

Land & Water Resources Division Environmental Quality Department Phone: (919) 545-8394

Website: www.chathamnc.org

Riparian Buffer Review Application Surface Water Identification Request

Surface water identification Request
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: 19 Total Paid: \$ 1,900.00
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: Bludweoz Date: 12-11-17
Applications can be submitted by mail to: Environmental Quality Department, P.O. Box 548, Pittsboro, NC 27312 or by electronic mail to drew.blake@chathamnc.org
For Questions, please contact:
Drew Blake, Watershed Specialist, at (919)-545-8394 or drew.blake@chathamnc.org
Rachael Thorn, Watershed Protection Supervisor, at (919) 545-8343 or rachael.thorn@chathamnc.org



LAND & WATER RESOURCES DIVISION **Environmental Quality Department**

PHONE: (919) 545-8204

Website: www.chathamnc.org

AUTHORIZED AGENT FOR LEGAL REPRESENTATION FORM

	PROPERTY LEGAL DESCRIPTION: 0088505/0001777
	PROPERTY LEGAL DESCRIPTION: 0088505/0001777 LOT NO. 1-4 PARCEL ID (PIN) PARCEL SIZE 127.13 ACRES
	STREET ADDRESS: 2206, 2094, 2062, 2064 MANNS CHAPEL ROAD
	Please print: Property Owner: KATHLEEN RYAN
	Property Owner:
	The undersigned, owner(s) of the above described property, do hereby authorize
	STEVEN BALL OF SOIL ENVIRONMENTAL CONSULTANTS P.A. (Contractor/Agent) (Name of consulting firm if applicable)
	(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 (initial all that apply):
FX	Zoning Compliance Permits
FX FX	Floodplain Determination Soil Erosion and Sedimentation Control Permit
Chy	Permits to install, repair, evaluate, or expand onsite wastewater system(s) Evaluation/inspection/permitting of a private drinking water well(s)
PA	Riparian Buffer Review pursuant to §304 of the Chatham County Watershed Protection Ordinance Other:
	Property Owner's Address (if different than property above):
	3350 HWY. 63 RISON, AR 71665
	Owner Telephone: (870) 357 - 2058 Email:
	We hereby certify the above information submitted in this application is true and accurate to the best of our knowledge.
	bocusioned br. Kalluleur Kyan
	Owner Authorized Signature Agent Authorized Signature
	Date: Date:
	Applications can be mailed to: Planning Dept., PO 8ox 54, Pittsboro, NC 27312
	The Constitution of the state o

For Questions, please contact: Lynn Richardson at 919-542-8207

Revised 3/2014



LAND & WATER RESOURCES DIVISION Environmental Quality Department

PHONE: (919) 545-8394

Website: www.chathamnc.org

Authoriz	zation to Enter Property	Form
Date: 11/28/17		
PARCEL No. (AKPAR) 008850	05/0001777/0088506/00	OBTIO
I, (print name) KATHUES F	MAY	, as owner of the property
described above, or as a representat	ive of the owner(s) do hereby convey	,
	nvenience to conduct a surface water	
	ot water features on my property are s	
	of the Chatham County Watershed Pro	7
	e Planning and Environmental Quality I	
requested in the future for review by		reparaments, and may be
, , , , , , , , , , , , , , , , , , ,	microsida particol	
I understand that stream delineations	s for the property listed above will be n	nade by County staff only
once and that if future subdivisions a	re proposed within this property bound	ary, it will require a surface
water identification by a private cons	ultant at the property owner's expense	
ATHLEEN RYAN	kathleen Kyan	12/6/2017
(Print Owner's Name)	(Sighattipe of Owner)	(Date)
(Print Authorized Agent Name)	(Signature of Authorized Agent)	(Date)

