City of Wooster - Post Construction O&M Plan Checklist and Minimum Requirements

The Ohio EPA general construction stormwater permit and City of Wooster *Site Development and Improvement Manual* require a standalone Operation and Maintenance (O&M) plan to be developed and provided to the Owner or post-construction operator for all permanent stormwater controls. An O&M plan has been an EPA requirement since the original Ohio EPA permit (OHR100000) was issued in 1992 and a City of Wooster requirement since becoming an MS4 in 2007. However, the City did not mandate a copy of the O&M plan to be provided to the City until July 2017.

The O&M plan shall convey to the owner/operator the needed information to perform regular inspection and maintenance of the site-specific stormwater system and complete annual reporting requirements per City and Ohio EPA requirements. The City has adopted an O&M plan checklist and minimum requirements to facilitate complance with this requirement. These requirements are based upon the current Ohio EPA General Construction Stormwater Permit, Ohio EPA -Rainwater and Land Development Manual, Ohio EPA - Maintaining Stormwater Control Measure, Guidance for Private Owners & Operators, the City of Wooster - Site Development and Improvement Manual and third-party premanufactured control documentation.

The checklist document is contained in two sections:

Section I - contains a checklist that serves exclusively as a general outline of the requirements for an O&M plan. The City checklist is not part of the O&M manual but rather to aid the preparer and assist with the City's review. However, the City cannot address all situations in a general checklist, and additional requirements may be imposed case-by-case. This checklist is a living document and is subject to change; therefore, please download the current version before completing this form.

Section II - contains minimum inspection and maintenance requirements for commonly used stormwater controls. Again, the City list of the minimum requirements is not part of the O&M manual but rather to aid the preparer and assist with the City's review. The following stormwater controls are currently included in the guidance document.

- Bioretention Area
- Dry Pond or Dry Extended Detention Basin
- Wet Pond or Wet Extended Detention Basin
- Oil-Water Separators
- Swirl Separators
- Riparian & Wetland Setback Areas

For stormwater controls not listed, the preparer should consult the Ohio EPA - Rainwater & Land Development Manual, Ohio EPA - Maintaining Stormwater Control Measure - Guidance for Private Owners & Operators, the current Ohio EPA - General Construction Stormwater Permit, City of Wooster - Site Development and Improvement Manual, and manufacturer reference documentation. The City shall review additional controls on a case-case basis.

Part III.G.2.e - Post-Construction Storm Water Management - O&M Plan

Please mark each item as Included "Y," Not Included "N," or Not Applicable "N/A." Any item marked as not included must have a comment with an explanation. Additional comments can be included as needed.

Please limit the O&M plan page size to 8-1/2"x11" or 11x17.

			Comments
Υ	N	N/A	Comments
Υ	N	N/A	Comments
Υ	N	N/A	Comments
		YN	Y N N/A

5) Listing of Warning Signs Maintainance is Required	Υ	N	N/A	Comments
For each stormwater control, a list of warning signs that indicate				
when maintenance is possibly needed.				
 Warning signs incorporated into the checklist as a monthly review requirement 				
6) Schedule, Inspection Log, and Maintenance Log	Υ	N	N/A	Comments
The plan contains a 12-month schedule outlining when each stormwater component is to be inspected and at what frequency				
The plan contains an inspection log for the owner/operator to document each inspection. At a minimum, the following shall be recorded.				
- Date & Time				
- Person or entity performing the inspection				
- Component inspected				
If any maintenance is needed or was performed The plan contains a maintenance log for the owner/operator or agent to document any maintenance performed on the stormwater system each year. The following shall be entered.				
- Date & Time				
- Person or entity performing the maintenance				
- Detail of the maintenance performed				
7) Annual Reporting	Υ	N	N/A	Comments
The O&M plan contains an annual self-inspection form to be completed by the Owner for each permanent stormwater control and submitted to the City The plan directs the Owner to submit the self-inspection form and the inspection/maintenance logs for the past 12 months to the City annually				
The plan states that the information may be submitted at any time during the year but must be submitted no later than January 31st for the prior year.				
8) Material Disposal	Υ	N	N/A	Comments
The O&M plan addresses the proper disposal of materials collected from inlet collection bags, regular inlet/structure cleanout, oil/water separators, swirl concentrators, etc.				
The City strongly recommends that a licensed contractor should be retained to perform this service on a scheduled contract basis				
The owner/operator shall maintain manifests, a chain of custody, and disposal records as part of their stormwater documentation.				
9) Professional Inspection	Υ	N	N/A	Comments
The plan requires a professional inspection a minimum of once every five (5) years to be performed by a qualified professional familiar with stormwater management systems and design				
 The professional shall follow current City of Wooster guidance and requirments for processional inspections 				
 The professional shall ensure the system and controls are maintained & operating per the original design parameters. 				
 Perform a comprehensive physical inspection of the entire stormwater system to ensure there are no maintenance or structural issues 				

