LIBBS LAKE MANAGEMENT PLAN NEIGHBORHOOD MEETING

DECEMBER 3, 2024

CITY OF MINNETONKA

OVERVIEW

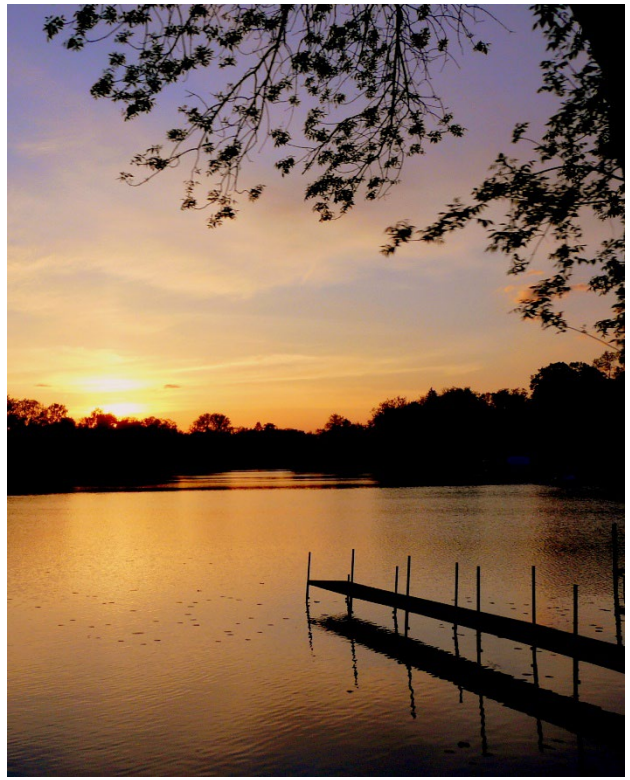
Goals for this meeting…

- Introductions
- Why a lake management plan?
- Learn about “shallow lakes”
- Libbs Lake - current conditions
  - Water quality and trends
  - Aquatic plants and management activities
  - Shoreline management
- Updates from the Libbs Lake Association
- Gather input on values, concerns, and long-term goals for protecting the lake
- Next steps for plan development

WHY A LAKE MANAGEMENT PLAN?

"Plan to protect what we have for future generations"

- Describes current conditions
- Identifies issues and opportunities
- Sets goals and priorities
- Identifies appropriate strategies, roles, responsibilities, timelines, and monitoring
- Identifies resources available



Benefits: clarity and guidance on pollution prevention, ecosystem health, recreation, community stewardship

