



Shoreline Restoration Basics

Phil Nasby

DNR Fish & Wildlife

Southern Region Shoreland Habitat
Specialist

Steps for a restoration project:

- Identify existing conditions, vegetation, soil type, moisture, sun/shade, etc.
- Choose techniques
- Create a site plan, budget, and plant & materials list
- Obtain permits
- Prepare site and install project
- **Maintain project!!!**

The Buffer Zone

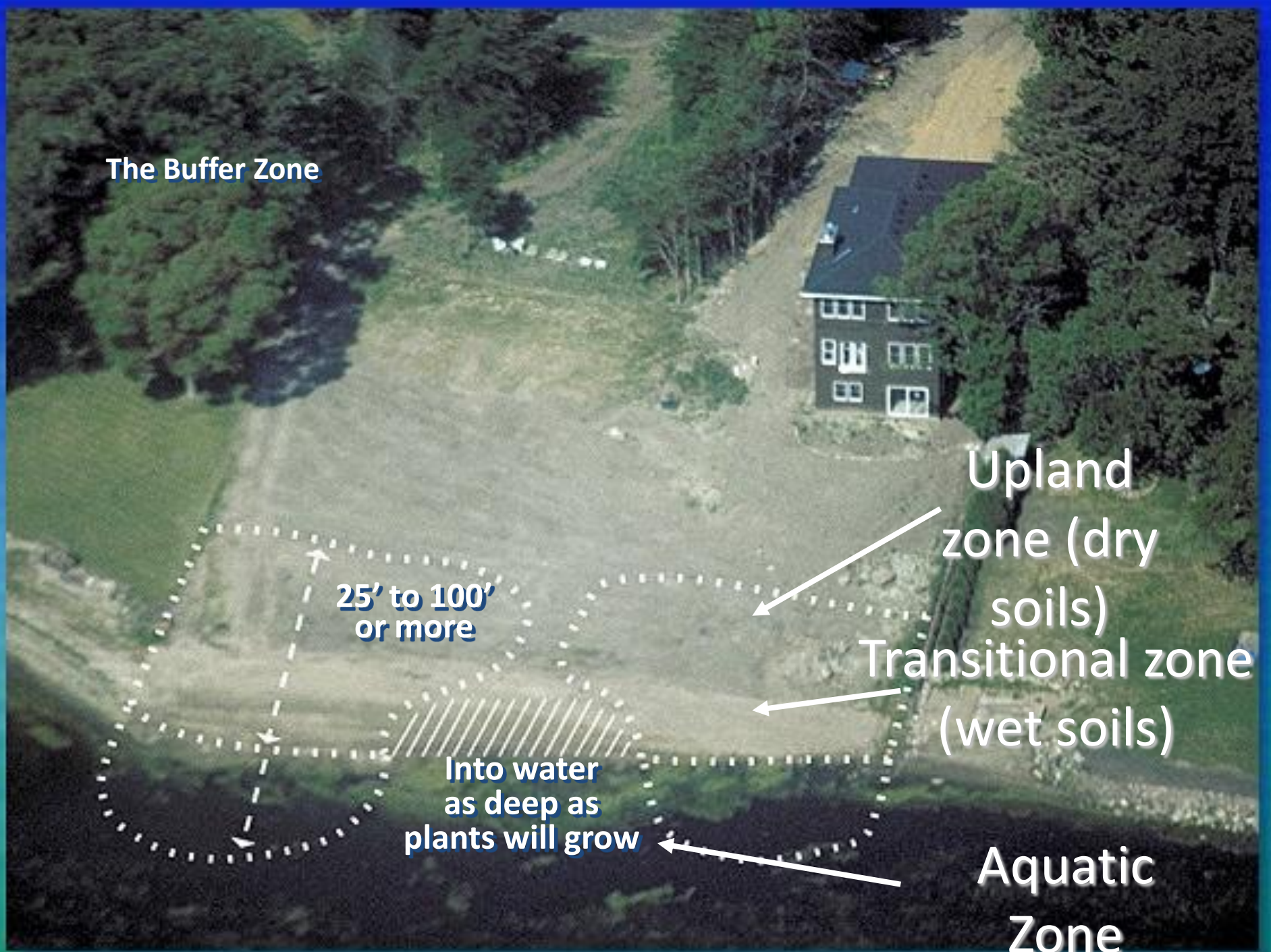
**25' to 100'
or more**

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

**Upland
zone (dry
soils)**

**Transitional zone
(wet soils)**

**Aquatic
Zone**

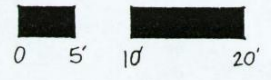
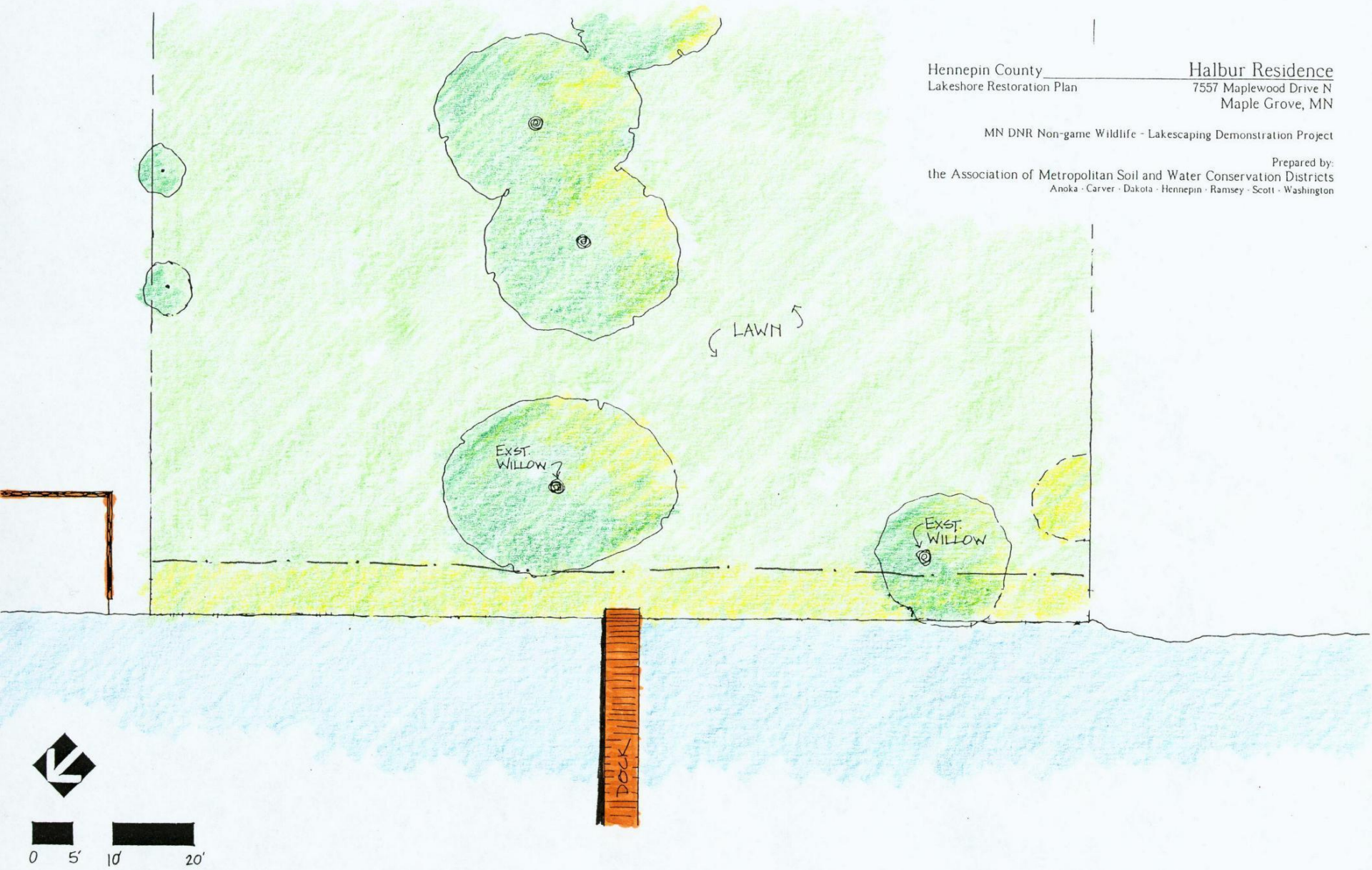


