STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENTAL QUALITY

Study of the State's Riparian Buffer Protection Program
Pursuant to SL 2017-10

Introduction

Pursuant to Session Law 2017-10 (3.7), the Department of Environmental Quality (Department) examined whether the size of riparian buffers required for intermittent streams should be adjusted, whether the allowable activities within the buffers should be modified, and under what circumstances units of local governments should be allowed to exceed riparian buffer requirements mandated by the state and federal government.

Background

I. Strategies

Tar-Pamlico – In the late 1980s, the Pamlico estuary experienced increased algal blooms and fish kills that were linked to excessive nutrient (*e.g.* nitrogen and phosphorus) levels in the river. The Environmental Management Commission (Commission) designated the entire Tar-Pamlico River Basin as Nutrient Sensitive Waters (NSW) in 1989, and a management strategy was developed.

Neuse – During the summer of 1995, algal blooms and massive fish kills in the Neuse River and the Neuse River estuary led the N.C. General Assembly to pass Session Law 1995-572. The session law directed the Commission to develop a plan to reduce the average annual load of nitrogen to the Neuse River estuary.

Randleman – When the Piedmont Triad Regional Water Authority requested that the Deep River be reclassified for drinking water supply use and a dam be constructed on the River in 1997, models indicated potential violations of North Carolina's chlorophyll a standard in the new reservoir. As part of the state and federal approval to reclassify the water and build the Randleman Reservoir, a nutrient management strategy was developed.

Catawba – Lakes along the mainstem of the Catawba River (Rhodhiss, Hickory and Wylie) had documented water quality problems from excess nutrients. In 2003 the Commission completed a stakeholder process and the temporary buffer rules that had been in effect since 2001 became permanent in 2004.

Goose Creek – The Goose Creek watershed provides habitat for an aquatic animal species listed as federally endangered by the U.S. Fish and Wildlife. The Commission designated Goose Creek as impaired in 2002. A TMDL (Total Maximum Daily Load) was finalized in 2005 and a water quality management strategy was developed.

Jordan – The Commission designated Jordan Reservoir a NSW the year of its impoundment and imposed phosphorus limits on wastewater dischargers. The lake did not respond to these controls so in 2002, the Commission determined the reservoir was impaired. Nutrient management strategy development began in 2003 and the U.S. EPA approved a final TMDL in September 2007.

Update on Coastal Waters – Fish kills and harmful algal blooms during the 1980s and 1990s were visible signs of coastal water quality problems. According to the 2015 North Carolina

Coastal Habitat Protection Plan, large fish kills have diminished somewhat in recent years, but many coastal waters remain impaired (excess sediment loading is the most common cause of impairment).

II. Statutory requirement

G.S. 143-215.8B directs the Commission to consider the cumulative impacts of all point and nonpoint sources of pollutants (*e.g.* wastewater discharges, development, agricultural operations, etc.). It further requires that the Commission provide that all point and nonpoint sources jointly share the responsibility of reducing the pollutants in the State's waters in a fair, reasonable, and proportionate manner, using computer modeling and the best science and technology reasonably available and considering future anticipated population growth and economic development.

The Division of Water Resources (Division) uses water quality monitoring and modeling to determine the allocation of nutrient loading among the different source categories. That information becomes the basis for a management strategy that, as directed by the General Assembly, ensures that all sources jointly share the responsibility of reducing the pollutants in the State's waters.

The riparian buffer rule within each management strategy is an important tool for addressing nutrient loading from development activity. Removing the efficacy of the existing riparian buffer requirements would shift the burden of additional nutrient reductions to other sources, such as farmers, local governments, etc., which would be much more costly than maintaining existing riparian buffers (see Figure 1).

