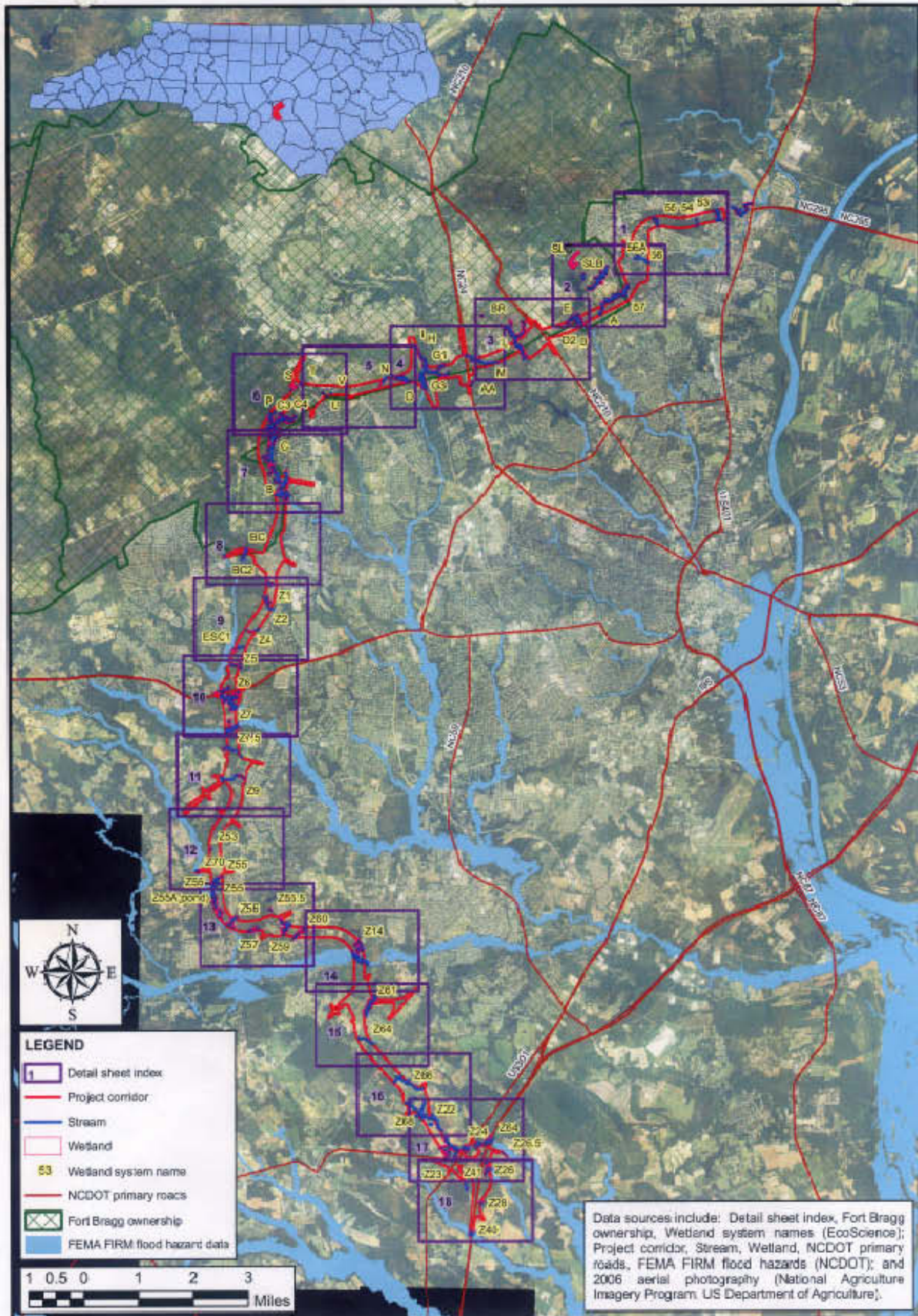


NCDOT TIP/Section	NCDOT Wetland Site	ESC Sheet No.	ESC System Number	NC WAM Wetland Type	Assessment Area Size	Hydrology Sub-Function	Water Quality Sub-Function (Condition)	Water Quality Sub-Function (Modified Condition)	Water Quality (Opportunity Presence?)	Habitat Sub-Function	Overall Wetland Quality	USACE type	NCWAM type	Proposed Impact
X-0002C	Site 6	1	53-I-WAM-01	Headwater Wetland	6	HIGH	HIGH	HIGH	YES	HIGH	1 HIGH	N	R	fill
X-0002C	Site 5	1	54-I-WAM-01	Riverine Swamp Forest	0.61	HIGH	HIGH	HIGH	NO	HIGH	1 HIGH	N	R	fill
X-0002C	Site 5	1	54-I-WAM-02	Non-Tidal Freshwater Marsh	0.23	HIGH	HIGH	X	X	HIGH	1 HIGH	N	R	fill
X-0002C	Site 5	1	54-I-WAM-03	Seep	0.69	HIGH	HIGH	X	X	HIGH	1 HIGH	N	N	fill
X-0002C	Site 4	1	55-I-WAM-01	Seep	0.36	HIGH	HIGH	X	X	HIGH	1 HIGH	R	N	fill
X-0002C	Site 4	1	55-I-WAM-02	Seep	0.55	LOW	LOW	X	X	LOW	3 LOW	R	N	bridged
X-0002C	Site 4	1	55-I-WAM-03	Bottomland Hardwood Forest	2.54	HIGH	HIGH	HIGH	YES	LOW	1 HIGH	R	R	bridged
X-0002C	Site 2	2	57-I-WAM-01	Headwater Wetland	8.41	HIGH	MEDIUM	HIGH	YES	HIGH	1 HIGH	N	R	fill
X-0002C	Site 1	2	A-I-WAM-01	Riverine Swamp Forest	3.17	HIGH	HIGH	HIGH	YES	HIGH	1 HIGH	R	R	fill
X-0002B	Site 3	2,3	D-I-WAM-01	Riverine Swamp Forest	13.17	HIGH	HIGH	HIGH	YES	MEDIUM	1 HIGH	R	R	bridged
X-0002B	Sites 1a-c	3	L-I-WAM-01	Riverine Swamp Forest	6.17	HIGH	HIGH	HIGH	YES	HIGH	1 HIGH	N	R	bridged
U-2519E	Sites 2, 3	3,4	M-I-WAM-01	Headwater Wetland	4.76	HIGH	HIGH	HIGH	YES	HIGH	1 HIGH	R	R	fill
U-2519E	Site 4	4	G2-I-WAM-01	Headwater Wetland	5.14	HIGH	HIGH	HIGH	YES	HIGH	1 HIGH	R	R	fill
U-2519DA	Site 4	4	G2-I-WAM-02	Headwater Wetland	3.84	HIGH	HIGH	HIGH	YES	HIGH	1 HIGH	R	R	fill
U-2519DA	Site 4	4	G2-I-WAM-03	Riverine Swamp Forest	6.27	MEDIUM	HIGH	HIGH	YES	MEDIUM	1 HIGH	R	R	fill
U-2519DA	Site 5	4	G3-I-WAM-01	Riverine Swamp Forest	7.17	MEDIUM	HIGH	HIGH	YES	HIGH	1 HIGH	R	R	fill
U-2519DA	Site 3	4	G3-I-WAM-02	Non-Tidal Freshwater Marsh	4.5	HIGH	HIGH	X	X	HIGH	1 HIGH	R	R	fill
U-2519DA	Sites 1, 2	4,5	O-I-WAM-01	Riverine Swamp Forest	13.01	HIGH	HIGH	HIGH	YES	MEDIUM	1 HIGH	R	R	fill
U-2519DA	? 15+50	5	N-I-WAM-01	Riverine Swamp Forest	1.09	HIGH	HIGH	HIGH	YES	MEDIUM	1 HIGH	N	R	fill
U-2519CB	Site 3	6	T-I-WAM-01	Headwater Wetland	0.21	LOW	MEDIUM	HIGH	YES	MEDIUM	2 MEDIUM	N	R	fill
U-2519CA	Site 6	9	Z1-II-WAM-03	Headwater Wetland	2.09	HIGH	HIGH	HIGH	YES	MEDIUM	1 HIGH	N	R	fill
U-2519CA	Site 5	9	Z2-II-WAM-04	Riverine Swamp Forest	1.75	HIGH	HIGH	HIGH	YES	HIGH	1 HIGH	N	R	fill
U-2519CA	Site 4	9	Z4-II-WAM-08	Headwater Wetland	0.57	HIGH	HIGH	HIGH	YES	HIGH	1 HIGH	N	R	fill
U-2519CA	? ~670+50	9	ESC1-II-WAM-05	Headwater Wetland	0.1	LOW	MEDIUM	HIGH	YES	LOW	3 LOW		R	fill
U-2519CA	? ~670+50	9	ESC1-II-WAM-06	Headwater Wetland	0.25	HIGH	HIGH	HIGH	YES	MEDIUM	1 HIGH		R	fill
U-2519CA	Site 3	10	Z5-II-WAM-09	Headwater Wetland	2.97	HIGH	HIGH	HIGH	YES	HIGH	1 HIGH	R	R	bridged
U-2519CA	Site 2	10	Z6-II-WAM-20	Bottomland Hardwood Forest	1.07	HIGH	HIGH	HIGH	YES	LOW	1 HIGH	R	R	fill
U-2519CA	Site 2	10	Z6-II-WAM-19	Seep	2.41	HIGH	HIGH	X	X	HIGH	1 HIGH	R	N	fill
U-2519CA	Site 2	10	Z6-II-WAM-10	Bottomland Hardwood Forest	13.47	HIGH	HIGH	HIGH	YES	HIGH	1 HIGH	R	R	fill
U-2519CA	Site 2	10	Z6-II-WAM-12	Seep	0.48	HIGH	HIGH	X	X	HIGH	1 HIGH	R	N	fill
U-2519CA	Site 2	10	Z6-II-WAM-13	Headwater Wetland	0.79	HIGH	HIGH	HIGH	YES	HIGH	1 HIGH	R	N	fill

Legend	
	High quality wetland
	Medium quality wetland
	Low quality wetland
	USACE and NC WAM riverine vs non-riverine call inconsistent



FAYETTEVILLE OUTER LOOP

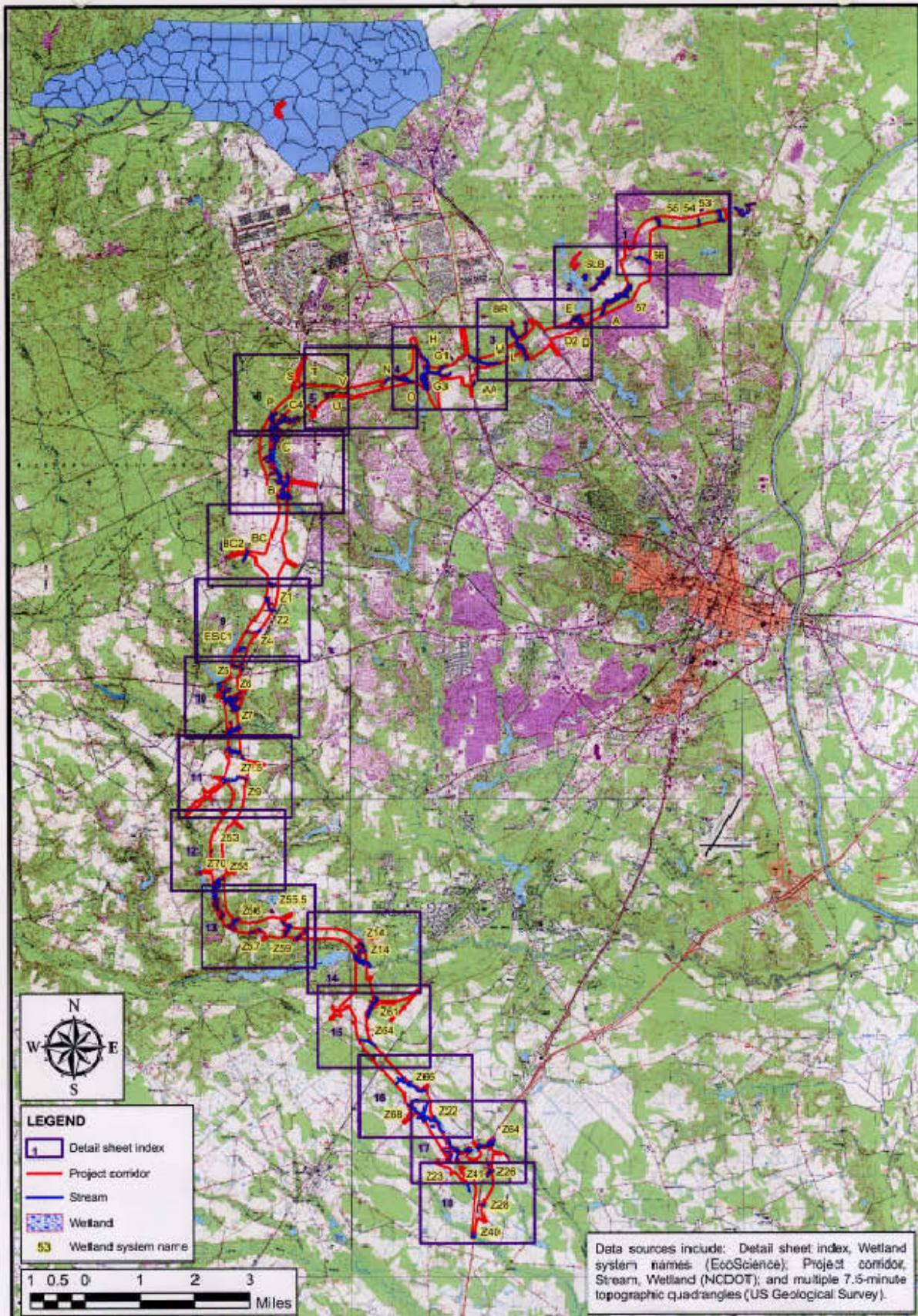
WETLAND FUNCTIONAL ASSESSMENT

Cumberland, Robeson, and Hoke Counties, North Carolina

Project Overview

Drawn By:	3/03	Doc By:	AJS
Date:	SEP 2001		
Scale:	1:100,000		
ESC Project No.	00-200		

FIGURE
A



**FAYETTEVILLE
OUTER LOOP**

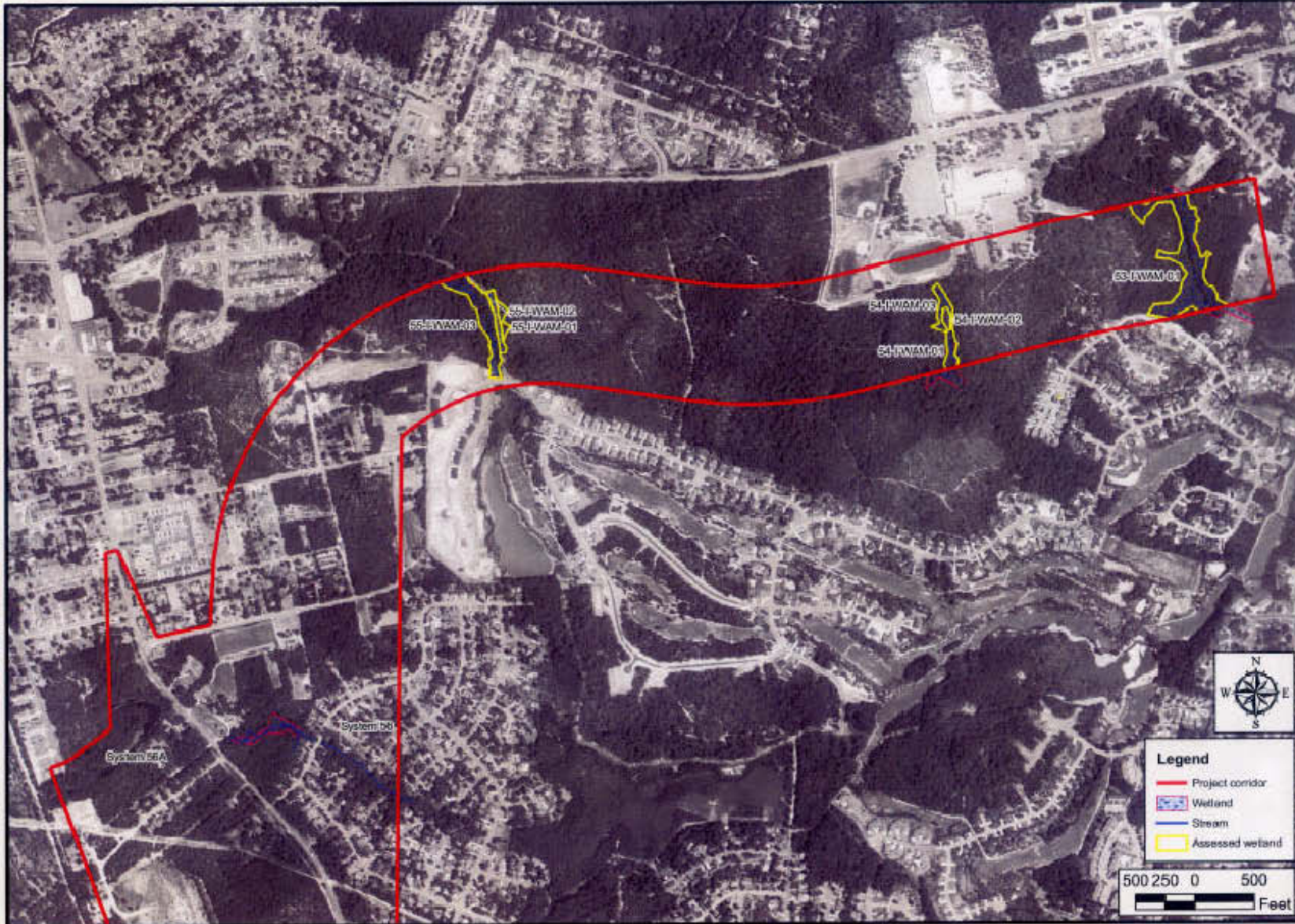
**WETLAND
FUNCTIONAL ASSESSMENT**

Cumberland, Robeson and
Hoke Counties, North Carolina

Project
Overview

Drawn By:	ESD	Check By:	AKG
Date:	SEP 2007		
Scale:	1:100,000		
GIS Project No.:	06-200		

FIGURE
B



Client:

Project:

**FAYETTEVILLE
OUTER
LOOP
WETLAND
FUNCTIONAL
ASSESSMENT**

Cumberland, Robeson,
and Hoke Counties,
North Carolina

Title:

**Wetland
Locations**

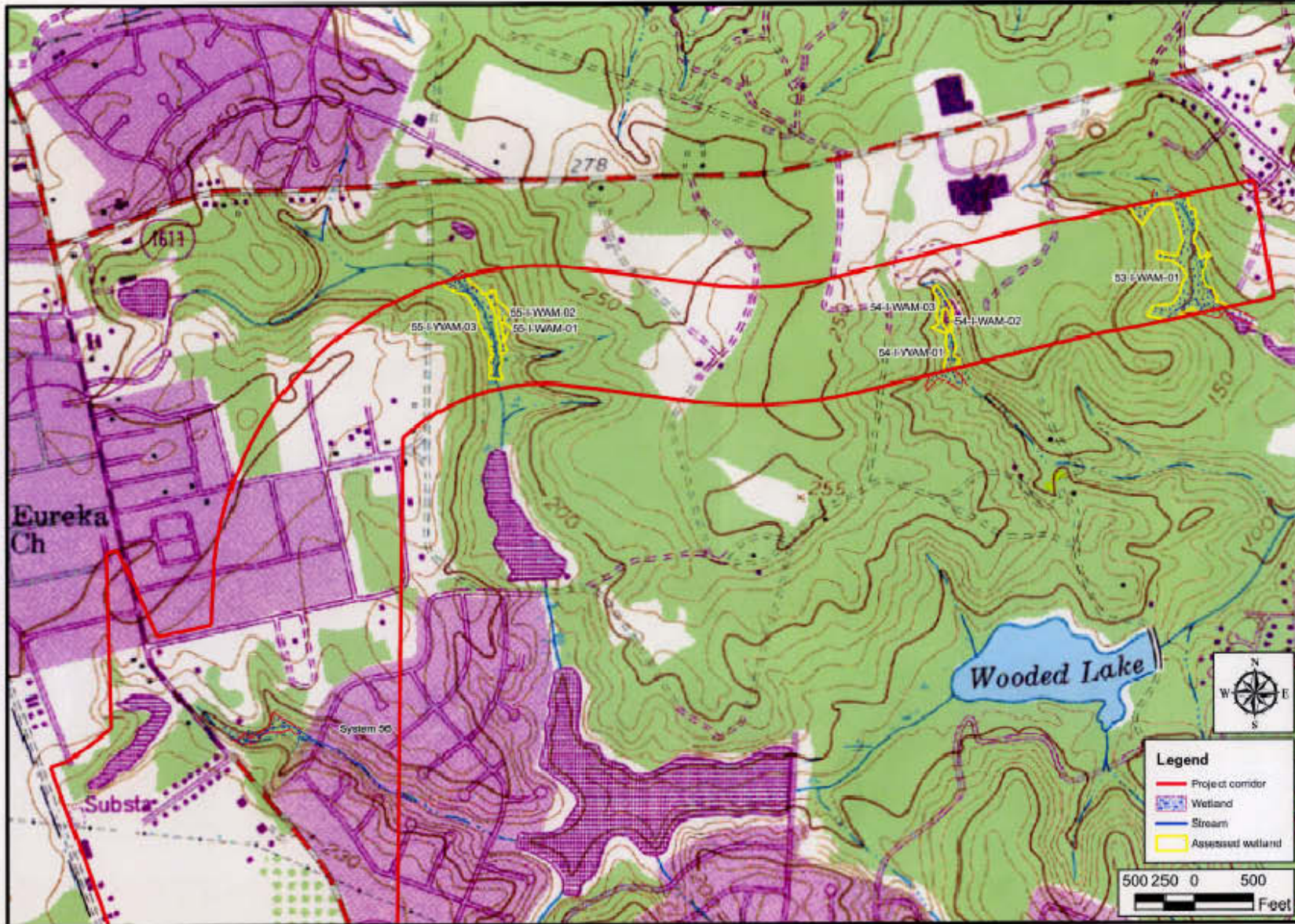


- Legend**
- Project corridor
 - Wetland
 - Stream
 - Assessed wetland



Drawn By:	SGD	Checked By:	MTC
Date:	SEP 2007	Scale:	1:8000
ESC Project No.: 06-296.02			

FIGURE
1



EcoScience Corporation
 Raleigh, North Carolina

Client:



Project:

**FAYETTEVILLE
 OUTER
 LOOP**

**WETLAND
 FUNCTIONAL
 ASSESSMENT**

Cumberland, Robeson,
 and Hoke Counties,
 North Carolina

Title:

**Wetland
 Locations**

Drawn By:

SGD

Clk By:

MTC

Date:

SEP 2007

Scale:

1:8000

ESC Project No.:

06-296.02

FIGURE

1

- Legend**
- Project corridor
 - Wetland
 - Stream
 - Assessed wetland



NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	54-I-WAM01	Date	9/6/07
Wetland Type	Riverine Swamp Forest	Assessor Name/Organization	AS, RA ESC
Level III Ecoregion	Southeastern Plains	Nearest Named Water Body	Falls Creek, Wooded Lake
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030004
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.151326, -78.887395

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

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

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

Is the assessment area intensively managed? Yes No

Describe effects of stressors that are present.

Regulatory Considerations

Select all that apply to the assessment area.

- Anadromous fish
- Federally protected species or State endangered or threatened species
- NCDWQ riparian buffer rule in effect
- Wetland adjacent to or associated stream drains to a Primary Nursery Area
- Publicly owned property
- N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
- N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
- Designated NCNHP reference community

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

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

Is the assessment area on a coastal island? Yes No

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

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

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GS | VS | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Not severely altered |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration) |

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

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

- | | | |
|---------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surf | Sub | |
| <input type="checkbox"/> A | <input checked="" type="checkbox"/> A | Water storage capacity and duration are not altered. |
| <input checked="" type="checkbox"/> B | <input type="checkbox"/> B | Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation). |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction). |

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

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

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------|
| AA | WT | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | > 50% of the wetland type with depressions able to pond water > 2 feet |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | > 50% of the wetland type with depressions able to pond water 1 to 2 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | > 50% of wetland type with depressions able to pond water 6 inches to 1 foot |
| <input type="checkbox"/> D | <input type="checkbox"/> D | > 50% of wetland type with depressions able to pond water 3- to 6-inches deep |
| <input type="checkbox"/> E | <input type="checkbox"/> E | Depressions able to pond water < 3-inches deep |

4. Soil Texture/Structure – assessment area condition metric

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- A Sandy soil
- B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- C Predominantly characterized by other, mineral soil (no mottling)
- D Gleyed mineral soil (F2, S4)
- E Soil ribbon < 1 inch
- F Soil ribbon ≥ 1 inch
- G No peat or muck presence
- H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

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 | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Little or no evidence of pollutants or discharges entering the assessment area |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| <input type="checkbox"/> C | <input type="checkbox"/> 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) |

6. Land Use – opportunity metric

Check all that apply. Evaluation of this metric 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 and 30 feet wide in the Mountains.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS | 5M | 2M | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | > 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential) |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | > 30% impervious surfaces without stormwater BMPs |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | 10 to 30% impervious surfaces |
| <input checked="" type="checkbox"/> D | <input checked="" type="checkbox"/> D | <input checked="" type="checkbox"/> D | < 10% impervious surfaces |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | Old urban development (pink areas on USGS 7.5-minute quadrangles) |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | New adjacent development |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | Confined animal operations (or other local, concentrated source of pollutants) |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | ≥20% coverage of pasture without riparian buffer |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I | ≥20% coverage of pasture with effective riparian buffer |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J | ≥20% coverage of agricultural land (regularly plowed land) without riparian buffer |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K | ≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer |
| <input type="checkbox"/> L | <input type="checkbox"/> L | <input type="checkbox"/> L | ≥20% coverage of maintained grass/herb |
| <input type="checkbox"/> M | <input type="checkbox"/> M | <input type="checkbox"/> M | Silvicultural land with disturbance < 5 years old |
| <input checked="" type="checkbox"/> N | <input checked="" type="checkbox"/> N | <input checked="" type="checkbox"/> N | Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area. |

7. Wetland Acting as Vegetated Buffer – assessment area condition metric

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

- Yes No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

- ≤15-foot wide > 15-foot wide Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

- Yes No

Is stream or other open water sheltered or exposed?

- Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
 Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-----------------------|
| WT | WC | RB (if applicable) | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input checked="" type="checkbox"/> A | ≥100 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | From 80 to < 100 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | From 50 to < 80 feet |
| <input checked="" type="checkbox"/> D | <input checked="" type="checkbox"/> D | <input type="checkbox"/> D | From 40 to < 50 feet |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | From 30 to < 40 feet |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | From 15 to < 30 feet |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | From 5 to < 15 feet |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | < 5 feet |

9. Inundation Duration – assessment area condition metric

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 (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

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 contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)
<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A ≥500 acres
<input type="checkbox"/> B	<input type="checkbox"/> B	<input type="checkbox"/> B From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D From 25 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	<input type="checkbox"/> E From 10 to < 25 acres
<input type="checkbox"/> F	<input checked="" type="checkbox"/> F	<input type="checkbox"/> F From 5 to < 10 acres
<input checked="" type="checkbox"/> G	<input type="checkbox"/> G	<input checked="" type="checkbox"/> G From 1 to < 5 acres
<input type="checkbox"/> H	<input type="checkbox"/> H	<input type="checkbox"/> H From 0.5 to < 1 acre
<input type="checkbox"/> I	<input type="checkbox"/> I	<input type="checkbox"/> I From 0.1 to < 0.5 acre
<input type="checkbox"/> J	<input type="checkbox"/> J	<input type="checkbox"/> J From 0.01 to < 0.1 acre
<input type="checkbox"/> K	<input type="checkbox"/> K	<input type="checkbox"/> K < 0.01 acre

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

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

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
<input checked="" type="checkbox"/> A	<input type="checkbox"/> A	≥500 acres
<input type="checkbox"/> B	<input type="checkbox"/> B	From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	From 10 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	< 10 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

- Yes No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- Yes No Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-foot wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- A No artificial edge within 150 feet in all directions
- B No artificial edge within 150 feet in four to seven directions
- C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for 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. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

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.
- B Vegetation diversity is low or has > 10% cover of exotics.
- C Vegetation is dominated by exotic species.

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

Vegetation present

Evaluate percent coverage of vegetation for marshes only

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

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 | |
|---------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------|
| <input type="checkbox"/> A | <input type="checkbox"/> A | Canopy closed, or nearly closed, with natural gaps associated with natural processes |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Canopy present, but opened more than natural gaps |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Canopy sparse or absent |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Dense mid-story/sapling layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density mid-story/sapling layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Mid-story/sapling layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense shrub layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density shrub layer |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | Shrub layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense herb layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density herb layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Herb layer sparse or absent |

Vegetation absent

18. **Snags – wetland type condition metric**

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

19. **Diameter Class Distribution – wetland type condition metric**

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

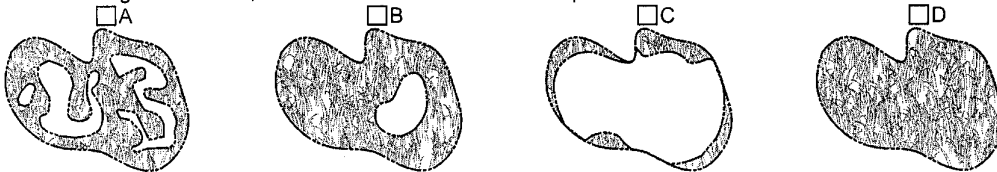
20. **Large Woody Debris – wetland type condition metric**

Include both man-made and natural debris piles.

- A Large logs (more than one) are present (> 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.



22. **Habitat Uniqueness – wetland type condition metric**

- Yes
- No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name 54-I-WAM01 Date of Assessment 9/6/07
 Wetland Type Riverine Swamp Forest Assessor Name/Organization AS, RA ESC

Presence of stressor affecting assessment area (Y/N) NO
 Notes on Field Assessment Form (Y/N) NO
 Presence of regulatory considerations (Y/N) YES
 Wetland is intensively managed (Y/N) NO
 Wetland may be a high-quality riverine wetland (Y/N)

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	MEDIUM
		Condition/Opportunity	MEDIUM
		Opportunity Presence (Y/N)	NO
	Particulate Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
		Opportunity Presence (Y/N)	NO
	Soluble Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
		Opportunity Presence (Y/N)	NO
	Physical Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	NO
Pollution Change	Condition	X	
	Condition/Opportunity	X	
	Opportunity Presence (Y/N)	X	
Habitat	Physical Structure	Condition	MEDIUM
	Landscape Patch Structure	Condition	MEDIUM
	Vegetation Composition	Condition	HIGH
	Uniqueness	Condition	NO

Function Rating Summary

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

Overall Wetland Rating HIGH

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	53-I-WAM01	Assessor Name/Organization	AS, RA / EcoScience	Date	9/6/07
Wetland Type	Headwater Wetland	Nearest Named Water Body	Falls Creek		
Level III Ecoregion	Southeastern Plains	USGS 8-Digit Catalogue Unit	03030004		
River Basin	Cape Fear	Latitude/Longitude (deci-degrees)	35.152096, -78.879960		
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Precipitation within 48 hrs?				

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following.

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

Is the assessment area intensively managed? Yes No

Describe effects of stressors that are present.
Sewer lien right of way adjacent to wetland

Regulatory Considerations

Select all that apply to the assessment area.

- Anadromous fish
- Federally protected species or State endangered or threatened species
- NCDWQ riparian buffer rule in effect
- Wetland adjacent to or associated stream drains to a Primary Nursery Area
- Publicly owned property
- N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
- N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
- Designated NCNHP reference community

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

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

Is the assessment area on a coastal island? Yes No

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

1. Ground Surface Condition/Vegetation Condition – assessment area condition metric
Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

GS	VS	
<input checked="" type="checkbox"/> A	<input checked="" type="checkbox"/> A	Not severely altered
<input type="checkbox"/> B	<input type="checkbox"/> B	Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

2. Surface and Sub-Surface Storage Capacity and Duration – assessment area condition metric
Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

Surf	Sub	
<input type="checkbox"/> A	<input checked="" type="checkbox"/> A	Water storage capacity and duration are not altered.
<input checked="" type="checkbox"/> B	<input type="checkbox"/> B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation)
<input type="checkbox"/> C	<input type="checkbox"/> C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction).

3. Water Storage/Surface Relief – assessment area/wetland type condition metric
Check a box in each column. Select the appropriate storage for the assessment area (AA) and the wetland type (WT).

AA	WT	
<input type="checkbox"/> A	<input type="checkbox"/> A	> 50% of the wetland type with depressions able to pond water > 2 feet
<input type="checkbox"/> B	<input type="checkbox"/> B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
<input type="checkbox"/> C	<input type="checkbox"/> C	> 50% of the wetland type with depressions able to pond water 6 inches to 1 foot
<input checked="" type="checkbox"/> D	<input checked="" type="checkbox"/> D	> 50% of the wetland type with depressions able to pond water 3- to 6-inches deep
<input type="checkbox"/> E	<input type="checkbox"/> E	Depressions able to pond water < 3-inches deep

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- A Sandy soil
- B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- C Predominantly characterized by other, mineral soil (no mottling)
- D Gleyed mineral soil (F2, S4)
- E Soil ribbon < 1 inch
- F Soil ribbon ≥ 1 inch
- G No peat or muck presence
- H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

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 | |
| <input type="checkbox"/> A | <input checked="" type="checkbox"/> A | Little or no evidence of pollutants or discharges entering the assessment area |
| <input checked="" type="checkbox"/> B | <input type="checkbox"/> B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| <input type="checkbox"/> C | <input type="checkbox"/> 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) |

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric 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 and 30 feet wide in the Mountains.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS | 5M | 2M | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | > 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential) |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | > 30% impervious surfaces without stormwater BMPs |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | 10 to 30% impervious surfaces |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | < 10% impervious surfaces |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | Old urban development (pink areas on USGS 7.5-minute quadrangles) |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | New adjacent development |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | Confined animal operations (or other local, concentrated source of pollutants) |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | ≥20% coverage of pasture without riparian buffer |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I | ≥20% coverage of pasture with effective riparian buffer |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J | ≥20% coverage of agricultural land (regularly plowed land) without riparian buffer |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K | ≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer |
| <input type="checkbox"/> L | <input type="checkbox"/> L | <input type="checkbox"/> L | ≥20% coverage of maintained grass/herb |
| <input type="checkbox"/> M | <input type="checkbox"/> M | <input type="checkbox"/> M | Silvicultural land with disturbance < 5 years old |
| <input type="checkbox"/> N | <input type="checkbox"/> N | <input type="checkbox"/> N | Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area. |

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

Yes No If No, Skip to next metric
Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

≤15-foot wide > 15-foot wide Not Applicable
Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

Yes No
Is stream or other open water sheltered or exposed?

Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
 Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

- | | | |
|---------------------------------------|---------------------------------------|--------------------------------------------------|
| WT | WC | RB (if applicable) |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A ≥100 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B From 80 to < 100 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C From 50 to < 80 feet |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D From 40 to < 50 feet |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E From 30 to < 40 feet |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F From 15 to < 30 feet |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G From 5 to < 15 feet |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H < 5 feet |

9. Inundation Duration – assessment area condition metric

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 (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

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 contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)
<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A ≥500 acres
<input type="checkbox"/> B	<input type="checkbox"/> B	<input type="checkbox"/> B From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D From 25 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	<input type="checkbox"/> E From 10 to < 25 acres
<input type="checkbox"/> F	<input checked="" type="checkbox"/> F	<input checked="" type="checkbox"/> F From 5 to < 10 acres
<input type="checkbox"/> G	<input type="checkbox"/> G	<input type="checkbox"/> G From 1 to < 5 acres
<input type="checkbox"/> H	<input type="checkbox"/> H	<input type="checkbox"/> H From 0.5 to < 1 acre
<input checked="" type="checkbox"/> I	<input type="checkbox"/> I	<input type="checkbox"/> I From 0.1 to < 0.5 acre
<input type="checkbox"/> J	<input type="checkbox"/> J	<input type="checkbox"/> J From 0.01 to < 0.1 acre
<input type="checkbox"/> K	<input type="checkbox"/> K	<input type="checkbox"/> K < 0.01 acre

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

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

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
<input checked="" type="checkbox"/> A	<input type="checkbox"/> A	≥500 acres
<input type="checkbox"/> B	<input type="checkbox"/> B	From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	From 10 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	< 10 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

- Yes No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- Yes No Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-foot wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- A No artificial edge within 150 feet in all directions
- B No artificial edge within 150 feet in four to seven directions
- C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for 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. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

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.
- B Vegetation diversity is low or has > 10% cover of exotics.
- C Vegetation is dominated by exotic species.

