STEP 1: INFILTRATION TEST

1. Call “811” before you dig to have your utilities located.
2. Dig 1-2 holes in the proposed garden area. (8” diameter & deep)
3. Clear out loose dirt, fill to top with water.
4. Allow water to soak in for 1-2 hours to saturate the soil.
5. Fill hole back up with water so that the water level is about 1” from the top.
6. Mark starting level with toothpick.
7. Measure how far water level falls at specific time intervals.
8. For sandy soils: 15 minutes, 30 minutes, 1 hour
9. For clay soils (more common in Oakdale): 1, 2 and 4 hours.
10. Based on the rate measured, calculate how many inches will soak into the soil over 24 hours.
11. The number of inches that soak in should be your raingarden depth.
12. 12” is the maximum raingarden depth, even if your test shows the soils can handle more.

Infiltration Example

Test shows .5 inch of infiltration after 4 hours.

\[
\frac{.5 \text{ inch}}{4 \text{ hours}} \times 24 \text{ hours} = 3 \text{ inches garden depth day}
\]
RAINGARDENS

TECHNICAL STANDARDS AND DESIGN EXAMPLES

STEP 2: RAINGARDEN SIZING

1. Depends on yard space available and how much rain is meant to be captured.

2. Most residential raingardens are sized to hold about an inch of the rain that falls on the area that you want to drain into the raingarden (roof, driveway, etc).

3. Example: 200 square feet of roof that drains into a downspout
   
   Infiltration test shows 5” of water per day will soak into the ground.

   One inch of water capture = 1/5 the size of the roof.

   200 square feet of roof/5 = 40 square feet of total garden.
STEP 3: DIRECTING FLOW AND GARDEN SHAPE

1. A variety of options are available to move water towards the raingarden, including: grass swales, rain chains, buried pipes, and creating a rock creek bed.

2. Basic shape is a wide, flat-bottomed depression.

3. Garden must have an overflow outlet, protected from erosion with rocks.

4. If yard is sloped, a small berm may be required to hold water in on the downhill side of the garden. Use stakes and string to be sure both sides are level.

5. Garden must have some form of edging installed to keep grass out and to create a clean, purposeful look. Can be standard garden edging, stone, or brick.

6. Test infiltration once again before planting!

SLOPED YARD DIAGRAM

A wide, flat-bottomed depression is necessary for a successful raingarden.
EXAMPLE #1

Bird and Butterfly Garden
Bird & Butterfly Raingarden Key

Full Sun—6+ Hours/Day

#2A  Indian Blanket
Daisy-like flower heads with yellow, orange, red and maroon that bloom between June to Sept.

#1  Big Bluestem: Tall, clump-forming grass.
Tall, clump-forming prairie grass, turns maroon color in fall.

#2B  Daylily
Come in many colors, bloom June to Aug. Nectar source for hummingbirds. Hardy plant.

#3A  Meadow Blazingstar
Bright rosy flowers that bloom July to Sept. Best for monarch butterflies and goldfinches.

#6  Joe-Pye Weed
Flat-topped purple flowers bloom July to Sept. Tall plant, native to Midwest.

#3B  Sneezeweed
Yellow flowers bloom from Aug to Oct. Tall plant, may require staking. Deer resistant.

#7A  Orange Coneflower “Goldsturm”
Yellow flowers bloom May to Aug. Very hardy, deer resistant, native to Midwest.

#5  Blue Flag Iris
Blue flowers bloom May to July. Low maintenance, native to Midwest.

#7B  Black-eyed Susan
Bright yellow flower heads bloom from June to Sept. Self-seeding, may require replacement every few years due to decrease in density.

#4A  Purple Dome Aster
Dark purple flower heads, attractive to migrating monarchs.

#4B  Meadow Sage
Spikes of blue flowers bloom from May to June. Hardy and deer resistant.
EXAMPLE #2
Native Prairie - Full Sun
Native Prairie Raingarden Key
(Full Sun 6+ Hours/Day)

#2A Little Bluestem
Blue-green grass that turns bronze in fall. Low maintenance, drought tolerant.

#1 Indian Grass
Clump-forming grass that turns golden in the fall. Seeds used by songbirds.

#2B Showy Goldenrod
Prairie flower with clusters of bright yellow blooms July to Sept.

#3A Marsh Milkweed
Flat-topped pink flowers, attractive to monarchs. Self-seeding, prefers clay soils.

#6 Ironweed
Bright purple flowers that bloom July to Sept. Low maintenance, moisture loving.

#3B Sky Blue Aster
Bright blue flowers with yellow centers that bloom Sept to Oct.

#7A Nodding Sedge
Long, narrow seed heads, seeds food for birds and small mammals.

#5 Great Blue Lobelia
Bright blue flowers bloom Aug to Sept. Self-seeding, will fill in bare spots in garden.

#7B Fox Sedge
Golden colored seed heads bloom from May to July.

#4A Butterfly Milkweed

#4B Prairie Smoke
Clump-forming, purple flowers bloom from May to June. Prefers drier soils.

These diagrams show how the planting zones change with changing garden shapes.
EXAMPLE #3

Native Prairie - Medium to Full Shade
Native Prairie Raingarden Key
(Medium to Full Shade—Less than 4 hrs sun/day)

#2A False Solomon’s Seal
Clump-forming white flowers bloom April to June, later becoming red berries.

#1 Greenheaded Coneflower
Yellow drooping flower heads, bloom July to Sept. Low maintenance.

#2B Wild Geranium
Vibrant purple flowers bloom April to May. Foliage turns reddish in fall, deer resistant.

#3A Lady Fern
Grows in a variety of soil types, 12 to 36 inches tall.

#6 Culver’s Root
White flower heads bloom June to Aug. Do not plant in dry, sandy conditions.

#3B Turtlehead
White flowers bloom Aug to Oct. Attractive to caterpillars.

#7A Cinnamon Fern
Fern that grows in clumps, grows frond that turns brown in fall resembling cinnamon sticks.

#5 Southern Blue Flag Iris
Blue-violet flowers, low maintenance. Do not use Yellow Iris, is an invasive species.

#7B Sensitive Fern
Light green fronds, attractive year-round. Can handle sunny conditions with additional moisture.

#4A Harebells
Bell-shaped flowers bloom from June to July. Tolerates all soils.

#4B Alum Root (Coral Bells)
Attractive foliage, available in a variety of flower colors.