ROY COOPER
Governor
MICHAEL S. REGAN
Secretary
LINDA CULPEPPER
Director

NORTH CAROLINA
Environmental Quality

November 21, 2019

To:
N.C. Division of Mitigation Services, Private & Public Mitigation Banks, other Interested Parties

Subject: Clarified Procedures for Calculating Buffer Mitigation Credits & Nutrient Offset Credits for Riparian Projects Regulated under 15A NCAC 02B .0295 and 15A NCAC 02B .0240

This letter, and the included attachments, outlines procedures and provides guidance for calculating buffer mitigation credits and nutrient offset credits for projects submitted to the Division of Water Resources (DWR) for review. In March 2019, the DWR established a small Work Group ("Group") consisting of 7 people to discuss crediting inconsistencies for nutrient offset and buffer mitigation projects. The Group consisted of 3 staff members from DWR, two staff members from the Division of Mitigation Services, and one representative from each of two private mitigation banks. The procedures and guidance provided in this letter were made by consensus from the Group for implementing 15A NCAC 02B .0295 ("Rule .0295") and 15A NCAC 02B .0240 ("Rule .0240).

These procedures are for implementing buffer mitigation or nutrient offset projects where a draft mitigation plan or a draft Bank Parcel Development Plan (BPDP) is submitted to the DWR for review after the date of this letter. All other projects must comply with mitigation plans and BPDPs submitted to DWR for review prior to the date of this letter.

A summary of the issues resolved by the Group and associated guidance for credit calculations are detailed in Attachment A *"Issues and Resolutions Ver 1.0 – Buffer Mitigation & Nutrient Offset*". For further information regarding this correspondence, please contact Katie Merritt with DWR at katie.merritt@ncdenr.gov or by phone at 919-707-3637.

Sincerely,

Jim Gregson
Deputy Director, Division of Water Resources

Attachments: A, B, C, and D

Issue #1: Procedure for crediting mitigation activities within riparian areas for buffer mitigation and nutrient offsets.
Applying ratios and reductions under 15A NCAC 02B .0295 (m) and (n) respectively for buffer mitigation credit, while also applying the *DWR-Methodology and Calculations for determining Nutrient Reductions associated with Riparian Buffer Establishment* https://files.nc.gov/ncdeq/Water%20Quality/Planning/NPU/Nutrient%20Offset%20Rule/Ag-Buffer-Credit.pdf, often leads to differences in measuring and accounting. Establishing procedures on how credits are measured, calculated, converted and presented in mitigation plans involved addressing inconsistencies and creating guidance on rounding, significant digits, units of measurement, as well as developing credit ratios and conversion ratios.

Resolution: Established (a) guidance for rounding & decimal places, (b) guidance for physical measurements, (c) buffer mitigation credit ratios, (d) credit conversion ratios, (e) formula for credit conversions, and (f) a format for presenting credits.

a) Established guidance for rounding and decimal places. See Table 1.0

Table 1.0 – Guidance for Rounding

Physical Measurements	Credit Ratios & Credit Conversion Ratios	Credits	[1]Nutrient Effectiveness for Phosphorus & Nitrogen
Round to nearest whole number	Round to 5 decimal places	Round to 3 decimal places	Round to 2 decimal places
Example: 1,452.6424 ft^2 = 1,453 ft^2	Example: 6.06061444 = 6.06061	Example: 49,625.4876 ft^2 = 49,625.488 ft^2	Nitrogen: 2,273.02 lbs/ac/30yrs Phosphorus:146.40 lbs/ac/30yrs

[1]*DWR-Methodology and Calculations for determining Nutrient Reductions associated with Riparian Buffer Establishment* https://files.nc.gov/ncdeq/Water%20Quality/Planning/NPU/Nutrient%20Offset%20Rule/Ag-Buffer-Credit.pdf

b) Established guidance for physical measurements. See Table 2.0

Table 2.0 – Guidance for Physical Measurements

Credit Type	[1]Mitigation Activity	Unit of Measurement	Guidance
Riparian Buffer	Riparian R/E/P/Ex	Square Foot	Measure area and round to the nearest whole number
Nutrient Offset (Nitrogen)	Riparian R/E	Square Foot	Measure area and round to the nearest whole number
Nutrient Offset (Phosphorus)	Riparian R/E	Square Foot	Measure area and round to the nearest whole number