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 Evaluate drawdown times and water elevations to ensure proper operation per the original design for WQv and 				
detention				
 Evaluate sediment accumulation and make appropriate recommendations regarding the removal of materials 				
- Provide an O&M plan if once does not exist				
 Review inspection and maintenance logs and make needed modifications to the O&M plan or to address reoccurring issues 				
 Provide a written report and recommendations to address any noted deficiencies to the Owner and copy the City 				
10) Owner Financial Considerations	Υ	N	N/A	Comments
The stormwater O&M plan addresses owner/operator financial considerations about the following:				
- Regular Inspection and Maintainance				
- Regular Repair and Upkeep				
- Non-Routine Maintenance				
- Long-term maintenance obligations				
 Professional Inspections and third-party maintenance requirements 				
11) Maintenance Easements and Agreements	Υ	N	N/A	Comments
Plan sheet depicting recorded platted stormwater and access				
easements with sufficient detail to reproduce the easement				
bounds without ambiguity – shared or offsite controls only.				
Platted or recorded easements fully contain constructed				
permanent stormwater controls plus a minimum 15-foot access easement around the control and extend to a public right-of-way				
Shared or regional controls have a recorded private Operating and Reciprocal Easement Agreement between the owners.				
 The agreement defines owners and provides a legal description of the properties 				
 Grants each Owner an easement for the discharge, drainage, conveyance, use, detention, and retention of stormwater from the site 				
 Provides the right to construct, connect to, maintain, repair, and replace stormwater collection, retention, detention, and distribution lines, conduits, pipes, and other apparatus 				
 Defines each Owner's responsibility in the maintenance and inspection of the stormwater system 				
 Establishes how costs related to the maintenance, inspection, and repair shall be disseminated 				
The agreement runs with the land, transferring upon sale or further subdivision				
The City shall draft a Stormwater Maintenance Agreement to be executed and recorded between the CITY and OWNER(S) to ensure continued compliance with inspection, maintenance, and reporting requirements of permanent stormwater controls and the related stormwater system.				
All easements, covenants, and agreements shall run with the land transferring upon sale or further subdivision of the property.				

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12) Construction Drawings or Excerpts	Υ	N	N/A	Comments
Overall stormwater site plan (multiple sheets if needed)				
- Permanent stormwater controls are identified and labeled				
 Stormwater inlets, outlets, piping, conveyances, and drainage swales are depicted and identified 				
 Outfalls to the City MS4 or Water of the State are identified and labeled 				
 If reduction of the impervious area was utilized for redevelopment, depict areas converted from impervious to previous restored areas 				
If the site adjoins or has related riparian areas or wetlands, include a separate site plan delineating the riparian and wetland areas and their approved buffers.				
Plan and profile detail sheet(s) for <u>each</u> permanent stormwater control				
 Table or callout, including identification, the type of control, date installed, water quality volume, detention volume, sediment storage volume, critical storm, design drawdown time, etc. 				
 The profile includes as-built elevations of inlets, outlets, orifices, outlet windows, overflows, etc. 				
 The profile for Stormwater controls from Ohio EPA Table 4a/4b provides relevant elevations and associated volumes that dictate when accumulated sediments must be removed, typically at a 25 percent reduction in sediment storage 				
 Outlet structure detail, including outlets, inlets, orifice, windows, overflow, as-built elevations, and water levels such as static, WQv, critical storm 				
 Key components are identified to allow the Owner to locate and inspect needed components 				
Third-party manufactured stormwater controls are utilized				
- Manufacture O&M information included as a reference				
 Site-specific maintenance and inspection requirements are incorporated into the O&M plan by the stormwater engineer 				

