Rain Gardens

What do they do?
• 30% more water soak into the ground
• Cleans water
• Low maintenance
• Improves animal & good insect population
Credits

• LEED
• SSc5.1 Protect & Restore Habitat
• SSc6.1 Stormwater Design – Quantity Control
• SSc6.2 Stormwater Design – Quality Control
• WEc1.1 Water efficient landscaping
• WEc1.2 Water efficient landscaping

• NAHB
• 1.3.5 Manage Storm water using low impact development
• 1.3.6 Devise landscape plans to limit water demands
• 4.1.10 Collect and use rainwater as permitted by local code

Disclaimer

• These guidelines are not rules that must be followed but directions that will assist in the design of a rain garden for a residence. Design of bio-retention areas, bio-swales and other rain gardens for parking lots, streets, etc should be designed by a professional

Location

• At least 10’ away from the house
• Not on slopes > 12%
• Not over septic system
• Not in a ponding area
• Close to runoff source
• In sunlight or partial sunlight
Sizing

- Between 100 & 300 SF
- Depth of garden
- Soil type
- Impermeable runoff area draining into garden
Garden Depth

- Too shallow > 3”
  - More surface area
- Too deep < 8”
  - Pond too much water
  - Hole in a ground
  - Possible tripping
- Must be level
**Slope**

- Determine slope by using 2 stakes and string
- Height/width * 100 = % slope
- Slope < 4%, 3-5" depth
- 5% < slope < 7%, 6-7" depth
- 8% < slope < 12%, 8" depth

![Diagram of slope determination](image)

**Soil Type**

- All about infiltration
- Determine soil type
  - Sandy soils = quicker infiltration = smaller garden
  - Clay soils = slower infiltration = larger garden
  - Silty soils = in between sandy & clay soils

**Soil Type Factor on Surface Area**

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Rain gardens less than 30 feet from downsour</th>
<th>Table 2</th>
<th>Rain gardens more than 30 feet from downsour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3 in. deep</td>
<td>6 in. deep</td>
<td>8 in. deep</td>
</tr>
<tr>
<td>Sandy soil</td>
<td>0.19</td>
<td>0.15</td>
<td>0.06</td>
</tr>
<tr>
<td>Silty soil</td>
<td>0.34</td>
<td>0.23</td>
<td>0.16</td>
</tr>
<tr>
<td>Clayey soil</td>
<td>0.43</td>
<td>0.32</td>
<td>0.20</td>
</tr>
</tbody>
</table>
Runoff Transport

• Gardens < 30” from downspout
  – Directly from downspout
  – Only determine roof area for runoff

• Gardens > 30” from downspout
  – Need to determine roof area and lawn area draining to garden
Determining Dimensions

- Make sure water can spread across length of garden
- Long side perpendicular to slope
- Choose best placement of garden
- Divide size of garden by width to determine length
Plant Selection

• Local species
• Diversify
• Clump species in groups of 3 to 7 plants
• Leave 1ft area between species

Berm design

• Wall for back and side of garden
• Use dirt already cut out of garden area.
• Mild slope on backside of berm
• Mulch or vegetate with turf or with native species
Rain Garden Plant Spacing

10 feet wide; full to partial shade with silty & sandy soils

Total Area: 70 sq. ft.
<table>
<thead>
<tr>
<th>Plant Name</th>
<th>Color</th>
<th>Bloom Time</th>
<th>Height</th>
<th>Spread</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coreopsis</td>
<td>Yellow</td>
<td>Early</td>
<td>Tall</td>
<td>Wide</td>
<td>North</td>
</tr>
<tr>
<td>Globe Mallow</td>
<td>Pink</td>
<td>Early</td>
<td>Medium</td>
<td>Wide</td>
<td>Full</td>
</tr>
<tr>
<td>Russian Sage</td>
<td>Blue</td>
<td>Full</td>
<td>Tall</td>
<td>Wide</td>
<td>Full</td>
</tr>
<tr>
<td>Elephant Ears</td>
<td>Pink</td>
<td>Full</td>
<td>Tall</td>
<td>Wide</td>
<td>Full</td>
</tr>
<tr>
<td>Coreopsis</td>
<td>Yellow</td>
<td>Full</td>
<td>Tall</td>
<td>Wide</td>
<td>Full</td>
</tr>
</tbody>
</table>

Bio Swales

Picture from Low Impact Urban Design & Development website
Example

- The owners of the house proceeding this slide is wanting to create a rain garden for their patio and a portion of their roof on the northwest side of the house. Calculate the size and dimensions of the rain garden. The ground on that side of the house slopes away from the house 12" in 30'. The yard is a heavy clay soil type.