Hennepin County
Lakeshore Restoration Plan

Halbur Residence
7557 Maplewood Drive N
Maple Grove, MN

MN DNR Non-game Wildlife - Lakescaping Demonstration Project

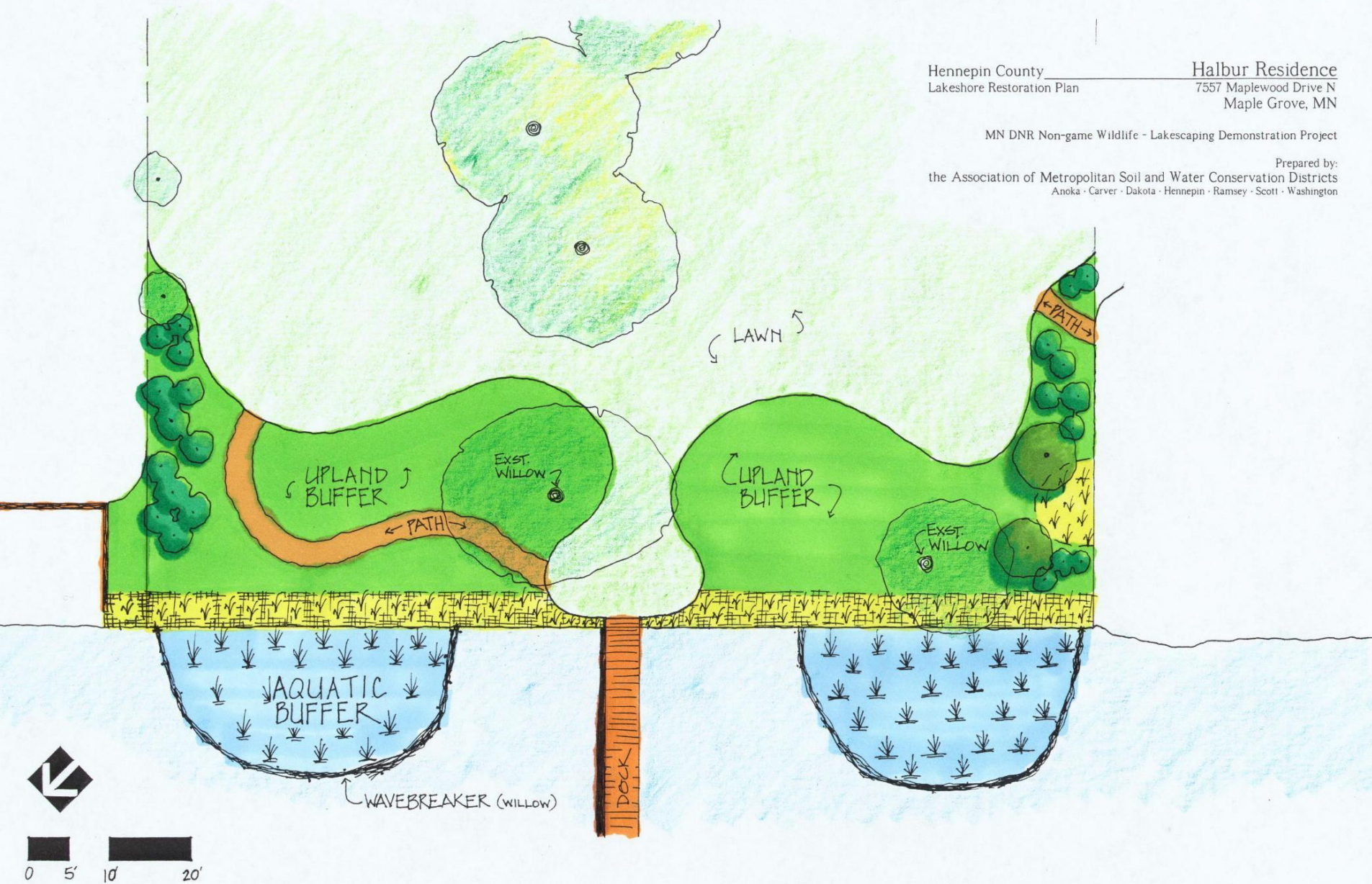
Prepared by:
the Association of Metropolitan Soil and Water Conservation Districts
Anoka · Carver · Dakota · Hennepin · Ramsey · Scott · Washington





