting the assessment reach (ex: watertight dam, sediment deposit)
	Urban stream (≥ 24% impervious surface for watershed)
	Evidence that the stream-side area has been modified resulting in accelerated drainage into the assessment reach
	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.
	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
10	
19.	Buffer Width – streamside area metric (skip for Tidal Marsh Streams)
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
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.
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
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
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 A A A A A A A A A A A A A A A
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 A A A A FRB B B B B From 50 to < 100-feet wide
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 A A A A A A A A A A A A A A A
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 □ A □ A □ C ≥ 100-feet wide or extends to the edge of the watershed □ B □ 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
	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 A A A A A A A A A A A A A A A
	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 A A A A A A A A A A A A A A A
	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 A A A A A A A A A A A A A A A

B C C D	A Mature forest B Non-mature woody vegetation or modified vegetation structure C Herbaceous vegetation with or without a strip of trees < 10 feet wide D Maintained shrubs E Little or no vegetation
Check all ap is within 30 f	B B B Maintained turf C C C Pasture (no livestock)/commercial horticulture
Consider fo LB R A © B	ty – streamside area metric (skip for Tidal Marsh Streams) r left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). B A Medium to high stem density B Low stem density C No wooded riparian buffer or predominantly herbaceous species or bare ground
Consider wh LB R A © B C	of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams) ether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10-feet wide. B A The total length of buffer breaks is < 25 percent. B The total length of buffer breaks is between 25 and 50 percent. C The total length of buffer breaks is > 50 percent.
Evaluate the to assessme LB R	Composition – First 100 feet of streamside area metric (skip for Tidal Marsh Streams) dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes ent reach habitat. B 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.
	 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 or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees. Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent or communities with non-native invasive species dominant over a large portion of expected strata or communities composed of planted stands of non-characteristic species or communities inappropriately composed of a single species or no vegetation.
25a. TYes If No, s	y – assessment reach metric (skip for all Coastal Plain streams) No Was a conductivity measurement recorded? elect one of the following reasons. No Water Other: the box corresponding to the conductivity measurement (units of microsiemens per centimeter).
Notes/Sketch: Perennial that flo A portion of the n	

Stream Site Name U-2412A	Date of Evaluation	4/20	0/2017	
Stream Category Pa2	Assessor Name/Organization	C. Insco	re/AECOM	_
				
Notes of Field Assessment Form (Y/N)		_	YES	
resence 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 Intermitten
(1) Hydrology	HIGH	
(2) Baseflow	HIGH	
(2) Flood Flow	HIGH	
(3) Streamside Area Attenuation	HIGH	
(4) Floodplain Access	HIGH	
(4) Wooded Riparian Buffer	HIGH	
(4) Microtopography	MEDIUM	
(3) Stream Stability	HIGH	
(4) Channel Stability	HIGH	
. ,	MEDIUM	
(4) Sediment Transport		
(4) Stream Geomorphology	HIGH	
(2) Stream/Intertidal Zone Interaction	NA NA	
(2) Longitudinal Tidal Flow	NA NA	
(2) Tidal Marsh Stream Stability	NA	
(3) Tidal Marsh Channel Stability	NA	
(3) Tidal Marsh Stream Geomorphology	NA	
(1) Water Quality	LOW	
(2) Baseflow	HIGH	
(2) Streamside Area Vegetation	MEDIUM	
(3) Upland Pollutant Filtration	LOW	
(3) Thermoregulation	HIGH	
(2) Indicators of Stressors	YES	
(2) Aquatic Life Tolerance	MEDIUM	
(2) Intertidal Zone Filtration	NA	
(1) Habitat	HIGH	
(2) In-stream Habitat	MEDIUM	
(3) Baseflow	HIGH	
(3) Substrate	MEDIUM	
(3) Stream Stability	HIGH	
(3) In-stream Habitat	MEDIUM	
(2) Stream-side Habitat	HIGH	
(3) Stream-side Habitat	HIGH	
(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 Habitat	NA	
Overall	HIGH	

USACE AID	#:			NCDWR #:			
property, ide Manual for de measuremen	and circle the entify and nun etailed descrip nts were perfor	a sketch of the asses e location of the stream nber all reaches on the tions and explanations of re med. See the NC SAM Usi ESSORS AFFECTING THE	reach under evalua attached map, and equested information er Manual for exampl	ation. If multiple stre include a separate for Record in the "Notes es of additional measu	eam reach orm for ea /Sketch" se urements th	es will be evanch reach. See ection if any supported that may be relevant.	aluated on the sa e the NC SAM U oplementary vant.
	SITE INFORM		Joedoment AN			- accomment	- u j.
1. Project na		U-2412A	2	Date of evaluation: 4	4/18/2017		
•	owner name:	NCDOT		Assessor name/organ		C. Inscore/AEC	OM
5. County:		Guilford		Nearest named water	_		
7. River Basi	n:	Cape Fear		on USGS 7.5-minute	quad: E	Bull Run	
		al degrees, at lower end of a		35.989131, -79.917	7501		
		(depth and width can be a		ath of accomment roa	ما المارة ما	ad (faat). 24(0
	er (show on at	tached map): <u>SM</u> d (in riffle, if present) to top		igth of assessment rea 5		ed (feet): <u>319</u> e to assess cha	
	width at top of	, , , , ,	` ′	ssessment reach a sw			No No
14. Feature t	<u> </u>	erennial flow		Marsh Stream			
	TING INFORM						
15. NC SAM	Zone:	Mountains (M)	Piedmont (P)	nner Coas	tal Plain (I)	Ou	iter Coastal Plain (0
valley sh Tidal M a 17. Watershe	d geomorphic nape (skip for arsh Stream): ed size: (skip Il Marsh Strea	(more sinuous stream, Size 1 (< 0.1 mi²)	flatter valley slope) Size 2 (0.1 to			stream, steeper	r valley slope) Size 4 (≥ 5 mi²)
Sectic Esser Public Anadi Docur List s	on 10 water ntial Fish Habit cly owned prop romous fish mented preser pecies: nated Critical	Classified Trou lat Primary Nurser lety NCDWR riparia 303(d) List lince of a federal and/or state Habitat (list species):	t Waters y Area In buffer rule in effect e listed protected spe		atershed (ters/Outsta re Waters invironmen ment area.	I IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	EC)
19. Are addit	ional stream in	nformation/supplementary n	neasurements include	ed in "Notes/Sketch" se	ection or at	tached?	Yes No
⊚ A \	Water through No flow, water	essment reach metric (ski out assessment reach. in pools only. sessment reach.	ip for Size 1 streams	s and Tidal Marsh Str	eams)		
A	At least 10% o	striction – assessment rea f assessment reach in-strea cting flow <u>or</u> a channel chol nt reach (examples: unders	am habitat or riffle-po ked with aquatic mac	rophytes <u>or</u> ponded wa	ater <u>or</u> impo	ounded on flood	or ebb within
A		sessment reach metric ne assessment reach has a	Itered pattern (examp	oles: straightening, mod	dification a	bove or below o	culvert).
A	Majority of ass	Profile – assessment rea essment reach has a subst active aggradation, dredgin nces).	antially altered strear			•	•
Considerative based on the constant of the constant of the constant of the constant of the constant of the consideration of the conside	er only curren ank failure, act < 10% of chan	hannel unstable	nts from which the s	_			-
Conside LB	er for the Left RB A Little o B Modera	raction – streamside area Bank (LB) and the Right I or no evidence of conditions ate evidence of conditions (ance interaction (examples: I	Bank (RB). that adversely affect (examples: berms, le	vees, down-cutting, ag			
□ C	leaky o	or intermittent bulkheads, casive evidence of conditions	auseways with floodp	lain constriction, minor	r ditching [i	ncluding mosqu	ito ditching])

7.	Water Quality Stressors – assessment reach/intertidal zone metric Check all that apply.				
	Discolored water in stream or intertidal zone (milky white, blue, unnatural water discoloration, oil sheen, stream foam)				
	Excessive sedimentation (burying of stream features or intertidal zone) Noticeable evidence of pollutant discharges entering the assessment reach and causing a water quality problem				
	Odor (not including natural sulfide odors) Current published or collected data indicating degraded water quality in the assessment reach. Cite source in the "Notes/Sketch"				
	section.				
	F Livestock with access to stream or intertidal zone Excessive algae in stream or intertidal zone				
	H Degraded marsh vegetation in the intertidal zone (removal, burning, regular mowing, destruction, etc.)				
	Other: (explain in "Notes/Sketch" section) Little to no stressors				
8.	Recent Weather – watershed metric				
	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. Drought conditions and no rainfall or rainfall not exceeding 1 inch within the last 48 hours Drought conditions and rainfall exceeding 1 inch within the last 48 hours 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 கு த [F 5% oysters or other natural hard bottoms				
	(include liverworts, lichens, and algal mats)				
	☐B Multiple sticks and/or leaf packs and/or emergent operation				
	C Multiple snags and logs (including lap trees)				
	□D 5% undercut banks and/or root mats and/or roots □ □ □ K Little or no habitat in banks extend to the normal wetted perimeter				
	▼ E Little or no habitat				

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 riffles 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 \leq 10%, Common (C) = > 10-40%, Abundant (A) = > 40-70%, Predominant (P) = > 70%. Cumulative percentages should not exceed 100% for each assessment reach.				
	NPRCAP				
	 Bedrock/saprolite Boulder (256 – 4096 mm) 				
	Cobble (64 – 256 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 Size 4 Coastal Plain streams and 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.				
	✓				
	Aquatic reptiles Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats)				

			Beetles (including water pennies)
			Caddisfly larvae (Trichoptera [T])
			Asian clam (Corbicula)
	•		Crustacean (isopod/amphipod/crayfish/shrimp)
			Damselfly and dragonfly larvae
			Dipterans (true flies)
			Mayfly larvae (Ephemeroptera [E])
		i - E	Megaloptera (alderfly, fishfly, dobsonfly larvae)
		і г	Midges/mosquito larvae
		i s	Mosquito fish (<i>Gambusia</i>) or mud minnows (<i>Umbra pygmaea</i>)
	Г	i r	Mussels/Clams (not Corbicula)
		_: _	Other fish
			Salamanders/tadpoles
			Snails
	Ī		Stonefly larvae (Plecoptera [P])
		-: -	Tipulid larvae
			Worms/leeches
		1	Tromanecones
13.	Consi upland LB A	der for d runoff. RB A A B	the Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and Little or no alteration to water storage capacity over a majority of the streamside area Moderate alteration to water storage capacity over a majority of the streamside area Severe alteration to water storage capacity over a majority of the streamside area (examples include: ditches, fill,
			soil, compaction, livestock disturbance, buildings, man-made levees, drainage pipes)
14.	Consi	der for	rea Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types) the Left Bank (LB) and the Right Bank (RB) of the streamside area.
	LB	RB	Materials of the social and with decreasing which are adjusted Circles
	O A	ΩA	Majority of streamside area with depressions able to pond water ≥ 6 inches deep
	В	ΩВ	Majority of streamside area with depressions able to pond water 3 to 6 inches deep
	O C	C C	Majority of streamside area with depressions able to pond water < 3 inches deep
15.	Consi	der for	ence – streamside area metric (skip for Tidal Marsh Streams) the Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the
			perimeter of assessment reach.
	LB	RB	
	O Y	O Y	Are wetlands present in the streamside area?
	O N	O N	
16.	Basef	low Co	ntributors – assessment reach metric (skip for size 4 streams and Tidal Marsh Streams)
			tributors within the assessment reach or within view of <u>and</u> draining to the assessment reach.
	ΠIA		ns and/or springs (jurisdictional discharges)
	ГВ		(include wet detention basins; do not include sediment basins or dry detention basins)
	C		iction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam)
			nce of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage)
	E		n bed or bank seepage of sweating (from oxidizing bacteria in water indicates seepage)
	VF		of the above
		None	of the above
17.	Basef	low Det	ractors – assessment area metric (skip for Tidal Marsh Streams)
	Check	call tha	t apply.
	\square	Evide	nce of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation)
	ГВ		iction not passing flow during low flow periods affecting the assessment reach (ex: watertight dam, sediment deposit)
	C		stream (≥ 24% impervious surface for watershed)
	ΠD		nce that the stream-side area has been modified resulting in accelerated drainage into the assessment reach
	ΠİΕ		sment reach relocated to valley edge
	₩.		of the above
18.		-	sessment reach metric (skip for Tidal Marsh Streams)
			ct. Consider "leaf-on" condition.
	A		n shading is appropriate for stream category (may include gaps associated with natural processes)
	🕜 В	•	ded (example: scattered trees)
	C	Strear	n shading is gone or largely absent
19	Buffe	r Width	– streamside area metric (skip for Tidal Marsh Streams)
13.			getated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top
			o the first break.
	Veget		Wooded
	_		
	LB	RB	LB RB
	□ A	O A	A DA ≥ 100-feet wide or extends to the edge of the watershed
	⊚ B	В	B B From 50 to < 100-feet wide
	C	C	C C From 30 to < 50-feet wide
	D	O D	D D From 10 to < 30-feet wide
	() E	O E	☐E ☐E < 10-feet wide <u>or</u> no trees
20.	Buffe	r Struct	ure – streamside area metric (skip for Tidal Marsh Streams)
_0.			left bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width).
	LB	RB	

	ABCDE	ABCCDD	Mature forest Non-mature woody vegetation or modified vegetation structure Herbaceous vegetation with or without a strip of trees < 10 feet wide Maintained shrubs Little or no vegetation
21.	is within If none Abuts LB A B C C	all appro 30 feet of of the fo RB L B C	s – streamside area metric (skip for Tidal Marsh Streams) priate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet). Illowing stressors occurs on either bank, check here and skip to Metric 22: So feet 30-50 feet B RB LB RB A A A Row crops B B B B B Maintained turf C C C Pasture (no livestock)/commercial horticulture D D D Pasture (active livestock use)
22.		_	streamside area metric (skip for Tidal Marsh Streams) t bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width). Medium to high stem density Low stem density No wooded riparian buffer or predominantly herbaceous species or bare ground
23.		-	regetated Buffer – streamside area metric (skip for Tidal Marsh Streams) regetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10-feet wide. The total length of buffer breaks is < 25 percent. The total length of buffer breaks is between 25 and 50 percent. The total length of buffer breaks is > 50 percent.
24.	Evaluate	e the don	position – First 100 feet of streamside area metric (skip for Tidal Marsh Streams) ninant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes each habitat. Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native
	© B	© B	species, with non-native invasive species absent or sparse. 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 or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees. Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent or communities with non-native invasive species dominant over a large portion of expected strata or communities composed of planted
25.	25a. 🗍	Yes [stands of non-characteristic species <u>or</u> communities inappropriately composed of a single species <u>or</u> no vegetation. assessment reach metric (skip for all Coastal Plain streams) No Was a conductivity measurement recorded? tone of the following reasons. No Water Oox corresponding to the conductivity measurement (units of microsiemens per centimeter).
Per	es/Sketch ennial str	A <46 n: eam that	

Stream Site Name U-2412A	Date of Evaluation	4/18/2017
Stream Category Pa1	Assessor Name/Organization	C. Inscore/AECOM
	_	
Notes of Field Assessment Form (Y/N)		YES
Presence of regulatory considerations (Y/N)		YES
Additional stream information/supplementary measurements include	ed (Y/N)	YES
NC SAM feature type (perennial, intermittent, Tidal Marsh Stream)		Perennial

Function Class Rating Summary	USACE/ All Streams	NCDWR Intermitten
(1) Hydrology	MEDIUM	
(2) Baseflow	HIGH	
(2) Flood Flow	MEDIUM	
(3) Streamside Area Attenuation	HIGH	
(4) Floodplain Access	HIGH	
(4) Wooded Riparian Buffer	MEDIUM	
(4) Microtopography	HIGH	
	LOW	
(3) Stream Stability		
(4) Channel Stability	MEDIUM	
(4) Sediment Transport	LOW	
(4) Stream Geomorphology	MEDIUM	
(2) Stream/Intertidal Zone Interaction	NA NA	
(2) Longitudinal Tidal Flow	NA	
(2) Tidal Marsh Stream Stability	NA NA	
(3) Tidal Marsh Channel Stability	NA	
(3) Tidal Marsh Stream Geomorphology	NA	
(1) Water Quality	LOW	
(2) Baseflow	HIGH	
(2) Streamside Area Vegetation	LOW	
(3) Upland Pollutant Filtration	LOW	
(3) Thermoregulation	LOW	
(2) Indicators of Stressors	NO	
(2) Aquatic Life Tolerance	LOW	
(2) Intertidal Zone Filtration	NA	
(1) Habitat	LOW	
(2) In-stream Habitat	LOW	
(3) Baseflow	HIGH	
(3) Substrate	LOW	
(3) Stream Stability	MEDIUM	
(3) In-stream Habitat	LOW	
(2) Stream-side Habitat	LOW	
(3) Stream-side Habitat	MEDIUM	
(3) Thermoregulation	LOW	
(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 Habitat	NA	
Overall	LOW	

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: U-2412A			City/C	County: Guilford Cou	unty	Sampling Da	ate: 4/11/2017
Applicant/Owner: NCDOT					State: NC	Sampling	Point: WA-up
Investigator(s): R. Johnson/ A	ECOM		Section	on, Township, Range	e:		
Landform (hillslope, terrace, et	c.): Hillside		Local reli	ief (concave, convex	k, none): Convex		Slope (%): <u>2-5</u>
Subregion (LRR or MLRA): LR	R P MLRA 136	_ Lat:		35.985449 Long:		-79.969498 D	atum: WGS84
Soil Map Unit Name: VuB - Vanc							
Are climatic / hydrologic condit	ions on the site typ	oical for th	is time of year? Y	'esx No	(If no, explain i	n Remarks.)	
Are Vegetation, Soil	, or Hydrolog	y	significantly distur	bed? Are "No	rmal Circumstance	s" present? Yes	sx No
Are Vegetation, Soil	, or Hydrolog	y	naturally problema	atic? (If need	ed, explain any ans	swers in Remarks	s.)
		_			_	_	
SUMMARY OF FINDIN	GS – Attach s	ite map	showing san	npling point loc	ations, transe	cts, importan	it features, etc.
Hydrophytic Vegetation Pres	ent? Ves	1	No x				
Hydric Soil Present?			Vox	Is the Sampled Ar within a Wetland?		No×	(
Wetland Hydrology Present?							
Remarks:							
Upland data point adjacent	to WA.						
HYDROLOGY							
Wetland Hydrology Indicate					•		n of two required)
Primary Indicators (minimum	of one is required				<u> </u>	Soil Cracks (B6)	
Surface Water (A1)			e Aquatic Plants (Vegetated Conca	ave Surface (B8)
High Water Table (A2)		_	drogen Sulfide Od		-	Patterns (B10)	
Saturation (A3)			•	es on Living Roots (m Lines (B16)	(0.0)
Water Marks (B1)			esence of Reduced			on Water Table (C2)
Sediment Deposits (B2)				on in Tilled Soils (C6)		Burrows (C8)	ol Imagani (CO)
Drift Deposits (B3)			n Muck Surface (C			n Visible on Aeria	
Algal Mat or Crust (B4) Iron Deposits (B5)		00	ner (Explain in Rer	ildiks)		or Stressed Plants phic Position (D2)	
Inundation Visible on Ae	rial Imagery (B7)					Aquitard (D3)	
Water-Stained Leaves (E						ographic Relief (D)4)
Aquatic Fauna (B13)	,,,				FAC-Neu	-	· ·,
Field Observations:							
Surface Water Present?	Yes No	x De	epth (inches):				
Water Table Present?			epth (inches):				
Saturation Present?			epth (inches):		nd Hydrology Pre	sant? Vas	No ×
(includes capillary fringe)					, 3,		
Describe Recorded Data (stre	eam gauge, monito	oring well,	aerial photos, pre	evious inspections), i	f available:		
Remarks:							

