

**Attachment 17: Inspection Records for
Town-owned BMPs**

BIORETENTION PRACTICES: O&M CHECKLIST

Inspection Date 6/17/15
 Project Downtown Parking Lot Site Plan/Permit Number _____
 Location Downtown Date BMP Placed in Service 11/15/12
 Date of Last Inspection 11/15/12 Inspector Chris Holloway
 Owner/Owner's Representative Town of Ashland
 As-Built Plans available: Yes

Facility Type: Level 1 _____ Level 2 _____

Facility Location:

- Surface
- Underground

- On-line facility
- Off-line facility

Filtration Media:

- No filtration (e.g., dry well, permeable pavement, infiltration facility, etc.)
- Sand
- Bioretention Soil
- Peat
- Other: _____

Type of Pre-Treatment Facility:

- Sediment forebay (above ground)
- Sedimentation chamber
- Plunge pool
- Stone diaphragm
- Grass filter strip
- Grass channel
- Other: Permeable Pavement

Hydraulic Configuration: _____

Ideally, Bioretention facilities should be inspected and cleaned up annually, preferably during the Spring. During the first 6 months following construction of a bioretention facility, the site should be inspected at least twice after storm events that exceed 1/2-inch of rainfall. Watering is needed once a week during the first 2 months following installation, and then as needed during the first growing season (April-October), depending upon rainfall. If vegetation needs to be replaced, one-time spot fertilization may be needed, preferably using an organic rather than a chemical fertilizer. Each facility should have a customized routine maintenance schedule addressing issues such as the following: grass mowing, weeding, trash removal, mulch raking and maintenance, erosion repair, reinforcement plantings, tree and shrub pruning, and sediment removal.

Element of BMP	Potential Problem	Problem? Y/N			How to fix problem	Who Will Address Problem	Comments
		Problem?	Investigate?	Repaired?			
Contributing Drainage Area	Adequate vegetation	Y			Supplement as necessary	Owner or professional	
	There is excessive trash and debris	N			Remove immediately	Owner or professional	
	There is evidence of erosion and / or bare or exposed soil	N			Stabilize immediately	Owner or professional	
	There are excessive landscape waste or yard clippings	N			Remove immediately and recycle or compost	Owner or professional	
	Oil, grease or other unauthorized substances are entering the facility	Y			Identify and control the source of this pollution. It may be necessary to erect fences, signs, etc	Owner or professional	Oil and grease from parked cars

Element of BMP	Potential Problem	Problem? Y / N	Investigate? Y / N	Repaired? Y / N	How to fix problem	Who Will Address Problem	Comments
Pre-Treatment	There is adequate access to the pre-treatment facility	Y			Establish adequate access	Professional and, perhaps, the locality	
	Excessive trash, debris, or sediment.	N			Remove immediately	Owner or professional	
Pre-Treatment (continued)	There is evidence of clogging (standing water, noticeable odors, water stains, algae or floating aquatic vegetation, or oil/grease)	N			Identify and eliminate the source of the problem. If necessary, remove and clean or replace the clogged material.	Professional	
	There is evidence of erosion and / or exposed soil	N			Stabilize immediately	Owner or professional	
	There is dead vegetation or exposed soil in the grass filter	N			Restabilize and revegetate as necessary	Owner or professional	
Inlets	Check for sediment build-up at curb cuts, gravel diaphragms or pavement edges that prevent flow from getting into the bed, and check for bypassing.	N			Remove sediment and correct any other problems that block inflow.	Owner or professional	
	There is excessive trash, debris, or sediment.	N			Remove immediately	Owner or professional	
	There is evidence of erosion at or around the inlet	N			Repair erosion damage and reseed or otherwise restabilize with vegetation	Owner or professional	
	Inflow is hindered by trees and/or shrubs.	N			Remove woody vegetation from points of inflow and directly above underdrains. (Trees and shrubs may be located closer to the perimeter.)	Owner or professional	
Side Slopes (Annually, after major storms)	There is evidence of rill or gully erosion or bare soil	N			Identify the source of erosion damage and prevent it from recurring. Repair erosion damage and reseed or otherwise restabilize with vegetation	Owner or professional	
	There is excess sediment accumulation	N			Remove immediately	Owner or professional	
	Side slopes support nuisance animals.	N			Animal burrows must be backfilled and compacted. Burrowing animals should be humanely removed from the area.	Professional	
Vegetation (monthly)	Plant composition is consistent with the approved plans and any stakes or wires are in good condition.	Y			Determine if existing plant materials are at least consistent with general Bioretention design criteria and replace inconsistent species.	Professional	
	There should be 75-90% cover (mulch plus vegetation), and the mulch cover should be 2-3 inches	Y			Supplement vegetation and mulch as needed.		

Element of BMP	Potential Problem	Problem? Y/N	Investigate? Y/N	Repaired? Y/N	How to fix problem	Who Will Address Problem	Comments
	deep.						

Element of BMP	Potential Problem	Problem?	Investigate?	Repaired?	How to fix problem	Who Will Address Problem	Comments
		Y / N	Y / N	Y / N			
Vegetation (monthly) (continued)	There is evidence of hydrocarbons or other deleterious materials, resulting in unsatisfactory plant growth or mortality,	N			Replace contaminated mulch. If problem persists, test soils for hydrocarbons and other toxic substances. If excess levels are found, the soils, plants and mulch may all need to be replaced in accordance with the approved construction plans.	Professional	
	Invasive species or weeds make up at least 10% of the facility's vegetation	N			Remove invasive species and excessive weeds immediately and replace vegetation as needed.	Owner or professional	
	The grass is too high	N			Mow within a week. Grass species should be selected that have dense cover, are relatively slow growing, and require the least mowing and chemical inputs. Grass should be from 6-10 inches high.	Owner or professional	
	Vegetation is diseased, dying or dead	N			Remove and replace. Increase watering, but avoid using chemical fertilizers, unless absolutely necessary.	Professional	
	Winter-killed or salt-killed vegetation is present.	N			Replace with hardier species.	Owner or professional	
Filter Media (Annually)	The filter media is too low, too compacted, or the composition is inconsistent with design specifications	N			Raise the level, loosen and amend or replace the media, as needed, to be consistent with the state design criteria for Bioretention (85-88% sand 8-12% soil fines 3-5% organic matter in form of leaf compost). Other remediation options are described in the maintenance section of the state design criteria for Bioretention	Professional	
	The mulch is older than 3 years or is otherwise in poor condition	Y			The mulch must be replaced every 2-3 years	Owner	Mulch is 2-3 years old. Should be replaced this year.
	There is evidence that chemicals, fertilizers, and/or oil/grease are present	N			Remove undesirable chemicals from media and facility immediately, and replace mulch or media as needed	Professional	
	There is excessive trash, debris, or sediment.	N			Remove trash and debris immediately. Check plant health and, without damaging plants, manually remove the sediment, especially if the depth exceeds 20% of the facility's design depth.	Owner or professional	
	There is evidence of concentrated flows, erosion or exposed soil	N			Identify the source of erosion damage and prevent it from recurring. Repair the erosion damage and reseed or otherwise restabilize with vegetation.	Professional	

