

Constructing a Native Soil Rain Garden

Purpose –

- Captures runoff from impervious areas such as roofs, driveways, patios.
- Encourages infiltration, reduces runoff leaving site. Should drain quickly to prevent mosquito problems (within 72 hours, 48 hours is better)
- Captures first inch of rainfall (rainfall containing most polluted runoff)

Placement -

- At least 10 feet from buildings to prevent seepage into foundations
- At least 25 feet from septic tank, septic drainfield, or well head.
- Avoid locations with slopes that are greater than 12%
- Avoid wet patches and soils with low infiltration (wetland soils & soils with high clay content). The goal of the rain garden is to encourage infiltration.
- Do not place garden site over underground utilities
- Be sure water table is at least 2 feet below soil surface
- It is better to build the rain garden in full or partial sun, not directly under trees.

Size –

- Rain garden are typically 100 to 300 square feet.
- Choose the impervious surfaces that will be diverted to the raingarden and calculate the size of this drainage area.
- Determine soil type: sandy, silty/loamy, or clayey
- Calculate raingarden size based on soil type and impervious drainage area

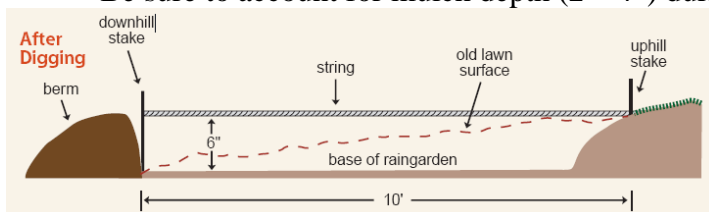
Calculation for constructing a raingarden based on soil type and impervious area

Soil type	Raingarden Ponding Depth		
	4-5 inches	6-7 inches	8-9 inches
Clay soil	0.19	0.15	0.08
Silty soil	0.34	0.25	0.16
Sandy soil	0.43	0.32	0.20

Example: a 1,000 ft² roof drains into a clay soil raingarden with a 6” ponding depth
 Solution: 1,000 ft² * 0.15 = 150 ft² raingarden

Ponding Depth –

- Ponding depth is the depression between the top of mulch layer and bottom of the overflow outlet. Runoff is captured and held in order to enhance infiltration.
- Rain gardens are usually 4 to 9 inches deep depending on slope and soils.
 - Slope less than 4% - 4” to 5” deep
 - Slope between 5-7% - 6” to 7” deep
 - Slope between 8-12% - 8” to 9” deep
- Be sure to account for mulch depth (2 – 4”) during raingarden construction.



(*slope = height/length)

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Shape –

- Rain garden are not usually square or perfectly circular
- The longest dimension should be perpendicular to the major slope

Installation –

- Layout rain garden edge with rope or garden hose
- Call before you dig to locate utilities (811)
- Stockpile topsoil from rain garden area for later use
- Dig out raingarden area to a depth of 1 to 4 feet, stockpile subsoil
- Use subsoil to create a berm on downhill side (same height as uphill edge)
- Create an overflow outlet that allows water from large storm event to exit the garden in a non-erosive manner. Stone weirs, level spreaders, and large diameter pipe can be used as overflow outlets.
- The bottom of gardens should be tilled deeply and leveled to improve infiltration
- Modify soil in raingarden to a depth of 1 to 4 feet. Use tillage equipment, or shovels to mix topsoil and 3 to 4 inches of compost into every foot of native soil.
- Compost should be stable (well aged) and low in nitrogen and phosphorus. Composted pine bark is well suited for this purpose.
- Mulch with 2 to 4 inches of shredded hardwood bark (avoid pine bark - it floats)
- For more installation information visit: <http://dnr.wi.gov/runoff/rg/rgmanual.pdf>



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Connecting the Rain Garden –

- Create shallow wide swales to direct water from impervious areas to rain garden
- Some stormwater infiltration may occur in swales. Raingarden size can be adjusted to account for reduced runoff delivery.
- Line swales with stone, or vegetation to filter runoff and prevent erosion.
- Drainage pipe can be used for delivery, but outlet protection may be needed

Vegetation –

- Plants must tolerate flood and drought conditions
- Consider aesthetics – rain gardens are gardens
- Visit <http://www.bae.ncsu.edu/topic/raingarden/plants.htm> for suggested plant list

Maintenance –

- Replenish mulch to maintain 2 – 4 inch depth
- Check inlets, and overflow outlet – repair any eroded areas
- Similar to other garden areas – requires routine periodic landscape maintenance