MN DNR Non-game Wildlife - Lakescaping Demonstration Project

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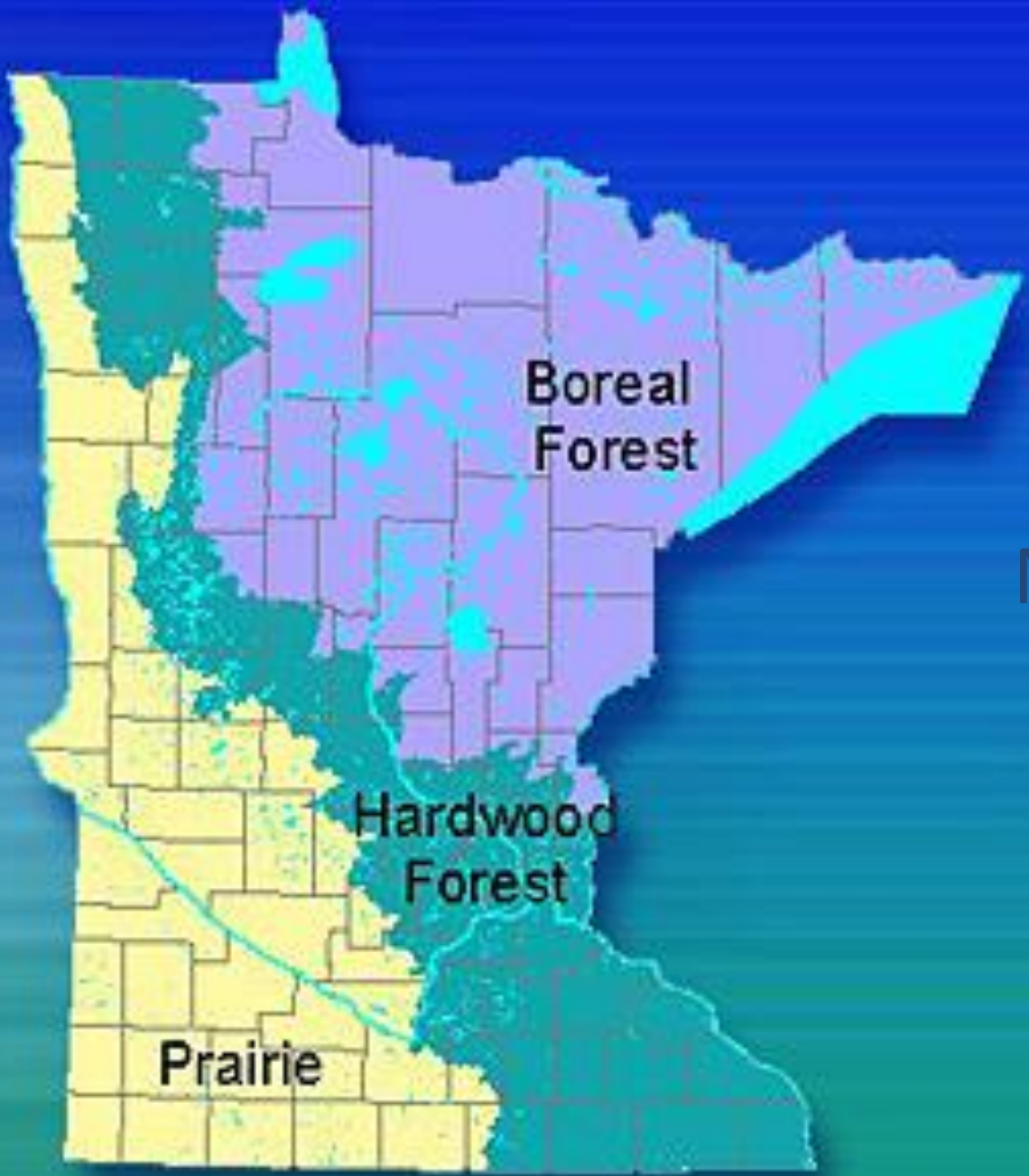




Create
plant
groups,
one plant
per 1.5
square
feet.

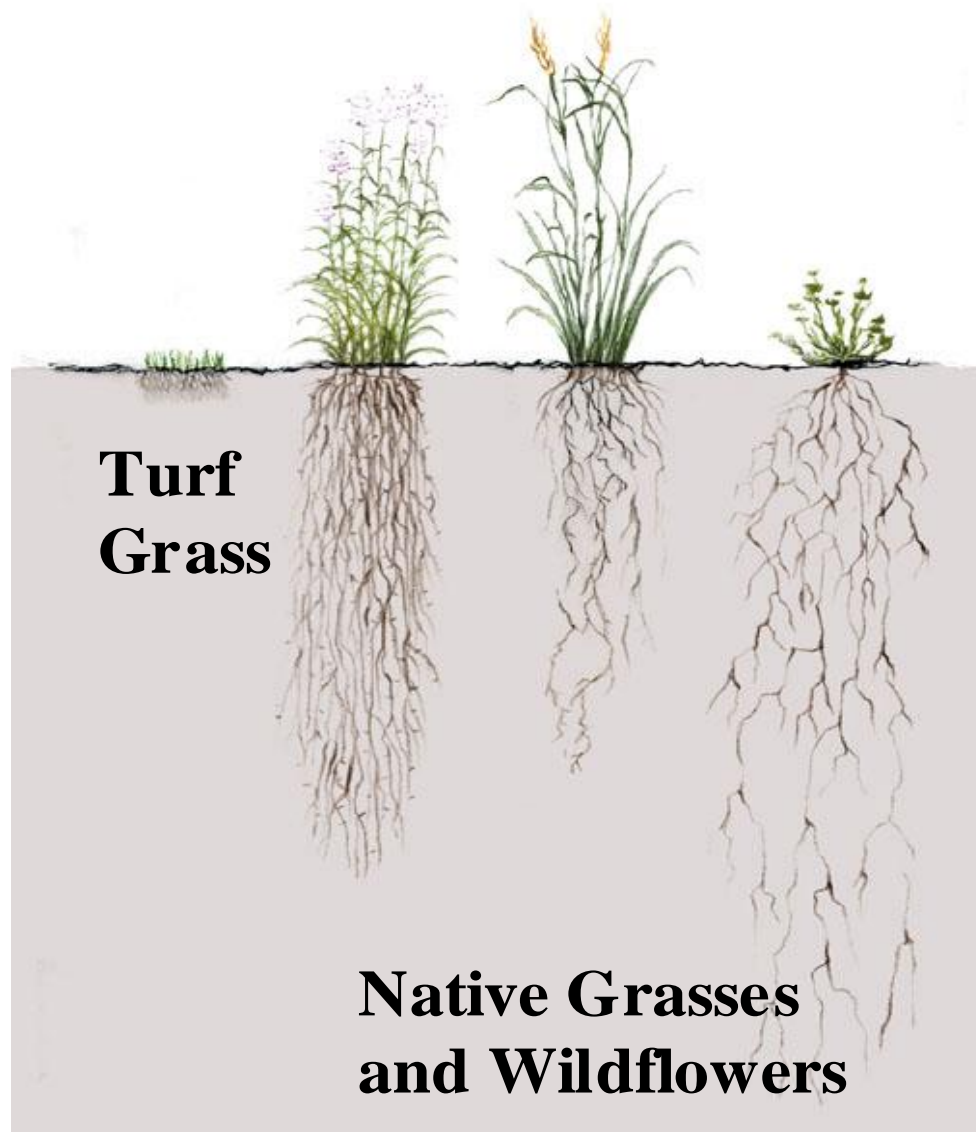
Remember
that
nothing in
nature
grows in
straight

