STORMWATER MANAGEMENT SITEs are generally a best management practice integrated throughout land development projects which provide for a volume of water storage, infiltration and evaporation that mimics the natural rate of runoff or groundwater recharge.

Detention basin featuring a diverse mix including *Chamaecrista fasciculata* (Partridge Pea), *Heliopsis helianthoides* (Oxeye Sunflower), *Monarda fistulosa* (Wild Bergamot) and *Sorghastrum nutans* (Indian Grass).
The sites (e.g., size, location and depth) must be designed and constructed according to all applicable ordinances and under the direction of a qualified design professional. In addition to planting trees and shrubs, seeding with native plant species is an economical way of vegetating stormwater management sites. Erosion control fabric, mulch or hydromulch is necessary to control erosion, both during and after construction.

Examples: Detention basins - temporarily impound run-off water, allowing for release at controlled rates; retention basins - stormwater management facilities with permanent impoundment or pool for improving water quality; or, bioretention basins and rain gardens - dynamic living microbiological systems that enhance retention, infiltration and evaporation of run-off water while remaining attractive to wildlife.

PLANT SELECTION

In all stormwater management facilities, plants prevent erosion and slow water movement, hold or convert pollutants, enhance infiltration and evapotranspiration and encourage wildlife. Plant species or mixes can be selected that meet the critical objectives and extreme conditions of the site. Native grasses produce fibrous root systems that tolerate fast-moving water. Woody and herbaceous species add aesthetics, provide wildlife food and habitat and assist with evapotranspiration while preventing erosion.

When selecting a seed mix, choose one appropriate for the site’s hydrology (moisture status) to avoid stand failure. If the site is chronically moist with long periods of inundation, a retention basin, FACW meadow or OBL wetland mix is appropriate; if chronically moist with occasional inundation (immediately after a rainfall) and periodic drying out, a FACW meadow or riparian floodplain mix is appropriate; or, if typically dry except for a 12-72 hour period after a rainfall, a detention basin or rain garden mix is appropriate.

SITE PREPARATION

Invasive species, particularly those adapted to wet conditions, should be removed or sprayed with an approved herbicide by a licensed spray technician planting the site. Perennial weeds not addressed before establishment will be difficult to remove later. Normal vegetation can be worked into the topsoil, which should be stockpiled until the final grade has been established.

With the specifications and dimensions, on-site construction of the berm and outlets must be executed carefully to maintain structural integrity. The infiltration and plant growth areas should be loose and friable (easy to crumble).
high in organic matter and completed without compaction by heavy equipment. An excavator can be used to dig and drop each area of the bottom soil in a loose manner. At this point, lime or compost can be incorporated. The excavation machine does not move over the finished surface, thus avoiding unnecessary compaction. Native vegetation can be planted or seeded over this uneven absorbent surface.

**SEEDING AND PLANTING METHODS**

Seeding and planting should begin immediately upon completion of the structure while the soil is still friable and before weeds emerge. Plan seeding and planting before the basin is flooded or allow the basin to drain before seeding. Broadcast seed evenly over each unit by hand seeding or hydroseeding. Seeding rates are generally low (1/2 lb per 1,000 sq ft). If broadcasting seed, add a bulking agent (e.g., kitty litter) so that seed may be broadcast evenly over the area. If the soil is dry, incorporate the seed into the soil with a garden rake. Oats or rye can provide temporary vegetation to protect the soil until permanent vegetation is established. The use of such native species as *Elymus virginicus* (Virginia Wildrye) can create an intermediate cover that is succeeded by long-term native vegetation. Straw mulch or straw coconut mats are frequently used to control erosion and protect emerging seedlings from extreme temperatures and drying out. Mulch should be sparse in order to allow sunlight to reach the ground. If the site is a retention basin, refer to the Wet Meadow & Wetland Sites Establishment Guide.

Transplanted seedlings and shrubs may need to be watered until they become well-rooted. Irrigating seeded areas is beneficial until seedlings become established.

**GROWING SEASON MAINTENANCE**

**FIRST GROWING SEASON**

- Whenever canopy height (overall vegetation) reaches 18”-24”, use a brush hog mower or string trimmer to trim the meadow to a height of 8”. A lawn mower is not recommended as the mower height will be too low and native seedlings will be killed. Trimming will reduce competition by fast-growing weeds for sunlight, water and nutrients needed by slow-growing perennial natives.
- If bioengineering or containerized woody materials are used on the site or seed of shrubs/trees were part of the mix, the site should not be trimmed after the establishment year.
- Problem weeds should be hand pulled or spot sprayed with an approved herbicide, such as Rodeo®, Garlon® 3A or Milestone® (do not use Milestone® where standing water is present). If you did not plant vines or spiny plants as part of your mix, be particularly vigilant about controlling them. These are more easily pulled when they are young rather than after they have had two to three months of growth. Examples include bindweed, blackberry, multiflora rose, mile-a-minute and Japanese hops. Be equally vigilant about controlling other invasive species, such as autumn olive and Japanese knotweed.
SECOND & SUBSEQUENT GROWING SEASONS

- Prior to new spring growth reaching a height of 2” (e.g., shortly after forsythia or redbud blooms), trim any material standing from the previous year close to the ground (approximately 2”). If your seed mix included sedges, trimming should be no lower than 2” above the crowns that produced the prior year’s growth. This will allow the soil to warm more quickly which will stimulate the emergence and growth of native seedlings. It will also reduce the likelihood of shrub invasion.
- If bioengineering or containerized woody materials were used on the site or seed of shrubs/trees were part of the mix, the site should not be trimmed after the establishment year.
- Problem weeds should be hand pulled or spot sprayed with an approved herbicide, such as Rodeo®, Garlon® 3A or Milestone®. If you did not plant vines or spiny plants as part of your mix, be vigilant about controlling them. These are more easily pulled when they are young rather than after they have had two to three months of growth. Examples include bindweed, blackberry, multiflora rose, mile-a-minute and Japanese hops. Be equally vigilant about controlling other invasive species, such as autumn olive and Japanese knotweed.

SPECIAL CIRCUMSTANCES - SECOND GROWING SEASON

- If you notice a heavy infestation of ragweed or foxtail in the second growing season, trim the meadow to a height of 8”. If bioengineering or containerized woody materials were used, trimming should be above or around new growth of the plants. Trimming should cease after mid-September.

GENERAL MAINTENANCE

- In addition to structural maintenance, siltation needs to be removed as needed. Close mowing throughout the growing season or extensive chemical use is not conducive to water quality improvement and wildlife habitat.

STORMWATER MANAGEMENT SITES SEED MIXES

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>ERNMX-126</td>
<td>Retention Basin Floor Mix - Low Maintenance</td>
</tr>
<tr>
<td>ERNMX-127</td>
<td>Retention Basin Wildlife Mix</td>
</tr>
<tr>
<td>ERNMX-128</td>
<td>Seasonally Flooded Wildlife Food Mix</td>
</tr>
<tr>
<td>ERNMX-154</td>
<td>Floodplain Mix</td>
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<tr>
<td>ERNMX-180</td>
<td>Rain Garden Mix</td>
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<td>ERNMX-180-1</td>
<td>Rain Garden Grass Mix</td>
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<tr>
<td>ERNMX-180-2</td>
<td>Southeast Rain Garden Mix</td>
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<tr>
<td>ERNMX-183</td>
<td>Native Detention Area Mix</td>
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</tbody>
</table>

Mix formulations are subject to change without notice depending on the availability of existing and new products. While the formula may change, the guiding philosophy and function of the mix will not.

These mixes are used to address stormwater. Visit ernstseed.com for more options.