



October 16, 2019

Mr. Kevin Murphrey
Environmental Services, Inc.
4901 Trademark Drive
Raleigh, NC

Project Name: Shaddox Creek (Parcels 5557, 5545, 5334, 66894)

Chatham County Planning Application #: 2019-1517

Location: Old US 1, Chatham County

Subject Feature(s): Six (6) intermittent streams, one (1) perennial stream, seven (7) wetlands

Date of Determination: August 12, 2019

Explanation: The site visit was completed on August 12, 2019 by Drew Blake with Chatham County Watershed Protection and Kevin Murphrey of Environmental Services, Inc. (ESI) on four (4) properties identified as Chatham County Parcel numbers 5557, 5545, 5334, 66894 which are located outside of the Jordan Lake watershed. ESI personnel completed a previous site visit which resulted in the identification of three (3) potential ephemeral stream segments, three (3) intermittent streams segments, one (1) perennial stream segments, and seven (7) potential wetlands. ESI submitted a request to Chatham County to complete a formal review to determine if the aforementioned features would be subject to riparian buffers according to Section 304 of the Chatham County Watershed Protection Ordinance. All points of origin and stream type transitions were reviewed and agreed to in the field. All stream and wetland denotations referenced below are based on Figure 2 – Preliminary Stream and Wetland Assessment dated June 2019 and completed by ESI. No revisions were made during the site visit on August 12, 2019.

Andy Williams of the US Army Corps of Engineers completed a site visit on October 8, 2019 with staff from ESI. Streams SXC, SXF, and SXG were claimed as jurisdictional waters and have been upgraded from ephemeral to intermittent streams. No other revisions were made during this site visit.

Required Buffers

Streams SXA, SXB, SXC, SXE, SXF, and SXG were confirmed to be intermittent streams and will require a 50-ft buffer proceeding landward from the top of bank on both sides of the features. Stream SXD was confirmed to be a perennial stream and will require a 100-ft buffer proceeding landward from the top of bank on both sides of the features.

All wetland boundaries (WXA-WXF) flagged in the field by ESI were reviewed and confirmed by the US Army Corps of Engineers (USACE). A 50-ft buffer will be required beginning at the flagged boundary and proceeding landward from all seven (9) flagged wetlands determined jurisdictional by the USACE.



WATERSHED PROTECTION DEPARTMENT

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This on-site determination shall expire five (5) years from the date of this letter. Landowners or affected parties that dispute a determination made by Chatham County, on parcels outside of the Jordan Lake watershed, may submit a request for appeal in writing to the Watershed Review Board. A request for a determination by the Watershed Review Board shall be made in accordance with Section 304 of the Chatham County Watershed Protection Ordinance. Landowners or affected parties that dispute a determination made by Chatham County, on parcels inside the Jordan Lake watershed, shall submit a request for appeal in writing to NC DWR, 401 & Buffer Permitting Unit, 1650 Mail Service Center, Raleigh, NC 27669-1650 attention of the Director of the NC Division of Water Quality.

Should this project result in any direct impacts to surface water features (i.e., crossing and/or filling streams or wetlands) additional reviews may be necessary. Additionally, a Section 404/401 Permit may be required. Any inquiries regarding Section 404/401 permitting should be directed to the Division of Water Resources (Central Office) at (919)-807-6364 and the US Army Corp of Engineers (Raleigh Regulatory Field Office) at (919)-554-4884.

Respectfully,

Drew Blake
Senior Watershed Specialist, CESSWI

Enclosures: Figure 2 – Preliminary Stream and Wetland Assessment, dated June 2019
Figure 2 – Potential Waters of the US map, dated October 2019
NCDWQ Stream Identification Forms
Wetland Determination Forms
Transmittal Letter
Chatham County Riparian Buffer Application
Authorized Agent Form
Authorization to Enter Property Form

cc: Mark Ashness, CE Group
Rachael Thorn, Chatham County Watershed Protection Director
Kimberly Tyson, Planner II, Chatham County Subdivision Administrator
Angela Birchett, Planner II, Chatham County Zoning Administrator
Jason Sullivan, Chatham County Planning Director

Project: ER19133.00
 Date: June 2019
 Drwn/Chkd: CW/JH
 Figure: 2

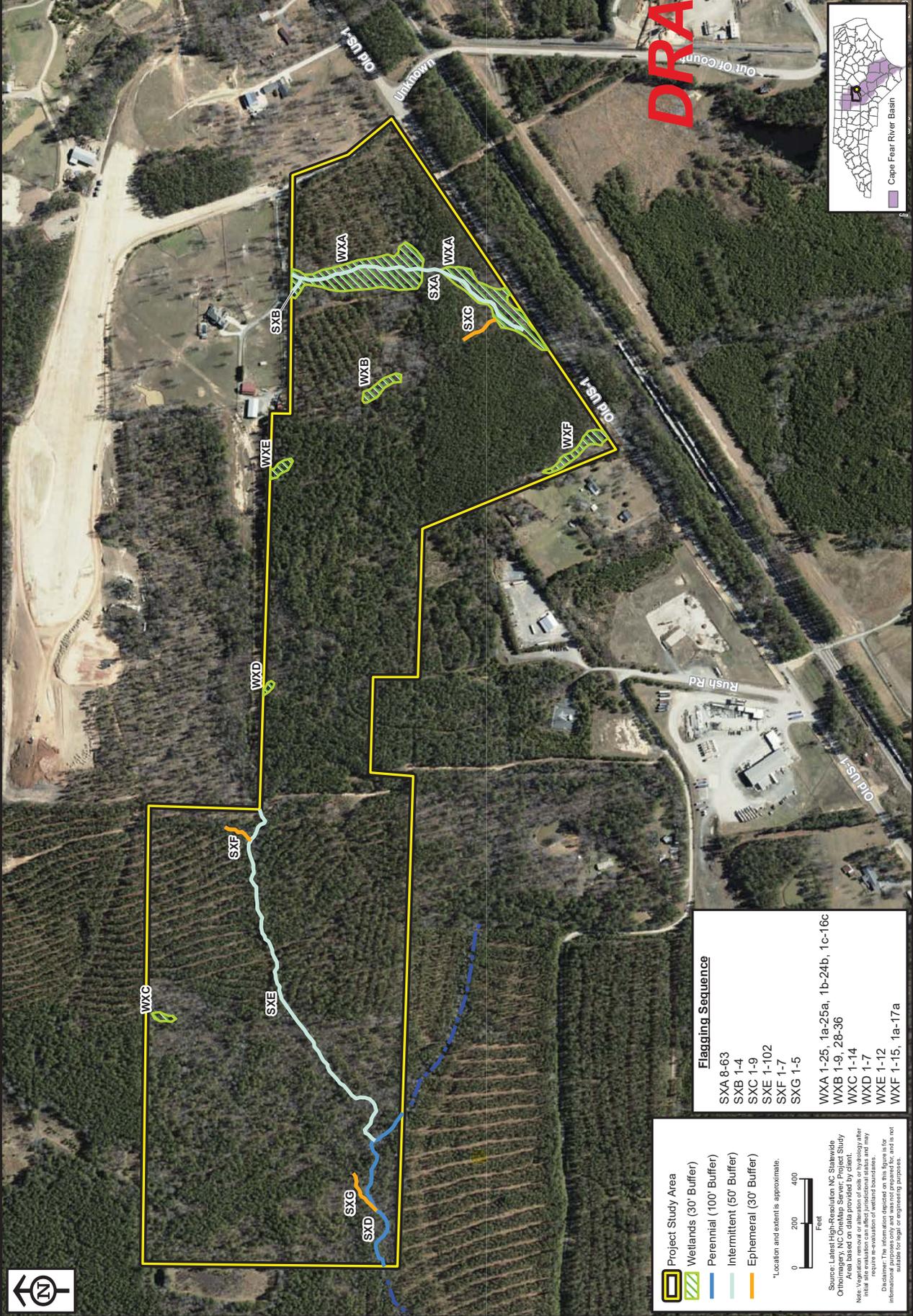
Preliminary Stream and Wetland Assessment
 Shadox Creek
 Chatham County, North Carolina



