# *Appendix A – Application and Report Forms*

## CITY OF NEW BERN STORMWATER PERMIT APPLICATION FORM
## (Form SW-001)

Name of Developer _____

Name of Contact Person _____

Phone Number _____

Email Address _____

Name of Development _____

Location of Development _____

_____

Who will legally be responsible for or own the development after construction?

Name _____

Address _____

Phone Number _____

Email Address _____

1. Total area disturbed by development _____ acres
2. Is any part of the development within the limits of the Neuse Stormwater Rule riparian buffer? A copy of the Neuse Stormwater Rule Riparian Buffer Advisory Map (Riparian Buffer Map) is available in the office of the New Bern Stormwater Administrator. It is the responsibility of the Developer to verify the location of the development with respect to the most current Riparian Buffer Map.
   _____ Yes – Development must comply with Neuse Stormwater Rule buffer requirements. Skip to Question 4.
   _____ No – Continue to Question 3.
3. Is the disturbed area of development greater than ½ acre?
   _____ Yes – Developer must have stormwater plans reviewed by City for approval of a Stormwater Permit. Continue to Question 4.
   _____ No – Development is exempt from stormwater rules, unless it is within the limits of the Riparian Buffer.
4. Is the development solely residential?
   _____ Yes – Developer must use Residential Stormwater Permit Application Form (SW-002).
   _____ No – Developer must use General Stormwater Permit Application Form (SW-003).

Certification

I, _____ (print name) hereby certify the information included on this and attached pages is true and correct to the best of my knowledge.

Signature _____ Date _____

Official Use Only: Stormwater Permit No. _____ Date Approved _____

## CITY OF NEW BERN RESIDENTIAL STORMWATER PERMIT APPLICATION FORM
## (Form SW-002, must be accompanied by completed Form SW-001)

Name of Developer _____

Name of Contact Person _____

Phone Number _____

Name of Development _____

1. Is the development solely residential?
   _____ Yes – This is the correct form, go on to next question.
   _____ No – You cannot use this form, go to the Non-residential Stormwater Permit Application Form (Form SW-003)

2. What kind of residential development is this?
   _____ Single lot with one single-family residential structure
   _____ Single-family residential subdivision with multiple lots
   _____ Multi-family residential
   _____ Mobile home development
   _____ Assisted living/congregate care facility
   _____ Other _____

3. Calculate pre- and post-development stormwater runoff from the development for the **1-year, 24-hour storm** with one of the approved methods specified in the City of New Bern Stormwater Management Manual.

   Pre-development peak runoff _____ cfs (1-year, 24-hour storm)

   Post-development peak runoff _____ cfs (1_year, 24-hour storm)

4. Does the post-development peak flow exceed the pre-development peak flow? (1-year, 24-hour storm)
   _____ Yes – Implementation of an approved flow control Best Management Practice (BMP) is required to reduce peak flow to pre-development peak before continuing to next question.
   _____ No – A flow control BMP is not required for this development. Continue to next question.

5. Does the development meet one or both of the following criteria: 1) the post-development peak runoff is less than 10 percent greater then the pre-development peak runoff (for the 1 year, 24-hour storm) or 2) the overall impervious surface is less than fifteen percent and the remaining pervious portions of the site are utilized to the maximum extent practical to convey and control the stormwater runoff?
   _____ Yes – A flow control BMP is not required for this development but the New Bern Stormwater Administrator must approve a variance. Continue to next question.
   _____ No - Implementation of an approved flow control Best Management Practice (BMP) is required to reduce peak flow to pre-development peak before continuing to next question.

6. Calculate pre- and post-development stormwater runoff from the development for the **10-year, 24-hour** storm with one of the approved methods specified in the City of New Bern Stormwater Management Manual.

   Pre-development peak runoff _____ cfs (10-year, 24-hour storm)

   Post-development peak runoff _____ cfs (10-year, 24-hour storm)

7. Does the post-development peak flow exceed the pre-development peak flow? (10-year, 24-hour storm)
   _____ Yes – Implementation of an approved flow control Best Management Practice (BMP) is required to reduce peak flow to pre-development peak before continuing to next question.
   _____ No – A flow control BMP is not required for this development. Continue to next question.

8. Where the requirement that the 10-year, 24-hour storm post-development peak flow not exceed the pre-development peak flow places an undue hardship upon a property owner, variances from the requirement may be granted by the Stormwater Administrator if the development meets the following requirement: *The proposed new development appropriately uses the parcel's total remaining total impervious area to the extent practical to convey and control the stormwater runoff, and it is demonstrated, to the satisfaction of the Stormwater Administrator, that no damage to public or private properties, including to the City's stormwater facilities and to the quality of the public waters, will be caused by granting of the variance.* Is this requirement met for the proposed development?
   _____ Yes – A flow control BMP is not required for this development but the New Bern Stormwater Administrator must approve a variance. Continue to next question.
   _____ No - Implementation of an approved flow control Best Management Practice (BMP) is required to reduce peak flow to pre-development peak before continuing to next question.
9. Are the number of building footprints and sizes for the entire development, to the ultimate built out condition of the development, known?
   _____ Yes – Use Method 2, Form SW-005 for Total Nitrogen export calculations.
   _____ No – Use Method 1, Form SW-004 for Total Nitrogen export calculations.
10. From Step 8 of Form SW-004 or Step 6 of Form SW-005, the Total Nitrogen export load from the development is: _____ lb/acre/year.
11. Does the Total Nitrogen export from the development exceed 6.0 lb/acre/year?
   _____ Yes – Developer must incorporate a single or combination of BMPs to reduce Total Nitrogen load, and recalculate Total Nitrogen export with Method 1 or 2 until it is less than 6.0 lb/acre/year.
   _____ No – Continue to next question.
12. Does the Total Nitrogen export from the development exceed 3.6 lb/acre/year?
   _____ Yes – The developer must either incorporate a single or combination of BMPs to reduce Total Nitrogen load or pay offset fees for difference between N export (less than 6.0 lb/acre/year) and 3.6 lb/acre/year. State offset fee is: $330/lb/year for each acre of disturbed area.
   City of New Bern offset fee is: $170/lb/year for each acre of disturbed area.
   _____ No – No offset fee payments or additional BMPs are required.

