
Certificate in Stormwater Management and Drainage Design

Stormwater Treatment Techniques

Stormwater Treatment Techniques are essential for managing runoff from precipitation and preventing pollution in our waterways. In this explanation, we will cover key terms and vocabulary related to Stormwater Treatment Techniques in the Certificate in Stormwater Management and Drainage Design.

Stormwater: Stormwater is the runoff from precipitation that does not soak into the ground. It can pick up pollutants from surfaces such as streets, parking lots, and rooftops, carrying them into our waterways.

Nonpoint source pollution: Nonpoint source pollution is pollution that comes from multiple sources and is carried by stormwater. Examples include oil and grease from roads, pesticides and fertilizers from lawns, and sediment from construction sites.

Best Management Practices (BMPs): BMPs are methods used to manage stormwater and reduce nonpoint source pollution. They include structural practices, such as ponds and filters, and non-structural practices, such as education and outreach.

Stormwater pond: A stormwater pond is a body of water designed to collect and treat stormwater runoff. It can also be called a retention pond or a detention pond.

Retention pond: A retention pond is a type of stormwater pond that retains water permanently. It is used to treat and manage stormwater runoff, as well as to provide habitat for wildlife.

Detention pond: A detention pond is a type of stormwater pond that temporarily holds water and then releases it slowly. It is used to manage stormwater runoff and prevent flooding.

Forebay: A forebay is a small pond or chamber located at the inlet of a stormwater pond. It is used to remove sediment and pollutants from the incoming stormwater.

Underdrain system: An underdrain system is a system of pipes and gravel located at the bottom of a stormwater pond. It is used to collect treated stormwater and discharge it to a nearby waterway.

Wet pond: A wet pond is a type of stormwater pond that has a permanent pool of water. It is used to treat and manage stormwater runoff and provide habitat for wildlife.

Dry pond: A dry pond is a type of stormwater pond that is dry except during or immediately after a storm. It is used to manage stormwater runoff and prevent flooding.

Vegetated swale: A vegetated swale is a shallow, vegetated channel designed to convey and treat

stormwater runoff. It is also called a bioretention swale or a bioswale.

Infiltration trench: An infiltration trench is a trench filled with gravel or other aggregate that is used to treat and infiltrate stormwater runoff into the ground.

Permeable pavement: Permeable pavement is a type of pavement that allows stormwater to infiltrate through it into the ground. It is also called porous pavement or pervious pavement.

Green roof: A green roof is a roof that is partially or completely covered with vegetation. It is used to reduce stormwater runoff, improve air quality, and provide habitat for wildlife.

Stormwater harvest and reuse: Stormwater harvest and reuse is the practice of collecting and treating stormwater runoff for use as a source of water. It can be used for irrigation, flushing toilets, and other non-potable uses.

Hydrodynamic separator: A hydrodynamic separator is a device used to remove pollutants from stormwater runoff. It uses the energy of the flowing water to separate pollutants from the water.

Sedimentation basin: A sedimentation basin is a tank or pond used to remove sediment and pollutants from stormwater runoff. It works by allowing the water to settle, allowing the sediment to sink to the bottom.

Filtration system: A filtration system is a system used to remove pollutants from stormwater runoff by passing it through a filter. The filter can be made of sand, gravel, or other materials.

Ultraviolet disinfection: Ultraviolet disinfection is a method of treating stormwater runoff by exposing it to ultraviolet light. This kills bacteria and other microorganisms in the water.

In summary, understanding the key terms and vocabulary related to Stormwater Treatment Techniques is essential for managing stormwater and reducing nonpoint source pollution. Stormwater ponds, BMPs, vegetated swales, infiltration trenches, permeable pavement, green roofs, hydrodynamic separators, sedimentation basins, filtration systems, and ultraviolet disinfection are all important concepts in the field of Stormwater Management and Drainage Design. By understanding these terms and how they are used in practice, you will be well-equipped to design and implement effective stormwater management systems.

Challenge:

1. Identify three structural BMPs and three non-structural BMPs.
2. Explain the difference between a retention pond and a detention pond.
3. Describe how a vegetated swale works to treat stormwater runoff.
4. Explain how ultraviolet disinfection can be used to treat stormwater runoff.
5. Design a stormwater management system using at least three different BMPs. Explain how each BMP works and why it was chosen for the system.