SERRATES, INC.
 ENVIRONMENTAL
 4077 Tribulation Drive
 Raleigh, NC 27610
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 www.serratesinc.com



DRAFT



The size and exact location of these features is approximated below to aid the surveyors when locating the flags.



Project Study Area
 Wetlands (30' Buffer)
 Perennial (100' Buffer)
 Intermittent (50' Buffer)
 Ephemeral (30' Buffer)

Location and extent is approximate.

0 200 400
 Feet

Source: Latest High-Resolution NC Statewide Orthomophy, NC OneMap Server; Project Study Area based on data provided by client.
 Note: Visual interpretation of aerial imagery for initial site evaluation can affect jurisdictional status and may require re-evaluation of wetland boundaries.
 Disclaimer: The information reported on this figure is for informational purposes only and is not suitable for legal or engineering purposes.

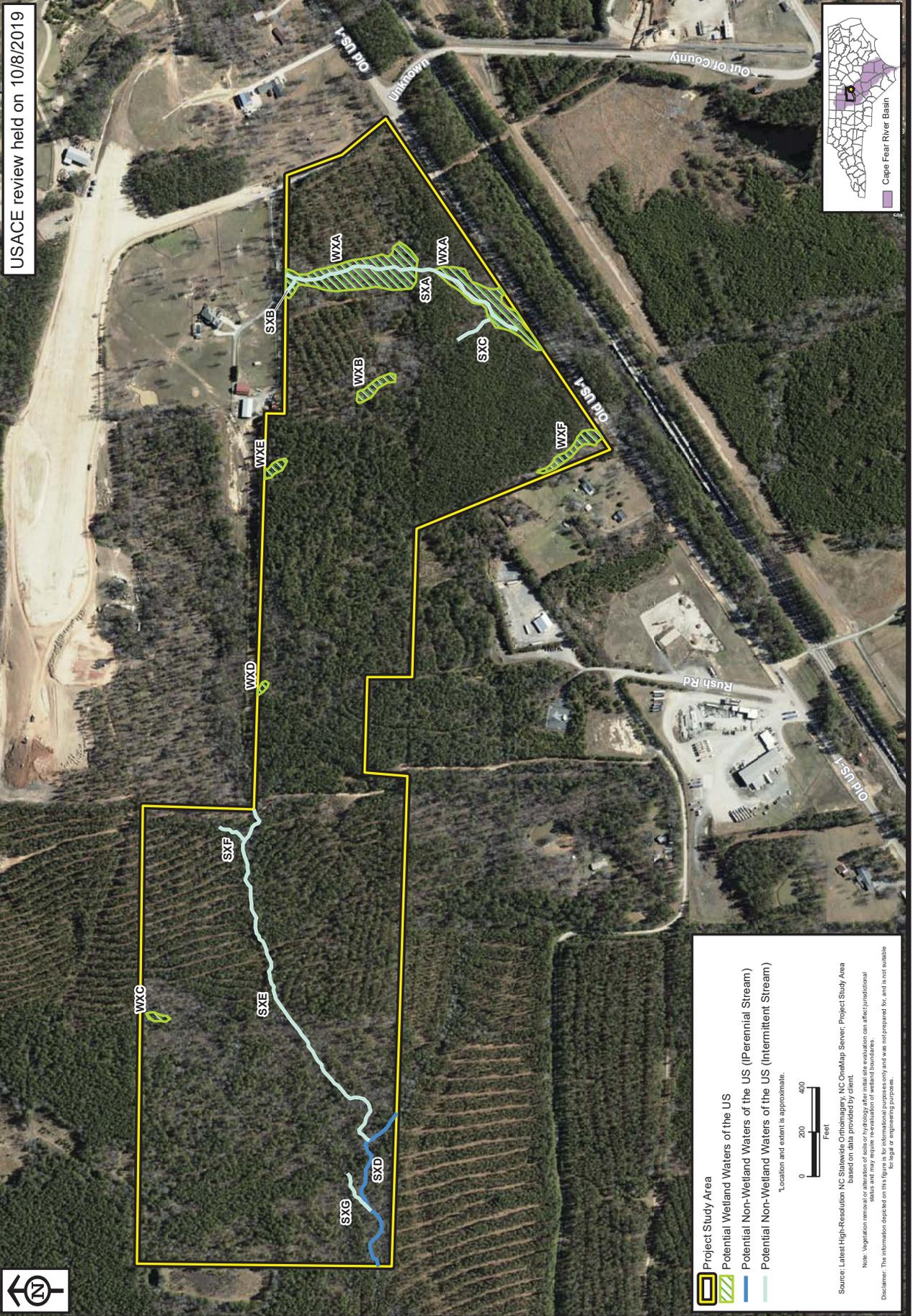
Flagging Sequence

SXA 8-63	WXA 1-25, 1a-25a, 1b-24b, 1c-16c
SXB 1-4	WXB 1-9, 28-36
SXC 1-9	WXC 1-14
SXE 1-102	WXD 1-7
SXF 1-7	WXE 1-12
SXG 1-5	WXF 1-15, 1a-17a