**FEES**

The Developer must pay the Standard Stormwater fee plus any additional fees for Technical Review of Structural BMP designs and any offset fees to the City. A fee schedule is available from the Office of the City of New Bern's Stormwater Program Administrator.

1. Standard fee: $ _____
2. Structural BMP Technical Review fee: _____ structural BMPs x $_____per BMP = $ _____
3. Structural BMP As-Built inspection fee: _____ structural BMPs x $_____ per BMP = $ _____
4. State Offset fee:

(_____ lb/ac/yr Total Nitrogen export - 3.6 lb/ac/yr) x _____ acres x $850.50 lb/yr = offset payment to EEP = $ _____

5. City Offset fee:

(_____ lb/ac/yr Total Nitrogen export - 3.6 lb/ac/yr) x _____acres x $170/lb/yr = $ _____

**Total Fee** $ _____

Is an application being submitted to the State of North Carolina Division of Land Quality for an Erosion and Sediment Control Permit for this development?

_____ Yes – Approval of a City of New Bern stormwater permit is contingent upon approval of the State of North Carolina's Erosion and Sediment Control Permit.

_____ No – What is the reason?

Is development <1 acre?

_____ Yes – A City of New Bern Stormwater Permit is still required if the disturbed area of the development is greater than ½ acre.

_____ No – Both and City of New Bern Stormwater Permit and a State Erosion and Sediment Control Permit are required.

Other Reason:_____

## CITY OF NEW BERN GENERAL STORMWATER PERMIT APPLICATION FORM

**(Form SW-003, must be accompanied by completed Form SW-001)**

Name of Developer _____

Name of Contact Person _____

Phone Number _____

Name of Development _____

1. Is the development solely residential?
   _____ Yes – You may use the Residential Application Form (Form SW-002).
   _____ No – this is the correct form. Go to the next question.

2. What kind of residential development is this?
   _____ Commercial
   _____ Industrial
   _____ Single lot with one single family residential structure
   _____ Single family residential subdivision with multiple lots
   _____ Multi-family residential
   _____ Mobile home development
   _____ Assisted living/congregate care facility
   _____ Multi Use (Residential and Commercial)
   _____ Other _____

3. Calculate pre- and post-development stormwater runoff from the development for the **1-year, 24-hour storm** with one of the approved methods specified in the City of New Bern Stormwater Management Manual.

   Pre-development peak runoff _____ cfs (1-year, 24-hour storm)

   Post-development peak runoff _____ cfs (1_year, 24-hour storm)

4. Does the post-development peak flow exceed the pre-development peak flow? (1-year, 24-hour storm)
   _____ Yes – Implementation of an approved flow control Best Management Practice (BMP) is required to reduce peak flow to pre-development peak before continuing to next question.
   _____ No – A flow control BMP is not required for this development. Continue to next question.

5. Does the development meet one or both of the following criteria: 1) the post-development peak runoff is less than 10 percent greater then the pre-development peak runoff (for the 1 year, 24-hour storm) or 2) the overall impervious surface is less than fifteen percent and the remaining pervious portions of the site are utilized to the maximum extent practical to convey and control the stormwater runoff?
   _____ Yes – A flow control BMP is not required for this development but the New Bern Stormwater Administrator must approve a variance. Continue to next question.
   _____ No - Implementation of an approved flow control Best Management Practice (BMP) is required to reduce peak flow to pre-development peak before continuing to next question.

6. Calculate pre- and post-development stormwater runoff from the development for the **10-year, 24-hour** storm with one of the approved methods specified in the City of New Bern Stormwater Management Manual.

   Pre-development peak runoff _____ cfs (10-year, 24-hour storm)

   Post-development peak runoff _____ cfs (10-year, 24-hour storm)

7. Does the post-development peak flow exceed the pre-development peak flow? (10-year, 24-hour storm)
   _____ Yes – Implementation of an approved flow control Best Management Practice (BMP) is required to reduce peak flow to pre-development peak before continuing to next question.
   _____ No – A flow control BMP is not required for this development. Continue to next question.

8. Where the requirement that the 10-year, 24-hour storm post-development peak flow not exceed the pre-development peak flow places an undue hardship upon a property owner, variances from the requirement may

be granted by the Stormwater Administrator if the development meets the following requirement: *The proposed new development appropriately uses the parcel's total remaining total impervious area to the extent practical to convey and control the stormwater runoff, and it is demonstrated, to the satisfaction of the Stormwater Administrator, that no damage to public or private properties, including to the City's stormwater facilities and to the quality of the public waters, will be caused by granting of the variance.* Is this requirement met for the proposed development?

