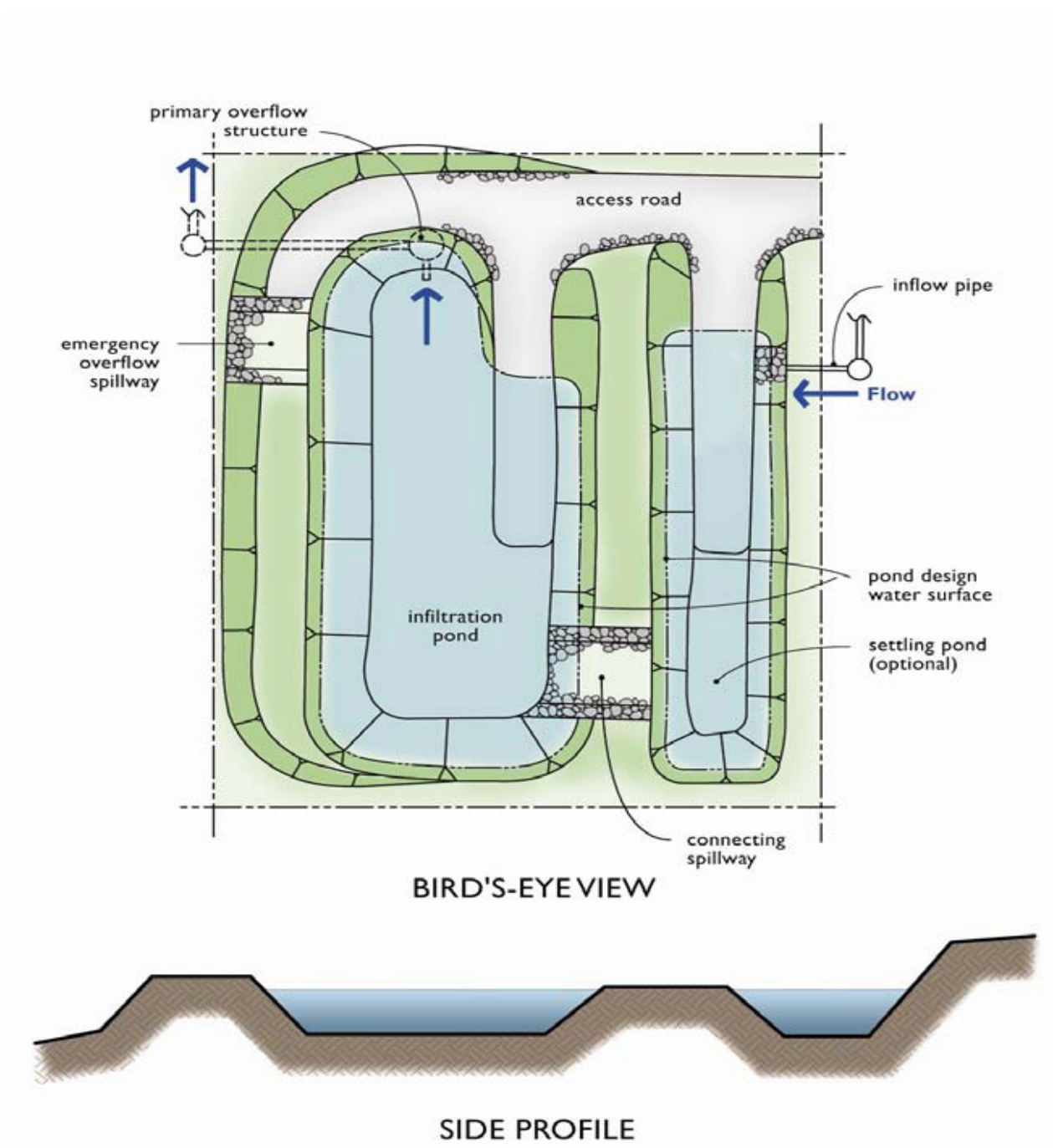


Infiltration Basin

A stormwater infiltration basin disposes of water by holding it in an area where it can soak into the ground. These are open facilities that may either drain rapidly and have grass bases, or have perpetual ponds where water levels rise and fall with stormwater flows. Infiltration facilities may be designed to handle all of the runoff from an area or they may overflow and bypass larger storms. Since the facility is design to pass water into the ground, anything that can cause the base to clog will reduce performance and is a concern. Generally, infiltration basins are managed like detention ponds but with greater emphasis on maintaining the capacity to infiltrate stormwater.

Facility objects that are typically associated with an infiltration facility include:

- access road or easement
- fence, gate, and water quality sign
- energy dissipaters
- conveyance stormwater pipe



Key Operations and Maintenance Considerations

- Maintenance should be performed per typical schedule and as indicated by routine inspections. The principal maintenance objective is to prevent clogging, which may lead to basin failure.

- Maintain basin floor and side slopes to promote dense turf with extensive root growth. This enhances infiltration, prevents erosion and consequent sedimentation of the basin floor, and prevents invasive weed growth. Immediately stabilize and revegetate bare spots.
- Do not allow vegetation growth to exceed 18 inches in height. Mow the slopes periodically and check for clogging and erosion.
- Use seed mixtures recommended in the table below or functionally similar mixes per the facility's design specifications. The use of slow-growing, stoloniferous grasses will permit long intervals between mowing. Mowing twice a year is generally satisfactory.
- Apply fertilizers only as necessary and in limited amounts to avoid contributing to groundwater pollution. Consult the local agricultural or gardening resources such as Washington State University Extension for appropriate fertilizer type, including slow release fertilizers, and application rates.
- The most common tools for cleaning infiltration basins are hand tools such as rakes and shovels to remove built-up sediments and debris from the surface of the basin.