[1]R= Restoration, E= Enhancement (not cattle exclusion), Ex=Enhancement for permanent exclusion of grazing livestock, P= Preservation

c) Established a buffer mitigation credit ratio for each scenario under 15A NCAC 02B .0295 (m) and (n). See Table 3.0

Table 3.0: Buffer Mitigation Credit Ratio

Location	Stream Buffer Subjectivity	[1]Mitigation Activity	[2,4]Min-Max Buffer Width (ft)	[3]Initial Unit Ratio (x:1)	[4]% Full Credit	[5]Final Credit Ratio (x:1)	Riparian Buffer Credit (ft^2)
N/A	N/A	R,E and P	<20	0	0	0	Credits (ft^2) rounded up to 3 decimal places
N/A	N/A	R	20-29	1	75%	1.33333	
N/A	N/A	R	30-100	1	100%	1.00000	
N/A	N/A	R	101-200	1	33%	6.06061	
N/A	N/A	E, Ex	20-29	2	75%	2.66667	
N/A	N/A	E, Ex	30-100	2	100%	2.00000	
N/A	N/A	E, Ex	101-200	2	33%	6.06061	
Rural	Subject	P	20-29	10	75%	13.33333	
Rural	Subject	P	30-100	10	100%	10.00000	
Rural	Subject	P	101-200	10	33%	30.30303	
Rural	Non-Subject	P	20-29	5	75%	6.66667	
Rural	Non-Subject	P	30-100	5	100%	5.00000	
Rural	Non-Subject	P	101-200	5	33%	15.15152	
Urban	Subject or Non-Subject	P	20-29	3	75%	4.00000	
Urban	Subject or Non-Subject	P	30-100	3	100%	3.00000	
Urban	Subject or Non-Subject	P	101-200	3	33%	9.09091	

[1] R= Restoration, E= Enhancement (not cattle exclusion), Ex=Enhancement just for permanent exclusion of grazing livestock, P= Preservation,

[2]all minimum physical measurement ranges of riparian widths are measured landward and perpendicular from top of bank and assumed to be continuous with top of bank without breaks

[3] Derived from 15A NCAC 02B .0295 (m)

[4] Derived from 15A NCAC 02B .0295 (n).

[5] Combining initial ratios in Rule .0295 (m) with physical measurements and corresponding credit reductions in Rule .0295 (n)

d) Established credit conversion ratios for Nitrogen and Phosphorus to simplify the conversion of buffer mitigation credits (square feet) into nutrient offset credits (pounds) where credits are deemed by DWR as being eligible for either credit type. See Tables 4a and 4b.

Table 4a: Nutrient Offset Credit Conversion Ratio (CCR) in Square Feet per Pound without Delivery Factors

[1]Service Area River Basin/WS and Hydrologic Unit Code	[2]Mitigation Activity	[2]Min-Max riparian Width (ft)	[3]Initial Unit Ratio (x:1)	[4]Nitrogen CCR (ft^2/pound)	[4]Phosphorus CCR (ft^2/pound)	Nutrient Offset Credits (lbs)
Cape Fear – Randleman	N/A	N/A	N/A	N/A	N/A	Credits (lbs) rounded up to 3 decimal places
Catawba	R & E	N/A	N/A	N/A	N/A	
Neuse- 03020201 *(Lower Falls Lake, Upper Falls Lake, Outside Falls Lake)*, 03020202, 03020203, Neuse 03020204	R	50-200	1	19.16394	N/A	
	E	50-200	2	9.58197	N/A	
Tar-Pamlico- 03020101, 03020102, 03020103, 03020104, 03020105	R	50-200	1	19.16394	297.54099	
	E	50-200	2	9.58197	148.77050	
Yadkin – Goose Creek	N/A	N/A	N/A	N/A	N/A	

[1] service area is defined in 15A NCAC 02B .0240 and G.S. 143-214.26
[2]R= Restoration, E= Enhancement (not cattle exclusion)
[2]All minimum physical measurement ranges of riparian widths are measured landward and perpendicular from top of bank and must be contiguous with top of bank
[4]*DWR-Methodology and Calculations for determining Nutrient Reductions associated with Riparian Buffer Establishment* *https://files.nc.gov/ncdeq/Water%20Quality/Planning/NPU/Nutrient%20Offset%20Rule/Ag-Buffer-Credit.pdf*

