



**Stormwater Retrofit Program:**  
*Operations and Maintenance Manual*



## **1. INTRODUCTION**

The East of Hudson Watershed Corporation (EOHWC) is a Regional Stormwater Entity (RSE) with 19 members (18 municipalities and one County), operating within 18 Municipal Separate Storm Sewer Systems (MS4) and within three Counties in the East of Hudson (EOH) watershed. The EOHWC is governed by a Board of Directors, composed of the chief elected official of each member. The chief elected official may delegate authority to another municipal employee.

Each member has passed resolutions to join the EOHWC and authorize implementation of the SRPs by the EOHWC on behalf of each member. The 19 municipalities represented by EOHWC have over 150 stormwater retrofit practices planned for, or constructed within their individual municipalities. Each of these projects will, over time, require maintenance for the practice to maintain optimal efficiency in its operation.

The purpose of this manual is to provide the participating municipalities with a technical breakdown of the NYSDEC requirements for long term maintenance on all completed projects as part of the Stormwater Retrofit Program.

## **2. REQUIREMENTS**

It shall be the responsibility of the individual municipalities to complete all inspections and maintenance required for all projects within their associated borders. The financial obligation associated with this policy will be assessed annually to verify the actual annual costs required of each MS4. This annual cost is reflective of the number and size of the SRP's within its borders. EOHWC is responsible for the allocation of corporation resources. EOHWC can also assist in the distribution and coordination of equipment to any municipality that can demonstrate a need for the equipment. EOHWC is not responsible for the completion of MS4 compliance reports and individual municipalities are expected to complete these reports independently.



All retrofit projects which have been constructed as part of the EOHWC program are required to be maintained for the lifetime of the designated project. The portion of the project eligible for O&M reimbursement begins at the diversion structure, Water Quality Treatment System, or along the stabilized channel, whichever is first. Blowouts, heavy sedimentation, etc. that affect the function of the project will be eligible. The functional lifetime of each stormwater management practice (SMP) is approximately 20 years but can be extended if the project is maintained properly.

NYSDEC Maintenance Requirements are discussed in Appendix A for each type of stormwater retrofit project which has been implemented by the EOHWC.

Newly appointed town supervisors and highway supervisors are required to meet with staff from EOHWC to establish and maintain operational procedures. EOHWC staff will provide annual O&M Recommendation Reports to each EOHWC member municipality, which will include project specific maintenance, existing project list, and possible projects to be completed.

### 3. SUBMITTALS

All forms should be submitted to the EOHWC to document that work is being completed by the MS4's. This submission schedule will coincide with requests for funding from the EOHWC, but all MS4's are required to abide by the following schedule:

- June 1<sup>st</sup> – O&M Documentation for January 4<sup>th</sup> – June 1<sup>st</sup>
- January 3<sup>rd</sup> – O&M Documentation for June 2<sup>nd</sup> – January 3<sup>rd</sup>

Any EOHWC requested corrections to submissions can be resubmitted until **January 31<sup>st</sup>**.

Any initial submissions received after **January 3<sup>rd</sup>** will not be reimbursed until next year's O&M cycle.

Any previous year initial submissions received after **March 31<sup>st</sup>** will **NOT** be accepted.



Inspection and reimbursement related documents can be found at <https://eohwc.org/corporation-documents/> under the Operations and Maintenance tab.

Inspection related submittals are to include, but are not limited to:

- EOHWC O&M Reimbursement Voucher Excel File
  - All costs must be submitted as FEMA Rates when applicable.
  - Anything not found in FEMA, can be found in the EOHWC manual.
  - Costs not listed above can be submitted for review.
- Signed copy of the EOHWC O&M Reimbursement Voucher Summary Sheet – submitted digitally.



**EOHWC – Additional Approved O&M Rates, NOT FOUND ON FEMA LIST**

<b><u>Equipment</u></b>	<b><u>Description</u></b>	<b><u>Approved Rate</u></b>
Weed Whacker	Gasoline Powered	\$5.00
Push Lawn Mower	Gasoline Powered	\$7.50
Riding Mower	Incl. Ride behind, ~52"	\$10.88
RC Mower	For unsafe/unreachable slopes	\$62.50
Chainsaw	Gas Powered	\$7.00
Hedge Trimmer	Gas Powered	\$5.00

Items that cannot be found through FEMA, or the above list, may be submitted for EOHWC approval.



# Appendix A: NYSDEC Maintenance Requirements

GENERAL MAINTENANCE REQUIREMENTS  
NYS STORMWATER MANAGEMENT DESIGN MANUAL

A. Stormwater Ponds<sup>4</sup>

- P-1 Micropool Extended Detention Pond
  - P-2 Wet Pond
  - P-3 Wet Extended Detention Pond
  - P-4 Multiple Pond System
1. Sediment removal in the forebay shall occur every 3 years or after 30% of total forebay capacity has been lost.
  2. Sediment removal from the main basin every 5 years or when the minimum water depth approaches 3 feet. More regular maintenance will help ensure that the system is achieving the highest removal of phosphorus.
  3. Annually mowing of side slopes.

