

#17 – Maintenance Standards for Stormwater Treatment Wetlands (BMP WP.01):

√	Drainage System Feature	Defect or Problem	Condition When Maintenance is Needed	Results Expected When Maintenance is Performed
	General	Trash and Debris	Any trash and debris accumulations which exceed five cubic feet per 1,000 square feet. If there is less than the threshold, remove all trash and debris as part of the next scheduled maintenance.	Trash and debris cleared from site.
	General	Poisonous Vegetation and Noxious Weeds	Any poisonous or nuisance vegetation which may constitute a hazard to maintenance personnel or the public. Any evidence of noxious weeds as defined in the Thurston County Noxious Weeds List . (Apply requirements of adopted integrated vegetation management (IVM) policies for the use of herbicides.)	No danger of poisonous vegetation where maintenance personnel or the public might have contact. <i>(Coordinate with Thurston County Noxious Weed Coordinator.) Complete eradication of noxious weeds may not be possible, however compliance with state or local eradication policies are required.</i>
	General	Oil Sheen on Water	Prevalent and visible oil sheen.	Oil removed from water using oil-absorbent pads or vacator truck. Source of oil located and corrected. <i>If chronic low levels of oil persist, plant emergent wetland plants such as Juncus effusus (soft rush) which can assist filtering small concentrations of oil.</i>
	General	Inlet/Outlet Pipe	Inlet/Outlet pipe clogged with sediment and/or debris material or damaged.	No clogging or blockage in the inlet and outlet piping.
	General	Rodent Holes	If the facility is constructed with a dam or berm, look for rodent holes or any evidence of water piping through the dam or berm.	Rodents removed and dam or berm repaired. <i>(Coordinate with Thurston County; coordinate with Ecology Dam Safety Office if pond exceeds 10 acre-feet.)</i>
	General	Beaver Dams	Beaver dam results in an adverse change in the functioning of the facility.	Facility is fully functioning. <i>Evaluate using beaver deceiver and leveler devices. If beaver removal is necessary, contact WDFW Region 6 to coordinate with a Nuisance Wildlife Control Operator.</i>
	General	Tree Growth and Hazard Trees	Tree growth that impedes maintenance access.	Trees removed from facility bottom, side slopes, and maintenance access areas. Species removed that are not part of the recorded planting plan.

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	General	Tree Growth and Hazard Trees	If dead, diseased, or dying trees are identified, use a certified Arborist to determine the health of tree and whether removal is required.	Hazard trees removed.
	General	Liner	Liner is visible and has more than three one-fourth inch holes in it.	Liner is repaired or replaced. Liner is fully covered.
	Forebay	Sediment Accumulation	Sediment accumulation in forebay exceeds the design depth of the sediment zone plus 6 inches.	Accumulated sediment is removed from forebay bottom to the design depth of the sediment zone.
	Side Slopes of Wetland	Erosion	Erosion damage over 2 inches deep where cause of damage is still present or where there is potential for continued erosion.	Slopes stabilized using appropriate erosion control measure(s) such as rock reinforcement, planting of grass, or additional compaction.
	Side Slopes of Wetland	Erosion	Any erosion observed on a compacted berm embankment.	<i>If erosion is occurring on compacted berms a professional engineer should be consulted to resolve source of erosion.</i>
	Wetland Cell	Wetland Vegetation	20 percent or more of the constructed wetland area has dead or dying vegetation, as measured by stem counts relative to the design plant coverage.	Plants in wetland cell surviving and not interfering with wetland function. Dead or dying vegetation is replaced by like species, unless recommended otherwise by the Wetlands Consultant and approved by the county. (<i>Watering, physical support, mulching, and weed removal may be required on a regular basis especially during the first 3 years.</i>)
	Wetland Cell	Wetland Vegetation	Percent vegetated cover of constructed wetland bottom area, excluding exotic and invasive species, is less than 50 percent after 2 years.	Exotic/invasive species removed. Additional plantings may be required.
	Wetland Cell	Wetland Vegetation	Decaying vegetation produces foul odors.	Decaying vegetation is removed, preferably in late summer.
	Wetland Cell	Wetland Vegetation	Wetland vegetation is blocking flow paths causing flow back-up and flooding.	Areas of blocking vegetation are cut back sufficient to allow design flows and prevent flooding.

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	Wetland Cell	Wetland Vegetation	Water quality monitoring indicates that wetland vegetation is contributing phosphorus and metals to downstream waters rather than sequestering them.	Water quality monitoring indicates improved water quality. To maximize removal of wetland pollutants, wetland vegetation must be periodically harvested, particularly with respect to phosphorus and metals removal. Harvesting should occur by mid-summer before plants begin to transfer phosphorus from the aboveground foliage to subsurface roots, or begin to lose metals that desorb during plant die off. Every 3 to 5 years the entire plant mass including roots should be harvested because the below ground biomass constitutes a significant reservoir (as much as half) of the nutrients and metals that are removed from stormwater by plants.
	Wetland Cell	Sediment Accumulation	Sediment accumulation inhibits growth of wetland plants or reduces wetland volume (greater than 1 foot of sediment accumulation).	Wetland dredged to remove sediment accumulation.
	Wetland Berms (Dikes)	Settlements	Any part of berm which has settled 4 inches lower than the design elevation. If settlement is apparent, measure berm to determine amount of settlement. Settling can be an indication of more severe problems with the berm or outlet works.	Dike restored to the design elevation. <i>A professional engineer should be consulted to determine the source of the settlement.</i>
	Wetland Berms (Dikes)	Piping	Discernable water flow through pond berm. Ongoing erosion with potential for erosion to continue.	Piping eliminated. Erosion potential eliminated. <i>(Recommend a geotechnical engineer be called in to inspect and evaluate condition and recommend repairs.)</i>

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	Wetland Berms Over 4 ft in height (Dikes)	Tree Growth	Tree growth on berms over 4 feet in height may lead to piping through the berm which could lead to failure of the berm.	Trees on berms removed. <i>If root system is small (base less than 4 inches) the root system may be left in place. Otherwise the roots should be removed and the berm restored. A professional engineer should be consulted for proper berm/spillway restoration.</i>
	Emergency Overflow/ Spillway	Obstruction	Tree growth or other blockage on emergency spillways may cause failure of the berm due to uncontrolled overtopping.	Obstruction on emergency spillway removed. <i>A professional engineer should be consulted for proper berm/spillway restoration.</i>
	Emergency Overflow/ Spillway	Rock Missing	Only one layer of rock exists above native soil in an area five square feet or larger, or any exposure of native soil at the top of out flow path of spillway.	Rocks and pad depth are restored to design standards. (Riprap on inside slopes need not be replaced.)
	Emergency Overflow/ Spillway	Erosion	Erosion damage over 2 inches deep where cause of damage is still present or where there is potential for continued erosion. Any erosion observed on a compacted berm embankment.	Slopes stabilized using appropriate erosion control measure(s); e.g., rock reinforcement, planting of grass, compaction. <i>If erosion is occurring on compacted berms a professional engineer should be consulted to resolve source of erosion.</i>