

APPENDIX B: Maintenance Requirements for Flow Control, Conveyance, and Water Quality Facilities

<b>NO. 13 – BASIC BIOSWALE (GRASS)</b>			
<b>Maintenance Component</b>	<b>Defect or Problem</b>	<b>Conditions When Maintenance Is Needed</b>	<b>Results Expected When Maintenance Is Performed</b>
<b>Site</b>	Trash and debris	Any trash and/or debris accumulated on the bioswale site.	No trash or debris on the bioswale site. Dispose of according to applicable state and/or local regulations.
	Contaminants and pollution	Any evidence of contaminants or pollution such as oil, gasoline, concrete slurries or paint.	Materials removed and disposed of according to applicable regulations. Source control BMPs implemented if appropriate. No contaminants present other than a surface oil film.
	Trees	Volunteer or seeded trees, those that were not planted per plan, are to be removed. Tree growth threatens integrity of slopes, does not allow maintenance access, or interferes with maintenance activity. If trees are per plan and are not a threat or not interfering with access or maintenance, they do not need to be removed.	Trees exist per plan and do not hinder facility performance or maintenance activities.
<b>Swale Section</b>	Sediment accumulation	Sediment depth exceeds 2 inches in 10% of the swale treatment area.	No sediment deposits in grass treatment area of the bioswale.
		Sediment inhibits grass growth over 10% of swale length.	Grass growth not inhibited by sediment.
		Sediment inhibits even spreading of flow.	Flow spreads evenly through swale.
	Erosion/scouring	Eroded or scoured swale bottom due to channelization or high flows.	No eroded or scoured areas in bioswale. Cause of erosion or scour addressed.
	Poor vegetation coverage	Grass is sparse or bare or eroded patches occur in more than 10% of the swale bottom.	Swale has no bare spots and grass is thick and healthy.
	Grass too tall	Grass excessively tall (greater than 10 inches), grass is thin, or nuisance weeds and other vegetation have taken over.	Grass is between 3 and 4 inches tall, thick, and healthy. No clippings left in swale. No nuisance vegetation present.
	Excessive shade	Grass growth is poor because sunlight does not reach swale.	Health grass growth or swale converted to a wet bioswale.
	Constant baseflow	Continuous flow through the swale, even when it has been dry for weeks or an eroded, muddy channel has formed in the swale bottom.	Baseflow removed from swale by a low-flow pea-gravel drain or bypassed around the swale.
	Standing water	Water pools in the swale between storms or does not drain freely.	Swale freely drains and there is no standing water in swale between storms.
	Channelization	Flow concentrates and erodes channel through swale.	No flow channels in swale.
<b>Flow Spreader</b>	Concentrated flow	Flow from spreader not uniformly distributed across entire swale width.	Flows are spread evenly over entire swale width.
<b>Inlet / Outlet Pipe</b>	Sediment accumulation	Sediment filling 20% or more of the pipe.	Inlet/outlet pipes clear of sediment.
	Trash and debris	Trash and debris accumulated in inlet/outlet pipes (includes floatables and non-floatables).	No trash or debris in pipes. Dispose of according to applicable state and/or local regulations.
	Damaged	Cracks wider than ½ inch at the joint of the inlet/outlet pipes or any evidence of soil entering at the joints of the inlet/outlet pipes.	No cracks more than ¼ inch wide at the joint of the inlet/outlet pipe.

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<b>NO. 14 – WET BIOSWALE</b>			
<b>Maintenance Component</b>	<b>Defect or Problem</b>	<b>Conditions When Maintenance Is Needed</b>	<b>Results Expected When Maintenance Is Performed</b>
<b>Site</b>	Trash and debris	Any trash and/or debris accumulated at the site.	No trash or debris at the site. Dispose of according to applicable state and/or local regulations.
	Contaminants and pollution	Any evidence of contaminants or pollution such as oil, gasoline, concrete slurries or paint.	Materials removed and disposed of according to applicable regulations. Source control BMPs implemented if appropriate. No contaminants present other than a surface oil film.
	Trees	Volunteer or seeded trees, those that were not planted per plan, are to be removed. Tree growth threatens integrity of slopes, does not allow maintenance access, or interferes with maintenance activity. If trees are per plan and are not a threat or not interfering with access or maintenance, they do not need to be removed.	Trees exist per plan and do not hinder facility performance or maintenance activities.
<b>Swale Section</b>	Sediment accumulation	Sediment depth exceeds 2 inches in 10% of the swale treatment area.	No sediment deposits in treatment area.
	Erosion/scouring	Eroded or scoured swale bottom due to channelization or high flows.	No eroded or scoured areas in bioswale. Cause of erosion or scour addressed.
	Water depth	Water not retained to a depth of about 4 inches during the wet season.	Water depth of 4 inches throughout swale for most of wet season.
	Vegetation ineffective	Vegetation sparse, does not provide adequate filtration, or crowded out by very dense clumps of cattail or nuisance vegetation.	Wetland vegetation fully covers bottom of swale and no cattails or nuisance vegetation present.
	Insufficient water	Wetland vegetation dies due to lack of water.	Wetland vegetation remains healthy (may require converting to grass lined bioswale).
<b>Flow Spreader</b>	Concentrated flow	Flow from spreader not uniformly distributed across entire swale width.	Flows are spread evenly over entire swale width.
<b>Inlet / Outlet Pipe</b>	Sediment accumulation	Sediment filling 20% or more of the pipe.	Inlet/outlet pipes clear of sediment.
	Trash and debris	Trash and debris accumulated in inlet/outlet pipes (includes floatables and non-floatables).	No trash or debris in pipes. Dispose of according to applicable state and/or local regulations.
	Damaged	Cracks wider than ½ inch at the joint of the inlet/outlet pipes or any evidence of soil entering at the joints of the inlet/outlet pipes.	No cracks more than ¼ inch wide at the joint of the inlet/outlet pipe.