

Operation & Maintenance Plan

Last revised 02/04/2022

Introduction

This Operation and Maintenance (O&M) Plan has been developed in accordance with the Massachusetts DEP Stormwater Management Standard No. 9 to ensure that the stormwater management system functions as designed.

Owner and Responsible Party

As the owner, the Town of Andover shall be the party responsible for adherence to the DEP Stormwater Management Policy after to completion of construction and until a Certificate of Compliance is issued by the Conservation Commission. The Andover School District shall designate a Site Supervisor who shall assume responsibility for this maintenance plan, post construction, after a Certificate of Compliance has been issued.

If the property owner changes, it shall be the responsibility of the Town of Andover to notify the future owner of the stormwater management system and its components, as well as the requirements for operation and maintenance.

The Town of Andover Conservation Commission shall be allowed to enter the property at reasonable times and in a reasonable manner for the purposes of inspection of the systems.

The Andover Facilities Department (Director of Facilities, Janet Nicosia), located at 5 Campanelli Drive in Andover, Massachusetts, shall be responsible for the site maintenance and emergency repairs.

Illicit Discharges

Illicit discharges to the stormwater management system are discharges that are not entirely comprised of stormwater, and any illicit discharge to the stormwater management system is prohibited. The stormwater management system conveys, treats, and infiltrates on-site stormwater and includes stormwater best management practices and any pipes intended to transport stormwater to the groundwater, a surface water, or municipal separate storm sewer system. Notwithstanding the foregoing, an illicit discharge does not include discharges from the following activities or facilities: firefighting, water line flushing, landscape irrigation, uncontaminated groundwater, potable water sources, foundation drains, air conditioning condensation, footing drains, individual resident car washing, flows from riparian habitats and wetlands, dechlorinated water from swimming pools, water used for street washing and water used to clean residential buildings without detergents.

Stormwater Maintenance Activities

The following site maintenance activities are required to maintain optimal pollutant attenuation by the drainage system. A maintenance schedule follows in the next section.

Catch Basins and Manholes

Proper maintenance includes inspection of all grates, sumps, and outlets. Any debris or obstructions should be removed. Structural damage should be recorded and reported. The amount of sediment in each structure should be recorded. The sumps shall be cleaned when they are half full of sediment or debris (approximately 2 feet below outlet pipe.) Catch basin inspection and maintenance shall occur four (4) times per year.

Pavement and Grass Areas

The pavement areas should be swept to remove solids and reduce levels of suspended solids in stormwater runoff. All accumulated trash and litter throughout the site should be collected and discarded.

Water Quality Units

The visual inspection should ascertain that the system components are in working order and that there are no blockages or obstructions in the inlet and separation screen. The inspection should also quantify the accumulation of hydrocarbons, trash, and sediment in the system. Measuring pollutant accumulation can be done with a calibrated dipstick, tape measure or other measuring instrument.

The water quality system should be cleaned when the level of sediment has reached 75% of capacity in the isolated sump; or when an appreciable level of hydrocarbons and trash has accumulated; or as directed by the selected manufacturer to achieve applicable TSS removal regulations; whichever is stricter. Performance will not be impacted until 100% of the sump capacity is exceeded; however, it is recommended that the system be cleaned prior to that for easier removal of sediment. The level of sediment is determined by measuring from finished grade down to the top of the sediment pile. To avoid underestimating the level of sediment in the chamber, the measuring device must be lowered to the top of the sediment pile carefully. Particles at the top of the pile typically offer less resistance to the end of the rod than consolidated particles toward the bottom of the pile. Once this measurement is recorded, it should be compared to the as-built drawing for the unit to determine whether the height of the sediment pile off the bottom of the sump floor exceeds 75% of the total height of isolated sump.

Cleaning of the systems should be done during dry weather conditions when no flow is entering the system. The use of a vacuum truck is generally the most effective and convenient method of removing pollutants from the system. Simply remove the manhole cover and insert the vacuum hose into the sump. The system should be completely drained down and the sump fully evacuated of sediment. The area outside the screen should also be cleaned out if pollutant build-up exists in this area.

