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College



Value / Function of Stable & Vegetated Shoreland Zone



Shoreland Vegetation

(erosion-control, water quality, wildlife habitat, high plant diversity = high wildlife diversity)

Emergent Vegetation

(water quality, erosion-control & wildlife habitat)

Tree Stumps

(wildlife habitat & water quality)

Drifted-in Logs & Snags

(wildlife habitat, erosion control & water quality)





Altered Watershed Effects



**Soil loss from mowing
to water's edge**



Coon Lake

Altered Watershed Effects



Prior Lake

Altered Watershed Effects



Altered Watershed Effects





One pound of phosphorus =
500 pounds of algae

Altered Watershed Effects



Biological Dead Zone



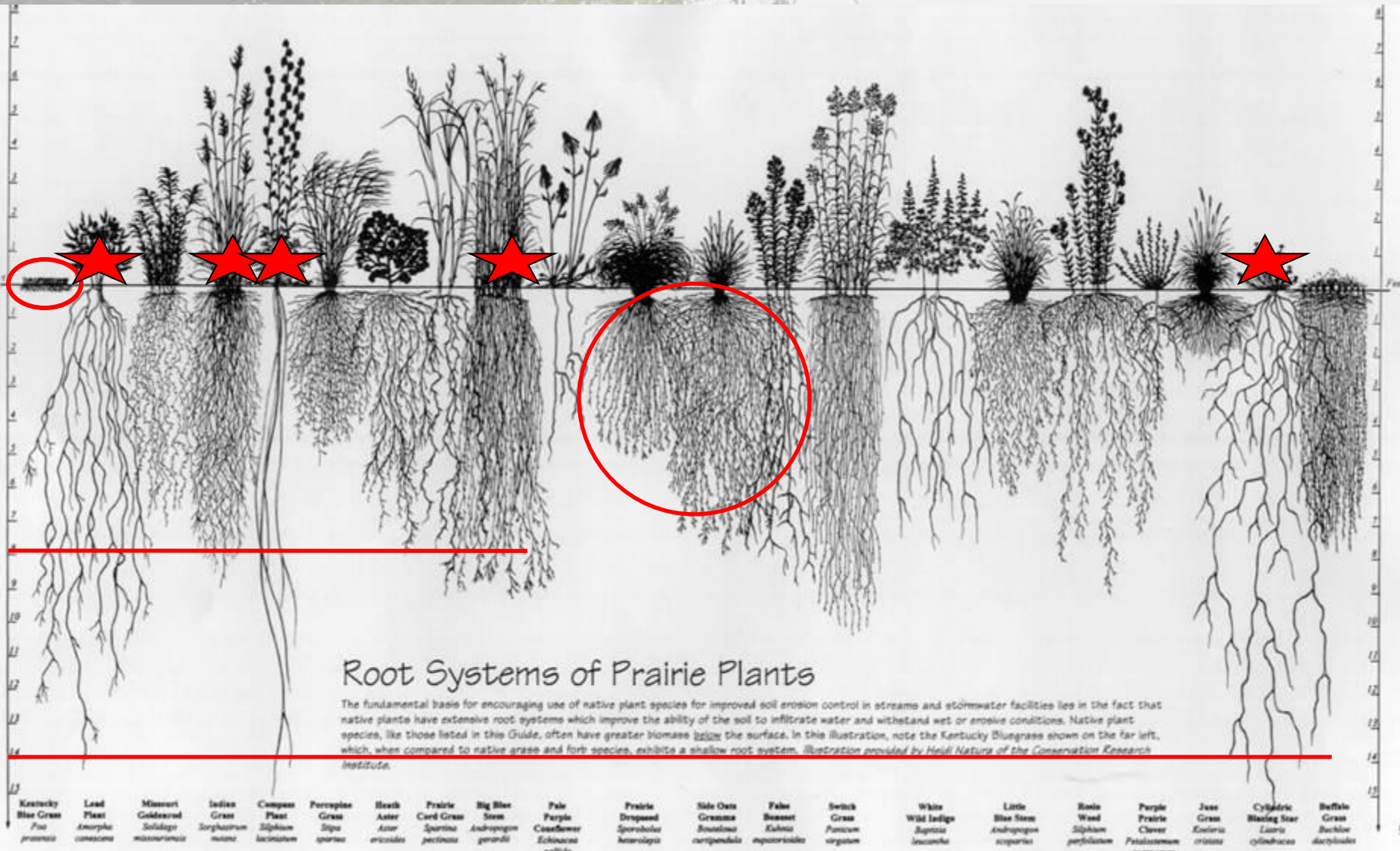














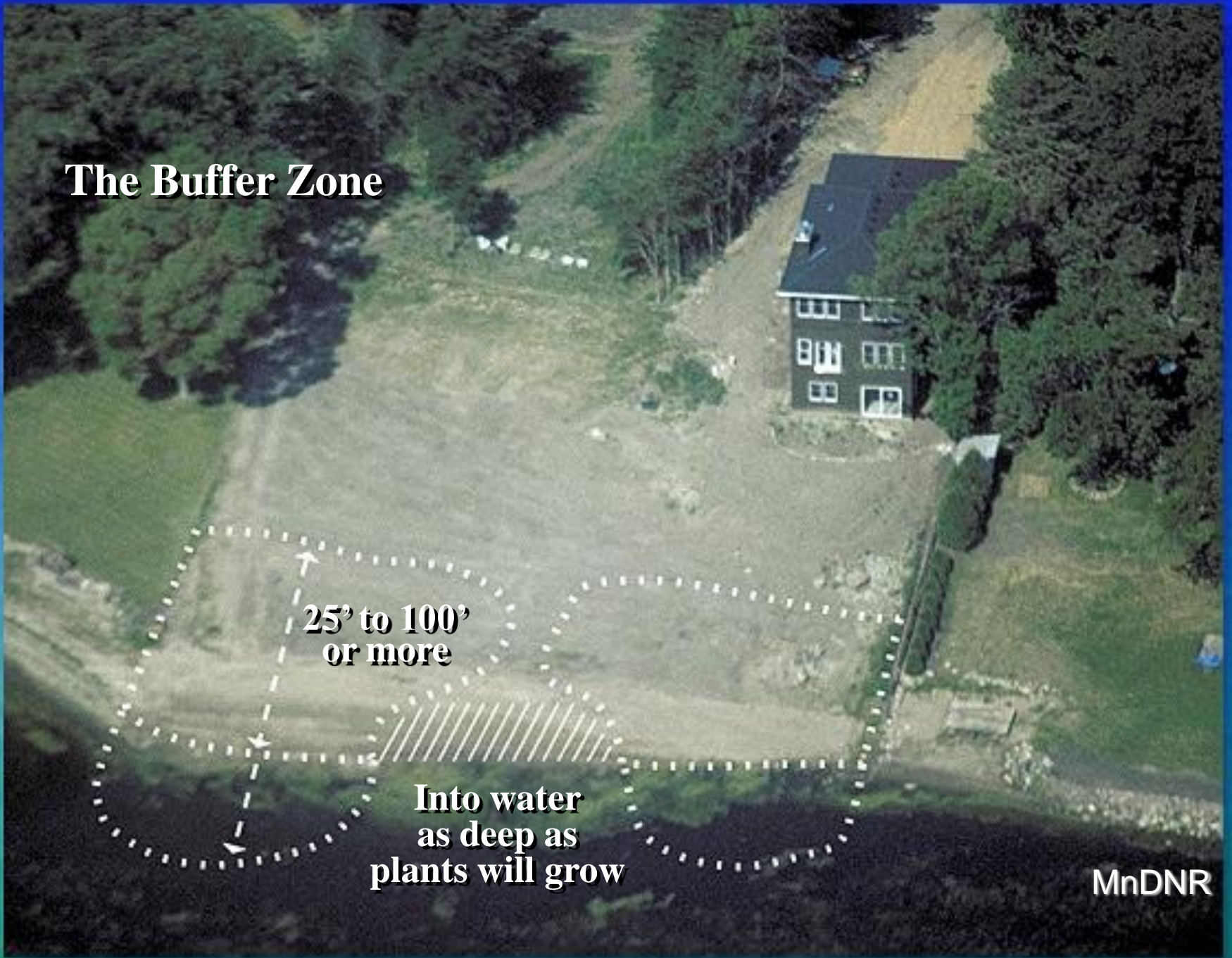
Design and Installation Approaches

The Buffer Zone

**25' to 100'
or more**

**Into water
as deep as
plants will grow**

MnDNR





Bank Treatment and Erosion Control



Existing vegetation, plantings, or soil bioengineering techniques

Herbaceous Plug

OHW, or Bankfull

Baseflow

Streambed

Dead Stout Stakes

Note: rooted, leafed condition of plant material is not representative of the time of installation

COCONUT FIBER LOG AT TOE





Defining “Native”

- Plants occurring in the local landscape, and particular ecosystem, before European colonization
- Grown from a seed source of local genotype
- Does not include cultivars of natives