_____ Yes – A flow control BMP is not required for this development but the New Bern Stormwater Administrator must approve a variance. Continue to next question.

_____ No - Implementation of an approved flow control Best Management Practice (BMP) is required to reduce peak flow to pre-development peak before continuing to next question.

9. Use Method 2, Form SW-005 for Total Nitrogen export calculations. From Step 8 of Form SW-005, the Total Nitrogen export load from the development is:
_____ lb/acre/year.

10. Does the Total Nitrogen export from the development exceed 6.0 lb/acre/year?
_____ Yes – Is this a solely residential development?
_____ Yes: Maximum allowable Total Nitrogen Export is 6.0 lb/acre/year. Developer must incorporate a single or combination of BMPs to reduce Total Nitrogen Load, and recalculate Total Nitrogen export with Method 1 or 2 until it is less than that amount.
_____ No: Maximum allowable Total Nitrogen Export is 10.0 lb/acre/year. Developer must incorporate a single or combination of BMPs to reduce Total Nitrogen Load, and recalculate Total Nitrogen export with Method 2 until it is less than that amount.
_____ No – Continue to next question.

11. Does the Total Nitrogen export from the development exceed 3.6 lb/acre/year?
_____ Yes – The developer must either incorporate a single or combination of BMPs to reduce Total Nitrogen load or pay offset fees for difference between N export and 3.6 lb/acre/year. State offset fee is: $330/lb/year for each acre of disturbed area. City of New Bern offset fee is: $170/lb/year for each acre of disturbed area.
_____ No – No offset fee payments or additional BMPs are required.

**FEES**

The Developer must pay the Standard Stormwater fee plus any additional fees for Technical Review of Structural BMP designs and any offset fees to the City of New Bern. A fee schedule is available from the Office of the City of New Bern's Stormwater Program Administrator.

1. Standard fee: $ _____
2. Structural BMP Technical Review fee: _____ structural BMPs x $_____per BMP = $ _____
3. Structural BMP As-Built inspection fee: _____ structural BMPs x $_____ per BMP = $ _____
4. State Offset fee:

(_____ lb/ac/yr Total Nitrogen export - 3.6 lb/ac/yr) x _____ acres x $850.50 lb/yr = offset payment to EEP = $ _____

5. City Offset fee:

(_____ lb/ac/yr Total Nitrogen export - 3.6 lb/ac/yr) x _____acres x $170/lb/yr = $ _____

**Total Fee** $ _____

Is an application being submitted to the State of North Carolina Division of Land Quality for an Erosion and Sediment Control Permit for this development?

_____ Yes – Approval of a City of New Bern stormwater permit is contingent upon approval of the State of North Carolina's Erosion and Sediment Control Permit.

_____ No – What is the reason?
Is development <1 acre?
_____ Yes – A City of New Bern Stormwater Permit is still required if the disturbed area of the development is greater than ½ acre.
_____ No – Both and City of New Bern Stormwater Permit and a State Erosion and Sediment Control Permit are required.

Other Reason: _____

## CITY OF NEW BERN STORMWATER PROGRAM DRAWING REQUIREMENTS

Submit one mylar and 12 reduced 8.5" x 11" copies of final site plan to the New Bern Stormwater Administrator prior to the regularly scheduled meeting of The Board of Aldermen in accordance with the subdivision review schedule. Following recording of the plan by the Craven County Registrar of Deeds, the Planning and Inspections Department receives one mylar and three full size copies for City distribution.

The final drawings must contain the following information:

a. General Information
   i. Title
   ii. Date
   iii. Name of developer and contact information
   iv. Name of owner, surveyor, and land planner
   v. Title block on each sheet
b. Location Information, Vicinity Plan
   i. Project location
   ii. North arrow, true north point
   iii. Scale (Drawing scale: 1" = 100' or larger. Drawing sheet size: 18" x 24" or larger)
   iv. All Paved Roads
   v. Adjoining lakes, streams, or other drainage ways shown on either United States Geographical Society (USGS) quad maps or United States Department of Agriculture Soil Conservation Service (SCS) Soils maps
c. Site Features
   i. North arrow
   ii. Scale
   iii. Legend
   iv. All dimensions should be to the nearest 0.1 foot and angles to the nearest minute.
   v. Accurate location of all monuments and markers.
   vi. Names and locations of all adjoining subdivisions and streets, and the location and ownership of adjoining unsubdivided property.
   vii. Zoning classification of subdivision and adjacent properties.
   viii. Reservations, easements, alleys, and any other areas to be dedicated to public use, conservation or other purposes.
   ix. Restricted access easement on limited access streets
   x. Boundaries of total tract
   xi. Property lines
   xii. Lot numbers and postal addresses, building numbers
   xiii. Lot owners' names
   xiv. Building envelopes in the case of Planned Unit Developments (PUD).
   xv. Sufficient data to determine readily and reproduce on the ground, the location, bearing and length of every street, block line, building line, whether curved or straight, and including true north point. Include the radius, central angle, and tangent distance for the center line of curved streets and curved property lines that are not the boundary of curved streets.
   xvi. Existing and proposed water mains, sanitary sewers, storm sewers, transmission lines, and other relevant utilities.
   xvii. Site plan of existing conditions including wooded areas, marshes, wetlands, Neuse Riparian Buffer limits
   xviii. Existing topographic contours, one foot intervals based on sea level data
   xix. Proposed topographic contours, one foot intervals based on sea level data
   xx. Limit and acreage of disturbed area
   xxi. Planned and existing buildings location and elevations
   xxii. Planned and existing roads location and elevations
   xxiii. Land use of surrounding areas
   xxiv. Rock outcrops
   xxv. Wetland limits - Written approval by Corps of Engineers with reference to wetlands, if applicable.
   xxvi. Streams, lakes, ponds, drainage ways, dams, seeps and springs
   xxvii. Borrow and/or waste areas
   xxviii. Stockpiled topsoil or subsoil location

