

Building a “Health Lakes” Rain Garden

Carolyn & Mike Aita

Garden address: W11254 Lake Road, Randolph, WI 53956

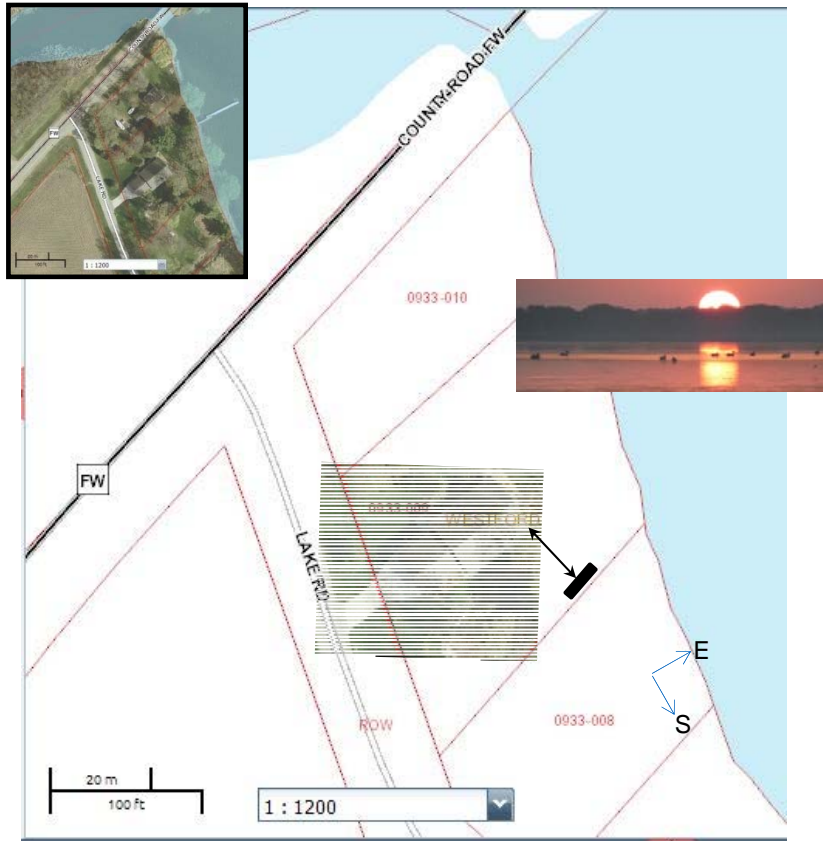
DNR Lake Protection Grant #LPT52416 (4/15/16 – 6/30/18)

Beaver Dam Lake Improvement Association

THREE BROAD GOALS

- Divert rainwater runoff, guided by Healthy Lakes Initiative.
- Provide nectar, nest, and larval sites for a diverse population of indigenous invertebrates throughout the growing season at a time when their global habitats are shrinking.
- Continue learning about the local natural world and, by example, demonstrate the benefits of establishing and preserving habitats.

SITE and SIZE



Plan of W11254 Lake Road and environs (insert).
Rectangle at southeast end of property indicates rain garden. Arrow indicates distance (40 ft.) from water source, a downspout at southeast corner of house.

Site:

