

Practices Approved for FAIR

Following is a list and *brief* description of the practices which have been approved for use by the FAIR Technical Policy Group for managing the water quality event in Metro Area Communities. Please note, detailed descriptions and recommended design guidelines immediately following this section.

PRIMARY PRACTICES

Bioretention Cells (infiltration basins or rain gardens) Landscaped depressed areas with an engineered soil mix and vegetation designed to receive stormwater from relatively small contributing areas. Bioretention cells may or may not have a subsurface drain and are not designed as a conveyance system.

- **Recommended V_Q Credit:** Difference in volume entering as compared to exiting the bioretention cell as calculated by the design professional.

Bioswales (vegetated swales) Bioswales incorporate the same design features as bioretention cells; however, bioswales are designed as part of a conveyance system and have relatively gentle side slopes and flow depths generally less than 12 inches.

- **Recommended V_Q Credit:** Difference in volume entering compared to exiting the vegetated swale as calculated by the design professional.

Dry Wells A dry well is a subsurface basin, typically associated with rooftop runoff, used to capture, temporarily store and eventually infiltrate stormwater runoff. It can be either a structural chamber and / or an excavated pit filled with uniformly-graded clean rock. The rock of the dry well can be left exposed at the surface or topped with vegetation to blend into the rest of the landscape.

- **Recommended V_Q Credit:** Total storage volume, taking into account void space of aggregate, calculated by design professional.

Infiltration Trenches Infiltration trenches consist of a long, narrow excavation ranging in depth from 3 to 12 feet and backfilled with clean rock. Runoff is stored in the void space between the aggregate, then infiltrates into the surrounding soil. An infiltration trench does not have a sub-surface drain; a French Drain does. As with a dry well, the rock of an infiltration trench can be left exposed or topped with vegetation to blend into the existing landscape.

- **Recommended V_Q Credit:** Total storage volume, taking into account void space of aggregate, calculated by design professional.

Porous Pavement Porous pavement refers to pavement surfaces that allow water to pass through them rather than shed runoff. The porous pavement takes many different forms with four main types: porous asphalt, pervious concrete, grid pavers filled with rock and grass pavers.

- **Recommended V_Q Credit:** Storage capacity of stone reservoir if underlying soils are permeable enough to facilitate infiltration of storm water. Reduction of time of concentration if underlying soils do not support infiltration of stormwater runoff.

Post-Construction Soil Quality Restoration Soil quality restoration is the process of restoring disturbed soils by reducing soil compaction and increasing soil organic matter to a minimum of 5% for areas that will be dedicated to turf and 10% for other landscaped areas. This consists of incorporating a soil amendment, such as compost, which increases soil porosity and water holding capacity (storage space).

- **Recommended V_Q Credit:** Amended Area (ft²) x 0.50 inch x 1/12 = Volume (cf) at 5% soil organic matter content. Amended Area (ft²) x 1 inch x 1/12 = Volume (cf) at 10% soil organic matter content.

Rooftop Disconnection Impervious rooftops, that are separated from the storm sewer system by pervious surface or infiltration BMPs contribute less runoff and reduce pollutant loading. Rooftop runoff should be directed to designated areas for on-site storage, treatment, and volume control. In some cases, individual lots may need minor grading to meet minimum overland flow conditions.

- **Recommended V_Q Credit:** Based on disconnection length from the table below, disconnected downspouts can be subtracted from the developed site when computing Water Quality (V_Q) volume.

Vegetated Filter Strip Vegetated filter strips treat sheet flow from adjacent surfaces and function by slowing runoff velocities and filtering out sediment and other pollutants, and by providing some infiltration into underlying soils.

- **Recommended V_Q Credit:** Filter Strip Area x Infiltration Rate X 24 hours (duration)

Native Soil / Vegetation Preservation To minimize the impacts of development and enhance post-construction aesthetic benefits, native soil / existing vegetation (including trees, grasses, and other plants) should be preserved to the maximum extent practicable by preventing disturbance or damage to specified areas of a construction site.

- **Recommended V_Q Credit:** Preserved / protected area, in square footage, removed from storm water quality calculations.

Wet Ponds Wet ponds are also known as stormwater ponds, retention ponds, and wet extended detention ponds. They are all excavated areas or enhanced natural depressions designed to detain stormwater runoff. While there are several variations of the wet pond design, the most common modification is the extended detention wet pond, where storage is provided above the permanent pool in order to detain storm water runoff to provide settling. Wet ponds need sufficient drainage area to maintain the permanent pool. typically 15 – 25:1. The United States Department of Agriculture (USDA) Pond Handbook No. 590 proposes a general rule of thumb of 6 acres of drainage area for each acre-foot of permanent storage.

- **Recommended V_Q Credit:** Wet ponds are designed to control water quantity volume, with a secondary benefit of improving water quality. A wet pond does not decrease the overall volume of storm water runoff, therefore zero credit, against the water quality volume, has been given for this particular practice.

Additional Primary Practices:

Integrating infiltration-based stormwater management practices is not restricted to those listed in this guide. However; the practices included in this guide are the only ones, at this time, that have an established credit system that the design professional can integrate into the post-construction stormwater quality management plan, as required as part of the Metro Area Standard Drainage Report. If you would like to review additional infiltration-based practices please visit the following website:

<http://cfpub.epa.gov/npdes/stormwater/menuofbmps/post.cfm>

SUPPORTING PRACTICES

Engineered Planting Soil If underlying soils or in-situ soils are compacted and / or lacking organic matter these soils should be amended or replaced with an engineered planting soil that consists of a compost / sand / topsoil blend to enhance the functionality and long-term success of bioretention based practices - bioswales and cells.

Flow Splitter A flow splitter is necessary to bypass stormwater flows greater than what the infiltration-based practice is designed to treat.

Level Spreader A level spreader is used to spread runoff over a wide area to prevent erosion and concentrated flow.

Pretreatment Measure Pretreatment refers to features designed to capture and remove coarse sediment particles before runoff enters the infiltration-based practice and include such practices as a sediment forebay, sediment basin, plunge pool, level spreader, filter strip, street / parking lot sweeping, or proprietary equipment, such as an oil/grit separator.

Sub-surface Drain A subsurface drain perforated pipe, tubing or tile installed below the ground surface to intercept and transport water to a downstream open conveyance, another infiltration-based practice (treatment train), outlet to a dispersion area using an effective flow dispersion practice, or to a storm sewer system.

Vegetation For Final Stabilization There are three levels of vegetation to use for infiltration-based practices, with each level progressively better for stormwater management purposes, as the plant choices become deeper-rooted and taller and are better able to filter, absorb, infiltrate and retain more water both above and below ground.

Vegetation	Fair	Better	Best
Plant Species	Cool season turf grass, such as Kentucky Bluegrass	Cultivated plants, such as those found at the local nursery or garden center, shrubs, young trees	Native plants / flower, forbes, sedges, warm season grasses, and mature trees
Maintenance	"Mow" to high maintenance, depending on personal expectations for a green, weed-free lawn	Low to medium maintenance; consisting of watering until plants / shrubs / trees are established; deadheading, weeding and pruning occasionally thereafter	Medium to high through year 3 for native prairie plants; low to very little maintenance thereafter

Vegetation Rule of Thumb: The height of any given plant in an infiltration-based practice should be no taller than ½ the site width - i.e. plants / shrubs, etc. in a 4' wide rain garden should be get no taller than 2'