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

Sampling Point: WA-up

Trop Chrotum (Diet sine)	Absolute	Dominant		Dominance Test worksheet:
Tree Stratum (Plot size:)	25	Species?		Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)
1. Liriodendron tulipifera, Tuliptree			FACU FACU	That Are OBL, FACW, or FAC: 4 (A)
2. Quercus falcata, Southern Red Oak			<u>FACU</u>	Total Number of Dominant
3. Carya tomentosa, Mockernut Hickory			UPL_	Species Across All Strata: 7 (B)
4. Acer rubrum, Red Maple			FAC	Percent of Dominant Species
5				That Are OBL, FACW, or FAC:57.1% (A/B)
6				Prevalence Index worksheet:
	65:	= Total Cov	er	Total % Cover of: Multiply by:
50% of total cover: <u>32.5</u>	20% of	total cover:	13	OBL species x 1 = 0
Sapling Stratum (Plot size:)				FACW species 0 x 2 = 0
1. Acer rubrum, Red Maple	10	Yes	<u>FAC</u>	FAC species 85 x 3 = 255
2				FACU species 45 x 4 = 180
3				UPL species65 x 5 =325
4				Column Totals: 195 (A) 760 (B)
5				(5)
6				Prevalence Index = B/A = 3.90
	10	= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover:5	20% of	total cover:	2	1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size:)				X 2 - Dominance Test is >50%
1. Acer rubrum, Red Maple	30	Yes	FAC	3 - Prevalence Index is ≤3.0 ¹
2. Ligustrum sinense, Chinese Privet		Yes	FACU	4 - Morphological Adaptations (Provide supporting
3				data in Remarks or on a separate sheet)
4				Problematic Hydrophytic Vegetation ¹ (Explain)
5				
6.				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
	50	= Total Cov	er	Definitions of Five Vegetation Strata:
50% of total cover: 25				Definitions of Five vegetation strata.
Herb Stratum (Plot size:)	2070 01	total cover.		Tree – Woody plants, excluding woody vines,
1. Lonicera japonica, Japanese Honeysuckle	20	Yes	FAC	approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).
Vitis rotundifolia, Muscadine				
3				Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less
				than 3 in. (7.6 cm) DBH.
4				Shrub – Woody plants, excluding woody vines,
5				approximately 3 to 20 ft (1 to 6 m) in height.
7				Horb All horboscous (non woody) plants including
8				Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody
9				plants, except woody vines, less than approximately 3
10				ft (1 m) in height.
11				Woody vine – All woody vines, regardless of height.
		Total Cov		
50% of total cover: <u>17.5</u>	20% of	total cover:		
Woody Vine Stratum (Plot size:)				
1				
2				
3				
4				
5				Hydrophytic
	0	= Total Cov	er	Vegetation
50% of total cover:0	20% of	total cover-	0	Present? Yes Nox
Remarks: (Include photo numbers here or on a separate s		total cover.		
Remarks. (include prioto numbers here or on a separate s				

SOIL Sampling Point: WA-up

Profile Desc	ription: (Describe	to the depth	needed to docum	ent the indica	ator or confirn	n the absence	e of indicators.)
Depth	Matrix		Redox	r Features			
(inches)	Color (moist)	%	Color (moist)		pe ¹ Loc ²	Texture	Remarks
0-6	10YR 3/2	100%				Sandy clay loam	
6-12+	7.5YR 5/8	100%				Sandy clay loam	
			_				
¹ Type: C=Co	oncentration, D=Dep	letion. RM=F	Reduced Matrix, MS	=Masked San	d Grains.	² Location: E	PL=Pore Lining, M=Matrix.
Hydric Soil		iodon, ravi–i	toddood Widerix, Wie	-Masked San	a Grains.		eators for Problematic Hydric Soils ³ :
Histosol			Dark Surface	(\$7)			2 cm Muck (A10) (MLRA 147)
	oipedon (A2)				8) (MLRA 147 ,		Coast Prairie Redox (A16)
Black Hi				face (S9) (ML		<	(MLRA 147, 148)
	n Sulfide (A4)		Loamy Gleye		107 147, 140,	F	Piedmont Floodplain Soils (F19)
	Layers (A5)		Depleted Mat			<u> </u>	(MLRA 136, 147)
	ick (A10) (LRR N)		Redox Dark S			\	Very Shallow Dark Surface (TF12)
	d Below Dark Surfac	e (A11)		k Surface (F7)			Other (Explain in Remarks)
	ark Surface (A12)	,	Redox Depre				,
	lucky Mineral (S1) (I	_RR N,		ese Masses (F	12) (LRR N,		
	\ 147, 148)		MLRA 136		, ,		
	leyed Matrix (S4)			ce (F13) (MLR	A 136, 122)	³ Inc	dicators of hydrophytic vegetation and
	edox (S5)				F19) (MLRA 1 4		etland hydrology must be present,
	Matrix (S6)				MLRA 127, 14		nless disturbed or problematic.
	_ayer (if observed):	:				Ī	·
Type:							
	ches):		_			Hydric Soi	I Present? Yes Nox
-			_			Tiyune 301	Triesent: TesNO
Remarks:							

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: U-2412A		City/Co	ounty: Guilford County		Sampling Da	ate: 4/11/2017
Applicant/Owner: NCDOT						
Investigator(s): R. Johnson/ AECON	Л	Sectio	n, Township, Range:			
Landform (hillslope, terrace, etc.): <u>F</u>						Slope (%): 0-2
Subregion (LRR or MLRA): LRR P N						
Soil Map Unit Name: VuB - Vance-Urba						
Are climatic / hydrologic conditions of						
Are Vegetation, Soil		-				sx No
Are Vegetation, Soil				plain any answ	-	
-						
SUMMARY OF FINDINGS -	 Attach site map 	showing sam	pling point location	ıs, transect	s, importan	t features, etc.
II deal in Vandaire Barrell						
Hydrophytic Vegetation Present?	Yes x		Is the Sampled Area	Voc. X	No	
Hydric Soil Present? Wetland Hydrology Present?	Yes <u>x</u> N		within a Wetland?	res^	No	
Remarks:	res I	10				
Small wetland located in forester	d depression below pa	arking lots and im	pervious surfaces. Possil	ble headwater	s of stream sv	stem.
					, ,	
HYDROLOGY						
Wetland Hydrology Indicators:			9	Secondary Indic	cators (minimun	n of two required)
Primary Indicators (minimum of on	e is required; check all	that apply)		Surface So	il Cracks (B6)	
Surface Water (A1)	Tru	e Aquatic Plants (E	314) _	Sparsely Ve	egetated Conca	ave Surface (B8)
x High Water Table (A2)	Нус	drogen Sulfide Odo	or (C1)	Drainage P	atterns (B10)	
x Saturation (A3)	Oxi	dized Rhizosphere	es on Living Roots (C3)	Moss Trim	Lines (B16)	
Water Marks (B1)	Pre	sence of Reduced	Iron (C4)	Dry-Seasor	n Water Table (C2)
Sediment Deposits (B2) Recent Iron Reduction in Tilled Soils (C6) Crayfish Burrows (C8)						
Drift Deposits (B3)	Thir	n Muck Surface (C	7) _	Saturation \	Visible on Aeria	ıl Imagery (C9)
Algal Mat or Crust (B4)	Oth	er (Explain in Rem	narks)	Stunted or :	Stressed Plants	s (D1)
Iron Deposits (B5)			_	x Geomorphi	c Position (D2)	
Inundation Visible on Aerial Im	nagery (B7)		_	Shallow Aq	uitard (D3)	
Water-Stained Leaves (B9)			Microtopog	raphic Relief (D	04)	
Aquatic Fauna (B13)			_	FAC-Neutra	al Test (D5)	
Field Observations:						
Surface Water Present? Ye	s No _x De	epth (inches):				
Water Table Present? Ye	s <u>x</u> No De	epth (inches): <u>10</u>				
I .	sx No De		Wetland Hy	drology Prese	ent? Yesx	No
(includes capillary fringe)						
Describe Recorded Data (stream of	jauge, monitoring well,	aeriai photos, prev	vious inspections), if availa	able:		
Remarks:						
Manganese staining in soil						

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

Sampling Point: WA-wet

Troo Stratum (Diat size.	Absolute	Dominant Species 2		Dominance Test worksheet:
Tree Stratum (Plot size:)		Species?		Number of Dominant Species That Are OBL FACW or FAC: 6 (A)
Acer rubrum, Red Maple Liriodendron tulipifera, Tuliptree	80			That Are OBL, FACW, or FAC:6 (A)
			<u>FACU</u>	Total Number of Dominant
3				Species Across All Strata: 8 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC:75.0% (A/B)
6				Prevalence Index worksheet:
	95	= Total Cov	er	Total % Cover of: Multiply by:
50% of total cover: <u>47.5</u>	20% of	total cover:	19	OBL species x 1 = 10
Sapling Stratum (Plot size:)				FACW species
1. Acer rubrum, Red Maple	10	Yes	FAC	FAC species 140 x 3 = 420
2				FACU species x 4 = 60
3				UPL species
4				Column Totals: 200 (A) 665 (B)
5				Column Totals. 200 (A) 005 (B)
6				Prevalence Index = B/A = 3.33
	10	= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover:5	20% of	total cover-	2	1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size:)		total covor.		x 2 - Dominance Test is >50%
1. Ligustrum sinense, Chinese Privet	10	Yes	FACU	3 - Prevalence Index is ≤3.0¹
2. Ilex opaca, American Holly				4 - Morphological Adaptations ¹ (Provide supporting
				data in Remarks or on a separate sheet)
3				Problematic Hydrophytic Vegetation ¹ (Explain)
4				
5				¹ Indicators of hydric soil and wetland hydrology must
6	15	Total Cov		be present, unless disturbed or problematic.
				Definitions of Five Vegetation Strata:
50% of total cover: 7.5	20% of	total cover:	3	Tree – Woody plants, excluding woody vines,
Herb Stratum (Plot size:)				approximately 20 ft (6 m) or more in height and 3 in.
1. Lonicera japonica, Japanese Honeysuckle				(7.6 cm) or larger in diameter at breast height (DBH).
2. Microstegium vimineum, Japanese Stilt Grass			FAC	Sapling – Woody plants, excluding woody vines,
3. Trillium undulatum, Painted Trillium	5	<u>No</u>	<u>FACU</u>	approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.
4				than 3 m. (7.0 cm) DDM.
5				Shrub – Woody plants, excluding woody vines,
6				approximately 3 to 20 ft (1 to 6 m) in height.
7				Herb – All herbaceous (non-woody) plants, including
8				herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3
9				ft (1 m) in height.
10				Was devices Allowed with a second second second
11				Woody vine – All woody vines, regardless of height.
	50	= Total Cov	er	
50% of total cover:25_	20% of	total cover:	10	
Woody Vine Stratum (Plot size:)	_			
1. Smilax laurifolia, Laurel-Leaf Greenbrier	10	Yes	OBL	
2. Vitis rotundifolia, Muscadine		Yes	FAC	
3				
4				
5				
<u> </u>		Total Cov	er	Hydrophytic
500/ - (1-1-1				Vegetation
50% of total cover:		total cover:		
Remarks: (Include photo numbers here or on a separate s	neet.)			

SOIL Sampling Point: WA-wet

Profile Description: (Describe to the d	epth needed to document the indicator or confirm	the absence of indicators.)
Depth <u>Matrix</u>	Redox Features	
(inches) Color (moist) %	Color (moist) % Type ¹ Loc ²	Texture Remarks
	7.5YR 4/6 20%	Sandy clay loam
	- 	
¹ Type: C=Concentration, D=Depletion, R	M=Reduced Matrix, MS=Masked Sand Grains.	² Location: PL=Pore Lining, M=Matrix.
Hydric Soil Indicators:	,	Indicators for Problematic Hydric Soils ³ :
Histosol (A1)	Dark Surface (S7)	2 cm Muck (A10) (MLRA 147)
Histic Epipedon (A2)	Polyvalue Below Surface (S8) (MLRA 147,	
Black Histic (A3)	Thin Dark Surface (S9) (MLRA 147, 148)	(MLRA 147, 148)
Hydrogen Sulfide (A4)	Loamy Gleyed Matrix (F2)	Piedmont Floodplain Soils (F19)
Stratified Layers (A5)	x Depleted Matrix (F3)	(MLRA 136, 147)
2 cm Muck (A10) (LRR N)	Redox Dark Surface (F6)	Very Shallow Dark Surface (TF12)
Depleted Below Dark Surface (A11)	<pre> Depleted Dark Surface (F7) Redox Depressions (F8)</pre>	Other (Explain in Remarks)
Thick Dark Surface (A12) Sandy Mucky Mineral (S1) (LRR N,	Redox Depressions (F8) Iron-Manganese Masses (F12) (LRR N,	
MLRA 147, 148)	MLRA 136)	
Sandy Gleyed Matrix (S4)	Umbric Surface (F13) (MLRA 136, 122)	³ Indicators of hydrophytic vegetation and
Sandy Redox (S5)	Piedmont Floodplain Soils (F19) (MLRA 14	
Stripped Matrix (S6)	Red Parent Material (F21) (MLRA 127, 147	
Restrictive Layer (if observed):		
Туре:		
Depth (inches):		Hydric Soil Present? Yesx No
Remarks:		
Manganese stains/deposits staining		

Project/Site: U-2412A		City/County: Guilfo	rd County	Sampling Date:4/11/2017
Applicant/Owner: NCDOT			State: <u>NC</u>	Sampling Point: WB-up
Investigator(s): R. Johnson/ AECOM		Section, Township,	Range:	
Landform (hillslope, terrace, etc.): Forest				
Subregion (LRR or MLRA): LRR P MLRA	<u> 4 136</u> Lat:	35.985389 L	_ong:	-79.964797 Datum: WGS84
Soil Map Unit Name: VuB - Vance-Urban lan				
Are climatic / hydrologic conditions on the	ne site typical for this time	of year? Yesx No	(If no, explain in	Remarks.)
Are Vegetation, Soil, or	Hydrology signific	antly disturbed? A	re "Normal Circumstances	" present? Yes <u>x</u> No
Are Vegetation, Soil, or	Hydrology natural	lly problematic? (If	f needed, explain any ansv	wers in Remarks.)
SUMMARY OF FINDINGS – A	itach site map show	ving sampling poin	t locations, transec	ts, important features, etc.
Hydrophytic Vegetation Present?	Yes No	Is the Samp	lad Araa	
Hydric Soil Present?	Yes No			Nox
Wetland Hydrology Present?	Yes No>			
Remarks:				
Upland data point located adjacent t	to wetland WB.			
HYDROLOGY				
Wetland Hydrology Indicators:			Secondary Indi	icators (minimum of two required)
Primary Indicators (minimum of one is	required: check all that ar	(vlac	Surface So	
Surface Water (A1)		atic Plants (B14)		/egetated Concave Surface (B8)
High Water Table (A2)		Sulfide Odor (C1)		Patterns (B10)
Saturation (A3)		Rhizospheres on Living R	_	Lines (B16)
Water Marks (B1)		of Reduced Iron (C4)		on Water Table (C2)
Sediment Deposits (B2)		on Reduction in Tilled Soil		urrows (C8)
Drift Deposits (B3)	Thin Muck	Surface (C7)	Saturation	Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4)	Other (Ex	plain in Remarks)	Stunted or	Stressed Plants (D1)
Iron Deposits (B5)			Geomorph	ic Position (D2)
Inundation Visible on Aerial Image	ry (B7)		Shallow Ad	quitard (D3)
Water-Stained Leaves (B9)			Microtopoç	graphic Relief (D4)
Aquatic Fauna (B13)			FAC-Neutr	ral Test (D5)
Field Observations:				
Surface Water Present? Yes	Nox Depth (in	· ——		
	Nox Depth (in			
	Nox Depth (in	ches):	Wetland Hydrology Pres	ent? Yes Nox
(includes capillary fringe) Describe Recorded Data (stream gauge	je, monitoring well, aerial		ons), if available:	
Remarks:				

Sampling Point: WB-up

Torre Charles (District	Absolute	Dominant		Dominance Test worksheet:
Tree Stratum (Plot size:)		Species?		Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)
Acer negundo, Ash-Leaf Maple Liriodendron tulipifera, Tuliptree	30			That Are OBL, FACW, or FAC:5 (A)
			<u>FACU</u>	Total Number of Dominant
3				Species Across All Strata:10 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 50.0% (A/B)
6				Prevalence Index worksheet:
	60	= Total Cov	er	Total % Cover of: Multiply by:
50% of total cover: 30	20% of	total cover:	12	OBL species x 1 = 0
Sapling Stratum (Plot size:)				FACW species5 x 2 =10
1. Acer negundo, Ash-Leaf Maple	10	Yes	<u>FAC</u>	FAC species 95 x 3 = 285
2				FACU species 30 x 4 = 120
3				UPL species x 5 =
4				Column Totals: 215 (A) 840 (B)
5				Column Totals. 213 (A) 840 (B)
6				Prevalence Index = B/A = 3.91
		= Total Cov		Hydrophytic Vegetation Indicators:
50% of total cover: 5	20% of	total cover-	2	1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size:)	2070 01	total cover.		2 - Dominance Test is >50%
1. Acer negundo, Ash-Leaf Maple	20	Yes	FAC	3 - Prevalence Index is ≤3.0 ¹
2. Acer floridanum, Florida Maple	10		FACU	4 - Morphological Adaptations ¹ (Provide supporting
3. Lonicera morrowii, Morrow's Honeysuckle	10	Yes	FACU	data in Remarks or on a separate sheet)
				Problematic Hydrophytic Vegetation ¹ (Explain)
4. Ulmus americana, American Elm		No	<u>FACW</u>	
5				¹ Indicators of hydric soil and wetland hydrology must
6				be present, unless disturbed or problematic.
		= Total Cov		Definitions of Five Vegetation Strata:
50% of total cover: 22.5	20% of	total cover:	9	Tree – Woody plants, excluding woody vines,
Herb Stratum (Plot size:)				approximately 20 ft (6 m) or more in height and 3 in.
1. Fagus grandifolia, American Beech	30	Yes	FACU	(7.6 cm) or larger in diameter at breast height (DBH).
2. Viola sp., Violet	25	Yes	FAC	Sapling – Woody plants, excluding woody vines,
3				approximately 20 ft (6 m) or more in height and less
4				than 3 in. (7.6 cm) DBH.
5				Shrub – Woody plants, excluding woody vines,
6				approximately 3 to 20 ft (1 to 6 m) in height.
7				Herb – All herbaceous (non-woody) plants, including
8				herbaceous vines, regardless of size, and woody
9				plants, except woody vines, less than approximately 3 ft (1 m) in height.
10				it (1 m) in neight.
11				Woody vine – All woody vines, regardless of height.
		Total Cov	er	
50% of total cover: _ 27.5				
	20% 01	total cover.		
Woody Vine Stratum (Plot size:) 1. Lonicera japonica, Japanese Honeysuckle	10	Yes	FAC	
		Yes		
2. Hedera helix, English Ivy			FACU	
3				
4				
5				Hydrophytic
	15	= Total Cov	er	Vegetation
50% of total cover:7.5				Dresent2 Vos No Vos
30 % of total cover		total cover:	3	Present? Yes Nox
Remarks: (Include photo numbers here or on a separate s	20% of	total cover:	3	Present? Yes No×

SOIL Sampling Point: WB-up

Profile Desc	cription: (Describe	to the dep	th needed to docun	nent the ir	ndicator o	or confirm	n the absence	e of indicators.)
Depth	Matrix			x Features				
<u>(inches)</u>	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	<u>Remarks</u>
0-3	10YR 3/1	100%					Sandy clay loam	
3-12	10YR 4/4	85%	10 YR 6/8	15%			Sandy clay loam	l
¹ Type: C=C	oncentration, D=Dep	letion, RM:	=Reduced Matrix, MS	S=Masked	Sand Gra	ins.	² Location: F	PL=Pore Lining, M=Matrix.
Hydric Soil		,						ators for Problematic Hydric Soils ³ :
Histosol			Dark Surface	(S7)				2 cm Muck (A10) (MLRA 147)
	pipedon (A2)		Polyvalue Be		ce (S8) (M	LRA 147,		Coast Prairie Redox (A16)
	istic (A3)		Thin Dark Su					(MLRA 147, 148)
Hydroge	en Sulfide (A4)		Loamy Gleye	ed Matrix (F	⁻ 2)		F	Piedmont Floodplain Soils (F19)
	d Layers (A5)		Depleted Mat					(MLRA 136, 147)
	uck (A10) (LRR N)		Redox Dark S					/ery Shallow Dark Surface (TF12)
	d Below Dark Surfac	e (A11)	Depleted Dar				— (Other (Explain in Remarks)
	ark Surface (A12)	DD N	Redox Depre Iron-Mangane			DD N		
	Mucky Mineral (S1) (I A 147, 148)	_KK N,	MLRA 13		5 (F 12) (L	_KK N,		
	Gleyed Matrix (S4)		Umbric Surfa		MI RA 13	6. 122)	3Inc	dicators of hydrophytic vegetation and
	Redox (S5)		Piedmont Flo					etland hydrology must be present,
	Matrix (S6)		Red Parent N					nless disturbed or problematic.
	Layer (if observed)	;						·
Type:								
	ches):						Hydric Soi	I Present? Yes No _ x
Remarks:							,	
rtomants.								

