

Submitting Nutrient Calculations to the City of Raleigh

For Neuse Rules adopted with TC-1-23 and effective May 1, 2023

KEY CHANGES FROM FIRST GENERATION NEUSE RULES

- Stormwater nutrient compliance calculations will require use of SNAP Tool. NCDEQ released SNAP v4.2 in late Marc 2023. The current version of the tool can be found on the DEQ Nutrient Practices and Crediting website under [Stormwater Nutrient Accounting Tools](#). This replaces Method 1, Method 2, and the Apportionment Method.
- Stormwater control measure (SCM) designs will be required to use the current [NCDEQ Stormwater Design Manual](#), which includes the Minimum Design Criteria (MDCs). The Archived Manual will no longer be accepted.
- The term Built Upon Area (BUA) will be incorporated into Article 9.2 of the UDO. It is synonymous with impervious area.
- For sites with over 24% Built Upon Area (BUA), a primary SCM will be required on-site before off-site credits can be purchased. This replaces the 6 lb/ac/yr residential and 10 lb/ac/yr commercial thresholds.
- Purchased nutrient buy-down credits will now be in lb/yr and good in perpetuity, rather than purchased in pounds for an arbitrary 30 years.
- The grandfathered/exempt lot provisions in UDO 9.2.2.A will only apply to lots that are not part of a common plan of development. This will put some small developments into traditional stormwater requirements (UDO 9.2.2.B through H).

WHAT DESIGN MANUAL(S) APPLY

1. City of Raleigh *Stormwater Management Design Manual* (January 2002)

The current City Manual will continue to be in effect until replaced by a new City Stormwater Manual. However, Chapter 3 is no longer in use due to the changes in the Neuse rules.

Note that the sections of most use to designers are:

- Section 1.2.2 Street and Local Drainage
- Section 1.2.3 Drainage Easements

Link to current COR manual: <https://cityofraleigh0drupal.blob.core.usgovcloudapi.net/drupal-prod/COR16/StormwaterDesignManual.pdf>

2. City of Raleigh *Guidelines to Land Disturbing Activity* (GLDA) (September 2013)

GLDA will remain in effect until the content is replaced by the new City Stormwater Manual.

Link to GLDA: <https://cityofraleigh0drupal.blob.core.usgovcloudapi.net/drupal-prod/COR16/GuidelinesforLandDisturbingActivities.pdf>

3. NCDEQ *Stormwater Design Manual* (Current Version)

Use of the Minimum Design Criteria (MDCs) is required by the updated Neuse Rules. Therefore, after the effective date of TC-1-23, the City will no longer accept the Archived NCDEQ Manual. The Current NCDEQ Manual must be used.

Link to current NCDEQ manual: <https://www.deq.nc.gov/about/divisions/energy-mineral-and-land-resources/stormwater/stormwater-program/stormwater-design-manual>

4. NCDEQ NC *Stormwater Control Measure Credit Document*

Table A-2 states whether a SCM counts as a Primary SCM.

<https://www.deq.nc.gov/energy-mineral-and-land-resources/stormwater/bmp-manual/scm-credit-doc-2018-11-7/download>

5. *Submitting Nutrient Calculations to the City of Raleigh* (this document) and Associated Spreadsheet

This document provides guidance for meeting the requirements of the UDO. This content will be incorporated in the new City Stormwater Manual. Updates may be made to this document. Versions of the document will be labeled by date. Announcements of changes to the document will be made by e-mail and on the City's website here: <https://raleighnc.gov/stormwater/neuse-nutrient-rule-changes>

VESTED RIGHTS

Projects that submitted stormwater solutions for preliminary (SUB, ASR) or permitting (e.g. SPR) review prior to the effective date of TC-1-23 may choose either the regulations effective at the time of submittal or the new regulations. Submitted means that the documents were conveyed to the City's intake prior to May 1, 2023; proof of submittal will be required because the submittal date may vary from the date the case is processed and set-up in EnerGov.