Element of BMP	Potential Problem	Problem?	Investigate?	Repaired?	How to fix problem	Who Will Address Problem	Comments
		Y/N	Y/N	Y/N			
Filter Media (Annually) (continued)	The filter bed is clogged and/or filled inappropriately	N			Redistribute the soil substrate and remove sediment within 2 weeks.	Professional	
	The topsoil is in poor condition (e.g., the pH level is not 6-7, the composition is inappropriate, etc.)	N			Ensure a 3-inch surface depth of topsoil consistent with the state design criteria for Bioretention (loamy sand or sandy loam texture, with less than 5% clay content, and organic matter content of at least 2%). If the pH is less than 6.5, spread limestone.	Professional	
Underdrain/ Proper Drainage	The perforated pipe is not conveying water as designed	N			Determine if the pipe is clogged with debris or if woody roots have pierced the pipe. Immediately clean out or replace the pipe, as necessary.	Professional	
	The underlying soil interface is clogged (there is evidence on the surface of soil crusting, standing water, the facility does not dewater between storms, or water ponds on the surface of basin for more than 48 hours after an event).	N			Measure the draw-down rate of the observation well for three days following a storm event in excess of 1/2 inches in depth. After three days, if there is standing water on top but not in the underdrain, this indicates a clogged soil layer. If standing water is both on the surface and in the underdrain, then the underdrain is probably clogged. This should be promptly investigated and remediated to restore proper filtration. Grading changes may be needed or underdrain repairs made. The filter media may need to be raked, excavated and cleaned or replaced to correct the problem. Holes that are not consistent with the design and allow water to flow directly through a planter to the ground must be plugged.	Professional	
Planters	The planter is unable to receive or detain stormwater prior to infiltration. Water does not drain from the reservoir within 3-4 hours of after a storm event.	N			Identify and correct sources of clogging. Topsoil and sand/peat layer may need to be amended with sand or replaced all together.	Owner or professional	
	The planter has structural deficiencies, including rot, cracks, and failure, or the planter is unable to contain the filter media or vegetation	N			Make needed repairs immediately.	Owner or professional	
Outlet/ Overflow Spillway	Outlets are obstructed or erosion and soil exposure is evident below the outlet.	N			Remove obstructions and stabilize eroded or exposed areas.	Owner or Professional	

Element of BMP	Potential Problem	Problem?	Investigate?	Repaired?	How to fix problem	Who Will Address Problem	Comments
		Y/N	Y/N	Y/N			
Outlet/ Overflow Spillway (continued)	There is excessive trash, debris, or sediment at the outlet	N			Remove immediately, and keep the contributing area free of trash and debris.	Owner or professional	
	Any grates present are in good condition	Y			Repair or replace as necessary	Owner or professional	
Observation Well	Is the observation well still capped?				Repair, as necessary.	Professional	
Overall	Access to the Infiltration facility or its components is adequate	Y			Establish adequate access. Remove woody vegetation and debris that may block access. Ensure that hardware can be opened and operated.	Professional and, perhaps, the locality	
	There is evidence of standing water	N			Fill in low spots and stabilize; correct flow problems causing ponding.	Owner or professional	
	Mosquito proliferation	N			Eliminate stagnant pools and establish vegetation; treat for mosquitoes as needed. If sprays are considered, then a mosquito larvicide, such as Bacillus thurendensis or Altoside formulations can be applied <i>only if absolutely necessary</i> .	Owner or professional	
	Complaints from local residents	N			Correct real problems	Owner or professional	
	Encroachment on the bioretention area or easement by buildings or other structures	N			Inform involved property owners of BMPs status ; clearly mark the boundaries of the receiving pervious area, as needed	Owner or professional (and perhaps the locality)	

1. Mulch is 2-3 years old and should be replaced soon. No later than fall of 2015.

PERMEABLE PAVEMENT: O&M CHECKLIST

Inspection Date 6/17/15
 Project Downtown Parking Lot Site Plan/Permit Number _____
 Location Downtown Date BMP Placed in Service 11/15/12
 Date of Last Inspection 11/15/12 Inspector Chris Holloway
 Owner/Owner's Representative Town of Ashland
 As-Built Plans available: Yes

Facility Type: Level 1 _____ Level 2 _____

Ideally, each permeable pavement installation should be inspected in the Spring of each year, especially at large-scale installations.

Element of BMP	Potential Problem	Problem? Y/N	Investigate? Y/N	Repaired? Y/N	How to Fix Problem	Who Will Address Problem	Comments
Contributing Drainage Area	There is excessive trash and debris	N			Remove immediately.	Owner or professional	
	There is evidence of erosion and/or bare or exposed soil	N			Stabilize immediately.	Owner or professional	
	There is excessive landscape waste and yard clippings	N			Remove immediately.	Owner or professional	
Adjacent Vegetation	Trees and shrubs are within 5 feet of the pavement surface	Y			Check that tree roots have not penetrated the pavement and leaf residue has not clogged the pavement. Vegetation that limits access or interferes with the permeable pavement operation must be pruned or removed.	Owner or Professional	
Inlets, Pre-Treatment Cells and Flow Diversion Structures	There is excessive trash, debris or sediment accumulation	N			Remove immediately	Owner or Professional	
	There is evidence of erosion and / or exposed soil	N			Stabilize immediately	Owner or professional	
	Evidence of clogging	N			Clean out sediment or debris. Remove and wash or replace stone, as needed	Professional	
Pavement Surface	Mosquito proliferation	N			Eliminate standing water and establish vegetation; treat for mosquitoes as needed. If sprays are considered, then use a licensed pest controller to apply an approved mosquito larvicide (only if absolutely necessary).	Owner or professional	

Pavement Surface	There is evidence of erosion and / or bare or exposed soil in grid paver areas	N		Stabilize immediately. Mow, irrigate and apply organic (not chemical) fertilizer, as needed to keep grass healthy and dense enough to provide filtering while protecting the underlying soil. Remove any grass clippings.	Owner or professional	
	There is loose material (e.g., bark, sand, etc.) stored on the pavement surface	N		Remove immediately and vacuum sweep the area to prevent clogging the pavement pores.	Professional	
	Pavement is stained and/or clogged or water is ponded, indicating the pavement is not draining properly. Measure the drawdown rate in the observation well for three (3) days following a storm event that exceeds 1/2-inch of rain. If standing water is still observed in the well after three days, this is a clear sign that the pavement is clogged. There are significant amounts of sediment have accumulated between the pavers.	N		The surface must be kept clean and free of leaves, debris, and sediment by vacuum sweeping (without brooms or water spray) immediately and, otherwise, at a frequency consistent with the use and loadings encountered (at a minimum, annual dry-weather sweeping in the Spring). Where paving blocks are installed, the sweeper must be calibrated so it does <i>not</i> pick up the stones between the paver blocks. Following the vacuum sweeping, test pavement sections by pouring water from 5 gallon buckets, to ensure proper drainage.	Professional	
Structural Integrity	There is evidence of surface deterioration, such as slumping, cracking, spalling or broken pavers.	Y		Repair or replace affected areas, as necessary.	<u>Professional</u>	Spalling
Observation Wells	Is each observation well still capped?	Y		Repair, as necessary.	Professional	
Outlet	Outlets are obstructed or erosion and soil exposure is evident below the outlet.	N		Remove obstructions and stabilize eroded or exposed areas.	Owner or Professional	