Table 4b: Nutrient Offset Credit Conversion Ratio (CCR) with Delivery Factors

	Credit Generated (lbs/30	
Jordan Subwatershed	Nitrogen	Phosphorus
Cape Fear - Jordan Haw	2,249.360	143.810
Cape Fear - Jordan Upper New Hope	2,169.260	143.810
Cape Fear - Jordan Lower New Hope	2,273.020	146.400

				Rounded Up to 5th decimal	
Jordan Subwatershed	Watershed ID	Delivery Factors TN	Delivery Factors TP	Nitrogen CCR (sf/pound)	Phosphorus CCR (sf/pound)
Cape Fear - Jordan Haw	03030002010010	25%	10%	77.46204	3,028.99660
Cape Fear - Jordan Haw	03030002010020	37%	36%	52.33922	841.38795
Cape Fear - Jordan Haw	03030002010030	44%	40%	44.01252	757.24915
Cape Fear - Jordan Haw	03030002010040	49%	44%	39.52145	688.40832
Cape Fear - Jordan Haw	03030002010050	55%	48%	35.21002	631.04096
Cape Fear - Jordan Haw	03030002020010	15%	4%	129.10339	7,572.49149
Cape Fear - Jordan Haw	03030002020020	22%	12%	88.02504	2,524.16383
Cape Fear - Jordan Haw	03030002020030	48%	43%	40.34481	704.41782
Cape Fear - Jordan Haw	03030002020040	32%	33%	60.51722	917.87776
Cape Fear - Jordan Haw	03030002020050	32%	32%	60.51722	946.56144
Cape Fear - Jordan Haw	03030002020060	47%	42%	41.20321	721.18967
Cape Fear - Jordan Haw	03030002020070	54%	47%	35.86206	644.46737
Cape Fear - Jordan Haw	03030002030010	60%	56%	32.27585	540.89225
Cape Fear - Jordan Haw	03030002030020	44%	31%	44.01252	977.09568
Cape Fear - Jordan Haw	03030002030030	25%	8%	77.46204	3,786.24575
Cape Fear - Jordan Haw	03030002030040	42%	30%	46.10836	1,009.66554
Cape Fear - Jordan Haw	03030002030050	64%	62%	30.25861	488.54784
Cape Fear - Jordan Haw	03030002030060	39%	19%	49.65515	1,594.20874
Cape Fear - Jordan Haw	03030002030070	36%	18%	53.79308	1,682.77589
Cape Fear - Jordan Haw	03030002030080	73%	64%	26.52810	473.28072
Cape Fear - Jordan Haw	03030002040010	30%	14%	64.55170	2,163.56900
Cape Fear - Jordan Haw	03030002040020	28%	14%	69.16254	2,163.56900
Cape Fear - Jordan Haw	03030002040030	71%	63%	27.27537	480.79311
Cape Fear - Jordan Haw	03030002040040	32%	15%	60.51722	2,019.33107
Cape Fear - Jordan Haw	03030002040050	52%	50%	37.24137	605.79932
Cape Fear - Jordan Haw	03030002040060	54%	51%	35.86206	593.92091
Cape Fear - Jordan Haw	03030002040070	67%	60%	28.90375	504.83277
Cape Fear - Jordan Haw	03030002040080	53%	51%	36.53870	593.92091
Cape Fear - Jordan Haw	03030002040090	54%	51%	35.86206	593.92091
Cape Fear - Jordan Haw	03030002040100	75%	65%	25.82068	465.99948
Cape Fear - Jordan Haw	03030002040110	66%	60%	29.34168	504.83277
Cape Fear - Jordan Haw	03030002050010	74%	68%	26.16961	445.44068
Cape Fear - Jordan Haw	03030002050020	81%	74%	23.90804	409.32387
Cape Fear - Jordan Haw	03030002050030	42%	17%	46.10836	1,781.76271
Cape Fear - Jordan Haw	03030002050040	80%	73%	24.20689	414.93105
Cape Fear - Jordan Haw	03030002050050	71%	67%	27.27537	452.08905
Cape Fear - Jordan Haw	03030002050060	79%	73%	24.51331	414.93105
Cape Fear - Jordan Haw	03030002050070	78%	72%	24.82758	420.69398
Cape Fear - Jordan Haw	03030002050080	80%	73%	24.20689	414.93105
Cape Fear - Jordan Haw	03030002050090	79%	73%	24.51331	414.93105
Cape Fear - Jordan Haw	03030002050100	81%	75%	23.90804	403.86622
Cape Fear - Jordan Haw	03030002060010	81%	74%	23.90804	409.32387
Cape Fear - Jordan Haw	03030002060020	95%	97%	20.38475	312.26769
Cape Fear - Jordan Haw	03030002060030	88%	91%	22.00626	332.85677
Cape Fear - Jordan Haw	03030002060040	97%	98%	19.96445	309.08129
Cape Fear - Jordan Haw	03030002060050	92%	95%	21.04947	318.84175
Cape Fear - Jordan Haw	03030002060062	98%	99%	19.76073	305.95926
Cape Fear - Jordan Upper New Hope	03030002060070	40%	19%	50.20146	1,594.20874
Cape Fear - Jordan Upper New Hope	03030002060080	59%	45%	34.03489	673.11036
Cape Fear - Jordan Upper New Hope	03030002060100	69%	63%	29.10230	480.79311
Cape Fear - Jordan Upper New Hope	03030002060110	61%	58%	32.91899	522.24080
Cape Fear - Jordan Upper New Hope	03030002060120	69%	63%	29.10230	480.79311
Cape Fear - Jordan Upper New Hope	03030002060140	85%	89%	23.62422	340.33670
Cape Fear - Jordan Upper New Hope	03030002060130	69%	63%	29.10230	480.79311
Cape Fear - Jordan Lower New Hope	03030002060160	85%	90%	22.54581	330.60110
Cape Fear - Jordan Upper New Hope	03030002060090*	92%	94%	21.82672	322.23369
Cape Fear - Jordan Lower New Hope	03030002060090*	92%	94%	20.83037	316.53297
Cape Fear - Jordan Upper New Hope	03030002060060*	94%	96%	21.36232	315.52048
Cape Fear - Jordan Lower New Hope	03030002060060*	94%	96%	20.38717	309.93853
Cape Fear - Jordan Upper New Hope	03030002060150*	88%	91%	22.81885	332.85677
Cape Fear - Jordan Lower New Hope	03030002060150*	88%	91%	21.77720	326.96812