COMMON PLAN OF DEVELOPMENT

Definition: 'Common Plan of Development' means a site where multiple separate and distinct development activities may be taking place at different times on different schedules but governed by a single development plan regardless of ownership of the parcels. Information that may be used to determine a 'common plan of development' include plats, blueprints, marketing plans, contracts, building permits, public notices or hearings, zoning requests, and infrastructure development plans.

This definition is taken from Common Plan of Development Definition in 15A NCAC 02H .1002(8).

The City of Raleigh considers the following situations to fall under Common Plan of Development:

- Anything submitted as one case to the City of Raleigh.
- Adjacent parcels (including those separated by ROW) that are managed as one entity. E.g. Multiple apartment buildings managed as one per name and management.

The City of Raleigh considers the following situations to NOT fall under Common Plan of Development for the purposes of the Neuse Rule compliance:

- Two residential lots sharing a driveway, when those lots are used for any detached house or tiny house used for single-unit living or any attached house, tiny house or two unit townhouse development used for two- unit living, including accessory uses.

Additional examples will be provided in the future.

CHANGES TO UDO 9.2.2.A GRANDFATHERED LOTS & SUBDIVIDED LOTS

There are still provisions to grandfather some lots, but there have been changes to the rules based on the State's Rules:

- Lots over 1 acre used with 1 detached building for one or two unit living
 - 5% BUA Threshold. This is part of the State law.
 - 5% governs, NOT the zoning-based table in 9.2.2.A.4.
 - Lots wishing to place >5% BUA will be subject to the Traditional Stormwater Requirements in 9.2.2.B through H.
- Lots 1 acre or less for with 1 detached building for one or two unit living per lot
 - If not part of a common plan of development over 1 acre...
 - Use Zoning-based table in 9.2.2.A.4 or methods to exceed
 - Can subdivide
 - If part of a common plan of development over 1 acre, will be subject to the Traditional Stormwater Requirements in 9.2.2.B through H.
- Lots 0.5 acres or less for other use, including townhomes,
 - If not part of a common plan of development over 0.5 acre...
 - Use Zoning-based table in 9.2.2.A.4 or methods to exceed
 - Can subdivide
 - If part of a common plan of development over 0.5 acres, will be subject to the Traditional Stormwater Requirements in 9.2.2.B through H.

EXISTING DEVELOPMENT – How is existing impervious area handled?

Existing BUA that was in place before May 1, 2001 or was permitted before May 1, 2001...

- will not be counted towards the %BUA
- will not be required to be treated, and
- will not be included as part of the project's regulated site area.

Existing BUA that was permitted on or after May 1, 2001...

- will be counted towards the %BUA,
- will not be required to provide additional SCM treatment beyond what was required at the time of permitting, but may require additional buy-down, and
- will be included as part of the project's regulated site area.

Existing BUA that was placed on or after May 1, 2001 without a permit will be treated as Newly Proposed BUA.

Existing BUA previously permitted under the rule change in TC-1-23...

- will be counted towards the %BUA,
- will not be required to provide additional SCM treatment beyond what was required at the time of permitting, but may require additional buy-down, and
- will be included as part of the project's regulated site area.

DETERMINING IF A WATER QUALITY SCM IS NEEDED: CALCULATED BUA PERCENTAGE

The percentage BUA for the project is calculated based on the proposed total impervious area on the parcel.

For a Greenfield Site, the formula is

$$\frac{\text{Parcel BUA}}{\text{Parcel Area}} = \%BUA$$

For sites with Existing BUA, the formula is

$$\frac{\text{Parcel BUA} - \text{Existing BUA placed or permitted prior to May 1, 2001}}{\text{Parcel Area} - \text{Existing BUA placed or permitted prior to May 1, 2001}} = \%BUA$$

If the %BUA is greater than 24%, then a Primary SCM is required for nutrient treatment. If the %BUA is less than or equal to 24%, an SCM may be used but it is not required for water quality purposes. An SCM might be needed to meet peak discharge requirements.

DETERMINING WATER QUALITY VOLUME – How much does the SCM need to treat?

