

**Oak Park Conservancy District
Stormwater Best Management Practices (BMPs)
Site Planning and Design Practices (SPD's)**

SPD-01.4

Activity: Karst Topography

**PLANNING
CONSIDERATIONS:**

Planning:
Not Required

Training:
Not Required

Recommended
Personnel
Involvement:
Town Engineer
Developers



Target Pollutants

Significant ♦

Partial ♦

Low or Unknown ◇

Sediment ♦ Heavy Metals ◇ Nutrients ◇ Oxygen Demanding Substances ◇ Toxic Materials ◇
Oil & Grease ◇ Bacteria & Viruses ◇ Floatable Materials ◇ Construction Waste ◇

Description

Karst bedrock areas are underlain by bedrock containing soluble minerals. Karst areas develop voids and solution channels as groundwater gradually dissolves the bedrock. In these terrains, groundwater flow can be extremely rapid and unpredictable. Furthermore, the concentration of runoff may stimulate the formation of sinkholes. Sinkholes can develop as flowing water exposes and then washes into the mouths of the near surface openings of subterranean channels and caverns. Rapid degradation of groundwater resources can result when sediment or pollutant- laden runoff percolates into karst bedrock aquifers.

Few areas of Southern Indiana are susceptible to the development of karst conditions. Before introducing site alterations, which could concentrate or pond runoff, the presence or absence of carbonate bedrock should be established. If carbonate rocks do occur, a professional geologist or civil engineer should be consulted to determine whether sink hole activity is likely. The United States Geological Survey is a good source of information on karst bedrock in Indiana. If an area is prone to sink hole development, site drainage should be planned to minimize the concentration of runoff. This can be accomplished by reducing the hydraulic connectivity of impervious surfaces and by the use of filter strips. Where they are required, channels or ponds should be lined.

BMPs for the recharge of groundwater in karst areas provide infiltration opportunities over a very large area. Examples are filter strips, large bioretention facilities, and permeable pavement. These practices mimic the natural process by which rainfall enters the subsurface. Point sources of infiltration, such as infiltration trenches or dry wells, should be avoided.