1. Regularly scheduled paver sweeping is recommended.
2. Pavers show evidence of spalling. Manufacturer will replace all pavers. (Already scheduled for July 2015)

BIORETENTION PRACTICES: O&M CHECKLIST

Inspection Date 6/18/15
 Project Hanover Ave. Site Plan/Permit Number _____
 Location Hanover Ave. @ S. James St. Date BMP Placed in Service 7/18/12
 Date of Last Inspection 7/18/12 Inspector Chris Holloway
 Owner/Owner's Representative Town of Ashland
 As-Built Plans available: Yes

Facility Type: Level 1 _____ Level 2 _____

Facility Location:
 Surface
 Underground

Hydraulic Configuration:
 On-line facility
 Off-line facility

Filtration Media:
 No filtration (e.g., dry well, permeable pavement, infiltration facility, etc.)
 Sand
 Bioretention Soil
 Peat
 Other: Rain Garden

Type of Pre-Treatment Facility:
 Sediment forebay (above ground)
 Sedimentation chamber
 Plunge pool
 Stone diaphragm
 Grass filter strip
 Grass channel
 Other: _____

Ideally, Bioretention facilities should be inspected and cleaned up annually, preferably during the Spring. During the first 6 months following construction of a bioretention facility, the site should be inspected at least twice after storm events that exceed 1/2-inch of rainfall. Watering is needed once a week during the first 2 months following installation, and then as needed during the first growing season (April-October), depending upon rainfall. If vegetation needs to be replaced, one-time spot fertilization may be needed, preferably using an organic rather than a chemical fertilizer. Each facility should have a customized routine maintenance schedule addressing issues such as the following: grass mowing, weeding, trash removal, mulch raking and maintenance, erosion repair, reinforcement plantings, tree and shrub pruning, and sediment removal.

Element of BMP	Potential Problem	Problem? Y/N			How to fix problem	Who Will Address Problem	Comments
		Problem?	Investigate?	Repaired?			
Contributing Drainage Area	Adequate vegetation	N			Supplement as necessary	Owner or professional	Swale eroded
	There is excessive trash and debris	Y			Remove immediately	Owner or professional	Debris/sediment in gutter
	There is evidence of erosion and / or bare or exposed soil	Y			Stabilize immediately	Owner or professional	Swale eroded
	There are excessive landscape waste or yard clippings	Y			Remove immediately and recycle or compost	Owner or professional	Debris/sediment in gutter
	Oil, grease or other unauthorized substances are entering the facility	N			Identify and control the source of this pollution. It may be necessary to erect fences, signs, etc	Owner or professional	

Element of BMP	Potential Problem	Problem? Y/N	Investigate? Y/N	Repaired? Y/N	How to fix problem	Who Will Address Problem	Comments
Pre-Treatment	There is adequate access to the pre-treatment facility	Y			Establish adequate access	Professional and, perhaps, the locality	
	Excessive trash, debris, or sediment.	Y			Remove immediately	Owner or professional	Debris/sediment in gutter
Pre-Treatment (continued)	There is evidence of clogging (standing water, noticeable odors, water stains, algae or floating aquatic vegetation, or oil/grease)	Y			Identify and eliminate the source of the problem. If necessary, remove and clean or replace the clogged material.	Owner	Debris/sediment in gutter
	There is evidence of erosion and / or exposed soil	Y			Stabilize immediately	Owner or professional	Swale eroded
	There is dead vegetation or exposed soil in the grass filter	Y			Restabilize and revegetate as necessary	Owner or professional	Swale eroded
Inlets	Check for sediment build-up at curb cuts, gravel diaphragms or pavement edges that prevent flow from getting into the bed, and check for bypassing.	Y			Remove sediment and correct any other problems that block inflow.	Owner or professional	Debris/sediment in gutter
	There is excessive trash, debris, or sediment.	Y			Remove immediately	Owner or professional	Debris/sediment in gutter. Dome clogged.
	There is evidence of erosion at or around the inlet	Y			Repair erosion damage and reseed or otherwise restabilize with vegetation	Owner or professional	Swale eroded
	Inflow is hindered by trees and/or shrubs.	N			Remove woody vegetation from points of inflow and directly above underdrains. (Trees and shrubs may be located closer to the perimeter.)	Owner or professional	
Side Slopes (Annually, after major storms)	There is evidence of rill or gully erosion or bare soil	Y			Identify the source of erosion damage and prevent it from recurring. Repair erosion damage and reseed or otherwise restabilize with vegetation	Owner or professional	Swale eroded
	There is excess sediment accumulation	Y			Remove immediately	Owner or professional	
	Side slopes support nuisance animals.	N			Animal burrows must be backfilled and compacted. Burrowing animals should be humanely removed from the area.	Professional	
Vegetation (monthly)	Plant composition is consistent with the approved plans and any stakes or wires are in good condition.	Y			Determine if existing plant materials are at least consistent with general Bioretention design criteria and replace inconsistent species.	Professional	
	There should be 75-90% cover (mulch plus vegetation), and the mulch cover should be 2-3 inches	Y			Supplement vegetation and mulch as needed.		River stone instead of mulch

Element of BMP	Potential Problem	Problem? Y / N	Investigate? Y / N	Repaired? Y / N	How to fix problem	Who Will Address Problem	Comments
	deep.						

Element of BMP	Potential Problem	Problem?	Investigate?	Repaired?	How to fix problem	Who Will Address Problem	Comments
		Y/N	Y/N	Y/N			
Vegetation (monthly) (continued)	There is evidence of hydrocarbons or other deleterious materials, resulting in unsatisfactory plant growth or mortality,	N			Replace contaminated mulch. If problem persists, test soils for hydrocarbons and other toxic substances. If excess levels are found, the soils, plants and mulch may all need to be replaced in accordance with the approved construction plans.	Professional	
	Invasive species or weeds make up at least 10% of the facility's vegetation	Y			Remove invasive species and excessive weeds immediately and replace vegetation as needed.	Owner or professional	Remove weeds
	The grass is too high	N			Mow within a week. Grass species should be selected that have dense cover, are relatively slow growing, and require the least mowing and chemical inputs. Grass should be from 6-10 inches high.	Owner or professional	
	Vegetation is diseased, dying or dead	N			Remove and replace. Increase watering, but avoid using chemical fertilizers, unless absolutely necessary.	Professional	
	Winter-killed or salt-killed vegetation is present.	N			Replace with hardier species.	Owner or professional	
Filter Media (Annually)	The filter media is too low, too compacted, or the composition is inconsistent with design specifications	N			Raise the level, loosen and amend or replace the media, as needed, to be consistent with the state design criteria for Bioretention (85-88% sand 8-12% soil fines 3-5% organic matter in form of leaf compost). Other remediation options are described in the maintenance section of the state design criteria for Bioretention	Professional	
	The mulch is older than 3 years or is otherwise in poor condition	Y			The mulch must be replaced every 2-3 years	Owner	Mulch(stone) is clogged with debris
	There is evidence that chemicals, fertilizers, and/or oil/grease are present	N			Remove undesirable chemicals from media and facility immediately, and replace mulch or media as needed	Professional	
	There is excessive trash, debris, or sediment.	Y			Remove trash and debris immediately. Check plant health and, without damaging plants, manually remove the sediment, especially if the depth exceeds 20% of the facility's design depth.	Owner or professional	Mulch(stone) is clogged with debris, may impact filter media
	There is evidence of concentrated flows, erosion or exposed soil	<input checked="" type="checkbox"/>			Identify the source of erosion damage and prevent it from recurring. Repair the erosion damage and reseed or otherwise restabilize with vegetation.	Owner	Swale eroded