PLANTS

For Stormwater Design

Species Selection for the Upper Midwest

Daniel Shaw
Rusty Schmidt



<http://www.pca.state.mn.us/publications/manuals/stormwaterplants.html>

VOLUME II

PLANTS FOR STORMWATER DESIGN

Species Selection for the Upper Midwest

Daniel Shaw
Rusty Schmidt
Brian Ashman
Hugh Johnson
Tony Randazzo



<http://www.greatrivergreening.org/>

PLANTS FOR STORMWATER DESIGN VOLUME II

GARDENING PRAIRIE PLA

HOW TO

CREATE

BEAUTIFUL

NATIVE

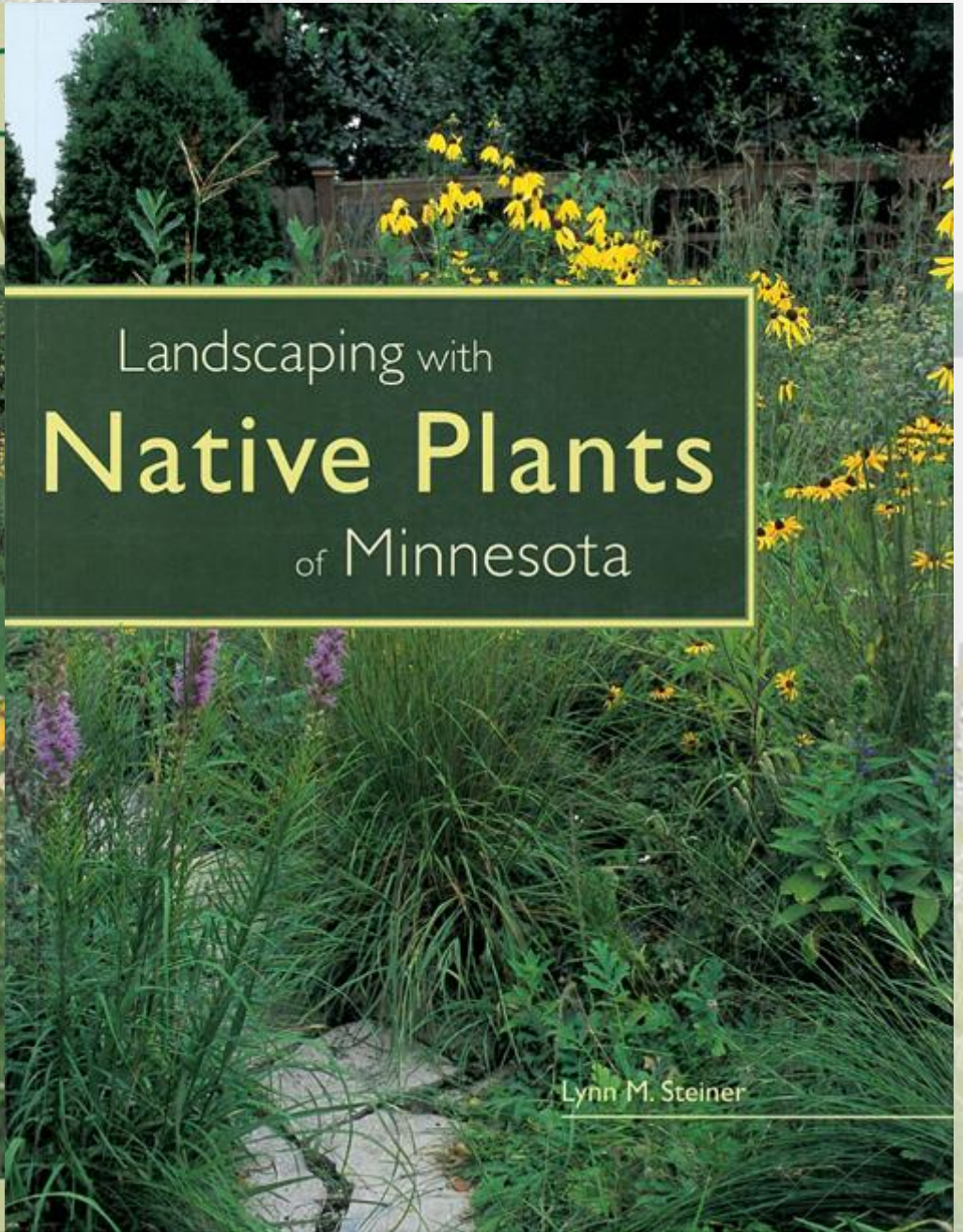
LANDSCAPES



SALLY WASOWSKI

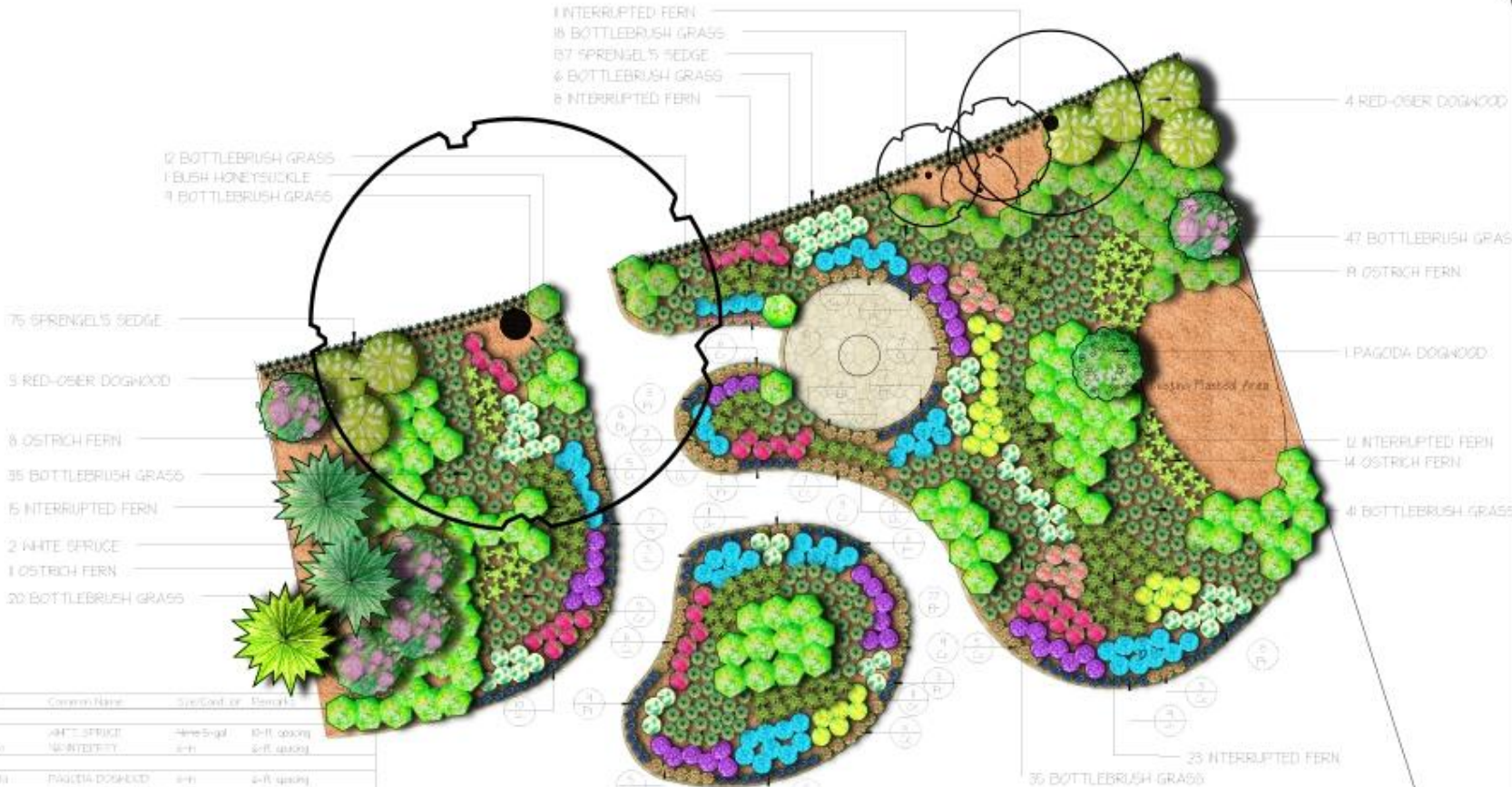
PHOTOGRAPHY BY ANDY WASOWSKI

Landscaping with **Native Plants** of Minnesota



Lynn M. Steiner

Additional Resources



Qty	Qty	Botanical Name	Common Name	Specified or	Remarks
Trees					
1	2	Pinus strobus	WHITE SPRUCE	4-in	4-ft spacing
1	5	Salix nigra	WILLOW DOGWOOD	4-in	4-ft spacing
Shrubs					
1	1	Cornus alternifolia	PAGODA DOGWOOD	4-in	4-ft spacing
1	7	Cornus sericea	RED-OSIER DOGWOOD	4-in	4-ft spacing
1	18	Desmodium illinoense	BUSH HONEYSUCKLE	4-in	25-ft spacing
Groundcover Plants					
1	20	Desmodium illinoense	BOTTLEBRUSH GRASS	7-in	8-in spacing
Perennials and Herbs					
1	10	Agrostis canadensis	ALCOCKHOLE	7-in	24-in spacing
1	50	Aster multiflorus	CALICO ASTER	7-in	24-in spacing
1	30	Carex pensilvanica	SPRENGEL'S SEDGE	7-in	12-in spacing
1	15	Carex canadensis	BUSH BERT	45-in	6-in spacing
1	37	Desmodium illinoense	PURPLE JOE-PYE WOOD	7-in	24-in spacing
1	25	Helianthus scaberrimus	SUNFLOWER	7-in	24-in spacing