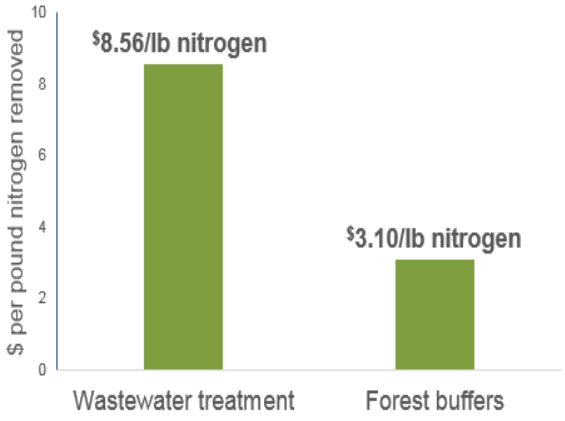

Figure 1. Cost in dollars per pound of nitrogen removed for wastewater treatment and forest buffers. (Source**:** *Hanson, Craig, John Talberth and Logan Yonavjak. 2011 "Forests for water: Exploring payments for watershed services in the US South." World Resources Institute Issue Brief, Issue 2. Pp15*)

III. Importance of the Riparian Buffer

A riparian buffer is a strip of forested or vegetated land bordering a body of water. The riparian buffer performs many natural functions including: filtering sediment, nutrients and

other contaminants; reducing the effect of drought on stream flow; supporting aquatic habitat by providing organic debris to the stream, controlling light and temperature; and providing habitat for wildlife. (see Appendix A for references)

Riparian buffers also provide many financial benefits to both the property owner and the community including: decreasing the need for public investment in stormwater management, flood control and pollution removal; increased property values; and reduced land maintenance costs (compared to formal lawns and other landscaped areas). (see Appendix A for references)

IV. Riparian Buffer Rule Overview

The purpose of each of the riparian buffer rules is to protect *existing* riparian buffers within the designated river basin or watershed. The Neuse, Tar-Pamlico, Catawba, Randleman and Jordan rules require a 50-foot riparian buffer that is divided into two zones. The 30 feet closest to the water (Zone 1) must remain undisturbed. The outer 20 feet (Zone 2) can be managed vegetation, such as lawns or shrubbery. The Goose Creek rules require a 100-foot undisturbed buffer outside of the 100-year floodplain and a 200-foot undisturbed buffer inside the 100-year floodplain.

The riparian buffer rules allow for uses that are present and ongoing (i.e. existing uses) to remain in the buffer. For new uses, the riparian buffer rules include a Table of Uses that lists activities allowed in each zone of the buffer. There are three different categories of allowable activities:

- **Exempt** uses are allowed in the riparian buffer without approval from the Division or Local Government.
- **Allowable** uses may occur in the buffer on a case-by-case basis with approval from the Division or Local Government.
- **Allowable with mitigation** uses may occur in the buffer on a case-by-case basis with approval from the Division or Local Government when mitigation is provided.

Some examples of these different uses include maintaining an existing lawn, pruning, removing nuisance vegetation, removing trees that may be a danger, planting vegetation, grading in Zone 2, fences, playground equipment, and driveway crossings.

Uses that are listed as **prohibited** or uses that are not included in the Table of Uses are **prohibited** unless a variance is granted. Minor variances can be granted by the Division or Local Government for impacts to Zone 2 only. Major variances can be granted by the Commission for impacts to Zone 1.

Session Law 2017-10

The Department consulted with entities impacted by riparian buffer requirements during a stakeholder meeting on October 18, 2017 in Wilson. 58 people attended the meeting, including local governments, consultants, engineers, mitigation providers, agricultural community, members of the regulated community, and other state agencies (sign in sheets are provided in

Appendix B). The purpose of this meeting was to review changes proposed by the Department to rules within the Neuse Tar-Pamlico and Randleman Nutrient Strategies. The topics within this study were discussed as part of the proposed rule revisions to the buffer rules.

I. Whether the size of riparian buffers required for intermittent streams should be adjusted

Headwater streams, which include intermittent and small perennial streams, are the key to success. They comprise ~ 75-90% of the total stream miles, draining 55-85% of the land area. The small size of these streams ensures a lot of water-sediment contact, which removes nitrogen (Mulholland et al 2001, Peterson et al 2001). This increased contact also allows a higher rate of adsorption of phosphorus to soil particles in the headwater stream bed (James Gregory, personal comm.) Sweeney (USFWS 2000) calculated that if the nutrient reduction functions of these headwater streams were removed (e.g. by culverting the stream), it would be nearly impossible to successfully implement a nutrient reduction strategy in a watershed.