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Section II –O&M, Minimum Inspection and Maintaince Requirements – City of Wooster

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Bioretention Area

Additional O&M Plan Requirements	Υ	N	N/A	Comments
The O&M Plan contains an approved landscape plan prepared by a designer familiar with Bioretention stormwater practices. The landscape plan shall address the following.				
- Specific plant species to be planted that are suitable to Ohio				
- Number and placement of each plant grouping				
- Seasonal maintenance and pruning requirements				
- Plant replacement schedule and criteria				

Routine Maintainance - Minimum Requirements

Task	Frequency	What to do
Sediment and Debris	Quarterly (1st year), then annually	Inspect for accumulation of sediment and debris from the mulch or grass surface area of the bioretention area and level spreader.
Outlet Structure	Quarterly	Keep outlets of the bioretention area free from sediment, debris, trash, mulch, or plant material blockage.
Erosion and Scour	Quarterly (1st year), then annually	Repair soil erosion or scouring within the bioretention area, side slopes or inlets leading into the bioretention area.
Mulch	Seasonal	Maintain a 2 to 3-inch depth of hardwood bark mulch layer within the planted area of the bioretention area. If an excessive depth of mulch exists, remove mulch until the mulch layer is 2 to 3 inches in depth.
Curb Cuts	Quarterly	Keep curb cuts to the bioretention area free from sediment, debris, and trash blockage.
Weeds	Monthly (Spring/Summer)	Remove weeds and invasive plants from the bioretention area.
Vegetation Management	Seasonal	Inspect plant health seasonally to ensure vigorous growth. Prune plants, mainly shrubs, and trees, during the dormant season (fall to early Spring).
Snow Removal	Seasonal	Do not pile or store snow within the bioretention area, as this will compact the specialized soils and add sediments that may lead to clogging.
Parking Lot Cleaning	Annually	Contributing parking areas are swept at least once a year, typically in the Spring, to remove accumulated materials from winter snow removal

Non-Routine Maintenance - Minimum Requirements:

Task	What to do
Plant Replacement	Replace diseased or dying plants.
Water Ponding Period	When ponding continues beyond 48 hours or the designed ponding duration, there may be construction or design issues that need to be corrected
Specialized Soil Replacement	Clogging of the specialized soil by fine sediments may require the replacement of the specialized soil, mulch, and plant materials.

Section II –O&M, Minimum Inspection and Maintaince Requirements – City of Wooster

Indicators Maintenance is Required:

- Standing water is visible 48 hours after a rain event.
- Erosion is visible within the bioretention area or on the slopes and inlets leading into the bioretention area.
- Vegetation, sediment, or debris is blocking inlets or outlets.
- Vegetation is wilting, discoloring, or dying.
- Foul odors are present.
- Sediment has accumulated over the mulch or soil media.

Dry Pond or Dry Extended Detention Basin

Additio	nal O&M Plan Requirements	Υ	N	N/A	Comments
	ifiers included on plan sheet or diagram indicating the				
	on of critical components of a Dry Pond or Dry Extended				
	ntion Basin, including micropools, forebays, inlets, outlets, t structure, water quality structure, orifices, etc.				

