



# WetlandMod<sup>®</sup> Separator

A Stormwater Biofiltration Solution

## OPERATION & MAINTENANCE MANUAL



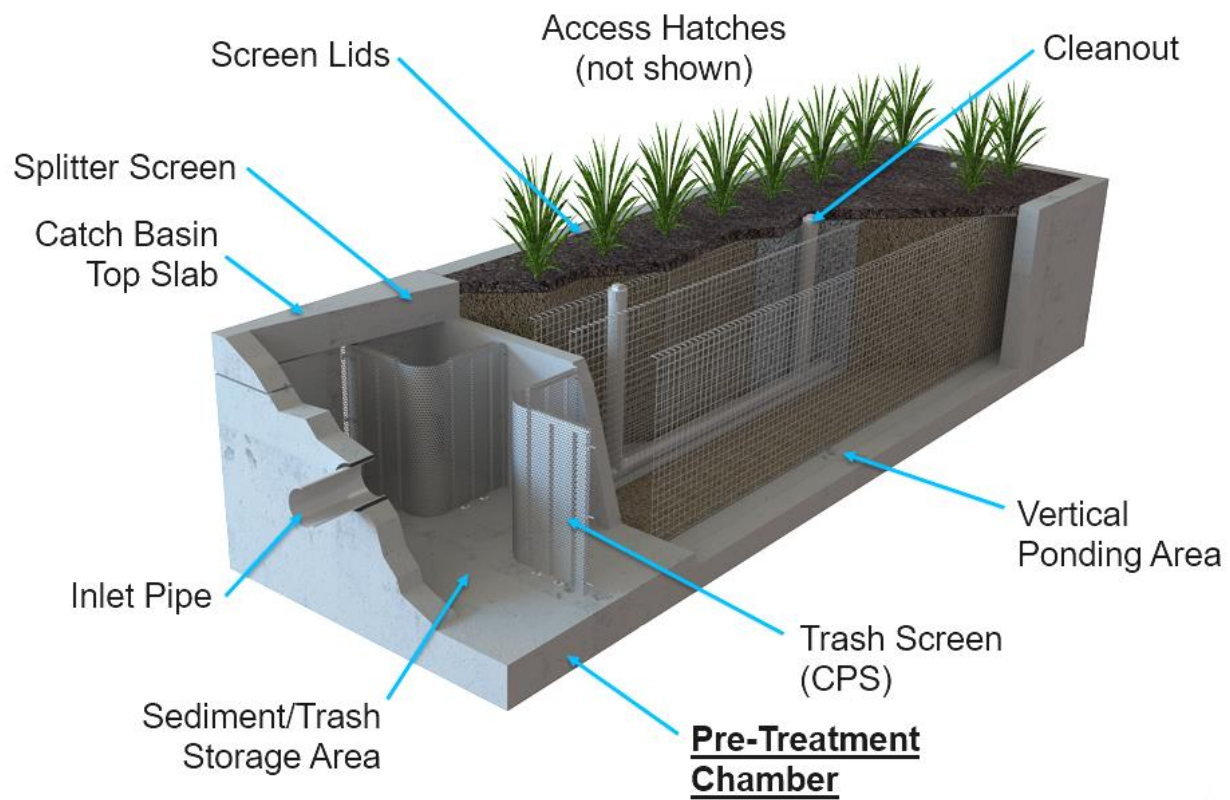


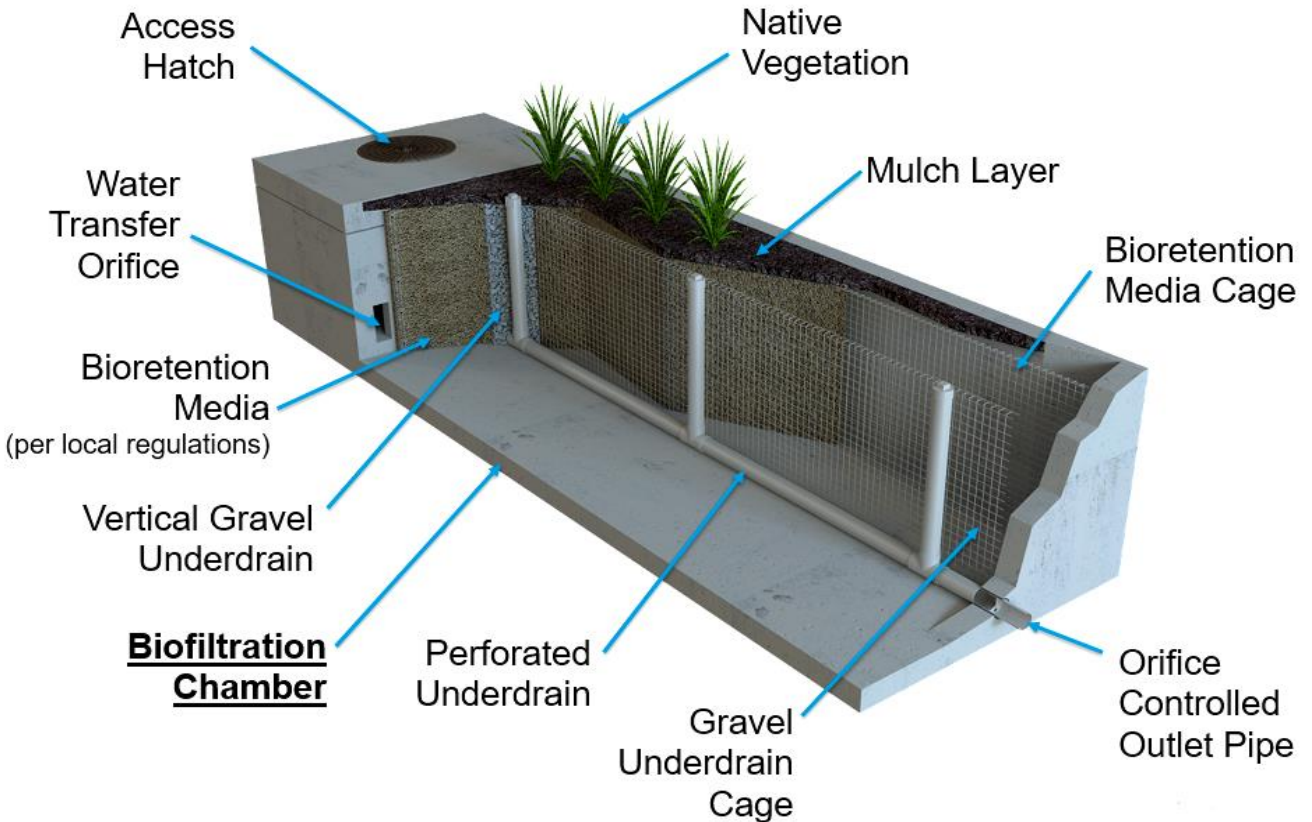
## Inspection Guidelines for WetlandMod

### Inspection Summary

- Inspect Pre-Treatment Chamber – average inspection interval is 6 to 12 months.
  - (5-minute average inspection time).
- Inspect Biofiltration Chamber – average inspection interval is 6 to 12 months.
  - (10-minute average inspection time).
- NOTE: Pollutant loading varies greatly from site to site and no two sites are the same. Therefore, the first year requires inspection monthly during the wet season and every other month during the dry season in order to observe and record the amount of pollutant loading the system is receiving.

### System Diagram





## Inspection Overview

As with all stormwater BMPs inspection and maintenance on the WetlandMod is necessary. Stormwater regulations require that all BMPs be inspected and maintained to ensure they are operating as designed to allow for effective pollutant removal and provide protection to receiving water bodies. It is recommended that inspections be performed multiple times during the first year to assess the site specific loading conditions. This is recommended because pollutant loading and pollutant characteristics can vary greatly from site to site. Variables such as nearby soil erosion or construction sites, winter sanding on roads, amount of daily traffic and land use can increase pollutant loading on the system. The first year of inspections can be used to set inspection and maintenance intervals for subsequent years to ensure appropriate maintenance is provided. Without appropriate maintenance a BMP will exceed its storage capacity which can negatively affect its continued performance in removing and retaining captured pollutants.