Project/Site: U-2412A		City/County: Guilford County	Samp	oling Date: 4/11/2017
Applicant/Owner: NCDOT				
Investigator(s): R. Johnson/ AECOM		Section, Township, Range:		
Landform (hillslope, terrace, etc.): Forest				
Subregion (LRR or MLRA): LRR P MLR	4 136 Lat:	35.985094 Long:	-79.9642	285 Datum: WGS84
Soil Map Unit Name: VuB - Vance-Urban lan				
Are climatic / hydrologic conditions on the	ne site typical for this time of ye	ar? Yes <u>x</u> No (I	f no, explain in Remark	s.)
Are Vegetation, Soil, or	Hydrology significantly	disturbed? Are "Normal of	Circumstances" present	? Yes <u>x</u> No
Are Vegetation, Soil, or			kplain any answers in R	
SUMMARY OF FINDINGS – A	ttach site map showing	sampling point location	ns, transects, imp	ortant features, etc.
Hydrophytic Vegetation Present?	Yes x No	Is the Sampled Area		
Hydric Soil Present?	Yes x No	within a Wetland?	Yes <u>x</u> N	o
Wetland Hydrology Present?	Yes x No		-	
Remarks:				
Small wetland located adjacent to SA	A and PA (Owens Lake).			
HYDROLOGY				
Wetland Hydrology Indicators:			Secondary Indicators (m	ninimum of two required)
Primary Indicators (minimum of one is	required: check all that apply)	-	Surface Soil Cracks	-
Surface Water (A1)	True Aquatic Pl			I Concave Surface (B8)
X High Water Table (A2)	Hydrogen Sulfic		Drainage Patterns (
× Saturation (A3)	• •	spheres on Living Roots (C3)	Moss Trim Lines (B	
Saturation (A3) Water Marks (B1)		educed Iron (C4)	Dry-Season Water	
Sediment Deposits (B2)		duction in Tilled Soils (C6)	Crayfish Burrows (0	
Drift Deposits (B3)	Thin Muck Surfa		-	n Aerial Imagery (C9)
Algal Mat or Crust (B4)	Other (Explain i		Stunted or Stressed	
Algal Mat of Crust (B4) Iron Deposits (B5)	Опот (Ехрант)	in Kemara)	 Stuffed of Stresset Geomorphic Position 	
Inundation Visible on Aerial Image	erv (R7)	-	Shallow Aquitard (E	
× Water-Stained Leaves (B9)	19 (57)	•	Microtopographic R	
Aquatic Fauna (B13)			 X FAC-Neutral Test (I 	
Field Observations:				
Surface Water Present? Yes	Nox Depth (inches)	ı:		
Water Table Present? Yes	x No Depth (inches)): <u>0</u>		
	x No Depth (inches)		ydrology Present? Y	esx No
(includes capillary fringe)			abla	
Describe Recorded Data (stream gaug	e, monitoring well, aerial photo	s, previous inspections), if avail	able:	
Remarks:				
Kemarks.				

Sampling Point: WB-wet

	Absolute	Dominant		Dominance Test worksheet:
Tree Stratum (Plot size:)		Species?		Number of Dominant Species
1. Acer negundo, Ash-Leaf Maple			<u>FAC</u>	That Are OBL, FACW, or FAC:9 (A)
2. <u>Liquidambar styraciflua</u> , <u>Sweet-Gum</u>			<u>FAC</u>	Total Number of Dominant
3. Acer floridanum, Florida Maple	25	Yes	FACU	Species Across All Strata:11 (B)
4. Salix nigra, Black Willow	15	No	OBL	Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 81.8% (A/B)
6				
	100	= Total Cov	er	Prevalence Index worksheet:
50% of total cover: 50	20% of	total cover:	20	Total % Cover of: Multiply by:
Sapling Stratum (Plot size:)		total cover.		OBL species 50 x 1 = 50
1. Alnus serrulata, Brookside Alder	15	Yes	OBL	FACW species 7 x 2 = 14
a C II i BI I MCII	4.0		OBL	FAC species 85 x 3 = 255
	4.0			FACU species 25 x 4 = 100
				UPL species x 5 =200
4				Column Totals: <u>207</u> (A) <u>619</u> (B)
5				2.00
6				Prevalence Index = B/A = 2.99
	35	= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover:17.5	20% of	total cover:	7	1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size:)				x 2 - Dominance Test is >50%
1. Lonicera morrowii, Morrow's Honeysuckle	15	Yes	FACU	$\frac{x}{2}$ 3 - Prevalence Index is $\leq 3.0^1$
2. Alnus serrulata, Brookside Alder	10	Yes	OBL	4 - Morphological Adaptations ¹ (Provide supporting
3. Fraxinus pennsylvanica, Green Ash	5	No	FACW	data in Remarks or on a separate sheet)
4				Problematic Hydrophytic Vegetation ¹ (Explain)
5				¹ Indicators of hydric soil and wetland hydrology must
6				be present, unless disturbed or problematic.
		= Total Cov		Definitions of Five Vegetation Strata:
50% of total cover:15	20% of	total cover:	6	Tree – Woody plants, excluding woody vines,
Herb Stratum (Plot size:)				approximately 20 ft (6 m) or more in height and 3 in.
1. Gramineae spp., Grasses				(7.6 cm) or larger in diameter at breast height (DBH).
2. Fraxinus pennsylvanica, Green Ash	2	Yes	FACW	Sapling – Woody plants, excluding woody vines,
3				approximately 20 ft (6 m) or more in height and less
4				than 3 in. (7.6 cm) DBH.
5				Shrub – Woody plants, excluding woody vines,
6				approximately 3 to 20 ft (1 to 6 m) in height.
7				Herb – All herbaceous (non-woody) plants, including
8				herbaceous vines, regardless of size, and woody
9				plants, except woody vines, less than approximately 3 ft (1 m) in height.
10				it (1 m) in neight.
				Woody vine – All woody vines, regardless of height.
11	7	Tatal Cau		
		= Total Cov		
50% of total cover: 3.5	20% of	total cover:	1.4	
Woody Vine Stratum (Plot size:)				
1. Lonicera japonica, Japanese Honeysuckle	10	Yes	FAC	
2				
3				
4				
5				l
	10	= Total Cov	er	Hydrophytic Vegetation
EOO/ of total across				Present? Yes x No
50% of total cover:5		total cover:		
Remarks: (Include photo numbers here or on a separate s	neet.)			

SOIL Sampling Point: WB-wet

Profile Des	cription: (Describe	to the dep	th needed to docu	ment the i	ndicator	or confirm	the absence of	indicators.)
Depth	Matrix			x Features		1 2 2	.	Barra I.
(inches)	Color (moist)	<u>%</u>	Color (moist)		Type ¹	_Loc ²	Texture	Remarks
0-8	10YR 3/1	80%	7.5YR 3/4	_20%	<u>C</u>		Sandy clay loam	
8-12+	Gley1 4/5GY	50%					Clay loam	
8-12+	7.5YR 3/4	50%					Clay loam	
	oncentration, D=Dep	letion, RM	=Reduced Matrix, M	S=Masked	Sand Gra	ains.		Pore Lining, M=Matrix.
Hydric Soil				(0=)				rs for Problematic Hydric Soils ³ :
Histoso			Dark Surface		00 (50) (84	II DA 147		Muck (A10) (MLRA 147)
	pipedon (A2) istic (A3)		Polyvalue Be Thin Dark Su					st Prairie Redox (A16) ILRA 147, 148)
	en Sulfide (A4)		Loamy Gleye			-7, 140)		mont Floodplain Soils (F19)
	d Layers (A5)		x Depleted Ma		,			ILRA 136, 147)
	uck (A10) (LRR N)		Redox Dark					Shallow Dark Surface (TF12)
	d Below Dark Surfac	e (A11)	Depleted Da				Othe	er (Explain in Remarks)
	ark Surface (A12) Mucky Mineral (S1) (I	DD N	Redox Depre Iron-Mangan			DD N		
	A 147, 148)	-KK N,	MLRA 13		55 (1 12) (1	LIXIX IN,		
	Gleyed Matrix (S4)		Umbric Surfa		MLRA 13	6, 122)	³ Indicat	tors of hydrophytic vegetation and
Sandy F	Redox (S5)		Piedmont Flo	oodplain S	oils (F19)	(MLRA 14	18) wetlar	nd hydrology must be present,
	d Matrix (S6)		Red Parent I	Material (F	21) (MLR	A 127, 147	7) unless	s disturbed or problematic.
	Layer (if observed):							
	ches):						Hydric Soil Pro	esent? Yes <u>x</u> No
Remarks:								

Project/Site: U-2412A		City/County: Guilfo	ord County	Sampling Date:4/18/2017
Applicant/Owner: NCDOT				Sampling Point: WC-up
Investigator(s): R. Johnson/ AECOM		Section, Township,	Range:	
Landform (hillslope, terrace, etc.): Hillsie	de	Local relief (concave,	convex, none): Convex	Slope (%): <u>5</u>
Subregion (LRR or MLRA): LRR P MLRA	<u>4 136</u> Lat:	35.985373	Long:	-79.936811 Datum: WGS84
Soil Map Unit Name: WkD - Wilkes-Poindex	ter-Wynott complex, 10 to 15 pe	rcent slopes	NWI class	sification: Upland
Are climatic / hydrologic conditions on the	ne site typical for this time o	of year? Yes <u>x</u> N	o (If no, explain i	n Remarks.)
Are Vegetation, Soil, or	Hydrology significa	ntly disturbed? A	re "Normal Circumstance:	s" present? Yes <u>x</u> No
Are Vegetation, Soil, or	Hydrology naturally	problematic? (I	f needed, explain any ans	wers in Remarks.)
SUMMARY OF FINDINGS – A	ttach site map show	ing sampling poir	nt locations, transed	ets, important features, etc.
Hydrophytic Vegetation Present?	Yes Nox	Is the Samp	aled Area	
Hydric Soil Present?	Yes Nox			No×
Wetland Hydrology Present?	Yes Nox			
Remarks:				
Upland point adjacent to WC.				
HYDROLOGY				
Wetland Hydrology Indicators:			Secondary Inc	dicators (minimum of two required)
Primary Indicators (minimum of one is	required: check all that and	nlv)		oil Cracks (B6)
Surface Water (A1)	True Aquat	•		Vegetated Concave Surface (B8)
High Water Table (A2)		Sulfide Odor (C1)		Patterns (B10)
Saturation (A3)		hizospheres on Living R	-	1 Lines (B16)
Water Marks (B1)		f Reduced Iron (C4)		on Water Table (C2)
Sediment Deposits (B2)		Reduction in Tilled Soi		Burrows (C8)
Drift Deposits (B3)	Thin Muck			n Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4)		ain in Remarks)		r Stressed Plants (D1)
Iron Deposits (B5)	_ ` '	•		hic Position (D2)
Inundation Visible on Aerial Image	ery (B7)			quitard (D3)
Water-Stained Leaves (B9)			Microtopo	graphic Relief (D4)
Aquatic Fauna (B13)			FAC-Neur	tral Test (D5)
Field Observations:				
Surface Water Present? Yes	Nox Depth (inc	hes):		
Water Table Present? Yes	Nox Depth (inc	hes):		
	Nox Depth (inc	hes):	Wetland Hydrology Pres	sent? Yes Nox
(includes capillary fringe) Describe Recorded Data (stream gauge	ne monitoring well aerial n	hotos previous inspecti	ons) if available:	
Beschibe Recorded Bata (Stream gadg	je, monitoring weil, deridi p	notos, previous inspecti	ons), ii avallabie.	
Remarks:				

Sampling Point: WC-up

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?		Dominance Test worksheet:
1. Quercus alba, Northern White Oak	35		FACU	Number of Dominant Species That Are OBL, FACW, or FAC:2 (A)
100 11 - 1 - 1			FACU	That Are OBE, I ACW, OF IAC.
Fagus grandifolia, American Beech Pinus virginiana, Virginia Pine			FACU	Total Number of Dominant Species Across All Strata: 9 (B)
4. <u>Liriodendron tulipifera</u> , <u>Tuliptree</u>			FACU	Species Across All Strata:9 (B)
				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 22.2% (A/B)
6		= Total Cov		Prevalence Index worksheet:
				Total % Cover of: Multiply by:
50% of total cover: 40	20% of	total cover:	16	OBL species0 x 1 =0
Sapling Stratum (Plot size:)				FACW species0 x 2 =0
1. Fagus grandifolia, American Beech				FAC species 25 x 3 = 75
2. Carya tomentosa, Mockernut Hickory			<u>UPL</u>	FACU species 80 x 4 = 320
3. Cornus florida, Flowering Dogwood			<u>FACU</u>	UPL species <u>140</u> x 5 = <u>700</u>
4. Acer floridanum, Florida Maple			<u>FACU</u>	Column Totals: <u>245</u> (A) <u>1095</u> (B)
5. Pinus virginiana, Virginia Pine	5	No	FACU	
6				Prevalence Index = B/A = 4.47
	40	= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover:20_	20% of	total cover:	:8	1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size:)				2 - Dominance Test is >50%
1. Carya tomentosa, Mockernut Hickory	10	Yes	UPL	3 - Prevalence Index is ≤3.0 ¹
2. Acer floridanum, Florida Maple		Yes	FACU	4 - Morphological Adaptations ¹ (Provide supporting
3. Pinus virginiana, Virginia Pine			FACU	data in Remarks or on a separate sheet)
4				Problematic Hydrophytic Vegetation ¹ (Explain)
5				1
6				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
		= Total Cov	er	Definitions of Five Vegetation Strata:
50% of total cover:10				Definitions of Five vegetation Strata.
Herb Stratum (Plot size:)	2078 01	total cover.	·—·	Tree – Woody plants, excluding woody vines,
1. Dichanthelium aciculare, Needle-Leaf Rosette Grass	15	Yes	FACU	approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).
2. Chasmanthium laxum, Slender Wood-Oats			FAC	
and the plant	4.0		FAC	Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less
Vaccinium sp., Blueberry Viburnum acerifolium, Maple-Leaf Arrow-Wood				than 3 in. (7.6 cm) DBH.
·			UPL	Should Meady plants analysis a washing
				Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.
6				
7				Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody
8				plants, except woody vines, less than approximately 3
9				ft (1 m) in height.
10				Woody vine – All woody vines, regardless of height.
11				
	42	= Total Cov	er	
50% of total cover: 21	20% of	total cover:	8.4	
Woody Vine Stratum (Plot size:)				
1				
2				
3				
4				
5				Hardward and a
		= Total Cov	er	Hydrophytic Vegetation
50% of total cover:0				Present? Yes Nox
Remarks: (Include photo numbers here or on a separate s		total cover		
Remarks: (include prioto numbers here or on a separate s	neet.)			

SOIL Sampling Point: WC-up

Profile Desc	ription: (Describe	to the depth	needed to docum	ent the ir	ndicator o	or confirm	n the absence	of indicators.)
Depth	Matrix			Features				
(inches)	Color (moist)		Color (moist)	%	Type ¹	Loc ²	Texture	<u>Remarks</u>
0-2	10YR 3/2	100%					Sandy clay loam	
2-12+	10YR 5/6	100%					Loamy Sand	coarse sand
			_					
¹ Type: C=Co	oncentration, D=Dep	letion, RM=R	teduced Matrix, MS	=Masked	Sand Gra	ins.	² Location: P	L=Pore Lining, M=Matrix.
Hydric Soil			ioaaooa maan, mo	maonoa	ound ord			ators for Problematic Hydric Soils ³ :
Histosol			Dark Surface	(S7)				cm Muck (A10) (MLRA 147)
	pipedon (A2)		Polyvalue Bel		e (S8) (M	LRA 147.		Coast Prairie Redox (A16)
Black Hi	•		Thin Dark Sur				_	(MLRA 147, 148)
	n Sulfide (A4)		Loamy Gleye	d Matrix (F	-2)		F	Piedmont Floodplain Soils (F19)
Stratified	l Layers (A5)		Depleted Mate	rix (F3)				(MLRA 136, 147)
	ick (A10) (LRR N)		Redox Dark S					ery Shallow Dark Surface (TF12)
	d Below Dark Surface	e (A11)	Depleted Dark				_ 0	Other (Explain in Remarks)
	ark Surface (A12)	DD N	Redox Depres			DD N		
	lucky Mineral (S1) (L	.RR N,	Iron-Mangane		es (F12) (L	RR N,		
	A 147, 148) Gleyed Matrix (S4)		MLRA 136 Umbric Surface		MI DA 12	2 122)	3Inc	licators of hydrophytic vegetation and
	ledox (S5)		Piedmont Floo					etland hydrology must be present,
	Matrix (S6)		Red Parent M	•				less disturbed or problematic.
	_ayer (if observed):					,		problemate.
Type:	-							
	ches):						Hydric Soil	Present? Yes Nox
Remarks:			_				Tryunc 3011	rresent: resNo
Remarks:								

Project/Site: U-2412A		City/C	County: Guilford County		Sampling Da	ate: 4/18/201	.7
Applicant/Owner: NCDOT		,					
Investigator(s): R. Johnson/ AEG		Section	on, Township, Range:		-		
Landform (hillslope, terrace, etc.						Slope (%): <u>0-2</u>	
Subregion (LRR or MLRA): LRR							
Soil Map Unit Name: WkD - Wilkes							
Are climatic / hydrologic conditio							
Are Vegetation, Soil		-				sx No	
Are Vegetation, Soil				explain any answ			
-							
SUMMARY OF FINDING	S – Attach site m	nap showing san	npling point locatio	ns, transect	s, importar	nt features, etc	c.
							_
Hydrophytic Vegetation Preser		No	Is the Sampled Area				
Hydric Soil Present?		No	within a Wetland?	Yesx	No		
Wetland Hydrology Present?	Yes^_	No					
Remarks: PEM wetland in transmission	right-of-way						
F LIVI Wetland III transmission	rigitt-oi-way.						
HYDROLOGY							
Wetland Hydrology Indicator	 'S:			Secondary India	cators (minimu	m of two required)	_
Primary Indicators (minimum o		k all that apply)		Surface Soi			
x Surface Water (A1)		True Aquatic Plants (ave Surface (B8)	
High Water Table (A2)		Hydrogen Sulfide Od			atterns (B10)	470 0411400 (20)	
× Saturation (A3)				Moss Trim			
Water Marks (B1)		Presence of Reduced	_		n Water Table	(C2)	
Sediment Deposits (B2)		Recent Iron Reduction		Crayfish Bu		、 /	
Drift Deposits (B3)		Thin Muck Surface (0		-		al Imagery (C9)	
Algal Mat or Crust (B4)		Other (Explain in Rer			Stressed Plant		
Iron Deposits (B5)	_	(,	x Geomorphi			
Inundation Visible on Aeria	al Imagery (B7)			Shallow Aq			
Water-Stained Leaves (B9	0 3				raphic Relief ([D4)	
Aquatic Fauna (B13)	•			× FAC-Neutra			
Field Observations:							_
Surface Water Present?	Yes ^x No	Depth (inches): 1					
Water Table Present?	Yes x No						
Saturation Present?	Yes x No	·	Wetland H	lydrology Prese	ent? Ves	x No	
(includes capillary fringe)							_
Describe Recorded Data (stream	am gauge, monitoring	well, aerial photos, pre	vious inspections), if avai	ilable:			
Remarks:							

