Retention Ponds

Owners in areas with at least occasional high rainfall and with space and appropriate site topography may want to consider retention ponds to reduce and manage storm water run-off and lessen storm drainage use. When considering storm water runoff from impermeable surfaces, most people often overlook residential areas. Apartment complexes include impermeable surfaces such as streets, driveways, sidewalks, walkways, and roofs. Residential areas are prone to flooding. The storm water systems in subdivisions are just as important as commercial areas. The storm water systems flush rainwater quickly from streets and gutters and into the nearest waterway. Unfortunately, storm water is not treated and often contains many pollutants including car fuel, oil, and sediments. The use of ponds with storm water systems in urban areas is becoming more widespread. It is already common to see retention ponds in commercial areas.

Retention ponds capture the diverted storm water runoff from streets and gutters. These ponds provide two primary services. First, they retain the runoff before releasing it into streams. They release the water at flow rates and frequencies similar to those that existed under natural conditions. The flood volume held in a retaining pond reduces the impact on downstream storm water systems. The second benefit of the retaining ponds is that they provide pollutant removal through settling and biological uptake. Ponds remove 30-80% of certain pollutants from water before it enters nearby streams. Common pollutants reduced are sediments, bacteria, greases, oils, metals, total suspended solids, phosphorous, nitrogen, and trash. Ponds are one of the most effective tools at providing channel protection and pollutant removal in urban streams. Essentially, retention ponds provide water quality and quantity control.

Two common classifications of retaining ponds are either “wet” or “dry.” Wet ponds, known as retention ponds, continually have a pool of water in them called dead storage. Dry ponds, detention ponds, do not have dead storage and dry out between storms. Retention ponds are more effective than dry ponds. The permanent pool of water found in the wet ponds is more efficient at removing particle pollutants. It does this by absorbing energy from inflow of the storm water as it enters the pond, preventing scour material from settling to the bottom, and exchanging new incoming storm water with previously captured water. This provides extra time between storms for pollution to settle. Aquatic vegetation is often associated with wet ponds. Vegetation such as grasses and plants are able to establish themselves in the permanent pool of wet ponds thus providing extra pollutant removal. The aquatic plants and grasses serve as an extra filter in the pond. They assimilate dissolved pollutants and, by biological uptake, transform pollutants into less toxic materials. Microorganisms often establish themselves in wet ponds and aid in the breakdown of pollutants.

Additional information at:
http://www.southalabama.edu/geography/fearn/480page/02Jordan/Jordan.htm