



Phase II Stormwater Program

Spring 2013

What are Detentions Ponds and why are they important?

Definitions...

Wet retention pond: a pond designed to have a remaining permanent pool of water after a storm event.

Dry detention pond: a pond designed to NOT have a significant pool of water remaining after a storm event.

Regional Pond: a pond designed to capture stormwater runoff from a larger, regional area.

Water Quality Pond: a detention pond with an orifice sized to allow time for settling and filtering of pollutants before the runoff is discharged from the pond.

Tributary drainage area: the total land area that drains to the pond.

Impervious area: a solid surface that does not allow rain to enter.

Stormwater runoff: runoff that occurs as a result of a rain or storm event hitting an impervious surface and running off.

Inlet: The point where stormwater enters the pond.

Trickle channel: A channel that efficiently conveys stormwater from the inlet to the outlet structure (selected ponds).

Outlet: A structure that controls the rate of release from the pond and the water depth and storage volume in the pond.

Orifice: A controlled opening on the outlet structure through which stormwater is discharged from the pond (selected ponds).

Trash Rack: A structural feature of the outlet that filters stormwater by trapping debris before runoff is discharged (selected ponds).



A well maintained detention pond

Rip rap: Rock material typically used to stabilize conveyance channels.

Emergency spillway: Conveyance feature of a detention pond to discharge excess stormwater flows to maintain the integrity of the pond structure during substantial runoff events.

Easement: A set-aside area with various restrictions to provide open access for inspection or repair of drainage feature.

Why Maintain ponds:

Stormwater runoff is a significant source of water pollution in urbanizing areas. In addition, the increased volumes of flow resulting from added impervious areas during urbanization results in increased runoff volumes. Detention ponds mitigate both scenarios in providing a treat-

ment basin for pollutant removal as well as a collection basin to retain the larger flows and thus reduce the peak runoff rates downstream. Studies have shown that properly maintained detention ponds can be very effective at removing certain pollutants and providing necessary storage volumes during larger storm events. Improperly maintained ponds can increase the discharge of pollutants downstream, increase the risk of flooding downstream, increase the instability of downstream channels, and lead to aesthetic and nuisance problems.

Why some ponds fail...

Studies show that poor operation and maintenance is the leading cause of pond failure. Poor maintenance can also create unpleasant odors, nuisance insects, algae blooms and a generally unsightly, unkempt area. Detention ponds may fail due to

- poor vegetation maintenance in terms of mowing and weed control,
- clogged inlets resulting from trash and debris, sediment accumulation,
- failed side slopes, and
- inadequate access for routine maintenance activities.

Knowing why this pond was built at your commercial site or in your subdivision community and the importance of all the components working together should reduce the chance of pond failure.



Maintenance considerations...

Routine maintenance, like mowing and debris removal, is vital to the proper operation of the detention pond, and needs to be done on a frequent basis.

Detention pond in need of maintenance

Non-routine maintenance, like slope stabilization and sediment removal, will probably be more on an annual basis. Every pond is different in the size, type and characteristics of the tributary area that contributes runoff to the pond, as well as the location of the pond within the development.

- A pond serving a large commercial district will likely require more maintenance than one serving an established neighborhood, and a pond in a prominent location in the development will require more frequent collection of trash to make a favorable impression.
- Maintenance considerations for a wet pond will need to focus on floating litter, scum and algal blooms, shoreline erosion, possible unpleasant odors and mosquitoes, as well as more difficult sediment removal.
- Maintenance considerations for a dry pond will concentrate more on mowing to control the vegetation and frequent removal of the trash and debris that may clog the outlet/trash rack.

Maintenance will always be needed; if maintenance is not done, or not done frequently enough, or properly, a false sense of security exists for the pond's temporary storage abilities during a large storm event, and its pollutant removal abilities during a typical runoff event.

Minimum checklist components...

Any obstructions of the inlet or outlet or orifice?
Has trash accumulated in the pond or on the rack?
Any erosion or instability on the slopes?
Any sedimentation in the basin?
Any settling or cracking of the bermed areas?
Are there any upstream or downstream conditions that could affect pond operation?
Is trickle channel conveyance in good working order?
Is outlet channel conveyance in good working order?

Routine Maintenance...

Inspections: Periodic scheduled inspections with a specified checklist, and inspections after major rainfall events, to check for obstructions/ damage & to remove debris/ trash.

Vegetation Management: Mowing on a regular basis to prevent erosion or aesthetic problems. Limited use of fertilizers and pesticides in and around the ponds to minimize entry into pond and subsequent downstream waters.

Trash, debris and litter removal: Removal of any trash, etc causing any obstructions at the inlet, outlet, orifice or trash rack during periodic inspections and especially after every runoff producing rainfall event. General pickup of trash, etc in and around the pond during all inspections.

Mechanical Equipment check: Inspection of any valves, pumps, fence gates, locks or mechanical components during periodic inspections and appropriate replacement/repair.

Structural Component check: Inspection of the outlet works, inlet, orifice, trash rack, trickle channel on a regular basis for additions to the annual Non-routine Maintenance list

Non-routine maintenance...

Bank erosion/stabilization: It is critical to keep effective ground cover on all vegetated areas in order to see the benefits of proper infiltration of runoff, and effective filtering of pollutants. All areas not vegetated should be re-vegetated and stabilized immediately

Sediment removal: If the depth of the accumulated sediment is greater than 25% of the original design depth, sediment should be removed.

Structural Repair/Replacement: Eventually the outlet structure or other structural components like the trickle channel or trash rack will need repair.

DO's

Keep screen and/or trash rack free from debris using established maintenance schedule or on an as-needed basis after a storm event.

Inspect inlet and outlet works.

Report damage/compromise to side slopes, pond banks, inlet pipe, trickle channels, outlet structure

Remove vegetation adjacent to outlet works that may interfere with operation.

Remove debris/trash from the detention pond and surrounding area and dispose properly.

When mowing, collect grass clippings and all other clippings/trimmings and take offsite for disposal or dispose in trash on site; do not leave in the pond.

DON'T's

DO NOT mow detention pond too close to the surface; height should be 4 to 6 inches to maintain healthy grasses.

DO NOT clean equipment or conduct maintenance on equipment in the detention pond, or near a storm drain or other stormwater conveyance feature.

DO NOT leave grass clippings or trimming residue in pond; collect and dispose of in trash.

DO NOT apply landscaping chemicals in pond area, or in areas where the residue could make it into the pond during a storm event.

DO NOT attempt to clean up any unidentified or possibly hazardous materials found in or around pond during inspections; notify owner immediately upon discovery of hazardous materials.