### Inspection Equipment:

Following is a list of equipment to allow for simple and effective inspection of the WetlandMod:

- WetlandMod Inspection Form
- Flashlight
- Manhole hook or appropriate tools to remove access hatches and covers (if applicable)
- Appropriate traffic control signage and procedures
- Measuring pole and/or tape measure.
- Protective clothing and eye protection.

- Note: entering a confined space requires appropriate safety and certification. It is generally not required for routine inspections of the system.



## **Inspection Steps**

The core to any successful stormwater BMP maintenance program is routine inspections. The inspection steps required on the WetlandMod are quick and easy. As mentioned above the first year should be seen as the maintenance interval establishment phase. During the first year more frequent inspections should occur in order to gather loading data and maintenance requirements for that specific site. This information can be used to establish a base for long-term inspection and maintenance interval requirements.

The WetlandMod can be inspected through visual observation without entry into the system. All necessary pre-inspection steps must be carried out before inspection occurs, especially traffic control and other safety measures to protect the inspector and near-by pedestrians from any dangers associated with an open access. Once the top tray is removed the following apply:

- Prepare the inspection form by writing in the necessary information including project name, location, date & time, unit number and other info (see inspection form).
- Observe the inside of the pre-treatment chamber and biofiltration chamber once the access hatch is removed. If minimal light is available and vision into the unit is impaired utilize a flashlight to see inside the system and all of its chambers.
- Look for any out of the ordinary obstructions in the inflow pipe, around the trash screen (CPS), on the surface of the media, or in the drain down riser. Write down any observations on the inspection form.
- Through observation and/or digital photographs estimate the amount of trash, debris and sediment accumulated in the chamber. Utilizing a tape measure or measuring stick estimate the amount of trash, debris and sediment on the floor of each chamber. Record this depth on the inspection form.
- Finalize inspection report for analysis by the maintenance manager to determine if maintenance is required.

## **Maintenance Indicators**

Based upon observations made during inspection, maintenance of the system may be required based on the following indicators:

- Missing or damaged internal components.
- Obstructions in the system or its inlet or outlet.

- Excessive accumulation of floatables more than 12” in depth in the pre-treatment chamber.
- Excessive accumulation of sediment of more than 6” in depth in the biofiltration chamber.
- Excessive build up on the vertical surface of the biofiltration media.
- Overgrown vegetation.
- Storage area around media cage has standing water 72 hours after a storm event.

### **Inspection Notes**

1. Following maintenance and/or inspection, it is recommended the maintenance operator prepare a maintenance/inspection record. The record should include any maintenance activities performed, amount and description of debris collected, and condition of the system and its various filter mechanisms.
2. The owner should keep maintenance/inspection record(s) for a minimum of five years from the date of maintenance. These records should be made available to the governing municipality for inspection upon request at any time.
3. Transport all debris, trash, organics and sediments to approved facility for disposal in accordance with local and state requirements.
4. Entry into chambers may require confined space training based on state and local regulations.
5. No fertilizer shall be used in the Biofiltration Media.
6. Irrigation should be provided as recommended by manufacturer and/or landscape architect. Amount of irrigation required is dependent on plant species. Some plants may not require irrigation after initial establishment.