Plant Material

Table 8: Stormwater Tract "Low Grow" Seed Mix for Infiltration Basin

Stormwater Tract "Low Grow" Seed Mix*		
<u>Botanical Name</u>	<u>Common Name</u>	<u>% By Weight</u>
<i>Festuca arundinacea</i> var.	Dwarf tall fescue	40%
<i>Lolium perenne</i> var. barclay	Dwarf perennial rye** 'Barclay'	30%
<i>Festuca rubra</i>	Red fescue	25%
<i>Agrostis tenuis</i>	Colonial bentgrass	5%
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.		
*Adapted from Ecology 2012, v.III, Ch 3.2.		
** If wildflowers are used and sowing is done before Labor Day, the amount of dwarf perennial rye can be reduced proportionately to the amount of wildflower seed used.		

Stormwater Treatment, Flow Control, and Conveyance Facility Components

Infiltration Basin			
Drainage System Feature	Potential Defect	Conditions When Maintenance Is Needed	Minimum Performance Standard
Note: table spans multiple pages.			
General	Trash and Debris	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.	Site is free of trash and debris.
	Poisonous Plants 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 by State or local regulations. (Apply requirements of adopted IPM policies for the use of herbicides.)	No danger of poisonous vegetation where maintenance personnel or the public might normally be. (Coordinate with Clark County Weed Management department) Complete eradication of noxious weeds may not be possible. Compliance with State or local eradication policies required.
	Contaminants and Pollution	Any evidence of oil, gasoline, contaminants or other pollutants. (Coordinate removal/cleanup with local water quality response agency.)	No contaminants or pollutants present.
	Rodent Holes	Any evidence of rodent holes if facility is acting as a dam or berm, or any evidence of water piping through dam or berm via rodent holes.	Rodents destroyed and dam or berm repaired. (Coordinate with Clark County Maintenance and Operations department; coordinate with Ecology Dam Safety Office if pond exceeds 10 acre-feet.)
Storage Area	Sediment Reducing Infiltration Rate	Water ponding in infiltration pond after rainfall ceases and appropriate time allowed for infiltration. Treatment basins should infiltrate Water Quality Design Storm Volume within 48 hours, and empty within 24 hours after cessation of most rain events. (A percolation test pit or test of facility indicates facility is only working at 90% of its designed capabilities. Test every 2 to 5 years. If two inches or more sediment is present, remove.)	Sediment is removed and/or facility is cleaned so that infiltration system works according design standards.
Filter Bags (If Applicable)	Filled with Sediment and Debris	Sediment and debris fill bag more than 1/2 full.	Filter bag has been replaced or system is redesigned.
Rock Filters	Sediment and Debris	By visual inspection, little or no water flows through filter during heavy rain storms.	Gravel in rock filter is replaced.

Infiltration Basin			
Drainage System Feature	Potential Defect	Conditions When Maintenance Is Needed	Minimum Performance Standard
Note: table spans multiple pages.			
Side Slopes of Pond	Erosion	Eroded 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 have been stabilized using appropriate erosion control measure(s), e.g., rock reinforcement, planting of grass, compaction. If erosion is occurring on compacted berms a licensed civil engineer should be consulted to resolve source of erosion.
Pond Berms (Dikes)	Settlement	Any part of berm which has settled 4 inches lower than the design elevation.	Dike has been built back to 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. A licensed civil engineer should be consulted to determine the source of the settlement.	
Emergency Overflow/ Spillway and Berms Over 4 Feet in Height	Tree Growth	Tree growth on emergency spillways creates blockage problems and may cause failure of the berm due to uncontrolled overtopping. 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 removed. 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 licensed civil engineer should be consulted for proper berm/spillway restoration.
	Piping	Discernible water flow through pond berm. Ongoing erosion with potential for erosion to continue. (Recommend a Geotechnical engineer be called in to inspect and evaluate condition and recommend repair of condition.)	Piping eliminated. Erosion potential resolved.
Emergency Overflow/ Spillway	Rock Missing	Only one layer of rock exists above native soil in area five square feet or larger, or any exposure of native soil at the top of flow path of spillway. (Rip-rap on inside slopes need not be replaced.)	Rocks and pad depth are restored to design standards.
Emergency Overflow/ Spillway	Erosion	Eroded 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 have been stabilized using appropriate erosion control measure(s), e.g., rock reinforcement, planting of grass, compaction. If erosion is occurring on compacted berms

Stormwater Treatment, Flow Control, and Conveyance Facility Components

Infiltration Basin			
Drainage System Feature	Potential Defect	Conditions When Maintenance Is Needed	Minimum Performance Standard
			Note: table spans multiple pages.
			a licensed civil engineer should be consulted to resolve source of erosion.
Presettling Ponds and Vaults	Facility or Sump Filled With Sediment and/or Debris	6" or designed sediment trap depth of sediment.	Sediment is removed.