In installations where the risk of petroleum spills is small, liquid contaminants may not accumulate as quickly as sediment. However, the system should be cleaned out immediately in the event of an oil or gasoline spill. Motor oil and other hydrocarbons that accumulate on a more routine basis should be removed when an appreciable layer has been captured. To remove these pollutants, it may be preferable to use absorbent pads since they are usually less expensive to dispose than the oil/water emulsion that may be created by vacuuming the oily layer. Trash and debris can be netted out to separate it from the other pollutants. The screen should be cleaned to ensure it is free of trash and debris.

Manhole covers should be securely seated following cleaning activities to prevent leakage of runoff into the system from above and also to ensure that proper safety precautions have been followed. Confined space entry procedures need to be followed if physical access is required. Polluted water or sediments removed from the CDS is to be disposed of in accordance with all applicable local, state and federal laws and regulations including M.G.L.c. 21C and 310 CMR 30.00.

Porous Pavement

The pavement itself acts as pretreatment to the stone reservoir below. Consequently, cleaning and maintenance of the pavement surface is critical to prevent clogging. To keep the surface clean, vacuum sweeping along with jet washing of the pavement is required. No winter sanding shall be conducted on porous surfaces. Snow is to be removed by mechanical means including plow, snow blowing and sweeping as the main means of snow removal. Chlorides (salts) including Sodium Chloride (road salt), Magnesium Chloride, Calcium Chloride and

Potassium Chloride are only to be used after mechanical means have been used and icy conditions still exist, as determined by the School. If salts are used, they shall be applied by hand spreading. Salt is to be evenly spread using the minimal amount necessary to provide adequate melting based on the ice conditions, temperature, and location.

For proper maintenance:

- Minimize salt use during winter months.
- No winter sanding is allowed.
- Keep landscaped areas well maintained to prevent soil from being transported onto the pavement.
- Clean the surface using vacuum sweeping machines.
- Regularly monitor the paving surface to make sure it drains properly after storms.
- Never reseal or repave with impermeable materials.

Inspect the surface annually for deterioration.

Bioretention Areas

Bioretention areas are prone to clogging and failure, so it is imperative to develop and implement aggressive maintenance plans and schedules. Perform inspections and preventive maintenance at least twice a year, and after every time drainage discharges through the high outlet orifice. Inspect the pretreatment BMPs in accordance with the minimal requirements specified for those practices and after every major storm event. A major storm event is defined as a storm that is equal to or greater than the 2-year, 24-hour storm (generally 2.9 to 3.6 inches in a 24-hour period, depending in geographic location in Massachusetts).

Once the bioretention area is in use, inspect it after every major storm for the first few months to ensure it is stabilized and functioning properly and if necessary, take corrective action. Note how long water remains standing in the basin after a storm; standing water within the basin 48 to 72 hours after a storm indicates that the infiltration capacity may have been overestimated. If the ponding is due to clogging, immediately address the reasons for the clogging (such as upland sediment erosion, excessive compaction of soils, or low spots).

Thereafter, inspect the area at least twice per year. Important items to check during the inspection include:

- Signs of differential settlement,
- Cracking,
- Erosion,
- Leakage in the embankments,
- Tree growth on the embankments,
- Condition of riprap,
- Sediment accumulation and
- The health of the turf.

At least twice a year, mow the side slopes. Remove grass clippings and accumulated organic matter to prevent an impervious organic mat from forming. Remove trash and debris at the same time. Use deep tilling to break up clogged surfaces and revegetate immediately.

Remove sediment from the bioretention area as necessary but wait until the floor of the basin is thoroughly dry. Use light equipment to remove the top layer so as to not compact the underlying soil. Deeply till the remaining

soil and revegetate as soon as possible. Inspect and clean drainage structures and inlets associated with basins at least twice a year, and ideally every other month.

The bioretention areas should be inspected and cleaned of any trash or debris on a periodic basis. Plant material in poor health, damaged or dead should be removed and replaced. Grasses which are subsiding or dead will require reseeding with the appropriate seed mixtures. If the bioretention area fails, then all soil media and vegetation shall be removed and replaced per the specified planting plan. Snow should never be stored in the bioretention area.

Subsurface Detention Systems

The inlet and outlet of the system should be inspected and cleared of any debris that might clog the system. The system should be checked to ensure functionality after installation. The area above and immediately adjacent to the infiltration system should be checked for depressions. The area above and adjacent to the system should also be inspected to ensure that no unauthorized modifications have been made.