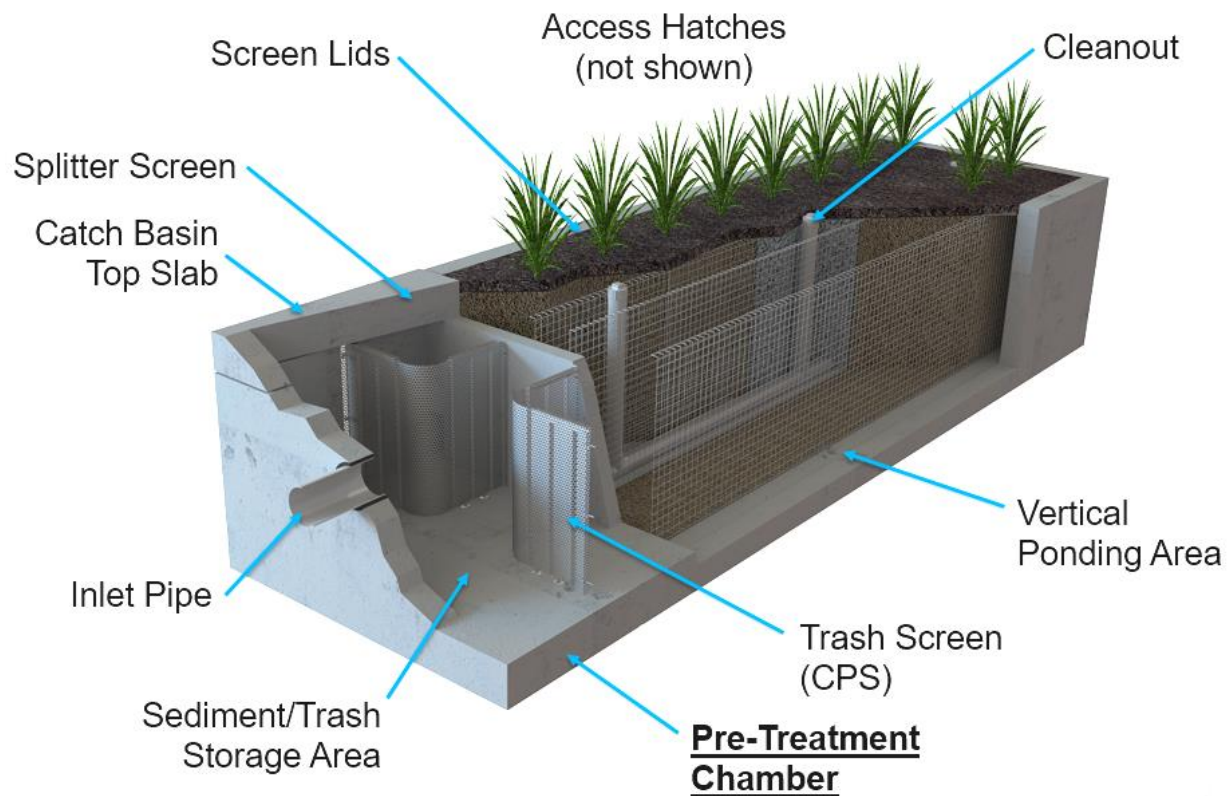


## Maintenance Guidelines for WetlandMod

### Maintenance Summary

- Remove Sediment and Trash from Pre-Treatment Chamber – average maintenance interval is 6 to 12 months.
  - *(15 minute average service time).*
- Removed Sediment and Pressure Wash Biofiltration Media Surface – average maintenance interval 12 to 24 months.
  - *(15-60 minutes depending on size of system).*
- Trim Vegetation – average maintenance interval is 6 to 12 months.
  - *(Service time varies).*

### System Diagram



## Maintenance Overview

The time has come to maintain your WetlandMod. To ensure successful and efficient maintenance on the system we recommend the following. The WetlandMod can be maintained by removing the access hatches. The mulch over the top tray should be removed prior to removing the top hatch over the biofiltration chamber. All necessary pre-maintenance steps must be carried out before maintenance occurs, especially traffic control and other safety measures to protect the inspector and near-by pedestrians from any dangers associated with an open access hatch or manhole. Once traffic control has been set up per local and state regulations and access covers have been safely opened the maintenance process can begin. It should be noted that no maintenance activities require confined space entry but if entry is done all confined space requirements must be strictly followed before entry into the system. In addition the following is recommended:

- Prepare the maintenance form by writing in the necessary information including project name, location, date & time, unit number and other info (see maintenance form).
- Set up all appropriate safety and cleaning equipment.
- Ensure traffic control is set up and properly positioned.
- Prepare a pre-checks (OSHA, safety, confined space entry) are performed.