Sampling Point: WC-wet

T () (D) ()		Dominant		Dominance Test worksheet:
Tree Stratum (Plot size:)		Species?	Status	Number of Dominant Species
1,				That Are OBL, FACW, or FAC:7 (A)
2				Total Number of Dominant
3				Species Across All Strata: 8 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 87.5% (A/B)
6				
	0 =	= Total Cov	er	Prevalence Index worksheet:
50% of total cover:0	20% of	total cover:	0	
Sapling Stratum (Plot size:)	_			OBL species x 1 = 10
1. Alnus serrulata, Brookside Alder	10	Yes	OBL	FACW species <u>45</u> x 2 = <u>90</u>
2. Sambucus nigra, Black Elder				FAC species45 x 3 =135
			1710	FACU species 0 x 4 = 0
3				UPL species <u>37</u> x 5 = <u>185</u>
4				Column Totals:137 (A)420 (B)
5				2.07
6				Prevalence Index = B/A = 3.07
	= =	= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover:10	20% of	total cover:	4	1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size:)				x 2 - Dominance Test is >50%
1. Rubus argutus, Saw-Tooth Blackberry	30	Yes	FACU	3 - Prevalence Index is ≤3.0 ¹
2. Solidago sp., Solidago		Yes	FAC	4 - Morphological Adaptations ¹ (Provide supporting
3. Elaeagnus angustifolia, Russian-Olive	2		FACU	data in Remarks or on a separate sheet)
4				Problematic Hydrophytic Vegetation ¹ (Explain)
5				
5				¹ Indicators of hydric soil and wetland hydrology must
0		Total Cour		be present, unless disturbed or problematic.
		= Total Cove		Definitions of Five Vegetation Strata:
50% of total cover: 26	20% of	total cover:	10.4	Tree – Woody plants, excluding woody vines,
Herb Stratum (Plot size:)				approximately 20 ft (6 m) or more in height and 3 in.
1. Juncus effusus, Lamp Rush	30	Yes	FACW	(7.6 cm) or larger in diameter at breast height (DBH).
2. Caryx sp., Sedge	10	Yes	FACW	Sapling – Woody plants, excluding woody vines,
3. Impatiens capensis, Spotted Touch-Me-Not	5	No	FACW	approximately 20 ft (6 m) or more in height and less
4. <u>Liriodendron tulipifera</u> , <u>Tuliptree</u>	5	No	FACU	than 3 in. (7.6 cm) DBH.
5				Shrub – Woody plants, excluding woody vines,
6.				approximately 3 to 20 ft (1 to 6 m) in height.
7				Herb – All herbaceous (non-woody) plants, including
8				herbaceous vines, regardless of size, and woody
9				plants, except woody vines, less than approximately 3
				ft (1 m) in height.
10				Woody vine – All woody vines, regardless of height.
11				
	50:	= Total Cov	er	
50% of total cover: 25	20% of	total cover:	10	
Woody Vine Stratum (Plot size:)				
1 Lanicara ianonica, Jananese Honoveyella			E A C	
1 Lonicera japonica, Japanese Honeysuckle	10	Yes	<u>FAC</u>	
2. Toxicodendron radicans, Eastern Poison Ivy	<u>10</u> 5	Yes Yes	FAC	
2. Toxicodendron radicans, Eastern Poison Ivy	5	Yes		
Toxicodendron radicans, Eastern Poison Ivy	5	Yes		
2. Toxicodendron radicans, Eastern Poison Ivy	5	Yes		
Toxicodendron radicans, Eastern Poison Ivy 4	5	Yes	FAC	Hydrophytic Venetation
2. Toxicodendron radicans, Eastern Poison Ivy 3 4 5	5	Yes Total Cove	FAC	Vegetation
2. Toxicodendron radicans, Eastern Poison Ivy 3	5 15 _=20% of	Yes Total Cove	FAC	Vegetation
2. Toxicodendron radicans, Eastern Poison Ivy 3 4 5	5 15 _=20% of	Yes Total Cove	FAC	Vegetation

SOIL Sampling Point: WC-wet

Profile Desc	cription: (Describe	to the dep	th needed to docur	nent the i	ndicator	or confirm	n the absence	of indicators.)
Depth	Matrix			x Features				
<u>(inches)</u>	Color (moist)	%	Color (moist)	%	Type ¹	<u>Loc²</u>	Texture	Remarks
0-5	10YR 4/2	90%	7.5YR 5/8	10%		M	Sandy clay loam	
5-12	10YR 5/1	60%	10YR 5/8	40%		M	Sandy clay loam	
			-					
¹ Type: C=C	oncentration, D=Dep	letion RM:	=Reduced Matrix MS	S=Masked	Sand Gra		² Location: Pl	L=Pore Lining, M=Matrix.
Hydric Soil		iction, ixivi	-reduced Matrix, Mis	J-Maskea	Sana Ore	iii 13.		ators for Problematic Hydric Soils ³ :
Histosol			Dark Surface	(S7)				cm Muck (A10) (MLRA 147)
_	pipedon (A2)		Polyvalue Be		ce (S8) (N	ILRA 147		oast Prairie Redox (A16)
_	istic (A3)		Thin Dark Su			47, 148)		(MLRA 147, 148)
	en Sulfide (A4)		Loamy Gleye		F2)		P	iedmont Floodplain Soils (F19)
	d Layers (A5) uck (A10) (LRR N)		_x Depleted Ma Redox Dark S		·c)		1/	(MLRA 136, 147) ery Shallow Dark Surface (TF12)
_	d Below Dark Surfac	e (A11)	Depleted Dai					ther (Explain in Remarks)
	ark Surface (A12)	. (,	Redox Depre					and (Explain in Comains)
	/lucky Mineral (S1) (L	RR N,	Iron-Mangan		es (F12) (I	LRR N,		
	A 147, 148)		MLRA 13				2	
	Gleyed Matrix (S4)		Umbric Surfa					icators of hydrophytic vegetation and
	Redox (S5) I Matrix (S6)		Piedmont Florage Red Parent N					tland hydrology must be present, less disturbed or problematic.
	Layer (if observed):		Red Farench	viateriai (i	ZI) (WILK	127, 14	, un	less disturbed of problematic.
	ches):						Hydric Soil	Present? Yes x No No
Remarks:							1	

Project/Site: U-2412A	City/Cou	nty: Guilford County		_ Sampling Date:	4/12/2017
Applicant/Owner: NCDOT					
Investigator(s): R. Johnson/ AECOM	Section,	Township, Range:			
Landform (hillslope, terrace, etc.): Hillside	Local relief	(concave, convex, nor	ne): <u>Convex</u>	Slope	e (%): <u>2-4</u>
Subregion (LRR or MLRA): LRR P MLRA 136 La	t:35	.986707_ Long:		79.930916 Datum:	WGS84
Soil Map Unit Name: ChA - Chewacla loam, 0 to 2 percent sl	opes, frequently flooded		NWI classif	ication: <u>Upland</u>	
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	d? Are "Normal	Circumstances"	present? Yes x	No
Are Vegetation, Soil, or Hydrology	naturally problematic	? (If needed, e	xplain any answ	ers in Remarks.)	
SUMMARY OF FINDINGS – Attach site	map showing sampl	ing point locatio	ns, transect	s, important fea	tures, etc.
Hydrophytic Vegetation Present? Yesx	No Is	the Sampled Area			
Hydric Soil Present? Yes		ithin a Wetland?	Yes	No×	
	Nox				
Remarks:	l .				
Upland data point located adjacent to WD.					
HYDROLOGY					
Wetland Hydrology Indicators:			Secondary India	cators (minimum of ty	wo required)
Primary Indicators (minimum of one is required; che	ck all that apply)		Surface So		iro roquirou,
	_ True Aquatic Plants (B14			egetated Concave Si	urface (B8)
	_ Hydrogen Sulfide Odor (atterns (B10)	uriace (Bo)
I -	Oxidized Rhizospheres		Drainage P Moss Trim		
Water Marks (B1)	Presence of Reduced Iro	_		Water Table (C2)	
Sediment Deposits (B2)	Recent Iron Reduction in		Crayfish Bu		
Drift Deposits (B3)	Thin Muck Surface (C7)			Visible on Aerial Ima	aery (C9)
Algal Mat or Crust (B4)	Other (Explain in Remar	ks)		Stressed Plants (D1)	
Iron Deposits (B5)	- ` '	•		c Position (D2)	
Inundation Visible on Aerial Imagery (B7)			Shallow Aq		
Water-Stained Leaves (B9)			Microtopog	raphic Relief (D4)	
Aquatic Fauna (B13)			FAC-Neutra	al Test (D5)	
Field Observations:					
Surface Water Present? Yes No _ x	Depth (inches):	_			
Water Table Present? Yes Nox	Depth (inches):	_			
Saturation Present? Yes Nox	Depth (inches):	Wetland H	lydrology Prese	ent? Yes	Nox
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring	well periol photos provio	us inspections) if avai	ilabla		
Describe Recorded Data (stream gauge, monitoring	well, aeriai priotos, previo	us irispections), ii avai	liable:		
Remarks:					
Tremains.					

Sampling Point: WD-up

Tree Chrotium (Dick size:	Absolute	Dominant		Dominance Test worksheet:			
Tree Stratum (Plot size:)		Species?		Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)			
1. Carya tomentosa, Mockernut Hickory			UPL_	That Are OBL, FACW, or FAC:/ (A)			
Liquidambar styraciflua, Sweet-Gum Platanus occidentalis, American Sycamore			FACW	Total Number of Dominant			
				Species Across All Strata:13 (B)			
4. <u>Quercus falcata, Southern Red Oak</u> 5. Acer rubrum, Red Maple			FACU FAC	Percent of Dominant Species			
		165	FAC	That Are OBL, FACW, or FAC: 53.8% (A/B)			
6	25	Total Cou		Prevalence Index worksheet:			
		= Total Cov		Total % Cover of: Multiply by:			
50% of total cover: <u>17.5</u>	20% of	total cover:	7	OBL species0 x 1 =0			
Sapling Stratum (Plot size:)				FACW species 5 x 2 = 10			
1. Carya tomentosa, Mockernut Hickory				FAC species55 x 3 =165			
2. Acer negundo, Ash-Leaf Maple			FAC	FACU species 5 x 4 = 20			
3				UPL species <u>55</u> x 5 = <u>275</u>			
4				Column Totals: <u>120</u> (A) <u>470</u> (B)			
5							
6				Prevalence Index = B/A = 3.92			
	20	= Total Cov	er	Hydrophytic Vegetation Indicators:			
50% of total cover:10	20% of	total cover:	4	1 - Rapid Test for Hydrophytic Vegetation			
Shrub Stratum (Plot size:)				X 2 - Dominance Test is >50%			
1. Lonicera morrowii, Morrow's Honeysuckle	25	Yes	FACU	3 - Prevalence Index is ≤3.0 ¹			
2. Ligustrum sinense, Chinese Privet	10	Yes	FACU	4 - Morphological Adaptations ¹ (Provide supporting			
3. Cornus florida, Flowering Dogwood	5	No	FACU	data in Remarks or on a separate sheet)			
4				Problematic Hydrophytic Vegetation ¹ (Explain)			
5				1			
6				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.			
	40	= Total Cov	er	Definitions of Five Vegetation Strata:			
50% of total cover: 20	20% of	total cover-	8				
Herb Stratum (Plot size:)	2070 01	total oover.		Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in.			
1. Gramineae spp., Grasses	20	Yes	FAC	(7.6 cm) or larger in diameter at breast height (DBH).			
2. Lonicera japonica, Japanese Honeysuckle			FAC	Carling Woods plants avaluding woods vines			
3. Ligustrum sinense, Chinese Privet				Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less			
4. Daucus carota, Queen Anne's-Lace	-		UPL	than 3 in. (7.6 cm) DBH.			
				Shrub – Woody plants, excluding woody vines,			
6.				approximately 3 to 20 ft (1 to 6 m) in height.			
7				Herb – All herbaceous (non-woody) plants, including			
8				herbaceous vines, regardless of size, and woody			
9				plants, except woody vines, less than approximately 3 ft (1 m) in height.			
10				it († 111) III Height.			
11				Woody vine – All woody vines, regardless of height.			
		= Total Cov	er				
22.5							
50% of total cover: 22.5	20% 01	total cover:	9				
Woody Vine Stratum (Plot size:)	10	Vos	FAC				
1. Smilax rotundifolia, Horsebrier							
2							
3							
4							
5				Hydrophytic			
		= Total Cov		Vegetation Present? Yes x No			
50% of total cover:5	20% of	total cover:	2	i resent: 165 NU			
Remarks: (Include photo numbers here or on a separate s	heet.)						

SOIL Sampling Point: WD-up

Profile Desc	ription: (Describe	to the depth	needed to docum	ent the indi	icator o	r confirm	n the absenc	ce of indicators.)
Depth	Matrix			Features				
(inches)	Color (moist)		Color (moist)		Γ <u>ype¹</u> _	Loc ²	<u>Texture</u>	Remarks
0-2	10YR 3/2	100%					Sandy clay loar	<u> </u>
2-10	10YR 3/4	100%					Sandy clay	
10-12+	10YR 4/6	100%					Sandy clay	
			_					
¹ Type: C=Co	oncentration, D=Dep	letion RM=R	educed Matrix MS	=Masked Sa	and Grai	ins	² Location:	PL=Pore Lining, M=Matrix.
Hydric Soil I		icdon, ravi–ra	eddeed Wattix, Wis	-Maskea Se	una Ora	1113.		cators for Problematic Hydric Soils ³ :
Histosol			Dark Surface	(S7)				2 cm Muck (A10) (MLRA 147)
	ipedon (A2)		Polyvalue Bel		(S8) (M I	LRA 147,		Coast Prairie Redox (A16)
Black Hi			Thin Dark Sur					(MLRA 147, 148)
	n Sulfide (A4)		Loamy Gleyed				_	Piedmont Floodplain Soils (F19)
	Layers (A5)		Depleted Matr	ix (F3)				(MLRA 136, 147)
	ck (A10) (LRR N)		Redox Dark S					Very Shallow Dark Surface (TF12)
	Below Dark Surface	e (A11)	Depleted Dark		7)		_	Other (Explain in Remarks)
	rk Surface (A12)	DD 11	Redox Depres		(E40) (I	DD 11		
	lucky Mineral (S1) (L	.KK N,	Iron-Mangane		(F 12) (L	KK N,		
	147, 148) leyed Matrix (S4)		MLRA 136 Umbric Surfac		DA 136	122)	³ lr	ndicators of hydrophytic vegetation and
	edox (S5)		Piedmont Floo					vetland hydrology must be present,
	Matrix (S6)		Red Parent M	•				ınless disturbed or problematic.
	ayer (if observed):		_				İ	· · · · · · · · · · · · · · · · · · ·
Type:								
	ches):		_				Hydric So	oil Present? Yes Nox
Remarks:			_				,	
rtomarts.								

Project/Site: U-2412A		City/C	County: Guilford County		Sampling D	ate: 4/12/2017		
Applicant/Owner: NCDOT			•					
Investigator(s): R. Johnson/ AEG	COM	Section	on, Township, Range:					
Landform (hillslope, terrace, etc.						Slope (%): 0-2		
Subregion (LRR or MLRA): LRR								
Soil Map Unit Name: ChA - Chewar								
Are climatic / hydrologic conditio								
Are Vegetation, Soil		-				sx No		
Are Vegetation, Soil				explain any answ				
· — —								
SUMMARY OF FINDING	S – Attach site n	nap showing san	npling point locatio	ons, transect	ts, importar	nt features, etc.		
Hydrophytic Vegetation Preser		No	Is the Sampled Area					
Hydric Soil Present?		No	within a Wetland?	Yesx	No			
Wetland Hydrology Present?	Yes^_	No						
Remarks: Wetland located on the flood	Inlain adjacent to De	en River						
Wetland located on the floor	ipiairi adjacerit to Det	ep River.						
HYDROLOGY								
Wetland Hydrology Indicator	'S:			Secondary India	cators (minimu	m of two required)		
Primary Indicators (minimum o		k all that apply)		Surface So				
x Surface Water (A1)		True Aquatic Plants (-			ave Surface (B8)		
High Water Table (A2)		Hydrogen Sulfide Od			Patterns (B10)	ave surface (Bo)		
× Saturation (A3)				Moss Trim				
Water Marks (B1)		Presence of Reduced	_		n Water Table	(C2)		
Sediment Deposits (B2)		Recent Iron Reduction						
Drift Deposits (B3)		Thin Muck Surface (0				al Imagery (C9)		
Algal Mat or Crust (B4)		Other (Explain in Rer			Stressed Plant			
Iron Deposits (B5)	_	(,		ic Position (D2)			
Inundation Visible on Aeria	al Imagery (B7)			Shallow Aq		,		
Water-Stained Leaves (B9	0 3				graphic Relief ([D4)		
Aquatic Fauna (B13)	,			× FAC-Neutra		,		
Field Observations:								
Surface Water Present?	Yes ^x No	_ Depth (inches): 3						
Water Table Present?	Yes x No							
Saturation Present?	Yesx No		Wetland H	Judrology Pres	ont? Voc	× No		
(includes capillary fringe)	163 NO	_ Deput (inches)o	Wedand ii	lydrology Frest	ent: 1e3			
Describe Recorded Data (stream	m gauge, monitoring	well, aerial photos, pre	evious inspections), if avai	ilable:				
Remarks:								
buttress swell on trees								

Sampling Point: WD-wet

Tree Charles (Diet size:	Absolute	Dominant		Dominance Test worksheet:
Tree Stratum (Plot size:)		Species?		Number of Dominant Species That Are OBL, FACW, or FAC: 9 (A)
1. Liquidambar styraciflua, Sweet-Gum	40		FAC.W	That Are OBL, FACW, or FAC:9 (A)
2. Platanus occidentalis, American Sycamore			FACW	Total Number of Dominant
3. Ulmus americana, American Elm			FACW	Species Across All Strata: 9 (B)
4. Acer rubrum, Red Maple			FAC	Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 100.0% (A/B)
6				Prevalence Index worksheet:
		= Total Cov		Total % Cover of: Multiply by:
50% of total cover:35	20% of	total cover:	14	OBL species5 x 1 =5
Sapling Stratum (Plot size:)				FACW species 60 x 2 = 120
1. Liquidambar styraciflua, Sweet-Gum	15	Yes	FAC	FAC species 160 x 3 = 480
2. <u>Ulmus americana</u> , American Elm			FACW	FACU species 0 x 4 = 0
3. Acer rubrum, Red Maple			FAC	UPL species 0 x 5 = 0
4. Carpinus caroliniana, American Hornbeam	5	No	FAC	Column Totals: <u>225</u> (A) <u>605</u> (B)
5				(V)(V)
6				Prevalence Index = B/A = 2.69
	40	= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover: 20	20% of	total cover:	8	1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size:)				X 2 - Dominance Test is >50%
1. Liquidambar styraciflua, Sweet-Gum	10	Yes	FAC	x 3 - Prevalence Index is ≤3.0 ¹
2. Ulmus americana, American Elm		Yes	FACW	4 - Morphological Adaptations ¹ (Provide supporting
3. Carpinus caroliniana, American Hornbeam	5	Yes	FAC	data in Remarks or on a separate sheet)
4				Problematic Hydrophytic Vegetation ¹ (Explain)
5				
6				¹ Indicators of hydric soil and wetland hydrology must
<u> </u>		= Total Cov		be present, unless disturbed or problematic.
700/ 6:				Definitions of Five Vegetation Strata:
50% of total cover: <u>12.5</u>	20% of	total cover:		Tree – Woody plants, excluding woody vines,
Herb Stratum (Plot size:)	70	W	E4.0	approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).
1. Gramineae spp., Grasses			FAC	(7.6 cm) of larger in diameter at breast neight (DBH).
2. Juncus effusus, Lamp Rush			FACW	Sapling – Woody plants, excluding woody vines,
3. Sagittaria cuneata, Arum-Leaf Arrowhead	5	No	OBL_	approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.
4				
5				Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.
6				approximately 3 to 20 it (1 to 6 iii) in neight.
7				Herb – All herbaceous (non-woody) plants, including
8				herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3
9				ft (1 m) in height.
10				Woody vine – All woody vines, regardless of height.
11				Woody vine - 7th woody vines, regardless of height.
	85	= Total Cov	er	
50% of total cover: <u>42.5</u>	20% of	total cover:	17	
Woody Vine Stratum (Plot size:)				
1. Lonicera japonica, Japanese Honeysuckle	5	Yes	FAC	
2				
3				
4				
5				
		= Total Cov	er	Hydrophytic Vegetation
F00/ -{ 2.F				Present? Yesx No
50% of total cover:2.5		total cover:		
Remarks: (Include photo numbers here or on a separate s	neet.)			

