Aqua-Ponic™ Inspection and Maintenance Guide

Aqua-Ponic Stormwater Treatment System

Aqua-Ponic™ (AquaPonic) technology is a modular proprietary, high-flow biofiltration system designed to remove total suspended solids (TSS), Total (insoluble) Phosphorus, and heavy metals such as copper and zinc from stormwater runoff.

A distinguishing feature of the AquaPonic is its combination of filtration with the principles of hydroponics. This allows AquaPonic to use stormwater as an asset, instead of liability, to provide a sustainable water supply for vegetation during hot and/or dry conditions.

AquaPonic Installation (Fall Vegetation)

The AquaPonic system utilizes hardy low-profile perennial vegetation such as native grasses, shrub grasses and/or ornamental flowering plants. A facility can utilize a single type or multiple types of plants to enhance the aesthetics. It is important to specify plants that demonstrate viability within the climatic zone of a site installation.

Inspection and Maintenance Frequency

In most cases, AquaShield recommends in most cases that a quarterly inspection for the first year of operation to develop an appropriate schedule of maintenance. Sites with higher volumes of trash and pollutant loads may require increased inspection and maintenance. Based on experience of the system's first year in operation, we recommend that the inspection schedule be revised to reflect the site-specific conditions encountered. Typically, the inspection schedule for subsequent years is reduced to semi-annual inspections. It is important to note that all inspection and maintenance activities can be performed from the surface without the need for AquaShield personnel to be present.

AquaPonic Inspection Procedure

An AquaPonic inspection should first determine any obvious signs of degradation, erosion, sediment or trash accumulation, or oil in the upper layers of the unit. To do so, it may be necessary to remove a section of the top gravel layer with a shovel. This will allow inspection of the underlying plant stabilization filter media. Care should be taken not to damage the plants or disturb root balls during this process.

Those most maintenance is limited to surface repairs or plant replacement; more complete maintenance activities may be necessary depending on the results of the inspection. In these cases, the top gravel layer is removed by shoveling or vacuuming. The top several inches of the underlying plant stabilization filter media may be replaced at the same time if warranted. Care should be taken not to damage the plants or disturb root balls during limited media replacement or when replacing adjacent plantings. Depending on site conditions, it may be necessary to remove all the media and all the plants. It is recommended that in these cases all materials and the wicks be replaced.

In rare cases, and over a prolonged period, fine sediment can accumulate in the base of the water supply sump. If this occurs, the pea gravel layer, the plants, the filter media bed, and the perforated metal plate should be removed to access the water supply sump from the surface. This allows for the vacuuming water and any accumulated sediment. Upon removal of the sediment, new replacement components shall be used to rebuild the unit.

AquaShield can provide filter media, wicks and any associated grommets. Although unlikely, the supporting stainless-steel plate can also be supplied by AquaShield if its replacement is necessary.

Disposal of Recovered Materials

AquaShield recommends that all maintenance activities be performed in accordance with appropriate health and safety practices for the tasks and equipment being used. All material removed during maintenance shall be handled and disposed of in full accordance with any applicable local and state requirements. Depending on the influent pollutant characteristics of the facility drainage area, it may be appropriate to perform Toxicity Characteristics Leaching Procedure (TCLP) analyses on representative samples of the spent filter media to ensure that the handling and disposition of materials complies with any applicable environmental regulations and practices.

AquaPonic Inspection and Maintenance Worksheets on following pages.

AquaPonic Inspection Worksheets

SITE and OWNER INFORMATION

Site Name: _____ Date / Time: _____

Site Location: _____

Inspector Name: _____

Inspector Company: _____ Phone #: _____

Owner Name: _____ Phone #: _____

Owner Address: _____

INSPECTIONS and MAINTENANCE

I. During Construction

The AquaPonic units are delivered sealed to prevent construction runoff from entering the filter media. Unit activation should only occur once all upstream drainage areas are stabilized.

II. First Year Post-Construction

Inspect and maintain the AquaPonic every three (3) months.

1. Inspect the vegetation in the unit to determine if any vegetation is damaged, dying or dead. Replace vegetation depending upon condition.
2. Inspect the surface and pea gravel for sediment accumulation, erosion and trash buildup. Remove the accumulated trash and sediment. Repair the pea gravel layer as necessary.
3. If oil is present, measure its depth into the filter media. Remove any materials containing oil residue and replace accordingly.

III. Second and Subsequent Years Post-Construction

Depending on the results of the first year of operation, inspection and maintenance schedules can be adjusted for the second and subsequent years.

1. Complete the same inspection and maintenance activities recommended in the first year.
2. Inspect the water supply reservoir for sediment accumulation. Utilize a CCTV camera to enter the sump through the outlet connection. If substantial sediment has accumulated, the sediment must be removed to restore the water reservoir volume. This is accomplished by removing the pea gravel, media and plate. The plate can be reused during reassembly, but all other components should be replaced with new components.

CLEANING

Most routine maintenance can be handled by the property's landscaping company or owner. If substantial media replacement or sediment accumulation must be removed, schedule cleaning with local Vactor company.

All cleaning activities should be performed in accordance with property health and safety procedures. AquaShield always recommends that all materials removed from the AquaPonic during the maintenance process be handled and disposed of in accordance with local and state environmental or other regulatory requirements.

AquaPonic Maintenance Worksheets

MAINTENANCE COMPANY INFORMATION

Company Name: _____

Street Address: _____

City: _____ State/Prov.: _____ Zip/Postal Code: _____

Contact: _____ Title: _____

Office Phone: _____ Cell Phone: _____

ACTIVITY LOG

Date of Cleaning: _____ Time of Cleaning: _____

Date of Next Inspection: _____ Floatable debris present: Yes No

Structural damage: Yes No Where: _____

Odors/Oil present: Yes No Describe: _____

Media Clogging: Yes No Describe: _____

NOTES

Additional Comments and/or Actions To Be Taken	Time Frame

ATTACHMENTS

- Attach site plan showing AquaPonic location.
- Attach detail drawing showing AquaPonic dimensions and model number.

TABULAR MAINTENANCE SCHEDULE

Date Construction Started: _____ Date Construction Ended: _____

FIRST YEAR POST-CONSTRUCTION

	Month											
Activity	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Inspect and Repair as needed			X			X			X			X
Replace Vegetation as needed System			X			X			X			X

SECOND AND SUBSEQUENT YEARS POST-CONSTRUCTION

	Month											
Activity	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Inspect and Repair as needed						X*						X*
Replace Vegetation as needed System						X*						X*
Remove sediment in water reservoir, as needed						X*						X*

* Depending on the results of the first year of operation, inspection and maintenance schedules can be adjusted for the second and subsequent years. It is recommended that the system be inspected at least semi-annually for vegetation and erosion conditions.