* Watershed is located in both the Upper New Hope (UNH) and Lower New Hope (LNH) Subwatersheds.

e) Establish a formula for credit conversions. See Table 5.0

Table 5.0 Calculation Formula for Credit Conversions

Credit Type	[1]Mitigation Activity	[2]Credit Conversion Formula (Quantity/Credit Conversion Ratio=X)	Final Project Credits
Riparian Buffer	Riparian R/E/P/Ex	Creditable Area (ft^2) ÷ Final Buffer Credit Ratio = X ft^2 buffer credits	rounded up to 3 decimal places
Nutrient Offset (Nitrogen)	Riparian R/E	Total Area (ft^2) ÷ Credit Conversion Ratio ft^2/ lb-N = X lbs-N	
Nutrient Offset (Phosphorus)	Riparian R/E	Total Area (ft^2) ÷ Credit Conversion Ratio ft^2/ lb-N = X lbs-N	

[1]R= Restoration, E= Enhancement (not cattle exclusion), Ex=Enhancement just for permanent exclusion of grazing livestock, P= Preservation

[2] A user-friendly tool has been developed in conjunction with this memo to assist in entering a project's credits. This tool is referenced in Issue #1 (f) of this memo.

f) Developed a format for presenting credits in project plans submitted to the DWR. The "Project Credit Table" template is a user-friendly "calculation tool" to calculate a project's riparian buffer and nutrient offset credits and is designed to comply with Rule .0295, Rule .0240, and the guidance provided in this letter. The calculation tool is useful and recommended, and is intended to increase efficiency in the review process. A link to the most up-to-date calculation tool is found at https://deq.nc.gov/about/divisions/water-resources/water-quality-permitting/401-buffer-permitting-branch/nutrient and a screenshot is included in Attachment B. A set of instructions for using the calculation tool is included in Attachment C.