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

Vegetation present

Evaluate percent coverage of vegetation for marshes only

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

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 | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Canopy closed, or nearly closed, with natural gaps associated with natural processes |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Canopy present, but opened more than natural gaps |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Canopy sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense mid-story/sapling layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density mid-story/sapling layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Mid-story/sapling layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense shrub layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density shrub layer |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | Shrub layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense herb layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density herb layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Herb layer sparse or absent |

Vegetation absent

18. Snags – wetland type condition metric

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

19. Diameter Class Distribution – wetland type condition metric

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

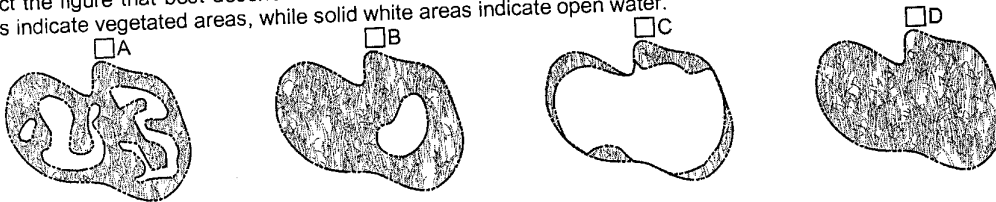
20. Large Woody Debris – wetland type condition metric

Include both man-made and natural debris piles.

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

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

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



22. Habitat Uniqueness – wetland type condition metric

- Yes
- No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name 53-I-NCWAM01 Date of Assessment 9/6/07
 Wetland Type Headwater Wetland Assessor Name/Organization AS, RA / EcoScience

Presence of stressor affecting assessment area (Y/N) YES
 Notes on Field Assessment Form (Y/N) NO
 Presence of regulatory considerations (Y/N) NO
 Wetland is intensively managed (Y/N) NO
 Wetland may be a high-quality riverine wetland (Y/N)

Sub-function Rating Summary

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

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	HIGH
	Condition	HIGH
Water Quality	Condition/Opportunity	HIGH
	Opportunity Presence (Y/N)	YES
Habitat	Condition	HIGH

Overall Wetland Rating HIGH

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	54-I-WAM02	Date	9/6/07
Wetland Type	Non-Tidal Freshwater Marsh	Assessor Name/Organization	AS, RA, EcoScience
Level III Ecoregion	Southeastern Plains	Nearest Named Water Body	Falls Creek, Wooded Lake
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030004
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.151839, -78.887505

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

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

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

Is the assessment area intensively managed? Yes No

Describe effects of stressors that are present.

Long standing, man made dam source of hydrology, near school property

Regulatory Considerations

Select all that apply to the assessment area.

- Anadromous fish
- Federally protected species or State endangered or threatened species
- NCDWQ riparian buffer rule in effect
- Wetland adjacent to or associated stream drains to a Primary Nursery Area
- Publicly owned property
- N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
- N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout Designated NCNHP reference community

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

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

Is the assessment area on a coastal island? Yes No

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

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

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GS | VS | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Not severely altered |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration) |

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

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

- | | | |
|---------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surf | Sub | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Water storage capacity and duration are not altered. |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation). |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction). |

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

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

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------|
| AA | WT | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | > 50% of the wetland type with depressions able to pond water > 2 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | > 50% of the wetland type with depressions able to pond water 1 to 2 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | > 50% of wetland type with depressions able to pond water 6 inches to 1 foot |
| <input type="checkbox"/> D | <input type="checkbox"/> D | > 50% of wetland type with depressions able to pond water 3- to 6-inches deep |
| <input type="checkbox"/> E | <input type="checkbox"/> E | Depressions able to pond water < 3-inches deep |

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- A Sandy soil
- B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- C Predominantly characterized by other, mineral soil (no mottling)
- D Gleyed mineral soil (F2, S4)
- E Soil ribbon < 1 inch
- F Soil ribbon ≥ 1 inch
- G No peat or muck presence
- H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

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 | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Little or no evidence of pollutants or discharges entering the assessment area |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| <input type="checkbox"/> C | <input type="checkbox"/> 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) |

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric 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 and 30 feet wide in the Mountains.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS | 5M | 2M | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | > 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential) |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | > 30% impervious surfaces without stormwater BMPs |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | 10 to 30% impervious surfaces |
| <input checked="" type="checkbox"/> D | <input checked="" type="checkbox"/> D | <input checked="" type="checkbox"/> D | < 10% impervious surfaces |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | Old urban development (pink areas on USGS 7.5-minute quadrangles) |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | New adjacent development |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | Confined animal operations (or other local, concentrated source of pollutants) |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | ≥20% coverage of pasture without riparian buffer |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I | ≥20% coverage of pasture with effective riparian buffer |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J | ≥20% coverage of agricultural land (regularly plowed land) without riparian buffer |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K | ≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer |
| <input type="checkbox"/> L | <input type="checkbox"/> L | <input type="checkbox"/> L | ≥20% coverage of maintained grass/herb |
| <input type="checkbox"/> M | <input type="checkbox"/> M | <input type="checkbox"/> M | Silvicultural land with disturbance < 5 years old |
| <input checked="" type="checkbox"/> N | <input checked="" type="checkbox"/> N | <input checked="" type="checkbox"/> N | Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area. |

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

- Yes No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

- ≤15-foot wide > 15-foot wide Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

- Yes No

Is stream or other open water sheltered or exposed?

- Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
 Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-----------------------|
| WT | WC | RB (if applicable) | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input checked="" type="checkbox"/> A | ≥100 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | From 80 to < 100 feet |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | <input type="checkbox"/> C | From 50 to < 80 feet |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | From 40 to < 50 feet |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | From 30 to < 40 feet |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | From 15 to < 30 feet |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | From 5 to < 15 feet |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | < 5 feet |

9. **Inundation Duration – assessment area condition metric**

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 (7 to 30 consecutive days or more)

10. **Indicators of Deposition – assessment area condition metric**

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 contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)
<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A ≥500 acres
<input type="checkbox"/> B	<input type="checkbox"/> B	<input type="checkbox"/> B From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D From 25 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	<input type="checkbox"/> E From 10 to < 25 acres
<input type="checkbox"/> F	<input checked="" type="checkbox"/> F	<input type="checkbox"/> F From 5 to < 10 acres
<input type="checkbox"/> G	<input type="checkbox"/> G	<input checked="" type="checkbox"/> G From 1 to < 5 acres
<input type="checkbox"/> H	<input type="checkbox"/> H	<input type="checkbox"/> H From 0.5 to < 1 acre
<input checked="" type="checkbox"/> I	<input type="checkbox"/> I	<input type="checkbox"/> I From 0.1 to < 0.5 acre
<input type="checkbox"/> J	<input type="checkbox"/> J	<input type="checkbox"/> J From 0.01 to < 0.1 acre
<input type="checkbox"/> K	<input type="checkbox"/> K	<input type="checkbox"/> K < 0.01 acre

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

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

13. **Connectivity to Other Natural Areas – landscape condition metric**

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
<input checked="" type="checkbox"/> A	<input type="checkbox"/> A	≥500 acres
<input type="checkbox"/> B	<input type="checkbox"/> B	From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	From 10 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	< 10 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

- Yes No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- Yes No Is the assessment area subject to overbank flooding during normal conditions?

14. **Edge Effect – wetland type condition metric**

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-foot wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- A No artificial edge within 150 feet in all directions
- B No artificial edge within 150 feet in four to seven directions
- C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. **Vegetative Composition – assessment area condition metric (skip for 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. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

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.
- B Vegetation diversity is low or has > 10% cover of exotics.
- C Vegetation is dominated by exotic species.

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

Vegetation present

Evaluate percent coverage of vegetation for marshes only

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

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 | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Canopy closed, or nearly closed, with natural gaps associated with natural processes |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Canopy present, but opened more than natural gaps |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Canopy sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense mid-story/sapling layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density mid-story/sapling layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Mid-story/sapling layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense shrub layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density shrub layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Shrub layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense herb layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density herb layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Herb layer sparse or absent |

Vegetation absent

18. **Snags – wetland type condition metric**

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

19. **Diameter Class Distribution – wetland type condition metric**

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

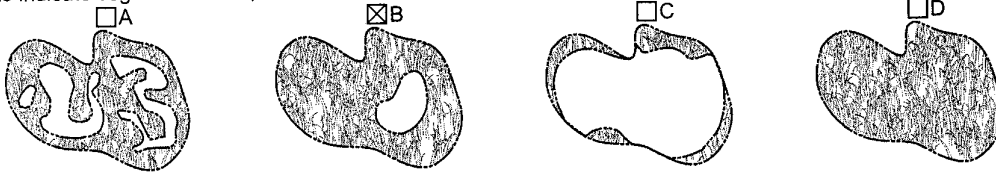
20. **Large Woody Debris – wetland type condition metric**

Include both man-made and natural debris piles.

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

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

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



22. **Habitat Uniqueness – wetland type condition metric**

- Yes
- No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?

Notes
Inundated during drought

NC WAM Wetland Rating Sheet

Wetland Site Name 54INCWAM02 Date of Assessment 9/6/07
 Wetland Type Non-Tidal Freshwater Marsh Assessor Name/Organization AS, RA, EcoScience

Presence of stressor affecting assessment area (Y/N) YES
 Notes on Field Assessment Form (Y/N) YES
 Presence of regulatory considerations (Y/N) YES
 Wetland is intensively managed (Y/N) YES
 Wetland may be a high-quality riverine wetland (Y/N)

Sub-function Rating Summary

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

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	HIGH
Water Quality	Condition	HIGH
	Condition/Opportunity	X
	Opportunity Presence (Y/N)	X
Habitat	Condition	HIGH

Overall Wetland Rating HIGH

**NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)**

Wetland Site Name	54-I-WAM03	Date	9/6/07
Wetland Type	Seep	Assessor Name/Organization	AS, RA, EcoScience
Level III Ecoregion	Southeastern Plains	Nearest Named Water Body	Falls Creek, Wooded Lake
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030004
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.152268, -78.887746

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

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

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

Is the assessment area intensively managed? Yes No

Describe effects of stressors that are present.

Adjacent to school football field

Regulatory Considerations

Select all that apply to the assessment area.

- Anadromous fish
- Federally protected species or State endangered or threatened species
- NCDWQ riparian buffer rule in effect
- Wetland adjacent to or associated stream drains to a Primary Nursery Area
- Publicly owned property
- N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
- N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
- Designated NCNHP reference community

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

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

Is the assessment area on a coastal island? Yes No

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

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

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GS | VS | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Not severely altered |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration) |

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

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

- | | | |
|---------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surf | Sub | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Water storage capacity and duration are not altered. |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation). |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction). |

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

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

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------|
| AA | WT | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | > 50% of the wetland type with depressions able to pond water > 2 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | > 50% of the wetland type with depressions able to pond water 1 to 2 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | > 50% of wetland type with depressions able to pond water 6 inches to 1 foot |
| <input type="checkbox"/> D | <input type="checkbox"/> D | > 50% of wetland type with depressions able to pond water 3- to 6-inches deep |
| <input checked="" type="checkbox"/> E | <input checked="" type="checkbox"/> E | Depressions able to pond water < 3-inches deep |

4. Soil Texture/Structure – assessment area condition metric

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- A Sandy soil
- B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- C Predominantly characterized by other, mineral soil (no mottling)
- D Gleyed mineral soil (F2, S4)
- E Soil ribbon < 1 inch
- F Soil ribbon ≥ 1 inch
- G No peat or muck presence
- H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

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 | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Little or no evidence of pollutants or discharges entering the assessment area |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| <input type="checkbox"/> C | <input type="checkbox"/> 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) |

6. Land Use – opportunity metric

Check all that apply. Evaluation of this metric 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 and 30 feet wide in the Mountains.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS | 5M | 2M | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | > 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential) |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | > 30% impervious surfaces without stormwater BMPs |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | 10 to 30% impervious surfaces |
| <input checked="" type="checkbox"/> D | <input checked="" type="checkbox"/> D | <input checked="" type="checkbox"/> D | < 10% impervious surfaces |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | Old urban development (pink areas on USGS 7.5-minute quadrangles) |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | New adjacent development |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | Confined animal operations (or other local, concentrated source of pollutants) |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | ≥20% coverage of pasture without riparian buffer |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I | ≥20% coverage of pasture with effective riparian buffer |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J | ≥20% coverage of agricultural land (regularly plowed land) without riparian buffer |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K | ≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer |
| <input type="checkbox"/> L | <input type="checkbox"/> L | <input type="checkbox"/> L | ≥20% coverage of maintained grass/herb |
| <input type="checkbox"/> M | <input type="checkbox"/> M | <input type="checkbox"/> M | Silvicultural land with disturbance < 5 years old |
| <input checked="" type="checkbox"/> N | <input checked="" type="checkbox"/> N | <input checked="" type="checkbox"/> N | Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area. |

7. Wetland Acting as Vegetated Buffer – assessment area condition metric

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

- Yes No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

- ≤15-foot wide > 15-foot wide Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

- Yes No

Is stream or other open water sheltered or exposed?

- Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
 Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

- | | | | |
|---------------------------------------|---------------------------------------|----------------------------|-----------------------|
| WT | WC | RB (if applicable) | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | ≥100 feet |
| <input type="checkbox"/> B | <input checked="" type="checkbox"/> B | <input type="checkbox"/> B | From 80 to < 100 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | From 50 to < 80 feet |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | From 40 to < 50 feet |
| <input checked="" type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | From 30 to < 40 feet |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | From 15 to < 30 feet |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | From 5 to < 15 feet |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | < 5 feet |

9. Inundation Duration – assessment area condition metric

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 (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

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 contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

- | WT | WC | FW (if applicable) |
|---------------------------------------|---------------------------------------|-----------------------------------------------------------|
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A ≥500 acres |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B From 100 to < 500 acres |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C From 50 to < 100 acres |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D From 25 to < 50 acres |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E From 10 to < 25 acres |
| <input type="checkbox"/> F | <input checked="" type="checkbox"/> F | <input type="checkbox"/> F From 5 to < 10 acres |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input checked="" type="checkbox"/> G From 1 to < 5 acres |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H From 0.5 to < 1 acre |
| <input checked="" type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I From 0.1 to < 0.5 acre |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J From 0.01 to < 0.1 acre |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K < 0.01 acre |

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

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

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

- | WC | LC | |
|---------------------------------------|----------------------------|--------------------------------------------------------------------|
| <input checked="" type="checkbox"/> A | <input type="checkbox"/> A | ≥500 acres |
| <input type="checkbox"/> B | <input type="checkbox"/> B | From 100 to < 500 acres |
| <input type="checkbox"/> C | <input type="checkbox"/> C | From 50 to < 100 acres |
| <input type="checkbox"/> D | <input type="checkbox"/> D | From 10 to < 50 acres |
| <input type="checkbox"/> E | <input type="checkbox"/> E | < 10 acres |
| <input type="checkbox"/> F | <input type="checkbox"/> F | Wetland type has a poor or no connection to other natural habitats |

Check Yes or No.

- Yes No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- Yes No Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-foot wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- A No artificial edge within 150 feet in all directions
- B No artificial edge within 150 feet in four to seven directions
- C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for 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. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

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.
- B Vegetation diversity is low or has > 10% cover of exotics.
- C Vegetation is dominated by exotic species.

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

Vegetation present

Evaluate percent coverage of vegetation for marshes only

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

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 | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Canopy closed, or nearly closed, with natural gaps associated with natural processes |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Canopy present, but opened more than natural gaps |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Canopy sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense mid-story/sapling layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density mid-story/sapling layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Mid-story/sapling layer sparse or absent |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Dense shrub layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density shrub layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Shrub layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense herb layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density herb layer |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | Herb layer sparse or absent |

Vegetation absent

18. **Snags – wetland type condition metric**

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

19. **Diameter Class Distribution – wetland type condition metric**

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

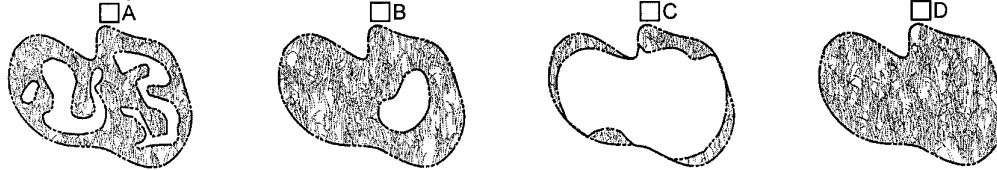
20. **Large Woody Debris – wetland type condition metric**

Include both man-made and natural debris piles.

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

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

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



22. **Habitat Uniqueness – wetland type condition metric**

- Yes No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name 54INCWAM02 Date of Assessment 9/6/07
 Wetland Type Non-Tidal Freshwater Marsh Assessor Name/Organization AS, RA, EcoScience

Presence of stressor affecting assessment area (Y/N) YES
 Notes on Field Assessment Form (Y/N) YES
 Presence of regulatory considerations (Y/N) YES
 Wetland is intensively managed (Y/N) YES
 Wetland may be a high-quality riverine wetland (Y/N)

Sub-function Rating Summary

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

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	HIGH
Water Quality	Condition	HIGH
	Condition/Opportunity	X
	Opportunity Presence (Y/N)	X
Habitat	Condition	HIGH

Overall Wetland Rating HIGH

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	55-I-WAM01	Date	9/6/07
Wetland Type	Seep	Assessor Name/Organization	AS, RA, EcoScience
Level III Ecoregion	Southeastern Plains	Nearest Named Water Body	Wooded Lake
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030004
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.151569, -78.899939

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

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

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

Is the assessment area intensively managed? Yes No

Describe effects of stressors that are present.

Regulatory Considerations

Select all that apply to the assessment area.

- Anadromous fish
- Federally protected species or State endangered or threatened species
- NCDWQ riparian buffer rule in effect
- Wetland adjacent to or associated stream drains to a Primary Nursery Area
- Publicly owned property
- N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
- N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
- Designated NCNHP reference community

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

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

Is the assessment area on a coastal island? Yes No

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

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

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GS | VS | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Not severely altered |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration) |

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

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

- | | | |
|---------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surf | Sub | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Water storage capacity and duration are not altered. |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation). |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction). |

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

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

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------|
| AA | WT | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | > 50% of the wetland type with depressions able to pond water > 2 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | > 50% of the wetland type with depressions able to pond water 1 to 2 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | > 50% of wetland type with depressions able to pond water 6 inches to 1 foot |
| <input type="checkbox"/> D | <input type="checkbox"/> D | > 50% of wetland type with depressions able to pond water 3- to 6-inches deep |
| <input checked="" type="checkbox"/> E | <input checked="" type="checkbox"/> E | Depressions able to pond water < 3-inches deep |

4. Soil Texture/Structure – assessment area condition metric

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- A Sandy soil
- B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- C Predominantly characterized by other, mineral soil (no mottling)
- D Gleyed mineral soil (F2, S4)
- E Soil ribbon < 1 inch
- F Soil ribbon ≥ 1 inch
- G No peat or muck presence
- H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

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 | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Little or no evidence of pollutants or discharges entering the assessment area |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| <input type="checkbox"/> C | <input type="checkbox"/> 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) |

6. Land Use – opportunity metric

Check all that apply. Evaluation of this metric 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 and 30 feet wide in the Mountains.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS | 5M | 2M | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | > 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential) |
| <input type="checkbox"/> B | <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | > 30% impervious surfaces without stormwater BMPs |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | 10 to 30% impervious surfaces |
| <input checked="" type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | < 10% impervious surfaces |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | Old urban development (pink areas on USGS 7.5-minute quadrangles) |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | New adjacent development |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | Confined animal operations (or other local, concentrated source of pollutants) |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | ≥20% coverage of pasture without riparian buffer |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I | ≥20% coverage of pasture with effective riparian buffer |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J | ≥20% coverage of agricultural land (regularly plowed land) without riparian buffer |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K | ≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer |
| <input type="checkbox"/> L | <input type="checkbox"/> L | <input type="checkbox"/> L | ≥20% coverage of maintained grass/herb |
| <input type="checkbox"/> M | <input type="checkbox"/> M | <input type="checkbox"/> M | Silvicultural land with disturbance < 5 years old |
| <input type="checkbox"/> N | <input type="checkbox"/> N | <input type="checkbox"/> N | Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area. |

7. Wetland Acting as Vegetated Buffer – assessment area condition metric

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

- Yes No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

- ≤15-foot wide > 15-foot wide Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

- Yes No

Is stream or other open water sheltered or exposed?

- Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
 Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

- | | | |
|---------------------------------------|---------------------------------------|--------------------------------------------------|
| WT | WC | RB (if applicable) |
| <input type="checkbox"/> A | <input checked="" type="checkbox"/> A | <input type="checkbox"/> A ≥100 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B From 80 to < 100 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C From 50 to < 80 feet |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D From 40 to < 50 feet |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E From 30 to < 40 feet |
| <input checked="" type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F From 15 to < 30 feet |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G From 5 to < 15 feet |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H < 5 feet |

9. Inundation Duration – assessment area condition metric

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 (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

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 contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)
<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A ≥500 acres
<input type="checkbox"/> B	<input type="checkbox"/> B	<input type="checkbox"/> B From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D From 25 to < 50 acres
<input type="checkbox"/> E	<input checked="" type="checkbox"/> E	<input checked="" type="checkbox"/> E From 10 to < 25 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	<input type="checkbox"/> F From 5 to < 10 acres
<input type="checkbox"/> G	<input type="checkbox"/> G	<input type="checkbox"/> G From 1 to < 5 acres
<input type="checkbox"/> H	<input type="checkbox"/> H	<input type="checkbox"/> H From 0.5 to < 1 acre
<input checked="" type="checkbox"/> I	<input type="checkbox"/> I	<input type="checkbox"/> I From 0.1 to < 0.5 acre
<input type="checkbox"/> J	<input type="checkbox"/> J	<input type="checkbox"/> J From 0.01 to < 0.1 acre
<input type="checkbox"/> K	<input type="checkbox"/> K	<input type="checkbox"/> K < 0.01 acre

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

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

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC
<input type="checkbox"/> A	<input type="checkbox"/> A ≥500 acres
<input checked="" type="checkbox"/> B	<input type="checkbox"/> B From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D From 10 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E < 10 acres
<input type="checkbox"/> F	<input type="checkbox"/> F Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

- Yes No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- Yes No Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- A No artificial edge within 150 feet in all directions
- B No artificial edge within 150 feet in four to seven directions
- C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for 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. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

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.
- B Vegetation diversity is low or has > 10% cover of exotics.
- C Vegetation is dominated by exotic species.

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

Vegetation present

Evaluate percent coverage of vegetation for marshes only

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

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 | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Canopy closed, or nearly closed, with natural gaps associated with natural processes |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Canopy present, but opened more than natural gaps |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Canopy sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense mid-story/sapling layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density mid-story/sapling layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Mid-story/sapling layer sparse or absent |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Dense shrub layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density shrub layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Shrub layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense herb layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density herb layer |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | Herb layer sparse or absent |

Vegetation absent

18. **Snags – wetland type condition metric**

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

19. **Diameter Class Distribution – wetland type condition metric**

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

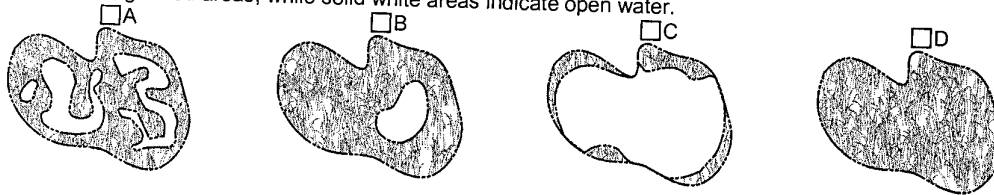
20. **Large Woody Debris – wetland type condition metric**

Include both man-made and natural debris piles.

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

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

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



22. **Habitat Uniqueness – wetland type condition metric**

- Yes No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name 55-I-WAM01 Date of Assessment 9/6/07
 Wetland Type Seep Assessor Name/Organization AS, RA, EcoScience

Presence of stressor affecting assessment area (Y/N) NO
 Notes on Field Assessment Form (Y/N) NO
 Presence of regulatory considerations (Y/N) NO
 Wetland is intensively managed (Y/N) NO
 Wetland may be a high-quality riverine wetland (Y/N) NO

Sub-function Rating Summary

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

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	HIGH
Water Quality	Condition	HIGH
	Condition/Opportunity	X
Habitat	Opportunity Presence (Y/N)	X
	Condition	HIGH

Overall Wetland Rating HIGH

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	55-I-WAM02	Date	9/6/07
Wetland Type	Seep	Assessor Name/Organization	ESC (AS, RA)
Level III Ecoregion	Southeastern Plains	Nearest Named Water Body	Wooded Lake
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030004
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	-48.900080, 35.151560

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

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

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

Is the assessment area intensively managed? Yes No

Describe effects of stressors that are present.

Clear-cut and mowed sewerline corridor. Foul odor suggest possible discharge.

Regulatory Considerations

Select all that apply to the assessment area.

- Anadromous fish
- Federally protected species or State endangered or threatened species
- NCDWQ riparian buffer rule in effect
- Wetland adjacent to or associated stream drains to a Primary Nursery Area
- Publicly owned property
- N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
- N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
- Designated NCNHP reference community

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

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

Is the assessment area on a coastal island? Yes No

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

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

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GS | VS | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Not severely altered |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration) |

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

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

- | | | |
|---------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surf | Sub | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Water storage capacity and duration are not altered. |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation). |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction). |

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

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

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------|
| AA | WT | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | > 50% of the wetland type with depressions able to pond water > 2 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | > 50% of the wetland type with depressions able to pond water 1 to 2 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | > 50% of wetland type with depressions able to pond water 6 inches to 1 foot |
| <input checked="" type="checkbox"/> D | <input checked="" type="checkbox"/> D | > 50% of wetland type with depressions able to pond water 3- to 6-inches deep |
| <input type="checkbox"/> E | <input type="checkbox"/> E | Depressions able to pond water < 3-inches deep |

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- A Sandy soil
- B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- C Predominantly characterized by other, mineral soil (no mottling)
- D Gleyed mineral soil (F2, S4)
- E Soil ribbon < 1 inch
- F Soil ribbon ≥ 1 inch
- G No peat or muck presence
- H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

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 | |
| <input type="checkbox"/> A | <input checked="" type="checkbox"/> A | Little or no evidence of pollutants or discharges entering the assessment area |
| <input checked="" type="checkbox"/> B | <input type="checkbox"/> B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| <input type="checkbox"/> C | <input type="checkbox"/> 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) |

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric 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 and 30 feet wide in the Mountains.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS | 5M | 2M | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | > 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential) |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | > 30% impervious surfaces without stormwater BMPs |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | 10 to 30% impervious surfaces |
| <input checked="" type="checkbox"/> D | <input checked="" type="checkbox"/> D | <input checked="" type="checkbox"/> D | < 10% impervious surfaces |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | Old urban development (pink areas on USGS 7.5-minute quadrangles) |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | New adjacent development |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | Confined animal operations (or other local, concentrated source of pollutants) |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | ≥20% coverage of pasture without riparian buffer |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I | ≥20% coverage of pasture with effective riparian buffer |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J | ≥20% coverage of agricultural land (regularly plowed land) without riparian buffer |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K | ≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer |
| <input type="checkbox"/> L | <input type="checkbox"/> L | <input type="checkbox"/> L | ≥20% coverage of maintained grass/herb |
| <input type="checkbox"/> M | <input type="checkbox"/> M | <input type="checkbox"/> M | Silvicultural land with disturbance < 5 years old |
| <input type="checkbox"/> N | <input type="checkbox"/> N | <input type="checkbox"/> N | Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area. |

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)
 Yes No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

- ≤15-foot wide > 15-foot wide Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

- Yes No

Is stream or other open water sheltered or exposed?

- Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
 Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

- | | | | |
|---------------------------------------|----------------------------|----------------------------|-----------------------|
| WT | WC | RB (if applicable) | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | ≥100 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | From 80 to < 100 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | From 50 to < 80 feet |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | From 40 to < 50 feet |
| <input checked="" type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | From 30 to < 40 feet |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | From 15 to < 30 feet |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | From 5 to < 15 feet |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | < 5 feet |

9. **Inundation Duration – assessment area condition metric**

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 (7 to 30 consecutive days or more)

10. **Indicators of Deposition – assessment area condition metric**

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 contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)	
<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A	≥500 acres
<input type="checkbox"/> B	<input type="checkbox"/> B	<input type="checkbox"/> B	From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C	From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D	From 25 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	<input type="checkbox"/> E	From 10 to < 25 acres
<input type="checkbox"/> F	<input checked="" type="checkbox"/> F	<input checked="" type="checkbox"/> F	From 5 to < 10 acres
<input type="checkbox"/> G	<input type="checkbox"/> G	<input type="checkbox"/> G	From 1 to < 5 acres
<input type="checkbox"/> H	<input type="checkbox"/> H	<input type="checkbox"/> H	From 0.5 to < 1 acre
<input checked="" type="checkbox"/> I	<input type="checkbox"/> I	<input type="checkbox"/> I	From 0.1 to < 0.5 acre
<input type="checkbox"/> J	<input type="checkbox"/> J	<input type="checkbox"/> J	From 0.01 to < 0.1 acre
<input type="checkbox"/> K	<input type="checkbox"/> K	<input type="checkbox"/> K	< 0.01 acre

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

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

13. **Connectivity to Other Natural Areas – landscape condition metric**

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
<input type="checkbox"/> A	<input type="checkbox"/> A	≥500 acres
<input checked="" type="checkbox"/> B	<input type="checkbox"/> B	From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	From 10 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	< 10 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

- Yes No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- Yes No Is the assessment area subject to overbank flooding during normal conditions?

14. **Edge Effect – wetland type condition metric**

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- A No artificial edge within 150 feet in all directions
- B No artificial edge within 150 feet in four to seven directions
- C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. **Vegetative Composition – assessment area condition metric (skip for 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. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

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.
- B Vegetation diversity is low or has > 10% cover of exotics.
- C Vegetation is dominated by exotic species.

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

Vegetation present

Evaluate percent coverage of vegetation for marshes only

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

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 | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Canopy closed, or nearly closed, with natural gaps associated with natural processes |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Canopy present, but opened more than natural gaps |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | Canopy sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense mid-story/sapling layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density mid-story/sapling layer |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | Mid-story/sapling layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense shrub layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density shrub layer |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | Shrub layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense herb layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density herb layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Herb layer sparse or absent |

Vegetation absent

18. **Snags – wetland type condition metric**

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

19. **Diameter Class Distribution – wetland type condition metric**

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

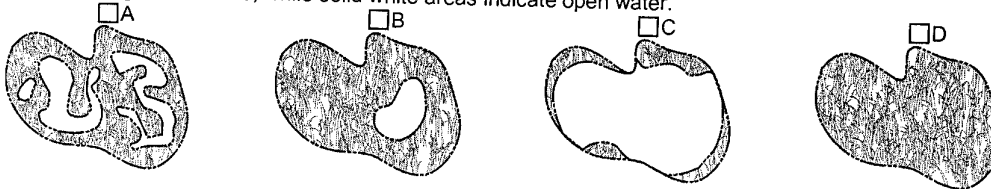
20. **Large Woody Debris – wetland type condition metric**

Include both man-made and natural debris piles.

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

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

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



22. **Habitat Uniqueness – wetland type condition metric**

- Yes No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name 55-I-NCWAM02 Date of Assessment 9/6/07
 Wetland Type Seep Assessor Name/Organization ESC (AS, RA)

Presence of stressor affecting assessment area (Y/N) YES
 Notes on Field Assessment Form (Y/N) NO
 Presence of regulatory considerations (Y/N) NO
 Wetland is intensively managed (Y/N) YES
 Wetland may be a high-quality riverine wetland (Y/N)

Sub-function Rating Summary

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

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	LOW
Water Quality	Condition	LOW
	Condition/Opportunity	<u>X</u>
Habitat	Opportunity Presence (Y/N)	<u>X</u>
	Condition	LOW

Overall Wetland Rating LOW

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	55-I-WAM03	Date	9/6/07
Wetland Type	Bottomland Hardwood Forest	Assessor Name/Organization	AS, RA, EcoScience
Level III Ecoregion	Southeastern Plains	Nearest Named Water Body	Wooded Lake
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030004
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.151428, -78.900251

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following.

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

Is the assessment area intensively managed? Yes No

Describe effects of stressors that are present.
New neighborhoods upstream; sewerline possibly overflows

Regulatory Considerations

- Select all that apply to the assessment area.
- Anadromous fish
 - Federally protected species or State endangered or threatened species
 - NCDWQ riparian buffer rule in effect
 - Wetland adjacent to or associated stream drains to a Primary Nursery Area
 - Publicly owned property
 - N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
 - N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
 - Designated NCNHP reference community

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

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

Is the assessment area on a coastal island? Yes No

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

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

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GS | VS | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Not severely altered |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration) |

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

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

- | | | |
|---------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surf | Sub | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Water storage capacity and duration are not altered. |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation). |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction). |

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

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

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------|
| AA | WT | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | > 50% of the wetland type with depressions able to pond water > 2 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | > 50% of the wetland type with depressions able to pond water 1 to 2 feet |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | > 50% of wetland type with depressions able to pond water 6 inches to 1 foot |
| <input type="checkbox"/> D | <input type="checkbox"/> D | > 50% of wetland type with depressions able to pond water 3- to 6-inches deep |
| <input type="checkbox"/> E | <input type="checkbox"/> E | Depressions able to pond water < 3-inches deep |

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- A Sandy soil
- B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- C Predominantly characterized by other, mineral soil (no mottling)
- D Gleyed mineral soil (F2, S4)
- E Soil ribbon < 1 inch
- F Soil ribbon ≥ 1 inch
- G No peat or muck presence
- H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

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 | |
| <input type="checkbox"/> A | <input checked="" type="checkbox"/> A | Little or no evidence of pollutants or discharges entering the assessment area |
| <input checked="" type="checkbox"/> B | <input type="checkbox"/> B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| <input type="checkbox"/> C | <input type="checkbox"/> 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) |

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric 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 and 30 feet wide in the Mountains.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS | 5M | 2M | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | > 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential) |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | > 30% impervious surfaces without stormwater BMPs |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | 10 to 30% impervious surfaces |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | < 10% impervious surfaces |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | Old urban development (pink areas on USGS 7.5-minute quadrangles) |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | New adjacent development |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | Confined animal operations (or other local, concentrated source of pollutants) |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | ≥ 20% coverage of pasture without riparian buffer |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I | ≥ 20% coverage of pasture with effective riparian buffer |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J | ≥ 20% coverage of agricultural land (regularly plowed land) without riparian buffer |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K | ≥ 20% coverage of agricultural land (regularly plowed land) with effective riparian buffer |
| <input type="checkbox"/> L | <input type="checkbox"/> L | <input type="checkbox"/> L | ≥ 20% coverage of maintained grass/herb |
| <input type="checkbox"/> M | <input type="checkbox"/> M | <input type="checkbox"/> M | Silvicultural land with disturbance < 5 years old |
| <input type="checkbox"/> N | <input type="checkbox"/> N | <input type="checkbox"/> N | Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area. |

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

- Yes No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

- ≤ 15-foot wide > 15-foot wide Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

- Yes No

Is stream or other open water sheltered or exposed?

- Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
 Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-----------------------|
| WT | WC | RB (if applicable) | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | ≥ 100 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | From 80 to < 100 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | From 50 to < 80 feet |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | From 40 to < 50 feet |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | From 30 to < 40 feet |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | From 15 to < 30 feet |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | From 5 to < 15 feet |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | < 5 feet |

9. Inundation Duration – assessment area condition metric

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 (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

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 contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)
<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A ≥500 acres
<input type="checkbox"/> B	<input type="checkbox"/> B	<input type="checkbox"/> B From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D From 25 to < 50 acres
<input type="checkbox"/> E	<input checked="" type="checkbox"/> E	<input checked="" type="checkbox"/> E From 10 to < 25 acres
<input checked="" type="checkbox"/> F	<input type="checkbox"/> F	<input type="checkbox"/> F From 5 to < 10 acres
<input type="checkbox"/> G	<input type="checkbox"/> G	<input type="checkbox"/> G From 1 to < 5 acres
<input type="checkbox"/> H	<input type="checkbox"/> H	<input type="checkbox"/> H From 0.5 to < 1 acre
<input type="checkbox"/> I	<input type="checkbox"/> I	<input type="checkbox"/> I From 0.1 to < 0.5 acre
<input type="checkbox"/> J	<input type="checkbox"/> J	<input type="checkbox"/> J From 0.01 to < 0.1 acre
<input type="checkbox"/> K	<input type="checkbox"/> K	<input type="checkbox"/> K < 0.01 acre

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

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

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
<input type="checkbox"/> A	<input type="checkbox"/> A	≥500 acres
<input checked="" type="checkbox"/> B	<input type="checkbox"/> B	From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	From 10 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	< 10 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

- Yes No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- Yes No Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-foot wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- A No artificial edge within 150 feet in all directions
- B No artificial edge within 150 feet in four to seven directions
- C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for 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. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

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.
- B Vegetation diversity is low or has > 10% cover of exotics.
- C Vegetation is dominated by exotic species.

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

Vegetation present

Evaluate percent coverage of vegetation for marshes only

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

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	
<input type="checkbox"/> A	<input type="checkbox"/> A	Canopy closed, or nearly closed, with natural gaps associated with natural processes
<input checked="" type="checkbox"/> B	<input checked="" type="checkbox"/> B	Canopy present, but opened more than natural gaps
<input type="checkbox"/> C	<input type="checkbox"/> C	Canopy sparse or absent
<input type="checkbox"/> A	<input type="checkbox"/> A	Dense mid-story/sapling layer
<input checked="" type="checkbox"/> B	<input checked="" type="checkbox"/> B	Moderate density mid-story/sapling layer
<input type="checkbox"/> C	<input type="checkbox"/> C	Mid-story/sapling layer sparse or absent
<input type="checkbox"/> A	<input type="checkbox"/> A	Dense shrub layer
<input checked="" type="checkbox"/> B	<input checked="" type="checkbox"/> B	Moderate density shrub layer
<input type="checkbox"/> C	<input type="checkbox"/> C	Shrub layer sparse or absent
<input checked="" type="checkbox"/> A	<input checked="" type="checkbox"/> A	Dense herb layer
<input type="checkbox"/> B	<input type="checkbox"/> B	Moderate density herb layer
<input type="checkbox"/> C	<input type="checkbox"/> C	Herb layer sparse or absent

Vegetation absent

18. Snags – wetland type condition metric

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

19. Diameter Class Distribution – wetland type condition metric

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

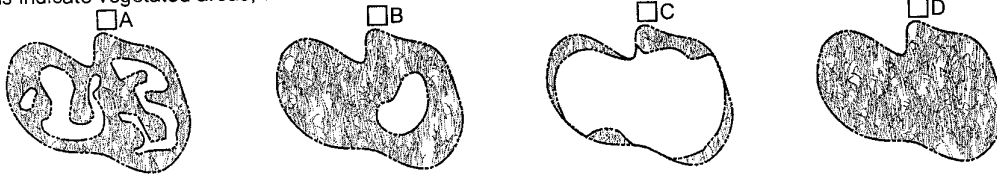
20. Large Woody Debris – wetland type condition metric

Include both man-made and natural debris piles.

- A Large logs (more than one) are present (> 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.



22. Habitat Uniqueness – wetland type condition metric

- Yes No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name 55-I-WAM03 Date of Assessment 9/6/07
 Wetland Type Bottomland Hardwood Forest Assessor Name/Organization AS, RA, EcoScience

Presence of stressor affecting assessment area (Y/N) YES
 Notes on Field Assessment Form (Y/N) NO
 Presence of regulatory considerations (Y/N) NO
 Wetland is intensively managed (Y/N) NO
 Wetland may be a high-quality riverine wetland (Y/N)

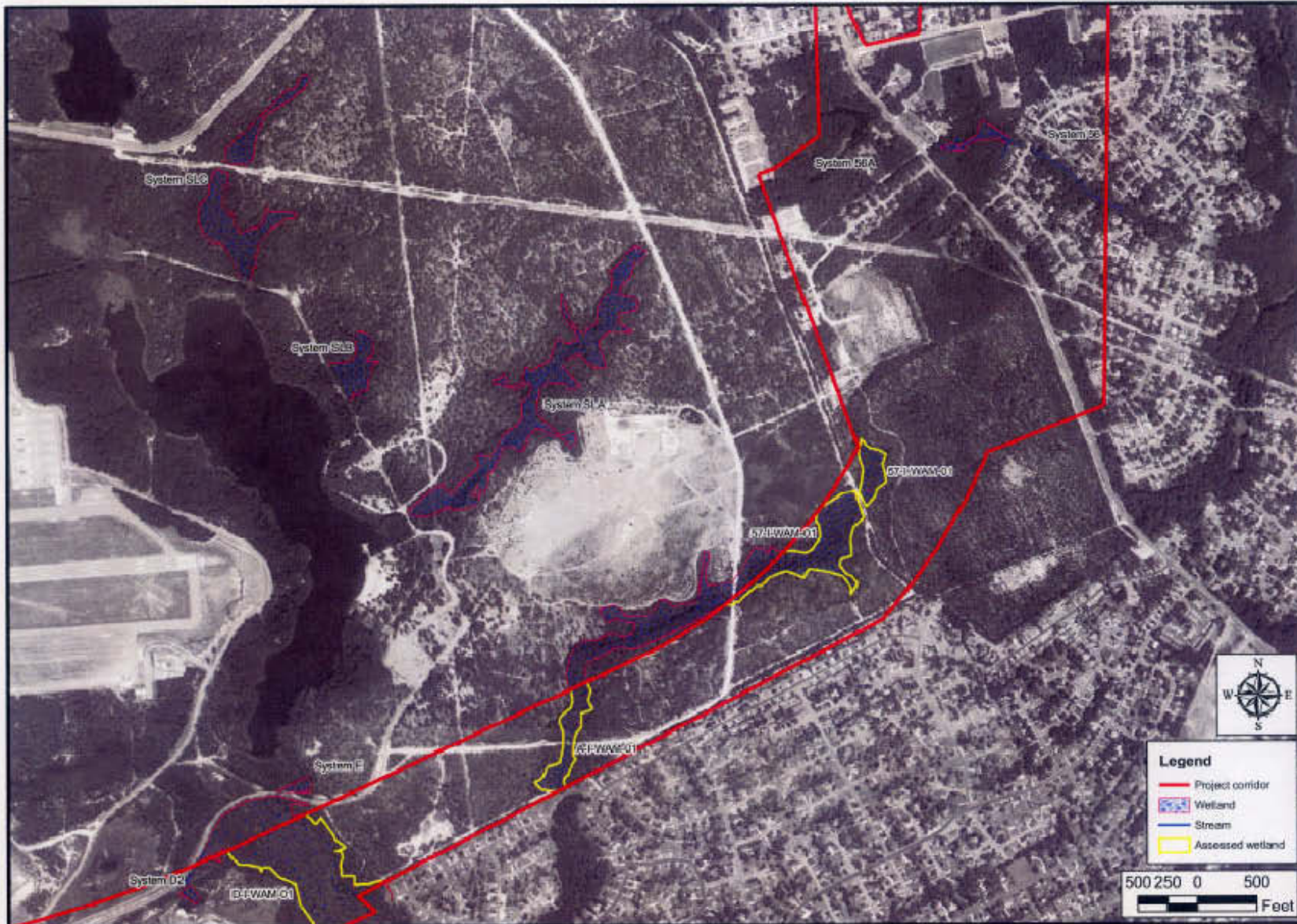
Sub-function Rating Summary

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

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	HIGH
Water Quality	Condition	HIGH
	Condition/Opportunity	HIGH
	Opportunity Presence (Y/N)	YES
Habitat	Condition	LOW

Overall Wetland Rating HIGH



Ecology Cooperation
Raleigh, North Carolina

Client:



Project:

**FAYETTEVILLE
OUTER
LOOP**

**WETLAND
FUNCTIONAL
ASSESSMENT**

Cumberland, Robeson,
and Hoke Counties,
North Carolina

Title:

**Wetland
Locations**



Legend	
	Project corridor
	Wetland
	Stream
	Assessed wetland



Drawn By:

Old By:

SGD

MTC

Date:

Scale:

SEP 2007

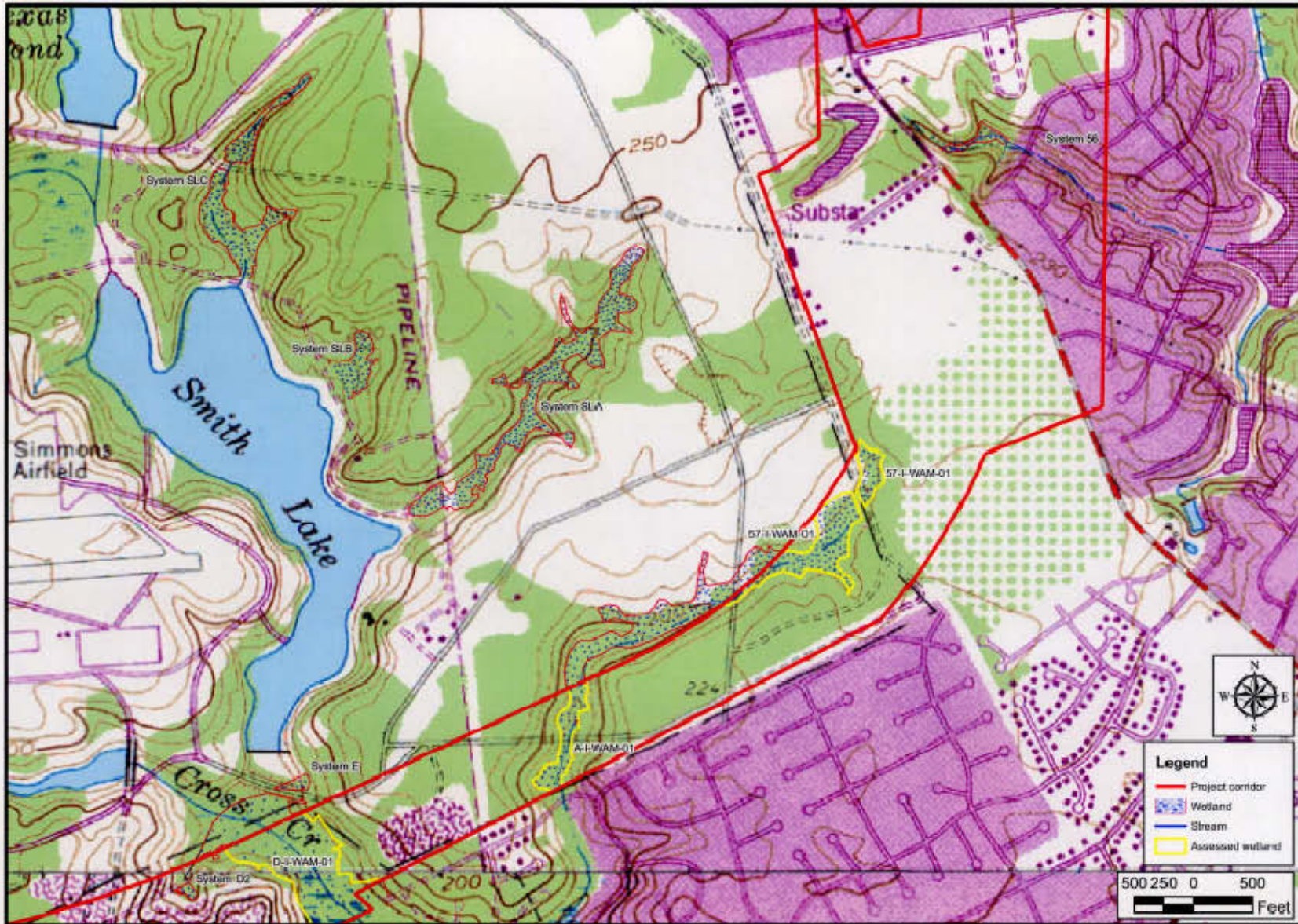
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ES&C Project No.:

06-296.02

FIGURE

2



EcoScience Corporation
Raleigh, North Carolina

Client:



Project:

**FAYETTEVILLE
OUTER
LOOP**

**WETLAND
FUNCTIONAL
ASSESSMENT**

Cumberland, Robeson,
and Hoke Counties,
North Carolina

Title:

**Wetland
Locations**

Drawn By:

SGD

Checked By:

MTG

Date:

SEP 2007

Scale:

1:9000

ESC Project No.:

06-296.02

FIGURE

2

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	57-I-WAM01	Date	9/7/07
Wetland Type	Headwater Wetland	Assessor Name/Organization	AS, RA, EcoScience
Level III Ecoregion	Southeastern Plains	Nearest Named Water Body	Cross Creek
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030004
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.133862, -78.909867

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

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

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

Is the assessment area intensively managed? Yes No

Describe effects of stressors that are present.

Road Causeway through wetland, Fort Bragg

Regulatory Considerations

Select all that apply to the assessment area.

- Anadromous fish
- Federally protected species or State endangered or threatened species
- NCDWQ riparian buffer rule in effect
- Wetland adjacent to or associated stream drains to a Primary Nursery Area
- Publicly owned property
- N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
- N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
- Designated NCNHP reference community

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

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

Is the assessment area on a coastal island? Yes No

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

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

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GS | VS | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Not severely altered |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration) |

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

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

- | | | |
|---------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surf | Sub | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Water storage capacity and duration are not altered. |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation). |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction). |

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

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

- | | | |
|---------------------------------------|---------------------------------------|----------------------------------------------------------------------------------|
| AA | WT | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | $> 50\%$ of the wetland type with depressions able to pond water > 2 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | $> 50\%$ of the wetland type with depressions able to pond water 1 to 2 feet |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | $> 50\%$ of wetland type with depressions able to pond water 6 inches to 1 foot |
| <input type="checkbox"/> D | <input type="checkbox"/> D | $> 50\%$ of wetland type with depressions able to pond water 3- to 6-inches deep |
| <input type="checkbox"/> E | <input type="checkbox"/> E | Depressions able to pond water < 3 -inches deep |

4. Soil Texture/Structure – assessment area condition metric

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- A Sandy soil
- B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- C Predominantly characterized by other, mineral soil (no mottling)
- D Gleyed mineral soil (F2, S4)
- E Soil ribbon < 1 inch
- F Soil ribbon ≥ 1 inch
- G No peat or muck presence
- H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

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 | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Little or no evidence of pollutants or discharges entering the assessment area |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| <input type="checkbox"/> C | <input type="checkbox"/> 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) |

6. Land Use – opportunity metric

Check all that apply. Evaluation of this metric 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 and 30 feet wide in the Mountains.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS | 5M | 2M | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | > 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential) |
| <input type="checkbox"/> B | <input checked="" type="checkbox"/> B | <input type="checkbox"/> B | > 30% impervious surfaces without stormwater BMPs |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input checked="" type="checkbox"/> C | 10 to 30% impervious surfaces |
| <input checked="" type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | < 10% impervious surfaces |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | Old urban development (pink areas on USGS 7.5-minute quadrangles) |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | New adjacent development |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | Confined animal operations (or other local, concentrated source of pollutants) |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | ≥ 20% coverage of pasture without riparian buffer |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I | ≥ 20% coverage of pasture with effective riparian buffer |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J | ≥ 20% coverage of agricultural land (regularly plowed land) without riparian buffer |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K | ≥ 20% coverage of agricultural land (regularly plowed land) with effective riparian buffer |
| <input type="checkbox"/> L | <input type="checkbox"/> L | <input type="checkbox"/> L | ≥ 20% coverage of maintained grass/herb |
| <input type="checkbox"/> M | <input type="checkbox"/> M | <input type="checkbox"/> M | Silvicultural land with disturbance < 5 years old |
| <input type="checkbox"/> N | <input type="checkbox"/> N | <input type="checkbox"/> N | Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area. |

7. Wetland Acting as Vegetated Buffer – assessment area condition metric

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

- Yes No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

- ≤ 15-foot wide > 15-foot wide Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

- Yes No

Is stream or other open water sheltered or exposed?

- Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
 Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic.

8. Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

- | | | | |
|---------------------------------------|---------------------------------------|----------------------------|-----------------------|
| WT | WC | RB (if applicable) | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | <input type="checkbox"/> A | ≥ 100 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | From 80 to < 100 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | From 50 to < 80 feet |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | From 40 to < 50 feet |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | From 30 to < 40 feet |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | From 15 to < 30 feet |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | From 5 to < 15 feet |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | < 5 feet |

9. Inundation Duration – assessment area condition metric

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 (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

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 contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)
<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A ≥500 acres
<input type="checkbox"/> B	<input type="checkbox"/> B	<input type="checkbox"/> B From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D From 25 to < 50 acres
<input checked="" type="checkbox"/> E	<input checked="" type="checkbox"/> E	<input checked="" type="checkbox"/> E From 10 to < 25 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	<input type="checkbox"/> F From 5 to < 10 acres
<input type="checkbox"/> G	<input type="checkbox"/> G	<input type="checkbox"/> G From 1 to < 5 acres
<input type="checkbox"/> H	<input type="checkbox"/> H	<input type="checkbox"/> H From 0.5 to < 1 acre
<input type="checkbox"/> I	<input type="checkbox"/> I	<input type="checkbox"/> I From 0.1 to < 0.5 acre
<input type="checkbox"/> J	<input type="checkbox"/> J	<input type="checkbox"/> J From 0.01 to < 0.1 acre
<input type="checkbox"/> K	<input type="checkbox"/> K	<input type="checkbox"/> K < 0.01 acre

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

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

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
<input checked="" type="checkbox"/> A	<input type="checkbox"/> A	≥500 acres
<input type="checkbox"/> B	<input type="checkbox"/> B	From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	From 10 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	< 10 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

- Yes No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- Yes No Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-foot wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- A No artificial edge within 150 feet in all directions
- B No artificial edge within 150 feet in four to seven directions
- C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for 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. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

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.
- B Vegetation diversity is low or has > 10% cover of exotics.
- C Vegetation is dominated by exotic species.

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

Vegetation present

Evaluate percent coverage of vegetation for marshes only

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

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 | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Canopy closed, or nearly closed, with natural gaps associated with natural processes |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Canopy present, but opened more than natural gaps |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Canopy sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense mid-story/sapling layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density mid-story/sapling layer |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | Mid-story/sapling layer sparse or absent |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Dense shrub layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density shrub layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Shrub layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense herb layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density herb layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Herb layer sparse or absent |

Vegetation absent

18. **Snags – wetland type condition metric**

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

19. **Diameter Class Distribution – wetland type condition metric**

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

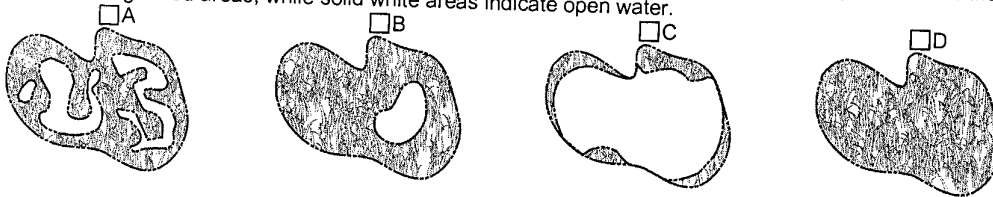
20. **Large Woody Debris – wetland type condition metric**

Include both man-made and natural debris piles.

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

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

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



22. **Habitat Uniqueness – wetland type condition metric**

- Yes No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name 57-I-WAM01 Date of Assessment 9/7/07
 Wetland Type Headwater Wetland Assessor Name/Organization AS, RA, EcoScience

Presence of stressor affecting assessment area (Y/N) YES
 Notes on Field Assessment Form (Y/N) NO
 Presence of regulatory considerations (Y/N) YES
 Wetland is intensively managed (Y/N) NO
 Wetland may be a high-quality riverine wetland (Y/N)

Sub-function Rating Summary

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

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	HIGH
Water Quality	Condition	MEDIUM
	Condition/Opportunity	HIGH
Habitat	Opportunity Presence (Y/N)	YES
	Condition	HIGH

Overall Wetland Rating HIGH

**NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)**

Wetland Site Name	A-I-WAM01	Date	9/7/07
Wetland Type	Riverine Swamp Forest	Assessor Name/Organization	AS, RA, EcoScience
Level III Ecoregion	Southeastern Plains	Nearest Named Water Body	Cross Creek
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030004
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.128225, -78.918120

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following.

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

Is the assessment area intensively managed? Yes No

Describe effects of stressors that are present.
Road Causeway through wetland with culvert, Fort Bragg

- Regulatory Considerations**
Select all that apply to the assessment area.
- Anadromous fish
 - Federally protected species or State endangered or threatened species
 - NCDWQ riparian buffer rule in effect
 - Wetland adjacent to or associated stream drains to a Primary Nursery Area
 - Publicly owned property
 - N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
 - N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
 - Designated NCNHP reference community

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

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

Is the assessment area on a coastal island? Yes No

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

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

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

GS	VS	
<input checked="" type="checkbox"/> A	<input checked="" type="checkbox"/> A	Not severely altered
<input type="checkbox"/> B	<input type="checkbox"/> B	Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

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

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

Surf	Sub	
<input checked="" type="checkbox"/> A	<input checked="" type="checkbox"/> A	Water storage capacity and duration are not altered.
<input type="checkbox"/> B	<input type="checkbox"/> B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation).
<input type="checkbox"/> C	<input type="checkbox"/> C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction).

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

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

AA	WT	
<input type="checkbox"/> A	<input type="checkbox"/> A	> 50% of the wetland type with depressions able to pond water > 2 feet
<input checked="" type="checkbox"/> B	<input checked="" type="checkbox"/> B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
<input type="checkbox"/> C	<input type="checkbox"/> C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
<input type="checkbox"/> D	<input type="checkbox"/> D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
<input type="checkbox"/> E	<input type="checkbox"/> E	Depressions able to pond water < 3-inches deep

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- A Sandy soil
- B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- C Predominantly characterized by other, mineral soil (no mottling)
- D Gleyed mineral soil (F2, S4)
- E Soil ribbon < 1 inch
- F Soil ribbon ≥ 1 inch
- G No peat or muck presence
- H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

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 | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Little or no evidence of pollutants or discharges entering the assessment area |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| <input type="checkbox"/> C | <input type="checkbox"/> 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) |

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric 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 Plain and Piedmont and 30 feet wide in the Mountains.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS | 5M | 2M | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | > 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential) |
| <input type="checkbox"/> B | <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | > 30% impervious surfaces without stormwater BMPs |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | 10 to 30% impervious surfaces |
| <input checked="" type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | < 10% impervious surfaces |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | Old urban development (pink areas on USGS 7.5-minute quadrangles) |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | New adjacent development |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | Confined animal operations (or other local, concentrated source of pollutants) |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | ≥ 20% coverage of pasture without riparian buffer |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I | ≥ 20% coverage of pasture with effective riparian buffer |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J | ≥ 20% coverage of agricultural land (regularly plowed land) without riparian buffer |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K | ≥ 20% coverage of agricultural land (regularly plowed land) with effective riparian buffer |
| <input type="checkbox"/> L | <input type="checkbox"/> L | <input type="checkbox"/> L | ≥ 20% coverage of maintained grass/herb |
| <input type="checkbox"/> M | <input type="checkbox"/> M | <input type="checkbox"/> M | Silvicultural land with disturbance < 5 years old |
| <input type="checkbox"/> N | <input type="checkbox"/> N | <input type="checkbox"/> N | Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area. |

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

- Yes No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

- ≤ 15-foot wide > 15-foot wide Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

- Yes No

Is stream or other open water sheltered or exposed?

- Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
 Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-----------------------|
| WT | WC | RB (if applicable) | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | <input type="checkbox"/> A | ≥ 100 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | From 80 to < 100 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input checked="" type="checkbox"/> C | From 50 to < 80 feet |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | From 40 to < 50 feet |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | From 30 to < 40 feet |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | From 15 to < 30 feet |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | From 5 to < 15 feet |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | < 5 feet |

9. Inundation Duration – assessment area condition metric

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 (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

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 contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)
<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A ≥500 acres
<input checked="" type="checkbox"/> B	<input checked="" type="checkbox"/> B	<input checked="" type="checkbox"/> B From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D From 25 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	<input type="checkbox"/> E From 10 to < 25 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	<input type="checkbox"/> F From 5 to < 10 acres
<input type="checkbox"/> G	<input type="checkbox"/> G	<input type="checkbox"/> G From 1 to < 5 acres
<input type="checkbox"/> H	<input type="checkbox"/> H	<input type="checkbox"/> H From 0.5 to < 1 acre
<input type="checkbox"/> I	<input type="checkbox"/> I	<input type="checkbox"/> I From 0.1 to < 0.5 acre
<input type="checkbox"/> J	<input type="checkbox"/> J	<input type="checkbox"/> J From 0.01 to < 0.1 acre
<input type="checkbox"/> K	<input type="checkbox"/> K	<input type="checkbox"/> K < 0.01 acre

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

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

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
<input type="checkbox"/> A	<input type="checkbox"/> A	≥500 acres
<input checked="" type="checkbox"/> B	<input type="checkbox"/> B	From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	From 10 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	< 10 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

- Yes No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- Yes No Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-foot wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- A No artificial edge within 150 feet in all directions
- B No artificial edge within 150 feet in four to seven directions
- C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for 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. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

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.
- B Vegetation diversity is low or has > 10% cover of exotics.
- C Vegetation is dominated by exotic species.

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

Vegetation present

Evaluate percent coverage of vegetation for marshes only

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

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 | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Canopy closed, or nearly closed, with natural gaps associated with natural processes |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Canopy present, but opened more than natural gaps |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Canopy sparse or absent |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Dense mid-story/sapling layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density mid-story/sapling layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Mid-story/sapling layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense shrub layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density shrub layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Shrub layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense herb layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density herb layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Herb layer sparse or absent |

Vegetation absent

18. Snags – wetland type condition metric

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

19. Diameter Class Distribution – wetland type condition metric

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

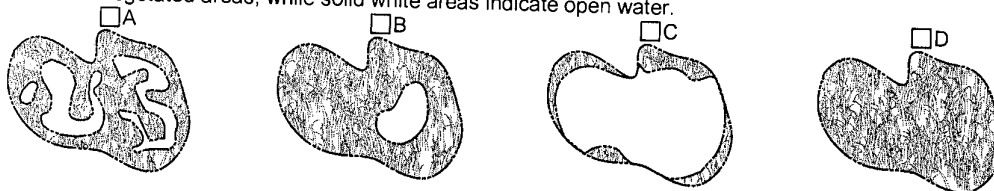
20. Large Woody Debris – wetland type condition metric

Include both man-made and natural debris piles.

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

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

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



22. Habitat Uniqueness – wetland type condition metric

- Yes No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name A-I-WAM01 Date of Assessment 9/7/07
 Wetland Type Riverine Swamp Forest Assessor Name/Organization AS, RA, EcoScience

Presence of stressor affecting assessment area (Y/N) YES
 Notes on Field Assessment Form (Y/N) NO
 Presence of regulatory considerations (Y/N) YES
 Wetland is intensively managed (Y/N) NO
 Wetland may be a high-quality riverine wetland (Y/N) _____

Sub-function Rating Summary

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

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	HIGH
Water Quality	Condition	HIGH
	Condition/Opportunity	HIGH
	Opportunity Presence (Y/N)	YES
Habitat	Condition	HIGH

Overall Wetland Rating HIGH



EcoScience Corporation
Raleigh, North Carolina

Client:



Project:

**FAYETTEVILLE
OUTER
LOOP**

**WETLAND
FUNCTIONAL
ASSESSMENT**

Cumberland, Robeson,
and Hoke Counties,
North Carolina

Title:

**Wetland
Locations**



Legend	
	Project corridor
	Wetland
	Stream
	Assessed wetland



Dwn By:

SGD

Clid By:

MITC

Miss:

SEP 2007

Scale:

1:9000

ERIC Project No.:

06-296.02

FIGURE

3





Eastern Cooperative
Wildlife Work Center



DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
NORTH CAROLINA

Client:

Project:

FAYETTEVILLE OUTER LOOP

WETLAND FUNCTIONAL ASSESSMENT

Cumberland, Robeson, and Wake Counties, North Carolina

Title:

Wetland Locations

Drawn By:	Check By:
SGD	MTG
Date:	Scale:
SEP 2007	1:8000
ERC Project No.:	
06-206.02	

FIGURE

3

- Legend**
- Project corridor
 - Wetland
 - Stream
 - Assessed wetland



NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	D-I-WAM01	Date	9/7/07
Wetland Type	Riverine Swamp Forest	Assessor Name/Organization	AS, RA, EcoScience
Level III Ecoregion	Southeastern Plains	Nearest Named Water Body	Cross Creek
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030004
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.126296, -78.924810

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

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

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

Is the assessment area intensively managed? Yes No

Describe effects of stressors that are present.

Fort Bragg

Regulatory Considerations

Select all that apply to the assessment area.

- Anadromous fish
- Federally protected species or State endangered or threatened species
- NCDWQ riparian buffer rule in effect
- Wetland adjacent to or associated stream drains to a Primary Nursery Area
- Publicly owned property
- N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
- N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
- Designated NCNHP reference community

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

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

Is the assessment area on a coastal island? Yes No

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

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

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GS | VS | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Not severely altered |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration) |

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

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

- | | | |
|---------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surf | Sub | |
| <input type="checkbox"/> A | <input checked="" type="checkbox"/> A | Water storage capacity and duration are not altered. |
| <input checked="" type="checkbox"/> B | <input type="checkbox"/> B | Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation). |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction). |

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

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

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------|
| AA | WT | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | > 50% of the wetland type with depressions able to pond water > 2 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | > 50% of the wetland type with depressions able to pond water 1 to 2 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | > 50% of wetland type with depressions able to pond water 6 inches to 1 foot |
| <input type="checkbox"/> D | <input type="checkbox"/> D | > 50% of wetland type with depressions able to pond water 3- to 6-inches deep |
| <input type="checkbox"/> E | <input type="checkbox"/> E | Depressions able to pond water < 3-inches deep |

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- A Sandy soil
- B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- C Predominantly characterized by other, mineral soil (no mottling)
- D Gleyed mineral soil (F2, S4)
- E Soil ribbon < 1 inch
- F Soil ribbon ≥ 1 inch
- G No peat or muck presence
- H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

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.

- | | | |
|---------------------------------------|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Little or no evidence of pollutants or discharges entering the assessment area |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| <input type="checkbox"/> C | <input type="checkbox"/> 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) |

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric 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 and 30 feet wide in the Mountains.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS | 5M | 2M | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | > 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential) |
| <input type="checkbox"/> B | <input checked="" type="checkbox"/> B | <input type="checkbox"/> B | > 30% impervious surfaces without stormwater BMPs |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input checked="" type="checkbox"/> C | 10 to 30% impervious surfaces |
| <input checked="" type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | < 10% impervious surfaces |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | Old urban development (pink areas on USGS 7.5-minute quadrangles) |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | New adjacent development |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | Confined animal operations (or other local, concentrated source of pollutants) |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | ≥20% coverage of pasture without riparian buffer |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I | ≥20% coverage of pasture with effective riparian buffer |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J | ≥20% coverage of agricultural land (regularly plowed land) without riparian buffer |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K | ≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer |
| <input type="checkbox"/> L | <input type="checkbox"/> L | <input type="checkbox"/> L | ≥20% coverage of maintained grass/herb |
| <input type="checkbox"/> M | <input type="checkbox"/> M | <input type="checkbox"/> M | Silvicultural land with disturbance < 5 years old |
| <input type="checkbox"/> N | <input type="checkbox"/> N | <input type="checkbox"/> N | Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area. |

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

- Yes No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

- ≤15-foot wide > 15-foot wide Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

- Yes No

Is stream or other open water sheltered or exposed?

- Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
 Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

- | | | | |
|---------------------------------------|---------------------------------------|----------------------------|-----------------------|
| WT | WC | RB (if applicable) | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | <input type="checkbox"/> A | ≥100 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | From 80 to < 100 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | From 50 to < 80 feet |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | From 40 to < 50 feet |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | From 30 to < 40 feet |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | From 15 to < 30 feet |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | From 5 to < 15 feet |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | < 5 feet |

9. Inundation Duration – assessment area condition metric

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 (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

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 contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)	
<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A	≥ 500 acres
<input checked="" type="checkbox"/> B	<input checked="" type="checkbox"/> B	<input checked="" type="checkbox"/> B	From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C	From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D	From 25 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	<input type="checkbox"/> E	From 10 to < 25 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	<input type="checkbox"/> F	From 5 to < 10 acres
<input type="checkbox"/> G	<input type="checkbox"/> G	<input type="checkbox"/> G	From 1 to < 5 acres
<input type="checkbox"/> H	<input type="checkbox"/> H	<input type="checkbox"/> H	From 0.5 to < 1 acre
<input type="checkbox"/> I	<input type="checkbox"/> I	<input type="checkbox"/> I	From 0.1 to < 0.5 acre
<input type="checkbox"/> J	<input type="checkbox"/> J	<input type="checkbox"/> J	From 0.01 to < 0.1 acre
<input type="checkbox"/> K	<input type="checkbox"/> K	<input type="checkbox"/> K	< 0.01 acre

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

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

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
<input type="checkbox"/> A	<input type="checkbox"/> A	≥ 500 acres
<input checked="" type="checkbox"/> B	<input type="checkbox"/> B	From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	From 10 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	< 10 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

- Yes No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- Yes No Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥ 40-foot wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- A No artificial edge within 150 feet in all directions
- B No artificial edge within 150 feet in four to seven directions
- C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for 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. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

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.
- B Vegetation diversity is low or has > 10% cover of exotics.
- C Vegetation is dominated by exotic species.

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

Vegetation present

Evaluate percent coverage of vegetation for marshes only

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

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 | |
|---------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Canopy closed, or nearly closed, with natural gaps associated with natural processes |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Canopy present, but opened more than natural gaps |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Canopy sparse or absent |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Dense mid-story/sapling layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density mid-story/sapling layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Mid-story/sapling layer sparse or absent |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Dense shrub layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density shrub layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Shrub layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense herb layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density herb layer |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | Herb layer sparse or absent |

Vegetation absent

18. Snags – wetland type condition metric

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

19. Diameter Class Distribution – wetland type condition metric

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

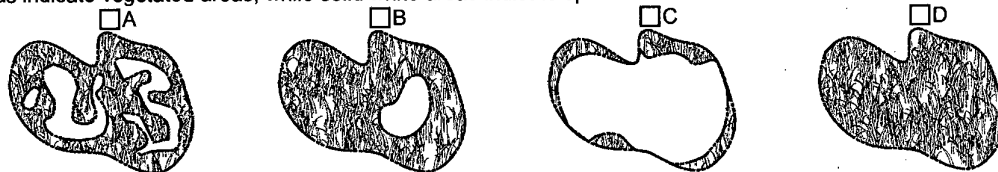
20. Large Woody Debris – wetland type condition metric

Include both man-made and natural debris piles.

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

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

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



22. Habitat Uniqueness – wetland type condition metric

- Yes No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name D-I-WAM01 Date of Assessment 9/7/07
 Wetland Type Riverine Swamp Forest Assessor Name/Organization AS, RA, EcoScience

Presence of stressor affecting assessment area (Y/N) YES
 Notes on Field Assessment Form (Y/N) NO
 Presence of regulatory considerations (Y/N) YES
 Wetland is intensively managed (Y/N) NO
 Wetland may be a high-quality riverine wetland (Y/N)

Sub-function Rating Summary

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

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	HIGH
Water Quality	Condition	HIGH
	Condition/Opportunity	HIGH
	Opportunity Presence (Y/N)	YES
Habitat	Condition	MEDIUM

Overall Wetland Rating HIGH

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	L-I-WAM01	Date	9/7/07
Wetland Type	Riverine Swamp Forest	Assessor Name/Organization	AS, RA, EcoScience
Level III Ecoregion	Southeastern Plains	Nearest Named Water Body	Bonnie Doone Lake
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030004
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.119600, -78.945626

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

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

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

Is the assessment area intensively managed? Yes No

Describe effects of stressors that are present.