Date: / 4/17	Project/Site: Manns Chare		Latitude: 35	.831842
Evaluator: S&EC - Steven Ball	County: Chat	ty: Chatham Longitude: -7		9.134586
Total Points: Stream is at least intermittent if ≥ 19 or perennial if $\geq 30^*$ 39.5	Stream Determin	nation (circle one) rmittent (Perennia)	Other e.g. Quad Name:	Вулим
A. Geomorphology (Subtotal = 22)	Absent	Weak	Moderate	Strong
1ª. Continuity of channel bed and bank	0	1	2	3
Sinuosity of channel along thalweg	0	1	2	3
3. In-channel structure: ex. riffle-pool, step-pool,	0	1	2	3
ripple-pool sequence 4. Particle size of stream substrate	0	1	2	3
5. Active/relict floodplain	0	1		3
Depositional bars or benches	0	1	0	3
7. Recent alluvial deposits	0	1	0	3
Recent alluvial deposits Headcuts	<u></u>	1	2	3
9. Grade control		0.5		1.5
10. Natural valley	0	0.5	Ø ①	1.5
11. Second or greater order channel	No		Yes =	135,500,00
a artificial ditches are not rated; see discussions in manual B. Hydrology (Subtotal = 10.5)				
12. Presence of Baseflow	0	1	2	<u> </u>
13. Iron oxidizing bacteria	0	0	2	3
14. Leaf litter	(1.5)	1	0.5	0
15. Sediment on plants or debris	0	0.5	0	1.5
16. Organic debris lines or piles	0	0.5	Ű	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	0	2 .	1	0
20. Macrobenthos (note diversity and abundance)	8	1	2	3
21. Aquatic Mollusks	Ø	1	2	3
22. Fish	0	0.5	1	1.5
23. Crayfish	0	65	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 = (7	
*perennial streams may also be identified using other method	s. See p. 35 of manual.			
Notes:				
Sketch:				

NC DWQ Stream Identification For	Project/Site: M	anns Charel	Latitude: 35	.832758
Evaluator: S&EC - Steven Ball			Longitude: -	
Total Points: Stream is at least intermittent 32.5 if ≥ 19 or perennial if $\geq 30^*$			Other e.g. Quad Name:	Вупим
1/ 5				
A. Geomorphology (Subtotal = 16.5)	Absent	Weak	Moderate	Strong
1 Continuity of Channel Ded and Dank	0	1	<u> </u>	3
2. Sinuosity of channel along thalweg	0	1	(2)	3
In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2	3
Particle size of stream substrate	0	1	Ø	3
5. Active/relict floodplain	0	0	2	3
6. Depositional bars or benches	0	1	2	3
7. Recent alluvial deposits	0	(i)	2	3
B. Headcuts	0	1	2	3
9. Grade control	0	0.5	1	1.5
0. Natural valley	0	0.5	0	1.5
Second or greater order channel	No	= 0	Yes -	3
artificial ditches are not rated; see discussions in manual				
3. Hydrology (Subtotal =)		100000000000000000000000000000000000000		
2. Presence of Baseflow	0	1	0	3
3. Iron oxidizing bacteria	0	0	2	3
4. Leaf litter	1.5	0	0.5	0
5. Sediment on plants or debris	0	0.5	0	1.5
6. Organic debris lines or piles	0	0.5	0	1.5
7. Soil-based evidence of high water table?	No	= 0	Yes =	<u> </u>
C. Biology (Subtotal =				
Fibrous roots in streambed	3	2	1	0
Rooted upland plants in streambed	<u></u>	2 .	1	0
Macrobenthos (note diversity and abundance)	Ø	1	2	3
Aquatic Mollusks		1	2	3
2. Fish		0.5	1	1.5
3. Crayfish	0	0.9	1	1.5
4. Amphibians	0	0.3	1	1.5
5. Algae	0	0.5	1	1.5
6. Wetland plants in streambed		FACW = 0.75; OBL =	1.5 Other (0))
perennial streams may also be identified using other method	is. See p. 35 of manual.			0,
otes:				
			and the second of the second	
ketch:				