Project: ER19133.00
 Date: Oct 2019
 Drwn/Chkd: CW/JH
 Figure: 2

Potential Waters of the US
Shadox Creek
 Chatham County, North Carolina

ENVIRONMENTAL SERVICES, INC.
 4075 Timberline Drive
 Raleigh, NC 27610
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USACE review held on 10/8/2019

Project Study Area

- Potential Wetland Waters of the US
- Potential Non-Wetland Waters of the US (Perennial Stream)
- Potential Non-Wetland Waters of the US (Intermittent Stream)

Location and extent is approximate.

Scale: 0 200 400 Feet

Source: Latest High-Resolution NC Statewide Orthophotos; NC OneMap Server; Project Study Area based on data provided by client.

Note: Vegetation removal or alteration of wetlands for project site activities, on or after jurisdictional date, and may require reevaluation of wetland boundaries.

Disclaimer: The information depicted on this figure is for informational purposes only and was not prepared for, and is not suitable for legal or engineering purposes.

NC DWQ Stream Identification Form Version 4.11

SXA

Date: 6/13/19	Project/Site: Shaddox Creek	Latitude: 35.65624
Evaluator: ESI-K. Murphy	County: Chatham	Longitude: -78.98253
Total Points: Stream is at least intermittent if ≥ 19 or perennial if $\geq 30^*$ 27.5	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other e.g. Quad Name:

A. Geomorphology (Subtotal = 13)

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

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

B. Hydrology (Subtotal = 7)

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

C. Biology (Subtotal = 7.5)

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

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

Notes:

Sketch:

NC DWQ Stream Identification Form Version 4.11

SXB

Date: 6/13/19	Project/Site: Shaddox Creek	Latitude: 35.65804
Evaluator: ESI-K. Murphree	County: Chatham	Longitude: -78.98272
Total Points: 19 <i>Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*</i>	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other e.g. Quad Name:

A. Geomorphology (Subtotal = 8.5)

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

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

B. Hydrology (Subtotal = 5.5)

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

C. Biology (Subtotal = 5)

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

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

Notes:

Sketch:

NC DWQ Stream Identification Form Version 4.11

SXC

Date: 6/26/2019	Project/Site: Shaddox Creek	Latitude: 35.6558
Evaluator: J. Harbour	County: Chatham	Longitude: -78.9828
Total Points: Stream is at least intermittent if ≥ 19 or perennial if $\geq 30^*$ 17.5	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other e.g. Quad Name:

A. Geomorphology (Subtotal = 10.5)

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

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

B. Hydrology (Subtotal = 5)

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

C. Biology (Subtotal = 2)

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

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

Notes:

Sketch:

NC DWQ Stream Identification Form Version 4.11 *SXD*

Date: <i>6/20/19</i>	Project/Site: <i>Shaddox Creek</i>	Latitude: <i>35.65854</i>
Evaluator: <i>ESI-C. McKeahey</i>	County: <i>Chatham</i>	Longitude: <i>-78.99406</i>
Total Points: <i>Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*</i> 37	Stream Determination (circle one) Ephemeral Intermittent <u>Perennial</u>	Other <i>New Hill</i> e.g. Quad Name:

A. Geomorphology (Subtotal = 20)

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

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

B. Hydrology (Subtotal = 9)

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

C. Biology (Subtotal = 8)

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

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

Notes:

Sketch:

NC DWQ Stream Identification Form Version 4.11

SXE

Date: 6/20/19	Project/Site: Shaddo Creek	Latitude: 35.65822
Evaluator: EST-K. Murphree	County: Chatnam	Longitude: -78.99436
Total Points: Stream is at least intermittent if ≥ 19 or perennial if $\geq 30^*$ 24	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other e.g. Quad Name:

A. Geomorphology (Subtotal = 11)

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

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

B. Hydrology (Subtotal = 6)

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

C. Biology (Subtotal = 7)

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

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

Notes:

Sketch:

NC DWQ Stream Identification Form Version 4.11

SXF 3

Date: 6/26/2019	Project/Site: Shaddox Creek	Latitude: 35.6589
Evaluator: J. Harbour	County: Chatham	Longitude: -78.9913
Total Points: Stream is at least intermittent if ≥ 19 or perennial if $\geq 30^*$ 12.5	Stream Determination (circle one) Ephemera Intermittent Perennial	Other e.g. Quad Name:

A. Geomorphology (Subtotal = 8)

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

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

B. Hydrology (Subtotal = 2.5)

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

C. Biology (Subtotal = 2)

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

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

Notes:

Sketch:

NC DWQ Stream Identification Form Version 4.11

SXG

Date: 6/26/2019	Project/Site: Shaddox Creek	Latitude: 35.6573
Evaluator: J. Harbour	County: Chatham	Longitude: -78.9965
Total Points: Stream is at least intermittent if ≥ 19 or perennial if $\geq 30^*$ 17.5	Stream Determination (circle one) Ephemeral Intermittent Perennial	Other e.g. Quad Name:

A. Geomorphology (Subtotal = 11)

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

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

B. Hydrology (Subtotal = 4.5)

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

C. Biology (Subtotal = 2)

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

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

Notes:

Sketch:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Shaddox Creek City/County: Chatnam Sampling Date: 6/13/19
 Applicant/Owner: Shaddox Creek Developers, LLC. State: NC Sampling Point: WXA-9P
 Investigator(s): ESS - K. Murphy Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): convex Slope (%): 2-4
 Subregion (LRR or MLRA): P Lat: 35.65615 Long: -78.98290 Datum: WGS 84
 Soil Map Unit Name: Creedmoor - Green Level complex, 2-6% NWI classification: NA
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>NA</u> Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>720"</u> Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>720"</u>	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

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

Sampling Point: WXA-CP

Tree Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Pinus taeda</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>
2. <u>Acer rubrum</u>	<u>15</u>	<u>Y</u>	<u>FAC</u>
3. <u>Liquidambar styraciflua</u>	<u>15</u>	<u>Y</u>	<u>FAC</u>
4.			
5.			
6.			
7.			