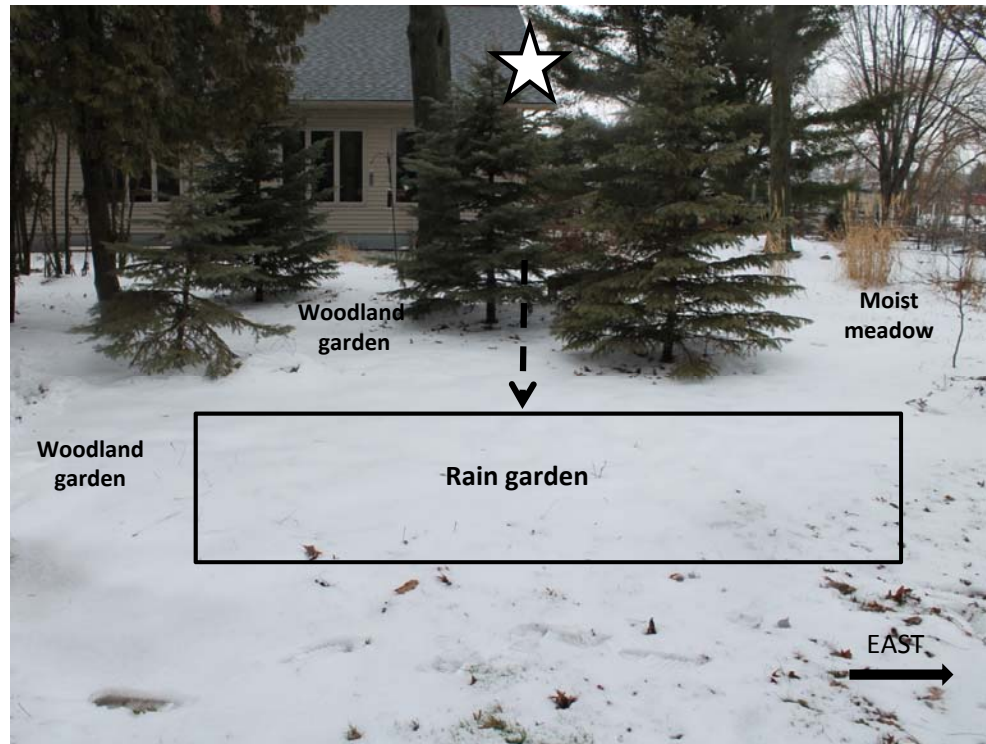
1. 40 ft from the house, precluding foundation damage.
2. Remote from the septic system.
3. In a spot that is low & flat, but in which water does not pool.
5. Away from the canopy of deciduous trees.
6. In a sunny area, receives at least 6 hours of morning/noonday sun.

Size:

Soil type and distance from downspout support* a maximum size of 255 sq. ft. (Actual garden is ~25' x 10').

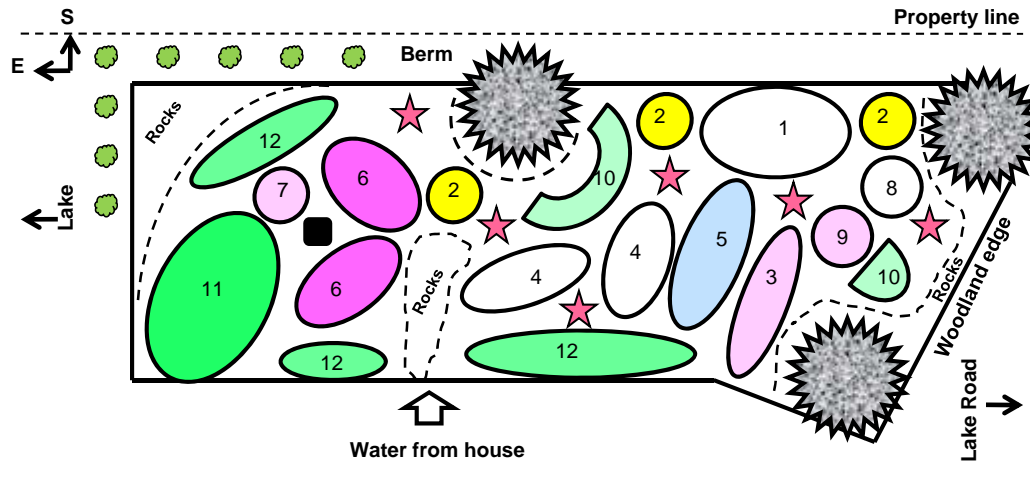
*Rain Gardens-A how-to manual for homeowners, WI DNR.

RAIN GARDEN SITE DECEMBER 2015







Location of rain garden viewed due north from south property line. Star indicates downspout that provides water from roof. Dashed arrow shows route of water, transported at ground level through buried PVC pipe. Three existing nearby gardens are indicated.