Routine Maintainance - Minimum Requirements

Task	Frequency	What to do
Outlet Structures	Quarterly	Keep outlets such as principal spillway pipe, outlet overflow, outlet windows, outlet pipe, and emergency spillway free from sediment, debris, or trash blockage.
Water Quality Structure/Orifice	Bi-monthly or monthly (orifice <3")	Inspect and clean water quality orifice
Dam/Embankment - Mowing	3-4 times per season or anytime growth exceeds 8"	Mow grassed dam and embankment of the dry pond to prevent establishment of woody vegetation.
Basin area (except forebay and micropool)	3-4 times per season or anytime growth exceeds 8"	Mow the bottom of the basin area to prevent the establishment of woody vegetation. Excessive cuttings are to be collected and disposed of or composted.
Forbay and micropool vegitation	Annually	Remove woody growth, invasive plants (cat tails), and excessive wetland plant growth. Depending upon groundwater levels, the area may be able to be mowed during dry seasons.
Erosion and Scour	Quarterly (1st year), then annually	Repair soil erosion or scouring on the side slopes leading into the dry pond or within the bottom or forebay of the dry pond. Reoccurring erosion or scouring shall require the installation of permanent erosion control matting or soil armor.
Debris removal	Quarterly	Remove accumulated debris, and trash from the dry pond forebay, low flow channel, and ponding area.
Sediment	Annually	Remove accumulated sediment from the forebay when accumulation reaches 6-inches.
Dam/Embankment – Erosion and Damage	Annually	Inspect and repair dam/embankment for erosion or animal burrows within the dam portion or side slopes of the pond
Parking Lot Cleaning	Annually	Contributing parking areas are swept at least once a year, typically in the Spring, to remove accumulated materials from winter snow removal
Inlet Inspection and Cleaning	Annually	Inspect and remove accumulated debris from the system catch basins and curb inlets, and manholes

Section II -O&M, Minimum Inspection and Maintaince Requirements - City of Wooster

Non-Routine Maintenance - Minimum Requirements:

Task	What to do
Excessive Sediment	Remove sediment accumulation from the ponding area before 25 percent of the ponding storage volume is lost within the dry pond.
Outlet Structure	Repair or replace damaged outlet structure
Inlet/Outlet Piping and Headwalls	Repair or replace exposed piping and erosion around headwalls
Erosion Protection	Repair or replace riprap or stone protection at pipe inlets, pipe outlets, or emergency spillway
Dam/Embankment	Seek professional consultation if seepage or leaks appear during ponding or erosion is discovered on the dam or embankment of the dry pond

Indicators Maintenance is Required:

- Standing water is visible 72 hours after a rain event.
- The outlet is blocked by trash, debris, or vegetation.
- Erosion within the emergency spillway or blocked by debris.
- Erosion of side slopes or dam portion of the pond.
- Low flow orifice, forebay, and micro pool are blocked by trash, debris, or sediment.
- Excessive (wetland) vegetation growing within dry pond area.
- Animal burrows within the dam portion or side slopes of the pond.
- Trees growing on the dam.
- Foul odors are present.

Wet Pond or Wet Extended Detention Basin

Additional O&M Plan Requirements	Υ	N	N/A	Comments
Identifiers included on plan sheet or diagram indicating the location of critical components of a Wet Pond or Wet Extended Detention Basin, including micropools, forebays, inlets, outlets, outlet structure, water quality structure, orifices, etc.				

Routine Maintainance - Minimum Requirements

Task	Frequency	What to do
Outlet Structures	Quarterly	Keep outlets such as principal spillway pipe, outlet overflow, outlet windows, outlet pipe, and emergency spillway free from sediment, debris, or trash blockage.
Water Quality Structure/Orifice	Bi-monthly or monthly (orifice <3")	Inspect and clean water quality orifice
Dam/Embankment - Mowing	3-4 times per season or anytime growth exceeds 8"	Mow grassed dam and embankment of the dry pond to prevent the establishment of woody vegetation. Excessive cuttings are to be collected and disposed of or composted.
Vegetation Management	Annually	Remove woody growth, invasive plants (cat tails), and excessive wetland plant growth.
Erosion and Scour	Quarterly (1 st year), then annually	Repair soil erosion or scouring on the side slopes leading into the Wet pond. Reoccurring erosion or scouring shall require the installation of permanent erosion control matting or soil armor.
Debris removal	Quarterly	Remove accumulated debris, and trash from the dry pond forebay, low flow channel, and ponding area.
Sediment	Annually	Remove accumulated sediment from the forebay when accumulation reaches 6-inches.
Dam/Embankment – Erosion and Damage	Annually	Inspect and repair dam/embankment for erosion or animal burrows within the dam portion or side slopes of the pond
Parking Lot Cleaning	Annually	Contributing parking areas are swept at least once a year, typically in the Spring, to remove accumulated materials from winter snow removal
Inlet Inspection and Cleaning	Annually	Inspect and remove accumulated debris from the system catch basins and curb inlets, and manholes