50% of total cover: 25 = Total Cover
20% of total cover: 10

Sapling/Shrub Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Ligustrum sinense</u>	<u>15</u>	<u>Y</u>	<u>FACU</u>
2. <u>Acer rubrum</u>	<u>15</u>	<u>Y</u>	<u>FAC</u>
3. <u>Ilex opaca</u>	<u>5</u>	<u>Y</u>	<u>FACU</u>
4.			
5.			
6.			
7.			
8.			
9.			

50% of total cover: 12.5 = Total Cover
20% of total cover: 5

Herb Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Microstegium vimineum</u>	<u>30</u>	<u>Y</u>	<u>FAC</u>
2. <u>Polystichum acrostichoides</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			

50% of total cover: 20 = Total Cover
20% of total cover: 8

Woody Vine Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Smilax rotundifolia</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>
2. <u>Vitis rotundifolia</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>
3.			
4.			
5.			

50% of total cover: 10 = Total Cover
20% of total cover: 4

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	<u>7</u>	(A)
Total Number of Dominant Species Across All Strata:	<u>10</u>	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>70%</u>	(A/B)

Prevalence Index worksheet:

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

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

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

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

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

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No

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

SOIL

Sampling Point: WXA-GP

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR3/4	100					SL	
4-20	10YR4/6	100					SL	

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

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Dark Surface (S7)	<input type="checkbox"/> 2 cm Muck (A10) (MLRA 147)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148)	<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 147, 148)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 136, 147)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 2 cm Muck (A10) (LRR N)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)		
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)		
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147)		

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

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Shaddox Creek City/County: Chatham Sampling Date: 6/13/19
 Applicant/Owner: Shaddox Creek Developers LLC. State: NC Sampling Point: WXA-Wet
 Investigator(s): ESI-K. Murphy Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): concave Slope (%): 0-2
 Subregion (LRR or MLRA): P Lat: 35.65614 Long: -78.98259 Datum: WGS 84
 Soil Map Unit Name: Creedmoor - Green Level complex, 12-6% NWI classification: PFO
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>712"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>4"</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

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

Sampling Point: WXA - Wet

Tree Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Acer rubrum</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>8</u> (A)
2. <u>Pinus taeda</u>	<u>15</u>	<u>Y</u>	<u>FAC</u>	Total Number of Dominant Species Across All Strata: <u>8</u> (B)
3. <u>Liquidambar styraciflua</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
4. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>22.5</u> 20% of total cover: <u>9</u>				
Total Cover: <u>45</u>				
Sapling/Shrub Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1. <u>Acer rubrum</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>	<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation
2. <u>Ligustrum sinense</u>	<u>5</u>	<u>N</u>	<u>FACU</u>	<input checked="" type="checkbox"/> 2 - Dominance Test is >50%
3. <u>Liquidambar styraciflua</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	<input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹
4. _____	_____	_____	_____	<input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5. _____	_____	_____	_____	<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
6. _____	_____	_____	_____	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7. _____	_____	_____	_____	Definitions of Four Vegetation Strata:
8. _____	_____	_____	_____	Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
9. _____	_____	_____	_____	Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.
10. _____	_____	_____	_____	Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
11. _____	_____	_____	_____	Woody vine – All woody vines greater than 3.28 ft in height.
50% of total cover: <u>17.5</u> 20% of total cover: <u>7</u>				
Total Cover: <u>35</u>				
Herb Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present?
1. <u>Microrhizogium vimineum</u>	<u>50</u>	<u>Y</u>	<u>FAC</u>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. <u>Woodwardia areolata</u>	<u>10</u>	<u>N</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
50% of total cover: <u>30</u> 20% of total cover: <u>12</u>				
Total Cover: <u>60</u>				
Woody Vine Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Remarks: (Include photo numbers here or on a separate sheet.)
1. <u>Smilax rotundifolia</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Vitis rotundifolia</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>10</u> 20% of total cover: <u>4</u>				
Total Cover: <u>20</u>				

SOIL

Sampling Point: WXA-wet

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR3/4	100					SL	
4-20	10YR5/2	90	10YR5/8	10	C	M	SL	

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

Hydric Soil Indicators:

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

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

Indicators for Problematic Hydric Soils³:

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

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

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Shaddox Creek City/County: Chatham Sampling Date: 6/13/19
 Applicant/Owner: Shaddox Creek Developers, LLC. State: NC Sampling Point: WXB-UP
 Investigator(s): ESI-K, Murphy Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): HILLSLOPE Local relief (concave, convex, none): convex Slope (%): 2-4
 Subregion (LRR or MLRA): P Lat: 35.65681 Long: -78.98459 Datum: WGS 84
 Soil Map Unit Name: Creedmoor-Green Level Compck, 6-10^m NWI classification: _____

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

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: _____ _____ _____	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
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Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>NA</u> Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>720"</u> Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>720"</u> (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: _____

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

Sampling Point: WXB-4P

Tree Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Pinus taeda</u>	<u>30</u>	<u>Y</u>	<u>FAC</u>
2. <u>Acer rubrum</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>
3. <u>Liquidambar styraciflua</u>	<u>10</u>	<u>N</u>	<u>FAC</u>
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

_____ = Total Cover
 50% of total cover: 30 20% of total cover: 12

Sapling/Shrub Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Ilex opaca</u>	<u>5</u>	<u>N</u>	<u>FACU</u>
2. <u>Acer rubrum</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>
3. <u>Liquidambar styraciflua</u>	<u>10</u>	<u>N</u>	<u>FAC</u>
4. <u>Pinus taeda</u>	<u>15</u>	<u>Y</u>	<u>FAC</u>
5. <u>Vaccinium corymbosum</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____

_____ = Total Cover
 50% of total cover: 32.5 20% of total cover: 13

Herb Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Lonicera japonica</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>
2. <u>Rubus argutus</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____

_____ = Total Cover
 50% of total cover: 10 20% of total cover: 4

Woody Vine Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Smilax rotundifolia</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>
2. <u>Vitis rotundifolia</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____

_____ = Total Cover
 50% of total cover: 5 20% of total cover: 2

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 78% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by:

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrophytic Vegetation

2 - Dominance Test is >50%

3 - Prevalence Index is $\leq 3.0^1$

4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of Four Vegetation Strata:

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

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

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

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No

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

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Shaddox creek City/County: Chatuam Sampling Date: 6/13/19
 Applicant/Owner: Shaddox Creek Developers, LLC State: NC Sampling Point: WXB-wet
 Investigator(s): ESI- K. Murphy Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): DEPRESSION Local relief (concave, convex, none): concave Slope (%): 0-2
 Subregion (LRR or MLRA): P Lat: 35.65680 Long: -78.98422 Datum: NAD83
 Soil Map Unit Name: Creedmoor-6rem Level complex, 6-10⁹10 NWI classification: PFO

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

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Geomorphic Position (D2) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>212"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>4"</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

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

Sampling Point: WXB-Wet

Tree Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Pinus taeda</u>	<u>30</u>	<u>Y</u>	<u>FAC</u>
2. <u>Acer rubrum</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>
3. <u>Liquidambar styraciflua</u>	<u>10</u>	<u>N</u>	<u>FAC</u>
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

50% of total cover: 60 = Total Cover
 20% of total cover: 12

Sapling/Shrub Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Vaccinium corymbosum</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>
2. <u>Acer rubrum</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>
3. <u>Pinus taeda</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____

50% of total cover: 50 = Total Cover
 20% of total cover: 10

Herb Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Juncus effusus</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>
2. <u>Woodwardia arifolia</u>	<u>5</u>	<u>Y</u>	<u>FACW</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____

50% of total cover: 15 = Total Cover
 20% of total cover: 3

Woody Vine Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Smilax rotundifolia</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>
2. <u>Vitis rotundifolia</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____

50% of total cover: 20 = Total Cover
 20% of total cover: 4

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 9 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

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

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

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

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No

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

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Shaddox creek City/County: Chatham Sampling Date: 6/20/19
 Applicant/Owner: Shaddox creek developers, LLC. State: NC Sampling Point: WXC-UP
 Investigator(s): ESI-K. Murphy Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): HILLSLOPE Local relief (concave, convex, none): convex Slope (%): 2-4
 Subregion (LRR or MLRA): P Lat: 35.65965 Long: -78.99461 Datum: WGS 84
 Soil Map Unit Name: Creedmoor-Green Level, complex, 6-10% NWI classification: _____

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

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>NA</u> Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>720"</u> Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>280"</u> (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

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

Sampling Point: WXC-4P

Tree Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Pinus taeda</u>	<u>30</u>	<u>Y</u>	<u>FAC</u>
2. <u>Acer rubrum</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>
3. <u>Liquidambar styraciflua</u>	<u>10</u>	<u>N</u>	<u>FAC</u>
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

50% of total cover: 30 60 = Total Cover
20% of total cover: 12

Sapling/Shrub Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Vaccinium corymbosum</u>	<u>30</u>	<u>Y</u>	<u>FACW</u>
2. <u>Ilex opaca</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____

50% of total cover: 20 40 = Total Cover
20% of total cover: 8

Herb Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Lonicera japonica</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____

50% of total cover: 5 10 = Total Cover
20% of total cover: 2

Woody Vine Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Smilax rotundifolia</u>	<u>30</u>	<u>Y</u>	<u>FAC</u>
2. <u>Vitis rotundifolia</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>
3. <u>Clematis integrifolia</u>	<u>5</u>	<u>N</u>	<u>FAC</u>
4. _____	_____	_____	_____
5. _____	_____	_____	_____

50% of total cover: 22.5 45 = Total Cover
20% of total cover: 9

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 71% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

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

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

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

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No

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

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Shaddox Creek City/County: Chatham Sampling Date: 6/20/19
 Applicant/Owner: Shaddox Creek Developers, LLC. State: NC Sampling Point: WXC-Wet
 Investigator(s): ESI-K. Murphy Section, Township, Range: NA
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): concave Slope (%): 0-2
 Subregion (LRR or MLRA): _____ Lat: 35.65951 Long: -78.94433 Datum: WGS 84
 Soil Map Unit Name: Creedmore-Green Level complex 6-10"ia NWI classification: PFO

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

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks:	

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p><u>Primary Indicators (minimum of one is required; check all that apply)</u></p> ___ Surface Water (A1) ___ True Aquatic Plants (B14) ___ High Water Table (A2) ___ Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Saturation (A3) ___ Oxidized Rhizospheres on Living Roots (C3) ___ Water Marks (B1) ___ Presence of Reduced Iron (C4) ___ Sediment Deposits (B2) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Drift Deposits (B3) ___ Thin Muck Surface (C7) ___ Algal Mat or Crust (B4) ___ Other (Explain in Remarks) ___ Iron Deposits (B5) ___ Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) ___ Aquatic Fauna (B13)	<p><u>Secondary Indicators (minimum of two required)</u></p> ___ Surface Soil Cracks (B6) ___ Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Stunted or Stressed Plants (D1) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ Microtopographic Relief (D4) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)
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<p>Field Observations:</p> Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>NA</u> Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): <u>>12"</u> Saturation Present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>6"</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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

Sampling Point: NXC - wet

Tree Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Acer rubrum</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>
2. <u>Liquidambar styraciflua</u>	<u>15</u>	<u>Y</u>	<u>FAC</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

50% of total cover: 17.5 20% of total cover: 7
35 = Total Cover

Sapling/Shrub Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Vaccinium corymbosum</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>
2. <u>Acer rubrum</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____

50% of total cover: 15 20% of total cover: 6
30 = Total Cover

Herb Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Woodwardia areolata</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>
2. <u>Juncus effusus</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>
3. <u>Smilax rotundifolia</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____

50% of total cover: 17.5 20% of total cover: 7
35 = Total Cover

Woody Vine Stratum (Plot size: <u>30' radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Smilax rotundifolia</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>
2. <u>Vitis rotundifolia</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____

50% of total cover: 5 20% of total cover: 2
10 = Total Cover

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 9 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes No

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

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Shaddox Creek Development City/County: Chatham Sampling Date: 20 Jun, 2019
 Applicant/Owner: Shaddox Creek Developers, LLC State: NC Sampling Point: WXD up
 Investigator(s): ESI - K. Murphrey, C. McKearney Section, Township, Range: n/a
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 4-8
 Subregion (LRR or MLRA): LRR-P Lat: 35.65849 Long: -78.98881 Datum: WGS-84
 Soil Map Unit Name: Creedmoor-Green Level complex, 6-10% slopes NWI classification: n/a

