TECHNICAL NOTE

General Filter Inspection and Maintenance

in Accordance with

WDNR Technical Standard 1010 Proprietary Storm Water Filtration Devices

I. INTRODUCTION

This technical note describes the operation and maintenance (O&M) expectations for a proprietary storm water filtration device installed in accordance with Wisconsin Department of Natural Resources (WDNR) Technical Standard 1010 Proprietary Storm Water Filtration Devices. Like all storm water best management practices (BMPs), it is vital for proprietary storm water filtration devices and any pretreatment devices or measures associated with them to receive regular inspections and appropriate maintenance for maximum pollution control performance. Proprietary storm water filtration devices are generally located below ground. Determination of whether they are functioning properly typically occurs via visual inspection where the device is opened and observed.

This technical note does not take the place of the original equipment manufacturer (OEM)-recommended O&M but rather provides a general understanding of the inspection and maintenance that proprietary storm water filters require.

In most situations, visual inspections during the first year of normal operation should be done quarterly to establish if maintenance is required more often than once every 12 months. Inspections may be reduced to once every 12 months if it is determined that maintenance is not needed over a minimum period of 12 months under normal operating conditions. Inspections shall also be performed whenever a significant source of soil, sediment, oil or petroleum has been discharged to the device (such as from a spill or illicit discharge).

A granular media filter is generally designed to have its media replaced every 12 months but may require replacement earlier if an O&M filter change indicator suggests replacement is needed. If the media filter shows no sign of being close to being spent, then the media filter may be used for a period of up to 24 months but should be replaced at 24 months regardless of the appearance of the media filter.

Intermediate maintenance may be required, including removal of sediment, debris, trash, and oil or grease floating on the surface, and in some filter types, backwashing using specific methods and procedures provided by the OEM-recommended O&M procedures.

Lack of maintenance will significantly reduce the life of filters resulting in a degradation of storm water quality leaving the system.

Filters can be of different configurations and types, including:

- Media Filters – containing a mix of filter materials including sand, carbon, perlite, and other blends of granular media. Granular media filters are generally composed of cartridges or canisters mounted on the floor or walls of the filter chamber.
- Ribbon or Membrane Filters – containing hanging filter ribbons or membrane filter cartridges that generally do not contain granular media blends.

Some filters can be inspected visually from the surface while others may require a more involved inspection requiring either specific tools, equipment, or processes. Consult with the OEM O&M manual for device-specific instructions.

General inspections may be done from the surface using the following guide and may be used to decide if confined space entry for a more detailed inspection or full maintenance may be required.

This Technical Note does not provide guidance or instructions on proper confined space entry procedures. Any confined space entry must follow OSHA and other relevant safety procedures.

II. GENERIC O&M – INSPECTION AND MAINTENANCE

Obtain the OEM O&M manual for the filter being inspected. This will contain critical information about indicator(s) of a filter being spent, depth of sediment in sump requiring cleanout, and other pollutants that may influence the maintenance cycle of the filter system. Generally, sediment sump cleanout and media filter replacement should occur at least once every 12 months or earlier if an O&M maintenance indicator suggests sooner. A media filter that shows no sign of being close to requiring replacement may continue to be used for a maximum operating period of 24 months. Membrane filters – which can be cleaned and reused – should be maintained and replaced per the manufacturer's O&M manual.

VISUAL INSPECTIONS

Site

Visually inspect the local area draining to the filter. Look for indications of flooding, standing water, back water upstream, or inlet back up, any of which may indicate either blockage or excessive sediment accumulation within the system.

Look for indications of disturbed surfaces, stockpiling of loose materials, spills, or other indications of changes to the site that may have impacted the sediment, trash, debris, oil, or grease load in storm water draining to the system. During winter, snow piling areas may greatly increase the load to the filter during spring thaw.

Water Levels

Lift access covers in the inlet and outlet areas to observe water levels. High inlet water levels may indicate spent or blocked filter media or membranes.

Some filters may be installed with an external bypass. There generally should be no standing water in the bypass structure unless it is designed to have standing water, as it may lead to an accumulation of sediment and can cause maintenance issues.

The normal standing water level may be difficult to evaluate in filters with an internal bypass. In general, any standing water in upstream pipes is an indicator of blocked or spent filters.

Some filters use a smaller "drain down" filter that is used to return standing water levels to their correct elevations between rain events. The drain down filter may need to be replaced or cleaned rather than full filter replacement. Refer to the OEM O&M manual for more information.

No water in the sump after a storm event is an indication of a leak or some other structural issue with the filter chamber and further inspection will be required to account for the loss of the sump water.

Trash and Debris

Look for floating trash and debris. Significant build-up should be removed during maintenance events.

Oil and Grease

Free floating oil or grease, which may have an oil sheen appearance and are commonly associated with vehicle spills or leaks and may be difficult to see from the surface. Use a dip stick, sampling tube, or other surface skimmer to inspect for oil or grease accumulation. Oil or grease can be a significant issue for filters leading to clogging of the media or membranes. A visible oil sheen may indicate significant impact to the filter operation and warrants further investigation. A full sump pump-out and filter replacement may be required. Significant oil or grease accumulation may need to be addressed through source area investigation and evaluation and may require additional pretreatment.

NON-VISUAL INSPECTIONS

Sediment Depth

Using a sediment or sludge probe, feel for the depth of sediment and compare it to the outlet invert and or the maximum level as recommended in the OEM O&M manual for the particular device being inspected.

Regular sediment sump cleaning will be needed to keep the sediment below required levels. The frequency of sump cleaning will depend on the volume of material collected. However, the sump should be cleaned at least once every 12 months as the longer the material sits in the sump, it may become cemented in place and harder to remove.

III. MATERIAL DISPOSAL

Accumulated material removed from the sump and spent filter material are considered a solid waste and must be managed in accordance with local and state solid waste regulations. This material is generally recommended to be disposed of in a licensed landfill.

IV. O&M DOCUMENTATION

Refer to OEM O&M manual for inspection and maintenance documentation. A written record of inspections shall be prepared to include: date, name of person conducting inspection, location of the device, identify apparent indicators of filter or membrane replacement and sediment sump cleanout needs, maintenance actions taken or identified. In many cases, the OEM O&M manual will include a sample maintenance inspection report. Inspection records must be kept on file by the device owner and made available to the local Municipal Separate Storm Sewer System (MS4) agency or WDNR upon request.