Sediment Forebay

Sediments and associated pollutants are removed only when sediment forebays are actually cleaned, so regular maintenance is essential. Frequently removing accumulated sediments will make it less likely that sediments will be resuspended. When mowing grasses proximate to the sediment forebay, keep the grass height no greater than 6 inches. Set mower blades no lower than 3 to 4 inches. Check for signs of rilling and gulying and repair as needed. After removing the sediment, replace any damaged vegetation near the forebay by either reseeding or resodding. When reseeding, incorporate practices such as hydroseeding with a tackifier, blanket, or similar practice to ensure that no scour occurs in the forebay, while the seeds germinate and develop roots.

Synthetic Turf Field

Snow Removal

The equipment and experience requirements for snow removal are such that the field designer, JJA Sports, strongly recommends this work be performed by experienced professionals only. A snow and ice management plan requires that proper equipment is used, staff are properly trained, adequate time is provided for proper execution of the work, and that an off-of-the-sports-surface location to store removed snow and ice is available. Check with you turf and track manufacturer for specific instructions to remove snow and ice. Each manufacturer may have requirements that differ from this guide. Further, the removal of snow and ice from a field or track surface may void portions of the warranty if done incorrectly.

The goal of this plan should be:

- In low accumulation storm events on a turf field, less than 2 inches total, with sun pending over the following days it is often necessary to only expose the surface of the turf to the sun which will quickly melt the snow. Twenty or more areas of 20 feet by 20 feet, equally spread out of the surface, will typically generate enough heat to melt the remaining snow.
- Remove dry snow before it accumulates to a 6-inch depth **and always drive straight.**
- Remove wet snow before it accumulates to a 3-inch depth **and always drive straight.** The weight of wet snows in-parts large wheel loads that can damage a turf field surface.
- Minimize pushing snow and ice across main seams of the field system to the extent practical.
- Push the snow to the sidelines from the middle of the field out to avoid long pushes. In cases where the push must go to one side, push the near half first and then push the furthest section afterwards or push snow at one half the depth noted above (4" for dry snow and 2" for wet snow).

- Snow blow accumulated piles of snow off the field edge of the synthetic turf field to a natural grass location to the extent possible before they freeze. Snow blowers shall have synthetic runners to keep blower off the surface.
- Where snow has a crusty surface, it is recommended to break up this surface by driving a Gator or similar vehicle until all areas are broken-up by the action of the tires on the crusty snow.
- A dry crystallize snow can sometimes be removed with the use of backpack or trailer style leaf blowers.
- Never let the snow get ahead of the effort.
- Never carry wet snow in a loading bucket or trailer over any sport surface. The effective load extended out in the bucket creates, multiplies the front wheel loading significantly, and can result in rutting of the turf.
- Never leave piles of snow and or ice on the sports surface.

Ice Removal

See product specific maintenance recommendations for ice removal. Before attempting to remove ice break it up and allow time for warmer air to access the turf surface and initiate melting. Expose small areas of the turf to allow solar radiation to warm the surface and melt the frozen connects to the fibers. Always dig test holes through the full depth of the snow/ice cover to determine conditions before commencing. Recommended removal equipment:

- 40 to 60 hp 4-wheel drive tractor with a PTO and front-end loader with turf tires.
- A ProTech SPO6T synthetic turf specific plow blade. Use this to push snow to the side lines from the center. This can be mounted on the tractor front bucket arms.
- A 6-foot-wide to 7-foot wide high flow rate PTO driven snow blower for removal of sideline piles and general removal of snow from the sports surfaces. Requires surface runners to protect the synthetic turf surface and track. Blower must be capable of throwing snow 40 to 50 feet.
- Backpack or trailer type leaf blower for dry crystalized snow.

