



Stormwater Operation and Maintenance Plan

BIORETENTION CELL

Regular inspection and maintenance are necessary to preserve long-term functionality of Stormwater Control Measures “SCMs” per the original design intent. This Plan outlines the Town of Chapel Hill requirements for regular inspection and maintenance of Bioretention Cell SCMs. The Owner as defined in the Agreement shall keep a copy of this Stormwater Operations and Maintenance Plan, the SCM Inspection and Maintenance Log, and a copy of the approved As-Built Plans in a known set location and made available to the Town of Chapel Hill upon request.

Annual inspections shall be performed by a qualified licensed Professional Engineer or Landscape Architect. Routine maintenance and inspection shall be performed by a qualified professional with NCSU Stormwater Inspection and Maintenance Certification or similar certification.

The qualified professional shall maintain a **SCM Inspection and Maintenance Log** and make available to the Town of Chapel Hill upon request. All inspections shall be recorded in the log according to the frequency in the Inspection and Maintenance Table (Table 1 below) and within 24 hours after storm events that exceed 1.0 inch of rainfall. Any deficit SCM elements noted during inspection shall be recorded in the log and immediately corrected, repaired, or replaced. All routine and corrective/emergency maintenance activities shall be recorded in the log. The log template can be found at the Town of Chapel Hill Stormwater Control Measures [website](#).

An **Annual Inspection and Maintenance Report** shall be submitted to the Town of Chapel Hill Stormwater Department. The report shall detail the status of the SCM and maintenance performed as outlined in the [SCM Inspection Report Guidelines](#). A copy of the annual report shall be submitted to the Town of Chapel Hill Stormwater Management Division beginning one year after issuance of the Certificate of Occupancy.

REQUIRED INSPECTION AND MAINTENANCE TASKS FOR BIORETENTION CELL

NOTE: The following inspection and maintenance table is not an exhaustive list of inspection and maintenance tasks. It is the responsibility of the professional inspecting the facility to perform comprehensive maintenance for the SCM to be operational.

Table 1: Inspection and Maintenance Provisions for Bioretention Cell

FREQUENCY OF INSPECTIONS	MAINTENANCE ACTIVITIES
Upon construction completion	<ul style="list-style-type: none"> • Watering is needed twice a week until the plants become established (commonly 6-8 weeks) and then as needed during first growing season (April-October), depending on rainfall. • Remove and replace dead plants. • Remove any tree stakes or wires six months after planting.
Once every quarter	<ul style="list-style-type: none"> • Mow any bioretention with turf cover to a height of approximately six to eight inches and remove grass clippings. • Check inlet, collection system and outlet device for clogging. Remove accumulated grit, leaves, debris and any other obstructions and dispose off-site. • Inspect for ponding and bare or eroding areas and make adjustments as necessary. • Remove trash and/or debris from the bioretention area.
Twice during the growing season	<ul style="list-style-type: none"> • Pull out weeds and dead, diseased, or invasives plants preferably by hand.
Annually	<ul style="list-style-type: none"> • For bioretention areas without turf cover, supplement triple shredded hard wood mulch in devoid areas to maintain a maximum 3 inch layer. • Prune trees and shrubs to best professional practice. Thin vegetation so that sunlight can penetrate the bioretention surface. • Inspect the observation/cleanout wells to ensure that the underdrain is functioning. If clogging has occurred, wash out the underdrain. • Inspect all structural elements. • Conduct a soil test for pH and heavy metals and determine the infiltration rate.
Once every 2-3 years	<ul style="list-style-type: none"> • For bioretention areas without turf cover, remove and replace the mulch layer with triple shredded hard wood. The ideal time to reapply mulch is in the late spring. • An extensive replanting is required if 50% minimum coverage throughout the basin is not achieved in the bioretention after the second growing season.
Once every 5 to 7 years	<ul style="list-style-type: none"> • Perform facility “make-over” to maintain intended landscaping regime and address any maintenance problems detected during routine inspections. After 5 growing seasons, the vegetation should achieve 75% coverage.
As Needed (Typical Problems)	<p>Vegetation</p> <ul style="list-style-type: none"> • If the bioretention cell suffers from dead or diseased plants or overgrown with invasive species, evaluate the source of the problem: soils, hydrology, species, and/or type of disease to determine the cause of the plant failure. <ul style="list-style-type: none"> ○ Remediate the problem by selecting new species and/or implementing an eradication plan for invasives.

- Ensure appropriate plant maintenance is occurring.
- A one-time fertilizer application to establish ground cover is permissible if a soil test indicates it is necessary. No portion of the dry detention system shall be fertilized after the initial fertilization that is required to establish the vegetation.
- Consult with the Town of Chapel Hill Stormwater Management Division before any aquatic herbicide is used and site specific approval is given.
- If vegetation coverage is not achieved, add reinforcement planting to maintain desired vegetation density and/or split out perennials to increase plant cover. Desired vegetation coverage is 50% after 2 growing seasons and 75% after 5 growing seasons
- Remediate bare soils or erosive gullies.
 - In perimeter areas, regrade the soil to remove the gully, plant a ground cover and water until it is established. If soil test shows that the pH has dropped, dolomitic lime shall be applied as recommended.
 - Within the pretreatment area, provide erosion control devices such as reinforced turf matting or riprap to avoid future problems with erosion.

Filter Media Failure

- If the bioretention area shows signs of clogging, identify source of sediment and work to remediate or eliminate it before proceeding with the following maintenance tasks.
 - Flush the underdrains and capture any sediment before it enters any downstream stream or storm drain system.
 - Conduct one or more test pits to determine the depth of soil contamination.
 - Before remediating the filter bed, remove and temporary store any plants.
 - Remove the accumulated sediment to the point where sediment is no longer observed in the soil media plus an additional 2 inches of soil. Either replace with new media or till 2 to 3 inches of sand into the upper 8 to 12 inches of soil.
 - Dispose of any removed soil in an appropriate off-site location.
 - Replant and mulch the area of disturbance.
- If soil test shows that the pH has dropped, dolomitic lime shall be applied as recommended.
- If the soil test shows that heavy metals have accumulated, the toxic soils shall be removed, disposed of properly, and replaced with new planting media.

Structural Integrity

- Replace or repair any cracked, separated or damaged inlet pipes, drop inlets, overflow structure, outfalls, impoundment walls or other structural elements.

Functionality

- If flow is bypassing the pretreatment area, regrade to route all flow to the pretreatment area.
- Sediment Accumulation
 - Maintain stable ground cover in the drainage area.

- Sweep or vacuum sediment on pavement in the contributing drainage area.
- If sedimentation or clogging is occurring in the inlet, design modification may be needed to ensure adequate drop or slope between inlet and filter bed.
- If sediment has accumulated in the forebay area or basin reducing its depth to 75% of the original design depth, remove the sediment, restabilize the area, and replace with clean rock. Search for the source of the sediment in the drainage area and remedy the problem if possible.
- If greater than one feet of localized bed sinking and/or sediment is observed by the underdrain or overflow, conduct a test pit excavation by hand to examine subsurface conditions. Look for sediment across layers, discoloration, voids, loss of material. Cause of bed sinking may be breached material layers, poor connections, or damaged pipes. Repair the test pit to full functionality without cross contamination of the individual material layers.

For additional information or if damage has occurred at the outlet which effects the receiving water, contact the Town at Chapel Hill Stormwater Management at 919-969-7246 (RAIN).