xxix. Location of structural Best Management Practices (BMPs) and their associated maintenance easements.

d. Site Drainage Features
    i. Existing and planned drainage patterns (include off-site areas that drain through project)
    ii. Size of areas (acreage)
    iii. Size of location of culverts and sewers
    iv. Soils information (type, special characteristics), including below culvert and storm sewer outlets
    v. Name of receiving watercourse or name of municipal operator (only where stormwater discharges are to occur)
e. Erosion Control Measures
    i. Legend
    ii. Location of temporary and permanent measures
    iii. Construction drawings and details for temporary and permanent measures
    iv. Maintenance requirements during and after construction
f. Vegetative Stabilization
    i. Areas and acreage to be vegetatively stabilized
    ii. Layout of planned vegetation with details of plants, seed, mulch and fertilizer
g. Appropriate certificates and signatures

*Nitrogen Export Calculations*

**Calculating Total Nitrogen Export from New Development**

For the purposes of the City of New Bern Stormwater Program, new development shall be defined as to include the following:

> Any activity that disturbs greater than one-half acre of land in order to establish, expand or modify a single family or duplex residential development or a recreational facility.

New development shall NOT include agriculture, mining or forestry activities. Land disturbance is defined as grubbing, stump removal and/or grading.

Property owners that can demonstrate that they have vested rights as of the effective date of the New Bern Stormwater Ordinance (expected April 10, 2001) will not be subject to the requirements for new development. Vested rights may be based on at least one of the following criteria:

(a) substantial expenditures of resources (time, labor, money) based on a good faith reliance upon having received a valid local government approval to proceed with the project, or

(b) having an outstanding valid building permit in compliance with G.S. 153A-344.1 or G.S. 160A-385.1, or

(c) having an approved site specific or phased development plan in compliance with G.S. 153A-344.1 or G.S. 160A-385.1.

Projects that require a state permit, such as landfills, NPDES wastewater discharges, land application of residuals and road construction activities shall be considered to have vested rights if a state permit was issued prior to the effective date of the New Bern Stormwater Ordinance.

The rule requires that all new developments achieve a nitrogen export of less than or equal to 3.6 pounds per acre per year. If the development contributes greater than 3.6 lbs/ac/yr of nitrogen, then the options shown in Table 1 are available based on whether the development is residential or non-residential.

**Table 1: Nitrogen Export Reduction Options**

| Residential | Commercial / Industrial |
|---|---|
| If the computed export is less than 6.0 lbs/ac/yr, then the owner may either:<br>1. Install BMPs to remove enough nitrogen to bring the development down to 3.6 lbs/ac/yr.<br>2. Pay a one-time offset payment of $850.50/lb to bring the nitrogen down to the 3.6 lbs/ac/yr.<br>3. Do a combination of BMPs and offset payment to achieve a 3.6 lbs/ac/yr export. | If the computed export is less than 10.0 lbs/ac/yr, then the owner may either:<br>1. Install BMPs to remove enough nitrogen to bring the development down to 3.6 lbs/ac/yr.<br>2. Pay a one-time offset payment of $850.50/lb to bring the nitrogen down to the 3.6 lbs/ac/yr.<br>3. Do a combination of BMPs and offset payment to achieve a 3.6 lbs/ac/yr export. |
| If the computed export is greater than 6.0 lbs/ac/yr, then the owner must use on-site BMPs to bring the development's export down to 6.0 lbs/ac/yr. Then, the owner may use one of the three options above to achieve the reduction between 6.0 and 3.6 lbs/ac/yr. | If the computed export is greater than 10.0 lbs/ac/yr, then the owner must use on-site BMPs to bring the development's export down to 10.0 lbs/ac/yr. Then, the owner may use one of the three options above to achieve the reduction between 10.0 and 3.6 lbs/ac/yr. |

# Method 1 for Nitrogen Export Calculation
# (Form SW-004)

**Method 1 is intended for residential developments where lots are shown but the actual footprint of buildings are not shown on site plans.** This method does not require calculation of the area of building footprints. Rather, the impervious surface resulting from building footprints is estimated based on typical impervious areas associated with a given lot size.

Step 1: Determine area for each type of land use and enter in Column (2).

Step 2: Total the areas for each type of land use and enter at the bottom of Column (2).

Step 3: Determine the Total Nitrogen (TN) export coefficient associated with right-of-way using Graph 1.

Step 4: Determine the TN export coefficient associated with lots using Graph 2.

Step 5: Multiply the areas in Column (2) by the TN export coefficients in Column (3) and enter in Column (4).

Step 6: Total the TN exports for each type of land use and enter at the bottom of Column (4).