EXAMPLES

Example A- Calculating Buffer Credits on Agricultural land within 0-100' riparian width: Using Tables 1.0-5.0 included in this memo, and the Project Credit Table referenced in (f) below, the following example is provided:

A total creditable area of 2.2 acres (95,832 ft^2) of agricultural land within top of bank to 100 feet adjacent from the Neuse River is approved for riparian restoration ("R"). The site will yield the following buffer credits:

Project Credit Table

Neuse 03020201 - Outside Falls Lake	vice Area
19.16394	N Credit Ratio (sf/credit)
N/A	P Credit Ratio (sf/credit)

Credit Type	Location	Subject? (enter NO if ephemeral or ditch [1])	Feature Type	Mitigation Activity	Min-Max Buffer Width (ft)	Feature Name	Total Area (sf)	Total (Creditable) Area of Buffer Mitigation (sf)	Initial Credit Ratio (x:1)	% Full Credit	Final Credit Ratio (x:1)	Convertible to Riparian Buffer?	Riparian Buffer Credits
Buffer	Rural	Yes	I/P	Restoration	0-100	Neuse River	95,832	95,832	1	100%	1.00000	Yes	95,832.000

Instead of using the Project Credit Table above, one can enter the formula from Table 5.0 as follows:

Creditable Area (ft^2) ÷ Final Credit Ratio = X ft^2 buffer credits

95,832 ft^2 ÷ (1.0 x 100%) = 95,382.000 ft^2 buffer credits

Example B- Calculating Nutrient Offset Credits from Example A
Using Tables 1.0-5.0 included in this memo, and the Project Credit Table referenced in (f), the following example is provided:

Project Credit Table

Neuse 03020201 - Outside Falls Lake	Service Area
19.16394	N Credit Ratio (sf/credit)
N/A	P Credit Ratio (sf/credit)

Credit Type	Location	Subject? (enter NO if ephemeral or ditch [1])	Feature Type	Mitigation Activity	Min-Max Buffer Width (ft)	Feature Name	Total Area (sf)	Total (Creditable) Area of Buffer Mitigation (sf)	Initial Credit Ratio (x:1)	% Full Credit	Final Credit Ratio (x:1)	Convertible to Riparian Buffer?	Riparian Buffer Credits	Convertible to Nutrient Offset?	Delivered Nutrient Offset: N (lbs)
Nutrient Offset	Rural	Yes	I/P	Restoration	0-100	Neuse River	95,832	95,832	1	100%	1.00000	Yes	95,832.000	Yes	5,000.642

Instead of using the Project Credit Table above, one can enter the formula from Table 5.0 as follows:

Total Area (ft^2) ÷ Credit Conversion Ratio ft^2/ lb-N = X lbs-N

95,832 ft^2 ÷ (19.16394 ft^2 /lb-N) = 5,000.642 lbs-N nutrient offset credits

Issue #2: Clarifications to DWR response to Item I. of the March 10, 2017 memorandum to DMS from DWR titled "*DWR Responses to Questions from DMS regarding implementation of the Consolidated Buffer Mitigation Rule (15A NCAC 02B)*" provided in Attachment D.

DWR issued a memo to DMS on March 10, 2017. Item I of this memo clarifies how to calculate the 25% of the total area of buffer mitigation cited under 15A NCAC 02B .0295 (o)(4), (o)(5) to achieve the allowed amount of preservation area. Examples on how to calculate the Total Area of Buffer Mitigation (TABM) and the Eligible Preservation Area (EPA) are included. However, the memo does not address when applicable credit ratios and credit reductions provided in 15A NCAC 02B .0295 (m) and (n) should be applied to the TABM to achieve the EPA.

Clarification: To achieve the EPA, the TABM is calculated by measuring the area of Restoration (R) and Enhancement (E) *before* applying any credit ratios and credit reductions provided in 15A NCAC 02B .0295 (m) and (n).