Key conditions to avoid:

- Never turn the wheels of a vehicle on a sport surface unless the vehicle is moving.
- Allowing snow and ice to build up over extended periods of time results in the accumulation of snow, heavy wet snow, and ice on the surface. The matrix of these materials is a heavy material with ice freezing the snow to the turf fibers and infill material.
- Rain and slush storms create a layer of ice which freezes to the turf fibers and infill material. Attempting to remove frozen materials from the surface without completely breaking up the surface will remove infill material and turf fibers from your field. Break up this frozen material before attempting remove it.
- Never allow piles of snow to sit on a synthetic sport surface. The weight of these piles is significant and can result in settlements of the surface and differential frost movement in underlying soils. Failure to remove snow piles prior to frost leaving the top surface of the field or track surface can result in wheel rutting the stone base during removal.
- Pushing too large an amount of snow and ice with a plow places excessive pressures on the sports surface/tire interface and can split seams, move turf panels, damage the turf, move sport lines, and tear the track surface. This applies to a deep snow section and too long of a push.
- Starting and stopping the plowing or snow blowing vehicle too quickly, and turning too sharp will shift the center of gravity of your vehicle causing movement of sport-lines, and or tear the turf or track surface. A turn coupled with breaking, force the front corner of your snow removal equipment down and into the into the sport surface with significant force which can cause damage.
- Never lift **wet** snow with a loader if wheels are on the synthetic turf surface or synthetic track surface.
- In cases where snow must be pushed to one side start with the half of the field adjacent to the direction of the push. The far side should be pushed over and past the cleared side. This will decrease the snow load associated with a long width snow cover.

Snow Management

Snow removal operations will adhere to the MassDEP Snow Removal Guidance, dated March 8, 2001. Snow shall be stockpiled as far away from resource areas as possible and removed as necessary under larger snow events. Snow is to be stockpiled along the edges of drives and parking areas. Stockpiling snow in this manner will allow melt-water to enter the drainage system and thereby receive pretreatment prior to discharging to receiving resource areas. Refer to the *Synthetic Turf Field* Section above for specific snow-related maintenance practices on the synthetic turf field.

Snow and ice that has accumulated around catch basin grates shall be removed in accordance with the Stormwater Operation & Maintenance Procedures of this plan.

Winter Salt & Sand Use and Plowing

Application of deicing materials and sand is to be administered as outlined below.

- Porous pavement plazas and walkways:
 - Snow is to be removed by mechanical means including snow blowing and sweeping as the main means of snow removal.
 - Abrasives such as winter sand are not to be used.
 - Chlorides (salts) including Sodium Chloride (road salt), Magnesium Chloride, Calcium Chloride and Potassium Chloride are only to be used after mechanical means have been used and icy conditions still exist, as determined by the School. If salts are used, they shall be applied by hand spreading. Salt is to be evenly spread using the minimal amount necessary to provide adequate melting based on the ice conditions, temperature, and location.
- Standard pavement parking and drives:
 - Snow is to be removed by mechanical means including snow plowing and/or snow blowing.
 - Plowed or blown snow is to be deposited in landscaped areas that drain to the drive/parking area drainage/treatment system.
 - A sand/salt mix is to be spread evenly using mechanical spreaders applying the minimal amount necessary to provide adequate melting based on the ice conditions, temperature, and location.
- Standard pavement walkways:
 - Snow is to be removed by mechanical means including plow, snow blowing and sweeping as the main means of snow removal.
 - Removed snow is to be deposited so that melt water is directed onto the drive and parking area into the drainage/treatment system.
 - Chlorides (salts) including Sodium Chloride (road salt), Magnesium Chloride, Calcium Chloride and Potassium Chloride are only to be used after mechanical means have been used and icy conditions still exist, as determined by the School. If salts are used, they shall be applied by hand spreading. Salt is to be evenly spread using the minimal amount necessary to provide adequate melting based on the ice conditions, temperature, and location.

Maintenance of Lawn and Landscaped Areas

The maintenance plan recommendations provided below are intended to provide guidance in maintaining healthy and aesthetic landscape areas. Aspects of this plan may need to be supplemented or adjusted as necessary based on site conditions, weather impacts and general tree, shrub, and turf observations.

Lawns

General lawn areas should be mowed to a height of 2-1/2" to 3". A good practice for determining mowing frequency is to never remove more than 1/3 of the grass blade length in one mowing. Removing more than 1/2 of the grass plant at a time can put the plant into shock, thus making it more susceptible to stress, disease and weed infestation. Mowing frequency will vary with the growing season and should be set by the plant height and not a set date. It will often be necessary to mow twice a week during periods of surge growth to help maintain plant health and color. Mowing should be cut back during periods of stress and slow growth.

