

ATTACHMENT A –

LTMA TEMPLATE REFERENCE INFORMATION

- **GENERAL REFERENCE INFORMATION ON THE INSPECTION AND MAINTENANCE ACTIONS TO BE TAKEN FOR MORE COMMONLY UTILIZED SCMS**
 - **GENERAL REFERENCE OF REGULATORY RESTRICTIONS OF NO-DISTURB RIPARIAN BUFFERS**
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REFERENCE OF GENERAL INSPECTION MAINTENANCE ACTIONS REQUIRED FOR THE MOST FREQUENTLY UTILIZED SCMs.

DRY PONDS

- Inspection
 - Ponds should drain within 72 hours of last rain event.
 - Not draining in this timeframe could indicate drainage issues.
 - Check for buildup is on top of outlet structure grate. Possible indicator of drainage issues.
 - Check for woody vegetation growth within the basin and around structures.
 - Check for buildup of sediment and debris around structures and within the basin.
 - Check for erosion around structures and on the berm of the pond.
 - Inspect discharge structure (located outside the pond) for issues such as woody vegetation, erosion, or structural damage.

- Maintenance
 - Mow at least twice per year to prevent the growth of woody vegetation.
 - Remove any woody vegetation growing within the pond or near structures.
 - Remove trash buildup within the pond and around structures as needed.
 - Remove any buildup obstructing the outlet orifice of the outlet structure or within the structure itself.
 - Stabilize exposed soils on the berm and around structures as needed.
 - Reseed bare areas as needed.
 - Sediment buildup equal to 50% or more of the structures' pipes circumference should be removed and area stabilized afterwards.
 - Stabilize any areas of moderate to heavy washout (particularly areas directly under or behind structures).
 - Repair any damaged or missing parts (i.e. riser pipes, pipe to headwall, etc.) to the structures.
 - Address any drainage issues noted.

REFERENCE OF GENERAL INSPECTION MAINTENANCE ACTIONS REQUIRED FOR THE MOST FREQUENTLY UTILIZED SCMs. (CONTINUED)

Note: Visit manufacturer website to determine all inspection and maintenance needs as each unit is different based on make and model.

**PROPRIETARY
DEVICE
(WATER QUALITY
UNIT)**

- Inspection
 - DO NOT ENTER UNIT WITHOUT PROPER TRAINING AND EQUIPMENT (Confined Space).
 - Observe from manhole/hatch opening the amount of debris, oil, and sediment buildup within the unit. (Note some units will have multiple openings).
 - Sediment for most units cannot be observed due to units holding a standard amount of static water. Sediment levels must be measured.
 - Recommend using tools like a sediment level stave, stadia rods, or chimney rods.
 - Check for any loose, detached, missing, or deteriorated parts.
 - Some units have parts that must be replaced often due to the amount of material being treated or lifespan of the part.
 - To determine if some parts need replacing, the unit may need to be entered by personnel that have confined space training and confined space equipment.

- Maintenance
 - Please refer to the specific Maintenance Manual for the unit for accurate guidance of when unit should be maintained.
 - Debris buildup should be removed usually when covering 50% or more of unit.
 - If you can't see the water or parts of the unit due to build up, then the debris needs to be removed.
 - Clean out unit if you observe a strong odor of product or heavy oil sheen covering the surface of the water of the unit.
 - Clean out unit if sediment buildup is measured at over foot or 75% of the sump capacity (each unit's cleanout threshold is different).
 - Some units can have well over foot of buildup before they need to be cleaned.
 - Some units can only have several inches of buildup before they need to be cleaned.
 - Replace or repair any parts observed to be damaged, missing, or spent.
 - Materials removed from units must be properly disposed of.
 - Specialized equipment such as a vacuum truck with a pump and a tank is usually needed to properly clean out (sediment, trash, and oil) units.

REFERENCE OF GENERAL INSPECTION MAINTENANCE ACTIONS REQUIRED FOR THE MOST FREQUENTLY UTILIZED SCMs. (CONTINUED)

**BIORETENTION
BASINS/URBAN
BIORETENTION**

- Inspection
 - Basin should drain within 24 to 48 hours of last rain event.
 - Ponding water observed in or after this timeframe could be an indicator of infiltration issues.
 - Check for buildup of mulch or debris on top of the overflow grate.
 - Possible indicator of infiltration issues.
 - Check for deteriorated mulch layer.
 - Check for washout in the forebay, basin, and/or level spreader.
 - Check for erosion on the berm, around check dams, and structures.
 - Check for dead or missing vegetation. Is there approximately 75% canopy cover?
 - Check for invasive vegetation growth.
 - Check for areas of excessive debris and sediment build up.
 - Ensure proper ponding capacity within the basin.
 - Standard is 6 inches from the top of mulch layer to the grate of the overflow structure or berm if bio does not have overflow structure.
 - Check for any signs where planned run-off could be bypassing the bio.
 - Monitor to ensure water ponds up in the basin and is not directly flowing into any overflow structures.
 - Check for missing/damaged cleanout caps.
 - Check for any buildup within the overflow structure.