SOIL Sampling Point: WD-wet

Profile Desc	cription: (Describe	to the dep	th needed to docur	nent the i	ndicator	or confirm	n the absence	of indicators.)
Depth	Matrix			x Features		. 2		
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	<u>Loc²</u>	<u>Texture</u>	Remarks
0-8	10YR 5/1	60%_	7.5 YR 5/8	40%_		M	Clay loam	
8-12	Gley1 6 5 GY	60%	7.5YR 5/6	40%		M	Sandy clay loam	
1Type: C-C	oncentration, D=Dep	letion RM	-Reduced Matrix M	S-Masked	Sand Gr	———	² Location: P	L=Pore Lining, M=Matrix.
Hydric Soil		iction, ixivi	- Reduced Width, Wi	J-Maskea	i Sana Ora	JII 13.		ators for Problematic Hydric Soils ³ :
Histosol			Dark Surface	e (S7)				cm Muck (A10) (MLRA 147)
	pipedon (A2)		Polyvalue Be		ce (S8) (N	ILRA 147		Coast Prairie Redox (A16)
Black H	istic (A3)		Thin Dark Su	ırface (S9)	(MLRA 1			(MLRA 147, 148)
	en Sulfide (A4)		Loamy Gleye		F2)		P	iedmont Floodplain Soils (F19)
_	d Layers (A5)		_x Depleted Ma		.0)			(MLRA 136, 147)
	uck (A10) (LRR N) d Below Dark Surfac	ο (Λ11)	Redox Dark : Depleted Dark :					ery Shallow Dark Surface (TF12) Other (Explain in Remarks)
	ark Surface (A12)	C (ATT)	Redox Depre				_ ~	Capitali III (Ciliarks)
_	Mucky Mineral (S1) (L	_RR N,	Iron-Mangan			LRR N,		
MLR	A 147, 148)		MLRA 13	6)				
	Gleyed Matrix (S4)		Umbric Surfa					icators of hydrophytic vegetation and
	Redox (S5)		Piedmont Flo					etland hydrology must be present,
	d Matrix (S6) Layer (if observed):		Red Parent N	viateriai (F	ZI) (WILK	A 127, 14	un	less disturbed or problematic.
	Layer (ii observed).							
	ches):						Hydric Soil	Present? Yesx No
Remarks:	CHE3)						Tiyane 3011	rresent: res No
Kemarks.								

Project/Site: U-2412A	C	City/County: Guilford County Sampling Date: 4/20/2017					
Applicant/Owner: NCDOT				_ State: NC	Sampling Point	: WE-up	
Investigator(s): R. Johnson/ AECOM		S	ection, Township, Range:				
Landform (hillslope, terrace, etc.): Hillsi	de	Loca	Il relief (concave, convex, no	ne): <u>Convex</u>	Slop	e (%): <u>0-5</u>	
Subregion (LRR or MLRA): LRR P MLR	A 136 Lat:		35.987741 Long:		-79.920362 Datum	: WGS84	
Soil Map Unit Name: HeC - Helena sandy lo							
Are climatic / hydrologic conditions on tl	ne site typical fo	or this time of year	r? Yesx No	(If no, explain in	Remarks.)		
Are Vegetation, Soil, or	Hydrology	significantly d	isturbed? Are "Norma	l Circumstances	" present? Yes	No×	
Are Vegetation, Soil, or	Hydrology	naturally prob	lematic? (If needed,	explain any ansv	vers in Remarks.)		
SUMMARY OF FINDINGS – A	ttach site m	nap showing s	sampling point location	ons, transect	ts, important fe	atures, etc.	
Hydrophytic Vegetation Present?	Yes	Nox	Is the Sampled Area				
Hydric Soil Present?		Nox	within a Wetland?	Yes	No×		
Wetland Hydrology Present?		No ×					
Remarks:		<u> </u>					
Upland point adjacent to WE. Locate	ed on an uplan	d ridge.					
LINDDOLOGY							
HYDROLOGY Wetland Hydrology Indicators:				Cocondony Indi	actors (minimum of t	wo roquirod)	
Wetland Hydrology Indicators:	required, aboo	k all that apply)		_	cators (minimum of t	wo required)	
Primary Indicators (minimum of one is	•		(D14)	Surface So		f (DO)	
Surface Water (A1)		True Aquatic Pla			egetated Concave S	urtace (B8)	
High Water Table (A2)		Hydrogen Sulfide	oheres on Living Roots (C3)	_	Patterns (B10)		
Saturation (A3)			nizospheres on Living Roots (C3) Moss Trim Lines (B16) f Reduced Iron (C4) Dry-Season Water Table (C2)				
Water Marks (B1) Sediment Deposits (B2)							
Drift Deposits (B3)		Thin Muck Surface	Reduction in Tilled Soils (C6) Crayfish Burrows (C8) Surface (C7) Saturation Visible on Aerial Imagery (C9)				
Algal Mat or Crust (B4)		Other (Explain in					
Iron Deposits (B5)	_	Other (Explain in	Kemarksy		ic Position (D2)	,	
Inundation Visible on Aerial Image	erv (B7)						
Water-Stained Leaves (B9)	,		Shallow Aquitard (D3) Microtopographic Relief (D4)				
Aquatic Fauna (B13)				FAC-Neutr			
Field Observations:					. , ,		
Surface Water Present? Yes	No ×	Depth (inches):					
_		Depth (inches):					
l .		Depth (inches):		Avdrology Pres	ent? Yes	No x	
(includes capillary fringe)				3 33			
Describe Recorded Data (stream gaug	je, monitoring v	vell, aerial photos	, previous inspections), if ava	ailable:			
Remarks:							

Sampling Point:WE-up

Trop Stratum (Diat size.	Absolute	Dominant		Dominance Test worksheet:
Tree Stratum (Plot size:)		Species?		Number of Dominant Species
1. Liriodendron tulipifera, Tuliptree			FACU	That Are OBL, FACW, or FAC:4 (A)
2. Prunus serotina, Black Cherry			<u>FACU</u>	Total Number of Dominant
3. pinus echinata				Species Across All Strata: 8 (B)
4. Acer rubrum, Red Maple			FAC	Percent of Dominant Species
5				That Are OBL, FACW, or FAC:50.0% (A/B)
6				Prevalence Index worksheet:
	85:	= Total Cov	er	Total % Cover of: Multiply by:
50% of total cover: <u>42.5</u>	20% of	total cover:	17	OBL species x 1 = 0
Sapling Stratum (Plot size:)				FACW species
1. Juniperus virginiana, Eastern Red-Cedar	10	Yes	FACU	FAC species 50 x 3 = 150
2. <u>Liquidambar styraciflua</u> , Sweet-Gum			FAC	FACU species 60 x 4 = 240
3. Quercus phellos, Willow Oak	5	Yes	FAC	UPL species 90 x 5 = 450
4				Column Totals: <u>200</u> (A) <u>840</u> (B)
5				(b)
6				Prevalence Index = B/A = 4.20
	20 :	= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover:10	20% of	total cover:	4	1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size:)	_			2 - Dominance Test is >50%
1. Fagus grandifolia, American Beech	5	Yes	FACU	3 - Prevalence Index is ≤3.0¹
2				4 - Morphological Adaptations ¹ (Provide supporting
3				data in Remarks or on a separate sheet)
4				Problematic Hydrophytic Vegetation ¹ (Explain)
5				
6.				¹ Indicators of hydric soil and wetland hydrology must
	5 :	Total Cov	er	be present, unless disturbed or problematic.
50% of total cover. 2.5				Definitions of Five Vegetation Strata:
50% of total cover: 2.5	20% 01	total cover:		Tree – Woody plants, excluding woody vines,
Herb Stratum (Plot size:) 1. Microstegium vimineum, Japanese Stilt Grass	20	Yes	FAC	approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).
2. Cornus florida, Flowering Dogwood			FACU	Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less
3. Liquidambar styraciflua, Sweet-Gum			FAC.	than 3 in. (7.6 cm) DBH.
4. Rosa multiflora, Rambler Rose			<u>FACU</u>	
5. Quercus falcata, Southern Red Oak	5	No	<u>FACU</u>	Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.
6				
7				Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody
8				plants, except woody vines, less than approximately 3
9				ft (1 m) in height.
10				Woody vine – All woody vines, regardless of height.
11				Woody vine 7th woody vines, regulaless of height.
	40:	= Total Cov	er	
50% of total cover:20_	20% of	total cover:	8	
Woody Vine Stratum (Plot size:)				
	5	Yes	FAC	
2				
3				
4				
5				
<u> </u>		Total Cov	er	Hydrophytic
				Vegetation Present? Yes No x
50% of total cover: 2.5		total cover:		
Remarks: (Include photo numbers here or on a separate s	neet.)			

SOIL Sampling Point: WE-up

Profile Desc	ription: (Describe	to the dep	th needed to docum	nent the i	ndicator o	or confirm	n the absence	of indicators.)
Depth	Matrix			x Features				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	_Loc ²	<u>Texture</u>	Remarks
0-2	10YR 4/3	100%					Sandy clay loam	
2-6	10YR 4/4	100%					Sandy Ioam	
6-12	10YR 4/4	60%	7.5YR 5/8	40%		М	Sandy clay loam	
1Type: C-C	ncontration D-Don	lotion PM-	Reduced Matrix, MS	 C-Mackod	Sand Gra		² Location: D	L=Pore Lining, M=Matrix.
Hydric Soil		ieuon, Rivi-	Reduced Matrix, MS	s=iviaskeu	Saliu Gra	11115.		ators for Problematic Hydric Soils ³ :
Histosol			Dark Surface	(\$7)				cm Muck (A10) (MLRA 147)
_	oipedon (A2)		Polyvalue Be		ce (S8) (M	LRA 147.		Coast Prairie Redox (A16)
Black Hi			Thin Dark Su					(MLRA 147, 148)
Hydroge	n Sulfide (A4)		Loamy Gleye	d Matrix (F2)		P	riedmont Floodplain Soils (F19)
	Layers (A5)		Depleted Mat					(MLRA 136, 147)
	ck (A10) (LRR N)	(0.11)	Redox Dark S					Yery Shallow Dark Surface (TF12)
	d Below Dark Surfac ark Surface (A12)	e (ATT)	Depleted Dar Redox Depre					Other (Explain in Remarks)
_	lucky Mineral (S1) (L	.RR N.	Iron-Mangane			RR N.		
	147, 148)	,	MLRA 136		(· · - <i>)</i> (-			
	leyed Matrix (S4)		Umbric Surfa		MLRA 13	6, 122)	³ Ind	licators of hydrophytic vegetation and
	edox (S5)		Piedmont Flo					etland hydrology must be present,
	Matrix (S6)		Red Parent M	1aterial (F	21) (MLR	A 127, 147	7) un	less disturbed or problematic.
	_ayer (if observed):							
	ches):						Hydric Soil	Present? Yes Nox
Remarks:								

Project/Site: U-2412A	City/C	County: Guilford County	!	Sampling Date:	4/20/2017
Applicant/Owner: NCDOT					
Investigator(s): R. Johnson/ AECOM	Section	on, Township, Range:			
Landform (hillslope, terrace, etc.): Ephemeral po					
Subregion (LRR or MLRA): LRR P MLRA 136	_ Lat:	35.987961 Long:	-79	.920482 Datum:	WGS84
Soil Map Unit Name: HeC - Helena sandy loam, 6 to 10					
Are climatic / hydrologic conditions on the site typ	ical for this time of year? Y	'es <u>x</u> No (I	f no, explain in Re	emarks.)	
Are Vegetation, Soil, or Hydrology	/ significantly distur	bed? Are "Normal	Circumstances" pr	esent? Yes <u>x</u>	No
Are Vegetation, Soil, or Hydrology	/ naturally problema	atic? (If needed, ex	xplain any answers	s in Remarks.)	
CLIMMA DV OF FINIDINGS Association				: 	
SUMMARY OF FINDINGS – Attach si	te map snowing sam	ipling point location	ns, transects,	important rea	itures, etc.
Hydrophytic Vegetation Present? Yes _	No	Is the Sampled Area			
Hydric Soil Present? Yes _	x No	within a Wetland?	Yesx	No	
Wetland Hydrology Present? Yes _	No				
Remarks:					
Small wetland located below pond.					
HYDROLOGY					
Wetland Hydrology Indicators:			Secondary Indicate	ors (minimum of tw	vo required)
Primary Indicators (minimum of one is required;	check all that apply)	·	Surface Soil C		
× Surface Water (A1)	True Aquatic Plants (Sparsely Vege		urface (B8)
× High Water Table (A2)	Hydrogen Sulfide Od		Drainage Patt		aa.o (20)
× Saturation (A3)		es on Living Roots (C3)	Moss Trim Lin		
× Water Marks (B1)	Presence of Reduced			Vater Table (C2)	
Sediment Deposits (B2)	Recent Iron Reductio		Crayfish Burro		
Drift Deposits (B3)	Thin Muck Surface (C		=	sible on Aerial Imag	gery (C9)
Algal Mat or Crust (B4)	Other (Explain in Ren			essed Plants (D1)	
Iron Deposits (B5)			x Geomorphic F	Position (D2)	
Inundation Visible on Aerial Imagery (B7)			Shallow Aquita	ard (D3)	
Water-Stained Leaves (B9)			Microtopograp	ohic Relief (D4)	
Aquatic Fauna (B13)			FAC-Neutral T	Γest (D5)	
Field Observations:					
Surface Water Present? Yesx No _					
	Depth (inches): <u>0</u>				
	Depth (inches): 0	Wetland Hy	ydrology Present	? Yes <u>x</u>	No
(includes capillary fringe) Describe Recorded Data (stream gauge, monitor	pring well, aerial photos, pre	vious inspections), if avail	lable:		
	3 / 1 /1	, ,			
Remarks:					

Sampling Point:WE-wet

Trop Chrotum (Diet sine)	Absolute	Dominant		Dominance Test worksheet:
Tree Stratum (Plot size:)		Species?		Number of Dominant Species That Are OBL FACW, or FAC: 6 (A)
1. Liriodendron tulipifera, Tuliptree	30		FACU	That Are OBL, FACW, or FAC:6 (A)
2. Pinus taeda, Loblolly Pine			FAC	Total Number of Dominant
3. Platanus occidentalis, American Sycamore			FACW	Species Across All Strata:10 (B)
4. <u>Liquidambar styraciflua, Sweet-Gum</u>			FAC	Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 60.0% (A/B)
6				Prevalence Index worksheet:
	/5:	= Total Cov	er	Total % Cover of: Multiply by:
50% of total cover: <u>37.5</u>	20% of	total cover:	15	OBL species x 1 = 0
Sapling Stratum (Plot size:)				FACW species 20 x 2 = 40
1. Acer rubrum, Red Maple	5	Yes	FAC	FAC species 45 x 3 = 135
2				FACU species 30 x 4 = 120
3				UPL species x 5 = 250
4				Column Totals: <u>145</u> (A) <u>545</u> (B)
5				(b)
6				Prevalence Index = B/A = 3.76
	5 :	= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover:2.5	20% of	total cover:	1	1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size:)				x 2 - Dominance Test is >50%
1. Ligustrum sinense, Chinese Privet	10	Yes	FACU	3 - Prevalence Index is ≤3.0 ¹
2				4 - Morphological Adaptations ¹ (Provide supporting
3				data in Remarks or on a separate sheet)
4				Problematic Hydrophytic Vegetation ¹ (Explain)
5				
6.				¹ Indicators of hydric soil and wetland hydrology must
	10	= Total Cov	er	be present, unless disturbed or problematic.
500/ of total covers 5				Definitions of Five Vegetation Strata:
50% of total cover: 5	20% 01	total cover:		Tree – Woody plants, excluding woody vines,
Herb Stratum (Plot size:) 1. Juncus effusus, Lamp Rush	5	Yes	FACW	approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).
Juncus effusus, Lamp Rush Ligustrum sinense, Chinese Privet			FACU	
			FACU	Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less
Rosa multiflora, Rambler Rose Microstegium vimineum, Japanese Stilt Grass				than 3 in. (7.6 cm) DBH.
			FAC	Shouth Mandy plants evaluding woody vines
5				Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.
6				
7				Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody
8				plants, except woody vines, less than approximately 3
9				ft (1 m) in height.
10				Woody vine – All woody vines, regardless of height.
11				
	20:	= Total Cov	er	
50% of total cover:10	20% of	total cover:	4	
Woody Vine Stratum (Plot size:)				
1. Lonicera japonica, Japanese Honeysuckle	5	Yes	FAC	
2				
3				
4				
5				Hydrophytic
	5 :	= Total Cov	er	Hydrophytic Vegetation
50% of total cover: 2.5				
	20% of	total cover:	1	Present? Yesx No
Remarks: (Include photo numbers here or on a separate s		total cover:	1	Present? Yes NO

SOIL Sampling Point: WE-wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth	Matrix			x Features				
<u>(inches)</u>	Color (moist)	%	Color (moist)		Type ¹	Loc ²	Texture	<u>Remarks</u>
0-2	7.5YR 2.5/1	100%					Muck	
2-12	10YR 4/1	80%	10YR 5/8	20%			Sandy clay loam	1
		- ——						
¹ Type: C=C	oncentration, D=Dep	letion, RM	=Reduced Matrix, MS	=Masked	Sand Gra	ins.	² Location: F	PL=Pore Lining, M=Matrix.
Hydric Soil		,						eators for Problematic Hydric Soils ³ :
Histosol			Dark Surface	(S7)				2 cm Muck (A10) (MLRA 147)
	pipedon (A2)		Polyvalue Be		e (S8) (M	LRA 147,		Coast Prairie Redox (A16)
	istic (A3)		Thin Dark Su					(MLRA 147, 148)
Hydroge	en Sulfide (A4)		Loamy Gleye		2)		F	Piedmont Floodplain Soils (F19)
	d Layers (A5)		_x Depleted Mat					(MLRA 136, 147)
	uck (A10) (LRR N)		Redox Dark S					Very Shallow Dark Surface (TF12)
	d Below Dark Surfac	e (A11)	Depleted Dar				— (Other (Explain in Remarks)
	ark Surface (A12)	DD N	Redox Depre Iron-Mangan			DD N		
	Mucky Mineral (S1) (I A 147, 148)	LKK N,	MLRA 13		5 (F 12) (L	_KK N,		
	Gleyed Matrix (S4)		Umbric Surfa		/II RA 130	6. 122)	3Inc	dicators of hydrophytic vegetation and
	Redox (S5)		Piedmont Flo					etland hydrology must be present,
	Matrix (S6)		Red Parent N	•				nless disturbed or problematic.
	Layer (if observed)	:						·
Type:								
	ches):						Hydric Soi	I Present? Yesx No
Remarks:							,	
rtomants.								