### Maintenance Equipment

Following is a list of equipment required for maintenance of the WetlandMod:

- WetlandMod Maintenance Form
- Manhole hook or appropriate tools to access hatches and covers (if applicable)
- Protective clothing, flashlight and eye protection.
- Vacuum assisted truck with pressure washer.
- Replacement pre-filter wraps (order from manufacturer).

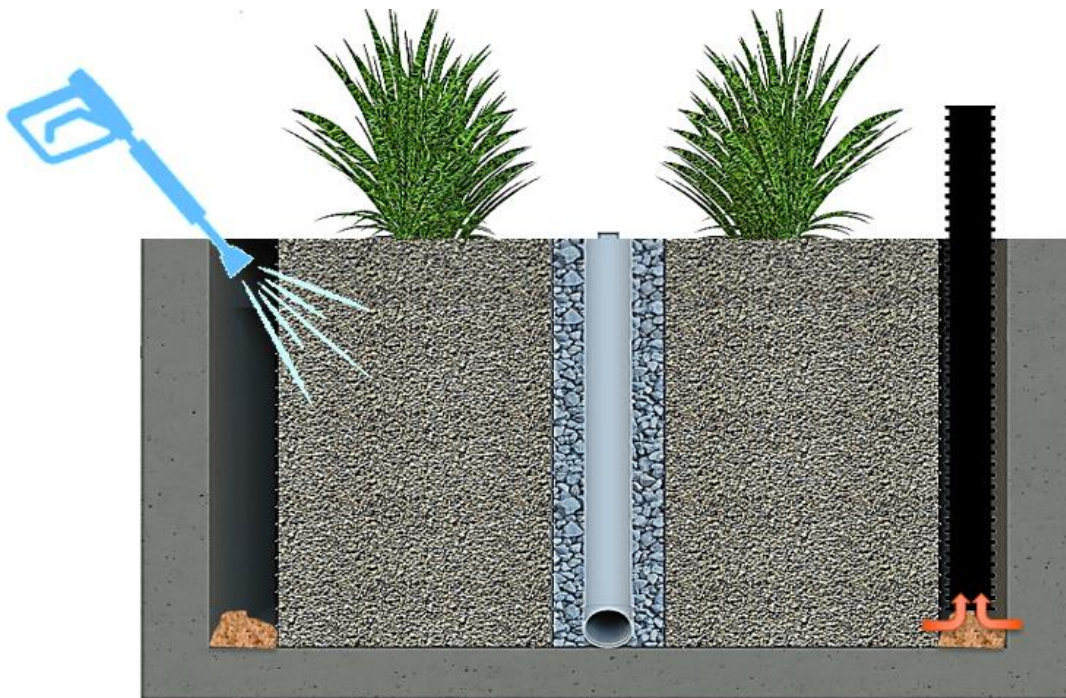


### Maintenance Steps

1. Pre-Treatment Chamber (first chamber that contains trash screens)
  - A. Remove access hatch and position vacuum truck accordingly.
  - B. With a pressure washer spray down pollutants accumulated on trash screens.
  - C. Vacuum out all accumulated pollutants including trash, debris and sediments. Be sure to vacuum the floor, screens, and walls along with outlet side of screens.

## 2. Biofiltration Chamber (vegetated chamber)

- A. Remove the mulch along each side of the unit. Rake away from side walls. Remove top covers to gain access to void areas.
- B. Pressure wash off the vertical surface of the media be using a pressure washer and a vacuum hose to collect and material on the floor around the cage. Pressure wash down into the media to allow accumulated sediments to flow back into the surrounding perimeter separation area for collection with the vac hose.
- C. Replace the top covers.
- D. Trim any vegetation that is overgrown.
- E. Replace the mulch to cover the top covers.