Example: *[2 acres (R) + 1 acre (E)] / 0.75 = 4 acres (TABM)*
*4 acres (TABM) * 0.25 = 1 acre (EPA)*
1 acre (P) + 3 acres (R/E) = 4 acres total

Attachment B
Project Credit Table

Neuse 03020201 - Outside Falls Lake	vice Area
19.16394	N Credit Ratio (sf/credit)
N/A	P Credit Ratio (sf/credit)

Credit Type	Location	Subject? (enter NO if ephemeral or ditch [1])	Feature Type	Mitigation Activity	Min-Max Buffer Width (ft)	Feature Name	Total Area (sf)	Total (Creditable) Area of Buffer Mitigation (sf)	Initial Credit Ratio (x:1)	% Full Credit	Final Credit Ratio (x:1)	Convertible to Riparian Buffer?	Riparian Buffer Credits	Convertible to Nutrient Offset?	Delivered Nutrient Offset: N (lbs)	Delivered Nutrient Offset: P (lbs)
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Enter Preservation Credits Below

Eligible for Preservation (sf): 0

Credit Type	Location	Subject?	Feature Type	Mitigation Activity	Min-Max Buffer Width (ft)	Feature Name	Total Area (sf)	Total (Creditable) Area for Buffer Mitigation (sf)	Initial Credit Ratio (x:1)	% Full Credit	Final Credit Ratio (x:1)	Riparian Buffer Credits
Buffer				Preservation								—
Buffer												—
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						Preservation Area Subtotal (sf):	0					
						Preservation as % Total Area of Buffer Mitigation:	0.0%					
						Ephemeral Reaches as % Total Area of Buffer Mitigation:	0.0%					

TOTAL AREA OF BUFFER MITIGATION (TABM)		
Mitigation Totals	Square Feet	Credits
Restoration:	0	0.000
Enhancement:	0	0.000
Preservation:	0	0.000
Total Riparian Buffer:	0	0.000
TOTAL NUTRIENT OFFSET MITIGATION		
Mitigation Totals	Square Feet	Credits
Nutrient Offset: Nitrogen:	0	0.000
Nutrient Offset: Phosphorus:		0.000

1. The Randleman Lake buffer rules allow some ditches to be classified as subject according to 15A NCAC 02B .0250 (5)(a).

Attachment C
Project Credit Table Instructions

The Tool Explained:

This tool is intended to calculate both riparian buffer credits and, where applicable, nutrient offset credits regardless of which credit type is proposed. The "Credit Type" column indicates which credit (buffer or nutrient offset) is proposed in the Mitigation Plan or BPDP. This selection determines which credits get applied to the "Total Mitigation Credits" summary box at the bottom of the sheet.

For example, if buffer credits are proposed for a reach, select "Buffer" from the "Credit Type" column. If the DWR Viability Letter identifies the reach as also viable for nutrient offset, select "Yes" for the column labeled "Convertible to Nutrient Offset?." In this scenario, only the buffer credits will be summed in the total credits summary, but potential nutrient offset credits for the reach will be visible in the upper portion of the table. If "No" is selected in the "Convertible..." column, then nutrient offset will not be calculated in either the upper portion of the table or the total credits summary.

According to a March 2017 memo by DWR, Restoration (R) + Enhancement (E) + Preservation (P) = Total Area of Buffer Mitigation (TABM).

Instructions for completing Project Mitigation Credits Table:

1) Revise Table 1 Title to include project name and number.
2) Select your service area for Table 1, in cell 3A. This will set up your table for rules that apply to the project.
3) Select 'Credit Type' (blue cell) as proposed in Mitigation Plan or BPDP. This selection triggers the calculations for the total mitigation credits (shown in the bottom summary box).
4) Select from the drop-down menus of each blue cell by feature. Use the viability assessment and stream determination provided by DWR if necessary.
5) Features that have matching attributes for all the drop-down (blue) cells can be lumped as one row, but if there are differences in blue cells it should be broken out as a secondary ro
6) Type in Feature Name as a unique identifier for each row. This name should match the unique name shown on any project map.
7) Type in Total Area and Creditable Area for Buffer Mitigation based on surveyed/GIS measurement, rounded to the nearest square foot. **Please note that Nutrient Offset is calculated from the Total Area column and buffer restoration, enhancement, etc. is calculated from the Total (Creditable) Area of Buffer Mitigation column.**
8) If applicable, ensure that preservation areas and ephemeral reaches do not show errors at bottom of table.
9) If applicable, ensure ditch features conform to the riparian buffer rule and provide additional justification in project plan text.
10) Paste Table 1 in project Mitigation Plan and/or Bank Parcel Development Plan (BPDP) document.