Non-Routine Maintenance - Minimum Requirements:

Task	What to do
Excessive Sediment	Remove sediment accumulation from the ponding area before 25 percent of the ponding storage volume is lost within the dry pond.
Outlet Structure	Repair or replace damaged outlet structure
Inlet/Outlet Piping and Headwalls	Repair or replace exposed piping and erosion around headwalls
Erosion Protection	Repair or replace riprap or stone protection at pipe inlets, pipe outlets or emergency spillway
Dam/Embankment	Seek professional consultation if seepage or leaks appear during ponding or erosion is discovered on the dam or embankment of the dry pond

Section II -O&M, Minimum Inspection and Maintaince Requirements - City of Wooster

Indicators Maintenance is Required:

- The outlet is blocked by trash, debris, or vegetation.
- The emergency spillway is blocked by debris or has signs of erosion.
- Erosion of dam, embankment, or side slopes of the pond.
- Low flow orifice, forebay, and micro pool are blocked by trash, debris, or sediment.
- Dam or embankment shows signs of visible water seepage.
- There are animal burrows within the dam, embankment, or side slopes of the pond.
- Woody vegetation is growing on the dam.
- Foul odors are present.
- Pond depths have been significantly reduced due to sediment accumulation.
- Algae blooms covering over 1/3 of the pond surface area occur in the summer.
- Beavers, muskrats, or groundhogs are present in the basin area.

Oil-Water Separators

Additional O&M Plan Requirements	Υ	N	N/A	Comments
The plan requires oil-water separators to be under contract with a service provider qualified to inspect and maintain these controls on a regular schedule.				
The plan notes stormwater oil-water separators connected to the City sanitary network require the owner/operator to register with the City of Wooster – Pretreatment Coordinator.				
The plan notes – "Do not enter systems unless Occupational Safety & Health Administration (OSHA) regulations for confined space entry are followed."				
Manufacture O&M documentation is included in the plan.				
Manufacute maintainance and inspection requirements have been incorporated into the site specif maintainace plan.				

Routine Maintainance - Minimum Requirements

Task	Frequency	What to do
Oil and Sludge Removal	Per Manufacture	Qualified individual to remove captured oils, grease, and sludge from separation chambers and dispose of them properly per manufacturer's specifications.
Oil Containment Chamber	Per Manufacture	Qualified individual to remove floating oil layer or empty oil container once it has reached manufacturer's recommended volume to be removed. If the system contains oil-absorbing pads, replace them before they are completely saturated
Sediment and Debris	Per Manufacture	Qualified individual to inspect inlets and outlets to ensure they are free of sediment, debris, and trash.
Sediment Collection Chamber	Per Manufacture	Qualified individual to remove accumulated sediment and sludge at the bottom of the system when it has reached the manufacturer's recommended volume to be removed.
Inlet Inspection and Cleaning	Annually	Inspect and remove accumulated debris from the system inlets.

Non-Routine Maintenance - Minimum Requirements:

Task	What to do
System Component Repair	Repair or replace damaged system components based on the manufacturer's specifications.

Indicators Maintenance is Required:

- Accumulated sediment and sludge at the bottom of the system have reached the manufacturer's recommended volume to be removed.
- Floating oil layer or oil container has reached the manufacturer's recommended volume to be removed.
- Spills or leaks are noticed in the system.
- Oil or other pollutants are discharging from the system outlet.
- Obstructions from trash or debris are visible at the inlet or outlet.
- Foul odors are present.