Calculate # of plants needed by
multiplying total square footage of
project by .5



Native Ecological Regions of Minnesota

A Comparison of Root Depths



Restore your Shore



A guide to protecting and restoring the natural beauty of your shoreland.

Plant Guide: Native Plant Encyclopedia: Search by Criteria

Menu

My List

Alpha Browse

County	Life form	Habitat	Exposure	Maximum Height (feet)
Grant	<input checked="" type="checkbox"/> F Ferns and Wildflowers	<input type="checkbox"/> A Aquatic	<input type="checkbox"/> Full Sun	<input type="radio"/> 3 <input type="radio"/> 20
Hennepin	<input type="checkbox"/> G Grasses, Sedges and Rushes	<input type="checkbox"/> W Transitional	<input type="checkbox"/> Partial Sun	<input type="radio"/> 6 <input type="radio"/> 40
Houston	<input type="checkbox"/> T Trees and Shrubs	<input type="checkbox"/> UM Upland-Moist	<input type="checkbox"/> Full Shade	<input type="radio"/> 12 <input checked="" type="radio"/> All
Hubbard	<input type="checkbox"/> V Vines	<input type="checkbox"/> UD Upland-Dry	<input checked="" type="checkbox"/> All	
Isanti	<input type="checkbox"/> All	<input checked="" type="checkbox"/> All		
Itasca				

To perform a search, choose a county and at least one check box in each of the categories above, then press **Search!** To view detailed information, click on the plant name. Create or modify **My Personal Plant List** by checking the box to add a plant, then click **Save List**.

Add	<input checked="" type="radio"/> Scientific Name	<input type="radio"/> Common Name	Life Form	Habitat	Exposure	Height (ft)	Spacing (ft)	Flower Color	Bloom Time
<input type="checkbox"/>	<u>Acorus calamus</u>	Sweet flag	F	A,W		2-3.5	2.5	Yellow-green	May-July
<input type="checkbox"/>	<u>Actaea rubra</u>	Red baneberry	F	UM		1-3	2	White	May-July
<input type="checkbox"/>	<u>Adiantum pedatum</u>	Maidenhair fern	F	UM		1-1.5	1-2	---	---
<input type="checkbox"/>	<u>Agastache foeniculum</u>	Blue giant hyssop	F	UM,UD		3-4	2	Blue	July-August
<input type="checkbox"/>	<u>Alisma subcordatum</u>	Mud plantain	F	W		1-2	1-2	White	July-August
<input type="checkbox"/>	<u>Alisma triviale</u>	Water plantain	F	W		2-3	2-3	White	June-Sept
<input type="checkbox"/>	<u>Allium stellatum</u>	Prairie wild onion	F	UM,UD		1-2	1	Pink	July-August
<input type="checkbox"/>	<u>Allium tricoccum</u>	Wild leek	F	UM		0.5-1	0.5-1	White	June-July
								Pale	

Permits

- Aquatic Plant Management Permit- for any aquatic planting
- Division of Waters- for any retaining wall removal, regrading or rock work
- Some Counties and Cities have permit requirements

(I'm not a permit expert so just double check with every organization you think may have some involvement.)