Buffers have the greatest potential for control over water quality when they are adjacent to headwater streams. There are many factors that enhance or limit pollutant removal effectiveness of buffers (e.g. slope, hydrology, vegetation type, etc.). In general, a 50-foot buffer captures four major objectives for nutrient removal (bank stabilization, water temperature moderation, nitrogen removal and sediment (phosphorus) removal):

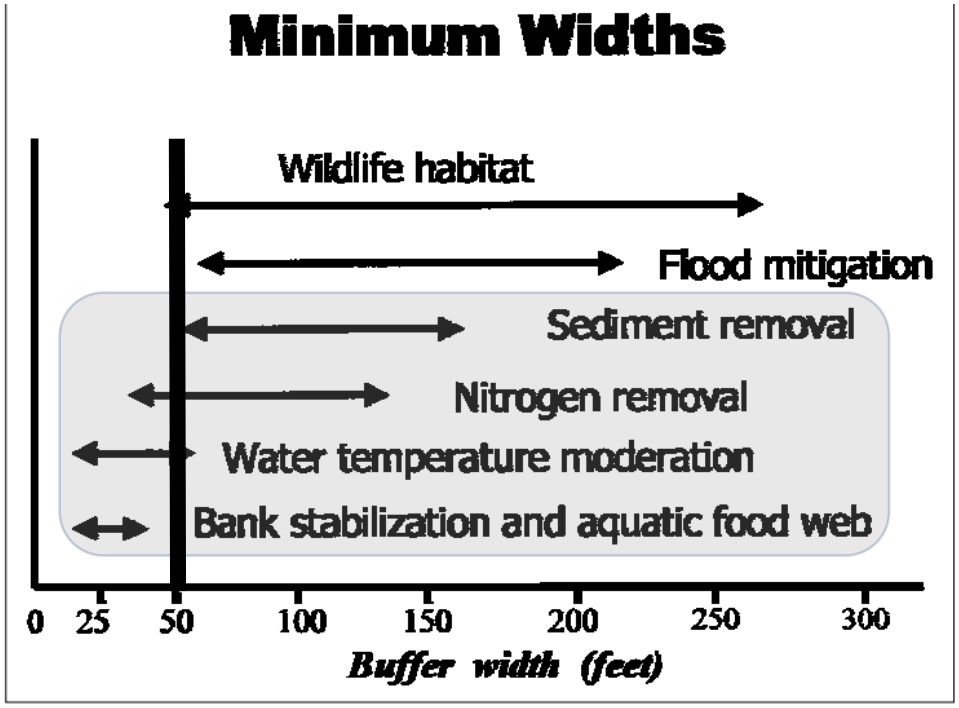

Figure 2. Range of minimum widths for meeting specific buffer objectives. (Adapted from**:** *USDA. 1998. Chesapeake Bay Riparian Handbook: A Guide for Establishing and Maintaining Riparian Forest Buffers. USDA Forest Service. NA-TP-02-97*)

Due to the importance of headwater (intermittent and small perennial) streams and the functions provided by buffers that are a minimum of 50-feet wide, the Department concludes that the minimum 50-foot buffer on intermittent streams should not be reduced.

II. Whether the allowable activities within the buffers should be modified

Recent Session Law Changes

Under Session Law 2011-394, a grandfather provision was adopted to allow encroachment into Zone 2 of the riparian buffer if necessary to construct a residence on a single-family residential lot (two acres in size or less) platted prior to Aug. 1, 2000 in the coastal counties in the Neuse and Tar-Pamlico River Basins. The provision allows additional flexibility in siting structures on these small, previously platted lots without having to go through a variance process. In a study submitted to the General Assembly in February 2012, the Department recommended expanding the "grandfather" provision to all counties in the Neuse and Tar-Pamlico Basin; that change was adopted in Session Law 2012-200.

Under Session Law 2015-246, a landowner can request the ability to remove woody vegetation in the buffer upon a showing that alternative measures (*e.g.* buffer mitigation, stormwater treatment) will provide equal or greater water quality protection. This session law also changed the start point of the buffer from the landward edge of the coastal marsh to the normal high water level or normal water level, which added even more flexibility for coastal lots.