Fire road causeway through middle of wetland, Fort Bragg

Regulatory Considerations

Select all that apply to the assessment area.

- Anadromous fish
- Federally protected species or State endangered or threatened species
- NCDWQ riparian buffer rule in effect
- Wetland adjacent to or associated stream drains to a Primary Nursery Area
- Publicly owned property
- N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
- N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
- Designated NCNHP reference community

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

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

Is the assessment area on a coastal island? Yes No

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

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

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GS | VS | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Not severely altered |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration) |

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

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

- | | | |
|---------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surf | Sub | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Water storage capacity and duration are not altered. |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation). |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction). |

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

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

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------|
| AA | WT | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | > 50% of the wetland type with depressions able to pond water > 2 feet |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | > 50% of the wetland type with depressions able to pond water 1 to 2 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | > 50% of wetland type with depressions able to pond water 6 inches to 1 foot |
| <input type="checkbox"/> D | <input type="checkbox"/> D | > 50% of wetland type with depressions able to pond water 3- to 6-inches deep |
| <input type="checkbox"/> E | <input type="checkbox"/> E | Depressions able to pond water < 3-inches deep |

4. Soil Texture/Structure – assessment area condition metric

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- A Sandy soil
- B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- C Predominantly characterized by other, mineral soil (no mottling)
- D Gleyed mineral soil (F2, S4)
- E Soil ribbon < 1 inch
- F Soil ribbon ≥ 1 inch
- G No peat or muck presence
- H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

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 | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Little or no evidence of pollutants or discharges entering the assessment area |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| <input type="checkbox"/> C | <input type="checkbox"/> 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) |

6. Land Use – opportunity metric

Check all that apply. Evaluation of this metric 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 and 30 feet wide in the Mountains.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS | 5M | 2M | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | > 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential) |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | > 30% impervious surfaces without stormwater BMPs |
| <input type="checkbox"/> C | <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | 10 to 30% impervious surfaces |
| <input checked="" type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | < 10% impervious surfaces |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | Old urban development (pink areas on USGS 7.5-minute quadrangles) |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | New adjacent development |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | Confined animal operations (or other local, concentrated source of pollutants) |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | ≥20% coverage of pasture without riparian buffer |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I | ≥20% coverage of pasture with effective riparian buffer |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J | ≥20% coverage of agricultural land (regularly plowed land) without riparian buffer |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K | ≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer |
| <input type="checkbox"/> L | <input type="checkbox"/> L | <input type="checkbox"/> L | ≥20% coverage of maintained grass/herb |
| <input type="checkbox"/> M | <input type="checkbox"/> M | <input type="checkbox"/> M | Silvicultural land with disturbance < 5 years old |
| <input type="checkbox"/> N | <input type="checkbox"/> N | <input type="checkbox"/> N | Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area. |

7. Wetland Acting as Vegetated Buffer – assessment area condition metric

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

- Yes No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

- ≤15-foot wide > 15-foot wide Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

- Yes No

Is stream or other open water sheltered or exposed?

- Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
 Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-----------------------|
| WT | WC | RB (if applicable) | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | ≥100 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | From 80 to < 100 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | From 50 to < 80 feet |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | From 40 to < 50 feet |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | From 30 to < 40 feet |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | From 15 to < 30 feet |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | From 5 to < 15 feet |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | < 5 feet |

9. Inundation Duration – assessment area condition metric

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 (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

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 contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)
<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A ≥500 acres
<input type="checkbox"/> B	<input checked="" type="checkbox"/> B	<input checked="" type="checkbox"/> B From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D From 25 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	<input type="checkbox"/> E From 10 to < 25 acres
<input checked="" type="checkbox"/> F	<input type="checkbox"/> F	<input type="checkbox"/> F From 5 to < 10 acres
<input type="checkbox"/> G	<input type="checkbox"/> G	<input type="checkbox"/> G From 1 to < 5 acres
<input type="checkbox"/> H	<input type="checkbox"/> H	<input type="checkbox"/> H From 0.5 to < 1 acre
<input type="checkbox"/> I	<input type="checkbox"/> I	<input type="checkbox"/> I From 0.1 to < 0.5 acre
<input type="checkbox"/> J	<input type="checkbox"/> J	<input type="checkbox"/> J From 0.01 to < 0.1 acre
<input type="checkbox"/> K	<input type="checkbox"/> K	<input type="checkbox"/> K < 0.01 acre

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

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

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
<input checked="" type="checkbox"/> A	<input type="checkbox"/> A	≥500 acres
<input type="checkbox"/> B	<input type="checkbox"/> B	From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	From 10 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	< 10 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

- Yes No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- Yes No Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-foot wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- A No artificial edge within 150 feet in all directions
- B No artificial edge within 150 feet in four to seven directions
- C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for 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. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

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.
- B Vegetation diversity is low or has > 10% cover of exotics.
- C Vegetation is dominated by exotic species.

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

Vegetation present

Evaluate percent coverage of vegetation for marshes only

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

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 | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Canopy closed, or nearly closed, with natural gaps associated with natural processes |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Canopy present, but opened more than natural gaps |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Canopy sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense mid-story/sapling layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density mid-story/sapling layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Mid-story/sapling layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense shrub layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density shrub layer |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | Shrub layer sparse or absent |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Dense herb layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density herb layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Herb layer sparse or absent |

Vegetation absent

18. **Snags – wetland type condition metric**

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

19. **Diameter Class Distribution – wetland type condition metric**

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

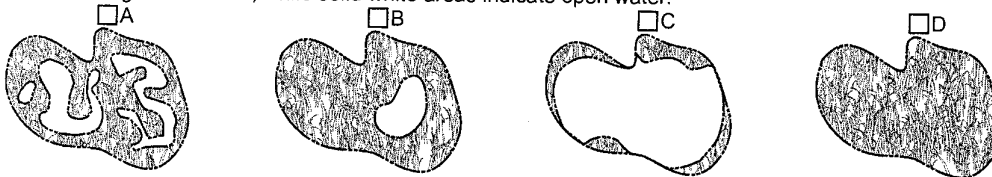
20. **Large Woody Debris – wetland type condition metric**

Include both man-made and natural debris piles.

- A Large logs (more than one) are present (> 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.



22. **Habitat Uniqueness – wetland type condition metric**

- Yes No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name L-I-WAM01 Date of Assessment 9/7/07
 Wetland Type Riverine Swamp Forest Assessor Name/Organization AS, RA, EcoScience

Presence of stressor affecting assessment area (Y/N) YES
 Notes on Field Assessment Form (Y/N) NO
 Presence of regulatory considerations (Y/N) YES
 Wetland is intensively managed (Y/N) NO
 Wetland may be a high-quality riverine wetland (Y/N)

Sub-function Rating Summary

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

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	HIGH
Water Quality	Condition	HIGH
	Condition/Opportunity	HIGH
	Opportunity Presence (Y/N)	YES
Habitat	Condition	HIGH

Overall Wetland Rating HIGH



Traksource Corporation
Raleigh, North Carolina

Client:



Project:

FAYETTEVILLE OUTER LOOP

WETLAND FUNCTIONAL ASSESSMENT

Cumberland, Robeson, and Hoke Counties, North Carolina

Title:

Wetland Locations

Drawn By:

Checked By:

Date:

Scale:

ES&C Project No.:

00-296.02

FIGURE

4

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	M-I-WAM01	Date	9/7/07
Wetland Type	Headwater Wetland	Assessor Name/Organization	AS, RA, EcoScience
Level III Ecoregion	Southeastern Plains	Nearest Named Water Body	Bonnie Doone Lake
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030004
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.114734, -78.956196

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following.

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

Is the assessment area intensively managed? Yes No

Describe effects of stressors that are present.
Road adjacent to wetland, vines and shrubs filling in from available light, Fort Bragg

Regulatory Considerations

Select all that apply to the assessment area.

- Anadromous fish
- Federally protected species or State endangered or threatened species
- NCDWQ riparian buffer rule in effect
- Wetland adjacent to or associated stream drains to a Primary Nursery Area
- Publicly owned property
- N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
- N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
- Designated NCNHP reference community

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

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

Is the assessment area on a coastal island? Yes No

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

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

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GS | VS | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Not severely altered |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration) |

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

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

- | | | |
|---------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surf | Sub | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Water storage capacity and duration are not altered. |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation). |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction). |

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

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

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------|
| AA | WT | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | > 50% of the wetland type with depressions able to pond water > 2 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | > 50% of the wetland type with depressions able to pond water 1 to 2 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | > 50% of wetland type with depressions able to pond water 6 inches to 1 foot |
| <input checked="" type="checkbox"/> D | <input checked="" type="checkbox"/> D | > 50% of wetland type with depressions able to pond water 3- to 6-inches deep |
| <input type="checkbox"/> E | <input type="checkbox"/> E | Depressions able to pond water < 3-inches deep |

4. **Soil, Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- A Sandy soil
- B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- C Predominantly characterized by other, mineral soil (no mottling)
- D Gleyed mineral soil (F2, S4)
- E Soil ribbon < 1 inch
- F Soil ribbon ≥ 1 inch
- G No peat or muck presence
- H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

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 | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Little or no evidence of pollutants or discharges entering the assessment area |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| <input type="checkbox"/> C | <input type="checkbox"/> 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) |

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric 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 and 30 feet wide in the Mountains.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS | 5M | 2M | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | > 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential) |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | > 30% impervious surfaces without stormwater BMPs |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | 10 to 30% impervious surfaces |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | < 10% impervious surfaces |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | Old urban development (pink areas on USGS 7.5-minute quadrangles) |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | New adjacent development |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | Confined animal operations (or other local, concentrated source of pollutants) |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | ≥20% coverage of pasture without riparian buffer |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I | ≥20% coverage of pasture with effective riparian buffer |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J | ≥20% coverage of agricultural land (regularly plowed land) without riparian buffer |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K | ≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer |
| <input type="checkbox"/> L | <input type="checkbox"/> L | <input type="checkbox"/> L | ≥20% coverage of maintained grass/herb |
| <input type="checkbox"/> M | <input type="checkbox"/> M | <input type="checkbox"/> M | Silvicultural land with disturbance < 5 years old |
| <input type="checkbox"/> N | <input type="checkbox"/> N | <input type="checkbox"/> N | Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area. |

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

Yes No If No, Skip to next metric
Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

≤15-foot wide > 15-foot wide Not Applicable
Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

Yes No
Is stream or other open water sheltered or exposed?
 Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
 Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

- | | | |
|---------------------------------------|---------------------------------------|--------------------------------------------------|
| WT | WC | RB (if applicable) |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A ≥100 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B From 80 to < 100 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C From 50 to < 80 feet |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D From 40 to < 50 feet |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E From 30 to < 40 feet |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F From 15 to < 30 feet |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G From 5 to < 15 feet |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H < 5 feet |

9. Inundation Duration – assessment area condition metric

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 (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

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 contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)
<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A ≥500 acres
<input type="checkbox"/> B	<input checked="" type="checkbox"/> B	<input checked="" type="checkbox"/> B From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D From 25 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	<input type="checkbox"/> E From 10 to < 25 acres
<input checked="" type="checkbox"/> F	<input type="checkbox"/> F	<input type="checkbox"/> F From 5 to < 10 acres
<input type="checkbox"/> G	<input type="checkbox"/> G	<input type="checkbox"/> G From 1 to < 5 acres
<input type="checkbox"/> H	<input type="checkbox"/> H	<input type="checkbox"/> H From 0.5 to < 1 acre
<input type="checkbox"/> I	<input type="checkbox"/> I	<input type="checkbox"/> I From 0.1 to < 0.5 acre
<input type="checkbox"/> J	<input type="checkbox"/> J	<input type="checkbox"/> J From 0.01 to < 0.1 acre
<input type="checkbox"/> K	<input type="checkbox"/> K	<input type="checkbox"/> K < 0.01 acre

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

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

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
<input checked="" type="checkbox"/> A	<input type="checkbox"/> A	≥500 acres
<input type="checkbox"/> B	<input type="checkbox"/> B	From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	From 10 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	< 10 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

- Yes No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- Yes No Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- A No artificial edge within 150 feet in all directions
- B No artificial edge within 150 feet in four to seven directions
- C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for 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. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

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.
- B Vegetation diversity is low or has > 10% cover of exotics.
- C Vegetation is dominated by exotic species.

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

Vegetation present

Evaluate percent coverage of vegetation for marshes only

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

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 | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Canopy closed, or nearly closed, with natural gaps associated with natural processes |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Canopy present, but opened more than natural gaps |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Canopy sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense mid-story/sapling layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density mid-story/sapling layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Mid-story/sapling layer sparse or absent |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Dense shrub layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density shrub layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Shrub layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense herb layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density herb layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Herb layer sparse or absent |

Vegetation absent

18. Snags – wetland type condition metric

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

19. Diameter Class Distribution – wetland type condition metric

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

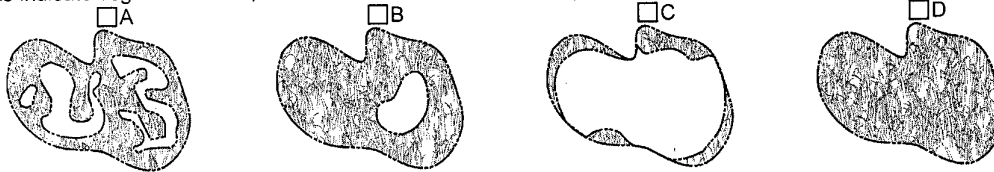
20. Large Woody Debris – wetland type condition metric

Include both man-made and natural debris piles.

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

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

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



22. Habitat Uniqueness – wetland type condition metric

- Yes No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name M-I-WAM01 Date of Assessment 9/7/07
 Wetland Type Headwater Wetland Assessor Name/Organization AS, RA, EcoScience

Presence of stressor affecting assessment area (Y/N) YES
 Notes on Field Assessment Form (Y/N) NO
 Presence of regulatory considerations (Y/N) YES
 Wetland is intensively managed (Y/N) NO
 Wetland may be a high-quality riverine wetland (Y/N)

Sub-function Rating Summary

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

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	HIGH
Water Quality	Condition	HIGH
	Condition/Opportunity	HIGH
	Opportunity Presence (Y/N)	YES
Habitat	Condition	HIGH

Overall Wetland Rating HIGH

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	G2-I-WAM01	Date	9/7/07
Wetland Type	Headwater Wetland	Assessor Name/Organization	AS, RA, EcoScience
Level III Ecoregion	Southeastern Plains	Nearest Named Water Body	Big Branch
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030004
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.112232, -78.970543

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

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

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

Is the assessment area intensively managed? Yes No

Describe effects of stressors that are present.

Fire Road Cuts through wetland, Fort Bragg

Regulatory Considerations

Select all that apply to the assessment area.

- Anadromous fish
- Federally protected species or State endangered or threatened species
- NCDWQ riparian buffer rule in effect
- Wetland adjacent to or associated stream drains to a Primary Nursery Area
- Publicly owned property
- N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
- N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
- Designated NCNHP reference community

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

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

Is the assessment area on a coastal island? Yes No

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

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

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GS | VS | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Not severely altered |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration) |

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

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

- | | | |
|---------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surf | Sub | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Water storage capacity and duration are not altered. |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation). |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction). |

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

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

- | | | |
|---------------------------------------|---------------------------------------|----------------------------------------------------------------------------------|
| AA | WT | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | $> 50\%$ of the wetland type with depressions able to pond water > 2 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | $> 50\%$ of the wetland type with depressions able to pond water 1 to 2 feet |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | $> 50\%$ of wetland type with depressions able to pond water 6 inches to 1 foot |
| <input type="checkbox"/> D | <input type="checkbox"/> D | $> 50\%$ of wetland type with depressions able to pond water 3- to 6-inches deep |
| <input type="checkbox"/> E | <input type="checkbox"/> E | Depressions able to pond water < 3 -inches deep |

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- A Sandy soil
- B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- C Predominantly characterized by other, mineral soil (no mottling)
- D Gleyed mineral soil (F2, S4)
- E Soil ribbon < 1 inch
- F Soil ribbon ≥ 1 inch
- G No peat or muck presence
- H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

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 | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Little or no evidence of pollutants or discharges entering the assessment area |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| <input type="checkbox"/> C | <input type="checkbox"/> 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) |

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric 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 and 30 feet wide in the Mountains.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS | 5M | 2M | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | > 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential) |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | > 30% impervious surfaces without stormwater BMPs |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | 10 to 30% impervious surfaces |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | < 10% impervious surfaces |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | Old urban development (pink areas on USGS 7.5-minute quadrangles) |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | New adjacent development |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | Confined animal operations (or other local, concentrated source of pollutants) |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | ≥20% coverage of pasture without riparian buffer |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I | ≥20% coverage of pasture with effective riparian buffer |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J | ≥20% coverage of agricultural land (regularly plowed land) without riparian buffer |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K | ≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer |
| <input type="checkbox"/> L | <input type="checkbox"/> L | <input type="checkbox"/> L | ≥20% coverage of maintained grass/herb |
| <input type="checkbox"/> M | <input type="checkbox"/> M | <input type="checkbox"/> M | Silvicultural land with disturbance < 5 years old |
| <input type="checkbox"/> N | <input type="checkbox"/> N | <input type="checkbox"/> N | Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area. |

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)
 Yes No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

≤15-feet wide > 15-feet wide Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?
 Yes No

Is stream or other open water sheltered or exposed?

Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
 Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

- | | | | |
|---------------------------------------|---------------------------------------|----------------------------|-----------------------|
| WT | WC | RB (if applicable) | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | <input type="checkbox"/> A | ≥100 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | From 80 to < 100 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | From 50 to < 80 feet |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | From 40 to < 50 feet |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | From 30 to < 40 feet |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | From 15 to < 30 feet |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | From 5 to < 15 feet |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | < 5 feet |

9. Inundation Duration – assessment area condition metric

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 (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

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 contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)
<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A ≥500 acres
<input type="checkbox"/> B	<input checked="" type="checkbox"/> B	<input checked="" type="checkbox"/> B From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D From 25 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	<input type="checkbox"/> E From 10 to < 25 acres
<input checked="" type="checkbox"/> F	<input type="checkbox"/> F	<input type="checkbox"/> F From 5 to < 10 acres
<input type="checkbox"/> G	<input type="checkbox"/> G	<input type="checkbox"/> G From 1 to < 5 acres
<input type="checkbox"/> H	<input type="checkbox"/> H	<input type="checkbox"/> H From 0.5 to < 1 acre
<input type="checkbox"/> I	<input type="checkbox"/> I	<input type="checkbox"/> I From 0.1 to < 0.5 acre
<input type="checkbox"/> J	<input type="checkbox"/> J	<input type="checkbox"/> J From 0.01 to < 0.1 acre
<input type="checkbox"/> K	<input type="checkbox"/> K	<input type="checkbox"/> K < 0.01 acre

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

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

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
<input checked="" type="checkbox"/> A	<input type="checkbox"/> A	≥500 acres
<input type="checkbox"/> B	<input type="checkbox"/> B	From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	From 10 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	< 10 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

- Yes No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- Yes No Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-foot wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- A No artificial edge within 150 feet in all directions
- B No artificial edge within 150 feet in four to seven directions
- C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for 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. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

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.
- B Vegetation diversity is low or has > 10% cover of exotics.
- C Vegetation is dominated by exotic species.

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

Vegetation present

Evaluate percent coverage of vegetation for marshes only

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

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 | |
|---------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Canopy closed, or nearly closed, with natural gaps associated with natural processes |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Canopy present, but opened more than natural gaps |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Canopy sparse or absent |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Dense mid-story/sapling layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density mid-story/sapling layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Mid-story/sapling layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense shrub layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density shrub layer |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | Shrub layer sparse or absent |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Dense herb layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density herb layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Herb layer sparse or absent |

Vegetation absent

18. **Snags – wetland type condition metric**

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

19. **Diameter Class Distribution – wetland type condition metric**

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

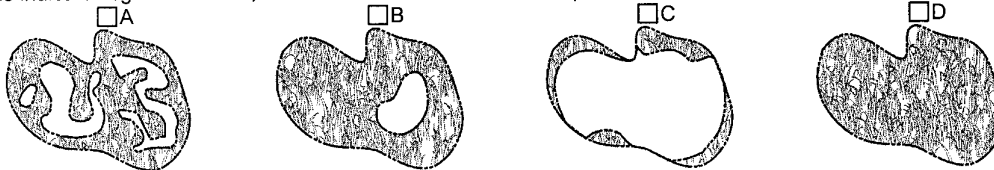
20. **Large Woody Debris – wetland type condition metric**

Include both man-made and natural debris piles.

- A Large logs (more than one) are present (> 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.



22. **Habitat Uniqueness – wetland type condition metric**

- Yes No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name G2-I-WAM01 Date of Assessment 9/7/07
 Wetland Type Headwater Wetland Assessor Name/Organization AS, RA, EcoScience

Presence of stressor affecting assessment area (Y/N) YES
 Notes on Field Assessment Form (Y/N) NO
 Presence of regulatory considerations (Y/N) YES
 Wetland is intensively managed (Y/N) NO
 Wetland may be a high-quality riverine wetland (Y/N)

Sub-function Rating Summary

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	HIGH
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	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	X	
	Condition/Opportunity	X	
	Opportunity Presence (Y/N)	X	
Habitat	Physical Structure	Condition	HIGH
	Landscape Patch Structure	Condition	HIGH
	Vegetation Composition	Condition	MEDIUM
	Uniqueness	Condition	NO

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	HIGH
Water Quality	Condition	HIGH
	Condition/Opportunity	HIGH
	Opportunity Presence (Y/N)	YES
Habitat	Condition	HIGH

Overall Wetland Rating HIGH

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	G2-I-WAM02	Date	9/7/07
Wetland Type	Headwater Wetland	Assessor Name/Organization	AS, RA EcoScience
Level III Ecoregion	Southeastern Plains	Nearest Named Water Body	Big Branch
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030004
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.112068, -78.972705

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

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

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

Is the assessment area intensively managed? Yes No

Describe effects of stressors that are present.

Fire Road and fence cuts through wetland, Fort Bragg

Regulatory Considerations

Select all that apply to the assessment area.

- Anadromous fish
- Federally protected species or State endangered or threatened species
- NCDWQ riparian buffer rule in effect
- Wetland adjacent to or associated stream drains to a Primary Nursery Area
- Publicly owned property
- N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
- N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
- Designated NCNHP reference community

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

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

Is the assessment area on a coastal island? Yes No

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

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

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GS | VS | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Not severely altered |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration) |

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

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

- | | | |
|---------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surf | Sub | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Water storage capacity and duration are not altered. |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation). |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction). |

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

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

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------|
| AA | WT | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | > 50% of the wetland type with depressions able to pond water > 2 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | > 50% of the wetland type with depressions able to pond water 1 to 2 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | > 50% of wetland type with depressions able to pond water 6 inches to 1 foot |
| <input checked="" type="checkbox"/> D | <input checked="" type="checkbox"/> D | > 50% of wetland type with depressions able to pond water 3- to 6-inches deep |
| <input type="checkbox"/> E | <input type="checkbox"/> E | Depressions able to pond water < 3-inches deep |

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- A Sandy soil
- B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- C Predominantly characterized by other, mineral soil (no mottling)
- D Gleyed mineral soil (F2, S4)
- E Soil ribbon < 1 inch
- F Soil ribbon ≥ 1 inch
- G No peat or muck presence
- H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

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 | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Little or no evidence of pollutants or discharges entering the assessment area |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| <input type="checkbox"/> C | <input type="checkbox"/> 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) |

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric 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 and 30 feet wide in the Mountains.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS | 5M | 2M | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | > 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential) |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | > 30% impervious surfaces without stormwater BMPs |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | 10 to 30% impervious surfaces |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | < 10% impervious surfaces |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | Old urban development (pink areas on USGS 7.5-minute quadrangles) |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | New adjacent development |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | Confined animal operations (or other local, concentrated source of pollutants) |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | ≥20% coverage of pasture without riparian buffer |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I | ≥20% coverage of pasture with effective riparian buffer |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J | ≥20% coverage of agricultural land (regularly plowed land) without riparian buffer |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K | ≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer |
| <input type="checkbox"/> L | <input type="checkbox"/> L | <input type="checkbox"/> L | ≥20% coverage of maintained grass/herb |
| <input type="checkbox"/> M | <input type="checkbox"/> M | <input type="checkbox"/> M | Silvicultural land with disturbance < 5 years old |
| <input type="checkbox"/> N | <input type="checkbox"/> N | <input type="checkbox"/> N | Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area. |

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

- Yes No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

- ≤15-foot wide > 15-foot wide Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

- Yes No

Is stream or other open water sheltered or exposed?

- Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
 Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-----------------------|
| WT | WC | RB (if applicable) | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input checked="" type="checkbox"/> A | ≥100 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | From 80 to < 100 feet |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | <input type="checkbox"/> C | From 50 to < 80 feet |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | From 40 to < 50 feet |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | From 30 to < 40 feet |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | From 15 to < 30 feet |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | From 5 to < 15 feet |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | < 5 feet |

9. Inundation Duration – assessment area condition metric

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 (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

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 contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)
<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A ≥500 acres
<input type="checkbox"/> B	<input checked="" type="checkbox"/> B	<input checked="" type="checkbox"/> B From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D From 25 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	<input type="checkbox"/> E From 10 to < 25 acres
<input checked="" type="checkbox"/> F	<input type="checkbox"/> F	<input type="checkbox"/> F From 5 to < 10 acres
<input type="checkbox"/> G	<input type="checkbox"/> G	<input type="checkbox"/> G From 1 to < 5 acres
<input type="checkbox"/> H	<input type="checkbox"/> H	<input type="checkbox"/> H From 0.5 to < 1 acre
<input type="checkbox"/> I	<input type="checkbox"/> I	<input type="checkbox"/> I From 0.1 to < 0.5 acre
<input type="checkbox"/> J	<input type="checkbox"/> J	<input type="checkbox"/> J From 0.01 to < 0.1 acre
<input type="checkbox"/> K	<input type="checkbox"/> K	<input type="checkbox"/> K < 0.01 acre

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

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

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
<input checked="" type="checkbox"/> A	<input type="checkbox"/> A	≥500 acres
<input type="checkbox"/> B	<input type="checkbox"/> B	From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	From 10 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	< 10 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

- Yes No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- Yes No Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-foot wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- A No artificial edge within 150 feet in all directions
- B No artificial edge within 150 feet in four to seven directions
- C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for 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. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

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.
- B Vegetation diversity is low or has > 10% cover of exotics.
- C Vegetation is dominated by exotic species.

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

Vegetation present

Evaluate percent coverage of vegetation for marshes only

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

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 | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Canopy closed, or nearly closed, with natural gaps associated with natural processes |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Canopy present, but opened more than natural gaps |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Canopy sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense mid-story/sapling layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density mid-story/sapling layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Mid-story/sapling layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense shrub layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density shrub layer |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | Shrub layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense herb layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density herb layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Herb layer sparse or absent |

Vegetation absent

18. Snags – wetland type condition metric

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

19. Diameter Class Distribution – wetland type condition metric

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

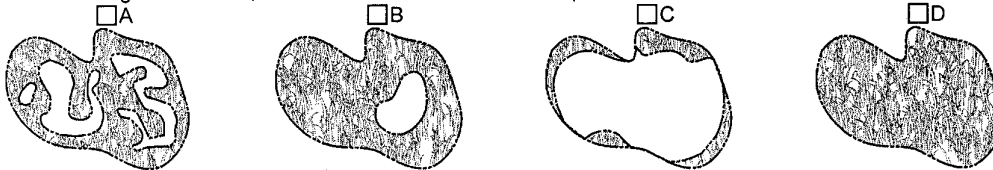
20. Large Woody Debris – wetland type condition metric

Include both man-made and natural debris piles.

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

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

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



22. Habitat Uniqueness – wetland type condition metric

- Yes No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name G2-I-WAM02 Date of Assessment 9/7/07
 Wetland Type Headwater Wetland Assessor Name/Organization AS, RA EcoScience

Presence of stressor affecting assessment area (Y/N) YES
 Notes on Field Assessment Form (Y/N) NO
 Presence of regulatory considerations (Y/N) YES
 Wetland is intensively managed (Y/N) NO
 Wetland may be a high-quality riverine wetland (Y/N) _____

Sub-function Rating Summary

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

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	HIGH
Water Quality	Condition	HIGH
	Condition/Opportunity	HIGH
Habitat	Opportunity Presence (Y/N)	YES
	Condition	HIGH

Overall Wetland Rating HIGH

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	G2-I-WAM03	Date	9/7/07
Wetland Type	Riverine Swamp Forest	Assessor Name/Organization	EcoScience
Level III Ecoregion	Southeastern Plains	Nearest Named Water Body	Big Branch
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030004
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.113715, -78.974279

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

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

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

Is the assessment area intensively managed? Yes No

Describe effects of stressors that are present.

Fire Road cuts through wetland, beaver impacted, Fort Bragg

Regulatory Considerations

Select all that apply to the assessment area.

- Anadromous fish
- Federally protected species or State endangered or threatened species
- NCDWQ riparian buffer rule in effect
- Wetland adjacent to or associated stream drains to a Primary Nursery Area
- Publicly owned property
- N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
- N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
- Designated NCNHP reference community

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

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

Is the assessment area on a coastal island? Yes No

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

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

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GS | VS | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Not severely altered |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration) |

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

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

- | | | |
|---------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surf | Sub | |
| <input type="checkbox"/> A | <input checked="" type="checkbox"/> A | Water storage capacity and duration are not altered. |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation). |
| <input checked="" type="checkbox"/> C | <input type="checkbox"/> C | Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction). |

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

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

- | | | |
|---------------------------------------|---------------------------------------|----------------------------------------------------------------------------------|
| AA | WT | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | $> 50\%$ of the wetland type with depressions able to pond water > 2 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | $> 50\%$ of the wetland type with depressions able to pond water 1 to 2 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | $> 50\%$ of wetland type with depressions able to pond water 6 inches to 1 foot |
| <input type="checkbox"/> D | <input type="checkbox"/> D | $> 50\%$ of wetland type with depressions able to pond water 3- to 6-inches deep |
| <input type="checkbox"/> E | <input type="checkbox"/> E | Depressions able to pond water < 3 -inches deep |

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- A Sandy soil
- B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- C Predominantly characterized by other, mineral soil (no mottling)
- D Gleyed mineral soil (F2, S4)
- E Soil ribbon < 1 inch
- F Soil ribbon ≥ 1 inch
- G No peat or muck presence
- H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

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 | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Little or no evidence of pollutants or discharges entering the assessment area |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| <input type="checkbox"/> C | <input type="checkbox"/> 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) |

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric 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 and 30 feet wide in the Mountains.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS | 5M | 2M | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | > 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential) |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | > 30% impervious surfaces without stormwater BMPs |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | 10 to 30% impervious surfaces |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | < 10% impervious surfaces |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | Old urban development (pink areas on USGS 7.5-minute quadrangles) |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | New adjacent development |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | Confined animal operations (or other local, concentrated source of pollutants) |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | ≥20% coverage of pasture without riparian buffer |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I | ≥20% coverage of pasture with effective riparian buffer |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J | ≥20% coverage of agricultural land (regularly plowed land) without riparian buffer |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K | ≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer |
| <input type="checkbox"/> L | <input type="checkbox"/> L | <input type="checkbox"/> L | ≥20% coverage of maintained grass/herb |
| <input type="checkbox"/> M | <input type="checkbox"/> M | <input type="checkbox"/> M | Silvicultural land with disturbance < 5 years old |
| <input type="checkbox"/> N | <input type="checkbox"/> N | <input type="checkbox"/> N | Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area. |

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

- Yes No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

- ≤15-foot wide > 15-foot wide Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

- Yes No

Is stream or other open water sheltered or exposed?

- Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
 Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-----------------------|
| WT | WC | RB (if applicable) | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | ≥100 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | From 80 to < 100 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | From 50 to < 80 feet |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | From 40 to < 50 feet |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | From 30 to < 40 feet |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | From 15 to < 30 feet |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | From 5 to < 15 feet |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | < 5 feet |

9. Inundation Duration – assessment area condition metric

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 (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

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 contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)
<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A ≥500 acres
<input type="checkbox"/> B	<input checked="" type="checkbox"/> B	<input checked="" type="checkbox"/> B From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D From 25 to < 50 acres
<input checked="" type="checkbox"/> E	<input type="checkbox"/> E	<input type="checkbox"/> E From 10 to < 25 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	<input type="checkbox"/> F From 5 to < 10 acres
<input type="checkbox"/> G	<input type="checkbox"/> G	<input type="checkbox"/> G From 1 to < 5 acres
<input type="checkbox"/> H	<input type="checkbox"/> H	<input type="checkbox"/> H From 0.5 to < 1 acre
<input type="checkbox"/> I	<input type="checkbox"/> I	<input type="checkbox"/> I From 0.1 to < 0.5 acre
<input type="checkbox"/> J	<input type="checkbox"/> J	<input type="checkbox"/> J From 0.01 to < 0.1 acre
<input type="checkbox"/> K	<input type="checkbox"/> K	<input type="checkbox"/> K < 0.01 acre

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

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

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
<input checked="" type="checkbox"/> A	<input type="checkbox"/> A	≥500 acres
<input type="checkbox"/> B	<input type="checkbox"/> B	From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	From 10 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	< 10 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

- Yes No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- Yes No Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-foot wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- A No artificial edge within 150 feet in all directions
- B No artificial edge within 150 feet in four to seven directions
- C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for 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. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

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.
- B Vegetation diversity is low or has > 10% cover of exotics.
- C Vegetation is dominated by exotic species.

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

Vegetation present

Evaluate percent coverage of vegetation for marshes only

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

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 | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Canopy closed, or nearly closed, with natural gaps associated with natural processes |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Canopy present, but opened more than natural gaps |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Canopy sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense mid-story/sapling layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density mid-story/sapling layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Mid-story/sapling layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense shrub layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density shrub layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Shrub layer sparse or absent |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Dense herb layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density herb layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Herb layer sparse or absent |

Vegetation absent

18. **Snags – wetland type condition metric**

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

19. **Diameter Class Distribution – wetland type condition metric**

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

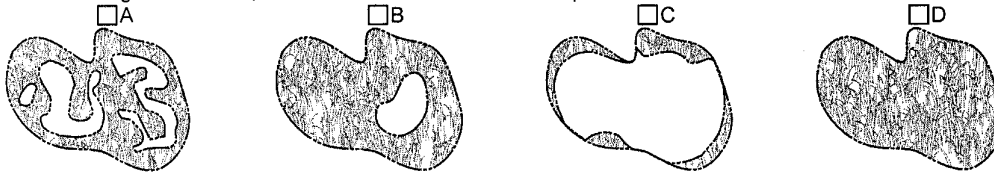
20. **Large Woody Debris – wetland type condition metric**

Include both man-made and natural debris piles.

- A Large logs (more than one) are present (> 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.



22. **Habitat Uniqueness – wetland type condition metric**

- Yes No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name G2-I-WAM03 Date of Assessment 9/7/07
 Wetland Type Riverine Swamp Forest Assessor Name/Organization EcoScience

Presence of stressor affecting assessment area (Y/N) YES
 Notes on Field Assessment Form (Y/N) NO
 Presence of regulatory considerations (Y/N) YES
 Wetland is intensively managed (Y/N) NO
 Wetland may be a high-quality riverine wetland (Y/N)

Sub-function Rating Summary

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

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	MEDIUM
Water Quality	Condition	HIGH
	Condition/Opportunity	HIGH
	Opportunity Presence (Y/N)	YES
Habitat	Condition	MEDIUM

Overall Wetland Rating MEDIUM

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	G3-I-WAM01	Date	9/7/07
Wetland Type	Riverine Swamp Forest	Assessor Name/Organization	AS, RA, EcoScience
Level III Ecoregion	Southeastern Plains	Nearest Named Water Body	Big Branch
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030004
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.111304, -78.975669

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

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

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

Is the assessment area intensively managed? Yes No

Describe effects of stressors that are present.