Step 7: Determine the export coefficient for site by dividing the total TN export from uses at the bottom of Column (4) by the total area at the bottom of Column (2).

| (1) Type of Land Cover | (2) Area (acres) | (3) TN export coeff. (lbs/ac/yr) | (4) TN export from use (lbs/yr) |
|---|---|---|---|
| **Permanently protected undisturbed open space** (forest, unmown meadow) | | 0.6 | |
| **Permanently protected managed open space** (grass, landscaping, etc.) | | 1.2 | |
| **Right-of-way** (read TN export from Graph 1) | | | |
| **Lots** (read TN export from Graph 2) | | | |
| **TOTAL** | | --- | |

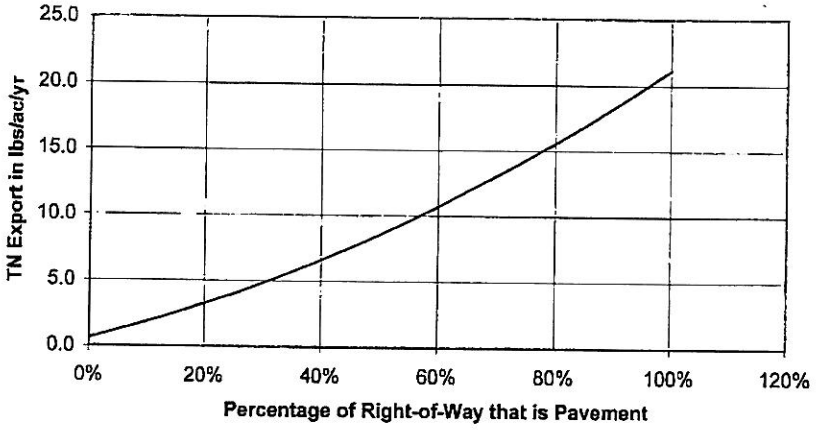
Step 8: Calculate Total TN export from use (lb/yr) / Total Area (acre) = _____ (lb/acre/year)

Certification

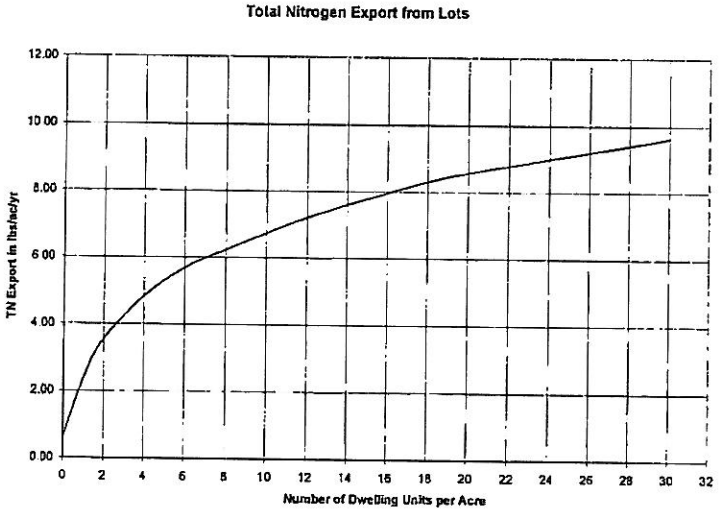
I, _____ (print name) hereby certify the information included on this and attached pages is true and correct to the best of my knowledge.

Signature _____ Date _____

**Graph 1: Total Nitrogen Export from Right-of-Way**




**Graph 2: Total Nitrogen Export from Lots**



# Method 2 for Nitrogen Export Calculation
# (Form SW-005)

**Method 2 is for residential, commercial and industrial developments when the entire footprint of the roads, parking lots, buildings and any other built-upon area is shown on the site plans.**

Step 1: Determine area for each type of land use and enter in Column (2).

Step 2: Total the areas for each type of land use and enter at the bottom of Column (2).

Step 3: Multiply the areas in Column (2) by the Total Nitrogen (TN) export coefficients in Column (3) and enter in Column (4).

Step 4: Total the TN exports for each type of land use and enter at the bottom of Column (4).

Step 5: Determine the export coefficient for site by dividing the total TN export from uses at the bottom of Column (4) by the total area at the bottom of Column (2).

| (1) Type of Land Cover | (2) Area (acres) | (3) TN export coeff. (lbs/ac/yr) | (4) TN export from use (lbs/yr) |
|---|---|---|---|
| **Permanently protected undisturbed open space** (forest, unmown meadow) | | 0.6 | |
| **Permanently protected managed open space** (grass, landscaping, etc.) | | 1.2 | |
| **Impervious surfaces** (roads, parking lots, driveways, roofs, paved storage areas, etc.) | | 21.2 | |
| **TOTAL** | | --- | |

Step 6: Calculate Total TN export from use (lb/yr) / Total Area (acre) = _____ (lb/acre/year)

Certification

I, _____ (print name) hereby certify the information included on this and attached pages is true and correct to the best of my knowledge.

_____

Signature _____ Date _____

*Peak Flow Calculations*

## Rational Method Peak Flow Calculation Form (SW-006)

The Rational Method may only be used for single-family residential developments where the final built-out development will impact less than 10 acres.