Under Session Law 2017-209, an exemption to the riparian buffer rules was adopted for publicly owned spaces where it has been determined by the head of the local law enforcement agency with jurisdiction over that area that the buffers pose a risk to public safety. Under that same session law, an exemption to the riparian buffer rules was also adopted for walking trails on publicly owned property.

Rule Revision Process Underway

Pursuant to G.S. 150B-21.3A, the Commission reviewed the riparian buffer protection rules and determined them to be "necessary with substantive interest." The Commission has begun the rulemaking process to amend the riparian buffer rules. The rules will be presented to the Commission at their January 2018 meeting. Public notice and hearings will occur during the summer of 2018, with EMC adoption winter of 2018/2019. Some of the proposed major changes include:

Expand "Grandfather" provision – As stated above, SL 2011-394 and SL 2012-200 established a new Allowable use allowing encroachment into Zone 2 in the Neuse and Tar-Pamlico River Basins. The Department is proposing the Commission allow for further encroachment into Zone 1 of the riparian buffer when mitigation is provided (Allowable with Mitigation). Such relief would be determined on a case-by-case basis and provide relief to successor owners. Proposed Rule Language is provided in Appendix C.

Modify the variance process – The current Major Variance process is cumbersome and time-consuming for the applicant, DEQ staff and the Commission. The Department is proposing several changes to the Commission: (1) remove the requirement for Major Variances to be heard before the Commission and instead allow the decision to be made by the Director of the Division of Water Resources (Division); change terminology to "Allowable with Exception" to reflect these approvals are authorization certificates not variances from Commission rules and (3) change the triggers for a Major Variance from any impact in Zone 1 to any impact greater than one-third acre. This would greatly reduce the regulatory burden on all applicants, and would be consistent with other permitting programs within the Division. Such relief would be determined on a case-by-case basis and provide relief to successor owners. Proposed Rule Language is provided in Appendix C.

Modify the variance hardships – The hardships as currently written are onerous. The Commission is proposing to make significant changes to the hardship requirements, including removing the requirement that applicants have purchased the property prior to the effective date of the rule. This would provide regulatory relief, especially to successor owners. Proposed Rule Language is provided in Appendix C.

In addition to the changes listed above, the Department is proposing a number of new uses, clarifications to language and reorganization of the Rule. Many of these changes are still preliminary proposals, without the benefit of the formal public notice/comment period process. The Department recommends allowing the rulemaking process currently underway to continue. The Department believes the rulemaking process is the best way to solicit input from all stakeholders and evaluate and incorporate amendments to the rule that will provide regulatory relief while maintaining the efficacy of riparian buffers.

III. <u>Under what circumstances units of local governments should be allowed to exceed riparian buffer requirements mandated by the state and federal government</u>

G.S. 143-214.23 authorizes the Commission to delegate responsibility for implementing and enforcing the state's riparian buffer rules to units of local governments that have the power to regulate land use. The authority for local governments to regulate land use is found in Chapter 153A and 160A of the General Statutes.

SL 2015-246 placed limitations on local government riparian buffer requirements stating that except as provided in G.S. 143-214.23A, a local government may not enact, implement or enforce an ordinance that establishes a riparian buffer requirement that exceeds riparian buffer requirements necessary to comply with or implement federal or state law, or as a condition of a permit, certificate or other approval issued by a federal or state agency. The session law went on to allow for ordinances enacted prior to August 2, 1997 that met a specific list of criteria to remain in effect, and allowed for local governments to apply to the Commission with a scientific study.

There are a number of reasons a local government may implement wider buffers than those specified in the state riparian buffer program. For example:

- Impaired waters for sediment, biology, etc.
- Priority watersheds, such as water supply watersheds
- Slope
- Depth of water table
- Incised streams
- Potential for soil and streambank erosion
- Keep development out of the floodplain
- Slowing floodwaters
- Protect downstream property
- Wildlife habitat
- Conservation
- Condition of other state/federal approval (e.g. Phase II stormwater permit, 404 permit

While the Commission has authority to delegate state riparian buffer programs to the local government per G.S. 143-214.23, the Commission does not have authority over local governments with regard to their land use authorities in Chapter 153A and 160A of the general statutes. The Department recommends an entity more familiar with local government land use authorities, such as the UNC School of Government, to study what measures may be needed to ensure local governments do not exceed their statutory authority for establishing riparian buffer requirements.