“Stormwater control measures shall be designed to control and treat volume of runoff generated from all built-upon area by one inch of rainfall or equivalent runoff volume in one or more primary stormwater control measure.” Per NCDEQ this means that the new BUA (or an equivalent amount of previously untreated BUA) must drain to the SCMs on the site and that the SCMs must provide at least 100% treatment for that BUA. After the City's webinar on 4/20/2023, NCDEQ clarified that 100% of the BUA must drain to the SCMs – it is not acceptable to provide treatment >100% in lieu of sending BUA to SCMs.

Calculate the required WQv based on all the Newly Proposed BUA on the site.

Treat that volume of WQv in one or more SCMs on the site.

The amount of actually treated WQv will be based on:

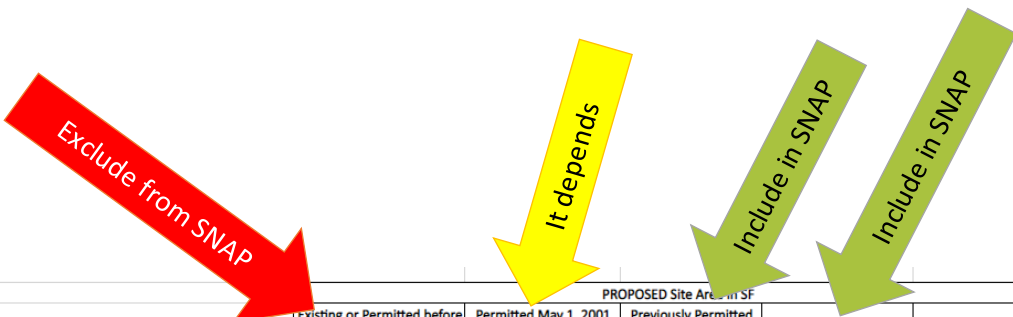
- Determining the WQv associated with the actual land cover draining to each SCM.
- Existing BUA on the site may be treated in lieu of the newly proposed BUA if that existing BUA is not currently treated by another SCM.
- ROW that drains to the SCM may be given credit for treatment if that ROW BUA is not currently treated by another SCM.

DETERMINING REGULATED SITE AREA

For Greenfield Sites, the following areas are part of the regulated site area and will be entered into SNAP:

- Entire parcel(s) area
- Newly dedicated ROW
- Existing ROW where BUA is added

For sites with Existing BUA, the following areas are part of the regulated site area and will be entered into SNAP:



Land Cover Category	PROPOSED Site Area in SF				Total
	Existing or Permitted before May 1, 2001	Permitted May 1, 2001 to May 1, 2023	Previously Permitted May 1, 2023 and Later	Newly Proposed Areas	
BUA on Parcel(s)	Roof BUA				
	Deck (50% of footprint)				
	Parking/Driveway/Sidewalk/Other BUA on Parcel				
	<i>Total BUA on Parcel(s)</i>				
Non-BUA on Parcel(s)	Protected Forest				
	Managed Pervious/Landscaping on Parcel				
	Land Taken Up by SCM				
	<i>Total non-BUA on Parcel(s)</i>				
BUA in ROW	Roadway BUA in ROW				
	Sidewalk/Other BUA in ROW				
	<i>Total BUA in ROW</i>				
Non-BUA in ROW	Managed Pervious/Landscaping in ROW				
<i>Total Site Area</i>					

CALCULATIONS FOR BUA PERMITTED BETWEEN MAY 1, 2001 and MAY 1, 2023

Designers will have two options for showing the calculations for BUA permitted between under the first generation of Neuse Rules, between May 1, 2001 and May 1, 2023.

- **Method A:** Put all information in SNAP, recalculating all areas with the new method.

Advantages:

- Simplest because only one method is used.
- The land cover loading associated with BUA is lower than the first generation calculation method.
- For some SCMs, the credit given will be higher than the first generation method.

Disadvantages:

- For some SCMs, the credit given will be lower than the first generation method.
- **Method B:** Use first generation calculation method for the existing BUA, which requires recalculation because the pervious area decreases. Use SNAP for the new BUA. Show the overall compliance in a spreadsheet.