Location: _____

Drainage area (A): _____ acres

Average slope: _____ percent

Maximum Slope Length: _____ feet

**Pre-Development Conditions**

| Type of Land Use | C | Area (acre) | C x A |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| **Total** | | | |

Area-weighted C: _____

Height of most remote outlet: _____ feet

Maximum Length of travel: _____ feet

Tc: _____ min.

Intensity (i) for 1-yr, 24-hr storm: _____ in/hr

Intensity (i) for 10-yr, 24-hr storm: _____ in/hr

Pre-dev. peak flow for 1-year, 24-hour storm:

q = CiA = _____ cfs

Pre-dev. peak flow for 10-year, 24-hour storm:

q = CiA = _____ cfs

**Post-Development Conditions**

| Type of Land Use | C | Area (acre) | C x A |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| **Total** | | | |

Area-weighted C: _____

Height of most remote outlet: _____ feet

Maximum Length of travel: _____ feet

Tc: _____ min.

Intensity (i) for 1-yr, 24-hr storm: _____ in/hr

Intensity (i) for 10-yr, 24-hr storm: _____ in/hr

Post-dev. peak flow for 1-year, 24-hour storm:

q = CiA = _____ cfs

Post-dev. peak flow for 10-year, 24-hour storm:

q = CiA = _____ cfs

Certification

I, _____ (print name) hereby certify the information included on this and attached pages is true and correct to the best of my knowledge.

Signature _____ Date _____

## SCS Method Peak Flow Calculation Form (SW-007)

The SCS Method may be used for any development.

Location: _____

Drainage area (A): _____ acres

Maximum Slope Length: _____ feet

Average slope: _____ percent

**Pre-Development Conditions**

| Type of Land Use | CN | % Imp. | Area (acre) | CN x A | Imp x A |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| **Total** | | | | | |

Area-weighted CN: _____

Overall % Impervious: _____

Design rainfall for 1-year storm, $P_1$: _____ inches

Design rainfall for 10-year storm, $P_{10}$: _____ inches

Runoff depth $Q_1$: _____ inches

Runoff depth $Q_{10}$: _____ inches

Equivalent Drainage area: _____ acres

Peak runoff rate: _____ cfs/inch

Peak flow for 1-year, 24-hour storm, _____ cfs

Peak flow for 10-year, 24-hour storm, _____ cfs

Adjustments for percent impervious surfaces, improved channels, average watershed slope, ponding, and swampy areas may be necessary. Refer to the North Carolina Cooperative Extension Service, North Carolina State University, and North Carolina Department of Environment, and Natural Resources *Stormwater Guidance Manual* design manual or the United States Department of Agriculture, Soil Conservation Service (USDA - SCS) - *Technical Release 55* for details.

Adjusted Peak Flow for percent impervious surfaces and improved channels.
Peak flow: 1-yr, 24-hr storm: _____ cfs 10-yr, 24-hr storm: _____ cfs

Adjusted Peak Flow for average watershed slope.
Peak flow: 1-yr, 24-hr storm: _____ cfs 10-yr, 24-hr storm: _____ cfs

Adjusted Peak Flow for ponding and swampy areas.
Peak flow: 1-yr, 24-hr storm: _____ cfs 10-yr, 24-hr storm: _____ cfs

Repeat the calculations for Post-Development Conditions.

**Post-Development Conditions**

| Type of Land Use | CN | % Imp. | Area (acre) | CN x A | Imp x A |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| **Total** | | | | | |

Area-weighted CN: _____

Overall % Impervious: _____

Design rainfall for 1-year storm, $P_1$: _____ inches

Design rainfall for 10-year storm, $P_{10}$: _____ inches

Runoff depth $Q_1$: _____ inches

Runoff depth $Q_{10}$: _____ inches

Equivalent Drainage area: _____ acres

Peak runoff rate: _____ cfs/inch

Peak flow for 1-year, 24-hour storm, _____ cfs

Peak flow for 10-year, 24-hour storm, _____ cfs

Adjustments for percent impervious surfaces, improved channels, average watershed slope, ponding, and swampy areas may be necessary. Refer to the North Carolina Cooperative Extension Service, North Carolina State University, and North Carolina Department of Environment, and Natural Resources *Stormwater Guidance Manual* design manual or the United States Department of Agriculture, Soil Conservation Service (USDA - SCS) - *Technical Release 55* for details.

Adjusted Peak Flow for percent impervious surfaces and improved channels.
Peak flow: 1-yr, 24-hr storm: _____ cfs 10-yr, 24-hr storm: _____ cfs

Adjusted Peak Flow for average watershed slope.
Peak flow: 1-yr, 24-hr storm: _____ cfs 10-yr, 24-hr storm: _____ cfs

Adjusted Peak Flow for ponding and swampy areas.
Peak flow: 1-yr, 24-hr storm: _____ cfs 10-yr, 24-hr storm: _____ cfs

Certification

I, _____ (print name) hereby certify the information included on this and attached pages is true and correct to the best of my knowledge.

Signature _____ Date _____

**CITY OF NEW BERN STORMWATER PERMIT**
**(Form SW-010)**

**Development** _____

**Owner or Contact Person** _____

**Address** _____

_____

**Date Issued:** _____

This permit is provided under the City of New Bern Stormwater Ordinance and covers construction activities as submitted on the Stormwater Management Plan and accompanying drawings, calculations and other documentation for the period ending _____ (2 years from date issued).