Swirl Separators

Additional O&M Plan Requirements	Υ	N	N/A	Comments
The plan requires swirl separators to be under contract with a service provider qualified to regularly inspect and maintain these controls.				
The plan notes – "Do not enter systems unless Occupational Safety & Health Administration (OSHA) regulations for confined space entry are followed."				
Manufacture O&M documentation is included in the plan.				
Manufacture maintenance and inspection requirements have been incorporated into the site specif maintenance plan.				

Routine Maintainance - Minimum Requirements

Task	Frequency	What to do
Floatable debris is removed at a frequency sufficient to prevent reaching the floatable pollutant capacity of the control.	Quarterly first year, then per Manufacture	Qualified individual to remove captured flotable debris from separation chambes and dispose of them properly per manufacturer's specifications.
Accumulated sediment removed before reaching capacity of the control	Quarterly first year, then per Manufacture	Qualified individual to remove accumulated sediment prior to the control reaching the design sediment capacity.
Check control and components for damage or maintenance needs	Per Manufacture	Qualified individual to inspect inlets and outlets to ensure they are free of sediment, debris, and trash.
Sediment Collection Chamber	Per Manufacture	Qualified individual to remove accumulated sediment and flotables at the bottom of the system prior to reaching the manufacturer's recommended volume to be removed.
Inlet Inspection and Cleaning	Annually	Inspect and remove accumulated debris from the system catch basins and curb inlets, and manholes.
Parking Lot Cleaning	Annually	Contributing parking areas are swept at least once a year, typically in the Spring, to remove accumulated materials from winter snow removal.

Non-Routine Maintenance - Minimum Requirements:

Task	What to do
System Component Repair	Repair or replace damaged system components based on the manufacturer's specifications.

Indicators Maintenance is Required:

- Accumulated sediment and debris at the bottom of the system have reached the manufacturer's recommended volume to be removed.
- A floating oil layer is noted in the system, or spills or leaks are noticed.
- Debris is discharging from the system outlet.
- Obstructions from trash or debris are visible at the inlet or outlet.
- Connected inlets are slow to drain or frequently backup.

Riparian & Wetland Setback Area

Additional O&M Plan Requirements	Υ	N	N/A	Comments
Riparian and wetland setback area boundary signs are to be placed anywhere development or maintained property is within 50 feet of the setback boundary. Signs should be placed 10 feet outside the boundary and spaced approximately one sign every two quarter-acre lots or not exceeding 250 feet.				
Orange Silt fence must be maintained a minimum of 20 feet outside the riparian or wetland setback boundary during any adjacent construction activity. The orange silt fence is in addition to the standard silt fence at the bounds of the project.				

Routine Maintainance - Minimum Requirements

Task	Frequency	What to do
Encroachment	Monthly during development, then quarterly	Inspect boundaries and internal riparian and wetland setbacks or conservation areas for encroachment, damaged vegetation, or soil-disturbing activities—report non-compliance issues to The City of Wooster.
Vegetation Management	Annually	Inspect plant health seasonally to ensure vigorous growth and protection from soil erosion.
Sign Installation	Ongoing during development, then Annual inspection	Riparian and wetland setback area boundary signs are to be placed anywhere development or maintained property is within 50 feet of the setback boundary.
Orange Silt fence	Ongoing during development or construction	Orange silt fence is to be maintained a minimum of 20 feet outside the riparian and wetland setback boundary throughout all construction phases of the development.

Non-Routine Maintenance - Minimum Requirements:

Task	What to do
Sign Installation/Replacement	Replace riparian and wetland setback area boundary signs if damaged, vandalized, or removed. Signs are to be maintained anywhere development or maintained property is within 50 feet of the setback boundary.
Invasive Vegetation	Treat and remove invasive vegetation from riparian and wetland setbacks or conservation areas under the direction of a qualified professional.

Indicators Maintenance/Action is Required:

- Encroachment into riparian and wetland setback boundaries observed.
- Vegetation removal or disturbance is observed.
- Discharge of sediment or concentrated runoff into the protected area.
- Significant populations of non-native or invasive plants are observed.
- Significant soil erosion of stream banks or natural areas observed due to lack of vegetation.