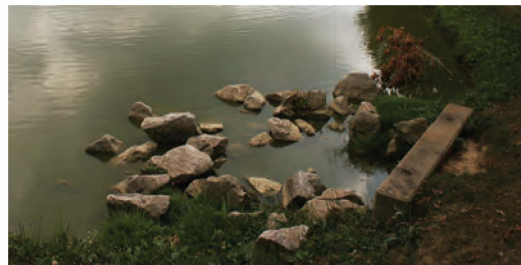
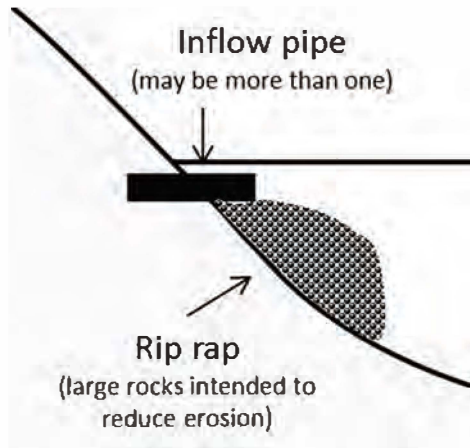
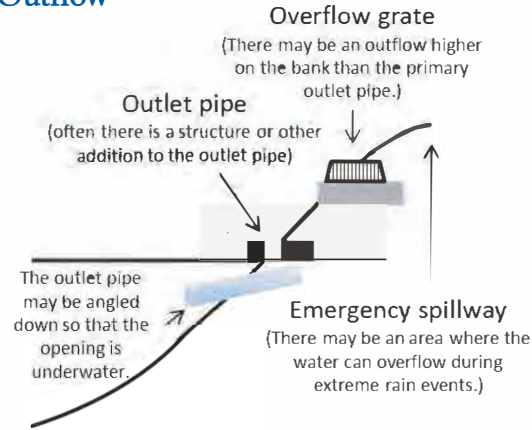


Typical Stormwater Pond Structures

Inflow



Outflow



Common outlet variations designed to improve performance, reduce cost, and/or increase efficiency

Orifice plate - a metal plate that reduces the size of the opening of the outflow pipe



Riser - forces the water level to rise above outlet before water leaves the pond

Box outlet - Overflow grate(s) are incorporated into the box



Why Stormwater Ponds Matter

Stormwater ponds help protect our streams from pollution and erosion. Without these ponds or other stormwater features, everything running off our streets into storm sewers would run directly into our creeks. The ponds remove pollutants such as sediment and garbage. Some of them are designed to slow stormwater flows, reducing bank erosion that can threaten homes, roads, sewers and other structures along creeks.

Stormwater Pond Management and Maintenance

If you own the property on which a pond is located, you normally are the owner of that pond. As the owner, you are responsible for managing and maintaining the pond. This brochure is intended to provide you some basic guidance for managing, inspecting and maintaining your stormwater pond.

City of Keller
Public Works Department
817-743-4080
1100 Bear Creek Pkwy
Keller, TX 76244



Stormwater Pond Management and Maintenance

A resource for HOAs and other stormwater pond owners



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Pond Management

Sediment and Muck Accumulation

Stormwater ponds fill in over time, reducing their effectiveness and increasing the likeliness of algae problems, odor and fish kills. Sound pond management will slow this process but cannot stop it. Ponds ought to be dredged when the sediment on the bottom takes up 25% of the volume of the pond.

Vegetation

Many stormwater ponds are surrounded by turf grass. If banks are mowed to the edge, maintain a buffer where fertilizers, herbicides and pesticides are not used. Fertilizers increase algae growth, and many herbicides and pesticides are toxic to aquatic life. Keep grass clippings out of the pond. They would contribute to a build-up of dead vegetation in the pond, adding nutrients as well.

An alternative to maintaining a grass pond edge is growing appropriate native vegetation around all or most (mow the area most accessed) of the pond which would reduce maintenance costs and help to reduce nutrients in the pond that promote algae growth. Any cut vegetation should be removed and composted to prevent it from going into the pond.