Plants that Established Most Reliably

- Aquatic:
 - *Scirpus fluviatilis* (River Bulrush), *Scirpus validus* (Softstem Bulrush), *Sparganium eurycarpum* (Giant Burreed)
- Transition:
 - *Calamagrostis canadensis* (Canada Bluejoint), various *Carex* spp, *Eleocharis palustris* (Creeping Spikerush), *Eupatorium maculatum* (Spotted Joe-Pyeweed), *Iris versicolor* (Blueflag), *Scirpus americanus* (Three Square), *Scirpus fluviatilis* (River Bulrush), *Spartina pectinata* (Prairie Cord Grass)
- Upland:
 - *Agastache foeniculum* (Blue Giant Hyssop), *Monarda fistulosa* (Bee Balm), *Schizachryium scoparium* (Little Bluestem), *Solidago rigida* (Stiff Goldenrod), *Zizia aurea* (Golden Alexander)



Plants that Failed to Establish Well

- Aquatic:
 - Floating leaved, submersed species
- Transition:
 - *Acorus calamus* (Sweetflag), *Andropogon gerardii* (Big Bluestem), *Elymus canadensis* (Canada Wild Rye), *Panicum virgatum* (Switchgrass), *Sagittaria latifolia* (Arrowhead), *Scirpus atrovirens* (Green Bulrush), *Sorghastrum nutans* (Indian Grass).
- Upland:
 - *Asclepias tuberosa* (Butterflyweed), *Bouteloua curtipendula* (Side Oats Gramma), *Sorghastrum nutans* (Indian Grass), *Sporobolus heterolepis* (Prairie Dropseed).



[native plants](#) > [Landscaping with native plants](#) >

Native plant suppliers and landscapers in Minnesota

Lists of native plant nurseries and native vegetation consultants are organized by DNR Region.



- [Northwestern Minnesota](#) (386 KB) [PDF](#)
- [Northeastern Minnesota](#) (12 KB) [PDF](#)
- [Central Minnesota](#) (21 KB) [PDF](#)
- [Southern Minnesota](#) (14 KB) [PDF](#)
- [Out-of-state](#) (15 KB) [PDF](#)

- [Erosion Control Suppliers](#) (11 KB) [PDF](#)