Four lane highway causeway, utility crossing, Fort Bragg

Regulatory Considerations

Select all that apply to the assessment area.

- Anadromous fish
- Federally protected species or State endangered or threatened species
- NCDWQ riparian buffer rule in effect
- Wetland adjacent to or associated stream drains to a Primary Nursery Area
- Publicly owned property
- N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
- N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
- Designated NCNHP reference community

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

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

Is the assessment area on a coastal island? Yes No

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

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

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GS | VS | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Not severely altered |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration) |

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

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

- | | | |
|---------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surf | Sub | |
| <input type="checkbox"/> A | <input checked="" type="checkbox"/> A | Water storage capacity and duration are not altered. |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation). |
| <input checked="" type="checkbox"/> C | <input type="checkbox"/> C | Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction). |

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

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

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------|
| AA | WT | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | > 50% of the wetland type with depressions able to pond water > 2 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | > 50% of the wetland type with depressions able to pond water 1 to 2 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | > 50% of wetland type with depressions able to pond water 6 inches to 1 foot |
| <input type="checkbox"/> D | <input type="checkbox"/> D | > 50% of wetland type with depressions able to pond water 3- to 6-inches deep |
| <input type="checkbox"/> E | <input type="checkbox"/> E | Depressions able to pond water < 3-inches deep |

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- A Sandy soil
- B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- C Predominantly characterized by other, mineral soil (no mottling)
- D Gleyed mineral soil (F2, S4)
- E Soil ribbon < 1 inch
- F Soil ribbon ≥ 1 inch
- G No peat or muck presence
- H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

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 | |
| <input type="checkbox"/> A | <input checked="" type="checkbox"/> A | Little or no evidence of pollutants or discharges entering the assessment area |
| <input checked="" type="checkbox"/> B | <input type="checkbox"/> B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| <input type="checkbox"/> C | <input type="checkbox"/> 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) |

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric 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 and 30 feet wide in the Mountains.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS | 5M | 2M | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | > 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential) |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | > 30% impervious surfaces without stormwater BMPs |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | 10 to 30% impervious surfaces |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | < 10% impervious surfaces |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | Old urban development (pink areas on USGS 7.5-minute quadrangles) |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | New adjacent development |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | Confined animal operations (or other local, concentrated source of pollutants) |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | ≥20% coverage of pasture without riparian buffer |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I | ≥20% coverage of pasture with effective riparian buffer |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J | ≥20% coverage of agricultural land (regularly plowed land) without riparian buffer |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K | ≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer |
| <input type="checkbox"/> L | <input type="checkbox"/> L | <input type="checkbox"/> L | ≥20% coverage of maintained grass/herb |
| <input type="checkbox"/> M | <input type="checkbox"/> M | <input type="checkbox"/> M | Silvicultural land with disturbance < 5 years old |
| <input type="checkbox"/> N | <input type="checkbox"/> N | <input type="checkbox"/> N | Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area. |

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

- Yes No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

- ≤15-feet wide > 15-feet wide Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

- Yes No

Is stream or other open water sheltered or exposed?

- Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
 Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-----------------------|
| WT | WC | RB (if applicable) | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | ≥100 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | From 80 to < 100 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | From 50 to < 80 feet |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | From 40 to < 50 feet |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | From 30 to < 40 feet |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | From 15 to < 30 feet |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | From 5 to < 15 feet |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | < 5 feet |

9. **Inundation Duration – assessment area condition metric**

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 (7 to 30 consecutive days or more)

10. **Indicators of Deposition – assessment area condition metric**

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 contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

- | WT | WC | FW (if applicable) |
|---------------------------------------|---------------------------------------|---------------------------------------------------------------|
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A ≥500 acres |
| <input type="checkbox"/> B | <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B From 100 to < 500 acres |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C From 50 to < 100 acres |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D From 25 to < 50 acres |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E From 10 to < 25 acres |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F From 5 to < 10 acres |
| <input checked="" type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G From 1 to < 5 acres |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H From 0.5 to < 1 acre |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I From 0.1 to < 0.5 acre |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J From 0.01 to < 0.1 acre |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K < 0.01 acre |

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

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

13. **Connectivity to Other Natural Areas – landscape condition metric**

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

- | WC | LC | |
|---------------------------------------|----------------------------|--------------------------------------------------------------------|
| <input checked="" type="checkbox"/> A | <input type="checkbox"/> A | ≥500 acres |
| <input type="checkbox"/> B | <input type="checkbox"/> B | From 100 to < 500 acres |
| <input type="checkbox"/> C | <input type="checkbox"/> C | From 50 to < 100 acres |
| <input type="checkbox"/> D | <input type="checkbox"/> D | From 10 to < 50 acres |
| <input type="checkbox"/> E | <input type="checkbox"/> E | < 10 acres |
| <input type="checkbox"/> F | <input type="checkbox"/> F | Wetland type has a poor or no connection to other natural habitats |

Check Yes or No.

- Yes No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- Yes No Is the assessment area subject to overbank flooding during normal conditions?

14. **Edge Effect – wetland type condition metric**

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-foot wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- A No artificial edge within 150 feet in all directions
- B No artificial edge within 150 feet in four to seven directions
- C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. **Vegetative Composition – assessment area condition metric (skip for 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. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

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.
- B Vegetation diversity is low or has > 10% cover of exotics.
- C Vegetation is dominated by exotic species.

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

Vegetation present

Evaluate percent coverage of vegetation for marshes only

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

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 | |
|---------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------|
| <input type="checkbox"/> A | <input type="checkbox"/> A | Canopy closed, or nearly closed, with natural gaps associated with natural processes |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Canopy present, but opened more than natural gaps |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Canopy sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense mid-story/sapling layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density mid-story/sapling layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Mid-story/sapling layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense shrub layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density shrub layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Shrub layer sparse or absent |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Dense herb layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density herb layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Herb layer sparse or absent |

Vegetation absent

18. Snags – wetland type condition metric

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

19. Diameter Class Distribution – wetland type condition metric

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

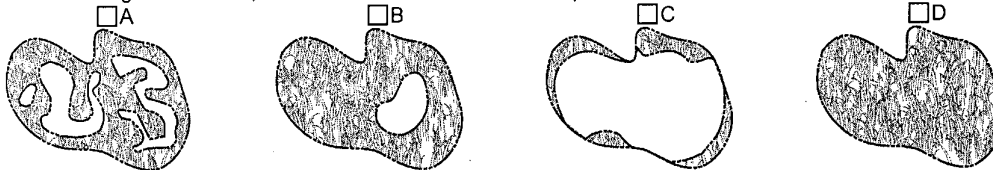
20. Large Woody Debris – wetland type condition metric

Include both man-made and natural debris piles.

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

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

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



22. Habitat Uniqueness – wetland type condition metric

- Yes No Has the N.C. Environmental Management Commission classified the assessment area as “Unique Wetlands” (UWL)?”

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name G3-I-WAM01 Date of Assessment 9/7/07
 Wetland Type Riverine Swamp Forest Assessor Name/Organization AS, RA, EcoScience

Presence of stressor affecting assessment area (Y/N) YES
 Notes on Field Assessment Form (Y/N) NO
 Presence of regulatory considerations (Y/N) YES
 Wetland is intensively managed (Y/N) NO
 Wetland may be a high-quality riverine wetland (Y/N)

Sub-function Rating Summary

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

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	MEDIUM
Water Quality	Condition	HIGH
	Condition/Opportunity	HIGH
	Opportunity Presence (Y/N)	YES
Habitat	Condition	HIGH

Overall Wetland Rating HIGH

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	G3-I-WAM02	Date	9/7/07
Wetland Type	Non-Tidal Freshwater Marsh	Assessor Name/Organization	AS, RA, EcoScience
Level III Ecoregion	Southeastern Plains	Nearest Named Water Body	Big Branch
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030004
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.111069, -78.976471

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

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

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

Is the assessment area intensively managed? Yes No

Describe effects of stressors that are present.

Beaver impacted, Fort Bragg

Regulatory Considerations

Select all that apply to the assessment area.

- Anadromous fish
- Federally protected species or State endangered or threatened species
- NCDWQ riparian buffer rule in effect
- Wetland adjacent to or associated stream drains to a Primary Nursery Area
- Publicly owned property
- N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
- N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
- Designated NCNHP reference community

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

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

Is the assessment area on a coastal island? Yes No

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

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

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GS | VS | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Not severely altered |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration) |

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

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

- | | | |
|---------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surf | Sub | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Water storage capacity and duration are not altered. |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation). |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction). |

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

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

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------|
| AA | WT | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | > 50% of the wetland type with depressions able to pond water > 2 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | > 50% of the wetland type with depressions able to pond water 1 to 2 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | > 50% of wetland type with depressions able to pond water 6 inches to 1 foot |
| <input type="checkbox"/> D | <input type="checkbox"/> D | > 50% of wetland type with depressions able to pond water 3- to 6-inches deep |
| <input type="checkbox"/> E | <input type="checkbox"/> E | Depressions able to pond water < 3-inches deep |

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- A Sandy soil
- B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- C Predominantly characterized by other, mineral soil (no mottling)
- D Gleyed mineral soil (F2, S4)
- E Soil ribbon < 1 inch
- F Soil ribbon ≥ 1 inch
- G No peat or muck presence
- H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

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 | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Little or no evidence of pollutants or discharges entering the assessment area |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| <input type="checkbox"/> C | <input type="checkbox"/> 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) |

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric 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 and 30 feet wide in the Mountains.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS | 5M | 2M | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | > 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential) |
| <input type="checkbox"/> B | <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | > 30% impervious surfaces without stormwater BMPs |
| <input checked="" type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | 10 to 30% impervious surfaces |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | < 10% impervious surfaces |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | Old urban development (pink areas on USGS 7.5-minute quadrangles) |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | New adjacent development |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | Confined animal operations (or other local, concentrated source of pollutants) |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | ≥20% coverage of pasture without riparian buffer |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I | ≥20% coverage of pasture with effective riparian buffer |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J | ≥20% coverage of agricultural land (regularly plowed land) without riparian buffer |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K | ≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer |
| <input type="checkbox"/> L | <input type="checkbox"/> L | <input type="checkbox"/> L | ≥20% coverage of maintained grass/herb |
| <input type="checkbox"/> M | <input type="checkbox"/> M | <input type="checkbox"/> M | Silvicultural land with disturbance < 5 years old |
| <input type="checkbox"/> N | <input type="checkbox"/> N | <input type="checkbox"/> N | Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area. |

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

- Yes No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

- ≤15-foot wide > 15-foot wide Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

- Yes No

Is stream or other open water sheltered or exposed?

- Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
 Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-----------------------|
| WT | WC | RB (if applicable) | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input checked="" type="checkbox"/> A | ≥100 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | From 80 to < 100 feet |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | <input type="checkbox"/> C | From 50 to < 80 feet |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | From 40 to < 50 feet |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | From 30 to < 40 feet |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | From 15 to < 30 feet |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | From 5 to < 15 feet |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | < 5 feet |

9. **Inundation Duration – assessment area condition metric**

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 (7 to 30 consecutive days or more)

10. **Indicators of Deposition – assessment area condition metric**

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 contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)	
<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A	≥500 acres
<input type="checkbox"/> B	<input checked="" type="checkbox"/> B	<input checked="" type="checkbox"/> B	From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C	From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D	From 25 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	<input type="checkbox"/> E	From 10 to < 25 acres
<input checked="" type="checkbox"/> F	<input type="checkbox"/> F	<input type="checkbox"/> F	From 5 to < 10 acres
<input type="checkbox"/> G	<input type="checkbox"/> G	<input type="checkbox"/> G	From 1 to < 5 acres
<input type="checkbox"/> H	<input type="checkbox"/> H	<input type="checkbox"/> H	From 0.5 to < 1 acre
<input type="checkbox"/> I	<input type="checkbox"/> I	<input type="checkbox"/> I	From 0.1 to < 0.5 acre
<input type="checkbox"/> J	<input type="checkbox"/> J	<input type="checkbox"/> J	From 0.01 to < 0.1 acre
<input type="checkbox"/> K	<input type="checkbox"/> K	<input type="checkbox"/> K	< 0.01 acre

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

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

13. **Connectivity to Other Natural Areas – landscape condition metric**

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
<input checked="" type="checkbox"/> A	<input type="checkbox"/> A	≥500 acres
<input type="checkbox"/> B	<input type="checkbox"/> B	From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	From 10 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	< 10 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

- Yes No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- Yes No Is the assessment area subject to overbank flooding during normal conditions?

14. **Edge Effect – wetland type condition metric**

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-foot wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- A No artificial edge within 150 feet in all directions
- B No artificial edge within 150 feet in four to seven directions
- C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. **Vegetative Composition – assessment area condition metric (skip for 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. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

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.
- B Vegetation diversity is low or has > 10% cover of exotics.
- C Vegetation is dominated by exotic species.

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

Vegetation present

Evaluate percent coverage of vegetation for marshes only

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

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 | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Canopy closed, or nearly closed, with natural gaps associated with natural processes |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Canopy present, but opened more than natural gaps |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Canopy sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense mid-story/sapling layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density mid-story/sapling layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Mid-story/sapling layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense shrub layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density shrub layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Shrub layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense herb layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density herb layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Herb layer sparse or absent |

Vegetation absent

18. **Snags – wetland type condition metric**

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

19. **Diameter Class Distribution – wetland type condition metric**

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

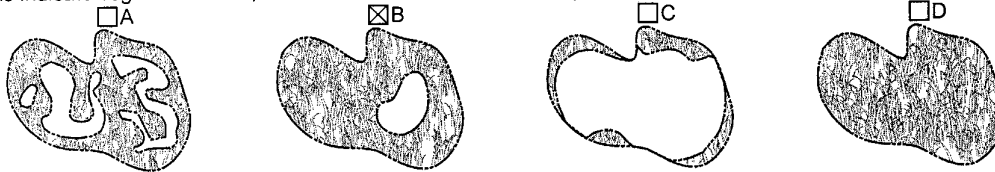
20. **Large Woody Debris – wetland type condition metric**

Include both man-made and natural debris piles.

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

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

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



22. **Habitat Uniqueness – wetland type condition metric**

- Yes No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name G3-I-WAM02 Date of Assessment 9/7/07
 Wetland Type Non-Tidal Freshwater Marsh Assessor Name/Organization AS, RA, EcoScience

Presence of stressor affecting assessment area (Y/N) YES
 Notes on Field Assessment Form (Y/N) NO
 Presence of regulatory considerations (Y/N) YES
 Wetland is intensively managed (Y/N) NO
 Wetland may be a high-quality riverine wetland (Y/N) _____

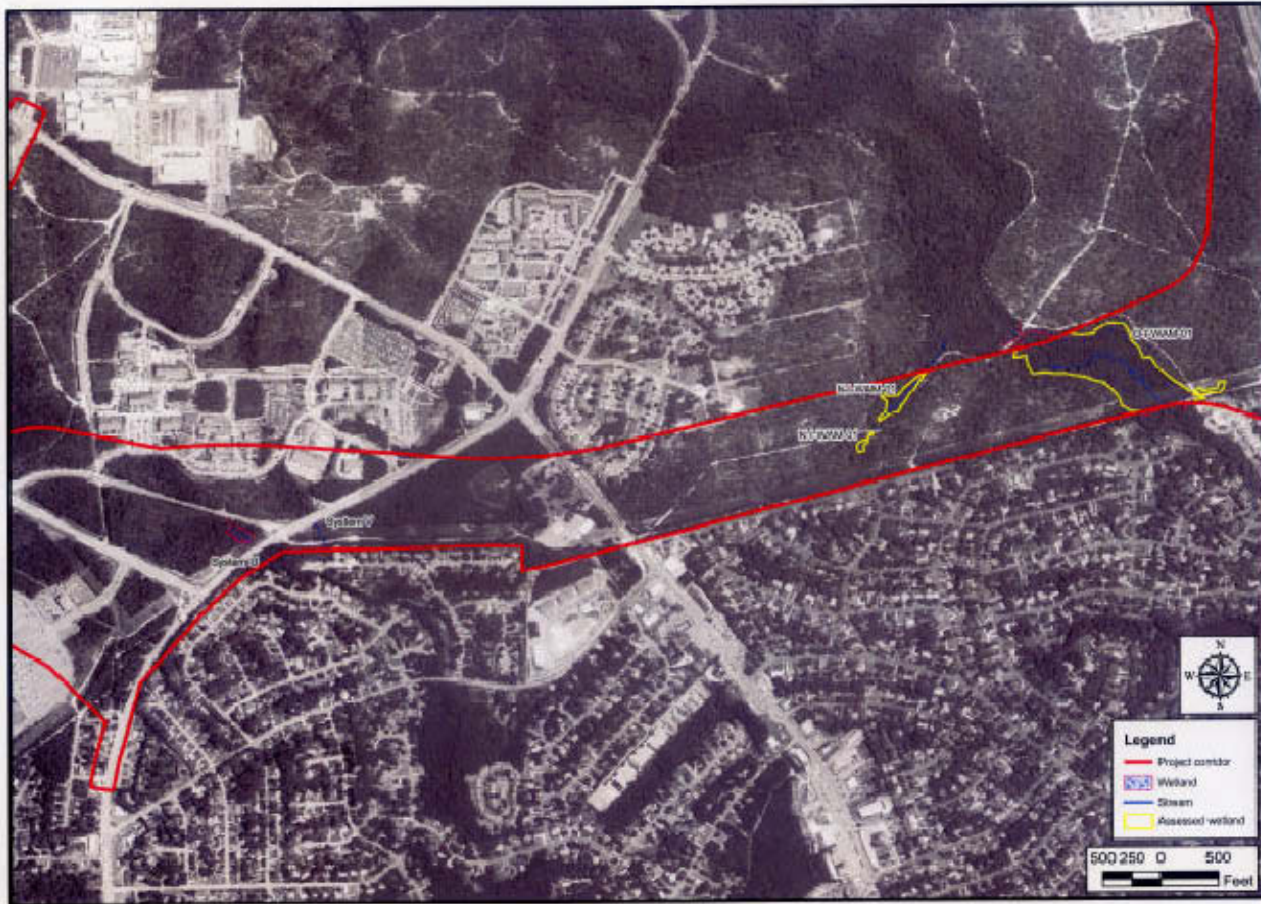
Sub-function Rating Summary

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

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	<u>HIGH</u>
Water Quality	Condition	<u>HIGH</u>
	Condition/Opportunity	<u>X</u>
	Opportunity Presence (Y/N)	<u>X</u>
Habitat	Condition	<u>HIGH</u>

Overall Wetland Rating HIGH



Project
**FAYETTEVILLE
 OUTER
 LOOP**
**WETLAND
 FUNCTIONAL
 ASSESSMENT**

Cumberland, Robeson,
 and Hoke Counties,
 North Carolina

Title:
**Wetland
 Locations**

Drawn By:	SGD	Checked By:	MTJ
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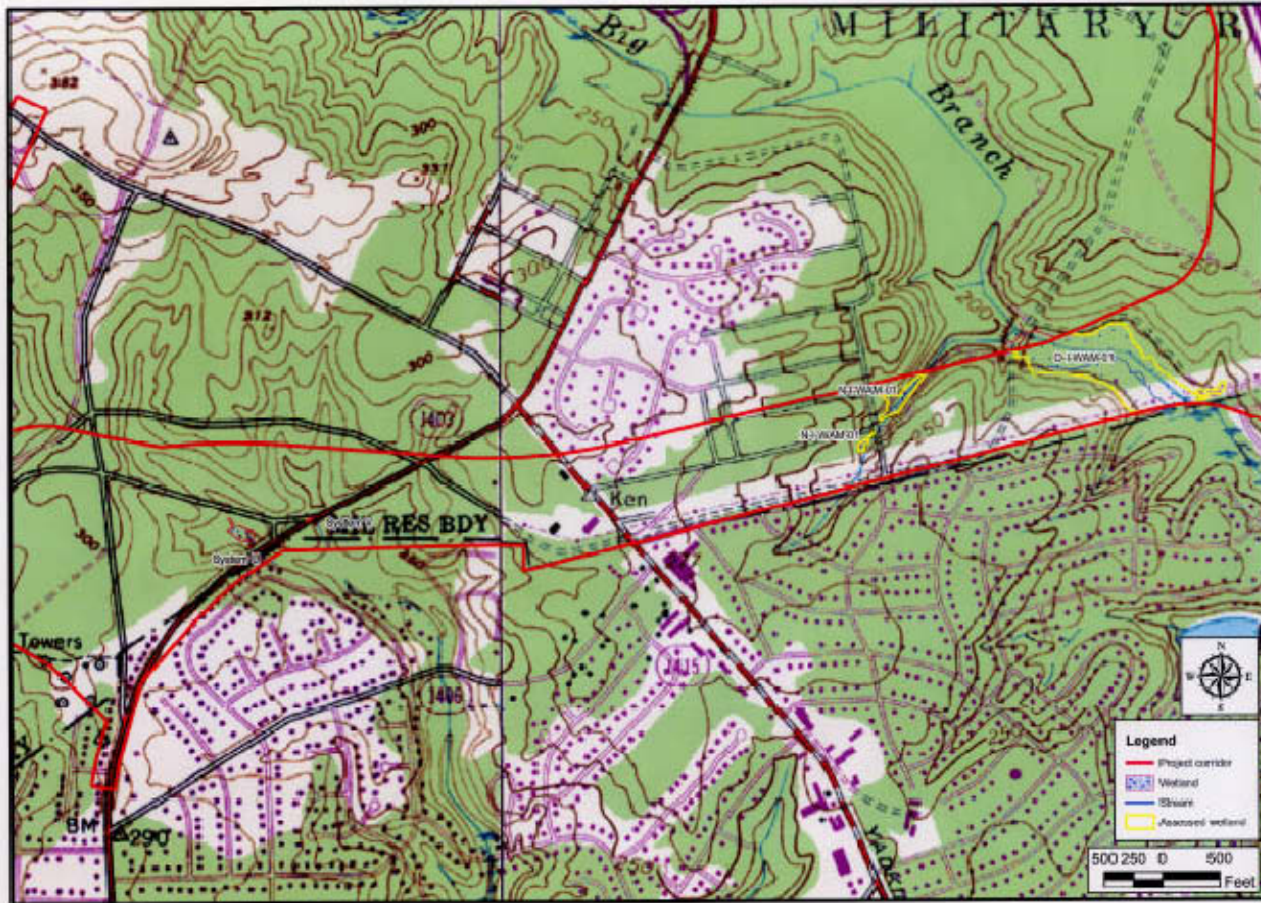
Date:	Scale:
SEP 2007	1:5000

ESC Project No.: 06-296.02

FIGURE
5

Legend
 — Project corridor
 — Wetland
 — Stream
 — Assessed wetland

0 250 500
 Feet



Client:
FAYETTEVILLE OUTER LOOP
WETLAND FUNCTIONAL ASSESSMENT

Cumberland, Robeson, and Hoke Counties, North Carolina

Title:
Wetland Locations

Drawn By:	SGD	Out By:	MTC
Date:	SEP 2007	Scale:	1:2000
SDC Project No.:		06-256.02	

FIGURE
5

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	O-I-WAM01	Date	9/7/07
Wetland Type	Riverine Swamp Forest	Assessor Name/Organization	AS, RA, EcoScience
Level III Ecoregion	Southeastern Plains	Nearest Named Water Body	Big Branch
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030004
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.110646, -78.981095

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

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

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

Is the assessment area intensively managed? Yes No

Describe effects of stressors that are present.

Flashy Hydrology, Fort Bragg

Regulatory Considerations

Select all that apply to the assessment area.

- Anadromous fish
- Federally protected species or State endangered or threatened species
- NCDWQ riparian buffer rule in effect
- Wetland adjacent to or associated stream drains to a Primary Nursery Area
- Publicly owned property
- N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
- N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
- Designated NCNHP reference community

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

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

Is the assessment area on a coastal island? Yes No

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

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

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GS | VS | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Not severely altered |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration) |

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

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

- | | | |
|---------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surf | Sub | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Water storage capacity and duration are not altered. |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation). |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction). |

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

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

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------|
| AA | WT | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | > 50% of the wetland type with depressions able to pond water > 2 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | > 50% of the wetland type with depressions able to pond water 1 to 2 feet |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | > 50% of wetland type with depressions able to pond water 6 inches to 1 foot |
| <input type="checkbox"/> D | <input type="checkbox"/> D | > 50% of wetland type with depressions able to pond water 3- to 6-inches deep |
| <input type="checkbox"/> E | <input type="checkbox"/> E | Depressions able to pond water < 3-inches deep |

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- A Sandy soil
- B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- C Predominantly characterized by other, mineral soil (no mottling)
- D Gleyed mineral soil (F2, S4)
- E Soil ribbon < 1 inch
- F Soil ribbon ≥ 1 inch
- G No peat or muck presence
- H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

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 | |
| <input type="checkbox"/> A | <input checked="" type="checkbox"/> A | Little or no evidence of pollutants or discharges entering the assessment area |
| <input checked="" type="checkbox"/> B | <input type="checkbox"/> B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| <input type="checkbox"/> C | <input type="checkbox"/> 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) |

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric 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 and 30 feet wide in the Mountains.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS | 5M | 2M | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | > 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential) |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | > 30% impervious surfaces without stormwater BMPs |
| <input type="checkbox"/> C | <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | 10 to 30% impervious surfaces |
| <input checked="" type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | < 10% impervious surfaces |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | Old urban development (pink areas on USGS 7.5-minute quadrangles) |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | New adjacent development |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | Confined animal operations (or other local, concentrated source of pollutants) |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | ≥20% coverage of pasture without riparian buffer |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I | ≥20% coverage of pasture with effective riparian buffer |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J | ≥20% coverage of agricultural land (regularly plowed land) without riparian buffer |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K | ≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer |
| <input type="checkbox"/> L | <input type="checkbox"/> L | <input type="checkbox"/> L | ≥20% coverage of maintained grass/herb |
| <input type="checkbox"/> M | <input type="checkbox"/> M | <input type="checkbox"/> M | Silvicultural land with disturbance < 5 years old |
| <input type="checkbox"/> N | <input type="checkbox"/> N | <input type="checkbox"/> N | Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area. |

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

- Yes No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

- ≤15-foot wide > 15-foot wide Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

- Yes No

Is stream or other open water sheltered or exposed?

- Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
 Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-----------------------|
| WT | WC | RB (if applicable) | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | ≥100 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | From 80 to < 100 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | From 50 to < 80 feet |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | From 40 to < 50 feet |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | From 30 to < 40 feet |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | From 15 to < 30 feet |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | From 5 to < 15 feet |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | < 5 feet |

9. Inundation Duration – assessment area condition metric

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 (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

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 contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)
<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A ≥500 acres
<input type="checkbox"/> B	<input checked="" type="checkbox"/> B	<input checked="" type="checkbox"/> B From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D From 25 to < 50 acres
<input checked="" type="checkbox"/> E	<input type="checkbox"/> E	<input type="checkbox"/> E From 10 to < 25 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	<input type="checkbox"/> F From 5 to < 10 acres
<input type="checkbox"/> G	<input type="checkbox"/> G	<input type="checkbox"/> G From 1 to < 5 acres
<input type="checkbox"/> H	<input type="checkbox"/> H	<input type="checkbox"/> H From 0.5 to < 1 acre
<input type="checkbox"/> I	<input type="checkbox"/> I	<input type="checkbox"/> I From 0.1 to < 0.5 acre
<input type="checkbox"/> J	<input type="checkbox"/> J	<input type="checkbox"/> J From 0.01 to < 0.1 acre
<input type="checkbox"/> K	<input type="checkbox"/> K	<input type="checkbox"/> K < 0.01 acre

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

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

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
<input checked="" type="checkbox"/> A	<input type="checkbox"/> A	≥500 acres
<input type="checkbox"/> B	<input type="checkbox"/> B	From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	From 10 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	< 10 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

- Yes No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- Yes No Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- A No artificial edge within 150 feet in all directions
- B No artificial edge within 150 feet in four to seven directions
- C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for 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. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

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.
- B Vegetation diversity is low or has > 10% cover of exotics.
- C Vegetation is dominated by exotic species.

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

Vegetation present

Evaluate percent coverage of vegetation for marshes only

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

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 | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Canopy closed, or nearly closed, with natural gaps associated with natural processes |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Canopy present, but opened more than natural gaps |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Canopy sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense mid-story/sapling layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density mid-story/sapling layer |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | Mid-story/sapling layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense shrub layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density shrub layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Shrub layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense herb layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density herb layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Herb layer sparse or absent |

Vegetation absent

18. **Snags – wetland type condition metric**

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

19. **Diameter Class Distribution – wetland type condition metric**

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

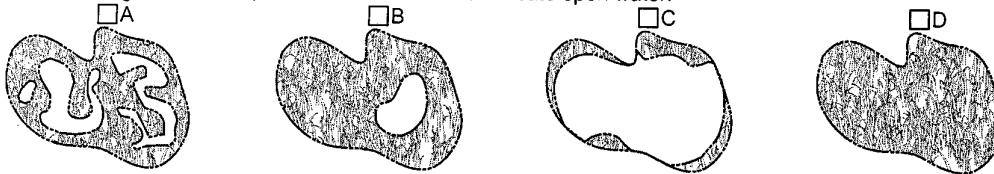
20. **Large Woody Debris – wetland type condition metric**

Include both man-made and natural debris piles.

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

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

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



22. **Habitat Uniqueness – wetland type condition metric**

- Yes No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name O-I-WAM01 Date of Assessment 9/7/07
 Wetland Type Riverine Swamp Forest Assessor Name/Organization AS, RA, EcoScience

Presence of stressor affecting assessment area (Y/N) YES
 Notes on Field Assessment Form (Y/N) NO
 Presence of regulatory considerations (Y/N) YES
 Wetland is intensively managed (Y/N) NO
 Wetland may be a high-quality riverine wetland (Y/N)

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	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	YES
	Particulate Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	YES
	Soluble Change	Condition	MEDIUM
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	YES
	Physical Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	NO
Pollution Change	Condition	X	
	Condition/Opportunity	X	
	Opportunity Presence (Y/N)	X	
Habitat	Physical Structure	Condition	LOW
	Landscape Patch Structure	Condition	HIGH
	Vegetation Composition	Condition	HIGH
	Uniqueness	Condition	NO

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	HIGH
Water Quality	Condition	HIGH
	Condition/Opportunity	HIGH
	Opportunity Presence (Y/N)	YES
Habitat	Condition	MEDIUM

Overall Wetland Rating HIGH

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	N-I-WAM01	Date	9/7/07
Wetland Type	Riverine Swamp Forest	Assessor Name/Organization	AS, RA, EcoScience
Level III Ecoregion	Southeastern Plains	Nearest Named Water Body	Big Branch
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030004
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.109776, -78.987825

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

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

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

Is the assessment area intensively managed? Yes No

Describe effects of stressors that are present.

Fort Bragg

Regulatory Considerations

Select all that apply to the assessment area.

- Anadromous fish
- Federally protected species or State endangered or threatened species
- NCDWQ riparian buffer rule in effect
- Wetland adjacent to or associated stream drains to a Primary Nursery Area
- Publicly owned property
- N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
- N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
- Designated NCNHP reference community

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

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

Is the assessment area on a coastal island? Yes No

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

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

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GS | VS | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Not severely altered |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration) |

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

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

- | | | |
|---------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surf | Sub | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Water storage capacity and duration are not altered. |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation). |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction). |

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

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

- | | | |
|---------------------------------------|---------------------------------------|----------------------------------------------------------------------------------|
| AA | WT | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | $> 50\%$ of the wetland type with depressions able to pond water > 2 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | $> 50\%$ of the wetland type with depressions able to pond water 1 to 2 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | $> 50\%$ of wetland type with depressions able to pond water 6 inches to 1 foot |
| <input checked="" type="checkbox"/> D | <input checked="" type="checkbox"/> D | $> 50\%$ of wetland type with depressions able to pond water 3- to 6-inches deep |
| <input type="checkbox"/> E | <input type="checkbox"/> E | Depressions able to pond water < 3 -inches deep |

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- A Sandy soil
- B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- C Predominantly characterized by other, mineral soil (no mottling)
- D Gleyed mineral soil (F2, S4)
- E Soil ribbon < 1 inch
- F Soil ribbon ≥ 1 inch
- G No peat or muck presence
- H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

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 | |
|---------------------------------------|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Little or no evidence of pollutants or discharges entering the assessment area |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| <input type="checkbox"/> C | <input type="checkbox"/> 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) |

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric 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 and 30 feet wide in the Mountains.

- | WS | 5M | 2M | |
|---------------------------------------|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | > 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential) |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | > 30% impervious surfaces without stormwater BMPs |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | 10 to 30% impervious surfaces |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | < 10% impervious surfaces |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | Old urban development (pink areas on USGS 7.5-minute quadrangles) |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | New adjacent development |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | Confined animal operations (or other local, concentrated source of pollutants) |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | ≥20% coverage of pasture without riparian buffer |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I | ≥20% coverage of pasture with effective riparian buffer |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J | ≥20% coverage of agricultural land (regularly plowed land) without riparian buffer |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K | ≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer |
| <input type="checkbox"/> L | <input type="checkbox"/> L | <input type="checkbox"/> L | ≥20% coverage of maintained grass/herb |
| <input type="checkbox"/> M | <input type="checkbox"/> M | <input type="checkbox"/> M | Silvicultural land with disturbance < 5 years old |
| <input type="checkbox"/> N | <input type="checkbox"/> N | <input type="checkbox"/> N | Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area. |

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

- Yes No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

- ≤15-feet wide > 15-feet wide Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

- Yes No

Is stream or other open water sheltered or exposed?

- Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
 Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

- | WT | WC | RB (if applicable) | |
|---------------------------------------|---------------------------------------|---------------------------------------|-----------------------|
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | ≥100 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | From 80 to < 100 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | From 50 to < 80 feet |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | From 40 to < 50 feet |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | From 30 to < 40 feet |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | From 15 to < 30 feet |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | From 5 to < 15 feet |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | < 5 feet |

9. Inundation Duration – assessment area condition metric

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 (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

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 contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)
<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A ≥500 acres
<input type="checkbox"/> B	<input checked="" type="checkbox"/> B	<input checked="" type="checkbox"/> B From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D From 25 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	<input type="checkbox"/> E From 10 to < 25 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	<input type="checkbox"/> F From 5 to < 10 acres
<input checked="" type="checkbox"/> G	<input type="checkbox"/> G	<input type="checkbox"/> G From 1 to < 5 acres
<input type="checkbox"/> H	<input type="checkbox"/> H	<input type="checkbox"/> H From 0.5 to < 1 acre
<input type="checkbox"/> I	<input type="checkbox"/> I	<input type="checkbox"/> I From 0.1 to < 0.5 acre
<input type="checkbox"/> J	<input type="checkbox"/> J	<input type="checkbox"/> J From 0.01 to < 0.1 acre
<input type="checkbox"/> K	<input type="checkbox"/> K	<input type="checkbox"/> K < 0.01 acre

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

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

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
<input checked="" type="checkbox"/> A	<input type="checkbox"/> A	≥500 acres
<input type="checkbox"/> B	<input type="checkbox"/> B	From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	From 10 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	< 10 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

- Yes No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- Yes No Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-foot wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- A No artificial edge within 150 feet in all directions
- B No artificial edge within 150 feet in four to seven directions
- C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for 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. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

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.
- B Vegetation diversity is low or has > 10% cover of exotics.
- C Vegetation is dominated by exotic species.

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

Vegetation present

Evaluate percent coverage of vegetation for marshes only

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

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 | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Canopy closed, or nearly closed, with natural gaps associated with natural processes |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Canopy present, but opened more than natural gaps |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Canopy sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense mid-story/sapling layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density mid-story/sapling layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Mid-story/sapling layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense shrub layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density shrub layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Shrub layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense herb layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density herb layer |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | Herb layer sparse or absent |

Vegetation absent

18. **Snags – wetland type condition metric**

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

19. **Diameter Class Distribution – wetland type condition metric**

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

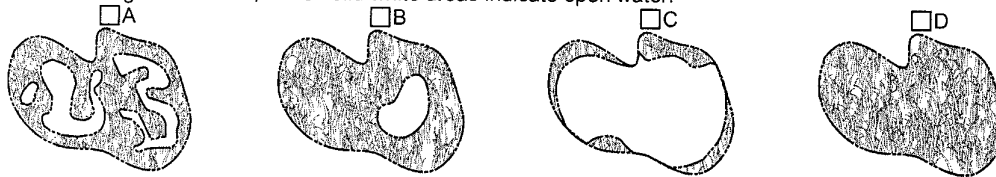
20. **Large Woody Debris – wetland type condition metric**

Include both man-made and natural debris piles.