Date: / 4/ 7	Project/Site: Ma	anns Chapel	Latitude: 35.82		
Evaluator: S&EC-Steven Ball	County: Chatham		Longitude: -	79.134455	
Total Points: Stream is at least intermittent 27.5 if ≥ 19 or perennial if ≥ 30*	Stream Determination (circle one) Ephemeral Intermittent Perennial		Other e.g. Quad Name:	Вупим	
A. Geomorphology (Subtotal = 14.5	Absent	Weak	Moderate	Strong	
1ª. Continuity of channel bed and bank	0	1	2	3	
2. Sinuosity of channel along thalweg	0	0	2	3	
3. In-channel structure: ex. riffle-pool, step-pool,			0		
ripple-pool sequence	0	1		3	
Particle size of stream substrate	0	1	2	3	
5. Active/relict floodplain	0	1	2	3	
6. Depositional bars or benches	0	Q	2	3	
7. Recent alluvial deposits	0	8	2	3	
B. Headcuts	0	(V)	2	3	
9. Grade control	0	0.5	1	1.5	
10. Natural valley	0	0.5	0	1.5	
11. Second or greater order channel	No	= 0	Yes = (3)		
artificial ditches are not rated; see discussions in manual					
3. Hydrology (Subtotal =)			3221		
2. Presence of Baseflow	0	(1)	2	3	
13. Iron oxidizing bacteria	0	1	0	3	
4. Leaf litter	1.5	(1)	0.5	0	
5. Sediment on plants or debris	0	(0,8)	1	1.5	
6. Organic debris lines or piles	0	(0.5)	1	1.5	
7. Soil-based evidence of high water table?	No		Yes 7	-	
C. Biology (Subtotal = \$)					
8. Fibrous roots in streambed	3	2	0	0	
Rooted upland plants in streambed	3	(2)	1	0	
20. Macrobenthos (note diversity and abundance)	0	1	- 2	3	
21. Aquatic Mollusks	0	1	2	3	
22. Fish	6	0.5	1	1.5	
3. Crayfish	6	0.5	1	1.5	
4. Amphibians	0	(0.5)	1	1.5	
5. Algae	6)	0.5	1	1.5	
6. Wetland plants in streambed		FACW = 0.75; OBL	=(1.5) Other = 0		
*perennial streams may also be identified using other method	ds. See p. 35 of manual.	17.077 0.10, 002	0		
Notes:					
Sketch:					
				I	

Date: / 4/ 7	Project/Site: Manns Chape County: Chatham		Latitude: 35	.826992	
Evaluator: S&EC-Steven Ball			Longitude: '-79./34648		
Total Points: Stream is at least intermittent if ≥ 19 or perennial if $\geq 30^*$	Stream Determi Ephemeral Inte	nation (circle one) rmittent Perennial	Other e.g. Quad Name:	lame: Bynum	
A. Geomorphology (Subtotal =)	Absent	Weak	Moderate	Strong	
1ª Continuity of channel bed and bank	0	1	②	3	
2. Sinuosity of channel along thalweg	0	0	2	3	
3. In-channel structure: ex. riffle-pool, step-pool,	0	1		3	
ripple-pool sequence			②		
Particle size of stream substrate	0	1	0	3	
5. Active/relict floodplain	0	1	2	3	
6. Depositional bars or benches	0	Q	2	3	
7. Recent alluvial deposits	0	Q	2	3	
B. Headcuts	0	G)	2	3	
9. Grade control	0	0.5	1	1.5	
10. Natural valley	0	0.5	0	1.5	
11. Second or greater order channel	No	=0	Yes =	3	
artificial ditches are not rated; see discussions in manual					
3. Hydrology (Subtotal =)					
12. Presence of Baseflow	0	1	Ø	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	
6. Organic debris lines or piles	0	(0.5)	1	1.5	
7. Soil-based evidence of high water table?	No	= 0	Yes =	3)	
C. Biology (Subtotal =3.5)					
8. Fibrous roots in streambed	3	2	0	0	
Rooted upland plants in streambed	3	(2)	1	0	
20. Macrobenthos (note diversity and abundance)	0	1	2	3	
1. Aquatic Mollusks	0	1	2	3	
2. Fish	(0)	0.5	1	1.5	
3. Crayfish	0	0.5	1	1.5	
4. Amphibians	Ŏ	(0.5)	1	1.5	
5. Algae	0	0.5	1	1.5	
6. Wetland plants in streambed		FACW = 0.75; OBL	= 1.5 Other =0		
*perennial streams may also be identified using other method	ls. See p. 35 of manual.				
Votes:					
Sketch:					