Grass clippings should be left on the lawn for it provides nutrients to the soil and helps retain moisture. If clippings are thick enough to layer the lawn, however, they should be removed. Heavily clumped grass clippings are a sign of infrequent mowing, calling for an adjustment in the mowing schedule.

Vary the mowing pattern to help keep blades upright and to provide for an even cut. To prevent tearing of the blades and loss of color, keep mowing blades sharp.

Aerate annually in the fall, more often in high traffic areas. Aeration reduces compaction and encourages better drainage and incorporation of nutrients.

Native Grass Stands / Prairie Areas or Naturalized Grasslands

Mown maintenance areas along edges of the Native Grass Stands should be mown to a height of 3" to 4" using a sharp blade.

Low maintenance area should be cut once a year. Mowing as low as possible with a mower conditioner or a flail type mower. Timing of the mowing is dependent on the aesthetic and ecological goal. Mowing in late winter / early spring allows food and habitat for overwintering birds and animals. If the early spring window is missed, waiting until after June 30 is recommended because this is when most ground nesting birds have completed incubation and left their nest sites. Fall mowing provides a cleaner look, however it is recommended to leave the cuttings on the ground until spring to provide food for birds. Remove as much of the old plant litter as possible to stimulate new growth. Periodic removal of the lower litter layer is a necessary treatment to achieve new growth and maintain a healthy ecosystem function within the grassland. Removal of old plant litter should occur when the accumulation reaches a 2" to 3" continuous layer of cover on the ground or every three years. If mowing or haying do not provide sufficient impact on old plant litter, scarification of the soil surface with heavy harrows or similar equipment may enhance the treatment effect.

Trees and Shrubs

Tree pruning should be performed on branches that are dead, broken, scarred or crossing. All cuts should be made at the collar and cut flush with the base. Coordinate time of pruning with the following:

- **Deciduous shade trees:** Late winter or early spring for most except for Maples, Elms and Birches, which are best pruned in the fall.

Mulch areas

Maintain a 2"-3" maximum depth and keep free of weeds by hand weeding. Old mulch should be removed in order to maintain a maximum depth of 3". Edges should be maintained in a cleanly edged fashion.

Maintenance Schedule

Catch Basins and Manholes	
Inspect for depth of sediment, obstructions, structural damage, or other malfunction	Four (4) times per year.
Clean sumps of accumulated sediment	Four (4) times per year. (Note: when structures are ½ full of sediment/debris (approximately two feet below outlet pipe), it must be cleaned.)
Bioretention Areas	
Preventative maintenance	Twice per year
Inspect to ensure proper functioning	After every major storm during first 3 months of operation and twice a year thereafter and when there are discharges through the high outlet orifice
Mow the buffer area, side slopes, and basin bottom if grassed floor; rake if stone bottom; remove trash and debris, remove grass clipping and accumulated organic matter	Twice per year
Inspect and clean pretreatment devices	Every other month recommended and at least twice per year and after every major storm event.
Pavement and Grass Areas	
Sweep pavement areas	At least twice per year: after final snow melt and after final leaf fall and as necessary in summer months
Remove accumulated litter, debris, and discarded materials throughout the site	Once per week
Subsurface Detention Structure	
Inspect inlets and outlet and remove any debris	Quarterly in first year; at least twice per year after
Inspect system for functionality	After first major rainfall following installation
Check for depressions in areas above and surrounding the system	Once per year

Confirm that no unauthorized modifications have been performed to the site around (including over) the system	Once per year
Inspect interior of system	Once per year
Water Quality Units	
Inspect for depth of sediment, obstructions, structural damage, and other malfunction	Twice per year in spring and fall
Remove sediment and pollutants	When level of sediment in structure's sump reaches 75% of capacity or when appreciable level of hydrocarbons and debris has accumulated; min once per year.
Grassed Channels	
Inspect vegetation establishment	Periodically for the first few months after installation
Inspect swales/channels for slope integrity, soil moisture, vegetative health, soil stability, soil compaction, soil erosion, ponding, and sedimentation	Twice per year
Perform regular maintenance including mowing, fertilizing, liming, watering, pruning, and weed and pest control	Twice per year
Remove sediment and debris, and periodically re-seed when doing so if necessary	At least once per year
Porous Pavement	
Monitor to ensure that the paving surface drains properly after storms	As needed
Clean the surface using power washer to dislodge particles and then vacuum sweep the area; inspect surface for deterioration	Annually
Assess the capability of water to percolate. When exfiltration capacity is found to decline, implement measures to restore the original exfiltration capacity.	At least once per year
Sediment Forebay	
Inspect for accumulation of sediment	Monthly
Remove accumulated sediment	Quarterly