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

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

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



22. **Habitat Uniqueness – wetland type condition metric**

- Yes No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name N-I-WAM01 Date of Assessment 9/7/07
 Wetland Type Riverine Swamp Forest Assessor Name/Organization AS, RA, EcoScience

Presence of stressor affecting assessment area (Y/N) YES
 Notes on Field Assessment Form (Y/N) NO
 Presence of regulatory considerations (Y/N) YES
 Wetland is intensively managed (Y/N) NO
 Wetland may be a high-quality riverine wetland (Y/N) _____

Sub-function Rating Summary

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

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	HIGH
Water Quality	Condition	HIGH
	Condition/Opportunity	HIGH
	Opportunity Presence (Y/N)	YES
Habitat	Condition	MEDIUM

Overall Wetland Rating HIGH





Eastern Carolina University
Raleigh, North Carolina

Client:



State of North Carolina

Project:

FAYETTEVILLE OUTER LOOP

WETLAND FUNCTIONAL ASSESSMENT

Cumberland, Robeson, and Hoke Counties, North Carolina

Title:

Wetland Locations

Drawn By: SGD	Dated By: MTC
Date: SEP 2007	Scale: 1:5000
ESC Project No.: 06-296.02	

FIGURE

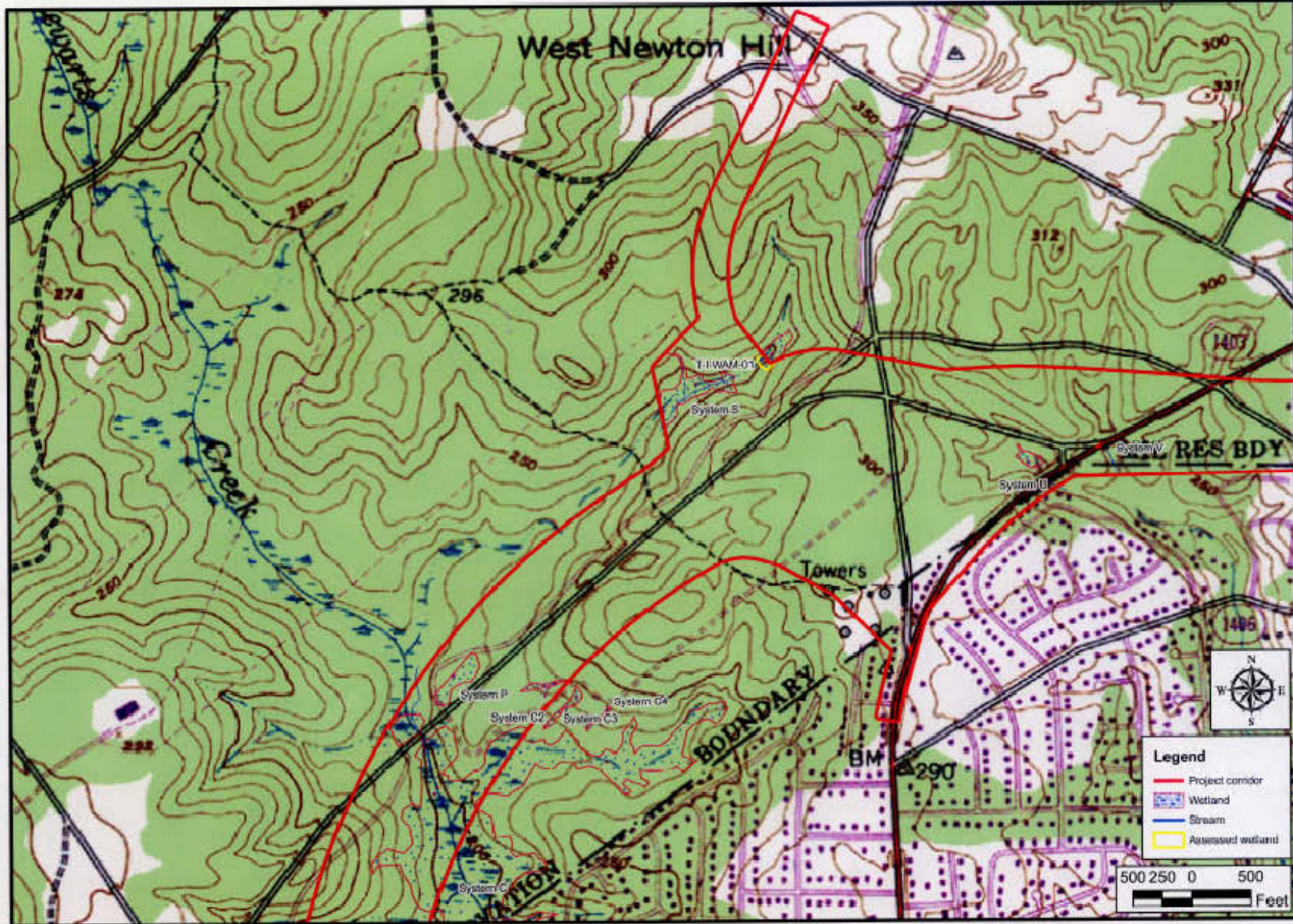
6

Legend

- Project corridor
- Wetland
- Stream
- Assessed wetland

500 250 0 500
Feet





Project:
FAYETTEVILLE OUTER LOOP
WETLAND FUNCTIONAL ASSESSMENT

Cumberland, Robeson, and Hoke Counties, North Carolina

Title:
Wetland Locations

Drawn By:	Clad By:
SGD	MTC
Date:	Scale:
SEP 2007	1:8000
ESC Project No.: 06-296.02	

FIGURE
6

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	T-I-WAM01	Date	9/7/07
Wetland Type	Headwater Wetland	Assessor Name/Organization	AS, RA/ EcoScience
Level III Ecoregion	Southeastern Plains	Nearest Named Water Body	Stewart's Creek
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030004
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35.108764, -79.014783

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

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

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

Is the assessment area intensively managed? Yes No

Describe effects of stressors that are present.

Man-made berm with rip rap and clay fill has caused ponding of water, Fort Bragg

Regulatory Considerations

Select all that apply to the assessment area.

- Anadromous fish
- Federally protected species or State endangered or threatened species
- NCDWQ riparian buffer rule in effect
- Wetland adjacent to or associated stream drains to a Primary Nursery Area
- Publicly owned property
- N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
- N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
- Designated NCNHP reference community

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

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

Is the assessment area on a coastal island? Yes No

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

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

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GS | VS | |
| <input type="checkbox"/> A | <input checked="" type="checkbox"/> A | Not severely altered |
| <input checked="" type="checkbox"/> B | <input type="checkbox"/> B | Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration) |

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

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

- | | | |
|---------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surf | Sub | |
| <input type="checkbox"/> A | <input checked="" type="checkbox"/> A | Water storage capacity and duration are not altered. |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation). |
| <input checked="" type="checkbox"/> C | <input type="checkbox"/> C | Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction). |

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

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

- | | | |
|---------------------------------------|---------------------------------------|----------------------------------------------------------------------------------|
| AA | WT | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | $> 50\%$ of the wetland type with depressions able to pond water > 2 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | $> 50\%$ of the wetland type with depressions able to pond water 1 to 2 feet |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | $> 50\%$ of wetland type with depressions able to pond water 6 inches to 1 foot |
| <input type="checkbox"/> D | <input type="checkbox"/> D | $> 50\%$ of wetland type with depressions able to pond water 3- to 6-inches deep |
| <input type="checkbox"/> E | <input type="checkbox"/> E | Depressions able to pond water < 3 -inches deep |

4. **Soil Texture/Structure – assessment area condition metric**

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- A Sandy soil
- B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- C Predominantly characterized by other, mineral soil (no mottling)
- D Gleyed mineral soil (F2, S4)
- E Soil ribbon < 1 inch
- F Soil ribbon ≥ 1 inch
- G No peat or muck presence
- H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

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 | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Little or no evidence of pollutants or discharges entering the assessment area |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| <input type="checkbox"/> C | <input type="checkbox"/> 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) |

6. **Land Use – opportunity metric**

Check all that apply. Evaluation of this metric 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 and 30 feet wide in the Mountains.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS | 5M | 2M | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | > 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential) |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | > 30% impervious surfaces without stormwater BMPs |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | 10 to 30% impervious surfaces |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | < 10% impervious surfaces |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | Old urban development (pink areas on USGS 7.5-minute quadrangles) |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | New adjacent development |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | Confined animal operations (or other local, concentrated source of pollutants) |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | ≥20% coverage of pasture without riparian buffer |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I | ≥20% coverage of pasture with effective riparian buffer |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J | ≥20% coverage of agricultural land (regularly plowed land) without riparian buffer |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K | ≥20% coverage of agricultural land (regularly plowed land) with effective riparian buffer |
| <input type="checkbox"/> L | <input type="checkbox"/> L | <input type="checkbox"/> L | ≥20% coverage of maintained grass/herb |
| <input type="checkbox"/> M | <input type="checkbox"/> M | <input type="checkbox"/> M | Silvicultural land with disturbance < 5 years old |
| <input type="checkbox"/> N | <input type="checkbox"/> N | <input type="checkbox"/> N | Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area. |

7. **Wetland Acting as Vegetated Buffer – assessment area condition metric**

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

- Yes No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

- ≤15-feet wide > 15-feet wide Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

- Yes No

Is stream or other open water sheltered or exposed?

- Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
 Exposed – adjacent open water with width ≥2500 feet or regular boat traffic.

8. **Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric**

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

- | | | | |
|---------------------------------------|---------------------------------------|----------------------------|-----------------------|
| WT | WC | RB (if applicable) | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | <input type="checkbox"/> A | ≥100 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | From 80 to < 100 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | From 50 to < 80 feet |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | From 40 to < 50 feet |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | From 30 to < 40 feet |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | From 15 to < 30 feet |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | From 5 to < 15 feet |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | < 5 feet |

9. Inundation Duration – assessment area condition metric

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 (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

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 contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

- | WT | WC | FW (if applicable) |
|---------------------------------------|---------------------------------------|----------------------------------------------------|
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A ≥500 acres |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B From 100 to < 500 acres |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C From 50 to < 100 acres |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D From 25 to < 50 acres |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E From 10 to < 25 acres |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F From 5 to < 10 acres |
| <input checked="" type="checkbox"/> G | <input checked="" type="checkbox"/> G | <input type="checkbox"/> G From 1 to < 5 acres |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H From 0.5 to < 1 acre |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I From 0.1 to < 0.5 acre |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J From 0.01 to < 0.1 acre |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K < 0.01 acre |

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

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

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

- | WC | LC | |
|----------------------------|---------------------------------------|--------------------------------------------------------------------|
| <input type="checkbox"/> A | <input type="checkbox"/> A | ≥500 acres |
| <input type="checkbox"/> B | <input checked="" type="checkbox"/> B | From 100 to < 500 acres |
| <input type="checkbox"/> C | <input type="checkbox"/> C | From 50 to < 100 acres |
| <input type="checkbox"/> D | <input type="checkbox"/> D | From 10 to < 50 acres |
| <input type="checkbox"/> E | <input type="checkbox"/> E | < 10 acres |
| <input type="checkbox"/> F | <input type="checkbox"/> F | Wetland type has a poor or no connection to other natural habitats |

Check Yes or No.

- Yes No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- Yes No Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- A No artificial edge within 150 feet in all directions
- B No artificial edge within 150 feet in four to seven directions
- C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for 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. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

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.
- B Vegetation diversity is low or has > 10% cover of exotics.
- C Vegetation is dominated by exotic species.

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

Vegetation present

Evaluate percent coverage of vegetation for marshes only

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

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 | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Canopy closed, or nearly closed, with natural gaps associated with natural processes |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Canopy present, but opened more than natural gaps |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Canopy sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense mid-story/sapling layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density mid-story/sapling layer |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | Mid-story/sapling layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense shrub layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density shrub layer |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | Shrub layer sparse or absent |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Dense herb layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density herb layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Herb layer sparse or absent |

Vegetation absent

18. **Snags – wetland type condition metric**

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

19. **Diameter Class Distribution – wetland type condition metric**

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

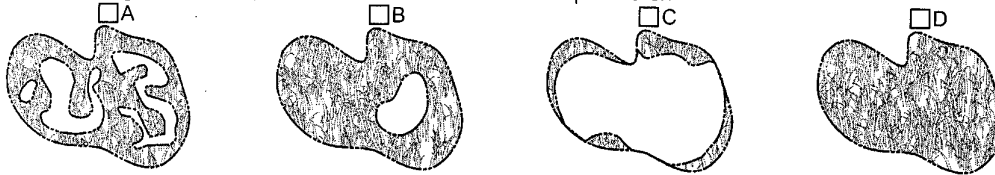
20. **Large Woody Debris – wetland type condition metric**

Include both man-made and natural debris piles.

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

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

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



22. **Habitat Uniqueness – wetland type condition metric**

- Yes No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?"

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name T-I-WAM01 Date of Assessment 9/7/07
 Wetland Type Headwater Wetland Assessor Name/Organization AS, RA/ EcoScience

Presence of stressor affecting assessment area (Y/N) YES
 Notes on Field Assessment Form (Y/N) NO
 Presence of regulatory considerations (Y/N) YES
 Wetland is intensively managed (Y/N) YES
 Wetland may be a high-quality riverine wetland (Y/N)

Sub-function Rating Summary

Function	Sub-function	Metrics	Rating
Hydrology	Surface Storage and Retention	Condition	LOW
	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	X
		Opportunity Presence (Y/N)	X
	Soluble Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	YES
	Physical Change	Condition	LOW
		Condition/Opportunity	LOW
		Opportunity Presence (Y/N)	YES
Pollution Change	Condition	X	
	Condition/Opportunity	X	
	Opportunity Presence (Y/N)	X	
Habitat	Physical Structure	Condition	MEDIUM
	Landscape Patch Structure	Condition	HIGH
	Vegetation Composition	Condition	LOW
	Uniqueness	Condition	NO

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	LOW
Water Quality	Condition	MEDIUM
	Condition/Opportunity	HIGH
	Opportunity Presence (Y/N)	YES
Habitat	Condition	MEDIUM

Overall Wetland Rating **MEDIUM**



EcoScience Corporation
Raleigh, North Carolina

Client:



Project:

**FAYETTEVILLE
OUTER
LOOP**

**WETLAND
FUNCTIONAL
ASSESSMENT**

Cumberland, Robeson,
and Hoke Counties,
North Carolina

Title:

**Wetland
Locations**

Drawn By:

SGD

Checked By:

MTC

Date:

SEP 2007

Scale:

1:9000

ESC Project No.:

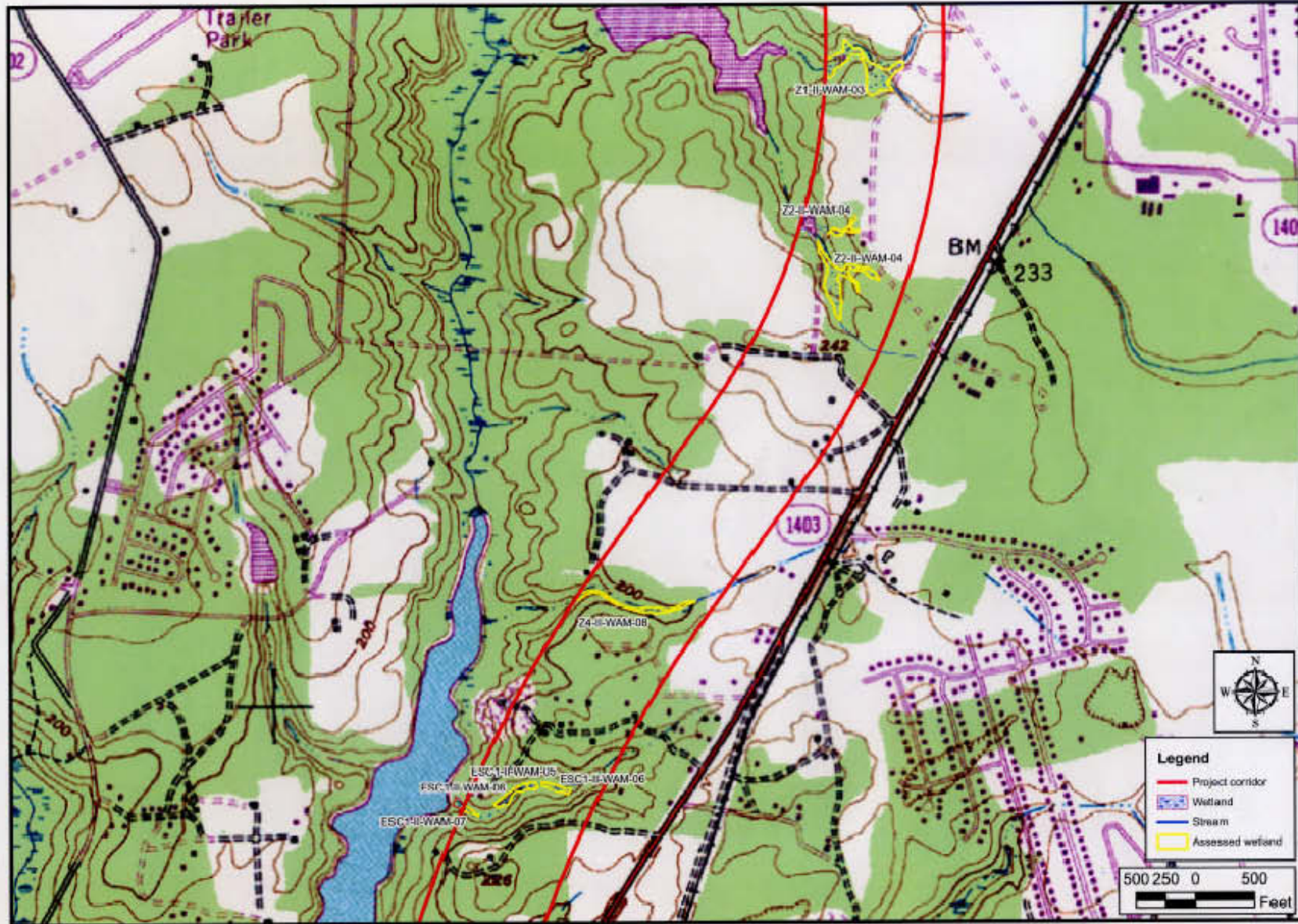
06 296.02

FIGURE

9

- Legend**
- Project corridor
 - Wetland
 - Stream
 - Assessed wetland





EcoScience Corporation
Raleigh, North Carolina

Client:



Project:

**FAYETTEVILLE
OUTER
LOOP**

**WETLAND
FUNCTIONAL
ASSESSMENT**

Cumberland, Robeson,
and Hoke Counties,
North Carolina

Title:

**Wetland
Locations**

Own By:

SGD

Clid By:

MTC

Date:

SEP 2007

Scale:

1:9000

ESIC Project No.:

06-296.02

FIGURE

9

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	Z1-II-WAM03	Date	9-6-07
Wetland Type	Headwater Wetland	Assessor Name/Organization	EcoScience MC/JW
Level III Ecoregion	Southeastern Plains	Nearest Named Water Body	Bones Creek
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030004
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Precipitation within 48 hrs?	Latitude/Longitude (dec-degrees)	35 056307 -79.024511

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following.

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

Is the assessment area intensively managed? Yes No

Describe effects of stressors that are present.

Regulatory Considerations

- Select all that apply to the assessment area
- Anadromous fish
 - Federally protected species or State endangered or threatened species
 - NCDWQ riparian buffer rule in effect
 - Wetland adjacent to or associated stream drains to a Primary Nursery Area
 - Publicly owned property
 - N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
 - N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
 - Designated NCNHP reference community

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

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

Is the assessment area on a coastal island? Yes No

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

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

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

GS	VS	
<input checked="" type="checkbox"/> A	<input checked="" type="checkbox"/> A	Not severely altered
<input type="checkbox"/> B	<input type="checkbox"/> B	Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

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

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

Surf	Sub	
<input checked="" type="checkbox"/> A	<input checked="" type="checkbox"/> A	Water storage capacity and duration are not altered.
<input type="checkbox"/> B	<input type="checkbox"/> B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation)
<input type="checkbox"/> C	<input type="checkbox"/> C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction).

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

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

AA	WT	
<input type="checkbox"/> A	<input type="checkbox"/> A	> 50% of the wetland type with depressions able to pond water > 2 feet
<input type="checkbox"/> B	<input type="checkbox"/> B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
<input type="checkbox"/> C	<input type="checkbox"/> C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
<input checked="" type="checkbox"/> D	<input checked="" type="checkbox"/> D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
<input type="checkbox"/> E	<input type="checkbox"/> E	Depressions able to pond water < 3-inches deep

4. Soil Texture/Structure – assessment area condition metric

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance)

- A Sandy soil
- B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- C Predominantly characterized by other, mineral soil (no mottling)
- D Gleyed mineral soil (F2, S4)
- E Soil ribbon < 1 inch
- F Soil ribbon ≥ 1 inch
- G No peat or muck presence
- H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

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 | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Little or no evidence of pollutants or discharges entering the assessment area |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| <input type="checkbox"/> C | <input type="checkbox"/> 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) |

6. Land Use – opportunity metric

Check all that apply. Evaluation of this metric 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 and 30 feet wide in the Mountains

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS | 5M | 2M | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | > 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples industrial, commercial, and high-density residential) |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | > 30% impervious surfaces without stormwater BMPs |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | 10 to 30% impervious surfaces |
| <input checked="" type="checkbox"/> D | <input checked="" type="checkbox"/> D | <input checked="" type="checkbox"/> D | < 10% impervious surfaces |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | Old urban development (pink areas on USGS 7 5-minute quadrangles) |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | New adjacent development |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | Confined animal operations (or other local, concentrated source of pollutants) |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | ≥ 20% coverage of pasture without riparian buffer |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I | ≥ 20% coverage of pasture with effective riparian buffer |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J | ≥ 20% coverage of agricultural land (regularly plowed land) without riparian buffer |
| <input checked="" type="checkbox"/> K | <input checked="" type="checkbox"/> K | <input checked="" type="checkbox"/> K | ≥ 20% coverage of agricultural land (regularly plowed land) with effective riparian buffer |
| <input type="checkbox"/> L | <input type="checkbox"/> L | <input type="checkbox"/> L | ≥ 20% coverage of maintained grass/herb |
| <input type="checkbox"/> M | <input type="checkbox"/> M | <input type="checkbox"/> M | Silvicultural land with disturbance < 5 years old |
| <input type="checkbox"/> N | <input type="checkbox"/> N | <input type="checkbox"/> N | Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area. |

7. Wetland Acting as Vegetated Buffer – assessment area condition metric

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

- Yes No. If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width

- ≤ 15-foot wide > 15-foot wide Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

- Yes No

Is stream or other open water sheltered or exposed?

- Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic
 Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic.

8. Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-----------------------|
| WT | WC | RB (if applicable) | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input checked="" type="checkbox"/> A | ≥ 100 feet |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | <input type="checkbox"/> B | From 80 to < 100 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | From 50 to < 80 feet |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | From 40 to < 50 feet |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | From 30 to < 40 feet |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | From 15 to < 30 feet |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | From 5 to < 15 feet |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | < 5 feet |

9. Inundation Duration – assessment area condition metric

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 (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

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 contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column

WT	WC	FW (if applicable)
<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A ≥ 500 acres
<input type="checkbox"/> B	<input type="checkbox"/> B	<input type="checkbox"/> B From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D From 25 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	<input type="checkbox"/> E From 10 to < 25 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	<input type="checkbox"/> F From 5 to < 10 acres
<input type="checkbox"/> G	<input type="checkbox"/> G	<input type="checkbox"/> G From 1 to < 5 acres
<input type="checkbox"/> H	<input type="checkbox"/> H	<input type="checkbox"/> H From 0.5 to < 1 acre
<input checked="" type="checkbox"/> I	<input checked="" type="checkbox"/> I	<input checked="" type="checkbox"/> I From 0.1 to < 0.5 acre
<input type="checkbox"/> J	<input type="checkbox"/> J	<input type="checkbox"/> J From 0.01 to < 0.1 acre
<input type="checkbox"/> K	<input type="checkbox"/> K	<input type="checkbox"/> K < 0.01 acre

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

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

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
<input type="checkbox"/> A	<input type="checkbox"/> A	≥ 500 acres
<input type="checkbox"/> B	<input type="checkbox"/> B	From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	From 50 to < 100 acres
<input checked="" type="checkbox"/> D	<input type="checkbox"/> D	From 10 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	< 10 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

- Yes No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- Yes No Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥ 40-foot wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- A No artificial edge within 150 feet in all directions
- B No artificial edge within 150 feet in four to seven directions
- C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for 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. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species

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
- B Vegetation diversity is low or has > 10% cover of exotics
- C Vegetation is dominated by exotic species.

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

Vegetation present

Evaluate percent coverage of vegetation for marshes only

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

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 | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Canopy closed, or nearly closed, with natural gaps associated with natural processes |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Canopy present, but opened more than natural gaps |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Canopy sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense mid-story/sapling layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density mid-story/sapling layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Mid-story/sapling layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense shrub layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density shrub layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Shrub layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense herb layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density herb layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Herb layer sparse or absent |

Vegetation absent

18. Snags – wetland type condition metric

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

19. Diameter Class Distribution – wetland type condition metric

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

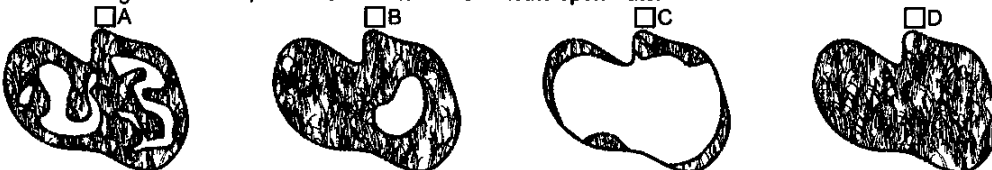
20. Large Woody Debris – wetland type condition metric

Include both man-made and natural debris piles

- A Large logs (more than one) are present (> 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



22. Habitat Uniqueness – wetland type condition metric

- Yes No Has the N C Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?

Notes

Frames 9884 and 9885

NC WAM Wetland Rating Sheet

Wetland Site Name Z1-II-WAM03
 Wetland Type Headwater Wetland

Date of Assessment 9-6-07
 Assessor Name/Organization EcoScience MC/JW

Presence of stressor affecting assessment area (Y/N) NO
 Notes on Field Assessment Form (Y/N) YES
 Presence of regulatory considerations (Y/N) NO
 Wetland is intensively managed (Y/N) NO
 Wetland may be a high-quality riverine wetland (Y/N)

Sub-function Rating Summary

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)	NO
	Particulate Change	Condition	HIGH
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Soluble Change	Condition	MEDIUM
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	YES
	Physical Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	YES
Pollution Change	Condition	X	
	Condition/Opportunity	X	
	Opportunity Presence (Y/N)	X	
Habitat	Physical Structure	Condition	HIGH
	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	MEDIUM
	Uniqueness	Condition	NO

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	HIGH
Water Quality	Condition	HIGH
	Condition/Opportunity	HIGH
Habitat	Opportunity Presence (Y/N)	YES
	Condition	MEDIUM

Overall Wetland Rating **HIGH**

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	Z2-II-WAM04	Date	9-6-07
Wetland Type	Riverine Swamp Forest	Assessor Name/Organization	EcoScience JW/MC
Level III Ecoregion	Southeastern Plains	Nearest Named Water Body	Bones Creek
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030004
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Precipitation within 48 hrs?	Latitude/Longitude (dec-degrees)	35 052466 -79 025985

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

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

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

Is the assessment area intensively managed? Yes No

Describe effects of stressors that are present

Regulatory Considerations

Select all that apply to the assessment area.

- Anadromous fish
- Federally protected species or State endangered or threatened species
- NCDWQ riparian buffer rule in effect
- Wetland adjacent to or associated stream drains to a Primary Nursery Area
- Publicly owned property
- N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
- N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
- Designated NCNHP reference community

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

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

Is the assessment area on a coastal island? Yes No

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

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

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1 0) If a reference is not applicable, then rate the assessment area based on evidence of alteration

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GS | VS | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Not severely altered |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Severely altered over most of the assessment area (ground surface alteration examples. vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples. mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration) |

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

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub) Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1 0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surf | Sub | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Water storage capacity and duration are not altered |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation). |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction) |

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

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

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------|
| AA | WT | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | > 50% of the wetland type with depressions able to pond water > 2 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | > 50% of the wetland type with depressions able to pond water 1 to 2 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | > 50% of wetland type with depressions able to pond water 6 inches to 1 foot |
| <input type="checkbox"/> D | <input checked="" type="checkbox"/> D | > 50% of wetland type with depressions able to pond water 3- to 6-inches deep |
| <input checked="" type="checkbox"/> E | <input type="checkbox"/> E | Depressions able to pond water < 3-inches deep |

4. Soil Texture/Structure – assessment area condition metric

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance)

- A Sandy soil
- B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- C Predominantly characterized by other, mineral soil (no mottling)
- D Gleyed mineral soil (F2, S4)
- E Soil ribbon < 1 inch
- F Soil ribbon ≥ 1 inch
- G No peat or muck presence
- H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

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 | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Little or no evidence of pollutants or discharges entering the assessment area |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| <input type="checkbox"/> C | <input type="checkbox"/> 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) |

6. Land Use – opportunity metric

Check all that apply. Evaluation of this metric 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 and 30 feet wide in the Mountains

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS | 5M | 2M | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | > 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples industrial, commercial, and high-density residential) |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | > 30% impervious surfaces without stormwater BMPs |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | 10 to 30% impervious surfaces |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | < 10% impervious surfaces |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | Old urban development (pink areas on USGS 7 5-minute quadrangles) |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | New adjacent development |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | Confined animal operations (or other local, concentrated source of pollutants) |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | ≥ 20% coverage of pasture without riparian buffer |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I | ≥ 20% coverage of pasture with effective riparian buffer |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J | ≥ 20% coverage of agricultural land (regularly plowed land) without riparian buffer |
| <input checked="" type="checkbox"/> K | <input checked="" type="checkbox"/> K | <input checked="" type="checkbox"/> K | ≥ 20% coverage of agricultural land (regularly plowed land) with effective riparian buffer |
| <input type="checkbox"/> L | <input type="checkbox"/> L | <input type="checkbox"/> L | ≥ 20% coverage of maintained grass/herb |
| <input type="checkbox"/> M | <input type="checkbox"/> M | <input type="checkbox"/> M | Silvicultural land with disturbance < 5 years old |
| <input type="checkbox"/> N | <input type="checkbox"/> N | <input type="checkbox"/> N | Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area |

7. Wetland Acting as Vegetated Buffer – assessment area condition metric

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

- Yes No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width.

- ≤ 15-foot wide > 15-foot wide Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

- Yes No

Is stream or other open water sheltered or exposed?

- Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic
 Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic

8. Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-----------------------|
| WT | WC | RB (if applicable) | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | ≥ 100 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | From 80 to < 100 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | From 50 to < 80 feet |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | From 40 to < 50 feet |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | From 30 to < 40 feet |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | From 15 to < 30 feet |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | From 5 to < 15 feet |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | < 5 feet |

9. Inundation Duration – assessment area condition metric

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 (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

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 contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

- | WT | WC | FW (if applicable) |
|---------------------------------------|---------------------------------------|------------------------------------------------------------|
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A ≥ 500 acres |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B From 100 to < 500 acres |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C From 50 to < 100 acres |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D From 25 to < 50 acres |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E From 10 to < 25 acres |
| <input type="checkbox"/> F | <input checked="" type="checkbox"/> F | <input checked="" type="checkbox"/> F From 5 to < 10 acres |
| <input checked="" type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G From 1 to < 5 acres |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H From 0.5 to < 1 acre |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I From 0.1 to < 0.5 acre |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J From 0.01 to < 0.1 acre |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K < 0.01 acre |

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

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

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

- | WC | LC |
|---------------------------------------|-----------------------------------------------------------------------------------------------|
| <input type="checkbox"/> A | <input type="checkbox"/> A ≥ 500 acres |
| <input type="checkbox"/> B | <input type="checkbox"/> B From 100 to < 500 acres |
| <input checked="" type="checkbox"/> C | <input type="checkbox"/> C From 50 to < 100 acres |
| <input type="checkbox"/> D | <input type="checkbox"/> D From 10 to < 50 acres |
| <input type="checkbox"/> E | <input type="checkbox"/> E < 10 acres |
| <input type="checkbox"/> F | <input type="checkbox"/> F Wetland type has a poor or no connection to other natural habitats |

Check Yes or No.

- Yes No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- Yes No Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥ 40-foot wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- A No artificial edge within 150 feet in all directions
- B No artificial edge within 150 feet in four to seven directions
- C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for 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. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species

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
- B Vegetation diversity is low or has > 10% cover of exotics.
- C Vegetation is dominated by exotic species.

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

Vegetation present

Evaluate percent coverage of vegetation for marshes only

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

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 | |
|---------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Canopy closed, or nearly closed, with natural gaps associated with natural processes |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Canopy present, but opened more than natural gaps |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Canopy sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense mid-story/sapling layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density mid-story/sapling layer |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | Mid-story/sapling layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense shrub layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density shrub layer |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | Shrub layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense herb layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density herb layer |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | Herb layer sparse or absent |

Vegetation absent

18. Snags – wetland type condition metric

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

19. Diameter Class Distribution – wetland type condition metric

- A Most canopy trees have stems > 6-inches in diameter at breast height (DBH), many large trees (> 12-inches DBH) are present
 B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH
 C Most canopy trees are < 6-inches DBH or no trees

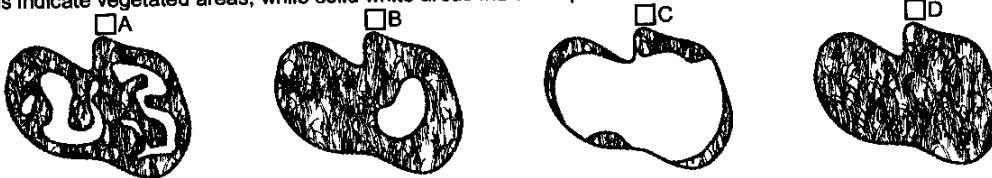
20. Large Woody Debris – wetland type condition metric

Include both man-made and natural debris piles.

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

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

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



22. Habitat Uniqueness – wetland type condition metric

- Yes No Has the N C Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?