Evaluator: S&EC - Steven Ball County: (hatham) Longitude: -7 Total Points: Stream is at least intermittent if ≥ 19 or perennial if ≥ 30* 10.5 Stream Determination (circle one) Ephemera Intermittent Perennial Other e.g. Quad Name: A. Geomorphology (Subtotal = 5.5) Absent Weak Moderate 1a. Continuity of channel bed and bank 0 1 ② 2. Sinuosity of channel along thalweg 0 1 ② 3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence 0 1 2 4. Particle size of stream substrate 0 0 2 5. Active/relict floodplain 0 1 2 6. Depositional bars or benches 0 1 2 7. Recent alluvial deposits 0 0 2 8. Headcuts 0 0.5 1 9. Grade control 0 0.5 1 10. Natural valley 0 0.5 1	Date: / 4/17	Project/Site: Manns Chapel County: Chatham		Latitude: 35	.828277	
A. Geomorphology (Subtotal = 5.5 Absent Weak Moderate				Longitude: -79.136460		
Contrainty of channel along thalweg	Stream is at least intermittent				Вупим	
Controlling to channel along thalmer bed and bank 0	A Geomorphology (Subtotal = 5.5	Absent	Weak	Moderate	Strong	
2. Sinuosity of channel along thalweg 3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence 4. Particle size of stream substrate 5. Active/relict floodplain 6. Depositional bars or benches 7. Recent alluvial deposits 8. Headcuts 9. Grade control 10. Natural valley 11. Second or greater order channel 8. Hydrology (Subtotal = 2) 12. Presence of Baseflow 13. Iron oxidizing bacteria 14. Leaf litter 15. Soil-based evidence of high water table? 16. Organic debris lines or piles 17. Soil-based evidence of high water table? 18. Fibrous roots in streambed 19. Rooted upland plants in streambed 20. Macrobenthos (note diversity and abundance) 21. A quatic Mollusks 22. Fish 23. Crayfish 24. Amphibians 26. Algae 27. Active/relict floodplain 28. d	1ª. Continuity of channel hed and hank				3	
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence 1	the second secon				3	
4. Particle size of stream substrate 5. Active/relict floodplain 6. Depositional bars or benches 7. Recent alluvial deposits 8. Headcuts 9. Grade control 10. Natural valley 11. Second or greater order channel 12. Tresence of Baseflow 13. Iron oxidizing bacteria 14. Leaf litter 15. Sediment on plants or debris 16. Organic debris lines or piles 17. Soil-based evidence of high water table? 18. Fibrous roots in streambed 19. Rooted upland plants in streambed 19. Rooted upland plants in streambed 10. Macrobenthos (note diversity and abundance) 21. Aquatic Mollusks 22. Active/relict floodplain 23. Crayfish 24. Amphibians 25. Algae 26. Depositional bars or benches 26. Depositional deposits 27. Soil-based evidence of high water dabundance) 28. Hydrology 29. Go. Macrobenthos (note diversity and abundance) 20. Macrobenthos (note diversity and abundance) 20. Soil-based 20. Soil-						
5. Active/relict floodplain 6. Depositional bars or benches 7. Recent alluvial deposits 7. Recent alluvial deposits 7. Recent alluvial deposits 7. Recent alluvial deposits 7. Depositional deposit depositional depositional depositional depositional depositiona	ripple-pool sequence			2	3	
7. Recent alluvial deposits 8. Headcuts 9. Grade control 10. Natural valley 11. Second or greater order channel 11. Second or greater order channel 12. Artificial ditches are not rated; see discussions in manual 13. Hydrology (Subtotal = 2) 14. Leaf litter 15. Sediment on plants or debris 16. Organic debris lines or piles 17. Soil-based evidence of high water table? 18. Fibrous roots in streambed 19. Rooted upland plants in streambed 10. Macrobenthos (note diversity and abundance) 11. Aquatic Mollusks 12. Fish 13. Crayfish 14. Amphibians 15. Algae 16. Organic debris in streambed 17. Soil-based evidence of high water table? 18. Fibrous roots in streambed 19. Rooted upland plants in streambed 10. Macrobenthos (note diversity and abundance) 10. Soil-based upland plants in streambed 10. Macrobenthos (note diversity and abundance) 10. Soil-based upland plants in streambed 10. Macrobenthos (note diversity and abundance) 10. Soil-based upland plants in streambed 10. Macrobenthos (note diversity and abundance) 11. Aquatic Mollusks 12. Fish 13. Crayfish 14. Amphibians 15. Algae	4. Particle size of stream substrate		0	2	3	