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

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

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>n/a</u> Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>>20</u> Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>>20</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

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

Sampling Point: WXD up

Tree Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Pinus taeda</u>	<u>60</u>	<u>Y</u>	<u>FAC</u>
2. <u>Acer rubrum</u>	<u>15</u>	<u>N</u>	<u>FAC</u>
3. <u>Liquidambar styraciflua</u>	<u>25</u>	<u>Y</u>	<u>FAC</u>
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

100 = Total Cover
 50% of total cover: 50 20% of total cover: 20

Sapling/Shrub Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Acer rubrum</u>	<u>10</u>	<u>N</u>	<u>FAC</u>
2. <u>Juniperus virginiana</u>	<u>30</u>	<u>Y</u>	<u>FACU</u>
3. <u>Quercus stellata</u>	<u>15</u>	<u>Y</u>	<u>UPL</u>
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____

55 = Total Cover
 50% of total cover: 27.5 20% of total cover: 11

Herb Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Parthenocissus quinquefolia</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>
2. <u>Festuca rubra</u>	<u>20</u>	<u>Y</u>	<u>FACU</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____

30 = Total Cover
 50% of total cover: 15 20% of total cover: 6

Woody Vine Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>None present</u>	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____

_____ = Total Cover
 50% of total cover: 0 20% of total cover: 0

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.33% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

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

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

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

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No

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

SOIL

Sampling Point: WXD up

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10 YR5/4	100					SC	
6-12	10 YR6/3	50	10 YR5/4	50			SC	

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

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

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

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

Indicators for Problematic Hydric Soils³:

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

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

Restrictive Layer (if observed):

Type: fill
 Depth (inches): 12

Hydric Soil Present? Yes No

Remarks:
 auger refusal

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Shaddox Creek Development City/County: Chatham Sampling Date: 20 Jun, 2019
 Applicant/Owner: Shaddox Creek Developers, LLC State: NC Sampling Point: WXD wet
 Investigator(s): ESI - K. Murphrey, C. McKearney Section, Township, Range: n/a
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 4-8
 Subregion (LRR or MLRA): LRR-P Lat: 35.65854 Long: -78.98841 Datum: WGS-84
 Soil Map Unit Name: Creedmoor-Green Level complex. 6-10% slopes NWI classification: PFO
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks:	

HYDROLOGY

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

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

Sampling Point: WXD wet

Tree Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Quercus alba</u>	<u>20</u>	<u>Y</u>	<u>FACU</u>
2. <u>Acer rubrum</u>	<u>40</u>	<u>Y</u>	<u>FAC</u>
3. <u>Liquidambar styraciflua</u>	<u>30</u>	<u>Y</u>	<u>FAC</u>
4. _____			
5. _____			
6. _____			
7. _____			

90 = Total Cover
50% of total cover: 45 20% of total cover: 18

Sapling/Shrub Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Acer rubrum</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>
2. <u>Liquidambar styraciflua</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>
3. <u>Vaccinium corymbosum</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			

60 = Total Cover
50% of total cover: 30 20% of total cover: 12

Herb Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Dichanthelium clandestinum</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>
2. <u>Carex lurida</u>	<u>10</u>	<u>Y</u>	<u>OBL</u>
3. <u>Juncus effusus</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			

30 = Total Cover
50% of total cover: 15 20% of total cover: 6

Woody Vine Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>None present</u>			
2. _____			
3. _____			
4. _____			
5. _____			

_____ = Total Cover
50% of total cover: 0 20% of total cover: 0

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 85.71% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

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

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

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

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No

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

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Shaddox Creek Development City/County: Chatham Sampling Date: 20 Jun, 2019
 Applicant/Owner: Shaddox Creek Developers, LLC State: NC Sampling Point: WXE up
 Investigator(s): ESI - K. Murphrey, C. McKearney Section, Township, Range: n/a
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 4-8
 Subregion (LRR or MLRA): LRR-P Lat: 35.65851 Long: -78.98503 Datum: WGS-84
 Soil Map Unit Name: Creedmoor-Green Level complex, 6-10% slopes NWI classification: n/a

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

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

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>n/a</u> Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>>20</u> Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>>20</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

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

Sampling Point: WXE up

Tree Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Pinus taeda</u>	<u>60</u>	<u>Y</u>	<u>FAC</u>
2. <u>Acer rubrum</u>	<u>15</u>	<u>N</u>	<u>FAC</u>
3. <u>Liquidambar styraciflua</u>	<u>25</u>	<u>Y</u>	<u>FAC</u>
4. _____			
5. _____			
6. _____			
7. _____			

_____ = Total Cover
 50% of total cover: 50 20% of total cover: 20

Sapling/Shrub Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Acer rubrum</u>	<u>10</u>	<u>N</u>	<u>FAC</u>
2. <u>Juniperus virginiana</u>	<u>30</u>	<u>Y</u>	<u>FACU</u>
3. <u>Quercus stellata</u>	<u>15</u>	<u>Y</u>	<u>UPL</u>
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			

_____ = Total Cover
 50% of total cover: 27.5 20% of total cover: 11

Herb Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Parthenocissus quinquefolia</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>
2. <u>Festuca rubra</u>	<u>20</u>	<u>Y</u>	<u>FACU</u>
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			

_____ = Total Cover
 50% of total cover: 15 20% of total cover: 6

Woody Vine Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>None present</u>			
2. _____			
3. _____			
4. _____			
5. _____			

_____ = Total Cover
 50% of total cover: 0 20% of total cover: 0

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.33% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

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

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

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

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No

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

SOIL

Sampling Point: WXE up

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10 YR5/4	100					SC	
6-12	10 YR6/3	50	10 YR5/4	50	D	M	SC	

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

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Dark Surface (S7)	<input type="checkbox"/> 2 cm Muck (A10) (MLRA 147)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148)	<input type="checkbox"/> Coast Prairie Redox (A16)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148)	<input type="checkbox"/> (MLRA 147, 148)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Piedmont Floodplain Soils (F19)	
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> (MLRA 136, 147)	
<input type="checkbox"/> 2 cm Muck (A10) (LRR N)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)		
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)		
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)		
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147)		