Conclusion

Scientific literature demonstrates that riparian buffers perform many functions that protect water quality, including nutrient, sediment and pollutant removal, stream bank stabilization, and temperature control. The buffer rules were adopted specifically to address nutrient, sediment and pollutant loading as part of larger management strategies that also require reductions from municipal and industrial dischargers and agriculture.

The Department recommends allowing the rulemaking process currently underway to continue. The Department believes the rulemaking process is the best way to solicit input from all stakeholders and evaluate and incorporate amendments to the rules, without unduly shifting the burden of additional nutrient reductions to other sources, such as farmers, local governments, etc. The Department also recommends an entity more familiar with local government land use authorities found in Chapters 153A and 160A study what measures may be needed to ensure local governments do not exceed their statutory authority for establishing riparian buffer requirements.

Appendix A: References

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Appendix B: Sign In Sheets from October 18, 2017 Stakeholder Meeting

2B Nutrient Rules Stakeholder Meeting
(Neuse, Tar-Pamlico, Randleman)
Wednesday, October 18, 2017 (9am-4pm)
Wedgewood Country Club
3201 Stantonsburg Raod SE – Wilson, NC 27893

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Name	Organization	Email
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(55)

Appendix C: Current Rule Language and Proposed Rule Language

Expand "Grandfather" provision

Current language:

Use	*Allowable Upon Authorization*	*Allowable with Mitigation Upon Authorization*
Residential Properties: Where application of this Rule would preclude construction or expansion of a single-family residence and necessary infrastructure, the single-family residence may encroach in the buffer if all of the following conditions are met: (1) the residence is set back the maximum feasible distance from the top of the bank, rooted herbaceous vegetation, normal high-water level, or normal water level, whichever is applicable, on the existing lot; (2) the residence is designed to minimize encroachment into the riparian buffer; (3) the residence complies with Item (9) of this Rule; and (4) if the residence will be served by an on-site wastewater system, no part of the septic tank or drainfield may encroach into the riparian buffer.		
• *The residence or necessary infrastructure impact Zone 2 only*	*X*	

Proposed language (new language underlined):

Use	*Allowable Upon Authorization*	*Allowable with Mitigation Upon Authorization*
Residential Properties: Where application of this Rule would preclude construction or expansion of a single-family residence and necessary infrastructure, the single-family residence may encroach in the buffer if all of the following conditions are met: (1) the residence is set back the maximum feasible distance from the top of the bank, rooted herbaceous vegetation, normal high-water level, or normal water level, whichever is applicable, on the existing lot; (2) the residence is designed to minimize encroachment into the riparian buffer; (3) the residence complies with Item (9) of this Rule; and (4) if the residence will be served by an on-site wastewater system, no part of the septic tank or drainfield may encroach into the riparian buffer.		
• *The residence or necessary infrastructure impact Zone 2 only*	*X*	
• *<u>The residence or necessary infrastructure impact Zone 1</u>*		*X*

Modify the variance process

Current language:

(c) MAJOR VARIANCES. A major variance request pertains to activities that are proposed to impact any portion of Zone 1 or any portion of both Zones 1 and 2 of the riparian buffer. If the Division or the delegated local authority has determined that a major variance request meets the requirements in Sub-Item (9)(a) of this Rule, then it shall prepare a preliminary finding and submit it to the Commission.

Preliminary findings on major variance requests shall be reviewed by the Commission within 90 days after receipt by the Director. Requests for appeals of determinations that the requirements of Sub-Item (9)(a) of this Rule have not been met shall be made to the Office of Administrative Hearings for determinations made by the Division or the appropriate Board of Adjustments under G.S. 160A-388 or G.S. 153A-345 for determinations made by the delegated local authority. The purpose of the Commission's review is to determine if it agrees that the requirements in Sub-Item (9)(a) of this Rule have been met. Requests for appeals of decisions made by the Commission shall be made to the Office of Administrative Hearings. The following actions shall be taken depending on the Commission's decision on the major variance request:

- *(i) Upon the Commission's approval, the Division or the delegated local authority shall issue a final decision granting the major variance.*
- *(ii) Upon the Commission's approval with conditions or stipulations, the Division or the delegated local authority shall issue a final decision, which includes these conditions or stipulations.*
- *(iii) Upon the Commission's denial, the Division or the delegated local authority shall issue a final decision denying the major variance.*

Proposed language:

(3) MAJOR EXCEPTIONS. An Authorization Certificate with Major Exception request pertains to allowable with exception activities that are proposed to impact greater than one-third of an acre of riparian buffer.