7. Recent alluvial deposits 0 0 2 3. Headcuts 0 0.5 1 9. Grade control 0 0.5 1 10. Natural valley 0 0.5 1 11. Second or greater order channel No	5. Active/relict floodplain	0	1	2	3	
8. Headcuts	6. Depositional bars or benches	0		2	3	
3. Grade control	7. Recent alluvial deposits		0	2	3	
10. Natural valley 0 0 0.5 1 11. Second or greater order channel No = 0 Yes = 0 ordinary order order channel No = 0 ordinary order order order channel No = 0 ordinary order	3. Headcuts		1	2	3	
11. Second or greater order channel	9. Grade control	0	0.5	1	1.5	
B. Hydrology (Subtotal = 2	10. Natural valley	0	0.5	1	1.5	
3		No	=®	Yes = 3		
12. Presence of Baseflow 1	To see that the contract the contract and the contract an	E4				
3. Iron oxidizing bacteria	3. Hydrology (Subtotal = 2)					
13. Iron oxidizing bacteria	2. Presence of Baseflow	0	1	2	3	
14. Leaf litter 1.5 1 0.5 15. Sediment on plants or debris 0 0.5 1 16. Organic debris lines or piles 0 0.5 1 17. Soil-based evidence of high water table? No = 0 Yes = 18. Fibrous roots in streambed 3 2 0 19. Rooted upland plants in streambed 3 2 1 20. Macrobenthos (note diversity and abundance) 0 1 2 21. Aquatic Mollusks 0 0.5 1 22. Fish 0 0.5 1 23. Crayfish 0 0.5 1 24. Amphibians 0 0.5 1 25. Algae 0 0.5 1	3. Iron oxidizing bacteria		1	2	3	
15. Sediment on plants or debris 16. Organic debris lines or piles 17. Soil-based evidence of high water table? 18. Fibrous roots in streambed 19. Rooted upland plants in streambed 10. Macrobenthos (note diversity and abundance) 11. Aquatic Mollusks 12. Fish 13. Crayfish 14. Amphibians 15. Algae 1 0 0 0.5 1 0 0.5					0	
16. Organic debris lines or piles 0 0.5) 1 17. Soil-based evidence of high water table? No €0 Yes = C. Biology (Subtotal = 3) 3 2 0 18. Fibrous roots in streambed 3 2 0 19. Rooted upland plants in streambed 3 0 1 20. Macrobenthos (note diversity and abundance) 0 1 2 21. Aquatic Mollusks 0 0 0.5 1 22. Fish 0 0.5 1 23. Crayfish 0 0.5 1 24. Amphibians 0 0.5 1 25. Algae 0 0.5 1					1.5	
17. Soil-based evidence of high water table? No €0 Yes = C. Biology (Subtotal =					1.5	
C. Biology (Subtotal =) 18. Fibrous roots in streambed						
18. Fibrous roots in streambed 3 2 ① 19. Rooted upland plants in streambed 3 ② 1 20. Macrobenthos (note diversity and abundance) ① 1 2 21. Aquatic Mollusks ① 1 2 22. Fish ② 0.5 1 23. Crayfish ② 0.5 1 24. Amphibians ② 0.5 1 25. Algae ① 0.5 1						
19. Rooted upland plants in streambed 3 ② 1 20. Macrobenthos (note diversity and abundance) ⑤ 1 2 21. Aquatic Mollusks ⑥ 1 2 22. Fish ⑥ 0.5 1 23. Crayfish ⑥ 0.5 1 24. Amphibians ⑥ 0.5 1 25. Algae 0 0.5 1		3	2	a	0	
20. Macrobenthos (note diversity and abundance) 6 1 2 21. Aquatic Mollusks 0 1 2 22. Fish 0 0.5 1 23. Crayfish 0 0.5 1 24. Amphibians 0 0.5 1 25. Algae 0 0.5 1					0	
21. Aquatic Mollusks 6 1 2 22. Fish 0 0.5 1 23. Crayfish 0 0.5 1 24. Amphibians 0 0.5 1 25. Algae 0 0.5 1				1000	3	
22. Fish 0 0.5 1 23. Crayfish 0 0.5 1 24. Amphibians 0 0.5 1 25. Algae 0 0.5 1					3	
3. Crayfish 0 0.5 1 4. Amphibians 0 0.5 1 5. Algae 0 0.5 1					1.5	
24. Amphibians 0.5 1 25. Algae 0.5 1		1 8			1.5	
5. Algae 0.5 1		(4		1	1.5	
	- Control of the Cont	1 8		1	1.5	
io. Wettand plants in streambed				= 1.5 Other = 0		
*perennial streams may also be identified using other methods. See p. 35 of manual.		See n. 35 of manual	1 AOV - 0.75, OBL	- 1.5 Other - 0		
Notes:	The state of the s	oce p. 55 of mandar.				
10165.	votes.					