1	52	Polypodium virginicum	OSTRICH FERN	4-in	24-in spacing
1	55	Thalictrum flavum	WILD BLUEBELLS	45-in	6-in spacing
1	10	Desmodium illinoense	WINTERBERRY	4-in	24-in spacing
1	34	Desmodium illinoense	ANGELICA PHOX	45-in	8-in spacing
1	52	Polypodium virginicum	PAGODA DOGWOOD	7-in	6-in spacing

LAKESHORE PLAN
LeBLANC SHORELINE
1677 Peltier Lake Dr, Centerville, MN

ANOKA COUNTY Prepared by: Prepared by Anoka Conservation District in association with Association of Metropolitan Soil and Water Conservation Districts and the USDA - Natural Resource Conservation District	Date 5-4-09 Sheet 2 Revision Scale 1 in = 10 ft
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Project Profile



Gustafson Residence

Lake Johanna – Ramsey County

photo by RCWD

Site Preparation



Options for control

- Chemical
(glyphosate)
- Smothering
(black plastic)
- Mechanical
(remove sod)

-Chemical

Rodeo (use within 10 feet of water's edge) – aquatic formulation of Roundup

Roundup (use away from shoreline) – breaks down upon contact with soil

Site Preparation



Chemical Method:

1. Mark out the planting area
2. Kill the Sod
3. Leave the sod in place

Project Profile 1



ISSUES:

- GEESE
- EROSION
- ICE-RIDGES

Gustafson Residence

Lake Johanna – Ramsey County

photo by RCWD



Gustafson Residence

Lake Johanna – Ramsey County

photo by RCWD

2005 5 22

Mulch

1. Above OHW / bounce
2. 2-3" thick
3. Shredded – not chipped



Gustafson Residence

Lake Johanna – Ramsey County



2005 5 27

Gustafson Residence