B. Wetland Systems<sup>4</sup>

- W-1 Shallow Wetland
  - W-2 ED Shallow Wetland
  - W-3 Pond/Wetland System
  - W-4 Pocket Wetland
1. Maintain a minimum of 50% cover of planted wetland zones

C. Infiltrations Systems<sup>4</sup>

- I-1 Infiltration Trench
  - I-2 Infiltration Basin
  - I-3 Dry Well
  - I-4 Underground Infiltration Systems
1. The vegetative cover needs to be regularly maintained. Grass cover may be mowed and bare areas should be reseeded
  2. Disc, aerate or scrape the basin bottom to restore original cross section and infiltration rate every one to five years.

D. Filtering Systems<sup>4</sup>

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<sup>4</sup> Based on the maintenance requirements in the NYS Stormwater Management Design Manual.

- F-1 Surface Sand Filter
  - F-2 Underground Sand Filter
  - F-3 Perimeter Sand Filter
  - F-4 Organic Filter(peat)
  - F-5 Bioretention
1. Remove sediment/gross solids from sedimentation chamber and filter surface annually or when depth exceeds 3 inches.
  2. Remove sediment/gross solids from bioretention surface annually or when depth exceeds 3 inches.
  3. Keep the vegetation height limited to 18 inches in bioretention systems to facilitate routine maintenance and allow for observation of system function.
  4. Rehabilitate/replace mulch and bioretention media (top 6 inches minimum) when flowthrough rate is reduced to <60% design treatment flow rate. This is determined by observing ponding in the facility following a storm event.

E. Swales

- O-1 Dry Swale
1. Remove sediment built-up within the bottom of the channel when 25% of the original water quality volume has been exceeded.
  2. Maintain a grass height of 4" to 6".

F. Hydrodynamic Separators

1. Inspect unit two to four times per year.
2. Clean out during dry weather conditions with Vac Truck when sediment accumulation reaches 12 to 18 inches from the dry-weather water surface elevation.

G. StormFilter Vault Maintenance Guidelines<sup>5</sup>

1. Maintenance is performed on an as needed basis, based on inspection. Maintenance lifecycle is 1-3 years. The primary factor controlling timing of maintenance of the StormFilter is sediment loading. Until appropriate timeline for inspections is determined, conduct annual inspections and after each major storm event. Use the following as a general guide.
2. Depending on the configuration of the particular system, workers will be required to enter

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<sup>5</sup> Based on manufacturer's recommendations



the vault to perform the maintenance. OSHA rules for confined space entry must be followed.

3. Filter cartridge replacement should occur during dry weather. It may be necessary to plug the filter inlet pipe if base flow is occurring. To conduct cartridge replacement and sediment removal:
  - a. Using appropriate equipment offload the replacement cartridges (up to 150 lbs. each) and set aside.
  - b. Unscrew (counterclockwise rotations) each filter cartridge from the underdrain connector. Roll the loose cartridge, on edge, to a convenient spot beneath the vault access.
  - c. Using appropriate hoisting equipment, attach a cable from the boom, crane, or tripod to the loose cartridge and remove the used cartridges (up to 250 lbs.) from the vault.
  - d. Remove accumulated sediment from the floor of the vault and from the forebay. Use vacuum truck for highest effectiveness.
  - e. Once the sediments are removed, assess the condition of the vault and the connectors. Lightly wash down the vault interior.
  - f. Lower new cartridges into vault and re-install.

#### H. Raingardens

1. Routine maintenance may include the occasional replacement of plants, mulching, weeding and thinning to maintain the desired appearance.
  - a. Watering for the first year, or during droughts is essential, and can be minimized with the use of a weed-free mulch layer.
  - b. Keep plants pruned if they start to get “leggy” and floppy.
  - c. Cut off old flower heads after a plant is done blooming.
  - d. Keeping the garden weeded is one of the most important tasks, especially in the first couple of years while the native plants are establishing their root systems.
2. Once the rain garden has matured, the garden area should be free of bare areas except where stepping stones are located. Inspect for sediment accumulations or heavy organic matter where runoff enters the garden and remove as necessary.
3. The top few inches of planting soil should be removed and replaced when water ponds for more than 48 hours. Blockages may cause diversion of flow around the garden.

4. If the garden overflow device is an earthen berm or lip, check for erosion and repair as soon as possible. If this continues, a harder armoring of stone may be necessary.
5. Make sure all appropriate elevations have been maintained, no settlement has occurred and no low spots have been created.