Project/Site: U-2412A		City/Co	unty: Guilford County	;	Sampling Date:	4/20/2017
Applicant/Owner: NCDOT				State: NC	_ Sampling Point:	WF-up
Investigator(s): R. Johnson/ AECOM		Section	n, Township, Range:			
Landform (hillslope, terrace, etc.): Hillsi	de	Local relie	f (concave, convex, non	e): Convex	Slope	(%): <u>2-5</u>
Subregion (LRR or MLRA): LRR P MLR	<u>4 136</u> Lat:	3	5.988296_ Long:	-79	.918725 Datum:	WGS84
Soil Map Unit Name: HeC - Helena sandy loa						
Are climatic / hydrologic conditions on the	ne site typical for this	s time of year? Ye	sx No (If no, explain in Re	marks.)	
Are Vegetation, Soil, or	H ydrology s	ignificantly disturb	ed? Are "Normal	Circumstances" pre	esent? Yesx	No
Are Vegetation, Soil, or	Hydrology r	aturally problemat	ic? (If needed, e.	xplain any answers	s in Remarks.)	
SUMMARY OF FINDINGS – A	ttach site map	showing sam	pling point locatio	ns, transects,	important fea	tures, etc.
Hydrophytic Vegetation Present?	Yes N	o x	la tha Campulad Area			
Hydric Soil Present?	Yes N		Is the Sampled Area within a Wetland?	Yes	No×	
Wetland Hydrology Present?	YesN					
Remarks:						
Upland point adjacent to WF.						
HYDROLOGY						
Wetland Hydrology Indicators:				Secondary Indicate	ors (minimum of tw	o required)
Primary Indicators (minimum of one is	required: check all t	hat annly)	•	Surface Soil C		o required)
Surface Water (A1)	-	e Aquatic Plants (B			etated Concave Su	rface (B8)
High Water Table (A2)		rogen Sulfide Odo		Drainage Patte		illace (bo)
Saturation (A3)	-	-	s on Living Roots (C3)	Moss Trim Lin		
Water Marks (B1)		sence of Reduced			/ater Table (C2)	
Sediment Deposits (B2)			in Tilled Soils (C6)	Crayfish Burro		
Drift Deposits (B3)		Muck Surface (C7		-	ible on Aerial Imag	jery (C9)
Algal Mat or Crust (B4)	Othe	er (Explain in Rem	arks)		essed Plants (D1)	
Iron Deposits (B5)				Geomorphic P	osition (D2)	
Inundation Visible on Aerial Image	ry (B7)			Shallow Aquita	ard (D3)	
Water-Stained Leaves (B9)				Microtopograp	hic Relief (D4)	
Aquatic Fauna (B13)				FAC-Neutral T	est (D5)	
Field Observations:						
Surface Water Present? Yes		oth (inches):	_			
Water Table Present? Yes	No <u>x</u> Dep	oth (inches):				
	No <u></u> x Dep	oth (inches):	Wetland H	ydrology Present	? Yes	Nox
(includes capillary fringe) Describe Recorded Data (stream gauce	e, monitoring well, a	aerial photos, prev	lious inspections), if avai	lable:		
	,-,g	, μ				
Remarks:						

Sampling Point: WF-up

Tree Charles (Diet size:	Absolute	Dominant		Dominance Test worksheet:
Tree Stratum (Plot size:)		Species?		Number of Dominant Species
1. Fagus grandifolia, American Beech	60		FACU FACU	That Are OBL, FACW, or FAC: 4 (A)
2. Quercus alba, Northern White Oak			FACU	Total Number of Dominant
3. Liquidambar styraciflua, Sweet-Gum			FAC	Species Across All Strata: 10 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 40.0% (A/B)
6				Prevalence Index worksheet:
	100_	= Total Cov	er	Total % Cover of: Multiply by:
50% of total cover:50	20% of	total cover:	20	OBL species x 1 = 0
Sapling Stratum (Plot size:)				FACW species x 2 =0
1. Juniperus virginiana, Eastern Red-Cedar	10	Yes	FACU	FAC species 60 x 3 = 180
2. <u>Liquidambar styraciflua, Sweet-Gum</u>	10	Yes	<u>FAC</u>	FACU species 90 x 4 = 360
3. Acer rubrum, Red Maple	10	Yes	FAC	UPL species 194 x 5 = 970
4. Quercus alba, Northern White Oak	5	No	FACU	Column Totals: 344 (A) 1510 (B)
5. Cornus florida, Flowering Dogwood	2	<u>No</u>	FACU	Column Totals: <u>344</u> (A) <u>1310</u> (B)
6				Prevalence Index = B/A = 4.39
	37	= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover: _ 18.5				1 - Rapid Test for Hydrophytic Vegetation
	20% 01	total cover:	7.4	2 - Dominance Test is >50%
Shrub Stratum (Plot size:) 1. Liquidambar styraciflua, Sweet-Gum	10	Voc	FAC	3 - Prevalence Index is ≤3.0 ¹
				4 - Morphological Adaptations ¹ (Provide supporting
2. Pyrus calleryana, Bradford Pear			FACU	data in Remarks or on a separate sheet)
3. Ulmus alata, Winged Elm			<u>FACU</u>	Problematic Hydrophytic Vegetation ¹ (Explain)
4				
5				¹ Indicators of hydric soil and wetland hydrology must
6				be present, unless disturbed or problematic.
	17	= Total Cov	er	Definitions of Five Vegetation Strata:
50% of total cover: <u>8.5</u>	20% of	total cover:	3.4	Tree Weeds plants evaluding weeds since
Herb Stratum (Plot size:)				Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in.
1. Pyrus calleryana, Bradford Pear	40	Yes	FACU	(7.6 cm) or larger in diameter at breast height (DBH).
2. Quercus alba, Northern White Oak		Yes	FACU	Sapling – Woody plants, excluding woody vines,
3. Campsis radicans, Trumpet-Creeper			FAC	approximately 20 ft (6 m) or more in height and less
4. Liquidambar styraciflua, Sweet-Gum	_		FAC	than 3 in. (7.6 cm) DBH.
				Shrub – Woody plants, excluding woody vines,
6.				approximately 3 to 20 ft (1 to 6 m) in height.
7				Herb – All herbaceous (non-woody) plants, including
8				herbaceous vines, regardless of size, and woody
9				plants, except woody vines, less than approximately 3
10				ft (1 m) in height.
11				Woody vine – All woody vines, regardless of height.
· · ·		= Total Cov		
50% of total cover: <u>47.5</u>	20% of	total cover:	19	
Woody Vine Stratum (Plot size:)				
1. Smilax rotundifolia, Horsebrier	5	Yes	<u>FAC</u>	
2				
3				
4				
5				Hydrophytic
	5	= Total Cov	er	Vegetation
50% of total cover: 2.5	20% of	total cover:	1	Present? Yes No ×
Remarks: (Include photo numbers here or on a separate s				1
	,			

SOIL Sampling Point: WF-up

Profile Desc	cription: (Describe	to the depth	needed to docum	nent the indicator	or confirm	the absence	of indicators.)
Depth	Matrix			x Features			
<u>(inches)</u>	Color (moist)	%	Color (moist)	<u>%</u> <u>Type¹</u>	<u>Loc²</u>	Texture	Remarks
0-2	7.5YR 2/3	100%				Sandy clay loam	
2-12+	10YR 5/8	100%				Sandy clay loam	
¹ Type: C=C	oncentration, D=Dep	letion RM=F	Reduced Matrix MS	S=Masked Sand G	rains	² Location: P	L=Pore Lining, M=Matrix.
Hydric Soil		nouon, ravi=f	Coduced Matrix, MS	-waskeu Saliu U	uii i3.		ators for Problematic Hydric Soils ³ :
Histosol			Dark Surface	(\$7)			cm Muck (A10) (MLRA 147)
	pipedon (A2)			(57) low Surface (S8) (1	MI RA 147		Coast Prairie Redox (A16)
	istic (A3)			rface (S9) (MLRA			(MLRA 147, 148)
	en Sulfide (A4)		Loamy Gleye		,,	Р	liedmont Floodplain Soils (F19)
	d Layers (A5)		Depleted Mat			 ·	(MLRA 136, 147)
	uck (A10) (LRR N)		Redox Dark S			v	ery Shallow Dark Surface (TF12)
Deplete	d Below Dark Surfac	e (A11)	Depleted Dar	k Surface (F7)		c	other (Explain in Remarks)
Thick Da	ark Surface (A12)		Redox Depre				
	/lucky Mineral (S1) (LRR N,		ese Masses (F12)	(LRR N,		
	A 147, 148)		MLRA 136			2	
	Gleyed Matrix (S4)			ce (F13) (MLRA 1			icators of hydrophytic vegetation and
	Redox (S5)			odplain Soils (F19			tland hydrology must be present,
	Matrix (S6)		Red Parent N	Material (F21) (MLF	RA 127, 147	7) un	less disturbed or problematic.
	Layer (if observed)						
Туре:							
Depth (in	ches):					Hydric Soil	Present? Yes Nox
Remarks:						•	

Project/Site: U-2412A	City/C	ounty: Guilford County	Sampling	Date: 4/20/2017
Applicant/Owner: NCDOT		State: NC Sampling Point: WF-		
Investigator(s): R. Johnson/ AECOM	Section Section	on, Township, Range:		
Landform (hillslope, terrace, etc.): Forested				
Subregion (LRR or MLRA): LRR P MLRA 13	36 Lat:	35.988535_ Long:	-79.918775	Datum: WGS84
Soil Map Unit Name: HeC - Helena sandy loam, 6				
Are climatic / hydrologic conditions on the si				
Are Vegetation, Soil, or Hydronic,	rology significantly distur	bed? Are "Normal Cir	cumstances" present? \	/es <u> </u>
Are Vegetation, Soil, or Hydronic,	rology naturally problema	atic? (If needed, expl	ain any answers in Rema	rks.)
SUMMARY OF FINDINGS – Attac	ch site map showing sam	pling point locations	s, transects, import	ant features, etc.
Hydrophytic Vegetation Present?	Yesx No	Is the Sampled Area		
Hydric Soil Present?	Yesx No	within a Wetland?	Yes x No	
Wetland Hydrology Present?	Yesx No			
Remarks:				
Wetlandpossiblly created by beaver dan	n failure on opposite side of PC			
HYDROLOGY				
Wetland Hydrology Indicators:		<u>Se</u>	condary Indicators (minin	num of two required)
Primary Indicators (minimum of one is requ	uired; check all that apply)		Surface Soil Cracks (B6	6)
Surface Water (A1)	True Aquatic Plants (B14)	Sparsely Vegetated Co	ncave Surface (B8)
x High Water Table (A2)	Hydrogen Sulfide Odd	or (C1)	Drainage Patterns (B10)
x Saturation (A3)	Oxidized Rhizosphere	es on Living Roots (C3)	Moss Trim Lines (B16)	
Water Marks (B1)	Presence of Reduced	I Iron (C4)	_ Dry-Season Water Tabl	e (C2)
Sediment Deposits (B2)	Recent Iron Reduction		Crayfish Burrows (C8)	
Drift Deposits (B3)	Thin Muck Surface (C		_ Saturation Visible on A	
Algal Mat or Crust (B4)	Other (Explain in Ren	narks)	Stunted or Stressed Pla	
Iron Deposits (B5)		<u> </u>	Geomorphic Position (D	02)
Inundation Visible on Aerial Imagery (I	37)	_	Shallow Aquitard (D3)	(5.4)
Water-Stained Leaves (B9)		<u></u>	Microtopographic Relief	(D4)
Aquatic Fauna (B13)			FAC-Neutral Test (D5)	
Field Observations:	No. V. Double (inches)			
Surface Water Present? Yes	No x Depth (inches):			
	No Depth (inches): 8			
Saturation Present? Yesx (includes capillary fringe)	No Depth (inches):	Wetland Hydi	rology Present? Yes _	No
Describe Recorded Data (stream gauge, n	nonitoring well, aerial photos, pre	vious inspections), if availab	ole:	
Remarks:				

Sampling Point:WF-wet

	Absolute	Dominant		Dominance Test worksheet:
Tree Stratum (Plot size:)		Species?		Number of Dominant Species
1. <u>Liriodendron tulipifera, Tuliptree</u>			<u>FACU</u>	That Are OBL, FACW, or FAC: 4 (A)
2. <u>Liquidambar styraciflua</u> , <u>Sweet-Gum</u>				Total Number of Dominant
3. Acer rubrum, Red Maple	5	No	FAC	Species Across All Strata:5 (B)
4				Dorgant of Dominant Cassias
5				Percent of Dominant Species That Are OBL, FACW, or FAC: 80.0% (A/B)
6				
		= Total Cov	er	Prevalence Index worksheet:
50% of total cover:17.5	20% of	total cover	7	Total % Cover of: Multiply by:
	2078 01	total cover.		OBL species 0 x 1 = 0
Sapling Stratum (Plot size:)	-	Voc	FAC	FACW species 40 x 2 = 80
1. Acer rubrum, Red Maple			FAC	FAC species 30 x 3 = 90
2				FACU species x 4 = 80
3				UPL species x 5 = 125
4				Column Totals:115 (A)375 (B)
5				
6				Prevalence Index = B/A = 3.26
	5	= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover: 2.5	20% of	total cover:	1	1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size:)				x 2 - Dominance Test is >50%
1				3 - Prevalence Index is ≤3.0 ¹
2				4 - Morphological Adaptations ¹ (Provide supporting
				data in Remarks or on a separate sheet)
3				Problematic Hydrophytic Vegetation ¹ (Explain)
4				
5				¹ Indicators of hydric soil and wetland hydrology must
6				be present, unless disturbed or problematic.
		= Total Cov	er	Definitions of Five Vegetation Strata:
50% of total cover: 0	20% of	total cover:	0	Tree – Woody plants, excluding woody vines,
Herb Stratum (Plot size:)				approximately 20 ft (6 m) or more in height and 3 in.
1. Juncus effusus, Lamp Rush	20	Yes	FACW	(7.6 cm) or larger in diameter at breast height (DBH).
2. Carex sp., Sedge	15	Yes	FACW	Sapling – Woody plants, excluding woody vines,
3. Liquidambar styraciflua, Sweet-Gum	10	No	FAC	approximately 20 ft (6 m) or more in height and less
4. Impatiens capensis, Spotted Touch-Me-Not	_	No No	FACW	than 3 in. (7.6 cm) DBH.
5. Ambrosia artemisiifolia, Annual Ragweed	5	No	FACU	Shrub – Woody plants, excluding woody vines,
6.				approximately 3 to 20 ft (1 to 6 m) in height.
				Horb All harbacous (non-woody) plants, including
7				Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody
8				plants, except woody vines, less than approximately 3
9				ft (1 m) in height.
10				Woody vine – All woody vines, regardless of height.
11				, , , , , , , , , , , , , , , , , , , ,
	55:	= Total Cov	er	
50% of total cover: <u>27.5</u>	20% of	total cover:	11	
Woody Vine Stratum (Plot size:)				
1				
2				
3				
4				
J		Total Carr		Hydrophytic
		= Total Cov		Vegetation Present? Yes _ x _ No
50% of total cover: 0	20% of	total cover	Ω	1 103 NU
Demonto: (Include photo mumbers bore or on a consusta	20 % 01	total cover.		
Remarks: (Include photo numbers here or on a separate s		total cover.		

SOIL Sampling Point: WF-wet

Depth (Inches)	Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
0-6 5Y 4/2 60% 7.5YR 4/6 40% C Loamy Sand 6-12+ 5Y 4/2 95% 7.5YR 4/6 5% C Loamy Sand "Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. "Location: PL=Pore Lining, M=Matrix. Hydric Soil Indicators: Indicators for Problematic Hydric Soils*: Histosol (A1) Dark Surface (S7) 2 cm Muck (A10) (MLRA 147) Histos Epipedon (A2) Polyvalue Below Surface (S8) (MLRA 147, 148) Coast Prairie Redox (A16) Black Histic (A3) Thin Dark Surface (S9) (MLRA 147, 148) (MLRA 147, 148) Stratified Layers (A5) Depleted Matrix (F2)	Depth								
6-12+ 5Y 4/2 95% 7.5YR 4/6 5% C Loamy Sand Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Hydric Soil Indicators: Histosol (A1) Dark Surface (S7) 2 cm Muck (A10) (MLRA 147) Histic Epipedon (A2) Polyvalue Below Surface (S8) (MLRA 147, 148) Coast Prairie Redox (A16) Black Histic (A3) Thin Dark Surface (S9) (MLRA 147, 148) (MLRA 147, 148) Hydrogen Sulfide (A4) Depleted Matrix (F2) Piedmont Floodplain Soils (F19) Stratified Layers (A5) Depleted Matrix (F3) (MLRA 136, 147) Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Other (Explain in Remarks)	(inches)	Color (moist)	%	Color (moist)	%	Type ¹	_Loc ²	<u>Texture</u>	Remarks
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Hydric Soil Indicators: Histosol (A1) Polyvalue Below Surface (S7) Polyvalue Below Surface (S8) (MLRA 147, 148) Black Histic (A3) Thin Dark Surface (S9) (MLRA 147, 148) Hydrogen Sulfide (A4) Stratified Layers (A5) Z om Muck (A10) (LRR N) Peleted Below Dark Surface (F6) Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Tucation: PL=Pore Lining, M=Matrix. PL=Pore Lining, M=Matrix. PL=Pore Lining, M=Matrix. Indicators for Problematic Hydric Soils³: 2 cm Muck (A10) (MLRA 147) Mura 147, 148) Piedmont Floodplain Soils (F19) (MLRA 136, 147) Very Shallow Dark Surface (TF12) Other (Explain in Remarks)	0-6	5Y 4/2	60%	7.5YR 4/6	40%	C		Loamy Sand	
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Hydric Soil Indicators: Histosol (A1) Polyvalue Below Surface (S7) Polyvalue Below Surface (S8) (MLRA 147, 148) Black Histic (A3) Thin Dark Surface (S9) (MLRA 147, 148) Hydrogen Sulfide (A4) Stratified Layers (A5) Z om Muck (A10) (LRR N) Peleted Below Dark Surface (F6) Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Tucation: PL=Pore Lining, M=Matrix. PL=Pore Lining, M=Matrix. PL=Pore Lining, M=Matrix. Indicators for Problematic Hydric Soils³: 2 cm Muck (A10) (MLRA 147) Mura 147, 148) Piedmont Floodplain Soils (F19) (MLRA 136, 147) Very Shallow Dark Surface (TF12) Other (Explain in Remarks)	6-12+	5Y 4/2	95%	7.5YR 4/6	5%	С		Loamy Sand	
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Depleted Below Dark Surface (A11) Depleted Dark Surface (F7) Other (Explain in Remarks)	_	•				6)			
			e (A11)						
Thick Dark Surface (A12) Redux Depressions (Fo)	Thick Da	ark Surface (A12)		Redox Depre	ssions (F8	3)			
Sandy Mucky Mineral (S1) (LRR N, Iron-Manganese Masses (F12) (LRR N,	Sandy N	lucky Mineral (S1) (L	.RR N,	Iron-Mangane	ese Masse	es (F12) (I	_RR N,		
MLRA 147, 148) MLRA 136)				MLRA 136	6)				
Sandy Gleyed Matrix (S4) Umbric Surface (F13) (MLRA 136, 122) ³ Indicators of hydrophytic vegetation and									
Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 148) wetland hydrology must be present,									
Stripped Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) unless disturbed or problematic.				Red Parent M	laterial (F	21) (MLR /	A 127, 147	7) u	nless disturbed or problematic.
Restrictive Layer (if observed):	Restrictive	Layer (if observed):							
Type:	Туре:								
Depth (inches): No	Depth (in	ches):						Hydric So	il Present? Yesx No
Remarks:	Remarks:								

NC WAM WETLAND ASSESSMENT FORM Accompanies User Manual Version 5

USACE AID#:	NCDWR #:
Project Name U-2412 A	Date of Evaluation 4/11/2017
Applicant/Owner Name NCDOT	Wetland Site Name WA
Wetland Type Headwater Forest	Assessor Name/Organization C. Inscore/AECOM
Level III Ecoregion Piedmont	Nearest Named Water Body Deep River
River Basin Cape Fear	USGS 8-Digit Catalogue Unit 0303003
County Guilford	NCDWR Region Winston-Salem
☐ Yes	Latitude/Longitude (deci-degrees)
Evidence of stressors affecting the assessment area (may not be with Please circle and/or make note on last page if evidence of stressors is appropriate, in recent past (for instance, approximately within 10 years). Note the following. • Hydrological modifications (examples: ditches, dams, beaver dams. • Surface and sub-surface discharges into the wetland (examples: discipled septic tanks, underground storage tanks (USTs), hog lagoons, etc. • Signs of vegetation stress (examples: vegetation mortality, insect of the Habitat/plant community alteration (examples: mowing, clear-cutting is the assessment area intensively managed? The Yes Note of Note	hin the assessment area) parent. Consider departure from reference, if Noteworthy stressors include, but are not limited as, dikes, berms, ponds, etc.) ischarges containing obvious pollutants, presence of nearby .) damage, disease, storm damage, salt intrusion, etc.) ng, exotics, etc.) 4? Yes No If Yes, check all that apply to the assessment area. ecies cern (AEC) (including buffer) al classifications of HQW, ORW, or Trout
Is the assessment area on a coastal island? Yes No	
Is the assessment area's surface water storage capacity or duration s	substantially altered by beaver? Yes No
Does the assessment area experience overbank flooding during norm	mal rainfall conditions? <u>©</u> Yes <u>@</u> No
sedimentation, fire-plow lanes, skidder tracks, bedding	face (GS) in the assessment area and vegetation structure
C C Water storage capacity or duration are substantially a	nd duration (Surf) and sub-surface storage capacity and A ditch ≤ 1 foot deep is considered to affect surface water only,
3. Water Storage/Surface Relief – assessment area/wetland type co Check a box in each column for each group below. Select the appropriate (WT). AA WT 3a. A A Majority of wetland with depressions able to pond B Majority of wetland with depressions able to pond C C Majority of wetland with depressions able to pond D Depressions able to pond water < 3 inches deep 3b. A Evidence that maximum depth of inundation is greater the B Evidence that maximum depth of inundation is between C Evidence that maximum depth of inundation is less than	d water > 1 foot deep d water 6 inches to 1 foot deep d water 3 to 6 inches deep man 2 feet 1 and 2 feet