- *(A) Authorization Certificate with Major Exception requests shall be reviewed based on the criteria in Paragraph (b) and Subparagraph (c)(1) of this Rule.*
- *(B) Within 60 calendar days of receipt of a complete application package that addresses Subparagraphs (b)(1), (b)(2) and (c)(1) of this Rule, the Authority shall prepare a preliminary finding as to whether the criteria in Subparagraphs (b)(2) and (c)(1) of this Rule have been met.*
- *(C) Notice of each pending complete application for an Authorization Certificate with Major Exception, including the preliminary finding prepared by the Authority, shall be posted on the Division's website and sent to all individuals on the Mailing List, as described in 15A NCAC 02H .0503 (g), at least 30 calendar days prior to proposed final action by the Authority on the application.*
- *(D) Within 60 calendar days following the notice as described in SubPart (c)(3)(C) of this Rule, upon the Authority's determination that all of the requirements in Subparagraphs (b)(2) and (c)(1) of this Rule have been met, the Authority shall issue an Authorization Certificate with Major Exception. If the Authority determines that all of the requirements in Subparagraphs (b)(2) and (c)(1) of this Rule have not been met, the Authority shall issue a final decision denying the Authorization Certificate with Major Exception.*

<u>Modify the variance hardships</u>

Current language:

(a) For any variance request, the Division or the delegated local authority shall make a finding of fact as to whether the following requirements have been met:

- *(i) There are practical difficulties or unnecessary hardships that prevent compliance with the strict letter of the riparian buffer protection requirements. Practical difficulties or unnecessary hardships shall be evaluated in accordance with the following:*
  - *(A) If the applicant complies with the provisions of this Rule, he/she can secure no reasonable return from, nor make reasonable use of, his/her property. Merely proving that the variance would permit a greater profit from the property shall not be considered adequate*

justification for a variance. Moreover, the Division or delegated local authority shall consider whether the variance is the minimum possible deviation from the terms of this Rule that shall make reasonable use of the property possible.

(B) The hardship results from application of this Rule to the property rather than from other factors such as deed restrictions or other hardship.

(C) The hardship is due to the physical nature of the applicant's property, such as its size, shape, or topography, which is different from that of neighboring property.

(D) The applicant did not cause the hardship by knowingly or unknowingly violating this Rule.

(E) The applicant did not purchase the property after the effective date of this Rule, and then requesting an appeal.

(F) The hardship is unique to the applicant's property, rather than the result of conditions that are widespread. If other properties are equally subject to the hardship created in the restriction, then granting a variance would be a special privilege denied to others, and would not promote equal justice;

(ii) The variance is in harmony with the general purpose and intent of the State's riparian buffer protection requirements and preserves its spirit; and

(iii) In granting the variance, the public safety and welfare have been assured, water quality has been protected, and substantial justice has been done.

Proposed language:

(1) An Authorization Certificate with Exception shall require that all of the following conditions are met:

(A) There are practical difficulties or unnecessary hardships that prevent compliance with the riparian buffer protection requirements.

(B) If the applicant complies with the provisions of this Rule, he or she can secure no reasonable return from, nor make reasonable use of, his or her property. Merely proving that the Authorization Certificate with Exception would allow a greater profit from the property shall not be considered adequate justification for an Authorization Certificate with Exception. Moreover, the Authority shall consider whether the Authorization Certificate with Exception is the minimum possible deviation from the terms of this Rule that shall make reasonable use of the property possible;

(C) The hardship is due to the physical nature of the applicant's property, such as its size, shape, or topography;

(D) The applicant did not cause the hardship;

(E) The requested Authorization Certificate with Exception is in harmony with the general spirit, purpose and intent of the State's riparian buffer protection requirements, will protect water quality, will secure public safety and welfare, and will preserve substantial justice.