Element of BMP	Potential Problem	Problem?	Investigate?	Repaired?	How to fix problem	Who Will Address Problem	Comments
		Y/N	Y/N	Y/N			
Filter Media (Annually) (continued)	The filter bed is clogged and/or filled inappropriately	?			Redistribute the soil substrate and remove sediment within 2 weeks.	Professional	Mulch(stone) is clogged with debris, may impact filter media
	The topsoil is in poor condition (e.g., the pH level is not 6-7, the composition is inappropriate, etc.)	N			Ensure a 3-inch surface depth of topsoil consistent with the state design criteria for Bioretention (loamy sand or sandy loam texture, with less than 5% clay content, and organic matter content of at least 2%). If the pH is less than 6.5, spread limestone.	Professional	
Underdrain/ Proper Drainage	The perforated pipe is not conveying water as designed	N			Determine if the pipe is clogged with debris or if woody roots have pierced the pipe. Immediately clean out or replace the pipe, as necessary.	Professional	
	The underlying soil interface is clogged (there is evidence on the surface of soil crusting, standing water, the facility does not dewater between storms, or water ponds on the surface of basin for more than 48 hours after an event).	N			Measure the draw-down rate of the observation well for three days following a storm event in excess of 1/2 inches in depth. After three days, if there is standing water on top but not in the underdrain, this indicates a clogged soil layer. If standing water is both on the surface and in the underdrain, then the underdrain is probably clogged. This should be promptly investigated and remediated to restore proper filtration. Grading changes may be needed or underdrain repairs made. The filter media may need to be raked, excavated and cleaned or replaced to correct the problem. Holes that are not consistent with the design and allow water to flow directly through a planter to the ground must be plugged.	Professional	
Planters	The planter is unable to receive or detain stormwater prior to infiltration. Water does not drain from the reservoir within 3-4 hours of after a storm event.	N			Identify and correct sources of clogging. Topsoil and sand/peat layer may need to be amended with sand or replaced all together.	Owner or professional	
	The planter has structural deficiencies, including rot, cracks, and failure, or the planter is unable to contain the filter media or vegetation	N			Make needed repairs immediately.	Owner or professional	
Outlet/ Overflow Spillway	Outlets are obstructed or erosion and soil exposure is evident below the outlet.	Y			Remove obstructions and stabilize eroded or exposed areas.	Owner or Professional	Dome grate is clogged

Element of BMP	Potential Problem	Problem? Y/N	Investigate? Y/N	Repaired? Y/N	How to fix problem	Who Will Address Problem	Comments
Outlet/ Overflow Spillway (continued)	There is excessive trash, debris, or sediment at the outlet	Y			Remove immediately, and keep the contributing area free of trash and debris.	<u>Owner or professional</u>	Dome grate is clogged
	Any grates present are in good condition	N			Repair or replace as necessary	<u>Owner or professional</u>	Dome grate is clogged
Observation Well	Is the observation well still capped?	Y			Repair, as necessary.	Professional	
Overall	Access to the Infiltration facility or its components is adequate	Y			Establish adequate access. Remove woody vegetation and debris that may block access. Ensure that hardware can be opened and operated.	Professional and, perhaps, the locality	
	There is evidence of standing water	Y			Fill in low spots and stabilize; correct flow problems causing ponding.	<u>Owner or professional</u>	
	Mosquito proliferation	N			Eliminate stagnant pools and establish vegetation; treat for mosquitoes as needed. If sprays are considered, then a mosquito larvicide, such as Bacillus thurendensis or Altoside formulations can be applied <i>only if absolutely necessary</i> .	Owner or professional	
	Complaints from local residents	Y			Correct real problems	<u>Owner or professional</u>	
	Encroachment on the bioretention area or easement by buildings or other structures	N			Inform involved property owners of BMPs status ; clearly mark the boundaries of the receiving pervious area, as needed	Owner or professional (and perhaps the locality)	

1. Trash/debris/leaf litter needs to be regularly removed from Bioretention areas. Failure to do so may result in clogging of overflows and outlets.
2. Grass swale is eroded and requires stabilization.
3. Curb cut and gutter are full of sediment and debris. Regular cleaning with vacuum is recommended. Sweeper cannot reach corners.
4. Rain garden has yard waste, debris and sediment present and may impact Bioretention performance. Regular cleaning is recommended.
5. Dome grate and structure are clogged with debris and need to be cleaned. Structure has silt fence material under dome grate.









BIORETENTION PRACTICES: O&M CHECKLIST

Inspection Date 6/18/15
 Project Railroad Ave. Phase 1 Site Plan/Permit Number _____
 Location N. & S. Railroad Ave. (west side) Date BMP Placed in Service 4/15/14
 Date of Last Inspection 4/15/14 Inspector Chris Holloway
 Owner/Owner's Representative Town of Ashland
 As-Built Plans available: Yes

Facility Type: Level 1 _____ Level 2 _____

Facility Location:

- Surface
- Underground

- On-line facility
- Off-line facility

Filtration Media:

- No filtration (e.g., dry well, permeable pavement, infiltration facility, etc.)
- Sand
- X Bioretention Soil
- Peat
- Other:

Type of Pre-Treatment Facility:

- Sediment forebay (above ground)
- Sedimentation chamber
- Plunge pool
- Stone diaphragm
- Grass filter strip
- Grass channel
- X Other: Permeable Pavement

Hydraulic Configuration: _____

Ideally, Bioretention facilities should be inspected and cleaned up annually, preferably during the Spring. During the first 6 months following construction of a bioretention facility, the site should be inspected at least twice after storm events that exceed 1/2-inch of rainfall. Watering is needed once a week during the first 2 months following installation, and then as needed during the first growing season (April-October), depending upon rainfall. If vegetation needs to be replaced, one-time spot fertilization may be needed, preferably using an organic rather than a chemical fertilizer. Each facility should have a customized routine maintenance schedule addressing issues such as the following: grass mowing, weeding, trash removal, mulch raking and maintenance, erosion repair, reinforcement plantings, tree and shrub pruning, and sediment removal.