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 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 Histosol or histic epipedon
	4b.
	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 A A Little or no evidence of pollutants or discharges entering the assessment area B 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 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 <u>and</u> within the watershed draining to the assessment area (5M), and within 2 miles <u>and</u> within the watershed draining to the assessment area (2M). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont ecoregions and 30 feet wide in the Blue Ridge Mountains ecoregion. WS 5M 2M A PA PA A A A A A PA A B A B B Configuration of the provious surfaces
	B B B Confined animal operations (or other local, concentrated source of pollutants) C C C C C ≥ 20% coverage of pasture D D D D ≥ 20% coverage of agricultural land (regularly plowed land) E F F F F ≥ 20% coverage of maintained grass/herb C G G G G G Little or no opportunity to improve water quality. Lack of opportunity may result from little or no disturbance in the watershed or hydrologic alterations that prevent dainage and/or overbank flow from affectio 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?
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. Select the average width for the wetland type at the assessment area (WC) 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 From 30 to < 40 feet F From 15 to < 30 feet G G G From 5 to < 15 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 C From 50 to < 100 acres E E E From 10 to < 25 acres F F F F F F From 5 to < 10 acres G G G G From 1 to < 5 acres H H H From 0.5 to < 1 acre I I From 0.1 to < 0.5 acre K K K K < 0.01 acre or 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 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 evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous metric 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, fields (pasture open and agriculture), or water > 300 feet wide. Well Loosely A A ≥ 500 acres B B From 100 to < 500 acres 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 directiions? 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. 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.	7. 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.						
	te res (No ii res, continue to 175. ii 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. AA WT						
	Canopy closed, or nearly closed, with natural gaps associated with natural processes Canopy present, but opened more than natural gaps Canopy sparse or absent A A A Dense mid-story/sapling layer B B B B Moderate density mid-story/sapling layer Mid-story/sapling layer sparse or absent						
	G C C Shrub layer eparse or absent						
	A CA Dense herb layer B B Moderate density herb layer C 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.						
	Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12-inch DBH. 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). 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 interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.						
	CA CB CC CD						
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. Our bank 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.						
	U.B. Sound Tondam and Tondam and total and and total and and and and and and and and and and						

	NC WAM Wetland	_	
	Accompanies User Ma	anual Version 5.0	
Wetland Site Name	WA	Date	4/11/2017
Wetland Type	Headwater Forest	Assessor Name/Organization	C. Inscore/AECOM
Notes on Field Assess			NO
= .	y considerations (Y/N)		YES
Wetland is intensively			NO
Assessment area is lo	ocated within 50 feet of a natural tributary or ot	her open water (Y/N)	NO
	ubstantially altered by beaver (Y/N)		NO
Assessment area exp	eriences overbank flooding during normal rain	fall conditions (Y/N)	NO
Assessment area is o	n a coastal island (Y/N)		NO
Sub-function Rating			
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	HIGH
	Sub-Surface Storage and Retention	Condition	HIGH
Water Quality	Pathogen Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence? (Y/N)	YES
	Particulate Change	Condition	MEDIUM
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Soluble Change	Condition	MEDIUM
		Condition/Opportunity	HIGH
		Opportunity Presence? (Y/N)	YES
	Physical Change	Condition	LOW
		Condition/Opportunity	LOW
		Opportunity Presence? (Y/N)	YES
	Pollution Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
Habitat	Physical Structure	Condition	HIGH
	Landscape Patch Structure	Condition	HIGH
	Vegetation Composition	Condition	MEDIUM
Function Rating Sun	•		
Function	Metrics/Notes		Rating
Hydrology Water Quality	Condition Condition		HIGH
Water Quality	Condition Condition/Opportunity		<u>MEDIUM</u> HIGH
	Opportunity Presence?	(Y/N)	YES
Habitat	Condition	(1714)	HIGH
	Sommen		
Overall Wetland Rati	ng HIGH		
	<u>-</u>		
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USA	ACE AID#:	NCDWR #:		
	Project Name U-2412 A	Date of Evaluation 4/11/2017		
Ар	plicant/Owner Name NCDOT	Wetland Site Name WB		
	Wetland Type Headwater Forest	Assessor Name/Organization C. Inscore/AECOM		
	Level III Ecoregion Piedmont	Nearest Named Water Body Deep River		
	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)		
Plea app to th	clence of stressors affecting the assessment area (may not be we ase circle and/or make note on last page if evidence of stressors is a ropriate, in recent past (for instance, approximately within 10 years). The following. • Hydrological modifications (examples: ditches, dams, beaver date of the surface and sub-surface discharges into the wetland (examples: septic tanks, underground storage tanks (USTs), hog lagoons, etc. Signs of vegetation stress (examples: vegetation mortality, insect. Habitat/plant community alteration (examples: mowing, clear-cumber assessment area intensively managed? • Yes • No pulatory Considerations • Were regulatory considerations evaluated Anadromous fish Federally protected species or State endangered or threatened is NCDWR riparian buffer rule in effect Abuts a Primary Nursery Area (PNA) Publicly owned property	Apparent. Consider departure from reference, if Noteworthy stressors include, but are not limited ms, dikes, berms, ponds, etc.) discharges containing obvious pollutants, presence of nearby tic.) et damage, disease, storm damage, salt intrusion, etc.) titing, exotics, etc.) ed? Yes No If Yes, check all that apply to the assessment area.		
Wha	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)			
	, , ,	Wind © Both		
	Is the assessment area on a coastal island? © Yes © No			
	ne assessment area's surface water storage capacity or duration			
Doe	es the assessment area experience overbank flooding during no	rmal rainfall conditions?		
1.	sedimentation, fire-plow lanes, skidder tracks, bedd	urface (GS) in the assessment area and vegetation structure		
2.	C C Water storage capacity or duration are substantially	and duration (Surf) and sub-surface storage capacity and ∴ A ditch ≤ 1 foot deep is considered to affect surface water only, ub-surface water. Consider tidal flooding regime, if applicable.		
3.	Water Storage/Surface Relief – assessment area/wetland type Check a box in each column for each group below. Select the at type (WT). AA WT 3a. CA A Majority of wetland with depressions able to poor to be a majority of wetland with depressions able to poor to CA A Majority of wetland with depressions able to poor to CA A Majority of wetland with depressions able to poor to CA A Bevidence that maximum depth of inundation is greater B Evidence that maximum depth of inundation is between the CA Bevidence that maximum depth of inundation is less that	appropriate storage for the assessment area (AA) and the wetland and water > 1 foot deep and water 6 inches to 1 foot deep and water 3 to 6 inches deep appears than 2 feet and 2 feet		

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 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for regional indicators. 4a. O A Sandy soil
	 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 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 B C C C C D /ul>
	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). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont ecoregions and 30 feet wide in the Blue Ridge Mountains ecoregion. WS 5M 2M
	VA ≥ 10% impervious surfaces 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 F F F S ≥ 20% coverage of maintained grass/herb F 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 dainage <u>and/or</u> overbank flow from affectio the assessment area.
7.	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. 7b. How much of the first 50 feet from the bank is weltand? (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
	 Yes No 7e. Is tributary or other open water sheltered or exposed? Sheltered – adjacent open water with width < 2500 feet <u>and</u> no regular boat traffic. Exposed – adjacent open water with width ≥ 2500 feet <u>or</u> 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. 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
	© E From 30 to < 40 feet
	© F
	○ H ○ H < 5 feet

9.	Inundation Duration – assessment area condition metric (skip for non-riparian wetlands)
	Answer for assessment area dominant landform. C 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)
10.	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)
	CA CA CA ≥ 500 acres
	CB CB From 100 to < 500 acres CC CC From 50 to < 100 acres
	CD CD From 25 to < 50 acres
	ČE ČE ČE From 10 to < 25 acres
	CF CF From 5 to < 10 acres
	© G © G From 1 to < 5 acres
	CH CH CH From 0.5 to < 1 acre
	CI CI From 0.1 to < 0.5 acre
	C C C C C C C C C C
	CK CK < 0.01 acre or 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 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 evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous
	metric 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, fields (pasture open and agriculture), or water > 300 feet wide. Well Loosely
	CA CA ≥ 500 acres
	○B ○B From 100 to < 500 acres
	C C From 50 to < 100 acres
	○ D
	● 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."
	OA 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
	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. AA WT		
	Image: Second content of the conte		
	© A © A Canopy closed, or nearly closed, with natural gaps associated with natural processes Canopy present, but opened more than natural gaps Canopy sparse or absent Canopy sparse or absent Dense mid-story/sapling layer B B B Moderate density mid-story/sapling layer C C C Mid-story/sapling layer sparse or absent		
	☐ A ☐ A Dense shrub layer ☐ B ☐ B Moderate density shrub layer ☐ C ☐ C Shrub layer sparse or absent		
	☐ 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.		
	 Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12-inch DBH. 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 interspersion between vegetation and open water in the growing season. Patterned		
	areas indicate vegetated areas, while solid white areas indicate open water.		
	CA CB CC CD		
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.		

- Overbank and overland flow are not severely altered in the assessment area.

 Overland flow is severely altered in the assessment area.

 Overland flow is severely altered in the assessment area.

 Both overbank and overland flow are severely altered in the assessment area.

	NC WAM Wetland	_	
	Accompanies User Ma	nual Version 5.0	
Wetland Site Name	WB	Date	4/11/2017
Wetland Type	Headwater Forest	Assessor Name/Organization	C. Inscore/AECOM
	. 5		
Notes on Field Assess			NO NO
Presence of regulatory			YES
Wetland is intensively		0/00	NO NO
	cated within 50 feet of a natural tributary or oth	ner open water (Y/N)	YES
	ubstantially altered by beaver (Y/N)	(all and PC and (A/Al)	NO NO
· ·	eriences overbank flooding during normal rainf	rall conditions (Y/N)	NO NO
Assessment area is or	n a coastal island (Y/N)		NO
Sub-function Rating	Summary		
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	HIGH
	Sub-Surface Storage and Retention	Condition	MEDIUM
Water Quality	Pathogen Change	Condition	LOW
		Condition/Opportunity	MEDIUM
		Opportunity Presence? (Y/N)	YES
	Particulate Change	Condition	HIGH
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Soluble Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence? (Y/N)	YES
	Physical Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
		Opportunity Presence? (Y/N)	YES
	Pollution Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
Habitat	Physical Structure	Condition	MEDIUM
	Landscape Patch Structure	Condition	HIGH
	Vegetation Composition	Condition	MEDIUM
Francisco Betime Cross			
Function Rating Sum Function	Metrics/Notes		Rating
Hydrology	Condition		HIGH
Water Quality	Condition		HIGH
	Condition/Opportunity		HIGH
	Opportunity Presence?	(Y/N)	YES
Habitat	Condition		HIGH

USACE AID#:	NCDWR #:
Project Name U-2412 A	Date of Evaluation 4/11/2017
Applicant/Owner Name NCDOT	Wetland Site Name WC
Wetland Type Bottomland Hardwood Forest	Assessor Name/Organization C. Inscore/AECOM
Level III Ecoregion Piedmont	Nearest Named Water Body Deep River
River Basin Cape Fear	USGS 8-Digit Catalogue Unit 03030003
County Guilford	NCDWR Region Winston-Salem
☐ Yes	Latitude/Longitude (deci-degrees) 35.985219; -79.964902
Evidence of stressors affecting the assessment area (may not be wi Please circle and/or make note on last page if evidence of stressors is an appropriate, in recent past (for instance, approximately within 10 years). to the following. • Hydrological modifications (examples: ditches, dams, beaver dan examples: a ditches, dams, beaver dan examples: a ditches, dams, beaver dan examples: a septic tanks, underground storage tanks (USTs), hog lagoons, etc. • Signs of vegetation stress (examples: vegetation mortality, insect examples: ditches, dams, beaver dan examples: vegetation mortality, insect examples: vegetation mortality, insect examples: mowing, clear-cutter.	oparent. Consider departure from reference, if Noteworthy stressors include, but are not limited ms, dikes, berms, ponds, etc.) discharges containing obvious pollutants, presence of nearby c.) t damage, disease, storm damage, salt intrusion, etc.)
Is the assessment area intensively managed? • Yes • No	
Regulatory Considerations - Were regulatory considerations evaluated Anadromous fish Federally protected species or State endangered or threatened species or State endangered or State endangered or State endangered or State endangered or State endangered or State endangered or State endangered or State endangered endange	ocern (AEC) (including buffer) tal classifications of HQW, ORW, or Trout
What type of natural stream is associated with the wetland, if any? (Blackwater Brownwater Tidal (if tidal, check one of the following boxes) Lunar Is the assessment area on a coastal island? Yes No Is the assessment area's surface water storage capacity or duration Does the assessment area experience overbank flooding during nor	Wind Both substantially altered by beaver? Yes • No
1. Ground Surface Condition/Vegetation Condition – assessment a Check a box in each column. Consider alteration to the ground su (VS) in the assessment area. Compare to reference wetland if applithen rate the assessment area based on evidence of an effect. GS VS A Not severely altered B Severely altered over a majority of the assessment a sedimentation, fire-plow lanes, skidder tracks, beddirections.	area condition metric urface (GS) in the assessment area and vegetation structure
C C Water storage capacity or duration are substantially a	and duration (Surf) and sub-surface storage capacity and A ditch ≤ 1 foot deep is considered to affect surface water only,
3. Water Storage/Surface Relief – assessment area/wetland type c Check a box in each column for each group below. Select the al type (WT). AA WT 3a. A A Majority of wetland with depressions able to por B B B Majority of wetland with depressions able to por C C Majority of wetland with depressions able to por D D Depressions able to pond water < 3 inches deep 3b. A Evidence that maximum depth of inundation is greater to B Evidence that maximum depth of inundation is between	ppropriate storage for the assessment area (AA) and the wetland and water > 1 foot deep and water 6 inches to 1 foot deep and water 3 to 6 inches deep p than 2 feet a 1 and 2 feet

4.	il 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 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for regional indicators.		
	4a. CA 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.		
	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 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 <u>and</u> within the watershed draining to the assessment area (5M), and within 2 miles <u>and</u> within the watershed draining to the assessment area (2M). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont ecoregions and 30 feet wide in the Blue Ridge Mountains ecoregion. WS 5M 2M		
	□ A		
	B B Confined animal operations (or other local, concentrated source of pollutants)		
	C C C ≥ 20% coverage of pasture D D D D ≥ 20% coverage of agricultural land (regularly plowed land)		
	D D D ≥ 20% coverage of agricultural land (regularly plowed land) ▼ 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 dainage <u>and/or</u> overbank flow from affectio 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. Yes No If Yes, continue to 7b. If No, skip to Metric 8.		
	7b. How much of the first 50 feet from the bank is weltand? (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.		
	7d. Do roots of assessment area vegetation extend into the bank of the tributary/open water? Yes No		
	7e. Is tributary or other open water sheltered or exposed?		
	 Sheltered – adjacent open water with width < 2500 feet <u>and</u> no regular boat traffic. Exposed – adjacent open water with width ≥ 2500 feet <u>or</u> 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. Select the average width for the wetland type at the assessment area (WT) and the wetland complex at the assessment area (WT). See Hear Manual for WT and WC boundaries.		
	assessment area (WC). See User Manual for WT and WC boundaries. WT WC		
	A		
	© B		
	C C From 50 to < 80 feet D D From 40 to < 50 feet		
	© E From 30 to < 40 feet		
	F From 15 to < 30 feet		
	G G From 5 to < 15 feet		
	OH OH <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)		
	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)		
	CA CA ≥ 500 acres		
	C B C B From 100 to < 500 acres C C C C From 50 to < 100 acres		
	D D D From 25 to < 50 acres		
	CE CE From 10 to < 25 acres		
	CF CF From 5 to < 10 acres		
	G G G From 1 to < 5 acres		
	CI CI From 0.1 to < 0.5 acre		
	OJ OJ From 0.01 to < 0.1 acre		
	CK CK < 0.01 acre or 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 is < 90% of the full extent of its natural landscape size.		
	13a. Check appropriate box(es) (a box may be checked in each column). Involves a GIS effort with field adjustment. This evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous metric 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, fields (pasture open and agriculture), or 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 From 10 to < 50 acres C C C 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 directiions? 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.		
	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. 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 C Vegetation is dominated by exotic species (>50% cover of exotics).		
	1 JO VOGOLATION IS ADMINISTED BY GROUPS (2007) LOVEL OF CROWNING).		

	=		
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.		
	AA WT		
	6 A Canopy closed, or nearly closed, with natural gaps associated with natural processes		
	ຮັດB Canopy present, but opened more than natural gaps ບໍ່ ເຣັດ ເຣັດ Canopy sparse or absent		
	ੁੱ ਿA ਿA Dense mid-story/sapling layer ਯੂ ਿB ਿB Moderate density mid-story/sapling layer		
	☐ C ☐ C Mid-story/sapling layer sparse or absent		
	A A Dense shrub layer B B B Moderate density shrub layer		
	□ C C Shrub layer sparse or absent		
	Ω • 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). 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.	1. 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 interspersion between vegetation and open water in the growing season. Patterned		
	areas indicate vegetated areas, while solid white areas indicate open water.		
	OA OB OC OD		
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. Overbank and overland flow are not severely altered in the assessment area. Overbank flow is severely altered in the assessment area.		

- Overbank flow is severely altered in the assessment area.
 Overland flow is severely altered in the assessment area.
 Both overbank <u>and</u> overland flow are severely altered in the assessment area.

PEM wetland in transmission line right-of-way.

	NC WAM Wetland Accompanies User Ma	_	
	-	ilidai version 3.0	
Wetland Site Name	WC	_ Date _	4/11/2017
Wetland Type	Bottomland Hardwood Forest	_ Assessor Name/Organization _	C. Inscore/AECOM
Notes on Field Assessed	(V/N)		VEC
Notes on Field Assessn			YES
Presence of regulatory			YES YES
Wetland is intensively n	= ' '	har anon water (V/N)	YES
	ated within 50 feet of a natural tributary or otl ostantially altered by beaver (Y/N)	nei open water (1/14)	NO
	riences overbank flooding during normal rainf	fall conditions (V/N)	NO
Assessment area is on		rail conditions (1/14)	NO
Assessment area is on	a coastai isianu (1/14)		
Sub-function Rating S	ummary		
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	MEDIUM
	Sub-Surface Storage and Retention	Condition	MEDIUM
Water Quality	Pathogen Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence? (Y/N)	YES
	Particulate Change	Condition	MEDIUM
		Condition/Opportunity	HIGH
		Opportunity Presence? (Y/N)	YES
	Soluble Change	Condition	MEDIUM
		Condition/Opportunity	HIGH
		Opportunity Presence? (Y/N)	YES
	Physical Change	Condition	LOW
		Condition/Opportunity	LOW
		Opportunity Presence? (Y/N)	YES
	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	MEDIUM
Function Rating Sumn	narv		
Function Kating Summ	Metrics/Notes		Rating
Hydrology	Condition		MEDIUM
Water Quality	Condition		MEDIUM
	Condition/Opportunity		HIGH
	Opportunity Presence?	(Y/N)	YES
Habitat	Condition		LOW
Overall Wetland Ratin	g <u>MEDIUM</u>		

USACE AID#:	NCDWR #:
Project Name U-2412 A	Date of Evaluation 4/12/2017
Applicant/Owner Name NCDOT	Wetland Site Name WD
Wetland Type Bottomland Hardwood Forest	Assessor Name/Organization C. Inscore/AECOM
Level III Ecoregion Piedmont	Nearest Named Water Body Deep River
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) 35.986841; -79.931428
•	
Evidence of stressors affecting the assessment area (may not be with Please circle and/or make note on last page if evidence of stressors is appropriate, in recent past (for instance, approximately within 10 years). It to the following. • Hydrological modifications (examples: ditches, dams, beaver dam • Surface and sub-surface discharges into the wetland (examples: d	parent. Consider departure from reference, if Noteworthy stressors include, but are not limited s, dikes, berms, ponds, etc.) ischarges containing obvious pollutants, presence of nearby
 septic tanks, underground storage tanks (USTs), hog lagoons, etc. Signs of vegetation stress (examples: vegetation mortality, insect Habitat/plant community alteration (examples: mowing, clear-cutting) 	damage, disease, storm damage, salt intrusion, 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 or State endangered or threatened species or State endangered or threatened species of NCDWR riparian buffer rule in effect Abuts a Primary Nursery Area (PNA) Publicly owned property N.C. Division of Coastal Management Area of Environmental Concounties a stream with a NCDWQ classification of SA or supplementation Designated NCNHP reference community Abuts a 303(d)-listed stream or a tributary to a 303(d)-listed stream	eern (AEC) (including buffer) al classifications of HQW, ORW, or Trout
What type of natural stream is associated with the wetland, if any? (c Blackwater	heck all that apply)
Brownwater	
Tidal (if tidal, check one of the following boxes)	Wind Both
Is the assessment area on a coastal island?	
Is the assessment area's surface water storage capacity or duration	substantially altered by beaver?
Does the assessment area experience overbank flooding during norm	
Ground Surface Condition/Vegetation Condition – assessment are	
Check a box in each column. Consider alteration to the ground sur (VS) in the assessment area. Compare to reference wetland if applic then rate the assessment area based on evidence of an effect. GS VS A Not severely altered B Severely altered over a majority of the assessment and	face (GS) in the assessment area and vegetation structure
·	des, salt intrusion [where appropriate], exotic species, grazing,
C C Water storage capacity or duration are substantially a	and duration (Surf) and sub-surface storage capacity and A ditch ≤ 1 foot deep is considered to affect surface water only, b-surface water. Consider tidal flooding regime, if applicable. of substantially (typically, not sufficient to change vegetation). altered (typically, alteration sufficient to result in vegetation)
	n, filling, excessive sedimentation, underground utility lines).
 Water Storage/Surface Relief – assessment area/wetland type co Check a box in each column for each group below. Select the appropriate (WT). AA WT 	` '
3a. A A Majority of wetland with depressions able to pon B B Majority of wetland with depressions able to pon C C Majority of wetland with depressions able to pon D D Depressions able to pond water < 3 inches deep	d water 6 inches to 1 foot deep d water 3 to 6 inches deep
3b. A Evidence that maximum depth of inundation is greater the Evidence that maximum depth of inundation is between Evidence that maximum depth of inundation is less than	1 and 2 feet

