EXHIBIT A:

TOWN OF GARNER OPERATIONS AND MAINTENANCE MANUAL FOR STORMWATER CONTROL MEAURES(S)

Project Name:	
Project Number:	
Project Address:	
PIN of Project:	
Property Owner/Responsible Party:	
Address of Responsible Party:	
Email Address:	
Prepared by:	
Date:	

The annual inspections and routine maintenance of any Stormwater Control Measure (SCM) installed to achieve nitrogen loading and/or flow attenuating requirements for a development shall be the responsibility of the property owner or other identified responsible party. In the case of residential or commercial subdivisions, Home Owners Associations or Merchants Associations must be established in order to identify the responsible party. Any sale of this property binds this agreement to the new property owner.

This manual establishes general procedures for maintenance and operation of the allowed SCM types in accordance with the Town of Garner Stormwater Program for Nitrogen Control and the North Carolina Division of Environmental Quality (NCDEQ) Stormwater Control Measures Design Manual. It is important to note that only general maintenance tasks are identified here. All devices shall be maintained to original design standards. This agreement shall be signed and notarized in conjunction with a Memorandum of Agreement by the responsible party to perform the tasks specified in the plan, including inspections, operation, and any needed maintenance activities.

I. Background

Identify the types of SCMs located on the site and give a brief description on their design. If you need additional space please attach separate pages to this document.

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II. Annual Inspections and Certification and Maintenance Requirements

All property owners are required to perform an inspection of their owned and maintained SCMs on an annual basis based on the fiscal calendar that begins July 1 and ends June 30 of the following year. This inspection should be completed and certified by a qualified professional. Private property owners shall provide to the Town of Garner Engineering Department staff annually: a maintenance report along with detailed findings for the inspection, a certification letter sealed by a qualified professional that the SCM system(s) are functioning as originally designed or if not, a list of any required deficiencies or repairs to be completed along with a projected maintenance timeline.

The property owner/responsible party will have 90 days to correct all deficiencies and make all repairs to the satisfaction of the Town Engineer. Once repairs have been completed, the property owner shall resubmit a certification letter with an updated maintenance report to the Town of Garner Engineering Department staff for review and sign off. Failure to provide a certification letter that the SCM is functioning as originally designed or failure to satisfactorily complete the required repairs within the 90 days shall be constitute that the SCM is operating improperly and will cause the SCM to be declared a nuisance as provided for in Section 6-17 of the Garner Town Code and shall also constitute a violation of the Town's Unified Development Ordinance (UDO) subject to the issuance of civil penalties and other remedies. Abatement of the nuisance may proceed as provided for in Chapter 6, Article II of the Garner Town Code or as provided for in the UDO.

All property owners shall retain a copy of any and all documentation that pertains to inspections, maintenance and certifications performed for their individual SCM(s) for a five (5) year period and make those records available to Town of Garner Engineering Department staff upon request.

III. Maintenance of SCMs

A. Riparian Buffers – Extra land in addition to required riparian buffers that is used for nitrogen reduction should be left in an undisturbed condition. Only maintenance activities allowed by the buffer rules would be allowed. Any level spreaders used to diffuse flow into the buffer should be maintained as required in section II.B.2.

B. Vegetated Filter Strips with Level Spreaders – Maintenance requirements are as follows:

1. At least once annually, remove deposited sediment, especially from the upstream edge, to maintain original contours and grading.
2. Repair channels that form and regrade the filter strip to ensure that the runoff flows evenly in a thin sheet over the filter strip.
3. Repair level spreader whose disrepair can cause the formation of channels in the filter strip.
4. Reseed and regrade the filter strip to maintain a dense growth of vegetation, especially if the strip has been used for sediment control.
5. Grassed filter strips shall be mowed at least twice annually to a minimum height of six inches.

C. Open Channel Practices – Maintenance shall be performed as follows:

1. At least once annually, remove excess sediment, especially from the upstream edge, to maintain original contours and grading.

2. At least once annually, repair any erosion and regrade the swale to ensure that the runoff flows evenly in a thin sheet through the swale.
3. At least once annually, inspect vegetation and revegetate the swale to maintain a dense growth of vegetation.
4. Grassed swales shall be mowed at least twice annually to a minimum height of six inches.