NC DWQ Stream Identification Form Version 4.1 Latitude: 35, 832800 Project/Site: Manns Charel Date: Evaluator: S&EC - Steven Ball County: (hatham Longitude: -79.135729 **Total Points:** Stream Determination (circle one) Stream is at least intermittent e.g. Quad Name: Bynum Ephemeral Intermittent (Perennial) if ≥ 19 or perennial if ≥ 30* Strong A. Geomorphology (Subtotal = Absent Weak Moderate 1a. Continuity of channel bed and bank (3) 0 1 0 2. Sinuosity of channel along thalweg 0 1 3 3. In-channel structure: ex. riffle-pool, step-pool, 0 0 1 3 ripple-pool sequence (2)4. Particle size of stream substrate 3 0 1 0 3 5. Active/relict floodplain 0 0 6. Depositional bars or benches 0 3 0 3 7. Recent alluvial deposits 0 2 0 2 3 8. Headcuts 05 1 1.5 9. Grade control 0 0.5 1 1.5 10. Natural valley 0 No = 011. Second or greater order channel Yes = (3) a artificial ditches are not rated; see discussions in manual B. Hydrology (Subtotal = (2) 12. Presence of Baseflow 0 3 1 (1) 3 13. Iron oxidizing bacteria 0 2 (D 14. Leaf litter 1.5 0.5 0 O 1.5 15. Sediment on plants or debris 0 0.5 16. Organic debris lines or piles 0 (1) 1.5 0.5 No = 0Yes = 3 17. Soil-based evidence of high water table? C. Biology (Subtotal = 18. Fibrous roots in streambed 2 1 0 3 0 19. Rooted upland plants in streambed 2 1 0 3 20. Macrobenthos (note diversity and abundance) 1 2 0 21. Aquatic Mollusks 1 2 3 0 22. Fish 0.5 1 1.5 23. Crayfish 6.5 1.5 0 1 0 6.5 1 1.5 24. Amphibians 0 1.5 25. Algae 0.5 FACW = 0.75; OBL = 1.5 Other = 0 26. Wetland plants in streambed *perennial streams may also be identified using other methods. See p. 35 of manual. Notes: Sketch:

iapel	Latitude: 35	.831826
1	Longitude: -	-79.135 9 03
	Other e.g. Quad Name	: Вулим
ak N	Moderate	Strong
)	2	3
3	2	3
	3	3
	0	3
)	2	3
5	2	3
5	2	3
5	2	3
5	1	1.5
5	1	1.5
2	Yes = 3	
	163	- 3
)	2	3
<u></u>	2	3
,		0
	0.5	1.5
>	0	1.5
5	Yes	
	163	<u> </u>
	1	0
	1	0
	2	3
	2	3
5	1	1.5
	1	1.5
5		
	1	1.5 1.5
0.75, ODL =		
0.75; OBL =	1.5 Other 0	

NC DWQ Stream Identification Form Version 4.1 Latitude: 35.832184 Project/Site: Manns Charel Date: Longitude: -79.135781 Evaluator: S&EC - Steven Ball County: (hatham **Total Points:** Stream Determination (circle one) Other Stream is at least intermittent Ephemeral Intermittent Perennia e.g. Quad Name: Bynum if ≥ 19 or perennial if ≥ 30* A. Geomorphology (Subtotal = 14.5 Absent Weak Moderate Strong 1^{a.} Continuity of channel bed and bank 0 (2) 3 2. Sinuosity of channel along thalweg 0 (1) 3 2 3. In-channel structure: ex. riffle-pool, step-pool, (1) 0 2 3 ripple-pool sequence 4. Particle size of stream substrate 0 0 1 3 5. Active/relict floodplain 0 3 1 2 0 6. Depositional bars or benches 0 2 3 7. Recent alluvial deposits 0 ① 2 3 8. Headcuts (2) 0 3 9. Grade control (0.5) 0 1.5 (1) 10. Natural valley 0 0.5 1.5 11. Second or greater order channel No = 0Yes =(3) artificial ditches are not rated; see discussions in manual B. Hydrology (Subtotal = 0 12. Presence of Baseflow 0 1 3 6 13. Iron oxidizing bacteria 2 3 1 O 14. Leaf litter 1.5 0.5 0 15. Sediment on plants or debris 0 0.5 0 1.5 16. Organic debris lines or piles 10 0 0.5 1.5 17. Soil-based evidence of high water table? No = 0Yes = 3 C. Biology (Subtotal = **3**3 18. Fibrous roots in streambed 2 0 19. Rooted upland plants in streambed 2 0 20. Macrobenthos (note diversity and abundance) (1) 2 3 0 21. Aquatic Mollusks 0 2 3 1 22. Fish 0 0.5 1 1.5 23. Crayfish 0 0.5 1.5 1 24. Amphibians 1 0 0.5 1.5 25. Algae 0 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	m Version 4.1		-		
Date: / 4/17	Project/Site: Mans Chape La		Latitude: 35	.832227	
Evaluator: S&EC - Steven Ball	County: Chatham Longitude:		Longitude: -	gitude: -79.136009	
Total Points: Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*	Stream Determination (circle one) Other				
A. Geomorphology (Subtotal = 10)	Absent	Weak	Moderate	Strong	
1ª. Continuity of channel bed and bank	0	1	(Z)	3	
2. Sinuosity of channel along thalweg	0	0	2	3	
3. In-channel structure: ex. riffle-pool, step-pool,	0				
ripple-pool sequence	0	1	2	3	
Particle size of stream substrate	0	Ø	2	3	
5. Active/relict floodplain	0	1	2 -	3	
6. Depositional bars or benches	0	0	2	3	
7. Recent alluvial deposits	0	0	2	3	
8. Headcuts	0	1	2	3	
9. Grade control	0	0.5	1	1.5	
10. Natural valley	0	0.5	0	1.5	
11. Second or greater order channel	No	No =(0) Yes = 3			
artificial ditches are not rated; see discussions in manual					
B. Hydrology (Subtotal =)					
12. Presence of Baseflow	0	0	2	3	
13. Iron oxidizing bacteria	0	1	2	3	
14. Leaf litter	1.5	0	0.5	0	
15. Sediment on plants or debris	0	0.9	1	1.5	
16. Organic debris lines or piles	0	(0.5)	1	1.5	
17. Soil-based evidence of high water table?	No:		Yes =		
C. Biology (Subtotal = 5)					
18. Fibrous roots in streambed	3	0	1	0	
19. Rooted upland plants in streambed		2	1	0	
20. Macrobenthos (note diversity and abundance)	8	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	Ø	0.5	1	1.5	
26. Wetland plants in streambed		FACW = 0.75; OBL		1.0	
*perennial streams may also be identified using other method:	s. See p. 35 of manual.	171017 0.70, 002	1.0 011101 0		
Notes:					
			12 - 11100		
Sketch:					
				0.2	
				1	