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 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for regional indicators. 4a. CA 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 Histosol or histic epipedon
	4b. □ A Soil ribbon < 1 inch
	4c.
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 Little or no evidence of pollutants or discharges entering the assessment area Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area C C 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). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont ecoregions and 30 feet wide in the Blue Ridge Mountains ecoregion. 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 C ≥ 20% coverage of pasture D D D D D ≥ 20% coverage of agricultural land (regularly plowed land) E F E E E ≥ 20% coverage of maintained grass/herb F F F F ≥ 20% coverage of clear-cut land G G G G Little or no opportunity to improve water quality. Lack of opportunity may result from little or no disturbance in the watershed or hydrologic alterations that prevent dainage and/or overbank flow from affectio 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. 7b. How much of the first 50 feet from the bank is weltand? (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 tributary 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. 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 G From 5 to < 15 feet H C H < 5 feet

9.	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.
	Sediment deposition is excessive, but not overwhelming the wetland. Sediment deposition is excessive and is overwhelming the wetland.
44	
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
	☐ B ☐ B From 100 to < 500 acres ☐ C ☐ C From 50 to < 100 acres
	D D D From 25 to < 50 acres
	©E ©E From 10 to < 25 acres
	G G G From 1 to < 5 acres
	☐ H ☐ H From 0.5 to < 1 acre ☐ I ☐ I From 0.1 to < 0.5 acre
	GJ GJ From 0.01 to < 0.1 acre
	K K < 0.01 acre or 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 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
	evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous
	metric 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, fields (pasture open and agriculture), or water > 300 feet wide.
	Well Loosely
	C C From 50 to < 100 acres
	C D From 10 to < 50 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.
4.4	
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
	■ B 1 to 4□ C 5 to 8
45	
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 <u>or</u> at least one stratum inappropriately composed of a single species), <u>or</u> exotic species are dominant in at least one stratum.
16.	Vegetative Diversity – assessment area condition metric (evaluate for Non-tidal Freshwater Marsh only)
	Vegetation diversity is high and is composed primarily of native species (<10% cover of exotics). 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. 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 O C C C Canopy sparse or absent
	S C A Dense mid-story/sapling layer O C C Mid-story/sapling layer sparse or absent
	G A C A Dense shrub layer G B G B Moderate density shrub layer C C C Shrub layer sparse or absent
	CA CA Dense herb layer B CB Moderate density herb layer CC CC 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). Not A
19.	Diameter Class Distribution – wetland type condition metric (skip for all marshes) Majority of canopy trees have stems > 6 inches in diameter at breast height (DBH); many large trees (> 12 inches DBH) are present.
	Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12-inch DBH. 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. Large logs (more than one) are visible (> 12 inches in diameter, or large relative to species present and landscape stability). 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 interspersion 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. Overbank flow is severely altered in the assessment area. Overland flow is severely altered in the assessment area.
	Both overbank and overland flow are severely altered in the assessment area.

Wetland located on the floodplain adjacent to Deep River,

NC WAM Wetland Rating Sheet Accompanies User Manual Version 5.0			
Wetland Site Name	WD	Date	4/12/2017
Wetland Type	Bottomland Hardwood Forest	Assessor Name/Organization	C. Inscore/AECOM
			\/=0
Notes on Field Assessme	•		YES
Presence of regulatory co	,		YES
Wetland is intensively ma		0.00	NO NO
	ed within 50 feet of a natural tributary or othe	er open water (Y/N)	YES
	tantially altered by beaver (Y/N)	W	NO
	nces overbank flooding during normal rainfa	Il conditions (Y/N)	NO
Assessment area is on a	coastal island (Y/N)		NO
Sub-function Rating Su	mmary		
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	HIGH
	Sub-Surface Storage and Retention	Condition	LOW
Water Quality	Pathogen Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence? (Y/N)	YES
	Particulate Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence? (Y/N)	YES
	Soluble Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence? (Y/N)	YES
	Physical Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence? (Y/N)	YES
	Pollution Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
Habitat	Physical Structure	Condition	HIGH
	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	HIGH
Function Rating Summa	arv		
Function	Metrics/Notes		Rating
Hydrology	Condition		HIGH
Water Quality	Condition		HIGH
	Condition/Opportunity		HIGH
	Opportunity Presence?	(Y/N)	YES
Habitat	Condition		HIGH
Overall Wetland Rating	<u>HIGH</u>		

USACE AID#:	NCDWR #:		
Project Name U-2412 A	Date of Evaluation 4/20/2017		
Applicant/Owner Name NCDOT	Wetland Site Name WE		
Wetland Type Seep	Assessor Name/Organization C. Inscore/AECOM		
Level III Ecoregion Piedmont	Nearest Named Water Body Bull Run		
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) 35.987859; -79.920492		
Evidence of stressors affecting the assessment area (may not be wing Please circle and/or make note on last page if evidence of stressors is an appropriate, in recent past (for instance, approximately within 10 years). to the following. • Hydrological modifications (examples: ditches, dams, beaver dams). Surface and sub-surface discharges into the wetland (examples: septic tanks, underground storage tanks (USTs), hog lagoons, etc.	pparent. Consider departure from reference, if Noteworthy stressors include, but are not limited ms, dikes, berms, ponds, etc.) discharges containing obvious pollutants, presence of nearby c.)		
Signs of vegetation stress (examples: vegetation mortality, insec Habitat/plant community alteration (examples: mowing, clear-cut)			
Is the assessment area intensively managed? © Yes • No			
Regulatory Considerations - Were regulatory considerations evaluated Anadromous fish Federally protected species or State endangered or threatened sy NCDWR riparian buffer rule in effect Abuts a Primary Nursery Area (PNA) Publicly owned property N.C. Division of Coastal Management Area of Environmental Corlosista a stream with a NCDWQ classification of SA or supplement Designated NCNHP reference community Abuts a 303(d)-listed stream or a tributary to a 303(d)-listed stream	ncern (AEC) (including buffer) Ital classifications of HQW, ORW, or Trout		
What type of natural stream is associated with the wetland, if any? (Blackwater Brownwater Tidal (if tidal, check one of the following boxes) Lunar	Check all that apply) Wind Both		
	Willia Sy Dolli		
Is the assessment area on a coastal island?			
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 nor	rmal rainfall conditions? © Yes No		
sedimentation, fire-plow lanes, skidder tracks, beddir	urface (GS) in the assessment area and vegetation structure		
C C Water storage capacity or duration are substantially	and duration (Surf) and sub-surface storage capacity and A ditch ≤ 1 foot deep is considered to affect surface water only, ub-surface water. Consider tidal flooding regime, if applicable.		
3. Water Storage/Surface Relief – assessment area/wetland type of Check a box in each column for each group below. Select the at type (WT). AA WT 3a. A A Majority of wetland with depressions able to pose B B Majority of wetland with depressions able to pose C C Majority of wetland with depressions able to pose D D Depressions able to pond water < 3 inches dee 3b. A Evidence that maximum depth of inundation is greater.	ppropriate storage for the assessment area (AA) and the wetland nd water > 1 foot deep nd water 6 inches to 1 foot deep nd water 3 to 6 inches deep p than 2 feet		
 B Evidence that maximum depth of inundation is between C Evidence that maximum depth of inundation is less tha 			

feature. Make soil observations within the 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 A peat or muck presence
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 B B C C C C C D Little or no evidence of pollutants or discharges entering the assessment area Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area 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)
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). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont ecoregions and 30 feet wide in the Blue Ridge Mountains ecoregion. WS 5M 2M
VA VA ≥ 10% impervious surfaces B B B B Confined animal operations (or other local, concentrated source of pollutants) C C C Coverage of pasture D D D D D ≥ 20% coverage of agricultural land (regularly plowed land) E E E E ≥ 20% coverage of maintained grass/herb F VF VF ≥ 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 or hydrologic alterations that prevent dainage and/or overbank flow from affectio the
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? ② Yes ② No If Yes, continue to 7b. If No, skip to Metric 8. 7b. How much of the first 50 feet from the bank is weltand? (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.) ③ A ≥ 50 feet ③ B From 30 to < 50 feet ③ C From 15 to < 30 feet ⑤ D From 5 to < 15 feet ⑤ 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. ⑥ ≤ 15-feet wide ⑥ > 15-feet wide ⑥ Other open water (no tributary present) 7d. Do roots of assessment area vegetation extend into the bank of the tributary/open water? ⑥ Yes ⑥ No 7e. Is tributary or other open water sheltered or exposed? ⑥ Sheltered – adjacent open water with width < 2500 feet or regular boat traffic. ⑤ Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic.
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. 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 D From 40 to < 50 feet E F From 30 to < 40 feet F F From 15 to < 30 feet G G G From 5 to < 15 feet C H C H C H < 5 feet

9.	Inundation Duration – assessment area condition metric (skip for non-riparian wetlands)
	Answer for assessment area dominant landform.
	Evidence of short-duration inundation (< 7 consecutive days) Fuldence of acturation without suidence of inundation
	© 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 CC CC From 50 to < 100 acres CD D D From 25 to < 50 acres E E E From 10 to < 25 acres F From 5 to < 10 acres CF F From 5 to < 10 acres CF G G G From 1 to < 5 acres CF G G G From 1 to < 0.5 acre CF G G G From 0.1 to < 0.5 acre CF G G G From 0.1 to < 0.1 acre CF G G G G From 0.01 to < 0.1 acre CF G G G G From 0.01 to < 0.1 acre CF G G G G From 0.01 to < 0.1 acre CF G G G G G G G G G G G G G G G G G G
40	With the state of
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 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 evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous metric 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, fields (pasture open and agriculture), or water > 300 feet wide. Well Loosely A A ≥ 500 acres B B From 100 to < 500 acres C From 50 to < 100 acres D D From 10 to < 50 acres E C E < 10 acres 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 directiions? 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)
	 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. 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. 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)
10.	A 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.	7. 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. 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 C Canopy sparse or absent A A Dense mid-story/sapling layer B B B Moderate density mid-story/sapling layer C C C Mid-story/sapling layer sparse or absent		
	☐ C A Dense shrub layer ☐ B ☐ B Moderate density shrub layer ☐ C ☐ C Shrub layer sparse or absent		
	☐ CA CA Dense herb layer ☐ B CB 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.		
	 Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12-inch DBH. 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 interspersion between vegetation and open water in the growing season. Patterned		
	areas indicate vegetated areas, while solid white areas indicate open water. CA C C D		
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 Overhank flow is severely altered in the assessment area.		

- Overbank flow is severely altered in the assessment area.
 Overland flow is severely altered in the assessment area.

 Both overbank <u>and</u> overland flow are severely altered in the assessment area.

Small seep wetland located below pond damn and adjacent to Stream SL

	NC WAM Wetland	_	
	Accompanies User Ma	inual Version 5.0	
Wetland Site Name	WE	Date _	4/20/2017
Wetland Type	Seep	Assessor Name/Organization	C. Inscore/AECOM
Notes as Elektronia	0/00		VE0
Notes on Field Assess			YES
Presence of regulatory			YES
Wetland is intensively		nor onen water (M/N)	NO VES
	cated within 50 feet of a natural tributary or oth	ner open water (Y/N)	YES
	ubstantially altered by beaver (Y/N)	(-II (\) (\) (\)	NO NO
•	eriences overbank flooding during normal rainf	rail conditions (Y/N)	NO NO
Assessment area is or	n a coastal island (Y/N)		NO
Sub-function Rating	Summary		
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	NA
	Sub-Surface Storage and Retention	Condition	NA
Water Quality	Pathogen Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Particulate Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Soluble Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	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	HIGH
	Landscape Patch Structure	Condition	MEDIUM
	Vegetation Composition	Condition	HIGH
Function Rating Sum	mary		
Function Rating Sum	Metrics/Notes		Rating
Hydrology	Condition		HIGH
Water Quality	Condition		HIGH
	Condition/Opportunity		NA
	Opportunity Presence?	(Y/N)	NA
Habitat	Condition		HIGH

USACE AID#:	NCDWR #:
Project Name U-2412 A	Date of Evaluation 4/20/2017
Applicant/Owner Name NCDOT	Wetland Site Name WF
Wetland Type Non-Tidal Freshwater Marsh	Assessor Name/Organization C. Inscore/AECOM
Level III Ecoregion Piedmont	Nearest Named Water Body Bull Run
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) 35.988518; -79.918835
Evidence of stressors affecting the assessment area (may not be w Please circle and/or make note on last page if evidence of stressors is a appropriate, in recent past (for instance, approximately within 10 years). to the following. • Hydrological modifications (examples: ditches, dams, beaver da • Surface and sub-surface discharges into the wetland (examples: septic tanks, underground storage tanks (USTs), hog lagoons, et • Signs of vegetation stress (examples: vegetation mortality, insect • Habitat/plant community alteration (examples: mowing, clear-cut	ms, dikes, berms, ponds, etc.) discharges containing obvious pollutants, presence of nearby tc.) et damage, disease, storm damage, salt intrusion, etc.)
Is the assessment area intensively managed? © Yes • No	
Regulatory Considerations - Were regulatory considerations evaluate Anadromous fish Federally protected species or State endangered or threatened s NCDWR riparian buffer rule in effect Abuts a Primary Nursery Area (PNA) Publicly owned property N.C. Division of Coastal Management Area of Environmental Col Abuts a stream with a NCDWQ classification of SA or supplemer Designated NCNHP reference community Abuts a 303(d)-listed stream or a tributary to a 303(d)-listed stream	ncern (AEC) (including buffer) ntal classifications of HQW, ORW, or Trout
Is the assessment area on a coastal island? • Yes • No Is the assessment area's surface water storage capacity or duration	○ Wind ○ Both n substantially altered by beaver? • Yes ○ No
Does the assessment area experience overbank flooding during no	rmal rainfall conditions? © Yes ® No
sedimentation, fire-plow lanes, skidder tracks, beddi	urface (GS) in the assessment area and vegetation structure
© C C Water storage capacity or duration are substantially	and duration (Surf) and sub-surface storage capacity and ∴ A ditch ≤ 1 foot deep is considered to affect surface water only, ub-surface water. Consider tidal flooding regime, if applicable.
3. Water Storage/Surface Relief – assessment area/wetland type of Check a box in each column for each group below. Select the atype (WT). AA WT 3a. A A Majority of wetland with depressions able to poor able to be a majority of wetland with depressions able to poor able to poo	appropriate storage for the assessment area (AA) and the wetland and water > 1 foot deep and water 6 inches to 1 foot deep and water 3 to 6 inches deep app
3b. C A Evidence that maximum depth of inundation is greater C B Evidence that maximum depth of inundation is betwee C C Evidence that maximum depth of inundation is less that	n 1 and 2 feet

4.	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 12 inches. Use most recent National Technical Committee for Hydric Soils guidance for regional indicators. 4a. C.A. Sandy soil
	 Loamy or clayey soils exhibiting redoximorphic features (concentrations, depletions, or rhizospheres) Loamy or clayey soils not exhibiting redoximorphic features Loamy or clayey gleyed soil Histosol or histic epipedon
	4b. ○ A Soil ribbon < 1 inch ○ B Soil ribbon ≥ 1 inch
	4c. C A No peat or muck presence C 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 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). Effective riparian buffers are considered to be 50 feet wide in the Coastal Plain and Piedmont ecoregions and 30 feet wide in the Blue Ridge Mountains ecoregion. WS 5M 2M
	VA A ≥ 10% impervious surfaces B B B B Confined animal operations (or other local, concentrated source of pollutants) C C C ≥ 20% coverage of pasture D D D D ≥ 20% coverage of agricultural land (regularly plowed land) VE VE VE VE VE ≥ 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 dainage <u>and/or</u> overbank flow from affectio the assessment area.
7.	 7a. Is assessment area within 50 feet of a tributary or other open water?
	7c. Tributary width. If the tributary is anastomosed, combine widths of channels/braids for a total width. ⑥ ≤ 15-feet wide
	7d. Do roots of assessment area vegetation extend into the bank of the tributary/open water? © Yes No
	 7e. Is tributary or other open water sheltered or exposed? ⑤ Sheltered – adjacent open water with width < 2500 feet <u>and</u> no regular boat traffic. ⑥ Exposed – adjacent open water with width ≥ 2500 feet <u>or</u> 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. 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
	
	C C From 50 to < 80 feet D D From 40 to < 50 feet
	© E
	© G

J.	Answer for assessment area dominant landform. C A Evidence of short-duration inundation (< 7 consecutive days) E Vidence of saturation, without evidence of inundation C 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 F F F F F F From 5 to < 10 acres F F F F F From 5 to < 10 acres G G G G From 1 to < 5 acres H A H H H From 0.5 to < 1 acre J J J G From 0.01 to < 0.1 acre K K K K K C K < 0.01 acre or 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 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 evaluates whether the wetland is well connected (Well) and/or loosely connected (Loosely) to the landscape patch, the contiguous metric 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, fields (pasture open and agriculture), or water > 300 feet wide. Well Loosely A A ≥ 500 acres B B From 100 to < 500 acres C F From 50 to < 100 acres E C E < 10 acres F F Wetland type has a poor or no connection to other natural habitats 13b. Evaluate for marshes only.
14.	 Yes No Wetland type has a surface hydrology connection to open waters/stream or tidal wetlands. 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 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).

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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.
	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.
	AA WT 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 C Canopy sparse or absent
	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 C Canopy sparse or absent C A A Dense mid-story/sapling layer C B B Moderate density mid-story/sapling layer C C Mid-story/sapling layer sparse or absent
	CA CA Dense shrub layer CB CB Moderate density shrub layer CC CC Shrub layer sparse or absent
	CA CA Dense herb layer B CB Moderate density herb layer CC CC 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.
	Majority of canopy trees have stems between 6 and 12 inches DBH, few are > 12-inch DBH.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 interspersion between vegetation and open water in the growing season. Patterned areas indicate vegetated areas, while solid white areas indicate open water.
	CA
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. Overbank flow is severely altered in the assessment area.

- Overland flow is severely altered in the assessment area.

 Both overbank <u>and</u> overland flow are severely altered in the assessment area.

Wetland previously inundated due to beavers raising level of Pond PC. Beaver damn was washed away during a flood event, this area is no longer inundated, however all canopy trees have perished.

NC WAM Wetland Rating Sheet			
	Accompanies User Ma	inual Version 5.0	
Wetland Site Name	WF	Date	4/20/2017
Wetland Type	Non-Tidal Freshwater Marsh	Assessor Name/Organization	C. Inscore/AECOM
· -		-	
Notes on Field Assessme	ent Form (Y/N)		YES
Presence of regulatory considerations (Y/N)			YES
Wetland is intensively ma	anaged (Y/N)		NO
Assessment area is local	YES		
Assessment area is substantially altered by beaver (Y/N)			YES
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 Su			
Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	NA
	Sub-Surface Storage and Retention	Condition	NA
Water Quality	Pathogen Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Particulate Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	Soluble Change	Condition	NA
		Condition/Opportunity	NA
		Opportunity Presence? (Y/N)	NA
	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	HIGH
	Vegetation Composition	Condition	HIGH
Francisco Believe Commun			
Function Rating Summ	Metrics/Notes		Rating
Hydrology	Condition		MEDIUM
Water Quality	Condition		LOW
,	Condition/Opportunity		LOW
	Opportunity Presence? (Y/N)		YES
Habitat	Condition		HIGH
Overall Wetland Rating	<u>MEDIUM</u>		