- Maintenance\
 - If infiltration issues are noted:
 - Check for possible underdrain for blockage.
 - Top layer of bio-media soil may need to be removed/tilled.
 - Ensure bio has proper ponding capacity.
 - Remove any excessive build up that was observed in the bio.
 - Recommend replacing mulch layer every three years.
 - Remove the old mulch layer before adding a new mulch layer.
 - Add new mulch layer to washed out/deteriorated areas of bio.
 - Remove any remanent of old mulch layer before adding new mulch layer.
 - DO NOT ADD NEW LAYERS OF MULCH OR RIVER ROCK ON TOP OF OLD LAYERS. REMOVE OLD LAYERS BEFORE ADDING NEW LAYERS.
 - Replant dead or missing vegetation with plants similar to the original landscape plan
 - Remove invasive vegetation as needed.
 - Do not allow basin to become grass-lined.
 - Stabilize any erosion occurring in the basin, around structures, or areas that drain into the bio as needed.
 - Remove any excessive sediment and debris build up occurring in the bio or in/on the overflow structure.
 - DO NOT PLACE OR USE HEAVY EQUIPMENT (SUCH AS RIDING LAWNMOWERS) WITHIN THE BIO.
 - Address any washout in forebay and level spreader as needed.
 - Ensure all flow paths to the bio are not obstructed.
 - Repair or replace any missing cleanout caps.

REFERENCE OF GENERAL INSPECTION MAINTENANCE ACTIONS REQUIRED FOR THE MOST FREQUENTLY UTILIZED SCMs. (CONTINUED)

**PERMEABLE
PAVEMENT/
PAVERS**

- Inspections
 - Check for sediment, debris, and vegetation build up.
 - Check for damage or raveling of the surface material.
 - Check for loose pavers and lack of aggregate between pavers.
 - Check for erosion occurring around the pavement.
 - During rain events, check for signs of sheet flow and long durations of ponding.
 - Check for too much or too little gravel in permeable grid systems.
 - Note: Some grid systems are grass-line, and maintenance will differ from usual permeable pavement.

- Maintenance
 - Specialized equipment may be needed to maintain and restore pavement functionality.
 - Vacuum Sweeper
 - Recommend setting up a sweeping routine to help maintain pavement.
 - Remove sediment covering the pavement and clean further if needed.
 - Remove excessive sediment, asphalt residue, leafy debris, and vegetation build up on the pavement.
 - If infiltration issues are noted (sheet flow or long duration of ponding), the use of vacuum sweeping and/or pressure washer may be necessary.
 - Stabilize any erosion that causes sediment to discharge onto the pavement.
 - Repair or restore damaged areas if infiltration issues are noted.
 - Add the proper size aggregate in void gaps and between loose pavers.
 - Do not place, discharge, or store: concrete/asphalt material, oil, adhesive materials, and mulch on the pavement.

REFERENCE OF GENERAL INSPECTION MAINTENANCE ACTIONS REQUIRED FOR THE MOST FREQUENTLY UTILIZED SCMs. (CONTINUED)

**WET POND/
EXTENDED
DETENTION**

- Inspection
 - Check for erosion on the banks, berm, and around structures.
 - Check for washout of the check dams of the forebay.
 - Measure sediment buildup within the forebay.
 - Ensure pond has permanent pool of water (other than extended drought periods).
 - If not, check for areas of blow-out, openings in the outlet pipe, open valve of outlet structure, or damage to liner (if applicable).
 - Check for any damage or exposed liner if installed.
 - Check for woody vegetation growth within the forebay and around structures.
 - Cattails are invasive and not ideal, but may remain as long as not present near structures.
 - Check for trash and debris buildup within the forebay, within the pond, and around structures.
 - Check for damaged or loose pipe to structure connections.
- Maintenance
 - Stabilize exposed soils or erosion occurring within the pond, forebay, or around structures as needed.
 - Replace washed-out rock of the forebay as needed.
 - Remove woody vegetation from forebays and around structures.
 - Repair any damaged or leaking liners. Cover exposed liners as necessary.
 - If pond is dry, determine the cause and address as necessary.
 - Check outlet pipe for openings and seal if needed.
 - If over 50% of sediment build up in forebay, remove build up.
 - At some point, the permanent pool of the pond may have to be dredged to restore pond function and capacity.
 - Remove trash and debris buildup within the pond, forebay, and around structures as needed.
 - Repair any damage to structures or other components.