Table Information:

— Blue cells are completed by selecting information from drop-down menus.
— Yellow cells should be filled out as applicable to the project.
— White cells are locked and cannot be altered.
— If this symbol ⊗ appears, the allowable creditable buffer preservation area or allowable creditable ephemeral buffer area may be exceeded.
— The "Subject?" column refers to streams shown on either the most recent version of the soil survey map prepared by the Natural Resources Conservation Service, United States Departm
of Agriculture or the most recent version of the 1:24,000 scale (7.5 minute) quadrangle topographic maps prepared by the United States Geologic Survey (USGS). If a feature is ephemeral c
identified as perennial or intermittent and is not shown on one of the maps referenced above, select "No" for this column.

Regulatory Considerations:

All riparian area widths must be measured from top of bank or valley length if coastal headwater.
Area eligible for preservation may be no more than 25% of total area of buffer mitigation, where total area is back-calculated with the equation R+E/0.75.
Riparian areas must be minimum 20' wide (from top of bank) for riparian buffer credit; riparian areas must be minimum 50' for nutrient offset credit.
Ditches must be minimum 30' and maximum 50' for riparian buffer credit.
Ephemeral channels may only comprise 25% of the total area of buffer mitigation and meet certain criteria.
Ditches, grazing enhancement, coastal headwater and other alternative features must be evaluated by DWR and meet criteria of NCAC codes.

Regulatory direction for Riparian Buffer in this table follows NCAC rule 15A NCAC 02B .0295, effective November 1, 2015.
Regulatory direction for Nutrient Offset in this table follows Nutrient Offsets Payments Rule 15A NCAC 02B. 0240, amended effective September 1, 2010 and
DWR – 1998. Methodology and Calculations for determining Nutrient Reductions associated with Riparian Buffer Establishment.
Nutrient Offset calculation based on effectiveness in 30 years, with DWR's 146.40 lb/ac P; and 2,273.02 lb/ac N.
The N credit ratio used is 19.16394 sf per pound. The P credit ratio used is 297.54099 sf per pound. Alternative delivery factors for applicable service areas are embedded in the tool.

Attachment D

Water Resources
ENVIRONMENTAL QUALITY

ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

S. JAY ZIMMERMAN
Director

March 10, 2017

MEMORANDUM

To: N.C. Division of Mitigation Services

From: S. Jay Zimmerman, N.C. Division of Water Resources Director SJZ

Subject: DWR Responses to Questions from DMS regarding implementation of the Consolidated Buffer Mitigation Rule [15A NCAC 02B .0295]

On November 8, 2016, the Division of Mitigation Services (DMS) met with the Division of Water Resources (DWR) to discuss questions they had regarding implementation of the Consolidated Buffer Mitigation Rule [15A NCAC 02B .0295]. Below is a short summary of each question and DWR's response.

I. **Calculation of "25% of the Total Area of Buffer Mitigation"**

15A NCAC 02B .0295 (o) (4) and (5) state *"The area of preservation credit within a buffer mitigation site shall comprise of no more than 25 percent of the total area of buffer mitigation."*

DMS believes the following calculations should be used to determine the area eligible for preservation:

Restoration (R) + Enhancement (E) + Preservation (P) = Total Area of Buffer Mitigation (TABM)

TABM * 0.25 = Eligible Preservation Area (EPA)

Example: 2 acres (R) + 1 acre (E) + 7 acres (P) = 10 acres (TABM)

10 acres (TABM) * 0.25 = 2.5 acres (EPA)

Response:

In the example above, 45% of the area of the site would come from preservation, with the remaining 55% coming from restoration/enhancement:

2.5 acre (P) + 3 acres (R/E) = 5.5 acres total

Based on a review of the language in the rule, the documents throughout the rulemaking process, including correspondence with OSBM on the fiscal note, areas where buffer mitigation credits are not being generated should not be used to calculate the "total area of buffer mitigation."

The restoration or enhancement area shall be at least 75% of the area generating buffer mitigation; the remaining 25% of the area generating buffer mitigation can be preservation:

75% (R/E) + 25% (P) = 100% TABM

To calculate the area eligible for preservation:

[Restoration (R) + Enhancement (E)] / 0.75 = Total Area of Buffer Mitigation (TABM)

TABM * 0.25 = Eligible Preservation Area (EPA)

Example: [2 acres (R) + 1 acre (E)] / 0.75 = 4 acres (TABM)

4 acres (TABM) * 0.25 = 1 acre (EPA)

