STORMWATER SUBMITTAL REQUIREMENTS

LOW DENSITY

Subdivisions, Curb Outlet System, Non-subdivision

I. Objectives

A. Limit amount of built-upon surfaces per the most current rules.
B. No collection systems (limited piping-only enough to get under a road, no inverted crown streets)
C. Sheet flow
D. No area of the project of such high density that runoff threatens water quality. (i.e., pocket of high density).

II. What makes up a complete low-density application package?

A. Two sets of layout & grading plans with road details and a swale drainage area map for curb outlet systems. Unrelated plan sheets such as water/sewer profiles or details are not necessary. (Additional sets of plans may be requested for projects in certain counties)
B. Completed application with supplement(s), SWU-101, SW401-Low Density, SW401-Curb Outlet, SW401-Grassed Swale .
C. Deed restrictions, if applicable.
D. Curb outlet swale calculations if applicable.
E. Chlorides test results must be provided if the project is within ½ mile of SR waters (Phase II). (This is only required to test out of SR water treatment requirements)

III. BIMS entry (for Henderson County use only)

Enter & track submittal dates, add info requested/received dates, permit issue dates, and drainage area info. Best done after the add info letter is written and before sending permit up for signature.

IV. Shell documents (for Henderson County use only)

Permit shells: s:\wqs\stormwater\shells\lowother (for non-subdivisions)
s:\wqs\stormwater\shells\lowsub (for subdivisions with no C&G)
s:\wqs\stormwater\shells\lowsubcg (for subdivisions w/C&G)

Calculations: s:\wqs\stormwater\excel spreadsheets\curb&gutter

V. **Review Procedure-** look for consistency between the various elements of the package- application, plan and calculations.

A. APPLICATION

1. Original signature required. Photocopied signatures cannot be accepted.
2. If an agent signs the application, a signed letter of authorization from the applicant must be provided which includes the name, title, mailing address and phone number of the person signing the letter.
3. Correct supplements are provided – low density and/or curb outlet supplement and grassed swale supplement (no low-density supplement needed for projects that do not propose to subdivide and sell lots.)
4. Built-upon areas must be reported in square feet in Section III.6 of the application.
5. Within Phase II counties, BUA limits are 12% within ½ mile and draining to SR waters, and 24% for all others.
6. Receiving stream name and classification. This is important because of the various density limits.
7. Section III.6 is filled in-cannot be left blank. For low density, only one column is filled in unless either a pocket of high density is formed, or the project drains to different classifications of water bodies, which result in different BUA limits.
8. If the applicant is a corporation, partnership or LLC, look it up on the Secretary of State Corporations Database. Make sure corporation is spelled correctly (capitalization and punctuation matter) and that the person signing the application is at least a vice-president in the corporation, a General Partner in the partnership, a member in a member-managed LLC, or the manager of a manager-managed LLC. Need documentation to support if the Articles of Incorporation do not list the members or managers of the LLC. If an agent signs, then a letter of authorization is needed from the president, vice president, general partner, member or manager.
9. For subdivided projects, a signed and notarized deed restriction statement must be provided.

B. CALCULATIONS

1. Found at the top of page 2 of the low-density supplement. Follow the formula to get the allowable BUA per lot. For non-subdivision projects, a supplement form is not required and the calculations in Section III.6 of the application will suffice. For subdivision projects with varying lot sizes and BUA's per lot, the calculation would only be done to the point that the total BUA available for the lots is determined. Do not divide by the number of lots.
2. If wetlands are present, the applicant must calculate the site area to be used in the BUA per lot calculation by following the calculation methods outlined in the wetlands policy.
3. For curb outlet systems, swale velocity calculations are required, to include the individual swale drainage area, the built-upon area within each drainage area, and the Rational C-value calculated for each DA.
4. If a pocket of high density is formed, the application must include an engineered control suitable for the classification of the receiving waters.

C. **PLANS-** Plan sheets should be kept to a minimum. In general, depending on the size of the project, the plan set should consist of 1-4 sheets with the following information provided:

1. Development/Project Name
2. Engineer name and firm.
3. Legend containing all of the symbols used on the plans.
4. North Arrow
5. Location Map with nearest intersection of two major roads shown. Major road is any 1, 2, or 3 digit NC, US or interstate highway.
6. Scale- standard engineering scale, no off-the-wall stuff.
7. Date
8. Revision number and date, if applicable.
9. Original contours, proposed contours, spot elevations, finished floor elevations, pipe inverts, swale inverts, etc.
10. Existing drainage (piping, swales, ditches, ponds, etc.), including off-site. Include a map delineating the offsite drainage areas.
11. Property/Project boundary lines, bearing & distances.
12. Mean High Water Line, or Normal High Water line if applicable.
13. Drainage easement location and width.
14. Wetlands, whether they are disturbed or not, are delineated, or provide a note on the plans that none exist. Provide a copy of the wetlands delineation map signed by the Corps of Engineers, or include a copy of the unsigned delineation map that was submitted to the Corps.
15. Details for the roads, parking area, cul-de-sac radii, sidewalk widths, curb and gutter, all dimensions & slopes. Note if dimensions are face of curb to face of curb (FC-FC) or back of curb to back of curb (BC-BC).
16. Apartment / Condo development- Provide a typical building footprint with dimensions and note all concrete and wood deck areas.
17. The drainage area for each curb outlet swale is clearly delineated and numbered to match up to the calculations and supplement. Only swales that actually receive road runoff have to be curb outlet swales with 5:1 side slopes. Delineation is best done as a separate plan sheet.
18. A curb outlet swale detail noting the 5:1 or flatter side slopes, the 100' minimum length and the type of grass to be planted on the side slopes.
19. A level spreader is provided at the end of all swales that will drain into wetlands or surface waters. Level spreader O & M is provided.
20. For those low-density projects within ½ mile of and draining to SA or SR waters, additional BMP's are required to be shown on the stormwater plans such that no discharge from the site occurs. This is done on behalf of the Division of Marine Fisheries.
21. For Phase II low density projects draining to SR waters make sure that the project complies with the following:
    a. No new points of stormwater discharge. Diffuse flow of stormwater at a non-erosive velocity to a vegetated buffer capable of providing effective infiltration of the runoff from the 1 year 24-hour storm shall not be considered a direct discharge.
    b. No increase in the volume of stormwater flow or the capacity of an existing stormwater conveyance system that drains to SR waters.
    c. Modifications to existing stormwater conveyance systems within the contributing drainage basin do not increase the net amount or rate of stormwater discharge through existing outfalls to SR waters.