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Aquatic Zone

Into water
as deep as
plants will grow



Aquatic Plants



Transplant Aquatic Plants from the Wild



Buy Aquatic plants from greenhouse





Create Wavebreak





Plant Aquatics



Fencing to
keep out
predators



Transitional Zone

wet soils



Very Important!!- Use clean (weed free) fill



Soil Wraps

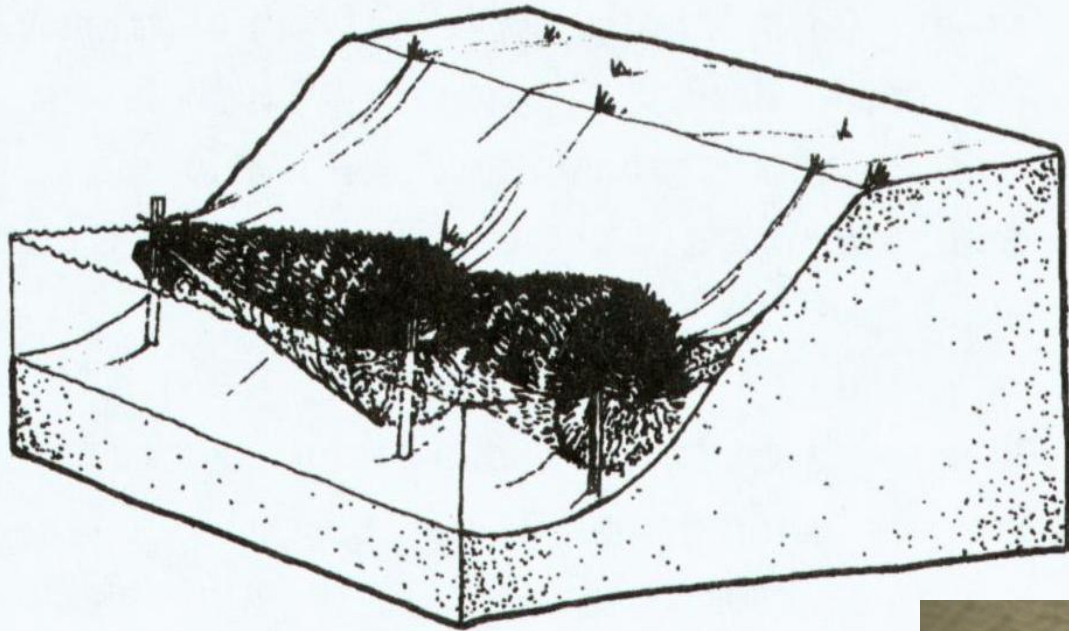
Biologs





Cedar Tree Revetments





Brush Revetment

Cedar Tree Revetments





Rock

Rock





Rock

When installing rock, reduce the visual impact and create habitat by planting



Lay out the boundary & Remove unwanted vegetation

Transitional Plants



welby R. Smith

Avoid Tilling shoreline soils

- Tilling can cause erosion and can bring weed seeds to the surface.
- Tilling is not necessary to prepare a seed bed along the shoreline, simply eliminate the vegetation, broadcast seed, lightly rake in and cover with erosion control fabric or weed free mulch.

Seeding



Install Erosion Control Fabric



Planting



Upland Zone

**25' to 100' wide
or more**

dry soils





Upland Plants



For 2" coverage of mulch, you need 6.24 cubic yards of mulch for 1000 square feet

Shredded Hardwood Mulch



A photograph showing a person in a white t-shirt and blue jeans, wearing yellow gloves, applying straw mulch to a garden bed. The garden bed is filled with straw and has a small green plant in the center. In the background, another person is visible near a wooden fence, and there are many trees. The text "Weed Free Straw or Prairie Straw Mulch" is overlaid on the bottom of the image.

**Weed Free Straw or Prairie
Straw Mulch**

Erosion Control Fabric

A photograph showing two women working on a sandy bank next to a lake. They are installing erosion control fabric. One woman, wearing a white shirt and shorts, is kneeling and using a hammer to secure a piece of dark fabric. The other woman, wearing a pink shirt and black shorts, is standing and using a hammer to secure a piece of light-colored fabric. The background features a calm lake, a boat with a green cover, and a line of trees under a clear blue sky.

How do you choose the right fabric for the job?

Planting



Maintenance Is Required

- Watering
- Weeding
- Mowing for weed control
- Burning
- Install Signs & Borders



The Test

- How would you restore these shorelines?

