### Maintenance Notes

1. Transport all debris, trash, organics and sediments to approved facility for disposal in accordance with local and state requirements.
2. Entry into chambers may require confined space training based on state and local regulations.
3. No fertilizer shall be used in the Biofiltration Chamber.
4. Irrigation should be provided as recommended by manufacturer and/or landscape architect. Amount of irrigation required is dependent on plant species. Some plants may not require irrigation after initial establishment



## Inspection Form



**Bio Clean, A Forterra Company**

**P. 760.433-7640**

**F. 760-433-3176**

**E. [stormwater@forterrabp.com](mailto:stormwater@forterrabp.com)**

**[www.biocleanenvironmental.com](http://www.biocleanenvironmental.com)**

Project Name \_\_\_\_\_

Project Address \_\_\_\_\_ (city) (Zip Code)

Owner / Management Company \_\_\_\_\_

Contact \_\_\_\_\_

Phone ( ) -

Inspector Name \_\_\_\_\_

Date \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Time \_\_\_\_\_ AM / PM

Type of Inspection  Routine  Follow Up  Complaint

Storm

Storm Event in Last 72-hours?  No  Yes

Weather Condition \_\_\_\_\_

Additional Notes \_\_\_\_\_

For Office Use Only
(Reviewed By)
(Date) Office personnel to complete section to the left.

## Inspection Checklist

WetlandMod System: \_\_\_\_\_

Size (Model): \_\_\_\_\_

Structural Integrity:	Yes	No	Comments
Damage to pre-treatment access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Damage to discharge chamber access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Does the MWS unit show signs of structural deterioration (cracks in the wall, damage to frame)?			
Is the inlet/outlet pipe or drain down pipe damaged or otherwise not functioning properly?			
<b>Working Condition:</b>			
Is there evidence of illicit discharge or excessive oil, grease, or other automobile fluids entering and clogging the unit?			
Is there standing water in inappropriate areas after a dry period?			
Is the filter insert (if applicable) at capacity and/or is there an accumulation of debris/trash on the shelf system?			
Does the depth of sediment/trash/debris suggest a blockage of the inflow pipe, bypass or cartridge filter? If yes, specify which one in the comments section. Note depth of accumulation in in pre-treatment chamber.			Depth:
Does the cartridge filter media need replacement in pre-treatment chamber and/or discharge chamber?			Chamber:
Any signs of improper functioning in the discharge chamber? Note issues in comments section.			
<b>Other Inspection Items:</b>			
Is there an accumulation of sediment/trash/debris in the wetland media (if applicable)?			
Is it evident that the plants are alive and healthy (if applicable)? Please note Plant Information below.			
Is there a septic or foul odor coming from inside the system?			

Waste:	Yes	No
Sediment / Silt / Clay		
Trash / Bags / Bottles		
Green Waste / Leaves / Foliage		

Recommended Maintenance	
No Cleaning Needed	
Schedule Maintenance as Planned	
Needs Immediate Maintenance	

Plant Information	
Damage to Plants	
Plant Replacement	
Plant Trimming	

Additional Notes: \_\_\_\_\_

## Maintenance Report



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# Cleaning and Maintenance Report WetlandMod System

Project Name \_\_\_\_\_  
 Project Address \_\_\_\_\_ (city) (Zip Code)  
 Owner / Management Company \_\_\_\_\_

For Office Use Only
(Reviewed By) _____
(Date) _____ Office personnel to complete section to the left.

Contact \_\_\_\_\_ Phone ( ) - \_\_\_\_\_  
 Inspector Name \_\_\_\_\_ Date \_\_\_\_ / \_\_\_\_ / \_\_\_\_ Time \_\_\_\_\_ AM / PM

Type of Inspection  Routine  Follow Up  Complaint  Storm Storm Event in Last 72-hours?  No  Yes

Weather Condition \_\_\_\_\_ Additional Notes \_\_\_\_\_

Site Map #	GPS Coordinates of Insert	Manufacturer / Description / Sizing	Trash Accumulation	Foliage Accumulation	Sediment Accumulation	Total Debris Accumulation	Condition of Media 25/50/75/100 (will be changed @ 75%)	Operational Per Manufactures' Specifications (If not, why?)
	Lat: _____ Long: _____	WM Catch Basins						
		WM Sedimentation Basin						
		CPS Filter Condition						
		Plant Condition						
		Drain Down Media Condition						
		Discharge Chamber Condition						
		Drain Down Pipe Condition						
		Inlet and Outlet Pipe Condition						

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_