

Questions for Ecology Staff Interviews

SAM Study: Evaluation of Stormwater BMPs Maintenance Conditions
City of Bellevue and Aspect Consulting
12/1/22

INTRODUCTION AND BACKGROUND

Task 4 of Study: *Interview Ecology Staff*

Ecology engineers and permit writers (up to four) will be interviewed to understand the background and basis for some of the maintenance conditions of selected BMPs in the BMP Maintenance Tables (SWMMWW Appendix V-A). [LINK](#)

This task is to better understand how certain maintenance conditions were identified, what publications or references were used, and what BMPs could use more input for maintenance conditions needs.

The interviews are intended to complement Task 2 (survey of municipal O&M programs) and Task 3 (BMP O&M literature review) regarding the evaluation of BMP maintenance criteria.

For this Study, we're focused on four BMP types: ponds, trenches, vaults, and tanks.

BMP Maintenance Tables list. Grayed out BMPs are not included in this study.

Table No.	BMP	Pond, Trench, Vault, or Tank
V-A.1	Detention Ponds	Pond
V-A.2	Infiltration	Pond
V-A.3	Closed Detention (Tanks/Vaults)	Tank and Vault
V-A.4	Control Structure/Flow Restrictor	other
V-A.5	Catch Basins	other
V-A.6	Debris Barriers (Trash Racks)	other
V-A.7	Energy Dissipators	other
V-A.8	Typical Biofiltration Swale	Trench
V-A.9	Wet Biofiltration Swale	Trench
V-A.10	Filter Strips	Trench
V-A.11	Wetponds	Pond
V-A.12	Wetvaults	Vault
V-A.13	Sand Filters (above ground/open)	Vault
V-A.14	Sand Filters (below ground/enclosed)	Vault
V-A.15	Manufactured Media Filters	Vault
V-A.16	Baffle Oil/Water Separator (API)	Vault
V-A.17	Coalescing Plate Oil/Water Separators	Vault
V-A.18	Catch Basin Inserts	other
V-A.19	Media Filter Drain	Trench
V-A.20	Compost Amended Vegetation Strips	Trench
V-A.21	Bioretention Facilities	Pond
V-A.22	Permeable Pavement	other
V-A.23	Vegetated Roofs	other

ECOLOGY INTERVIEW QUESTIONS
Regarding SWMMWW Appendix V-A BMP Maintenance Tables
for ponds, trenches, vaults, and tanks

General questions for all four BMP types:

1. Is there a bibliography for Appendix V-A? Some references are made in the Notes of the Tables, including the SWMMWW design standards and the LID Manual. But for some maintenance criteria, there are no references cited.
2. For references used to develop quantitative maintenance criteria, how were ranges of values or conflicting numbers handled for a given maintenance type? Are some criteria considered critical items that must be maintained per the Tables (needed vs. required)?
3. For the relatively newer BMP types of Bioretention Facilities, Permeable Pavement, and Vegetated Roofs, the Tables include a recommended frequency. Has Ecology considered adding recommended frequencies to other BMP types? If so, which ones?
4. What other regulations were considered or incorporated besides stormwater NPDES regulations when determining maintenance criteria? Such as OSHA for federal safety regulations, or local regulations for critical areas or shoreline management.

Questions about Pond BMPs:

1. How were specific maintenance criteria determined?

For Pond, Wetpond, Infiltration Pond, Bioretention Facilities

- a. Trash of 1 cf/1,000 sq ft or more
 - b. Erosion on side slopes and spillways: 2 inches or more (ponds) or 6 inches or more (wetponds)
 - c. Sediment in pond 10% of pond depth or more
 - d. Berm settlement of 4 in or more (3 inches for bioretention)
 - e. Sump depth in pre-settling vault of 6 inches or more
 - a. Infiltration rate of 90% or more
 - b. Vegetation survival rate of 75% or less (reference given in table)
 - c. Watering rates:
 - i. For new vegetation years 3-5?
 - ii. During drought conditions?
2. What is the source for some of the best practices recommendations?
 - a. Animal removal vs habitat benefits (e.g., for rodents, the Tables recommended only “eradicate” or “destroy”)
 - b. Dead tree: removal per Tables vs habitat benefits
 - c. Maintenance frequencies:
 - i. Assessing drawdown (Sand Filter, Media Filter)
 - ii. Erosion inspection

Questions about Trench BMPs:

1. How were specific maintenance criteria determined?

For Biofiltration Swale, Media Filter Drain, and Composted Amended Veg Strips

- a. Sediment depth of 2 inches or more
 - b. Vegetation coverage exceeds 10% of swale bottom
 - c. Erosion areas less than 12 inches wide
 - d. Water Depth of 4 or more inches (wet swale)
 - e. Sparse vegetation (bare areas) coverage of 10% or more
2. Source for some of the best practices recommendations?
- a. Remove grass clippings (rather than mulch in)
 - b. Maintenance frequencies?

Questions about Vault BMPs:

1. How were specific maintenance criteria determined?

For Wetvaults, Sand Filters, and Oil-Water Separators

- a. Sediment depth:
 - i. 6 inches or more Wetvaults
 - ii. ½ inch or more Sand Filters
 - iii. ¼ inch or more Media Filters
 - b. Structural: 10% or more “bent out of shape”
 - c. Vault structure: crack size ½-inch or more, or ¼-in at pipe joints
 - d. Media drawdown: more than 1 hour
 - e. Sand filter drawdown: more than 24 hours
 - f. Oil accumulation: 1 inch at water surface
2. Source for some of the best practices recommendations?
- a. Guidance to identify “obvious poor water quality” (in OWS)?
 - b. Maintenance frequencies:
 - i. Assessing drawdown (Sand Filter, Media Filter)
 - ii. Erosion inspection

Questions about Tank BMPs:

1. How were specific maintenance criteria determined?

For Closed Detention Systems

- a. Sediment depth of tanks: 10% of diameter for half of length of tank
 - b. Structural: 10% or more “bent out of shape”
 - c. Vault structure: crack size ½-inch or more, or ¼-in at pipe joints
2. Source for some of the best practices recommendations?
- a. Safety considerations for ladder, cover status and removal, plugged air vents
 - b. Maintenance frequencies?