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

Restrictive Layer (if observed):
 Type: fill
 Depth (inches): 12

Hydric Soil Present? Yes No

Remarks:
 auger refusal

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Shaddox Creek Development City/County: Chatham Sampling Date: 20 Jun, 2019
 Applicant/Owner: Shaddox Creek Developers, LLC State: NC Sampling Point: WXE wet
 Investigator(s): ESI - K. Murphrey, C. McKearney Section, Township, Range: n/a
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 4-8
 Subregion (LRR or MLRA): LRR-P Lat: 35.65852 Long: -78.98535 Datum: WGS-84
 Soil Map Unit Name: Creedmoor-Green Level complex. 6-10% slopes NWI classification: PFO

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

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks:	

HYDROLOGY

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

Remarks:

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

Sampling Point: WXE wet

Tree Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus taeda	60	Y	FAC
2. Acer rubrum	15	N	FAC
3. Liquidambar styraciflua	25	Y	FAC
4. _____			
5. _____			
6. _____			
7. _____			

100 = Total Cover
 50% of total cover: 50 20% of total cover: 20

Sapling/Shrub Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	20	Y	FAC
2. Liquidambar styraciflua	30	Y	FAC
3. Quercus michauxii	5	N	FACW
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			

55 = Total Cover
 50% of total cover: 27.5 20% of total cover: 11

Herb Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. Woodwardia areolata	10	Y	FACW
2. Carex lurida	20	Y	OBL
3. Osmunda regalis	10	Y	OBL
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			

40 = Total Cover
 50% of total cover: 20 20% of total cover: 8

Woody Vine Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. None present			
2. _____			
3. _____			
4. _____			
5. _____			

_____ = Total Cover
 50% of total cover: 0 20% of total cover: 0

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

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

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

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

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No

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

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Shaddox Creek Development City/County: Chatham Sampling Date: 20 Jun, 2019
 Applicant/Owner: Shaddox Creek Developers, LLC State: NC Sampling Point: WXF up
 Investigator(s): ESI - K. Murphrey, C. McKearney Section, Township, Range: n/a
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 4-8
 Subregion (LRR or MLRA): LRR-P Lat: 35.65480 Long: -78.98504 Datum: WGS-84
 Soil Map Unit Name: Creedmoor-Green Level complex, 6-10% slopes NWI classification: n/a

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

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks:	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
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Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>n/a</u> Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>>20</u> Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>>20</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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

Sampling Point: WXF up

Tree Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Pinus taeda</u>	<u>60</u>	<u>Y</u>	<u>FAC</u>
2. <u>Acer rubrum</u>	<u>15</u>	<u>N</u>	<u>FAC</u>
3. <u>Liquidambar styraciflua</u>	<u>25</u>	<u>Y</u>	<u>FAC</u>
4. _____			
5. _____			
6. _____			
7. _____			

100 = Total Cover
 50% of total cover: 50 20% of total cover: 20

Sapling/Shrub Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Acer rubrum</u>	<u>10</u>	<u>N</u>	<u>FAC</u>
2. <u>Juniperus virginiana</u>	<u>30</u>	<u>Y</u>	<u>FACU</u>
3. <u>Quercus stellata</u>	<u>15</u>	<u>Y</u>	<u>UPL</u>
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			

55 = Total Cover
 50% of total cover: 27.5 20% of total cover: 11

Herb Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Parthenocissus quinquefolia</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			

10 = Total Cover
 50% of total cover: 5 20% of total cover: 2

Woody Vine Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Smilax rotundifolia</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>
2. <u>Vitis rotundifolia</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>
3. _____			
4. _____			
5. _____			

10 = Total Cover
 50% of total cover: 5 20% of total cover: 2

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 57.14% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - 3 - Prevalence Index is ≤3.0¹
 - 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

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

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

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

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No

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

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Shaddox Creek Development City/County: Chatham Sampling Date: 20 Jun, 2019
 Applicant/Owner: Shaddox Creek Developers, LLC State: NC Sampling Point: WXF wet
 Investigator(s): ESI - K. Murphrey, C. McKearney Section, Township, Range: n/a
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 4-8
 Subregion (LRR or MLRA): LRR-P Lat: 35.65469 Long: -78.98513 Datum: WGS-84
 Soil Map Unit Name: Creedmoor-Green Level complex. 6-10% slopes NWI classification: PFO

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

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks:	

HYDROLOGY

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

Remarks:

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

Sampling Point: WXF wet

Tree Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus taeda	60	Y	FAC
2. Acer rubrum	15	N	FAC
3. Liquidambar styraciflua	25	Y	FAC
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

100 = Total Cover
 50% of total cover: 50 20% of total cover: 20

Sapling/Shrub Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	20	Y	FAC
2. Liquidambar styraciflua	30	Y	FAC
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____

50 = Total Cover
 50% of total cover: 25 20% of total cover: 10

Herb Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. Woodwardia areolata	10	N	FACW
2. Microstegium vimineum	30	Y	FAC
3. Osmunda regalis	10	N	OBL
4. Juncus effusus	10	N	FACW
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____

60 = Total Cover
 50% of total cover: 30 20% of total cover: 12

Woody Vine Stratum (Plot size: <u>30' x 30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. Smilax rotundifolia	10	Y	FAC
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____

10 = Total Cover
 50% of total cover: 5 20% of total cover: 2

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

- Hydrophytic Vegetation Indicators:**
- ___ 1 - Rapid Test for Hydrophytic Vegetation
 - 2 - Dominance Test is >50%
 - ___ 3 - Prevalence Index is ≤3.0¹
 - ___ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 - ___ Problematic Hydrophytic Vegetation¹ (Explain)
- ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

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

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

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

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No _____

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

SOIL

Sampling Point: WXF wet

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20	10YR 4/2	90	10YR 5/4	10	C	M	SCL	

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

Hydric Soil Indicators:		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Dark Surface (S7)	<input type="checkbox"/> 2 cm Muck (A10) (MLRA 147)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148)	<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 147, 148)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 136, 147)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2 cm Muck (A10) (LRR N)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)	
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)	
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147)	

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

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:



4901 Trademark Drive
Raleigh, North Carolina 27610
P (919) 212 1760
F (919) 212 1707
environmentalservicesinc.com

7/17/19

Chatham County Watershed Protection Department
P.O Box 548 Pittsboro, NC 27312

Re: Shaddox Creek

Mr. Drew Blake,

Attached is the Riparian Buffer Review Application for the Shaddox Creek site in Chatham County, there are a total of 14 features to look at (based on an email on 6/27/19) and the check of \$1,400 has been mailed to Chatham County Watershed Protection Department. The main field managers for this project were Jeff Harbour and Kevin Murphrey. Mr. Harbour has over 25 years of professional experience and has completed the Surface Water Identification Training Course. Mr. Murphrey has almost 6 years of professional experience and has also completed the Surface Water Identification Training Course. Please let us know when you will be able to schedule a field visit for this site.