Element of BMP	Potential Problem	Problem? Y / N			How to fix problem	Who Will Address Problem	Comments
		Problem?	Investigate?	Repaired?			
Contributing Drainage Area	Adequate vegetation	Y			Supplement as necessary	Owner or professional	
	There is excessive trash and debris	Y			Remove immediately	Owner or professional	Trash/derbis in curb cuts & corners
	There is evidence of erosion and / or bare or exposed soil	N			Stabilize immediately	Owner or professional	
	There are excessive landscape waste or yard clippings	Y			Remove immediately and recycle or compost	Owner or professional	Trash/derbis in curb cuts & corners
	Oil, grease or other unauthorized substances are	N			Identify and control the source of this pollution. It may be necessary to erect fences, signs, etc	Owner or professional	

Element of BMP	Potential Problem	Problem? Y/N	Investigate? Y/N	Repaired? Y/N	How to fix problem	Who Will Address Problem	Comments
	entering the facility						
Pre-Treatment	There is adequate access to the pre-treatment facility	Y			Establish adequate access	Professional and, perhaps, the locality	
	Excessive trash, debris, or sediment.	Y			Remove immediately	Owner or professional	Trash/derbis in curb cuts & corners
Pre-Treatment (continued)	There is evidence of clogging (standing water, noticeable odors, water stains, algae or floating aquatic vegetation, or oil/grease)	Y			Identify and eliminate the source of the problem. If necessary, remove and clean or replace the clogged material.	Owner	Pavers are are clogged or clogging in some areas
	There is evidence of erosion and / or exposed soil	N			Stabilize immediately	Owner or professional	
	There is dead vegetation or exposed soil in the grass filter	N			Restabilize and revegetate as necessary	Owner or professional	
Inlets	Check for sediment build-up at curb cuts, gravel diaphragms or pavement edges that prevent flow from getting into the bed, and check for bypassing.	Y			Remove sediment and correct any other problems that block inflow.	Owner or professional	Trash/derbis in curb cuts
	There is excessive trash, debris, or sediment.	Y			Remove immediately	Owner or professional	Trash/derbis in curb cuts
	There is evidence of erosion at or around the inlet	N			Repair erosion damage and reseed or otherwise restabilize with vegetation	Owner or professional	
	Inflow is hindered by trees and/or shrubs.	N			Remove woody vegetation from points of inflow and directly above underdrains. (Trees and shrubs may be located closer to the perimeter.)	Owner or professional	
Side Slopes (Annually, after major storms)	There is evidence of rill or gully erosion or bare soil	N			Identify the source of erosion damage and prevent it from recurring. Repair erosion damage and reseed or otherwise restabilize with vegetation	Owner or professional	
	There is excess sediment accumulation	N			Remove immediately	Owner or professional	
	Side slopes support nuisance animals.	N			Animal burrows must be backfilled and compacted. Burrowing animals should be humanely removed from the area.	Professional	
Vegetation (monthly)	Plant composition is consistent with the approved plans and any stakes or wires are in good condition.	Y			Determine if existing plant materials are at least consistent with general Bioretention design criteria and replace inconsistent species.	Professional	

Element of BMP	Potential Problem	Problem? Y/N	Investigate? Y/N	Repaired? Y/N	How to fix problem	Who Will Address Problem	Comments
	There should be 75-90% cover (mulch plus vegetation), and the mulch cover should be 2-3 inches deep.	Y			Supplement vegetation and mulch as needed.		

Element of BMP	Potential Problem	Problem?	Investigate?	Repaired?	How to fix problem	Who Will Address Problem	Comments
		Y/N	Y/N	Y/N			
Vegetation (monthly) (continued)	There is evidence of hydrocarbons or other deleterious materials, resulting in unsatisfactory plant growth or mortality,	N			Replace contaminated mulch. If problem persists, test soils for hydrocarbons and other toxic substances. If excess levels are found, the soils, plants and mulch may all need to be replaced in accordance with the approved construction plans.	Professional	
	Invasive species or weeds make up at least 10% of the facility's vegetation	N			Remove invasive species and excessive weeds immediately and replace vegetation as needed.	Owner or professional	
	The grass is too high	N			Mow within a week. Grass species should be selected that have dense cover, are relatively slow growing, and require the least mowing and chemical inputs. Grass should be from 6-10 inches high.	Owner or professional	
	Vegetation is diseased, dying or dead	N			Remove and replace. Increase watering, but avoid using chemical fertilizers, unless absolutely necessary.	Professional	
	Winter-killed or salt-killed vegetation is present.	N			Replace with hardier species.	Owner or professional	
Filter Media (Annually)	The filter media is too low, too compacted, or the composition is inconsistent with design specifications	N			Raise the level, loosen and amend or replace the media, as needed, to be consistent with the state design criteria for Bioretention (85-88% sand 8-12% soil fines 3-5% organic matter in form of leaf compost). Other remediation options are described in the maintenance section of the state design criteria for Bioretention	Professional	
	The mulch is older than 3 years or is otherwise in poor condition	N			The mulch must be replaced every 2-3 years	Professional	
	There is evidence that chemicals, fertilizers, and/or oil/grease are present	N			Remove undesirable chemicals from media and facility immediately, and replace mulch or media as needed	Professional	
	There is excessive trash, debris, or sediment.	Y			Remove trash and debris immediately. Check plant health and, without damaging plants, manually remove the sediment, especially if the depth exceeds 20% of the facility's design depth.	Owner or professional	Trash/debris, leaf litter needs to be removed from planting area
	There is evidence of concentrated flows, erosion or exposed soil	N			Identify the source of erosion damage and prevent it from recurring. Repair the erosion damage and reseed or otherwise restabilize with vegetation.	Professional	

Element of BMP	Potential Problem	Problem?	Investigate?	Repaired?	How to fix problem	Who Will Address Problem	Comments
		Y / N	Y / N	Y / N			
Filter Media (Annually) (continued)	The filter bed is clogged and/or filled inappropriately	Y			Redistribute the soil substrate and remove sediment within 2 weeks.	Owner	Trash/debris, leaf litter needs to be removed from planting area
	The topsoil is in poor condition (e.g., the pH level is not 6-7, the composition is inappropriate, etc.)	N			Ensure a 3-inch surface depth of topsoil consistent with the state design criteria for Bioretention (loamy sand or sandy loam texture, with less than 5% clay content, and organic matter content of at least 2%). If the pH is less than 6.5, spread limestone.	Professional	
Underdrain/ Proper Drainage	The perforated pipe is not conveying water as designed	N			Determine if the pipe is clogged with debris or if woody roots have pierced the pipe. Immediately clean out or replace the pipe, as necessary.	Professional	
	The underlying soil interface is clogged (there is evidence on the surface of soil crusting, standing water, the facility does not dewater between storms, or water ponds on the surface of basin for more than 48 hours after an event).	N			Measure the draw-down rate of the observation well for three days following a storm event in excess of 1/2 inches in depth. After three days, if there is standing water on top but not in the underdrain, this indicates a clogged soil layer. If standing water is both on the surface and in the underdrain, then the underdrain is probably clogged. This should be promptly investigated and remediated to restore proper filtration. Grading changes may be needed or underdrain repairs made. The filter media may need to be raked, excavated and cleaned or replaced to correct the problem. Holes that are not consistent with the design and allow water to flow directly through a planter to the ground must be plugged.	Professional	
Planters	The planter is unable to receive or detain stormwater prior to infiltration. Water does not drain from the reservoir within 3-4 hours of after a storm event.	N			Identify and correct sources of clogging. Topsoil and sand/peat layer may need to be amended with sand or replaced all together.	Owner or professional	
	The planter has structural deficiencies, including rot, cracks, and failure, or the planter is unable to contain the filter media or vegetation	N			Make needed repairs immediately.	Owner or professional	
Outlet/ Overflow Spillway	Outlets are obstructed or erosion and soil exposure is evident below the outlet.	N			Remove obstructions and stabilize eroded or exposed areas.	Owner or Professional	