D. Bioretention – Ongoing monitoring and maintenance is vital to the overall success of bioretention areas. Annual maintenance will be required for plant material, mulch layer, and soil layer. A maintenance schedule should include all of the main considerations discussed below:

1. Soil and mulch layer maintenance will most likely be limited to correcting areas of erosion.
2. Replacement of mulch layers may be necessary every two or three years.
3. Mulch should be replaced in the spring.
4. When the mulch layer is replaced, the previous layer should be removed first.
5. Plant material upkeep will include addressing problems associated with disease or insect infestations, replacing dead plant material, and any necessary pruning.
6. Mowing on a quarter basis for all grassed systems.

E. Constructed Wetlands – Wetlands will tend to collect debris, and it should be removed whenever it accumulates, or at least twice annually. Wetlands should be inspected annually after a rain even to ensure that the basin is operating as designed. At a minimum, items that should be included in the inspection are:

1. Clogging of the outlet or too rapid a release.
2. Erosion on the banks.
3. Erosion at the inlet and outlet.
4. Sediment accumulation and the need for removal.
5. Condition of the emergency spillway.
6. Woody vegetation in the embankment.

F. Sand Filters – Maintenance requirements are as follows:

1. Sand filters should be inspected at least once per month and after any large rain event to check for damages.
2. Sediment should be cleaned out of the forebay/sedimentation chamber when it accumulates to a depth of more than six (6) inches.
3. Any structures (outlets, flow diversions, embankments, etc.) should be checked at least annually for damage or degradation.
4. Once a year, the sand media will be skimmed.
5. Once a year the sand filter media will be replaced whenever it fails to function properly after vacuuming.
6. The sand filter will be inspected quarterly and within 24 hours after every storm event greater than 1.0 inches.

G. Wet Retention Ponds – Maintenance requirements are as follows:

1. Debris and litter control checks for inlet, outlet, and orifice obstruction after every storm producing runoff.
2. Provisions for routine vegetation management/mowing and a schedule for these activities.
3. Checks every 6 months, or more frequently, for:

    a. Sediment buildup and the need for removal.
    b. Erosion along the bank and the need for reseeding or stabilization and, if reseeding is necessary, a reseeding schedule.
    c. Erosion at the inlet and outlet and methods of stabilization.
    d. Seepage through the dam.
    e. Operation of any valves or mechanical components.

H. Dry Detention Ponds - Maintenance requirements are as follows:

1. All grassed areas of an extended dry detention basin should be mowed to a maximum height of six inches.
2. Reseeding of any areas not germinating with ground cover. Periodic reseeding may be required to establish grass on areas where seed did not take or has been destroyed. Before seeding, fertilizer (12-12-12) shall be applied at a minimum rate of 12 to 15 pounds per 1000 square feet. The seed should be covered with soil to a depth of approximately ¼ of an inch. Immediately following the planting, the area should be mulched with straw. At a minimum, semi-annual maintenance should include seeding and fertilizing of the dry detention basin which shall be performed by the grounds keeping contractor or individual otherwise noted.
3. Extended dry detention basins will tend to collect debris. It should be removed whenever it accumulates, or at least quarterly.
4. The basin should be inspected annually and after a rain event of more than one inch to ensure that it is operating as designed and that debris is removed from inlets and outlets and the crest of the spillway.
5. At a minimum, items that should be included in the annual inspection and addressed are:

    1. Clogging of the outlet or too rapid a release
    2. Erosion on the banks
    3. Erosion at the inlet and outlet
    4. Sediment accumulation and the need for removal
    5. Condition of the emergency spillway
    6. Woody vegetation in the embankment and condition of embankment. Embankments shall be kept clear of any woody vegetation. Rip rap pads, channels and slope protection shall be repaired or replaced, as needed.

I. Proprietary SCMs – Maintenance requirements will be based on the approved plans per manufacturer subject to DEQ approval.

J. Other SCMs – Maintenance requirements will be based on the approved plans subject to DEQ approval.