REFERENCE OF GENERAL INSPECTION MAINTENANCE ACTIONS REQUIRED FOR THE MOST FREQUENTLY UTILIZED SCMs. (CONTINUED)

**WATER QUALITY
SWALES/
GRASS
CHANNELS**

- Inspection
 - Check for erosion on the berm and around structures.
 - Check for bare areas in the basin.
 - Check for invasive woody vegetation growth.
 - Check for washout of check dams.
 - If mulch or river rock-lined, monitor for washout of material.
 - Check for dead/missing planned vegetation where applicable.
 - Check for any areas where flow could be bypassing swale.
 - Check for sediment build up around inlet areas and within the basins.
 - Check for trash and debris around structures and within the swale.
 - Check for excessive buildup of material around outlet structure.
 - Check for damaged/missing cleanout caps where applicable.

- Maintenance
 - If WQ Swale has engineered soil and is grass-lined, do not mow with commercial mowers or use other heavy equipment.
 - Recommend allowing grass to grow taller than usual.
 - Stabilize exposed soils and erosion occurring on the berm and around structures.
 - Remove any sediment buildup in the inlet areas that could cause bypass or obstruct flow.
 - Address washout of check dams or surface material (mulch/river rock) as needed.
 - Remove excessive trash and debris build up within the basin and around structures.
 - Remove any buildup of material that is covering or obstructing the outlet structure.
 - Remove invasive woody vegetation as needed.
 - Reseed or stabilize bare areas as needed
 - Replant vegetation where applicable.
 - Repair/replace cleanout caps where applicable.
 - Address any areas where planned run-off could bypass swale/treatment.
 - Remove excessive sediment build up in the swale.

REFERENCE OF GENERAL INSPECTION MAINTENANCE ACTIONS REQUIRED FOR THE MOST FREQUENTLY UTILIZED SCMs. (CONTINUED)

GREEN ROOF

- Inspection
 - Check for dead/missing planned vegetation.
 - Check for leaks. Inspect waterproof membrane for leaks or cracks.
 - Check for roof holding water or not draining properly.
 - Check for invasive vegetation.
 - Inspect at least twice a year during growing season.
 - Check for any other damage to the green roof.
 - Check for any roof drains to the green roof for any buildup.
 - Develop a plan for accessibility for both inspections and maintenance.

- Maintenance
 - Water plants to promote survival (automatic irrigation recommended).
 - Replant dead plants or bare areas with vegetation approved for green roofs.
 - Repair any damage to the garden or with waterproof membrane.
 - If a leak is suspected, it is recommended to have an electric leak survey conducted to pinpoint where repairs are needed.
 - Manually remove invasive vegetation as needed.
 - Replace media as needed. Ensure media used is consistent with green roof standards and is no deeper than the specific design depth.
 - Recommend use of slow release fertilizer for the first few years.
 - Remove buildup obstructing any roof drains to the green roof.
 - Recommend not using herbicides, fungicides, or insecticides on the green roof.
 - If holding water for long duration, determine the reason and address.

REFERENCE OF GENERAL INSPECTION MAINTENANCE ACTIONS REQUIRED FOR THE MOST FREQUENTLY UTILIZED SCMs. (CONTINUED)

**INFILTRATION
TRENCH**

- Inspection
 - Check for vegetation growth in the trench.
 - Check for sediment, debris, and oil build up within the trench.
 - Check for exposed soil or erosion around the trench and entering the trench.
 - Check for drainage area to the trench for bypass issues.
 - Check the trench for proper storage capacity.
 - Check for sediment build up near inlet and pretreatment areas.
 - Check observation well for any signs of clogging where applicable.

- Maintenance
 - Remove vegetation growth as needed.
 - Remove sediment, debris, and oil build up as needed.
 - Removal of sediment and oil may require replacing top layer of material.
 - Stabilize exposed soils and erosion around the trench and leading into the trench as needed.
 - Remove build up at inlets and pretreatment areas as needed.
 - Address any issues of bypass noted in the drainage area to the trench.
 - Do not store or place materials within the trench.