Lake Johanna – Ramsey County



2005 6 10

Planting



Bulb Auger w/ Cordless Drill



Planting

Pack it in!



Gustafson Residence

Lake Johanna – Ramsey County





Gustafson Residence

Lake Johanna – Ramsey County

photo by RCWD



**Shoreland
Access**

**Shoreland
Buffer**

Edging

Gustafson Residence
Lake Johanna – Ramsey County
photo by RCWD

Gustafson Residence

Lake Johanna – Ramsey County



Project Profile 2



Thompson Lake

? Is there enough wave action
to require a wavebreaker ? –
No (no boats & little fetch)

Goose Fence

(Green Snow-fence w/ t-posts)
-temporarily keep out herbivores

Coconut EC-Mat

6.5' x 165' roll
(\$300/roll) 'C7'
6-8yr life-span

Biolog

(Coconut-fiber)
-toe protection

Aquatic Emergents

Blue Flag Iris, Bur-reed,
Soft-stem Bulrush

Arrowhead →



Thompson Lake



Soft-stem Bulrush

Marsh
Milkweed

Prairie Cordgrass

Arrowhead

Sweet Flag

Thompson Lake – 1 yr after planting

Project Profile 3



Prior Lake
Lakefront Park / Beach



**Prior Lake
Lakefront Park / Beach**



**Prior Lake
Lakefront Park / Beach**



**Prior Lake
Lakefront Park / Beach**



**Prior Lake
Lakefront Park / Beach**



**Prior Lake
Lakefront Park / Beach**

Project Profile 4



Prior Lake
Lakefront Park / Beach



**To be
Mulched**

**Erosion-control
Matting**

**Prior Lake
Lakefront Park / Beach**



**Grasses &
Wildflower Mix
(upland)**

**Green Bulrush
& Sedges
(wet meadow)**

**Hardstem
Bulrush
(aquatic-emergent)**

**Prior Lake
Lakefront Park / Beach**

One year later

Planting

'plugs'