GARDEN DESIGN and PLANT SELECTION



Rain Garden Species*

1.	Virginia mountain mint (5) <i>Pycnathemum virginianum</i>	8.	Culvers root (1 stand) <i>Veronicastrum virginicum</i>
2.	Wild senna (4) <i>Cassia hebecarpa</i>	9.	Obedient plant (1 stand) <i>Physostegia virginiana</i>
3.	Marsh phlox (9) <i>Phlox glaberrima</i>	10.	Bur sedge (10) <i>Carex grayii</i>
4.	Wild quinine (12) <i>Parthenium integrifolium</i>	11.	Palm sedge (7) <i>Carex muskingumensis</i>
5.	Great blue lobelia (10) <i>Lobelia siphilitica</i>	12.	Fox sedge (15) <i>Carex vulpinoidea</i>
6.	Marsh blazingstar (6) <i>Liatris spicata</i>		Prairie dropseed (13) <i>Sporobolus heterolepsis</i>
7.	Rose mallow (1) <i>Hibiscus palustris</i>		Canadian hemlock (3) <i>Tsuga canadensis</i>
	Swamp (red) milkweed (20) <i>Asclepias incarnata</i>		Statue
*Forbs chosen with reference to <i>Pollinators of Native Plants</i> , Heather Holm, Pollinator Press LLC, Minnetonka, MN 2014.			

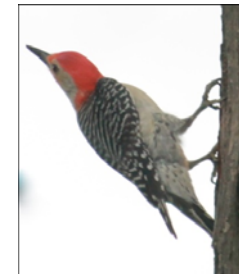
THE BEGINNING: PLANTING HEMLOCK TREES ON THE (FUTURE) BERM

Groundbreaking began on May 23, 2016 with the planting of three Canadian hemlocks at the future garden's southwest boundary.

Rationale:

- ❖ Observed unifying effect of small trees on garden design as well as providing a mid-height habitat for nesting birds and transient visitors* in rain garden at Horicon Marsh Wildlife Reserve Headquarters Visitors Center.
- ❖ Lost three arborvitae from site in Fall 2015 and wanted to replace with natives.

Hemlock was chosen because this species:



(1) Is naturally found on stream banks.

(2) Can be sheared to control both size and shape, are therefore manageable with respect to maintaining good design as the garden matured.

(3) Not poisoned by juglone emitted from mature black walnut on neighboring property.

*Indigo bunting visited our garden on 5/25/16; male red-bellied woodpecker, a year-round resident, photographed on 6/2/16.

Three Canadian hemlocks define the rain garden's southwest boundary.

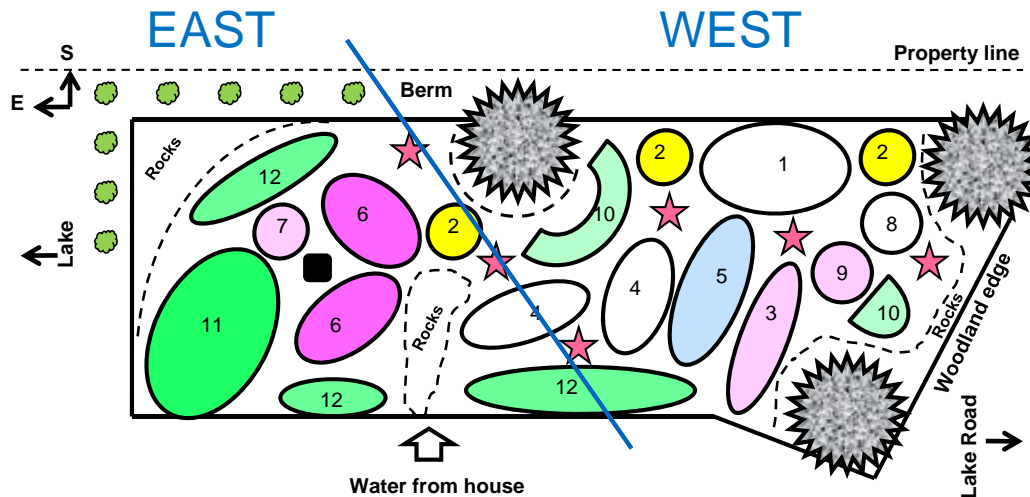


SITE CLEARING and SUBSOIL ASSESSMENT

Turf and weed removal : Lawn grass and annual and perennial weeds removed by hand exposing the topsoil within ~ 250 sq. ft area whose perimeter had been marked with water soluble spray paint.

Subsoil assessment: “Trial digs” into subsoil showed clay-loam containing increasing amounts of clay with increasing depth in west section. However, soil in east section contained gravel mixed with clay-loam.

Conclusion: To achieve a topography with good drainage after backfill throughout the garden, subsoil in east and west sections needed to be worked differently.



