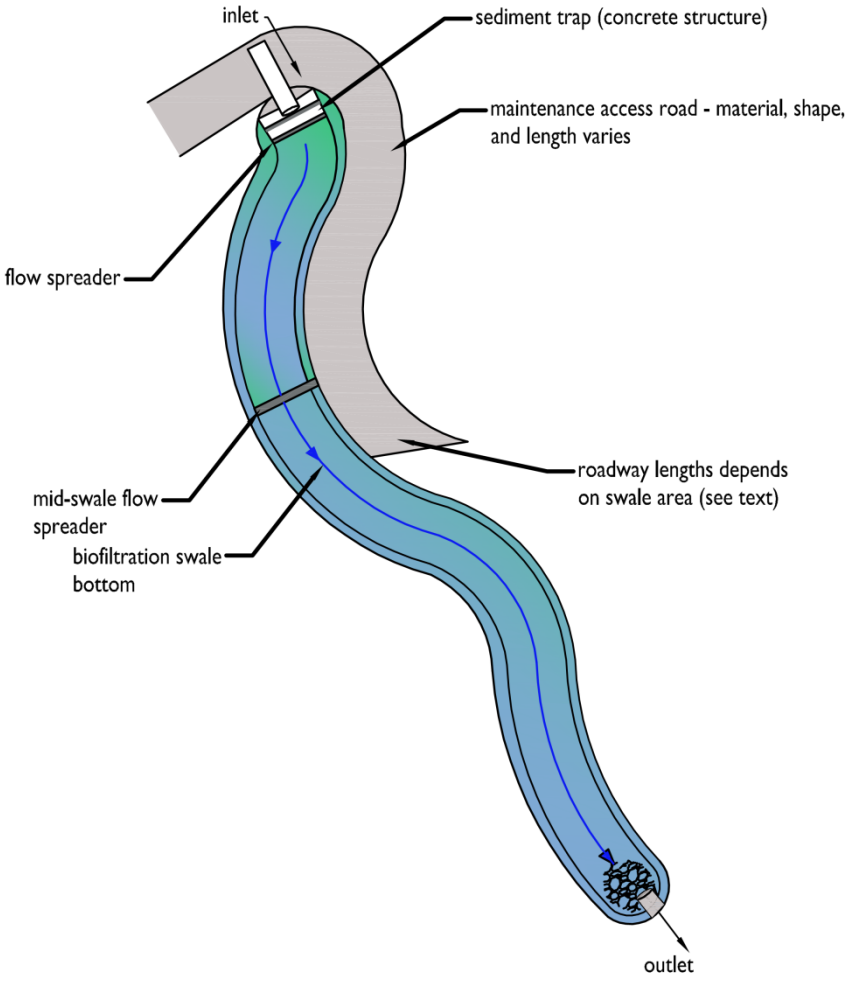
Wet Biofiltration Swale

A wet biofiltration swale is a variation of a basic biofiltration swale for use where the centerline slope is slight, groundwater tables are high, or a continuous low base flow is likely to result in wet soil conditions for long periods of time. Where continuously wet soil conditions exceeds about 2 weeks, typical grasses will die. Thus, vegetation specifically adapted to wet soil conditions is needed. Different vegetation, in turn, requires modification of several of the design and maintenance requirements from the basic biofiltration swale.

Facility objects that are often associated with a wet biofiltration swale include:

- access road or easement
- fence, gate, and water quality sign
- energy dissipaters (flow spreaders)
- debris barrier (e.g. trash rack)
- catch basins/field inlets



Key Operations and Maintenance Considerations

- Same as for basic biofiltration swales except mowing of wetland vegetation is not required. However, harvesting of very dense vegetation may be desirable in the fall after plant die-back to prevent the sloughing of excess organic material into receiving waters. Many native Juncus species remain green throughout the winter; therefore, fall harvesting of Juncus species is not recommended.
- The most common tools for maintenance of wet biofiltration swales are hand tools to remove built up sediment and debris in the swale and to redistribute media displaced.

Plant Material

Table 5: Acceptable Plants for Wet Biofiltration Swale

Wet Biofiltration Swale Treatment Area		
Botanical Name	Common Name	O.C. Spacing
Alopecurus aequalis	Shortawn foxtail	seed
Alopecurus geniculatus	Water foxtail	seed
Eleocharis ovata	Spike rush	4 inches or seed
Carex stipata	Sawbeak sedge	6 inches
Carex obnupta	Slough Sedge	6 inches
Glyceria occidentalis	Western mannagrass	seed
Holcus mollis	Velvetgrass	seed
Juncus tenuis	Slender rush	6 inches
Oenanthe sarmentosa	Water parsley*	6 inches
Scirpus acutus	Hardstem bulrush	6 inches
Scirpus microcarpus	Small-fruited bulrush	12 inches
Juncus effusus	Soft rush	18 inches
Juncus oxymeris	Pointed rush	12 inches
Juncus ensifolius	Dagger leaf rush	12 inches

Selected plants shall not include any plants from the State of Washington Noxious Weed List. Refer to clark.wa.gov/weed/ for a current list of noxious weeds.

*Good choices for swales with significant periods of flow, such as those downstream of a detention facility.

Note: Cattail (Typha latifolia) is not appropriate for most wet swales because of its very dense and clumping growth habit which prevents water from filtering through the clump.

Wet Biofiltration Swale			
Drainage System Feature	Potential Defect	Conditions When Maintenance Is Needed	Minimum Performance Standard
General	Sediment Accumulation	Sediment depth exceeds 2 inches in 10% of the swale treatment area.	Treatment area is free of accumulated sediment deposits.
	Water Depth	Water not retained to a depth of about 4 inches during the wet season.	Outlet berm has been built up or repaired so that water is retained in the wet swale.
	Wetland Vegetation	Vegetation becomes sparse and does not provide adequate filtration, OR vegetation is crowded out by very dense clumps of cattail, which do not allow water to flow through the clumps.	Vegetation healthy with good but not excessive coverage; facility meets design function. (Determine cause of lack of vigor of vegetation and correct. Replant as needed. For excessive cattail growth, cut cattail shoots back and compost off-site. Note: normally wetland vegetation does not need to be harvested unless die-back is causing oxygen depletion in downstream waters.)
	Inlet/Outlet	Inlet/outlet area clogged with sediment and/or debris.	Clogging or blockage in the inlet and outlet areas has been removed. Water flows per design function.
	Trash and Debris Accumulation	Any trash and debris which exceed 1 cubic foot per 1,000 square feet. In general, there should be no visual evidence of dumping. If less than threshold all trash and debris will be removed as part of next scheduled maintenance.	Wet swale is free of trash and debris.
	Erosion/Scouring	Swale has eroded or scoured due to flow channelization, or higher flows.	Eroded/scoured areas have been repaired and facility treats stormwater per design function. (Check design flows to assure swale is large enough to handle flows. By-pass excess flows or enlarge swale. Replant eroded areas with fibrous-rooted plants such as Juncus effusus (soft rush) in wet areas or snowberry (Symphoricarpos albus) in dryer areas.)