Notes
 Frames 9886 and 9887 (Northern fringe) 9888-9892 (Southern fringe)

NC WAM Wetland Rating Sheet

Wetland Site Name Z2-II-WAM04 Date of Assessment 9-6-07
 Wetland Type Riverine Swamp Forest Assessor Name/Organization EcoScience JW/MC

Presence of stressor affecting assessment area (Y/N) NO
 Notes on Field Assessment Form (Y/N) YES
 Presence of regulatory considerations (Y/N) NO
 Wetland is intensively managed (Y/N) NO
 Wetland may be a high-quality riverine wetland (Y/N) _____

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	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	NO
	Particulate Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	YES
	Soluble Change	Condition	MEDIUM
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	YES
	Physical Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	YES
Pollution Change	Condition	X	
	Condition/Opportunity	X	
	Opportunity Presence (Y/N)	X	
Habitat	Physical Structure	Condition	HIGH
	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	HIGH
	Uniqueness	Condition	NO

Function Rating Summary

Function	Metncs	Rating
Hydrology	Condition	HIGH
Water Quality	Condition	HIGH
	Condition/Opportunity	HIGH
	Opportunity Presence (Y/N)	YES
Habitat	Condition	HIGH

Overall Wetland Rating HIGH

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	Z4-II-WAM08	Date	9-6-07
Wetland Type	Headwater Wetland	Assessor Name/Organization	EcoScience JW/MC
Level III Ecoregion	Southeastern Plains	Nearest Named Water Body	Bones Creek
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030004
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Precipitation within 48 hrs?	Latitude/Longitude (decl-degrees)	34 044415 -79.031989

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

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

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

Is the assessment area intensively managed? Yes No

Describe effects of stressors that are present

Regulatory Considerations

Select all that apply to the assessment area

- Anadromous fish
- Federally protected species or State endangered or threatened species
- NCDWQ riparian buffer rule in effect
- Wetland adjacent to or associated stream drains to a Primary Nursery Area
- Publicly owned property
- N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
- N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
- Designated NCNHP reference community

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

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

Is the assessment area on a coastal island? Yes No

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

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

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GS | VS | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Not severely altered |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration) |

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

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surf | Sub | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Water storage capacity and duration are not altered |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation) |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction) |

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

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

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------|
| AA | WT | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | > 50% of the wetland type with depressions able to pond water > 2 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | > 50% of the wetland type with depressions able to pond water 1 to 2 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | > 50% of wetland type with depressions able to pond water 6 inches to 1 foot |
| <input checked="" type="checkbox"/> D | <input checked="" type="checkbox"/> D | > 50% of wetland type with depressions able to pond water 3- to 6-inches deep |
| <input type="checkbox"/> E | <input type="checkbox"/> E | Depressions able to pond water < 3-inches deep |

4. Soil Texture/Structure – assessment area condition metric

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- A Sandy soil
- B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- C Predominantly characterized by other, mineral soil (no mottling)
- D Gleyed mineral soil (F2, S4)
- E Soil ribbon < 1 inch
- F Soil ribbon ≥ 1 inch
- G No peat or muck presence
- H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

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 | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Little or no evidence of pollutants or discharges entering the assessment area |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| <input type="checkbox"/> C | <input type="checkbox"/> 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) |

6. Land Use – opportunity metric

Check all that apply. Evaluation of this metric 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 and 30 feet wide in the Mountains.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS | 5M | 2M | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | > 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples, industrial, commercial, and high-density residential) |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | > 30% impervious surfaces without stormwater BMPs |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | 10 to 30% impervious surfaces |
| <input checked="" type="checkbox"/> D | <input checked="" type="checkbox"/> D | <input checked="" type="checkbox"/> D | < 10% impervious surfaces |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | Old urban development (pink areas on USGS 7 5-minute quadrangles) |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | New adjacent development |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | Confined animal operations (or other local, concentrated source of pollutants) |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | ≥ 20% coverage of pasture without riparian buffer |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I | ≥ 20% coverage of pasture with effective riparian buffer |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J | ≥ 20% coverage of agricultural land (regularly plowed land) without riparian buffer |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K | ≥ 20% coverage of agricultural land (regularly plowed land) with effective riparian buffer |
| <input type="checkbox"/> L | <input type="checkbox"/> L | <input type="checkbox"/> L | ≥ 20% coverage of maintained grass/herb |
| <input type="checkbox"/> M | <input type="checkbox"/> M | <input type="checkbox"/> M | Silvicultural land with disturbance < 5 years old |
| <input checked="" type="checkbox"/> N | <input checked="" type="checkbox"/> N | <input checked="" type="checkbox"/> N | Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area |

7. Wetland Acting as Vegetated Buffer – assessment area condition metric

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

- Yes No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width

- ≤ 15-foot wide > 15-foot wide Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

- Yes No

Is stream or other open water sheltered or exposed?

- Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic
 Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic

8. Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-----------------------|
| WT | WC | RB (if applicable) | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | ≥ 100 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | From 80 to < 100 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | From 50 to < 80 feet |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | From 40 to < 50 feet |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | From 30 to < 40 feet |
| <input checked="" type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | From 15 to < 30 feet |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | From 5 to < 15 feet |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | < 5 feet |

9. Inundation Duration – assessment area condition metric

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 (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

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 contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)
<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A ≥ 500 acres
<input type="checkbox"/> B	<input checked="" type="checkbox"/> B	<input type="checkbox"/> B From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D From 25 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	<input type="checkbox"/> E From 10 to < 25 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	<input type="checkbox"/> F From 5 to < 10 acres
<input type="checkbox"/> G	<input type="checkbox"/> G	<input type="checkbox"/> G From 1 to < 5 acres
<input checked="" type="checkbox"/> H	<input type="checkbox"/> H	<input checked="" type="checkbox"/> H From 0.5 to < 1 acre
<input type="checkbox"/> I	<input type="checkbox"/> I	<input type="checkbox"/> I From 0.1 to < 0.5 acre
<input type="checkbox"/> J	<input type="checkbox"/> J	<input type="checkbox"/> J From 0.01 to < 0.1 acre
<input type="checkbox"/> K	<input type="checkbox"/> K	<input type="checkbox"/> K < 0.01 acre

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

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

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC
<input type="checkbox"/> A	<input type="checkbox"/> A ≥ 500 acres
<input checked="" type="checkbox"/> B	<input type="checkbox"/> B From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D From 10 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E < 10 acres
<input type="checkbox"/> F	<input type="checkbox"/> F Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

- Yes No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- Yes No Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥ 40-foot wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- A No artificial edge within 150 feet in all directions
- B No artificial edge within 150 feet in four to seven directions
- C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for 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. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

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
- B Vegetation diversity is low or has > 10% cover of exotics.
- C Vegetation is dominated by exotic species

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

Vegetation present

Evaluate percent coverage of vegetation for marshes only

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

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 | |
|---------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------|
| <input type="checkbox"/> A | <input type="checkbox"/> A | Canopy closed, or nearly closed, with natural gaps associated with natural processes |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Canopy present, but opened more than natural gaps |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Canopy sparse or absent |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Dense mid-story/sapling layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density mid-story/sapling layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Mid-story/sapling layer sparse or absent |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Dense shrub layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density shrub layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Shrub layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense herb layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density herb layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Herb layer sparse or absent |

Vegetation absent

18. Snags – wetland type condition metric

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

19. Diameter Class Distribution – wetland type condition metric

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

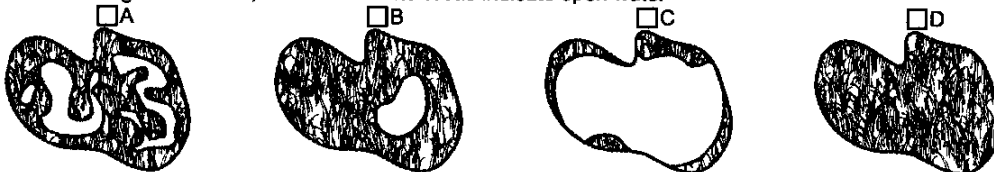
20. Large Woody Debris – wetland type condition metric

Include both man-made and natural debris piles

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

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

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



22. Habitat Uniqueness – wetland type condition metric

- Yes No Has the N C Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?

Notes

Frames 9900 and 9901

NC WAM Wetland Rating Sheet

Wetland Site Name Z4-II-WAM08 Date of Assessment 9-6-07
 Wetland Type Headwater Wetland Assessor Name/Organization EcoScience JW/MC

Presence of stressor affecting assessment area (Y/N) NO
 Notes on Field Assessment Form (Y/N) YES
 Presence of regulatory considerations (Y/N) NO
 Wetland is intensively managed (Y/N) NO
 Wetland may be a high-quality riverine wetland (Y/N)

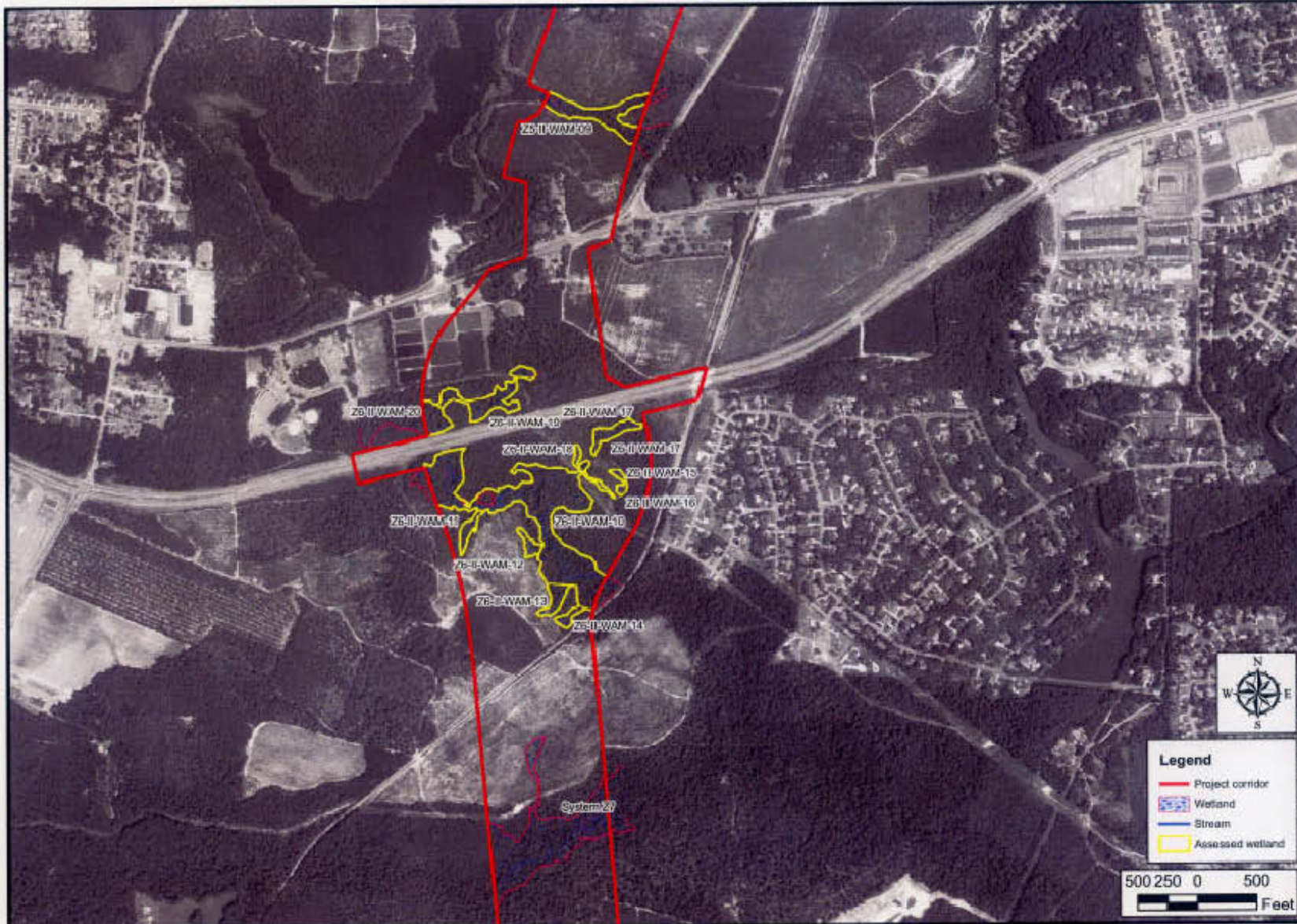
Sub-function Rating Summary

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

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	HIGH
Water Quality	Condition	HIGH
	Condition/Opportunity	HIGH
	Opportunity Presence (Y/N)	YES
Habitat	Condition	HIGH

Overall Wetland Rating HIGH



Kiewit Corporation
Raleigh, North Carolina

Client:



Project:

**FAYETTEVILLE
OUTER
LOOP**

**WETLAND
FUNCTIONAL
ASSESSMENT**

Cumberland, Robeson,
and Hoke Counties,
North Carolina

Title:

**Wetland
Locations**



Legend

- Project corridor
- Wetland
- Stream
- Assessed wetland



Drawn By:

SGD

Old By:

MTC

Date:

SEP 2007

Scale:

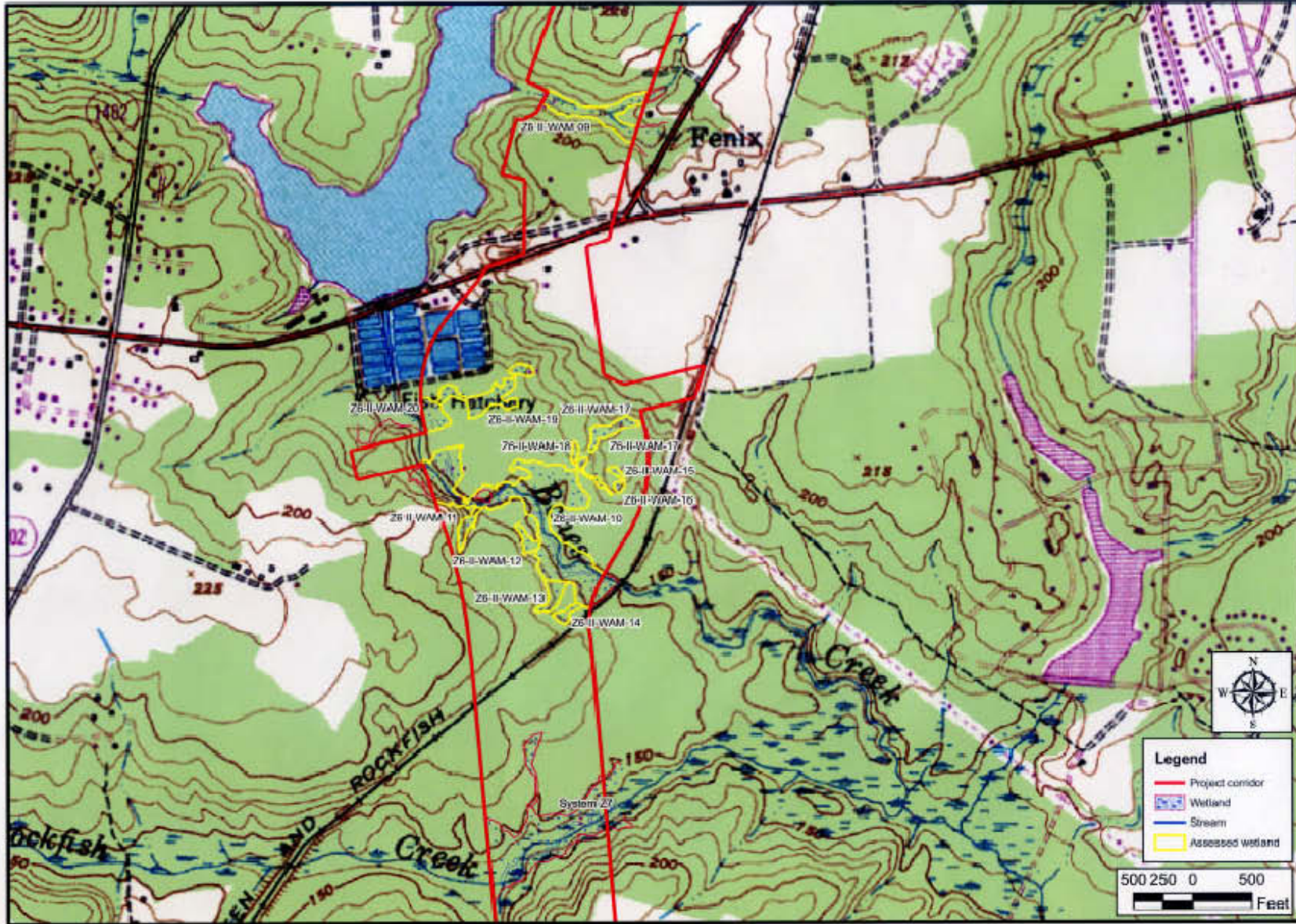
1:9000

ES/C Project No.:

06-296.02

FIGURE

10



EcoScience Corporation
Raleigh, North Carolina

Client:



Project:

**FAYETTEVILLE
OUTER
LOOP**

**WETLAND
FUNCTIONAL
ASSESSMENT**

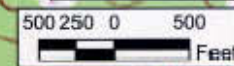
Cumberland, Robeson,
and Hoke Counties,
North Carolina

Title:

**Wetland
Locations**



- Legend**
- Project corridor
 - Wetland
 - Stream
 - Assessed wetland



Own By:

Ctrl By:

SGD

MTG

Date:

Scale:

SEP 2007

1:5000

ESC Project No.:

06-296.02

FIGURE

10

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	Z5-II-WAM09	Date	9-7-07
Wetland Type	Headwater Wetland	Assessor Name/Organization	EcoScience Allen and Cusack
Level III Ecoregion	Southeastern Plains	Nearest Named Water Body	Bones Creek
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030004
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Precipitation within 48 hrs?	Latitude/Longitude (decl-degrees)	35 035441 -79 035612

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

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

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

Is the assessment area intensively managed? Yes No

Describe effects of stressors that are present

Regulatory Considerations

Select all that apply to the assessment area

- Anadromous fish
- Federally protected species or State endangered or threatened species
- NCDWQ riparian buffer rule in effect
- Wetland adjacent to or associated stream drains to a Primary Nursery Area
- Publicly owned property
- N C Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
- N C Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
- Designated NCNHP reference community

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

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

Is the assessment area on a coastal island? Yes No

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

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

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GS | VS | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Not severely altered |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration) |

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

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surf | Sub | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Water storage capacity and duration are not altered |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation) |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction) |

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

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

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------|
| AA | WT | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | > 50% of the wetland type with depressions able to pond water > 2 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | > 50% of the wetland type with depressions able to pond water 1 to 2 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | > 50% of wetland type with depressions able to pond water 6 inches to 1 foot |
| <input checked="" type="checkbox"/> D | <input checked="" type="checkbox"/> D | > 50% of wetland type with depressions able to pond water 3- to 6-inches deep |
| <input type="checkbox"/> E | <input type="checkbox"/> E | Depressions able to pond water < 3-inches deep |

4. Soil Texture/Structure – assessment area condition metric

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- A Sandy soil
- B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- C Predominantly characterized by other, mineral soil (no mottling)
- D Gleyed mineral soil (F2, S4)
- E Soil ribbon < 1 inch
- F Soil ribbon ≥ 1 inch
- G No peat or muck presence
- H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

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 | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Little or no evidence of pollutants or discharges entering the assessment area |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| <input type="checkbox"/> C | <input type="checkbox"/> 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) |

6. Land Use – opportunity metric

Check all that apply. Evaluation of this metric 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 and 30 feet wide in the Mountains.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS | 5M | 2M | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | > 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples industrial, commercial, and high-density residential) |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | > 30% impervious surfaces without stormwater BMPs |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | 10 to 30% impervious surfaces |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | < 10% impervious surfaces |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | Old urban development (pink areas on USGS 7 5-minute quadrangles) |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | New adjacent development |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | Confined animal operations (or other local, concentrated source of pollutants) |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | ≥ 20% coverage of pasture without riparian buffer |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I | ≥ 20% coverage of pasture with effective riparian buffer |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J | ≥ 20% coverage of agricultural land (regularly plowed land) without riparian buffer |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K | ≥ 20% coverage of agricultural land (regularly plowed land) with effective riparian buffer |
| <input type="checkbox"/> L | <input type="checkbox"/> L | <input type="checkbox"/> L | ≥ 20% coverage of maintained grass/herb |
| <input type="checkbox"/> M | <input type="checkbox"/> M | <input type="checkbox"/> M | Silvicultural land with disturbance < 5 years old |
| <input checked="" type="checkbox"/> N | <input checked="" type="checkbox"/> N | <input checked="" type="checkbox"/> N | Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area. |

7. Wetland Acting as Vegetated Buffer – assessment area condition metric

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

- Yes No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]) If the stream is anastomosed, combine widths of channels/braids for a total stream width

- ≤ 15-foot wide > 15-foot wide Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

- Yes No

Is stream or other open water sheltered or exposed?

- Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic
 Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic

8. Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-----------------------|
| WT | WC | RB (if applicable) | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | ≥ 100 feet |
| <input checked="" type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | From 80 to < 100 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | From 50 to < 80 feet |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | From 40 to < 50 feet |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | From 30 to < 40 feet |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | From 15 to < 30 feet |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | From 5 to < 15 feet |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | < 5 feet |

9. Inundation Duration – assessment area condition metric

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 (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

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 contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual) Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain Additionally, other wetland types are considered boundaries for column WT If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)
<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A ≥ 500 acres
<input type="checkbox"/> B	<input checked="" type="checkbox"/> B	<input type="checkbox"/> B From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D From 25 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	<input type="checkbox"/> E From 10 to < 25 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	<input type="checkbox"/> F From 5 to < 10 acres
<input checked="" type="checkbox"/> G	<input type="checkbox"/> G	<input type="checkbox"/> G From 1 to < 5 acres
<input type="checkbox"/> H	<input type="checkbox"/> H	<input type="checkbox"/> H From 0.5 to < 1 acre
<input type="checkbox"/> I	<input type="checkbox"/> I	<input type="checkbox"/> I From 0.1 to < 0.5 acre
<input type="checkbox"/> J	<input type="checkbox"/> J	<input type="checkbox"/> J From 0.01 to < 0.1 acre
<input type="checkbox"/> K	<input type="checkbox"/> K	<input type="checkbox"/> K < 0.01 acre

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

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

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch

WC	LC	
<input type="checkbox"/> A	<input type="checkbox"/> A	≥ 500 acres
<input checked="" type="checkbox"/> B	<input type="checkbox"/> B	From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	From 10 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	< 10 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

- Yes No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- Yes No Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥ 40-foot wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old Consider the eight main points of the compass

- A No artificial edge within 150 feet in all directions
- B No artificial edge within 150 feet in four to seven directions
- C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for 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. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

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
- B Vegetation diversity is low or has > 10% cover of exotics
- C Vegetation is dominated by exotic species.

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

Vegetation present

Evaluate percent coverage of vegetation for marshes only

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

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 | |
|---------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------|
| <input type="checkbox"/> A | <input type="checkbox"/> A | Canopy closed, or nearly closed, with natural gaps associated with natural processes |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Canopy present, but opened more than natural gaps |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Canopy sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense mid-story/sapling layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density mid-story/sapling layer |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | Mid-story/sapling layer sparse or absent |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Dense shrub layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density shrub layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Shrub layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense herb layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density herb layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Herb layer sparse or absent |

Vegetation absent

18. Snags – wetland type condition metric

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

19. Diameter Class Distribution – wetland type condition metric

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

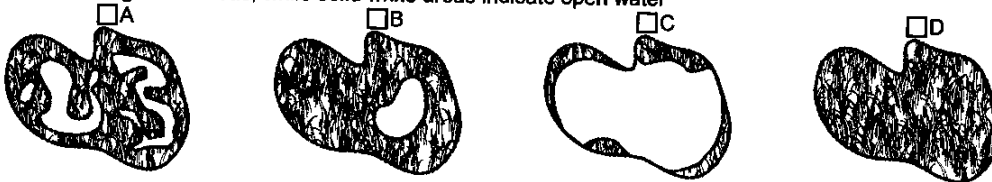
20. Large Woody Debris – wetland type condition metric

Include both man-made and natural debris piles

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

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

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



22. Habitat Uniqueness – wetland type condition metric

- Yes No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name Z5-II-WAM09 Date of Assessment 9-7-07
 Wetland Type Headwater Wetland Assessor Name/Organization EcoScience Allen and Cusack

Presence of stressor affecting assessment area (Y/N) NO
 Notes on Field Assessment Form (Y/N) NO
 Presence of regulatory considerations (Y/N) NO
 Wetland is intensively managed (Y/N) NO
 Wetland may be a high-quality riverine wetland (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	HIGH
Water Quality	Pathogen Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
		Opportunity Presence (Y/N)	NO
	Particulate Change	Condition	HIGH
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Soluble Change	Condition	MEDIUM
		Condition/Opportunity	MEDIUM
		Opportunity Presence (Y/N)	NO
	Physical Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	NO
Pollution Change	Condition	X	
	Condition/Opportunity	X	
	Opportunity Presence (Y/N)	X	
Habitat	Physical Structure	Condition	HIGH
	Landscape Patch Structure	Condition	HIGH
	Vegetation Composition	Condition	MEDIUM
	Uniqueness	Condition	NO

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	HIGH
Water Quality	Condition	HIGH
	Condition/Opportunity	HIGH
	Opportunity Presence (Y/N)	YES
Habitat	Condition	HIGH

Overall Wetland Rating HIGH

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	Z6-II-WAM19	Date	9-7-07
Wetland Type	Seep	Assessor Name/Organization	EcoScience Cusack/Alien
Level III Ecoregion	Southeastern Plains	Nearest Named Water Body	Bones Creek
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030004
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Precipitation within 48 hrs?	Latitude/Longitude (dec-degrees)	35 028825 -79.038614

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

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

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

Is the assessment area intensively managed? Yes No

Describe effects of stressors that are present

Regulatory Considerations

Select all that apply to the assessment area

- Anadromous fish
- Federally protected species or State endangered or threatened species
- NCDWQ riparian buffer rule in effect
- Wetland adjacent to or associated stream drains to a Primary Nursery Area
- Publicly owned property
- N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
- N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
- Designated NCNHP reference community

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

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

Is the assessment area on a coastal island? Yes No

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

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

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0) If a reference is not applicable, then rate the assessment area based on evidence of alteration

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GS | VS | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Not severely altered |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration) |

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

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub) Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surf | Sub | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Water storage capacity and duration are not altered |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation). |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction) |

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

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

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------|
| AA | WT | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | > 50% of the wetland type with depressions able to pond water > 2 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | > 50% of the wetland type with depressions able to pond water 1 to 2 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | > 50% of wetland type with depressions able to pond water 6 inches to 1 foot |
| <input type="checkbox"/> D | <input type="checkbox"/> D | > 50% of wetland type with depressions able to pond water 3- to 6-inches deep |
| <input checked="" type="checkbox"/> E | <input checked="" type="checkbox"/> E | Depressions able to pond water < 3-inches deep |

4. Soil Texture/Structure – assessment area condition metric

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance).

- A Sandy soil
- B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- C Predominantly characterized by other, mineral soil (no mottling)
- D Gleyed mineral soil (F2, S4)
- E Soil ribbon < 1 inch
- F Soil ribbon ≥ 1 inch
- G No peat or muck presence
- H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- I Peat or muck soil (histosol or histc epipedon) (A1, A2, A3)

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 | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Little or no evidence of pollutants or discharges entering the assessment area |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| <input type="checkbox"/> C | <input type="checkbox"/> 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) |

6. Land Use – opportunity metric

Check all that apply. Evaluation of this metric 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 and 30 feet wide in the Mountains.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS | 5M | 2M | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | > 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples: industrial, commercial, and high-density residential) |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | > 30% impervious surfaces without stormwater BMPs |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | 10 to 30% impervious surfaces |
| <input checked="" type="checkbox"/> D | <input checked="" type="checkbox"/> D | <input checked="" type="checkbox"/> D | < 10% impervious surfaces |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | Old urban development (pink areas on USGS 7.5-minute quadrangles) |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | New adjacent development |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | Confined animal operations (or other local, concentrated source of pollutants) |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | ≥ 20% coverage of pasture without riparian buffer |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I | ≥ 20% coverage of pasture with effective riparian buffer |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J | ≥ 20% coverage of agricultural land (regularly plowed land) without riparian buffer |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K | ≥ 20% coverage of agricultural land (regularly plowed land) with effective riparian buffer |
| <input type="checkbox"/> L | <input type="checkbox"/> L | <input type="checkbox"/> L | ≥ 20% coverage of maintained grass/herb |
| <input checked="" type="checkbox"/> M | <input checked="" type="checkbox"/> M | <input checked="" type="checkbox"/> M | Silvicultural land with disturbance < 5 years old |
| <input type="checkbox"/> N | <input type="checkbox"/> N | <input type="checkbox"/> N | Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area |

7. Wetland Acting as Vegetated Buffer – assessment area condition metric

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

- Yes No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]) If the stream is anastomosed, combine widths of channels/braids for a total stream width

- ≤ 15-foot wide > 15-foot wide Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

- Yes No

Is stream or other open water sheltered or exposed?

- Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic.
 Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic

8. Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

- | | | | |
|---------------------------------------|---------------------------------------|----------------------------|-----------------------|
| WT | WC | RB (if applicable) | |
| <input type="checkbox"/> A | <input checked="" type="checkbox"/> A | <input type="checkbox"/> A | ≥ 100 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | From 80 to < 100 feet |
| <input checked="" type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | From 50 to < 80 feet |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | From 40 to < 50 feet |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | From 30 to < 40 feet |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | From 15 to < 30 feet |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | From 5 to < 15 feet |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | < 5 feet |

9. Inundation Duration – assessment area condition metric

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 (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

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 contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)
<input type="checkbox"/> A	<input type="checkbox"/> A	<input type="checkbox"/> A ≥ 500 acres
<input type="checkbox"/> B	<input type="checkbox"/> B	<input type="checkbox"/> B From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D From 25 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	<input type="checkbox"/> E From 10 to < 25 acres
<input type="checkbox"/> F	<input checked="" type="checkbox"/> F	<input type="checkbox"/> F From 5 to < 10 acres
<input type="checkbox"/> G	<input type="checkbox"/> G	<input type="checkbox"/> G From 1 to < 5 acres
<input type="checkbox"/> H	<input type="checkbox"/> H	<input type="checkbox"/> H From 0.5 to < 1 acre
<input type="checkbox"/> I	<input type="checkbox"/> I	<input type="checkbox"/> I From 0.1 to < 0.5 acre
<input checked="" type="checkbox"/> J	<input type="checkbox"/> J	<input type="checkbox"/> J From 0.01 to < 0.1 acre
<input type="checkbox"/> K	<input type="checkbox"/> K	<input type="checkbox"/> K < 0.01 acre

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

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

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC	
<input type="checkbox"/> A	<input type="checkbox"/> A	≥ 500 acres
<input type="checkbox"/> B	<input checked="" type="checkbox"/> B	From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	From 10 to < 50 acres
<input checked="" type="checkbox"/> E	<input type="checkbox"/> E	< 10 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

- Yes No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- Yes No Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥ 40-foot wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- A No artificial edge within 150 feet in all directions
- B No artificial edge within 150 feet in four to seven directions
- C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for 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. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

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.
- B Vegetation diversity is low or has > 10% cover of exotics
- C Vegetation is dominated by exotic species

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

Vegetation present

Evaluate percent coverage of vegetation for marshes only

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

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 | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Canopy closed, or nearly closed, with natural gaps associated with natural processes |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Canopy present, but opened more than natural gaps |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | Canopy sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense mid-story/sapling layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density mid-story/sapling layer |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | Mid-story/sapling layer sparse or absent |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Dense shrub layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density shrub layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Shrub layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense herb layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density herb layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Herb layer sparse or absent |

Vegetation absent

18. **Snags – wetland type condition metric**

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

19. **Diameter Class Distribution – wetland type condition metric**

- A Most canopy trees have stems > 6-inches in diameter at breast height (DBH), many large trees (> 12-inches DBH) are present
 B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH
 C Most canopy trees are < 6-inches DBH or no trees

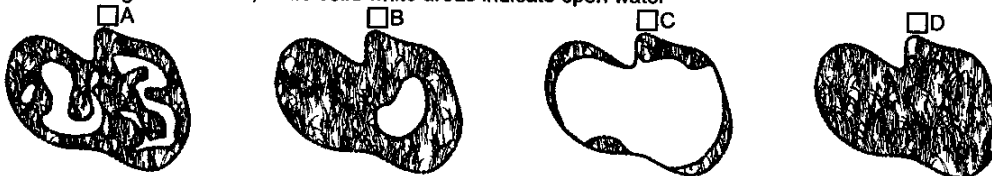
20. **Large Woody Debris – wetland type condition metric**

Include both man-made and natural debris piles.

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

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

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



22. **Habitat Uniqueness – wetland type condition metric**

- Yes No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?

Notes

Photos 9937-9939

NC WAM Wetland Rating Sheet

Wetland Site Name	Z6-II-WAM19	Date of Assessment	9-7-07
Wetland Type	Seep	Assessor Name/Organization	EcoScience Cusack/Allen

Presence of stressor affecting assessment area (Y/N)	NO
Notes on Field Assessment Form (Y/N)	YES
Presence of regulatory considerations (Y/N)	NO
Wetland is intensively managed (Y/N)	NO
Wetland may be a high-quality riverine wetland (Y/N)	

Sub-function Rating Summary

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

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	HIGH
Water Quality	Condition	HIGH
	Condition/Opportunity	X
	Opportunity Presence (Y/N)	X
Habitat	Condition	HIGH

Overall Wetland Rating HIGH

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	Z6-II-WAM20	Date	9-7-07
Wetland Type	Bottomland Hardwood Forest	Assessor Name/Organization	EcoScience Cusack/Allen
Level III Ecoregion	Southeastern Plains	Nearest Named Water Body	Bones Creek
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030004
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Precipitation within 48 hrs?	Latitude/Longitude (dec-degrees)	35 028515, -79 040211

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following

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

Is the assessment area intensively managed? Yes No

Describe effects of stressors that are present

Regulatory Considerations

- Select all that apply to the assessment area
- Anadromous fish
 - Federally protected species or State endangered or threatened species
 - NCDWQ riparian buffer rule in effect
 - Wetland adjacent to or associated stream drains to a Primary Nursery Area
 - Publicly owned property
 - N C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
 - N C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
 - Designated NCNHP reference community

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

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

Is the assessment area on a coastal island? Yes No

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

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

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration

- | | | |
|---------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GS | VS | |
| <input type="checkbox"/> A | <input checked="" type="checkbox"/> A | Not severely altered |
| <input checked="" type="checkbox"/> B | <input type="checkbox"/> B | Severely altered over most of the assessment area (ground surface alteration examples vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples, mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration) |

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

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable

- | | | |
|---------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surf | Sub | |
| <input type="checkbox"/> A | <input checked="" type="checkbox"/> A | Water storage capacity and duration are not altered. |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation) |
| <input checked="" type="checkbox"/> C | <input type="checkbox"/> C | Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples, intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction). |

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

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

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------|
| AA | WT | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | > 50% of the wetland type with depressions able to pond water > 2 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | > 50% of the wetland type with depressions able to pond water 1 to 2 feet |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | > 50% of wetland type with depressions able to pond water 6 inches to 1 foot |
| <input type="checkbox"/> D | <input type="checkbox"/> D | > 50% of wetland type with depressions able to pond water 3- to 6-inches deep |
| <input type="checkbox"/> E | <input type="checkbox"/> E | Depressions able to pond water < 3-inches deep |

4. Soil Texture/Structure – assessment area condition metric

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance)

- A Sandy soil
- B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- C Predominantly characterized by other, mineral soil (no mottling)
- D Gleyed mineral soil (F2, S4)
- E Soil ribbon < 1 inch
- F Soil ribbon ≥ 1 inch
- G No peat or muck presence
- H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

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 | |
| <input type="checkbox"/> A | <input checked="" type="checkbox"/> A | Little or no evidence of pollutants or discharges entering the assessment area |
| <input checked="" type="checkbox"/> B | <input type="checkbox"/> B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| <input type="checkbox"/> C | <input type="checkbox"/> 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) |

6. Land Use – opportunity metric

Check all that apply. Evaluation of this metric 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 and 30 feet wide in the Mountains.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS | 5M | 2M | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | > 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples industrial, commercial, and high-density residential) |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | > 30% impervious surfaces without stormwater BMPs |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | 10 to 30% impervious surfaces |
| <input checked="" type="checkbox"/> D | <input checked="" type="checkbox"/> D | <input checked="" type="checkbox"/> D | < 10% impervious surfaces |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | Old urban development (pink areas on USGS 7 5-minute quadrangles) |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | New adjacent development |
| <input checked="" type="checkbox"/> G | <input checked="" type="checkbox"/> G | <input checked="" type="checkbox"/> G | Confined animal operations (or other local, concentrated source of pollutants) |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | ≥ 20% coverage of pasture without riparian buffer |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I | ≥ 20% coverage of pasture with effective riparian buffer |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J | ≥ 20% coverage of agricultural land (regularly plowed land) without riparian buffer |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K | ≥ 20% coverage of agricultural land (regularly plowed land) with effective riparian buffer |
| <input type="checkbox"/> L | <input type="checkbox"/> L | <input type="checkbox"/> L | ≥ 20% coverage of maintained grass/herb |
| <input type="checkbox"/> M | <input type="checkbox"/> M | <input type="checkbox"/> M | Silvicultural land with disturbance < 5 years old |
| <input type="checkbox"/> N | <input type="checkbox"/> N | <input type="checkbox"/> N | Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area |

7. Wetland Acting as Vegetated Buffer – assessment area condition metric

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

- Yes No. If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]. If the stream is anastomosed, combine widths of channels/braids for a total stream width)

- ≤ 15-foot wide > 15-foot wide Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

- Yes No

Is stream or other open water sheltered or exposed?

- Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic
 Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic

8. Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-----------------------|
| WT | WC | RB (if applicable) | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | ≥ 100 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | From 80 to < 100 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | From 50 to < 80 feet |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | From 40 to < 50 feet |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | From 30 to < 40 feet |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | From 15 to < 30 feet |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | From 5 to < 15 feet |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | < 5 feet |

9. Inundation Duration – assessment area condition metric

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 (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

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 contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column

WT If assessment area is clear-cut, select "K" for FW column

- | WT | WC | FW (if applicable) |
|---------------------------------------|---------------------------------------|------------------------------------------------------------|
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A ≥ 500 acres |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B From 100 to < 500 acres |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C From 50 to < 100 acres |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D From 25 to < 50 acres |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E From 10 to < 25 acres |
| <input checked="" type="checkbox"/> F | <input checked="" type="checkbox"/> F | <input checked="" type="checkbox"/> F From 5 to < 10 acres |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G From 1 to < 5 acres |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H From 0.5 to < 1 acre |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I From 0.1 to < 0.5 acre |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J From 0.01 to < 0.1 acre |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K < 0.01 acre |

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

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

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch

- | WC | LC |
|---------------------------------------|-----------------------------------------------------------------------------------------------|
| <input type="checkbox"/> A | <input type="checkbox"/> A ≥ 500 acres |
| <input type="checkbox"/> B | <input checked="" type="checkbox"/> B From 100 to < 500 acres |
| <input type="checkbox"/> C | <input type="checkbox"/> C From 50 to < 100 acres |
| <input type="checkbox"/> D | <input type="checkbox"/> D From 10 to < 50 acres |
| <input checked="" type="checkbox"/> E | <input type="checkbox"/> E < 10 acres |
| <input type="checkbox"/> F | <input type="checkbox"/> F Wetland type has a poor or no connection to other natural habitats |

Check Yes or No.

- Yes No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- Yes No Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥ 40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- A No artificial edge within 150 feet in all directions
- B No artificial edge within 150 feet in four to seven directions
- C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for 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. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species

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
- B Vegetation diversity is low or has > 10% cover of exotics
- C Vegetation is dominated by exotic species

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

Vegetation present

Evaluate percent coverage of vegetation for marshes only

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

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 | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Canopy closed, or nearly closed, with natural gaps associated with natural processes |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Canopy present, but opened more than natural gaps |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Canopy sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense mid-story/sapling layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density mid-story/sapling layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Mid-story/sapling layer sparse or absent |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Dense shrub layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density shrub layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Shrub layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense herb layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density herb layer |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | Herb layer sparse or absent |

Vegetation absent

18. Snags – wetland type condition metric

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

19. Diameter Class Distribution – wetland type condition metric

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

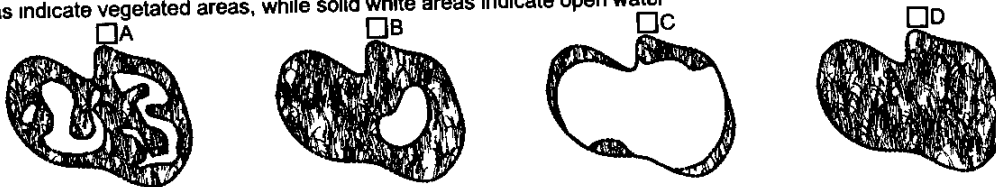
20. Large Woody Debris – wetland type condition metric

Include both man-made and natural debris piles

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

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

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



22. Habitat Uniqueness – wetland type condition metric

- Yes No Has the N C Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?

Notes
Photos 9940-9942

NC WAM Wetland Rating Sheet

Wetland Site Name	Z6-II-WAM20	Date of Assessment	9-7-07
Wetland Type	Bottomland Hardwood Forest	Assessor Name/Organization	EcoScience Cusack/Allen

Presence of stressor affecting assessment area (Y/N)	NO
Notes on Field Assessment Form (Y/N)	YES
Presence of regulatory considerations (Y/N)	NO
Wetland is intensively managed (Y/N)	NO
Wetland may be a high-quality riverine wetland (Y/N)	

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	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	YES
	Particulate Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	NO
	Soluble Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	YES
	Physical Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	NO
Pollution Change	Condition	X	
	Condition/Opportunity	X	
	Opportunity Presence (Y/N)	X	
Habitat	Physical Structure	Condition	LOW
	Landscape Patch Structure	Condition	LOW
	Vegetation Composition	Condition	MEDIUM
	Uniqueness	Condition	NO

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	HIGH
Water Quality	Condition	HIGH
	Condition/Opportunity	HIGH
	Opportunity Presence (Y/N)	YES
Habitat	Condition	LOW

Overall Wetland Rating HIGH

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	Z6-II-WAM10	Date	9-7-07
Wetland Type	Bottomland Hardwood Forest	Assessor Name/Organization	EcoScience Cusack/Allen
Level III Ecoregion	Southeastern Plains	Nearest Named Water Body	Bones Creek
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030004
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35 027068 -79 040021

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

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

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

Is the assessment area intensively managed? Yes No

Describe effects of stressors that are present

US 401 at upstream end of assessment area. Runoff from road ditched to assessment area.

Regulatory Considerations

Select all that apply to the assessment area

- Anadromous fish
- Federally protected species or State endangered or threatened species
- NCDWQ riparian buffer rule in effect
- Wetland adjacent to or associated stream drains to a Primary Nursery Area
- Publicly owned property
- N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
- N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
- Designated NCNHP reference community

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

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

Is the assessment area on a coastal island? Yes No

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

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

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GS | VS | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Not severely altered |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration) |

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

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Surf | Sub | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Water storage capacity and duration are not altered. |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation) |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction) |

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

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

- | | | |
|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------|
| AA | WT | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | > 50% of the wetland type with depressions able to pond water > 2 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | > 50% of the wetland type with depressions able to pond water 1 to 2 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | > 50% of wetland type with depressions able to pond water 6 inches to 1 foot |
| <input checked="" type="checkbox"/> D | <input checked="" type="checkbox"/> D | > 50% of wetland type with depressions able to pond water 3- to 6-inches deep |
| <input type="checkbox"/> E | <input type="checkbox"/> E | Depressions able to pond water < 3-inches deep |

4. Soil Texture/Structure – assessment area condition metric

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance)

- A Sandy soil
- B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- C Predominantly characterized by other, mineral soil (no mottling)
- D Gleyed mineral soil (F2, S4)
- E Soil ribbon < 1 inch
- F Soil ribbon ≥ 1 inch
- G No peat or muck presence
- H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

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 | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Little or no evidence of pollutants or discharges entering the assessment area |
| <input checked="" type="checkbox"/> B | <input type="checkbox"/> B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| <input type="checkbox"/> C | <input checked="" type="checkbox"/> 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) |

6. Land Use – opportunity metric

Check all that apply. Evaluation of this metric 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 and 30 feet wide in the Mountains

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS | 5M | 2M | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | > 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples industrial, commercial, and high-density residential) |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | > 30% impervious surfaces without stormwater BMPs |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | 10 to 30% impervious surfaces |
| <input checked="" type="checkbox"/> D | <input checked="" type="checkbox"/> D | <input checked="" type="checkbox"/> D | < 10% impervious surfaces |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | Old urban development (pink areas on USGS 7 5-minute quadrangles) |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | New adjacent development |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | Confined animal operations (or other local, concentrated source of pollutants) |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | ≥ 20% coverage of pasture without riparian buffer |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I | ≥ 20% coverage of pasture with effective riparian buffer |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J | ≥ 20% coverage of agricultural land (regularly plowed land) without riparian buffer |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K | ≥ 20% coverage of agricultural land (regularly plowed land) with effective riparian buffer |
| <input type="checkbox"/> L | <input type="checkbox"/> L | <input type="checkbox"/> L | ≥ 20% coverage of maintained grass/herb |
| <input type="checkbox"/> M | <input type="checkbox"/> M | <input type="checkbox"/> M | Silvicultural land with disturbance < 5 years old |
| <input type="checkbox"/> N | <input type="checkbox"/> N | <input type="checkbox"/> N | Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area |

7. Wetland Acting as Vegetated Buffer – assessment area condition metric

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

- Yes No. If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]). If the stream is anastomosed, combine widths of channels/braids for a total stream width

- ≤ 15-foot wide > 15-foot wide Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

- Yes No

Is stream or other open water sheltered or exposed?

- Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic
 Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic

8. Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-----------------------|
| WT | WC | RB (if applicable) | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | ≥ 100 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | From 80 to < 100 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | From 50 to < 80 feet |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | From 40 to < 50 feet |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | From 30 to < 40 feet |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | From 15 to < 30 feet |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | From 5 to < 15 feet |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | < 5 feet |

9. Inundation Duration – assessment area condition metric

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 (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

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 contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column

WT If assessment area is clear-cut, select "K" for FW column

- | WT | WC | FW (if applicable) |
|---------------------------------------|---------------------------------------|---------------------------------------------------------------|
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A ≥ 500 acres |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B From 100 to < 500 acres |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C From 50 to < 100 acres |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D From 25 to < 50 acres |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E From 10 to < 25 acres |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F From 5 to < 10 acres |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G From 1 to < 5 acres |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H From 0.5 to < 1 acre |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I From 0.1 to < 0.5 acre |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J From 0.01 to < 0.1 acre |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K < 0.01 acre |

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

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

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch

- | WC | LC | |
|---------------------------------------|----------------------------|--------------------------------------------------------------------|
| <input checked="" type="checkbox"/> A | <input type="checkbox"/> A | ≥ 500 acres |
| <input type="checkbox"/> B | <input type="checkbox"/> B | From 100 to < 500 acres |
| <input type="checkbox"/> C | <input type="checkbox"/> C | From 50 to < 100 acres |
| <input type="checkbox"/> D | <input type="checkbox"/> D | From 10 to < 50 acres |
| <input type="checkbox"/> E | <input type="checkbox"/> E | < 10 acres |
| <input type="checkbox"/> F | <input type="checkbox"/> F | Wetland type has a poor or no connection to other natural habitats |

Check Yes or No.

- Yes No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- Yes No Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥ 40-foot wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- A No artificial edge within 150 feet in all directions
- B No artificial edge within 150 feet in four to seven directions
- C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for 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. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species

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
- B Vegetation diversity is low or has > 10% cover of exotics
- C Vegetation is dominated by exotic species.

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

Vegetation present

Evaluate percent coverage of vegetation for marshes only

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

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 | |
|---------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Canopy closed, or nearly closed, with natural gaps associated with natural processes |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Canopy present, but opened more than natural gaps |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Canopy sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense mid-story/sapling layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density mid-story/sapling layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Mid-story/sapling layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense shrub layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density shrub layer |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | Shrub layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense herb layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density herb layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Herb layer sparse or absent |

Vegetation absent

18. Snags – wetland type condition metric

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

19. Diameter Class Distribution – wetland type condition metric

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

20. Large Woody Debris – wetland type condition metric

Include both man-made and natural debris piles

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

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

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



22. Habitat Uniqueness – wetland type condition metric

- Yes No Has the N C Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name Z6-II-WAM10 Date of Assessment 9-7-07
 Wetland Type Bottomland Hardwood Forest Assessor Name/Organization EcoScience Cusack/Allen

Presence of stressor affecting assessment area (Y/N) YES
 Notes on Field Assessment Form (Y/N) NO
 Presence of regulatory considerations (Y/N) NO
 Wetland is intensively managed (Y/N) NO
 Wetland may be a high-quality nverine wetland (Y/N)

Sub-function Rating Summary

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

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	HIGH
Water Quality	Condition	HIGH
	Condition/Opportunity	HIGH
	Opportunity Presence (Y/N)	YES
Habitat	Condition	HIGH

Overall Wetland Rating HIGH

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	Z6-II-WAM12	Date	9-7-07
Wetland Type	Seep	Assessor Name/Organization	EcoScience Cusack/Allen
Level III Ecoregion	Southeastern Plains	Nearest Named Water Body	Bones Creek
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030004
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Precipitation within 48 hrs?	Latitude/Longitude (deci-degrees)	35 022510 -79 037557

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years). Noteworthy stressors include, but are not limited to the following:

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

Is the assessment area intensively managed? Yes No

Describe effects of stressors that are present

- Regulatory Considerations**
Select all that apply to the assessment area
- Anadromous fish
 - Federally protected species or State endangered or threatened species
 - NCDWQ riparian buffer rule in effect
 - Wetland adjacent to or associated stream drains to a Primary Nursery Area
 - Publicly owned property
 - N C Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
 - N C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
 - Designated NCNHP reference community

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

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

Is the assessment area on a coastal island? Yes No

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

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

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

GS	VS	
<input checked="" type="checkbox"/> A	<input checked="" type="checkbox"/> A	Not severely altered
<input type="checkbox"/> B	<input type="checkbox"/> B	Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-plow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

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

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

Surf	Sub	
<input checked="" type="checkbox"/> A	<input checked="" type="checkbox"/> A	Water storage capacity and duration are not altered
<input type="checkbox"/> B	<input type="checkbox"/> B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation)
<input type="checkbox"/> C	<input type="checkbox"/> C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction)

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

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

AA	WT	
<input type="checkbox"/> A	<input type="checkbox"/> A	> 50% of the wetland type with depressions able to pond water > 2 feet
<input type="checkbox"/> B	<input type="checkbox"/> B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
<input type="checkbox"/> C	<input type="checkbox"/> C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
<input type="checkbox"/> D	<input type="checkbox"/> D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
<input checked="" type="checkbox"/> E	<input checked="" type="checkbox"/> E	Depressions able to pond water < 3-inches deep

4. Soil Texture/Structure – assessment area condition metric

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance)

- A Sandy soil
- B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- C Predominantly characterized by other, mineral soil (no mottling)
- D Gleyed mineral soil (F2, S4)
- E Soil ribbon < 1 inch
- F Soil ribbon ≥ 1 inch
- G No peat or muck presence
- H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

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 | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Little or no evidence of pollutants or discharges entering the assessment area |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| <input type="checkbox"/> C | <input type="checkbox"/> 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) |

6. Land Use – opportunity metric

Check all that apply. Evaluation of this metric 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 and 30 feet wide in the Mountains

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS | 5M | 2M | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | > 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples industrial, commercial, and high-density residential) |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | > 30% impervious surfaces without stormwater BMPs |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | 10 to 30% impervious surfaces |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | < 10% impervious surfaces |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | Old urban development (pink areas on USGS 7.5-minute quadrangles) |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | New adjacent development |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | Confined animal operations (or other local, concentrated source of pollutants) |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | ≥ 20% coverage of pasture without riparian buffer |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I | ≥ 20% coverage of pasture with effective riparian buffer |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J | ≥ 20% coverage of agricultural land (regularly plowed land) without riparian buffer |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K | ≥ 20% coverage of agricultural land (regularly plowed land) with effective riparian buffer |
| <input type="checkbox"/> L | <input type="checkbox"/> L | <input type="checkbox"/> L | ≥ 20% coverage of maintained grass/herb |
| <input checked="" type="checkbox"/> M | <input checked="" type="checkbox"/> M | <input checked="" type="checkbox"/> M | Silvicultural land with disturbance < 5 years old |
| <input type="checkbox"/> N | <input type="checkbox"/> N | <input type="checkbox"/> N | Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area |

7. Wetland Acting as Vegetated Buffer – assessment area condition metric

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

- Yes No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]) If the stream is anastomosed, combine widths of channels/braids for a total stream width

- ≤ 15-foot wide > 15-foot wide Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

- Yes No

Is stream or other open water sheltered or exposed?

- Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic
 Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic

8. Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-----------------------|
| WT | WC | RB (if applicable) | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | ≥ 100 feet |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | From 80 to < 100 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | From 50 to < 80 feet |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | From 40 to < 50 feet |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | From 30 to < 40 feet |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | From 15 to < 30 feet |
| <input checked="" type="checkbox"/> G | <input checked="" type="checkbox"/> G | <input checked="" type="checkbox"/> G | From 5 to < 15 feet |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | < 5 feet |

9. Inundation Duration – assessment area condition metric

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 (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

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 contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column

WT If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)
<input type="checkbox"/> A	<input checked="" type="checkbox"/> A	<input type="checkbox"/> A ≥ 500 acres
<input type="checkbox"/> B	<input type="checkbox"/> B	<input type="checkbox"/> B From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D From 25 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	<input type="checkbox"/> E From 10 to < 25 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	<input type="checkbox"/> F From 5 to < 10 acres
<input type="checkbox"/> G	<input type="checkbox"/> G	<input type="checkbox"/> G From 1 to < 5 acres
<input type="checkbox"/> H	<input type="checkbox"/> H	<input type="checkbox"/> H From 0.5 to < 1 acre
<input checked="" type="checkbox"/> I	<input type="checkbox"/> I	<input type="checkbox"/> I From 0.1 to < 0.5 acre
<input type="checkbox"/> J	<input type="checkbox"/> J	<input type="checkbox"/> J From 0.01 to < 0.1 acre
<input type="checkbox"/> K	<input type="checkbox"/> K	<input type="checkbox"/> K < 0.01 acre

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

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

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch

WC	LC
<input checked="" type="checkbox"/> A	<input type="checkbox"/> A ≥ 500 acres
<input type="checkbox"/> B	<input type="checkbox"/> B From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D From 10 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E < 10 acres
<input type="checkbox"/> F	<input type="checkbox"/> F Wetland type has a poor or no connection to other natural habitats

Check Yes or No.

- Yes No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- Yes No Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥ 40-foot wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- A No artificial edge within 150 feet in all directions
- B No artificial edge within 150 feet in four to seven directions
- C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for 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. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

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.
- B Vegetation diversity is low or has > 10% cover of exotics.
- C Vegetation is dominated by exotic species.

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

Vegetation present

Evaluate percent coverage of vegetation for marshes only

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

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 | |
|---------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------|
| <input type="checkbox"/> A | <input type="checkbox"/> A | Canopy closed, or nearly closed, with natural gaps associated with natural processes |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Canopy present, but opened more than natural gaps |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | Canopy sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense mid-story/sapling layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density mid-story/sapling layer |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | Mid-story/sapling layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense shrub layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density shrub layer |
| <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> C | Shrub layer sparse or absent |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Dense herb layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density herb layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Herb layer sparse or absent |

Vegetation absent

18. Snags – wetland type condition metric

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

19. Diameter Class Distribution – wetland type condition metric

- A Most canopy trees have stems > 6-inches in diameter at breast height (DBH), many large trees (> 12-inches DBH) are present
 B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH
 C Most canopy trees are < 6-inches DBH or no trees

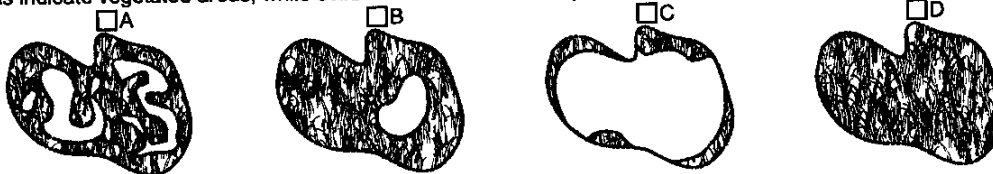
20. Large Woody Debris – wetland type condition metric

Include both man-made and natural debris piles

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

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

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



22. Habitat Uniqueness – wetland type condition metric

- Yes No Has the N.C. Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?

Notes

NC WAM Wetland Rating Sheet

Wetland Site Name Z6-II-WAM12 Date of Assessment 9-7-07
 Wetland Type Seep Assessor Name/Organization EcoScience Cusack/Allen

Presence of stressor affecting assessment area (Y/N) NO
 Notes on Field Assessment Form (Y/N) NO
 Presence of regulatory considerations (Y/N) NO
 Wetland is intensively managed (Y/N) NO
 Wetland may be a high-quality riverine wetland (Y/N) NO

Sub-function Rating Summary

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

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	HIGH
Water Quality	Condition	HIGH
	Condition/Opportunity	<u>X</u>
	Opportunity Presence (Y/N)	<u>X</u>
Habitat	Condition	HIGH

Overall Wetland Rating HIGH

NC WAM FIELD ASSESSMENT FORM
VERSION 3.13 (January 12, 2007)

Wetland Site Name	Z6-II-WAM13	Date	9-7-07
Wetland Type	Headwater Wetland	Assessor Name/Organization	EcoScience Cusack/Allen
Level III Ecoregion	Southeastern Plains	Nearest Named Water Body	Bones Creek
River Basin	Cape Fear	USGS 8-Digit Catalogue Unit	03030004
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Precipitation within 48 hrs?	Latitude/Longitude (dec-degrees)	35.024241, -79.036853

Evidence of stressors affecting the assessment area (may not be within the assessment area)
Please circle and/or make note below if evidence of stressors is apparent. Consider departure from reference, if appropriate, in recent past (for instance, within 10 years) Noteworthy stressors include, but are not limited to the following.

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

Is the assessment area intensively managed? Yes No

Describe effects of stressors that are present

- Regulatory Considerations**
Select all that apply to the assessment area
- Anadromous fish
 - Federally protected species or State endangered or threatened species
 - NCDWQ riparian buffer rule in effect
 - Wetland adjacent to or associated stream drains to a Primary Nursery Area
 - Publicly owned property
 - N.C. Division of Coastal Management Area of Environmental Concern (AEC) (including buffer)
 - N.C. Division of Water Quality best usage classification of SA or supplemental classifications of HQW, ORW, or Trout
 - Designated NCNHP reference community

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

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

Is the assessment area on a coastal island? Yes No

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

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

Check a box in each column. Consider alteration to the ground surface (GS) in the assessment area and vegetation structure (VS) in the assessment area. Compare to reference wetland if applicable (see User Manual v1.0). If a reference is not applicable, then rate the assessment area based on evidence of alteration.

GS	VS	
<input checked="" type="checkbox"/> A	<input checked="" type="checkbox"/> A	Not severely altered
<input type="checkbox"/> B	<input type="checkbox"/> B	Severely altered over most of the assessment area (ground surface alteration examples: vehicle tracks, excessive sedimentation, fire-pow lanes, skidder tracks, bedding, fill, soil compaction, obvious pollutants) (vegetation structure alteration examples: mechanical disturbance, herbicides, salt intrusion [where appropriate], exotic species, grazing, less diversity [if appropriate], artificial hydrologic alteration)

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

Check a box in each column. Consider surface storage capacity and duration (Surf) and sub-surface storage capacity and duration (Sub). Consider both increase and decrease in hydrology. Refer to the NRCS Scope and Effect Guide (see User Manual v1.0 Appendix G) for North Carolina hydric soils for the zone of influence of ditches in hydric soils. A ditch ≤ 1 foot deep is considered to affect surface water only, while a ditch > 1 foot deep is expected to affect both surface and sub-surface water. Consider tidal flooding regime, if applicable.

Surf	Sub	
<input checked="" type="checkbox"/> A	<input checked="" type="checkbox"/> A	Water storage capacity and duration are not altered.
<input type="checkbox"/> B	<input type="checkbox"/> B	Water storage capacity or duration are altered, but not substantially (typically, not sufficient to change vegetation).
<input type="checkbox"/> C	<input type="checkbox"/> C	Water storage capacity or duration are substantially altered (typically, alteration sufficient to result in vegetation change) (examples: intensive ditching, fill, sedimentation, channelization, diversion, man-made berms, beaver dams, stream incision, sewer lines, soil compaction)

3. Water Storage/Surface Relief – assessment area/wetland type condition metric

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

AA	WT	
<input type="checkbox"/> A	<input type="checkbox"/> A	> 50% of the wetland type with depressions able to pond water > 2 feet
<input checked="" type="checkbox"/> B	<input checked="" type="checkbox"/> B	> 50% of the wetland type with depressions able to pond water 1 to 2 feet
<input type="checkbox"/> C	<input type="checkbox"/> C	> 50% of wetland type with depressions able to pond water 6 inches to 1 foot
<input type="checkbox"/> D	<input type="checkbox"/> D	> 50% of wetland type with depressions able to pond water 3- to 6-inches deep
<input type="checkbox"/> E	<input type="checkbox"/> E	Depressions able to pond water < 3-inches deep

4. Soil Texture/Structure – assessment area condition metric

Select all that apply. Dig soil profile in the dominant assessment area landscape feature. Make soil observations within the top foot. National Technical Committee for Hydric Soils regional indicators are noted (use most recent guidance)

- A Sandy soil
- B Predominantly characterized by mottled (redoxymorphic features), mineral soil (F6, F8, F12, TF10, S5, S6)
- C Predominantly characterized by other, mineral soil (no mottling)
- D Gleyed mineral soil (F2, S4)
- E Soil ribbon < 1 inch
- F Soil ribbon ≥ 1 inch
- G No peat or muck presence
- H A peat or muck presence (A6, A7, A8, A9, A10, F1, S1)
- I Peat or muck soil (histosol or histic epipedon) (A1, A2, A3)

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 | |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Little or no evidence of pollutants or discharges entering the assessment area |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Noticeable evidence of pollutants or discharges entering the wetland and stressing, but not overwhelming the treatment capacity of the assessment area |
| <input type="checkbox"/> C | <input type="checkbox"/> 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) |

6. Land Use – opportunity metric

Check all that apply. Evaluation of this metric 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 and 30 feet wide in the Mountains

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS | 5M | 2M | |
| <input type="checkbox"/> A | <input type="checkbox"/> A | <input type="checkbox"/> A | > 30% impervious surfaces with stormwater Best Management Practices (BMPs) (land use examples industrial, commercial, and high-density residential) |
| <input type="checkbox"/> B | <input type="checkbox"/> B | <input type="checkbox"/> B | > 30% impervious surfaces without stormwater BMPs |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | 10 to 30% impervious surfaces |
| <input checked="" type="checkbox"/> D | <input checked="" type="checkbox"/> D | <input checked="" type="checkbox"/> D | < 10% impervious surfaces |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | Old urban development (pink areas on USGS 7 5-minute quadrangles) |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | New adjacent development |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | Confined animal operations (or other local, concentrated source of pollutants) |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | ≥ 20% coverage of pasture without riparian buffer |
| <input type="checkbox"/> I | <input type="checkbox"/> I | <input type="checkbox"/> I | ≥ 20% coverage of pasture with effective riparian buffer |
| <input type="checkbox"/> J | <input type="checkbox"/> J | <input type="checkbox"/> J | ≥ 20% coverage of agricultural land (regularly plowed land) without riparian buffer |
| <input type="checkbox"/> K | <input type="checkbox"/> K | <input type="checkbox"/> K | ≥ 20% coverage of agricultural land (regularly plowed land) with effective riparian buffer |
| <input type="checkbox"/> L | <input type="checkbox"/> L | <input type="checkbox"/> L | ≥ 20% coverage of maintained grass/herb |
| <input checked="" type="checkbox"/> M | <input checked="" type="checkbox"/> M | <input checked="" type="checkbox"/> M | Silvicultural land with disturbance < 5 years old |
| <input type="checkbox"/> N | <input type="checkbox"/> N | <input type="checkbox"/> N | Little or no opportunity. Lack of opportunity may result from hydrologic modifications that prevent drainage or overbank flow from affecting the assessment area. |

7. Wetland Acting as Vegetated Buffer – assessment area condition metric

Is the assessment area within 50 feet of a stream or other open water? ("open water" does not include man-made ditches or canals)

- Yes No If No, Skip to next metric

Stream width (Stream width is normal flow width [ordinary high water to ordinary high water]) If the stream is anastomosed, combine widths of channels/braids for a total stream width

- ≤ 15-foot wide > 15-foot wide Not Applicable

Do roots of assessment area vegetation extend into the bank of the adjacent stream/open water?

- Yes No

Is stream or other open water sheltered or exposed?

- Sheltered – adjacent open water with width < 2500 feet and no regular boat traffic
 Exposed – adjacent open water with width ≥ 2500 feet or regular boat traffic

8. Wetland/Riparian Buffer Width – assessment area/wetland type/wetland complex metric

Check a box in each column. Select the appropriate width for the wetland type at the assessment area (WT), the wetland complex (WC), and the riparian buffer at the assessment area (RB) (if applicable). Riparian buffer width is measured from top of bank and need only be present on one side of the water body. The riparian buffer is measured from the outside banks of the outer channels of an anastomosed system. Make buffer judgment based on dominant landscape feature. Record a note if a portion of the buffer has been removed or disturbed.

- | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|-----------------------|
| WT | WC | RB (if applicable) | |
| <input type="checkbox"/> A | <input checked="" type="checkbox"/> A | <input type="checkbox"/> A | ≥ 100 feet |
| <input checked="" type="checkbox"/> B | <input type="checkbox"/> B | <input checked="" type="checkbox"/> B | From 80 to < 100 feet |
| <input type="checkbox"/> C | <input type="checkbox"/> C | <input type="checkbox"/> C | From 50 to < 80 feet |
| <input type="checkbox"/> D | <input type="checkbox"/> D | <input type="checkbox"/> D | From 40 to < 50 feet |
| <input type="checkbox"/> E | <input type="checkbox"/> E | <input type="checkbox"/> E | From 30 to < 40 feet |
| <input type="checkbox"/> F | <input type="checkbox"/> F | <input type="checkbox"/> F | From 15 to < 30 feet |
| <input type="checkbox"/> G | <input type="checkbox"/> G | <input type="checkbox"/> G | From 5 to < 15 feet |
| <input type="checkbox"/> H | <input type="checkbox"/> H | <input type="checkbox"/> H | < 5 feet |

9. Inundation Duration – assessment area condition metric

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 (7 to 30 consecutive days or more)

10. Indicators of Deposition – assessment area condition metric

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 contiguous wetland complex (WC), and the size of the contiguous, forested wetland (FW) (if applicable, see User Manual). Boundaries are formed by uplands, four-lane roads, or urban landscapes. An observed beaver pond forms a boundary if it extends across the entire width of the floodplain. Additionally, other wetland types are considered boundaries for column WT. If assessment area is clear-cut, select "K" for FW column.

WT	WC	FW (if applicable)
<input type="checkbox"/> A	<input checked="" type="checkbox"/> A	<input checked="" type="checkbox"/> A ≥ 500 acres
<input type="checkbox"/> B	<input type="checkbox"/> B	<input type="checkbox"/> B From 100 to < 500 acres
<input type="checkbox"/> C	<input type="checkbox"/> C	<input type="checkbox"/> C From 50 to < 100 acres
<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D From 25 to < 50 acres
<input type="checkbox"/> E	<input type="checkbox"/> E	<input type="checkbox"/> E From 10 to < 25 acres
<input type="checkbox"/> F	<input type="checkbox"/> F	<input type="checkbox"/> F From 5 to < 10 acres
<input type="checkbox"/> G	<input type="checkbox"/> G	<input type="checkbox"/> G From 1 to < 5 acres
<input checked="" type="checkbox"/> H	<input type="checkbox"/> H	<input type="checkbox"/> H From 0.5 to < 1 acre
<input type="checkbox"/> I	<input type="checkbox"/> I	<input type="checkbox"/> I From 0.1 to < 0.5 acre
<input type="checkbox"/> J	<input type="checkbox"/> J	<input type="checkbox"/> J From 0.01 to < 0.1 acre
<input type="checkbox"/> K	<input type="checkbox"/> K	<input type="checkbox"/> K < 0.01 acre

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

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

13. Connectivity to Other Natural Areas – landscape condition metric

Check appropriate box(es). This metric refers to the landscape patch, the contiguous naturally vegetated area and open water (if appropriate) that includes the wetland type. Boundaries are formed by four-lane roads, urban landscapes, maintained fields (pasture and agriculture), or open water > 300 feet wide. Consider if the wetland type is well-connected (WC) or loosely-connected (LC) to the landscape patch.

WC	LC
<input checked="" type="checkbox"/> A	<input type="checkbox"/> A
<input type="checkbox"/> B	<input type="checkbox"/> B
<input type="checkbox"/> C	<input type="checkbox"/> C
<input type="checkbox"/> D	<input type="checkbox"/> D
<input type="checkbox"/> E	<input type="checkbox"/> E
<input type="checkbox"/> F	<input type="checkbox"/> F

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

Check Yes or No.

- Yes No Does wetland type have a surface hydrology connection to open waters or tidal wetlands? (evaluate for marshes only)
- Yes No Is the assessment area subject to overbank flooding during normal conditions?

14. Edge Effect – wetland type condition metric

Estimate distance from wetland type boundary to artificial edges. Artificial edges include permanent features such as fields, development, two-lane or larger roads (≥ 40-feet wide), utility line corridors wider than a two-lane road, and clear-cuts < 10 years old. Consider the eight main points of the compass.

- A No artificial edge within 150 feet in all directions
- B No artificial edge within 150 feet in four to seven directions
- C An artificial edge occurs within 150 feet in more than four directions or assessment area is clear-cut

15. Vegetative Composition – assessment area condition metric (skip for 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. Expected strata are unnaturally absent or dominated by exotic species or composed of planted stands of non-characteristic species or inappropriately composed of a single species.

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.
- B Vegetation diversity is low or has > 10% cover of exotics
- C Vegetation is dominated by exotic species

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

Vegetation present

Evaluate percent coverage of vegetation for marshes only

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

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 | |
|---------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Canopy closed, or nearly closed, with natural gaps associated with natural processes |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Canopy present, but opened more than natural gaps |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Canopy sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense mid-story/sapling layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density mid-story/sapling layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Mid-story/sapling layer sparse or absent |
| <input type="checkbox"/> A | <input type="checkbox"/> A | Dense shrub layer |
| <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> B | Moderate density shrub layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Shrub layer sparse or absent |
| <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> A | Dense herb layer |
| <input type="checkbox"/> B | <input type="checkbox"/> B | Moderate density herb layer |
| <input type="checkbox"/> C | <input type="checkbox"/> C | Herb layer sparse or absent |

Vegetation absent

18. **Snags – wetland type condition metric**

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

19. **Diameter Class Distribution – wetland type condition metric**

- A Most canopy trees have stems > 6-inches in diameter at breast height (DBH), many large trees (> 12-inches DBH) are present
- B Most canopy trees have stems between 6- and 12-inches DBH, few are > 12-inch DBH
- C Most canopy trees are < 6-inches DBH or no trees

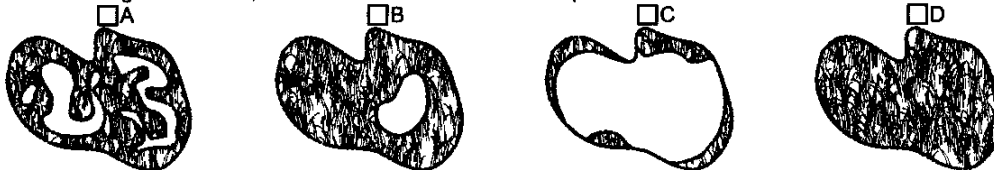
20. **Large Woody Debris – wetland type condition metric**

Include both man-made and natural debris piles.

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

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

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



22. **Habitat Uniqueness – wetland type condition metric**

- Yes
- No Has the N C Environmental Management Commission classified the assessment area as "Unique Wetlands" (UWL)?

Notes
Photos 9915-9917

NC WAM Wetland Rating Sheet

Wetland Site Name Z6-II-WAM13 Date of Assessment 9-7-07
 Wetland Type Headwater Wetland Assessor Name/Organization EcoScience Cusack/Allen

Presence of stressor affecting assessment area (Y/N) NO
 Notes on Field Assessment Form (Y/N) YES
 Presence of regulatory considerations (Y/N) NO
 Wetland is intensively managed (Y/N) NO
 Wetland may be a high-quality riverine wetland (Y/N)

Sub-function Rating Summary

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)	NO
	Particulate Change	Condition	HIGH
		Condition/Opportunity	X
		Opportunity Presence (Y/N)	X
	Soluble Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	NO
	Physical Change	Condition	HIGH
		Condition/Opportunity	HIGH
		Opportunity Presence (Y/N)	NO
Pollution Change	Condition	X	
	Condition/Opportunity	X	
	Opportunity Presence (Y/N)	X	
Habitat	Physical Structure	Condition	HIGH
	Landscape Patch Structure	Condition	HIGH
	Vegetation Composition	Condition	HIGH
	Uniqueness	Condition	NO

Function Rating Summary

Function	Metrics	Rating
Hydrology	Condition	HIGH
Water Quality	Condition	HIGH
	Condition/Opportunity	HIGH
	Opportunity Presence (Y/N)	YES
Habitat	Condition	HIGH

Overall Wetland Rating HIGH