REFERENCE OF GENERAL INSPECTION MAINTENANCE ACTIONS REQUIRED FOR THE MOST FREQUENTLY UTILIZED SCMs. (CONTINUED)

**UNDERGROUND
DETENTION
VAULT**

- Inspection
 - DO NOT ENTER VAULT WITHOUT PROPER TRAINING AND EQUIPMENT (Confined Space)
 - From manhole/access openings observe buildup of debris and sediment within the vault.
 - If a manhole/access opening is located over the outlet control box, inspect for buildup or obstruction in this area.
 - Maintenance
 - Remove heavy debris and sediment build up if occurring in the vault.
- Remove any build up around the outlet control box if obstructing the orifice.

REFERENCE OF GENERAL INSPECTION MAINTENANCE ACTIONS REQUIRED FOR THE MOST FREQUENTLY UTILIZED SCMs. (CONTINUED)

CISTERN

- Inspection and maintenance may require a hired professional to properly inspect and maintain the cistern.
- Inspection
 - Check for buildup in the cistern.
 - Check filters for buildup and deterioration.
 - Check meter readings for issues that could be occurring where applicable.
- Maintenance
 - Please consult with a professional.
 - Remove build up as needed.
 - Replace filters and parts as needed
 - Ensure water is being used and/or drained as needed.

REFERENCE OF GENERAL INSPECTION MAINTENANCE ACTIONS REQUIRED FOR THE MOST FREQUENTLY UTILIZED SCMs. (CONTINUED)

FILTRATION STRIP

- Inspection
 - Check for bare areas.
 - Check for trash and debris buildup.
 - Check for exposed soil or erosion in areas that drain to the strip.
 - Check for excessive sediment buildup.
 - Check for buildup on any outlet structures.
 - Check for woody vegetation growth.

- Maintenance
 - Allow grass to grow taller than usual.
 - Remove any woody vegetation as needed.
 - Remove any excessive sediment, debris, and trash build up.
 - Stabilize exposed soil and erosion as needed.
 - Remove any build up on the outlet structure.
 - Do not store or place material within the filter strip.

REFERENCE OF GENERAL INSPECTION MAINTENANCE ACTIONS REQUIRED FOR THE MOST FREQUENTLY UTILIZED SCMs. (CONTINUED)

REFORESTATION

- Inspection
 - Check for dead or missing planned vegetation.
 - Check for exposed soils or erosion
 - Check for large debris and trash within the area.
- Maintenance
 - Do not disturb the area by removing planted vegetation.
 - Any mowing practices should cease once planted vegetation has established and become dominant in the area.
 - Water trees and other vegetation as needed.
 - Replant vegetation as needed.
 - Reseed bare areas as needed.
 - Remove trash and large debris as needed.
 - Groom planted vegetation as needed.
 - Recommend not disturbing.

REFERENCE OF GENERAL RESTRICTIONS APPLIED TO NO-DISTURB BUFFERS.

BUFFER ZONE RESTRICTIONS

- Buffer Zone 1
 - Buffer Signs usually placed on the property denote the boundary line of buffer zone 1 area
 - Refer to plans for full boundary area
 - Do not disturb (i.e. mow, cut down, prune) vegetation within this area.
 - Do not build, place, or store any structures or materials in this area.
 - Exception for fences (fences placed in buffer zone must be installed with minimal impact and covered surface area in the buffer).
 - Dead, diseased, or dying trees that are in danger of falling or causing damage to dwellings or other structures may be removed.
 - Contact Metro Water Services Stormwater department for approval and/or notification.
(mws.scm@nashville.gov)
 - Debris caused by storm damage can be removed from buffer.
 - Removal of invasive plant species must be approved by MWS Stormwater as removal of invasive vegetation must be replaced by native plantings.
 - A buffer restoration plan for removal of invasive species must be approved by MWS.
 - Woody vegetation growing near approved planned structures (bridges, levees, driveways, “sight distances” for right of way, etc.) within the buffer zone can be maintained.
 - Removal of healthy, established trees will result in the site having to plant back vegetation of equal value.
- Buffer Zone 2
 - Do not build, place, or store any structures/materials in this area.
 - Exception for fences (fences placed in buffer zone must be installed with minimal impact and covered surface area in the buffer).
 - Vegetation within the buffer zone 2 area can be maintained (mowed).