In either method, credit will be given for the previous buydown associated with the parcel area and for the previous SCM treatment. See the City's spreadsheet associated with this document for additional information on Method B.

SNAP TOOL INPUTS

Project Info Worksheet

On the Project Info worksheet, the following fields must be filled in:

- If the field is listed below, it must be filled in. Other fields MAY be filled in.
- If an answer is listed in *red italics*, then it is guidance on how to complete this field.
- If an answer is listed in **blue bold**, then it is the answer everywhere in Raleigh, except the Falls and Swift Creek overlays.

LOCATION	
Project Name: <i>Your Project Name & Case Number</i>	
	Nutrient Management Watershed: Neuse
Local Jurisdiction/Reviewing Agency: Raleigh	Sub-watershed: Neuse-Upper
	Phosphorus Delivery Zone: Neuse – Upper 03020201
	Nitrogen Delivery Zone: Neuse – Upper 03020201
PROJECT DETAILS	
Public Linear Road/Sidewalk Project: <i>only answer yes if the project is funded by the City</i>	
	Project Description: <i>Once known in SPR, give N-File number here</i>
STORMWATER DETAILS	
	Project Uses LID/Runoff Volume Match?
Existing BUA/Development Onsite?	Local Gov’t nutrient req’s same as State? yes
Local Gov’t cutoff date for Existing BUA: May 1, 2001	Project Drains to Regional SCM? no
Nitrogen Export Rate Target: 3.6	
Phosphorus Export Rate Target: 1000	

Land Cover Characteristics Worksheet

On the Land Cover Characteristics worksheet:

- Precipitation Station will be Raleigh.
- The category “Roof” may be used for any impervious surface elevated above the surrounding ground and not used for vehicular traffic. Slatted decks may be included in this category at 50% or 30% according to the UDO definition of “impervious surface.”
- The category “Roadway” is for road surface impervious area in the public ROW.
- The category “Parking/Driveway/Sidewalk” is for all impervious area outside the ROW that is located at ground level. So, it encompasses miscellaneous impervious areas such as HVAC pads, retaining walls, plazas, patios, compacted gravel, synthetic turf/sports courts that do not meet

the permeable pavement SCM criteria. It also includes private roads and non-roadway BUA in the ROW.

- “Protected Forest” refers to Permanently Protected Undisturbed Open Space (PPUOS). This area must be recorded on the plat, permanently fenced, and treated like an SCM – requiring an O&M Manual and annual inspections. Note that Tree Conservation Area (TCA) is not automatically Protected Forest.
- “Managed Pervious/Landscaping” refers to all pervious area that is not PPUOS. For existing conditions, this will be used. Note that comparison between existing TN load and proposed TN load is not used for compliance.
- “Offsite or Existing” categories should not be used when submitting to the City of Raleigh. This is because SNAP does not give nutrient credit for these areas.
- Pools and Open water should be entered as Custom Land Cover with values of 0, 1.18, 0.11.
- Zone 1 of buffers, when forested, may be treated as Protected Forest for both existing and proposed conditions.
- For Existing BUA, reference the section on “Determining Regulated Site Areas” above.

SCM Characteristics Worksheet

- The Hydrologic soil group at SCM location, means the HSG specifically where the SCM is sited, not the HSG for the site. If the SCM location falls on the line between two HSG’s then the less infiltrating HSG must be chosen.
- The SCM Description should align with the Stormwater Calculations Report and plans. E.g. if SCMs are labeled A, B, and C, those labels would be used here.
- The Design Storm Size for all SCMs in Raleigh is 1 inch.
- All SCMs shall be designed to a minimum of 100% sizing if they are used for regulatory purposes.

BUY-DOWN THRESHOLD

Sites that have a BUA Percentage less than or equal to 24% may meet their nutrient target through buy-down only.

Sites with a BUA Percentage greater than 24% must treat all BUA with a Primary SCM before buying down to the nutrient target. See more information in the “Determining Water Quality” section above.