---

**Inspection Requirement**

Each structural component (Best Management Practice or BMP) constructed under this permit requires a final, as-built inspection prior to the use of the property as described in the Stormwater Management Plan. You must call the City of New Bern Stormwater Administrator's office to schedule that inspection. Failure to arrange for the required inspection prior to beginning the intended use of the property shall void this permit.

---

**No Modifications**

There shall be no modifications to the drainage patterns, structures, operation and maintenance, or other features approved in the Stormwater Management Plan without the prior approval of the Stormwater Administrator.

---

**Additional Requirements**

Additional requirements, conditions, variances, and approvals are included as part of this permit as attached and here referenced: _____.

Please keep a copy of this Stormwater Permit at your site. This permit does not supersede any other permit requirements or approvals required for you development. Your cooperation is appreciated.

Sincerely, City of New Bern Stormwater Administrator or Representative

Official Use Only: Stormwater Permit No. _____ Date Approved _____

**City of New Bern**

**Structural BMP Inspection Report**
**(Form SW-015)**

| Reporter Name | Development Name | Date & Time | Date/Time of Last Rainfall |
|---|---|---|---|
| | | | |

Site Description (Attach map if required)

| Address | GPS Location | Type of BMP | Dominant Land Use |
|---|---|---|---|
| | | | |

Visual Observations (Use as required. Attach photos if available)

| Forebay Condition | Clarity of Detained Water (clear, turbid, milky) |
|---|---|
| | |
| Vegetation (healthy, dead, sparse, rich) | Floating Materials (dead fish, debris, plastic) |
| | |
| Outfall Structural Condition (broken, rusty) | Current Inflow and Outflow Estimates (cfs) |
| | |
| Drainage Modifications Found? Describe. | Other |
| | |

Maintenance Record Review

| Records reviewed? (YES/NO) | If NO, why not? |
|---|---|
| | |
| Entries contemporaneously made? | Special Modifications or Conditions |
| | |

Stormwater Plan Review

| Drainage areas on plan and from site inspection (SQ.FT. or ACRES) | Outlet agrees with Stormwater Plan Specifications? |
|---|---|
| | |
| | |
| | |

Make additional notes and list additional maintenance requirements and dates on reverse site.

**City of New Bern**

## Illicit Discharge Elimination Program
## Field Screening Report (SW-020)

| Reporter Name | Outfall ID | Date & Time | Date/Time of Last Rainfall |
|---|---|---|---|
| | | | |

Site Description (Attach map if required)

| Address | GPS Location | Type of Outfall | Dominant Land Use |
|---|---|---|---|
| | | | |

Visual Observations (Attach photo if available)

| Odor (septic, fishy, chlorine, rotten egg) | Color (light or dark brown, oily, reddish) |
|---|---|
| | |
| Clarity (clear, turbid, milky) | Floating Materials (dead fish, debris, plastic) |
| | |
| Deposits and Stains (color and extent) | Vegetation (healthy, dead, sparse, rich) |
| | |
| Outfall Structural Condition (broken, rusty) | Flow Estimate (cfs) |
| | |
| Biological Conditions (fish present, live bugs) | Other |
| | |

Sampling & Analysis

| Sample taken by : | Method : |
|---|---|
| Meter last calibrated (Date/Time) : | Lab Analysis by : |
| Temperature (C) : | pH : |
| COD (mg/l): | Nitrogen-Ammonia (mg/l) |
| Total Nitrogen (mg/l): | Fluoride or Chlorine (mg/l) |

Make additional notes on reverse site.

# *Appendix B – Covenants*

NORTH CAROLINA

CRAVEN COUNTY

DECLARATION OF COVENANTS FOR STORM AND SURFACE WATER FACILITY MAINTENANCE

THIS DECLARATION OF COVENANTS is made this _____ day of _____, 20__, by _____ ("Covenantor(s)") to and for the benefit of the City of New Bern, a North Carolina municipal corporation and its successors and assigns ("City").

**WITNESSETH:**

THAT WHEREAS, the City is authorized and required to regulate and control the disposition of storm and surface waters within the City's jurisdiction as set forth in the City of New Bern Stormwater Ordinance, Code Sections 15-501 *et seq.*; and

WHEREAS, Covenantor(s) is (are) the owner(s) of a certain tract or parcel of land more particularly described on the attached Exhibit A, being all or part of the land which it acquired by deed dated _____ from _____ recorded in the Office of the Register of Deeds of Craven County in deed book _____ at page ____, such property being hereinafter referred to as "the property"; and

WHEREAS, the Covenantors(s) desires to construct certain improvements on its property that will alter the extent of storm and surface water flow conditions on both the property and adjacent lands; and

WHEREAS, in order to accommodate and regulate these anticipated changes in existing storm and surface water flow conditions, the Covenantor(s) desires to build and maintain at its expense, a storm and surface water management facility and system more particularly described and shown on plans titled _____ and further identified under City approval/permit number _____; and

WHEREAS, the City has reviewed and approved these plans subject to the execution of this agreement.

NOW, THEREFORE, in consideration of the benefits received by the Covenantor(s) as a result of the City's approval of its plans, Covenantor(s), with full authority to execute deeds, mortgages, other covenants, and all rights, title and interest in the property described above do hereby covenant with the City as follows:

1. Covenantor(s) shall construct and perpetually maintain, at its sole expense, the above-referenced storm and surface water management facility and system in strict accordance with the plan approval granted by the City.