DIGGING, BACKFILLING, AND PLANTING

Building the west section of the rain garden:

1. Excavated to ~10 inches.
2. Walls reinforced with rubber tape held by landscape staples.
3. Excavated soil containing lowest clay content set aside and amended with peat moss to achieve porosity.,
4. Excavation backfilled to a depth of 4" below ground.
5. Plants with 3" and 4" root systems planted in amended soil.
6. Two inches of shredded hardwood bark mulch brought garden surface up to 2" below ground level.
7. Watered with gentle, soaking sprinkle.

Rain Gardens on Clay Soil Sites, <http://www.wildones.org/download/rainclay/rainclay.html>

BUILDING THE WEST SECTION

(A-C) Excavating, soil saving and amending, wall reinforcing.



(C,D) Backfilling, laying grid, planting
(↑ marsh phlox).

AROUND THE GARDEN, LATE JUNE

(A) As our first rain garden plants were put into the ground, (mostly) native gardens on other parts of the property were greening up and blooming in early summer delight.

(B) In foreground, mature stand of marsh phlox blooms adjacent to the back patio. The long bloom time of this species is one reason it was chosen for the rain garden. Notice rose-breasted grosbeak in insert.



AROUND THE GARDEN, LATE JUNE

Moist meadow with a stand of smooth penstemon in foreground interplanted with cardinal flowers and great blue lobelia (not in bloom) to attract hummers throughout their nesting season. Note the metal hummer statue. Blooming narrow-leaved evening primrose at left-back.



AROUND THE GARDEN, LATE JUNE

Another view of moist meadow, greening up.



6/23/16

BUILDING THE EAST SECTION OF THE RAIN GARDEN

Challenge - A previous owner buried several large metal plates, assorted hardware, and other debris near the ground surface (photo A) in soil containing a large amount of gravel.

Photo B - Plate being removed. A movable fence was used to protect already-planted west section . Note removed plate's size in relation to the swing it leans against.

Photo C – Buried kitchen items.

Good news - Soil below plates was porous because of gravel component. Deep digging was not necessary. Once foreign objects were removed, east section floor was leveled, backfilled with amended soil, planted, and mulched.



AROUND THE GARDEN, EARLY JULY

Moist meadow: (1) queen of the prairie, (2) woodland sunflower, (3) Joe Pye weed, (4) purple coneflower, (5) swamp (red) milkweed +volunteer. Noticed first monarch nectaring on swamp milkweed (7/12/16)



AROUND THE GARDEN, LATE JULY

Moist meadow with cardinal flower, Joe Pye weed, Culver's root, purple cone flower, woodland sunflower, and nodding pink onion in bloom, as is an irresistible, albeit exotic, red daylily. CRA carrying last transplant, a stand of (dis)obedient plants, to go into the rain garden.



AROUND THE GARDEN, LATE JULY

Another view of moist meadow, in bloom.



7/23/16



6/23/16

AROUND THE GARDEN, LATE JULY



(A) Turkscap lily in bloom intermixed with false blue indigo making pods and new stems of swamp milkweed.

(B) Natives: Butterfly weed, purple coneflower, orange coneflower, tall ironweed, lavender hyssop, common milkweed. Exotics: Chicago peace daylily, bee balm of dubious parentage.

AROUND THE GARDEN, LATE JULY

Permanent resident with summer visitor Baltimore oriole.



AROUND THE GARDEN, LATE JULY
Monarch caterpillars devouring swamp milkweed.



MAKING BERMS AND HARDSCAPING THE RAIN GARDEN

The east, west, and south borders of the garden were bermed to retain rain water entering a conduit on the north side.

We researched berms to understand their construction and found that a height-to-depth ratio of 1-to-4 was desirable adjacent to forbs and sedges. A height-to-depth ratio of 1-to-7 was required for healthy tree establishment. We bermed accordingly.

The underlayer consisted of excavated soil containing a large clay content, over which we put layer of amended soil. The entire berm was mulched with shredded bark.

Large rocks intermixed with smaller stones were placed in some places on the berm. Their purpose was to decoratively define an edge and to deter mulch erosion from the berm into the garden.

Prairie dropseed was planted in other places on the berm.

