

**Henderson County North Carolina
Project Management Department
Water Quality**
STORMWATER MANAGEMENT PERMIT APPLICATION FORM

LOW DENSITY SUPPLEMENT
This form may be photocopied for use as an original

A low-density project is one that meets the appropriate criteria for built upon area and transports stormwater runoff primarily through vegetated conveyances. Low density projects should not have a discrete stormwater collection system as defined by 15A NCAC 2H .1002(18). Low density requirements and density factors can be found in Session Law 2008-211, 15A NCAC 2H .1000, Session Law 2006-246 and the State of North Carolina Stormwater Best Management Practice Manual. Curb and gutter systems are allowed provided they meet the requirements in 15A NCAC 2H .1008(g).

I. PROJECT INFORMATION

Project Name : _____
Contact Person: _____ Phone Number: (_____) _____

Number of Lots: _____ Allowable Built Upon Area (BUA) Per Lot*: _____
Number of Dwelling Units Per Acre**: _____

Low Density Development (check one): without curb & gutter with curb & gutter, outlets to (check one):
 Swales Vegetated Area

***If lot sizes are not uniform, attach a table indicating the number of lots, lot sizes and allowable built upon area for each lot. The attachment must include the project name, phase, page numbers and provide area subtotals and totals. BUA shall be shown in units of square feet.**

**** (Phase II Post-Construction [non-SA] only)**

II. BUILT UPON AREA

Refer to Henderson County forms link for specific language that must be recorded in the deed restrictions for all subdivided projects.

Complete the following calculation in the space provided below where:

- SA Site Area - the total project area above Mean High Water.
- DF Density Factor - the appropriate percent built upon area divided by 100.
- RA Road Area - the total impervious surface occupied by roadways.
- OA Other Area - the total area of impervious surfaces such as clubhouses, tennis courts, sidewalks, etc.
- No. of Lots - the total number of lots in the subdivision.
- BUA per Lot - the computed allowable built upon area for each lot including driveways and impervious surfaces located between the front lot line and the edge of pavement.
- Total allowable lot BUA - the computed allowable built upon area for all lots combined.
- Total BUA from lot listing - the sum of built upon area allocated for each lot on the list of non-uniform lots.

Calculation:

For uniform lot sizes:

$$\frac{(\text{SA: } \text{ft}^2 \times \text{DF: } \text{)} - (\text{RA: } \text{ft}^2) - (\text{OA: } \text{ft}^2)}{(\text{No of Lots: } \text{)}} = \text{BUA per Lot} = \text{ } \text{ft}^2$$

For non-uniform lot sizes:

a. $(\text{SA: } \text{ft}^2 \times \text{DF: } \text{)} - (\text{RA: } \text{ft}^2) - (\text{OA: } \text{ft}^2) = \text{Total allowable lot BUA} = \text{ } \text{ft}^2$

b. Total BUA from lot listing: $\text{ } \text{sf.}$ **b must be \leq a**

III. DESIGN INFORMATION

Complete the following table. If additional space is needed the information should be provided in the same format as Table 1 and attached to this form. Rainfall intensity data can be found in Appendix 8.03 of the State of North Carolina Erosion and Sediment Control Planning and Design Manual or at <http://hdsc.nws.noaa.gov/hdsc/pfds/>

Table 1. Swale design information based on the **10-year storm.**

Swale No.	Drainage Area (ac)	Impervious Area (ac)	Grassed Area (ac)	C	Q (cfs)	Slope (%)	V _{allow} (fps)	V _{actual} (fps)	Flow Depth (ft)
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

IV. REQUIRED ITEMS CHECKLIST

The following checklist outlines design requirements per the North Carolina Administrative Code Section 15A NCAC 2H .1000, NCDENR BMP Manual (2007), Session Law 2006-246, and Session Law 2008-211.