Date: / 4//7	Project/Site: Ma	anns Chapel	Latitude: 35.	832798	
Evaluator: S&EC - Steven Ball	Stream Determination (circle one) Other			79.137504	
Total Points: Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*			Other e.g. Quad Name:	Вупим	
A. Geomorphology (Subtotal = 5.5)	Absent	Weak	Moderate	Ctuona	
1ª. Continuity of channel bed and bank	O	Ø .	2	Strong	
Sinuosity of channel along thalweg	0	0	2	3	
In-channel structure: ex. riffle-pool, step-pool,					
ripple-pool sequence	0	1	2	3	
4. Particle size of stream substrate	0	G/	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	0	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		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	0	0.5	0	
15. Sediment on plants or debris	6	0.5	1	1.5	
16. Organic debris lines or piles	0	0.3	1	1.5	
17. Soil-based evidence of high water table?	No:		Yes =		
C. Biology (Subtotal = 4)	1	0	100		
18. Fibrous roots in streambed	3	a	1	0	
19. Rooted upland plants in streambed	3	2	1	0	
20. Macrobenthos (note diversity and abundance)	Ŏ	1	2	3	
21. Aquatic Mollusks		1	2	3	
22. Fish	8	0.5	1	1.5	
23. Crayfish	0	0.5	1	1.5	
24. Amphibians	6	0.5	1		
25. Algae	6/	0.5	1	1.5 1.5	
		FACW = 0.75; OBL	-15 Othor 0	1.5	
26 Wetland plants in streamhed	1	FACVV - 0.75, OBL	- 1.5 Other -(0)		
26. Wetland plants in streambed *nerennial streams may also be identified using other method					
26. Wetland plants in streambed *perennial streams may also be identified using other method: Notes:					

From: Williams, Andrew E CIV USARMY CESAW (US)

To: <u>Dan McCauley</u>
Cc: <u>Steven Ball</u>

Subject: RE: Ryan"s Crossing (Manns Chapel) Updated Sketch Map

Date: Monday, February 05, 2018 11:20:43 AM

Dan/Steven:

The map appears to reflect the decisions made by our office in the field on 11 January 2018, and will be used when I process the Jurisdictional Determination. Please let me know if you need any additional information. Thanks.

Andrew Williams Regulatory Project Manager US Army Corps of Engineers Wilmington District, Raleigh Regulatory Field Office 3331 Heritage Trade Drive, Suite 105 Wake Forest, North Carolina 27587 919-554-4884 ext. 26

----Original Message-----

From: Dan McCauley [mailto:dmccauley@sandec.com]

Sent: Monday, February 5, 2018 10:51 AM

To: Williams, Andrew E CIV USARMY CESAW (US) < Andrew.E.Williams 2@usace.army.mil>

Subject: [Non-DoD Source] Ryan's Crossing (Manns Chapel) Updated Sketch Map

Andy,

Attached is the update sketch map for the Ryan's Crossing Site (Manns Chapel) in Chatham County.

Thanks,

Dan McCauley

Environmental Scientist

(919) 846-5900 Office

(704) 998-1864 Mobile

dmccauley@sandec.com < mailto:dmccauley@sandec.com >

Soil & Environmental Consultants, PA

8412 Falls of Neuse Road, Suite 104 | Raleigh, NC 27615

Site Photos

Chatham County, NC





