Sincerely,

Kevin Murphrey, Staff Scientist

Environmental Services, Inc. A Terracon Company 4901 Trademark Drive Raleigh, North Carolina 27610
P (919)2121760 F (919)2121707 environmentalservicesinc.com



Date Received: 7/24/19 PL# 2019-1517

Riparian Buffer Review Application
Surface Water Identification Request for
Major Subdivisions

Tract Information

Parcel #: 5557, 5545, 5334, and 66894 Watershed District (and name of creek if known): Shaddox Creek

Property Owner: Shaddox Creek Developers, LLC.

Location/Physical Address of Tract: 7585 Old US 1 New Hill, NC 27562

Driving Directions from Pittsboro: From Pittsboro, head southeast on Monocure-Pittsboro Rd
Then turn left onto US 1, take the exit for Old US 1 and turn left. Project location is approximately 0.5 miles away and on the left side
of OLD US 1.

Subdivision Name (if applicable): Shaddox Creek

Owner's/Agent Contact Information (Agent: Consultant, Real Estate Agent, Surveyor, Other) Circle one

Name: Environmental Services, Inc, A Terracon Company.

Contact Phone Numbers: (h) _____ (w) 904-470-2112 (c) 919-916-0201

E-mail: kmurphrey@esinc.cc

Mailing Address: 4901 Trademark Drive

Do you wish to be contacted prior to Chatham County staff visiting the property? Yes No

How much notice is required prior to arrival onsite? 3-4 days

How would you like to receive the completed review letter? (Please check one of the following)

- I would like to pick up the completed Riparian Buffer Review at the County Office
- I would like the completed Riparian Buffer Review mailed to me
- I would like the completed Riparian Buffer Review e-mailed to me

Please include the following items with this request

- Completed consultant findings report including the following:
 - GIS generated or hand drawn sketch of surface water features found onsite (Buffer Plan Sheet)
No smaller than 1"=60' and paper size 11"x17" or larger
 - NCDWQ Stream Identification Forms, Version 4.11, Wetland Determination Data Form –



Riparian Buffer Review Application
Surface Water Identification Request

Eastern Mountains and Piedmont Region, digital photographs, notes, sketches, etc.

- NRCS map with property boundary depicted
- USGS map with property boundary depicted
- Statement of Credentials (Training Certificate for NCDWQ/NC State University Surface Waters Classification course, 2 years of jurisdictional wetland delineation according to the Eastern Mountains and Piedmont Regional Supplement to the 1987 US Corps of Engineers Wetland Delineation Manual)
- Signed Right to Enter Property Form
- Signed Owner's Agent Designation Form
- Fee (make checks payable to Chatham County) **\$100 per feature confirmed onsite**

Feature is defined as any surface water that is subject to Chatham County Riparian Buffers (streams, wetlands, ponds)

Total Number of Features: 14 Total Paid: \$ 1400

I have read and understand the regulations of the Watershed Protection Ordinance, Section 304, and I agree to adhere to these associated policies and guidelines herein.

Owner/Agent Signature: _____ Date: 7/15/19



CHATHAM COUNTY

AUTHORIZED AGENT FOR FORM

PROPERTY LEGAL DESCRIPTION:

LOT NO. _____ PARCEL ID (PIN) 060900340381 PARCEL SIZE 51.6 acres

STREET ADDRESS: Rush Road

Please print:

Property Owner: Equity Trust Company Custodian FBO Christina Zadell IRA

Property Owner: _____

The undersigned owner(s) of the above described property, do hereby authorize

Kevin Murphrey / Jeff Harbour, of Environmental Services, Inc
(Contractor / Agent) (Name of consulting firm if applicable)

to act on my/our behalf and take all actions, I/we could have taken if present, necessary for the processing, issuance and acceptance of reviews, inspections, or permits and any and all standard and special conditions attached to these approvals. The activities authorized include the following (Check all that apply):

Check here for all of the below options.

- Building Permit
- Zoning Compliance Permits
- Floodplain Determination
- Soil Erosion & Sedimentation Control Permit
- Permits to install, repair, evaluate, or expand onsite wastewater system(s)
- Evaluation/inspection/permitting of a private drinking water well(s).
- Riparian Buffer Review pursuant to §304 of the Chatham Co. Watershed Protection Ordinance.
- Other: _____

Property Owner's Address (if different than property above):

1 Equity Way, Westlake, Ohio 44145

Telephone: 919-625-8912

E-mail: czadell@gmail.com

We hereby certify the above information submitted in this application is true and accurate to the best of our knowledge.

CZadell
Owner Authorized Signature

Date: 7/1/2019

Kevin Murphrey
Agent Authorized Signature

Date: 7/15/19



Watershed Protection Department

P.O. Box 548
Pittsboro, NC 27312

Website: www.chathamnc.org

Authorization to Enter Property Form

Date: 7/1/2019

PARCEL No. (AKPAR) 060900340381

I, (print name) Christina Zadell, Account Holder, as owner of the property described above, or as a representative of the owner(s) do hereby convey permission to Chatham County staff to enter the property at their convenience to conduct a surface water identification (SWID) necessary to determine whether or not water features on my property are subject to the riparian buffer regulations described in Section 304 of the Chatham County Watershed Protection Ordinance. The SWID will be public record and on file at the Planning and Watershed Protection Departments, and may be requested in the future for review by interested parties.

I understand that stream delineations for the property listed above will be made by County staff only once and that if future subdivisions are proposed within this property boundary, it will require a surface water identification by a private consultant at the property owner's expense.

Equity Trust Company Custodian FBO Christina Zadell IRA

(Print Owner's Name)

C Zadell

(Signature of Owner)
(Date)

Kevin Murphy

(Print Authorized Agent Name)

Kevin Murphy

(Signature of Authorized Agent)
(Date)