Please indicate the page or plan sheet numbers where the supporting documentation can be found. **An incomplete submittal package will result in a request for additional information. This will delay final review and approval of the project.** Initial in the space provided to indicate that the following requirements have been met and supporting documentation is provided as necessary. If the applicant has designated an agent on the Stormwater Management Permit Application Form, the agent may initial below. **If any item is not met, then justification must be attached.** *Only complete items n through p for projects with curb outlets.*

Page/Plan Initials	Sheet No.	
N/A	_____	a. † For projects in the 20 coastal counties: Per NCAC 2H.1005, a 50 foot wide vegetative buffer is provided adjacent to surface waters. For Redevelopment projects, a 30' wide vegetative buffer adjacent surface waters is provided.
N/A	_____	b. † For HQW or ORW projects outside the 20 coastal counties: A 30 foot wide vegetative buffer is provided adjacent to surface waters.
N/A	_____	c. † For Phase II Post-Construction projects: All built upon area is located at least 30 feet landward of all perennial and intermittent surface waters.
_____	_____	d. Deed restriction language as required on form HC-101 shall be recorded as a restrictive covenant. A copy of the recorded document shall be provided to Henderson County Water Quality within 30 days of platting and prior to the sale of any lots.
_____	_____	e. Built upon area calculations are provided for the overall project and all lots.
N/A	_____	f. Project conforms to low density requirements within the ORW AEC. (if applicable per 15A NCAC 2H .1007)
_____	_____	g. Side slopes of swales are no steeper than 3:1; <i>or no steeper than 5:1 for curb outlet swales.</i>
_____	_____	h. Longitudinal slope of swales is no greater than 5%; <i>for non-curb outlet projects,</i> calculations for shear stress and velocity are provided if slope is greater than 5%.
_____	_____	i. At a minimum, swales are designed to carry the 10-year storm velocity at a non-erosive rate.
_____	_____	j. Swales discharging to wetlands are designed to flow into and through the wetlands at a non-erosive velocity (for this flow requirement into wetlands, non-erosive is velocity ≤ 2 ft/s).
_____	_____	k. Swale detail and permanent vegetation is specified on the plans.
_____	_____	l. Swale detail provided on plans; includes grass type(s) for permanent vegetative cover.
_____	_____	m. Swales are located in recorded drainage easements.
_____	_____	n. †† Length of swale or vegetated area is at least 100 feet for each curb outlet.
_____	_____	o. †† The system takes into account the run-off at ultimate built-out potential from all surfaces draining to the system (delineate drainage area for each swale).
_____	_____	p. †† Curb outlets direct flow to a swale or vegetated area.

† Projects in the Neuse, Tar-Pamlico, Catawba River basins, and Randleman Lake may require additional buffers.

†† Only complete these items for projects with curb outlets.

V. SWALE SYSTEM MAINTENANCE REQUIREMENTS

1. Mowing will be accomplished as needed according to the season. Grass height will not exceed six inches at any time; and grass will not be mowed too close to the ground or “scalped”.
2. Swales will be inspected monthly or after every runoff producing rainfall event for sediment build-up, erosion, and trash accumulation.
3. Accumulated sediment and trash will be removed as necessary. Swales will be reseeded or sodded following sediment removal.
4. Eroded areas of the swales will be repaired and reseeded. Swales will be revegetated as needed and in a timely manner based on the monthly inspections. Side slopes must be maintained at the permitted slope.
5. Catch basins, curb cuts, velocity reduction devices, and piping will be inspected monthly or after every significant runoff producing rainfall event. Trash and debris will be cleared away from grates, curb cuts, velocity reduction devices and piping.
6. Swales will not be altered, piped, or filled in without approval from Henderson County Water Quality.

I acknowledge and agree by my signature below that I am responsible for the performance of the six maintenance procedures listed above. I agree to notify Henderson County of any problems with the system or prior to any changes to the system or responsible party.

Print Name and Title: _____

Address: _____

Phone: _____ Date: _____

Signature: _____

Note: The legally responsible party should not be a homeowner’s association unless more than 50% of the lots have been sold and a resident of the subdivision has been named the president.

I, _____, a Notary Public for the State of _____, County of _____, do hereby certify that _____ personally appeared before me this _____ day of _____, _____, and acknowledge the due execution of the forgoing swale maintenance requirements.

Witness my hand and official seal,

Notary signature

SEAL

My commission expires _____