2. Covenantor(s) shall, at its sole expense, make such changes or modifications to the storm and surface water management facility and system as may, at the City's discretion, be determined necessary to insure that the facility and system is properly maintained and continues to operate as designed and approved.

3. The City, its agents, employees and contractors shall have the perpetual right of ingress and egress over the property of the Covenantor(s), and the right to inspect at reasonable times and in reasonable manner, the storm and surface water facility and system, in order to insure that the system is being properly maintained and is continuing to perform in an adequate manner.

4. The Covenantor(s) agrees that should it fail to correct any defects in the above-described facility and system within ten (10) days from the issuance of written notice, or shall fail to maintain the facility in accordance with the approved design standards and with the law and applicable executive regulation or, in the event of an emergency as determined by the City in its sole discretion, the City is authorized to enter the property to make all repairs, and to perform all maintenance, construction and reconstruction as the City deems necessary. The City shall then assess the Covenantor(s) and/or all landowners served by the facility for the cost of the work, both direct and indirect, and applicable penalties. Said assessment shall be a lien against all properties served by the facility and may be placed on the property tax bills of said properties and collected as ordinary taxes by the City.

5. Covenantor(s) shall indemnify, save harmless and defend the City from and against any and all claims, demands, suits, liabilities, losses, damages and payments including attorney fees

claimed or made by persons not parties to this Declaration against the City that are alleged or proven to result or arise from the Covenantor(s) construction, operation, or maintenance of the storm and surface water facility and system that is the subject of this Covenant.

6. The covenants contained herein shall run with the land and the Covenantor(s) further agrees that whenever the property shall be held, sold and conveyed, it shall be subject to the covenants, stipulations, agreements and provisions of this Declaration, which shall apply to, bind and be obligatory upon the Covenantor(s) hereto, its heirs, successors and assigns and shall bind all present and subsequent owners of the property served by the facility.

7. The Covenantor(s) shall promptly notify the City when the Covenantor(s) legally transfers any of the Covenantor(s) responsibilities for the facility. The Covenantor(s) shall supply the City with a copy of any document of transfer, executed by both parties.

8. The provisions of this Declaration shall be severable and if any phrase, clause, sentence or provision is declared unconstitutional, or the applicability thereof to the Covenantor is held invalid, the remainder of this Covenant shall not be affected thereby.

9. This Declaration shall be recorded in the Office of the Register of Deeds of Craven County at the Covenantor(s) expense.

10. In the event that the City shall determine in its sole discretion at a future time that the facility is no longer required, then the City shall at the request of the Covenantor(s) execute a release of this Declaration of Covenants which the Covenantor(s) shall record at its expense.

IN TESTIMONY HEREOF, the Covenantor has hereunto set his hand and adopted as his seal the typewritten word "Seal" appearing by his signature, the day and year first above written.

_____(SEAL)

STATE OF NORTH CAROLINA

COUNTY OF CRAVEN

I, _____, Notary Public in and for said County and State, do hereby certify _____, personally appeared before me this day and acknowledged the due execution of the foregoing and annexed instrument for the purposes therein expressed.

WITNESS my hand and official seal this the ____ day of _____, 20__.

_____
Notary Public

My Commission Expires:

_____

STATE OF NORTH CAROLINA

COUNTY OF CRAVEN

The foregoing notary certificate is certified to be correct. This instrument was presented for registration on this day and hour, and duly recorded in the Office of the Register of Deeds of _____ County, North Carolina in Book _____ at Page _____.

This the ____ day of _____, 20___, at _____ o'clock _.m.

_____ By _____
Register of Deeds Assistant Register of Deeds

**Table 4-1**
BMP Ability for Stormwater Quantity Control

| | Quantity Control | TSS Removal Efficiency | TN Removal Efficiency | TP Removal Efficiency | Fecal Removal Ability | High Temperature Concern |
|---|---|---|---|---|---|---|
| Bioretention without IWS | Possible | 85% | 35% | 45% | High | Med |
| Bioretention with IWS *Coastal Counties* | Possible | 85% | 60% | 60% | High | Med |
| Bioretention with IWS *Non-Coastal Counties* | Possible | 85% | 40% | 45% | High | Med |
| Stormwater wetlands | Yes | 85% | 40% | 40% | Med | High |
| Wet detention basin | Yes | 85% | 25% | 40% | Med | High |
| Sand filter | Possible | 85% | 35% | 45% | High | Med |
| Filter strip | No | 25-40% | 20% | 35% | Med | Low |
| Grassed swale | No | 35% | 20% | 20% | Low | Low |
| Restored riparian buffer | No | 60% | 30% | 35% | Med | Low |
| Infiltration devices | Possible | 85% | 30% | 35% | High | Low |
| Dry extended detention basin | Yes | 50% | 10% | 10% | Med | Med |
| Permeable pavement system | Possible | 0% | 0% | 0% | Low | Med |
| Rooftop runoff management | Possible | 0% | 0% | 0% | Low | Med |

## 4.5. Comparison of BMP Site Constraints

The basic nature of stormwater BMPs often places them in low-lying areas and next to existing waterways, which can put them at odds with other regulations. The designer must always be aware of other regulations when siting BMPs. A non-exhaustive list of possible environmental regulatory issues is provided below:

- Jurisdictional wetlands
- Stream channels
- 100-year floodplains
- Stream buffers
- Forest conservation areas