

## **4.1 Extended Detention Basins**

Extended Detention Basins (EDBs) temporarily store and slowly release stormwater runoff, allowing pollutants to settle out of the water column. While similar to detention basins used only for flood control, EDBs use much smaller outlets to slow the release of the stored runoff and provide a mechanism for pollutant removal. EDBs generally have low to moderate routine maintenance requirements but may require significant maintenance every 15 to 25 years. Maintenance frequency is dependent on several factors, including but not limited to construction activity in the watershed, size of the watershed, and erosion control measures implemented in the watershed.

### **4.1.1 Functional Description**

EDBs have six main components: inflow points (inlets), forebays, trickle channels, embankments, a micropool, and an outlet structure. Each EDB may have multiple inflow points, which are defined by any point where runoff enters.

Forebays are typically constructed below inlets and serve to settle out sediment, trash, and other debris. Trickle channels convey low flows from the forebay to the outlet structure. A micropool is a small area of standing water in front of the outlet structure that provides an environment for biological uptake of pollutants. Micropools are the only location where standing water is acceptable in an EDB. Not all EDBs have micropools; refer to original design drawings to confirm if the EDB was designed with one.

Outlet structures control the rate at which stored runoff is released from the EDB. Outlet structures generally contain several different components (including the well screen, orifice plate, and trash rack). It is essential to maintain these structures to ensure that the entire EDB can function correctly. The last aspect of EDBs is the basin's embankments, which creates an artificial low point for water containment.

### **4.1.2 Inspection Requirements**

EDBs should be inspected at least twice a year for sediment build-up in the forebay and debris obstructing the outlet structure.

### **4.1.3 Maintenance**

#### **4.1.3.1 Routine Maintenance**

Debris and trash removal should be completed as required to avoid plugging of the outlet structure.

While grasses are becoming established, typically the first three years, mow only when required to deter weeds. Mow regularly during the growing season to maintain desired vegetation height and control weeds.

## **City of Pueblo**

### **Stormwater Facilities Operation & Maintenance Manual**

---

Aeration is required for EDBs with manicured grass. This allows the soil to be supplied with air and increases infiltration in the EDB by allowing more water to move into the root zone. Aeration should be done at least 1 time per year when the ground is not frozen and conditions are not extremely hot and dry. Mark sprinkler heads and shallow utilities to prevent property damage.

Although EDBs are designed to minimize mosquito populations, mosquito control may be necessary in residential neighborhoods. Inspections for mosquitos and implementation of mosquito control measures can be performed by a mosquito control service of the property owner's choosing. A section is provided on the Appendix F form to be filled out for mosquito control.

Irrigation should be adjusted throughout the growing season, dependent on observed requirements of vegetation. Less irrigation is typically required in the early summer, with more needed in July and August. If the facility in question is designed around native grasses and other drought tolerant species, it may not require any irrigation after establishment. It is necessary to check for broken sprinkler heads if they are being used on the EDB and to drain any irrigation systems annually before every winter.

Annual sediment removal should be performed from the forebay and trickle channel. In some watersheds where construction or development is ongoing, this may be required more often than annually. The facility should be maintained so there is minimal sediment resuspension during each rain event. Waste sediment may be contaminated with various pollutants and must be disposed of properly.

Fertilizer use should be minimized to the extent possible; once vegetation is established, it may not be necessary.

#### ***4.1.4 Minor and Major Improvements***

If the EDB contains a micropool, it will require the removal of sediment from the bottom of the micropool once every 1 to 4 years or anytime the depth of the micropool has been reduced to approximately 18 inches. Small micropools may be vacuumed; larger pools may require pumping to remove all sediment entirely.

Sediment removal from the basin bottom is required roughly every 15 to 25 years but may need to occur more frequently in watersheds where construction activities are occurring. Complete basin sediment removal should be performed when accumulated sediment occupies 20 percent of the water quality design volume, or if the buildup of sediment and infiltrated waste particles is impairing infiltration and resulting in poor drainage. Immediate sediment removal is recommended if there is a chance that the EDB soil has been contaminated with high levels of contaminants.

Erosion and structural repairs do not have an attached time frame for maintenance but should be addressed immediately anytime either are noted during an inspection. Do not change the type of structure, size, quality, or species of grass when repairing the facility or addressing erosion.

**City of Pueblo**  
**Stormwater Facilities Operation & Maintenance Manual**

**Table 4-1. Extended Detention Basins: Common Indicators of Required Maintenance**

Component	Hazard	Indicator	Solution
Inflow Structure (Inlet)	Debris	Pile of trash mixed with sediment	Shovel out trash and sediment and dispose of properly.
	Undesired Vegetation	Large woody vegetation surrounding the pipe	Chainsaw and root removal should be used to prevent damage to concrete.
	Erosion	Gaps between components or often these gaps will be filled with dirt. Cracking of concrete	Minor repair may require adding energy dissipation techniques such as riprap or concrete patching. Major repairs may require an engineer and heavy equipment.
Forebay	Debris	Ponding of water, visible trash, and noxious smells	Removal of trash and sediment using proper methods.
	Any Vegetation	Any plants or green in the forebay (also a sign that sediment needs to be removed)	Immediate removal of vegetation and sediment.
	Weathering	Cracking of concrete	Concrete patching.
Trickle Channel	Debris	Visible trash or ponding of water along the path of the trickle channel	Immediate removal of debris and restoration of the flow path.
	Undesired Vegetation	Any large vegetation growing near the channel	Chainsaw and root removal should be used to prevent damage to concrete.
	Erosion	The trickle channel is no longer smooth and straight, and there are exposed soils along the length	Replacement of lost soils and concrete fortification of the channel bottom.

Component	Hazard	Indicator	Solution
Micropool	Sedimentation	Vegetation growing in the pool, noxious smells, discoloration	Immediate removal of sediment.
	Mosquitos	Excessive number of bites reported or visibly high numbers	Contact the designated mosquito control service or apply insecticide.
	Oil/Chemical Sheens	Visible sheen on water's surface, gas, or chemical smell	May indicate a possible illicit discharge inside of the watershed. Contact the stormwater authority immediately.
Outlet Structure	Debris	Well screen, orifice plate, and or trash rack are all visibly covered in trash and debris	Cleaning to remove trash.
	Removed or Missing Parts	Any of the designed parts are moved or missing from previous inspections and design drawings	Replace part and securely fasten down access. Repetitive loss resulting from repeated vandalism may require contacting law enforcement.