Pond Banks

Repair bare spots on the pond banks with an appropriate seed mix to prevent erosion and repair it immediately. Minor erosion can be repaired by filling with topsoil and spreading seed to grow soil-stabilizing plants. Erosion control (e.g. straw) may need to be added to prevent the soil from washing away before the plants can get established. Also look for muskrat or groundhog holes in the bank.

Landowner Practices

Streets, sidewalks, driveways and other hard surfaces produce runoff to the stormwater pond and affect the maintenance needs of the pond.

Lawn Care

Keep grass clippings and leaves out of the storm drains, and minimize the amount of dead vegetation that goes into the pond. Dead vegetation rots, which can result in algae growth, fish kills, and/or unpleasant odors. It also accumulates in the pond, increasing how fast the pond would need to be dredged, an expensive undertaking.

Fertilizers and lawn care chemicals are to be kept off of hard surfaces. Once on a hard surface, they can wash into the pond, increasing algae growth and potentially killing fish and other aquatic organisms.

Automobile Maintenance

Automobile fluid leaks and spills are typically washed into stormwater ponds, as is the soapy water from vehicles washed in driveways or in the street. These go into the stormwater pond, polluting the water and contributing to the pollution of neighboring creeks.

Litter/Trash

By picking up litter and trash, landowners can reduce the amount of material washed and/or blown into the pond. Trash will become an eyesore in the pond and can plug the outflow to the pond.

Street Sweeping

Anything that can be done (e.g. street sweeping) to prevent dirt and other grit from entering the pond reduces pollution in the pond and decreases pond maintenance.

Inspections

Stormwater ponds need to be inspected on a regular basis with particular attention to the inlets and outlets. Fall, spring and after major rain events are good time to conduct inspections. It is also important to protect access to the pond for maintenance work.

Inlets

Inlet pipes can deteriorate, crack and/or break. Sediment and other material can accumulate in the pipes and should be removed.

Rip Rap

Rocks placed to prevent erosion can be installed improperly and/or move, allowing or even causing erosion.

Outlet Structures

The various components of outlet structures can all become clogged by sediment, algae, dead plants and/or trash. It is important to remove any material clogging these structures

Keep Records

Owners are required to have ponds inspected on a regular basis. Keep records of these inspections, tracking such things as inspection date, the name of the inspector, what was observed, maintenance activities.

Stay safe!

Whenever you work around water, drowning is a risk. Rip rap is heavy, uneven and can be slippery and/or unstable, as can pond banks. Pond bottoms can drop off unpredictably, and it can be difficult to know how deep or soft the mud is on the bottom. Under some conditions, there can also be elevated bacteria levels in the water. Use appropriate caution with regard to any other potential hazards at your location.

Basic Inspection Schedule

Frequency	Inspection Items (Skill Level)
Monthly to Quarterly or After Major Storms (>1")	Inspect low flow orifices and other pipes for clogging (0)
	Check the pond for floating debris, undesirable vegetation (0)
	Investigate the shoreline for erosion (0)
	Look for broken signs, locks and other dangerous items (0)
Semi-annual to Annual	Ensure mechanical components are functional (0-1)
Every 1 to 3 years	Complete all routine inspection items above (0)
	Inspect riser and other outlet structures, and embankment for damage (1-2)
	Inspect all pipes (2)
2-7 years	Monitor deposition in pond and forebay (2)
5-25 years	Remote television inspection of reverse slope pipes, underdrains and other hard to access piping (2-3)

Skill Level	Description
0	No special skills are required but some basic training via manual, video or other materials is necessary.
1	Ordinary maintenance skill level
2	Contractor familiar with pond and wetland maintenance issues
3	Professional engineering consultant

Tables above adapted from:
<https://www3.epa.gov/npdes/pubs/pondmgmtguide.pdf>

Other resources include:
http://epa.ohio.gov/Portals/35/documents/SCM_OM_Manual_Final_7-30-15.pdf
http://www.stormwatercenter.net/Manual_Builder/Maintenance_Manual/pondwetlandguidebookdraft.pdf