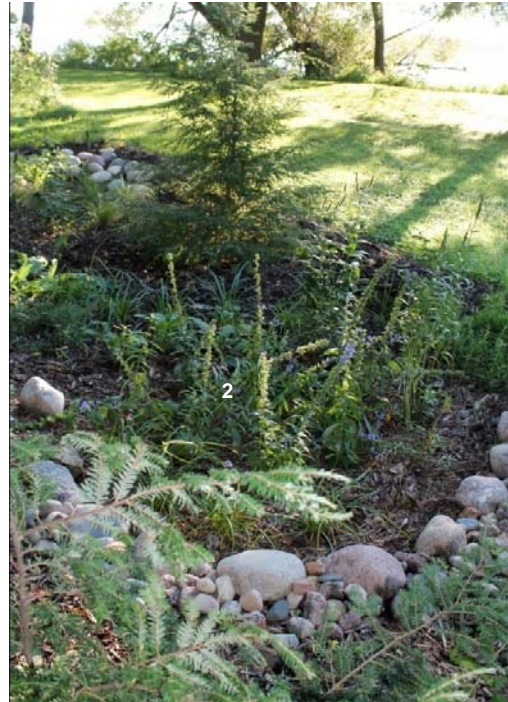
http://www.extension.umn.edu/garden/landscaping/implement/soil_berms.html

BERMS AND HARDSCAPING



(A) Bermed west end on 7/23/16 after a violent rainstorm showing good drainage. 1-burr sedge; 2-great blue lobelia; 3- obedient plant; 4-Culver's root; 5-mountain mint; 6-wild quinine; 7-marsh phlox.

(B) Same area on 9/11/16, looking southeast. In foreground, great blue lobelia (2) is at the end of its bloom. Note berm on south border in back of hemlock.

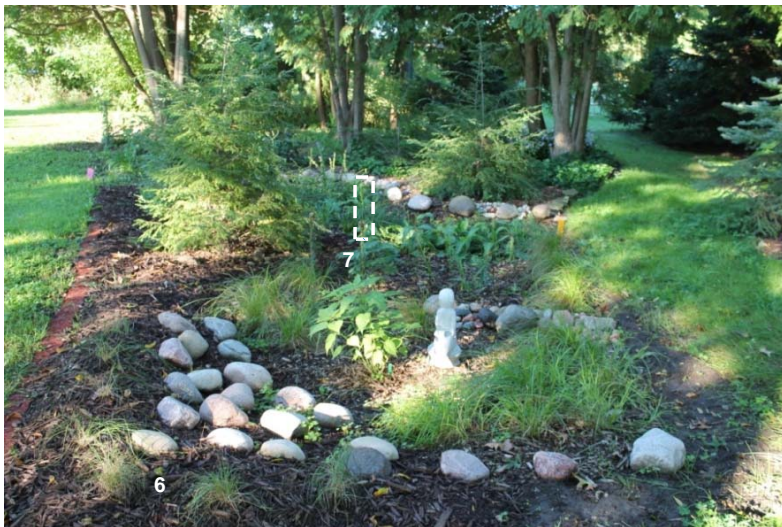


BERMS AND HARDSCAPING



(A) East end of rain garden, 8/3/16, planting continuing and berm and hardscape being developed.

(B) Same area, 9/11/16, with contiguous woodland to the west.



PLANTS

In (A):

1. rose mallow
2. palm sedge
3. fox sedge
4. dense blazingstar
(*liatris spicata*)
5. swamp milkweed

+

In (B):

6. prairie dropseed on berm
7. wild senna

AROUND THE GARDEN, LATE SUMMER

Nectaring beauties: (A) Monarch and swallowtail on meadow blazingstar (*liatris ligulistylis*). (B) Ruby-throated hummer on cardinal flower. (C) Mystery guest on lavender hyssop.



RAIN GARDEN, EARLY FALL



Important visitors to the rain garden on 10/3/16.

Thank You



- DNR Healthy Lakes Initiative for the opportunity to participate in this important program.
- Beaver Dam Lake Improvement Association & especially our Pres. Bill Boettge who works hard to keep our lake healthy, accessible, and FUN.

➤



...and congratulations to the

RUSTY PATCHED BUMBLE BEE

for just being recognized by the Federal government as an endangered species.

Long may you and your friends enjoy my garden, little one.