Element of BMP	Potential Problem	Problem? Y/N	Investigate? Y/N	Repaired? Y/N	How to fix problem	Who Will Address Problem	Comments
Outlet/ Overflow Spillway (continued)	There is excessive trash, debris, or sediment at the outlet	N			Remove immediately, and keep the contributing area free of trash and debris.	Owner or professional	
	Any grates present are in good condition	Y			Repair or replace as necessary	Owner or professional	
Observation Well	Is the observation well still capped?	N A			Repair, as necessary.	Professional	
Overall	Access to the Infiltration facility or its components is adequate	Y			Establish adequate access. Remove woody vegetation and debris that may block access. Ensure that hardware can be opened and operated.	Professional and, perhaps, the locality	
	There is evidence of standing water	N			Fill in low spots and stabilize; correct flow problems causing ponding.	Owner or professional	
	Mosquito proliferation	N			Eliminate stagnant pools and establish vegetation; treat for mosquitoes as needed. If sprays are considered, then a mosquito larvicide, such as Bacillus thurendensis or Altoside formulations can be applied <i>only if absolutely necessary</i> .	Owner or professional	
	Complaints from local residents	N			Correct real problems	Owner or professional	
	Encroachment on the bioretention area or easement by buildings or other structures	N			Inform involved property owners of BMPs status ; clearly mark the boundaries of the receiving pervious area, as needed	Owner or professional (and perhaps the locality)	

1. Trash/debris/leaf litter needs to be regularly removed from Bioretention areas. Failure to do so may result in clogging of overflows and outlets.







PERMEABLE PAVEMENT: O&M CHECKLIST

Inspection Date 6/18/15
 Project Railroad Ave. Phase 1 Site Plan/Permit Number N/A
 Location N. and S. Railroad Ave. (west side) Date BMP Placed in Service 4/15/2014
 Date of Last Inspection 4/15/2014 Inspector Chris Holloway
 Owner/Owner's Representative Town of Ashland
 As-Built Plans available: Yes

Facility Type: Level 1 _____ Level 2 _____

Ideally, each permeable pavement installation should be inspected in the Spring of each year, especially at large-scale installations.

Element of BMP	Potential Problem	Problem?			How to Fix Problem	Who Will Address Problem	Comments
		Y/N	Investigate? Y/N	Repaired? Y/N			
Contributing Drainage Area	There is excessive trash and debris	N			Remove immediately.	Owner or professional	
	There is evidence of erosion and/or bare or exposed soil	N			Stabilize immediately.	Owner or professional	
	There is excessive landscape waste and yard clippings	Y		N	Remove immediately.	Owner or professional	Excess sediment
Adjacent Vegetation	Trees and shrubs are within 5 feet of the pavement surface	Y			Check that tree roots have not penetrated the pavement and leaf residue has not clogged the pavement. Vegetation that limits access or interferes with the permeable pavement operation must be pruned or removed.	Owner or Professional	By design. No correction needed. Trees in raingardens.
Inlets, Pre-Treatment Cells and Flow Diversion Structures	There is excessive trash, debris or sediment accumulation	Y	Y	N	Remove immediately	Owner or Professional	Trash/debris in corners and curb cuts
	There is evidence of erosion and / or exposed soil	N			Stabilize immediately	Owner or professional	
	Evidence of clogging	Y	Y	N	Clean out sediment or debris. Remove and wash or replace stone, as needed	Owner	Trash/debris in corners and curb cuts
Pavement Surface	Mosquito proliferation	N			Eliminate standing water and establish vegetation; treat for mosquitoes as needed. If sprays are considered, then use a licensed pest controller to apply an approved mosquito larvicide (only if absolutely necessary).	Owner or professional	

Pavement Surface	There is evidence of erosion and / or bare or exposed soil in grid paver areas	N			Stabilize immediately. Mow, irrigate and apply organic (not chemical) fertilizer, as needed to keep grass healthy and dense enough to provide filtering while protecting the underlying soil. Remove any grass clippings.	Owner or professional	
	There is loose material (e.g., bark, sand, etc.) stored on the pavement surface	N			Remove immediately and vacuum sweep the area to prevent clogging the pavement pores.	Professional	
	Pavement is stained and/or clogged or water is ponded, indicating the pavement is not draining properly. Measure the drawdown rate in the observation well for three (3) days following a storm event that exceeds 1/2-inch of rain. If standing water is still observed in the well after three days, this is a clear sign that the pavement is clogged. There are significant amounts of sediment have accumulated between the pavers.	Y	Y			The surface must be kept clean and free of leaves, debris, and sediment by vacuum sweeping (without brooms or water spray) immediately and, otherwise, at a frequency consistent with the use and loadings encountered (at a minimum, annual dry-weather sweeping in the Spring). Where paving blocks are installed, the sweeper must be calibrated so it does <i>not</i> pick up the stones between the paver blocks. Following the vacuum sweeping, test pavement sections by pouring water from 5 gallon buckets, to ensure proper drainage.	<u>Owner</u>
Structural Integrity	There is evidence of surface deterioration, such as slumping, cracking, spalling or broken pavers.	N			Repair or replace affected areas, as necessary.	Professional	
Observation Wells	Is each observation well still capped?	N A			Repair, as necessary.	Professional	Cleanouts are capped
Outlet	Outlets are obstructed or erosion and soil exposure is evident below the outlet.	N			Remove obstructions and stabilize eroded or exposed areas.	Owner or Professional	

1. Paver area in front of 210 S. Railroad Ave. clogged due to excess sediment from contributing drainage area. To be repaired by Town. (New design already planned).
2. Curb corners and curb cuts have accumulated trash/debris/sediment due to lack of periodic maintenance. Regularly scheduled paver sweeping and vacuuming of corners is recommended. Work to be performed by Town. (N. and S. Railroad Ave.)
3. Paver surface is clogged or beginning to be clogged throughout most of project due to lack of periodic maintenance. Regularly scheduled paver sweeping is recommended. Some areas may need to have filler stone removed and replaced, particularly the N. Railroad Ave. section.





BIORETENTION PRACTICES: O&M CHECKLIST

Inspection Date 6/19/15
 Project College Park Site Plan/Permit Number _____
 Location College Park Subdivision Date BMP Placed in Service 9/15/13
 Date of Last Inspection 9/15/13 Inspector Chris Holloway
 Owner/Owner's Representative Town of Ashland
 As-Built Plans available: Yes

Facility Type: Level 1 _____ Level 2 _____

Facility Location:

- Surface
- Underground

On-line facility

Off-line facility

Filtration Media:

- No filtration (e.g., dry well, permeable pavement, infiltration facility, etc.)
- Sand
- Bioretention Soil
- Peat
- Other: _____

Type of Pre-Treatment Facility:

- Sediment forebay (above ground)
- Sedimentation chamber
- Plunge pool
- Stone diaphragm
- Grass filter strip
- Grass channel
- Other: Permeable Pavement

Hydraulic Configuration: _____

Ideally, Bioretention facilities should be inspected and cleaned up annually, preferably during the Spring. During the first 6 months following construction of a bioretention facility, the site should be inspected at least twice after storm events that exceed 1/2-inch of rainfall. Watering is needed once a week during the first 2 months following installation, and then as needed during the first growing season (April-October), depending upon rainfall. If vegetation needs to be replaced, one-time spot fertilization may be needed, preferably using an organic rather than a chemical fertilizer. Each facility should have a customized routine maintenance schedule addressing issues such as the following: grass mowing, weeding, trash removal, mulch raking and maintenance, erosion repair, reinforcement plantings, tree and shrub pruning, and sediment removal.