Turf Maintenance Schedule

The following is a Check List outlines the minimum suggested maintenance practices required to properly maintain the turf sport field. Recommended maintenance practices vary from manufacturer to manufacturer and it is the Owner's responsibility confirm that the following is suitable for their selected surface and that these activities, if performed as directed by the manufacturer, will not impact the provided system warranty.

Activity	Frequency of Activity				
<u>Turf Field Maintenance Table</u>	Daily	Weekly	Seasonally	Yearly	Other
Sweeping Using Lawn Sweeper or Equal		♦			Once Every Week
Pick Up Trash		♦			Once Every Week
Soft Broom Fiber and Infill Grooming					80 to 100 Use Hours
Check and Fill Infill Low Spots	♦	♦			Daily and Before Games
Adjust High Wear Goal Locations (ex. Lacrosse)		♦			Before Practices and Games
Clean Spills					On Occurrence
Clean Bodily Fluids					On Occurrence
Seam and Inlay Inspections			♦	♦	
Metal Tine Infill Decompaction				♦	Conditions may Warrant Higher Frequency
Painted Sport Field Marking Installation			♦		
Painted Sport Field Marking Removal			♦		
Field Infill Depth Checks			♦		
Inspect Fiber Wear			♦	♦	
Clean Infill and Fiber From Adjacent Trench Drains			♦	♦	
Remove Metals with Magnetic Sweep			♦	♦	Football Season Perform Twice
Replace Excessive High Wear Goal and Base Areas					2 to 4 Years
Premium Grooming				♦	Only if Necessary
<u>Attach Manufacturer Specific Activities:</u>					

1. Some of the above activities may not be part of the maintenance recommendations provided by your Synthetic Turf Manufacturer or may impact warranty coverage. Confirm with your provider prior to executing any of the above.
2. Migration of infill and loose fibers can impact performance of surrounding drainage systems which should be cleaned yearly. Groom infill away for trench drain edges at the end of each sports season.
3. Excessive High Wear Goal and Base Areas include areas such as men’s lacrosse goal mouths, baseball and softball batter’s and catcher’s boxes, and pitchers mounds. The combination of infill migration and fiber damage in these areas may warrant replacement of the synthetic turf in these areas prior to field replacement.
4. Maintain infill depth to allow ½ to ¾ inch of exposed fiber. Confirm with Manufacturer.
5. Maintain a log of all maintenance activities to assure compliance with Warranty Requirements.
6. **See Infill Synthetic Turf Snow Removal Recommended Practices Guidelines**

Estimated Annual Maintenance Budget

Maintenance Task	Budget Estimate
Sweeping of on-site pavement	Completed by town staff*
Removal of litter and trash	Completed by town staff*
Quarterly drainage structure sediment removal and disposal via vacuum truck	Estimated Contractor Cost: \$6,000/day Est. 10 structures completed per day Approx. 130 total structures \$78,000 per quarter; \$312,000 annually
Porous pavement: Vacuum and power wash two major parking lots	\$1,500 annually
Porous pavement: Vacuum and power wash sidewalks and field plazas	Completed by town staff*
Bioretention areas: Check media for clogging, general inspection after storm	Completed by town staff*
Bioretention areas: Mow side slopes	Completed by town staff*
North bioretention area: remove sediment from forebay.	Mostly completed in-house If outsourced: \$1,500 per occasion Twice per year: \$3,000 annually
Subsurface chamber systems: Clear debris in inlet and outlet structures	Completed by town staff*
Subsurface chamber systems: check pavement for settling or localized depressions	Completed by town staff*
All turf maintenance	Completed by town staff*
All snow removal	Completed by town staff*

*Categories to be performed by town staff represent typical activities that are customarily completed by the maintenance staff as part of their overall operating budget.