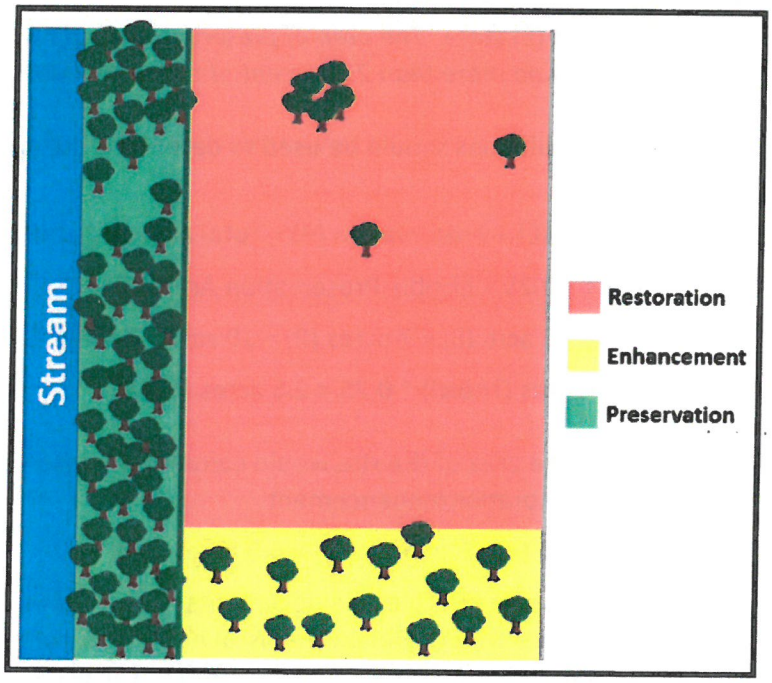
1 acre (P) + 3 acres (R/E) = 4 acres total

II. **Defining Breaks Between Restoration and Enhancement Areas**

DMS asked for clarification on how DWR defines the breaks between restoration[1] and enhancement[2]. Specifically, DMS asked whether drip lines were still used and whether individual trees were excluded from restoration sites.

Response:

DWR has not considered the drip line to represent the outer edge of a wooded area for several years. This was clarified in a memo from DWR to DMS in August 2013. Individual trees do not need to be delineated and removed from the restoration area, rather DWR looks for areas or zones when determining restoration, enhancement or preservation areas. For example:



[1] *characterized by an absence of trees and by a lack of dense growth of smaller woody stems or are characterized by scattered individual trees such that the tree canopy is less than 25% of the cover and by a lack of dense growth of smaller woody stems*

[2] *characterized by conditions between that of a restoration site and a preservation site such that the establishment of woody stems will maximize nutrient removal and other buffer functions*

III. Prior Grazing

15A NCAC 02B .0295 (o)(6) describes enhancement of grazing areas adjacent to streams. It states that the applicant or mitigation provider shall demonstrate that grazing was the predominant land use since the effective date of the applicable buffer rule. DMS asked when is the predominance of grazing demonstrated?

Response

15A NCAC 02B .0295 (l) states that the authority shall issue a mitigation determination that specifies the area, type and location of the mitigation and the water quality benefits to be provided by the mitigation site. During the on-site evaluation, DWR looks at existing conditions to determine whether grazing has been a continuous land use in the proposed mitigation area (*e.g.* hoof shear, manure, cattle fencing, *etc.*) since the effective date of the applicable buffer rule. DWR also evaluates satellite imagery. If it is not clear to DWR that grazing has been the predominant land use since the effective date of the applicable buffer rule, DWR will ask for additional documentation (*e.g.* landowner documentation, photos, maps, *etc.*).

If the grazing site is proposed for retroactive credit as described in 15A NCAC 02B .0295 (o)(1), additional documentation of the pre-existing conditions may be required.

If there is a disagreement regarding the documentation requested by DWR, the request will be elevated to the Water Quality Permitting Section Chief.

IV. Clarification of Use of 8-19-08 Diffuse Flow Clarification Memo

DMS asked for verification that the Buffer Interpretation Clarification Memo #2008-019, issued August 19, 2008, was still eligible for use, and whether that method or an alternative method as provided for in the rule could be used at the discretion of the project proponent.

Response:

The Buffer Interpretation Clarification Memo #2008-019, issued August 19, 2008, is still eligible for use to comply with 15A NCAC 02B .0295 (l)(3).