Element of BMP	Potential Problem	Problem? Y/N			How to fix problem	Who Will Address Problem	Comments
		Problem?	Investigate?	Repaired?			
Contributing Drainage Area	Adequate vegetation	Y			Supplement as necessary	Owner or professional	
	There is excessive trash and debris	N			Remove immediately	Owner or professional	
	There is evidence of erosion and / or bare or exposed soil	Y			Stabilize immediately	Owner or professional	At underdrain into BMP
	There are excessive landscape waste or yard clippings	N			Remove immediately and recycle or compost	Owner or professional	
	Oil, grease or other unauthorized substances are entering the facility	N			Identify and control the source of this pollution. It may be necessary to erect fences, signs, etc	Owner or professional	

Element of BMP	Potential Problem	Problem? Y/N	Investigate? Y/N	Repaired? Y/N	How to fix problem	Who Will Address Problem	Comments
Pre-Treatment	There is adequate access to the pre-treatment facility	Y			Establish adequate access	Professional and, perhaps, the locality	
	Excessive trash, debris, or sediment.	N			Remove immediately	Owner or professional	
Pre-Treatment (continued)	There is evidence of clogging (standing water, noticeable odors, water stains, algae or floating aquatic vegetation, or oil/grease)	Y			Identify and eliminate the source of the problem. If necessary, remove and clean or replace the clogged material.	<u>Owner</u>	Some areas of clogged pavers
	There is evidence of erosion and / or exposed soil	N			Stabilize immediately	Owner or professional	
	There is dead vegetation or exposed soil in the grass filter	N			Restabilize and revegetate as necessary	Owner or professional	
Inlets	Check for sediment build-up at curb cuts, gravel diaphragms or pavement edges that prevent flow from getting into the bed, and check for bypassing.	N			Remove sediment and correct any other problems that block inflow.	Owner or professional	
	There is excessive trash, debris, or sediment.	N			Remove immediately	Owner or professional	
	There is evidence of erosion at or around the inlet	N			Repair erosion damage and reseed or otherwise restabilize with vegetation	Owner or professional	
	Inflow is hindered by trees and/or shrubs.	N			Remove woody vegetation from points of inflow and directly above underdrains. (Trees and shrubs may be located closer to the perimeter.)	Owner or professional	
Side Slopes (Annually, after major storms)	There is evidence of rill or gully erosion or bare soil	N			Identify the source of erosion damage and prevent it from recurring. Repair erosion damage and reseed or otherwise restabilize with vegetation	Owner or professional	
	There is excess sediment accumulation	N			Remove immediately	Owner or professional	
	Side slopes support nuisance animals.	N			Animal burrows must be backfilled and compacted. Burrowing animals should be humanely removed from the area.	Professional	
Vegetation (monthly)	Plant composition is consistent with the approved plans and any stakes or wires are in good condition.	Y			Determine if existing plant materials are at least consistent with general Bioretention design criteria and replace inconsistent species.	Professional	
	There should be 75-90% cover (mulch plus vegetation), and the mulch cover should be 2-3 inches	N			Supplement vegetation and mulch as needed.	<u>Owner</u>	Mulch needs to be replaced

Element of BMP	Potential Problem	Problem? Y/N	Investigate? Y/N	Repaired? Y/N	How to fix problem	Who Will Address Problem	Comments
	deep.						

Element of BMP	Potential Problem	Problem?	Investigate?	Repaired?	How to fix problem	Who Will Address Problem	Comments
		Y/N	Y/N	Y/N			
Vegetation (monthly) (continued)	There is evidence of hydrocarbons or other deleterious materials, resulting in unsatisfactory plant growth or mortality,	N			Replace contaminated mulch. If problem persists, test soils for hydrocarbons and other toxic substances. If excess levels are found, the soils, plants and mulch may all need to be replaced in accordance with the approved construction plans.	Professional	
	Invasive species or weeds make up at least 10% of the facility's vegetation	Y			Remove invasive species and excessive weeds immediately and replace vegetation as needed.	Owner or professional	Weeds need to be removed
	The grass is too high	N			Mow within a week. Grass species should be selected that have dense cover, are relatively slow growing, and require the least mowing and chemical inputs. Grass should be from 6-10 inches high.	Owner or professional	
	Vegetation is diseased, dying or dead	N			Remove and replace. Increase watering, but avoid using chemical fertilizers, unless absolutely necessary.	Professional	
	Winter-killed or salt-killed vegetation is present.	N			Replace with hardier species.	Owner or professional	
Filter Media (Annually)	The filter media is too low, too compacted, or the composition is inconsistent with design specifications	N			Raise the level, loosen and amend or replace the media, as needed, to be consistent with the state design criteria for Bioretention (85-88% sand 8-12% soil fines 3-5% organic matter in form of leaf compost). Other remediation options are described in the maintenance section of the state design criteria for Bioretention	Professional	
	The mulch is older than 3 years or is otherwise in poor condition	Y			The mulch must be replaced every 2-3 years	Professional	Mulch needs to be replaced
	There is evidence that chemicals, fertilizers, and/or oil/grease are present	N			Remove undesirable chemicals from media and facility immediately, and replace mulch or media as needed	Professional	
	There is excessive trash, debris, or sediment.	N			Remove trash and debris immediately. Check plant health and, without damaging plants, manually remove the sediment, especially if the depth exceeds 20% of the facility's design depth.	Owner or professional	
	There is evidence of concentrated flows, erosion or exposed soil	Y			Identify the source of erosion damage and prevent it from recurring. Repair the erosion damage and reseed or otherwise restabilize with vegetation.	Professional	At underdrain into BMP