Reporting and Documentation

The designated Site Supervisor for The Town of Andover shall be responsible for maintaining an accurate Site Maintenance Log. The Site Maintenance Log shall be located on site and made available to the Town of Andover Conservation Commission upon request.

The Site Maintenance Log shall:

- Document the completion of planned maintenance tasks
- Identify the person responsible for the completion of tasks
- Identify any outstanding problem, malfunction, or inconsistency identified during the course of routine maintenance

The Site Supervisor shall be responsible for ensuring that the scheduled tasks area appropriately completed as described in this plan and the Site Maintenance Log accurately represents activities carried out as described in this plan.

Site Maintenance Log

A Site Maintenance Log shall be completed as described above and shall, at a minimum, include the following items:

- Completed Inspection Checklist
- Date of activity performed
- Specific maintenance task
- Structural components maintained, as identified on the O&M Plan
- Staff person or contractor performing activity on behalf of The Town of Andover
- Supervisor verification of maintenance activity
- Recommended additional maintenance task
- Means to document identified areas of concern, erosion, or system discrepancies requiring attention

Public Safety Features

On-site public safety features include the following:

- Heavy-duty covers and grates on all manholes and catch basins designed to withstand H2O loading
- Maintain or reduce peak stormwater runoff rates from pre-development to post-development
- Creation and implementation of an O&M Plan to ensure the ability of the stormwater management system to continue to operate as designed.

Inspection Checklist

Date of Inspection _____ Checklist Completed By _____
 Reviewed by Supervisor _____

Catch Basins and Manholes		
Inspect for depth of sediment, obstructions, structural damage, or other malfunction	Quarterly in the first year; at least twice per year after	
Clean sumps of accumulated sediment	When structures are ½ full of sediment/debris (approximately two feet below outlet pipe) once per year minimum	
Bioretention Areas		
Preventative maintenance	Twice per year	
Inspect to ensure proper functioning	After every major storm during first 3 months of operation and twice a year thereafter and when there are discharges through the high outlet orifice	
Mow the buffer area, side slopes, and basin bottom if grassed floor; rake if stone bottom; remove trash and debris, remove grass clipping and accumulated organic matter	Twice per year	
Inspect and clean pretreatment devices	Every other month recommended and at least twice per year and after every major storm event.	
Pavement and Grass Areas		

Sweep pavement areas	At least twice per year: after final snow melt and after final leaf fall and as necessary in summer months	
Remove accumulated litter, debris, and discarded materials throughout the site	Once per week	
Subsurface Detention Systems		
Inspect inlets and outlet and remove any debris	Quarterly in first year; at least twice per year after	
Inspect system for functionality	After first major rainfall following installation	
Check for depressions in areas above and surrounding the system	Once per year	
Confirm that no unauthorized modifications have been performed to the site around (including over) the system	Once per year	
Inspect interior of system	Once per year	
Water Quality Units		
Inspect for depth of sediment, obstructions, structural damage, and other malfunction	Twice per year in spring and fall	
Remove sediment and pollutants	When level of sediment in structure's sump reaches 75% of capacity or when appreciable level of hydrocarbons and debris has accumulated; at a minimum of once per year	
Grassed Channels		
Inspect vegetation establishment	Periodically for the first few months after installation	

Inspect channels/swales for slope integrity, soil moisture, vegetative health, soil stability, soil compaction, soil erosion, ponding, and sedimentation	Twice per year	
Perform regular maintenance including mowing, fertilizing, liming, watering, pruning, and weed and pest control	Twice per year	
Remove sediment and debris, and periodically re-seed when doing so if necessary	At least once per year	
Porous Pavement		
Monitor to ensure that the paving surface drains properly after storms	As needed	
Clean the surface using power washer to dislodge trapped particles and then vacuum sweep the area	Annually	
Inspect the surface annually for deterioration	Annually	
Assess the capability of water to percolate. When exfiltration capacity is found to decline, implement measures to restore the original exfiltration capacity.	At least once per year	
Sediment Forebay		
Inspect for accumulation of sediment	Monthly	
Remove accumulated sediment	Quarterly	

O&M Figure