The thresholds of 6 lb/ac/yr and 10 lb/ac/yr from the first generation rules will no longer be used.

BUY-DOWN CALCULATIONS

Credits bought will now be in lb/yr rather than lb. The annual load of lb/yr will no longer be multiplied by 30 years. Thirty years was assumed to be the lifespan in the past; we now know that we should assume the credits will be in effect in perpetuity. Therefore, the perpetual credits will be sold in lb/yr. Per NCDEQ, banks will offer credits in both formats for some period of time.

SUBMITTAL REQUIREMENTS

The sealed and signed stormwater calculations report will contain the following items related to the nutrient calculations:

- Existing Conditions and Post-Development Maps showing the land cover with SNAP categories.
- PDF version of the following SNAP Tool worksheets:
 - Project Info
 - Land Cover Characteristics
 - SCM Characteristics
 - Nutrient Export Summary
 - Nutrient Offset
- PDF version of City Nutrient Summary Sheets

Additionally, the Excel file of the SNAP tool will be submitted with the City's Case number in the file name.

The current version of SNAP must be used and submitted.

WATERSHED OVERLAYS

Projects with a watershed overlay need to meet both the Neuse Rules and the Watershed Rule. The more stringent requirements should be shown in the SNAP Tool.

The Falls and Swift Creek rules have not changed. However, projects in these watersheds need to use the current version of the SNAP tool.

The SNAP input on the Land Cover Characteristics and SCM Characteristics should follow the guidance above.

Guidance on ***Project Info Worksheet – for Falls***

On the Project Info worksheet, the following fields must be filled in:

- If the field is listed below, it must be filled in. Other fields MAY be filled in.
- If an answer is listed in *red italics*, then it is guidance on how to complete this field.
- If an answer is listed in **blue bold**, then it is the answer everywhere in the Falls Watershed.

LOCATION	
Project Name: <i>Your Project Name & Case Number</i>	
	Nutrient Management Watershed: Falls_Lake
Local Jurisdiction/Reviewing Agency: Raleigh	Sub-watershed: Lower_Falls
	Phosphorus Delivery Zone: Falls - Lower
	Nitrogen Delivery Zone: Falls – Lower
PROJECT DETAILS	
Public Linear Road/Sidewalk Project: <i>only answer yes if the project is funded by the City</i>	
	Project Description: <i>Once known in SPR, give N-File number here</i>
STORMWATER DETAILS	
	Project Uses LID/Runoff Volume Match?
Existing BUA/Development Onsite?	Local Gov’t nutrient req’s same as State? yes
Local Gov’t cutoff date for Existing BUA:	Project Drains to Regional SCM? no
Nitrogen Export Rate Target: 2.2	
Phosphorus Export Rate Target: 0.33	

Guidance on **Project Info Worksheet – for Swift**

On the Project Info worksheet, the following fields must be filled in:

- If the field is listed below, it must be filled in. Other fields MAY be filled in.
- If an answer is listed in *red italics*, then it is guidance on how to complete this field.
- If an answer is listed in **blue bold**, then it is the answer everywhere in the Swift Watershed.

LOCATION	
Project Name: <i>Your Project Name & Case Number</i>	
	Nutrient Management Watershed: Neuse
Local Jurisdiction/Reviewing Agency: Raleigh	Sub-watershed: Neuse-Upper
	Phosphorus Delivery Zone: Neuse – Upper 03020201
	Nitrogen Delivery Zone: Neuse – Upper 03020201
PROJECT DETAILS	
Public Linear Road/Sidewalk Project: <i>only answer yes if the project is funded by the City</i>	
	Project Description: <i>Once known in SPR, give N-File number here</i>
STORMWATER DETAILS	
	Project Uses LID/Runoff Volume Match?
Existing BUA/Development Onsite?	Local Gov’t nutrient req’s same as State? no
Local Gov’t cutoff date for Existing BUA:	Project Drains to Regional SCM? no
Nitrogen Export Rate Target: 2.2	
Phosphorus Export Rate Target: 0.33	