Element of BMP	Potential Problem	Problem?	Investigate?	Repaired?	How to fix problem	Who Will Address Problem	Comments
		Y/N	Y/N	Y/N			
Filter Media (Annually) (continued)	The filter bed is clogged and/or filled inappropriately	N			Redistribute the soil substrate and remove sediment within 2 weeks.	Professional	
	The topsoil is in poor condition (e.g., the pH level is not 6-7, the composition is inappropriate, etc.)	N			Ensure a 3-inch surface depth of topsoil consistent with the state design criteria for Bioretention (loamy sand or sandy loam texture, with less than 5% clay content, and organic matter content of at least 2%). If the pH is less than 6.5, spread limestone.	Professional	
Underdrain/ Proper Drainage	The perforated pipe is not conveying water as designed	N			Determine if the pipe is clogged with debris or if woody roots have pierced the pipe. Immediately clean out or replace the pipe, as necessary.	Professional	
	The underlying soil interface is clogged (there is evidence on the surface of soil crusting, standing water, the facility does not dewater between storms, or water ponds on the surface of basin for more than 48 hours after an event).	N			Measure the draw-down rate of the observation well for three days following a storm event in excess of 1/2 inches in depth. After three days, if there is standing water on top but not in the underdrain, this indicates a clogged soil layer. If standing water is both on the surface and in the underdrain, then the underdrain is probably clogged. This should be promptly investigated and remediated to restore proper filtration. Grading changes may be needed or underdrain repairs made. The filter media may need to be raked, excavated and cleaned or replaced to correct the problem. Holes that are not consistent with the design and allow water to flow directly through a planter to the ground must be plugged.	Professional	
Planters	The planter is unable to receive or detain stormwater prior to infiltration. Water does not drain from the reservoir within 3-4 hours of after a storm event.	N			Identify and correct sources of clogging. Topsoil and sand/peat layer may need to be amended with sand or replaced all together.	Owner or professional	
	The planter has structural deficiencies, including rot, cracks, and failure, or the planter is unable to contain the filter media or vegetation	N			Make needed repairs immediately.	Owner or professional	
Outlet/ Overflow Spillway	Outlets are obstructed or erosion and soil exposure is evident below the outlet.	N			Remove obstructions and stabilize eroded or exposed areas.	Owner or Professional	

Element of BMP	Potential Problem	Problem?	Investigate?	Repaired?	How to fix problem	Who Will Address Problem	Comments
		Y/N	Y/N	Y/N			
Outlet/ Overflow Spillway (continued)	There is excessive trash, debris, or sediment at the outlet	N			Remove immediately, and keep the contributing area free of trash and debris.	Owner or professional	
	Any grates present are in good condition	Y			Repair or replace as necessary	Owner or professional	
Observation Well	Is the observation well still capped?	Y			Repair, as necessary.	Professional	
Overall	Access to the Infiltration facility or its components is adequate	Y			Establish adequate access. Remove woody vegetation and debris that may block access. Ensure that hardware can be opened and operated.	Professional and, perhaps, the locality	
	There is evidence of standing water	N			Fill in low spots and stabilize; correct flow problems causing ponding.	Owner or professional	
	Mosquito proliferation	N			Eliminate stagnant pools and establish vegetation; treat for mosquitoes as needed. If sprays are considered, then a mosquito larvicide, such as Bacillus thurendensis or Altoside formulations can be applied <i>only if absolutely necessary</i> .	Owner or professional	
	Complaints from local residents	N			Correct real problems	Owner or professional	
	Encroachment on the bioretention area or easement by buildings or other structures	N			Inform involved property owners of BMPs status ; clearly mark the boundaries of the receiving pervious area, as needed	Owner or professional (and perhaps the locality)	

1. Mulch cover is too thin and should be replaced.
2. Weeds need to be removed from planter area.
3. Underdrain outfall into BMP has removed mulch because of concentrated flow from permeable pavement. Does not impact performance of BMP.
4. Regularly scheduled paver sweeping is recommended.







PERMEABLE PAVEMENT: O&M CHECKLIST

Inspection Date 6/19/15
 Project College Park Site Plan/Permit Number N/A
 Location College Park Subdivision Date BMP Placed in Service 9/15/2013
 Date of Last Inspection 9/13/2014 Inspector Chris Holloway
 Owner/Owner's Representative Town of Ashland
 As-Built Plans available: Yes

Facility Type: Level 1 _____ Level 2 _____

Ideally, each permeable pavement installation should be inspected in the Spring of each year, especially at large-scale installations.

Element of BMP	Potential Problem	Problem? Y/N	Investigate? Y/N	Repaired? Y/N	How to Fix Problem	Who Will Address Problem	Comments
Contributing Drainage Area	There is excessive trash and debris	N			Remove immediately.	Owner or professional	
	There is evidence of erosion and/or bare or exposed soil	N			Stabilize immediately.	Owner or professional	
	There is excessive landscape waste and yard clippings	Y		N	Remove immediately.	Owner or professional	Leaf and yard waste
Adjacent Vegetation	Trees and shrubs are within 5 feet of the pavement surface	Y			Check that tree roots have not penetrated the pavement and leaf residue has not clogged the pavement. Vegetation that limits access or interferes with the permeable pavement operation must be pruned or removed.	Owner or Professional	Existing trees prior to project
Inlets, Pre-Treatment Cells and Flow Diversion Structures	There is excessive trash, debris or sediment accumulation	N		N	Remove immediately	Owner or Professional	
	There is evidence of erosion and / or exposed soil	N			Stabilize immediately	Owner or professional	
	Evidence of clogging	N			Clean out sediment or debris. Remove and wash or replace stone, as needed	Owner	
Pavement Surface	Mosquito proliferation	N			Eliminate standing water and establish vegetation; treat for mosquitoes as needed. If sprays are considered, then use a licensed pest controller to apply an approved mosquito larvicide (only if absolutely necessary).	Owner or professional	

Pavement Surface	There is evidence of erosion and / or bare or exposed soil in grid paver areas	N		Stabilize immediately. Mow, irrigate and apply organic (not chemical) fertilizer, as needed to keep grass healthy and dense enough to provide filtering while protecting the underlying soil. Remove any grass clippings.	Owner or professional	
	There is loose material (e.g., bark, sand, etc.) stored on the pavement surface	N		Remove immediately and vacuum sweep the area to prevent clogging the pavement pores.	Professional	
	Pavement is stained and/or clogged or water is ponded, indicating the pavement is not draining properly. Measure the drawdown rate in the observation well for three (3) days following a storm event that exceeds 1/2-inch of rain. If standing water is still observed in the well after three days, this is a clear sign that the pavement is clogged. There are significant amounts of sediment have accumulated between the pavers.	Y	Y	The surface must be kept clean and free of leaves, debris, and sediment by vacuum sweeping (without brooms or water spray) immediately and, otherwise, at a frequency consistent with the use and loadings encountered (at a minimum, annual dry-weather sweeping in the Spring). Where paving blocks are installed, the sweeper must be calibrated so it does <i>not</i> pick up the stones between the paver blocks. Following the vacuum sweeping, test pavement sections by pouring water from 5 gallon buckets, to ensure proper drainage.	<u>Owner</u>	Pavement is clogged with debris and sediment. Drawdown rate is adequate
Structural Integrity	There is evidence of surface deterioration, such as slumping, cracking, spalling or broken pavers.	Y		Repair or replace affected areas, as necessary.	Owner	Some cracking
Observation Wells	Is each observation well still capped?	Y		Repair, as necessary.	Professional	Cleanouts are capped
Outlet	Outlets are obstructed or erosion and soil exposure is evident below the outlet.	N		Remove obstructions and stabilize eroded or exposed areas.	Owner or Professional	

1. Paver surface in some areas is clogged (leaf litter and yard waste) or beginning to be clogged due to lack of periodic maintenance. Clogged areas will need to be cleaned out. Filler stone is not present by design. Despite clogging, surface infiltration rate is adequate.
2. Regularly scheduled paver sweeping is recommended.
3. Some cracking of pavers is evident. Town to replace individual paver blocks as needed.