Project Examples- Before & After





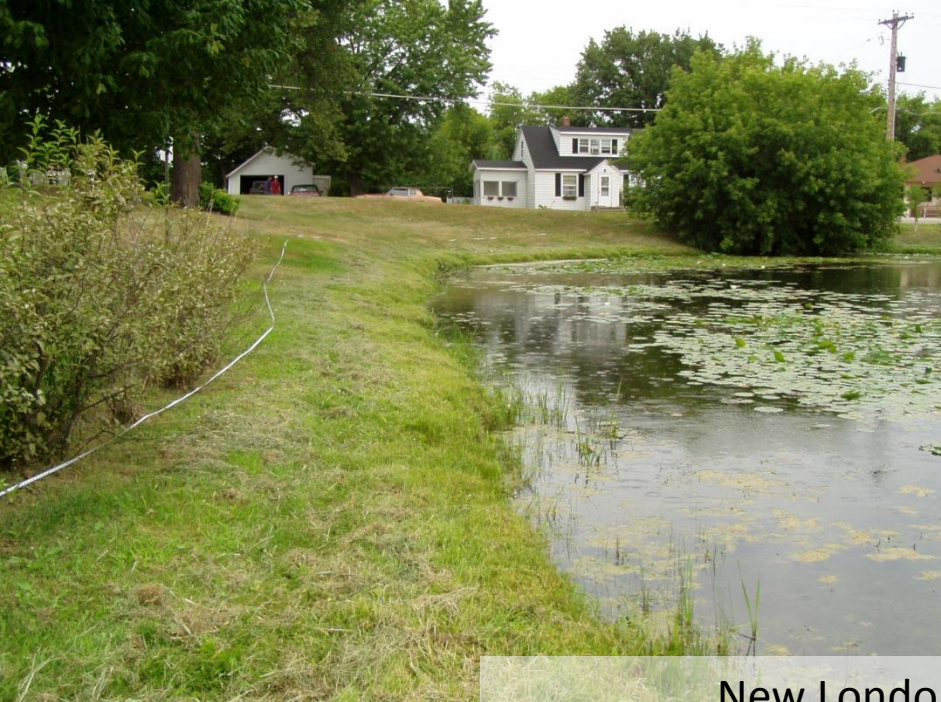
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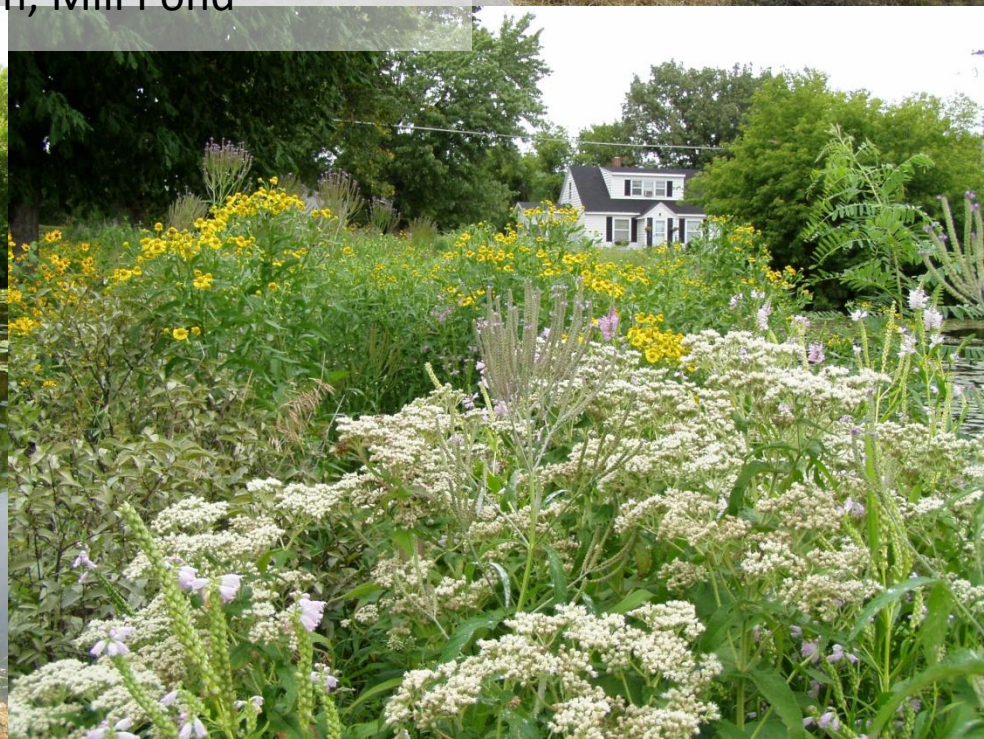
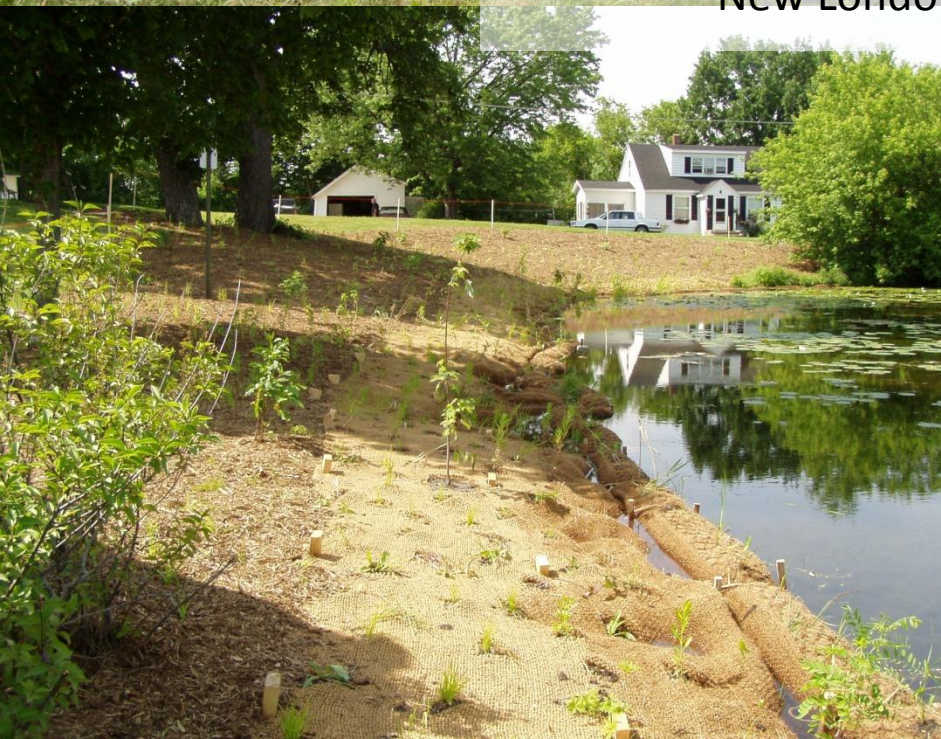
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New London, Mill Pond



Lake Washington, Darwin



Before



After

Before



Lion's Lake, Mankato

After



Before



Loon Lake City Park, Waseca

During



After



Before



Tiell Park, St. James

During



After



Before



Loon Lake Public Access, Waseca

During



After

Before



Ashley Park, Jackson

After