Libbs Lake Management Plan

Libbs Lake Management Plan-Team

Joe Bischoff

Janna Kieffer

Mark Origer

Barr Engineering

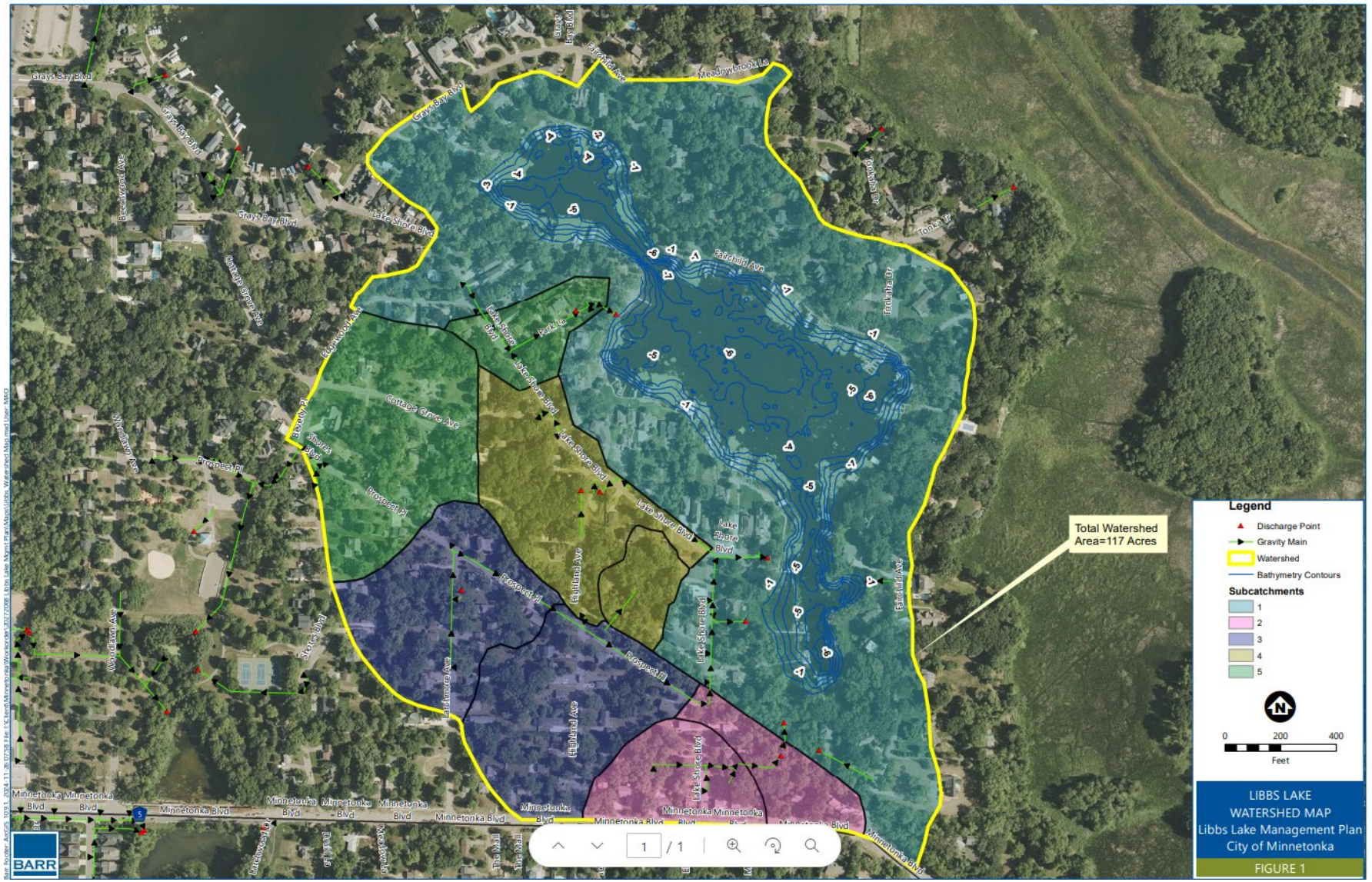
Leslie Yetka

Sarah Schweiger

City of Minnetonka

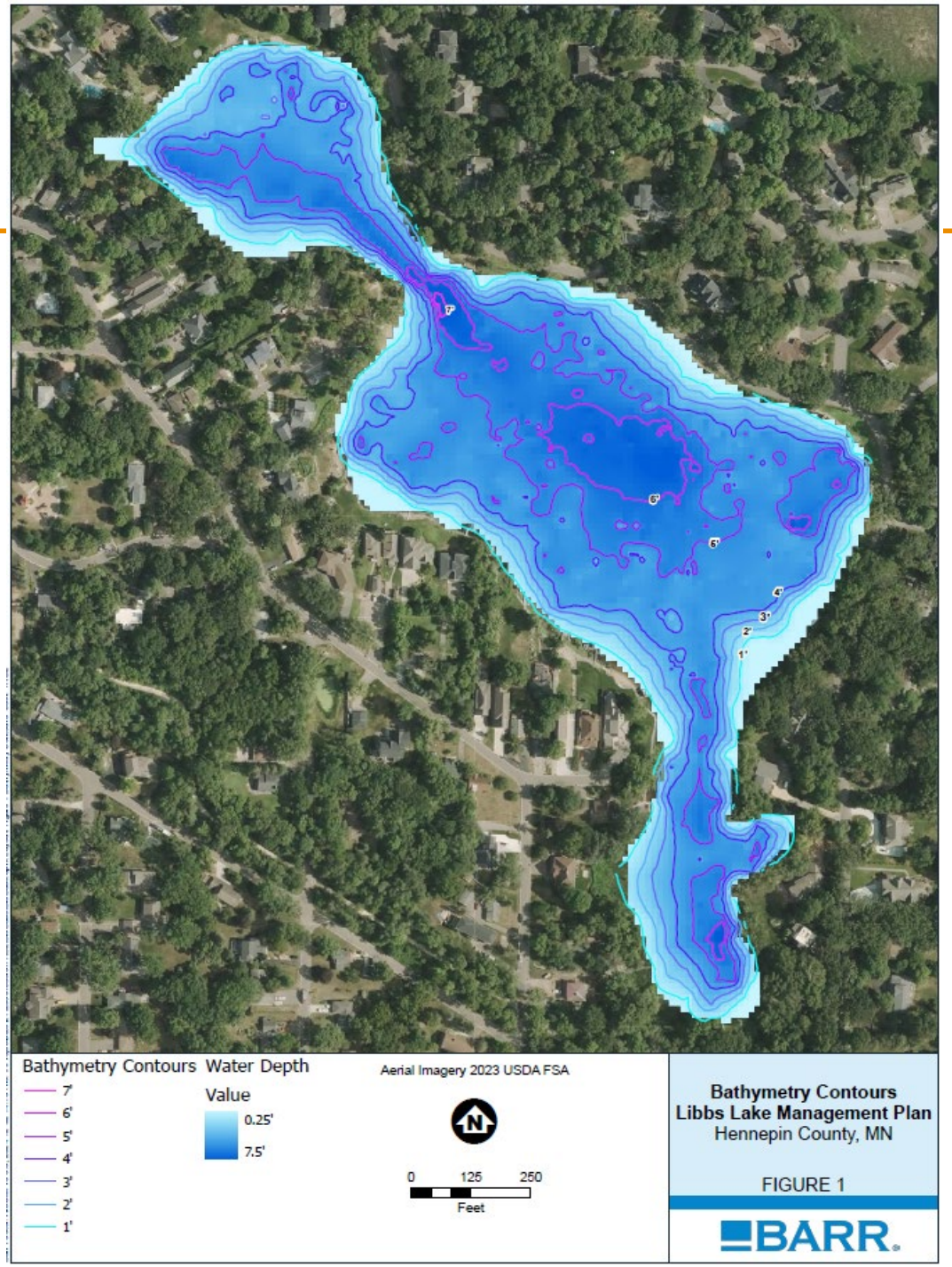
Libbs Lake Association

Libbs Lake Watershed



Libbs Lake – Physical Conditions

Parameter	Libbs Lake
Surface Area (acres)	23
Average Depth (feet)	5
Maximum Depth (feet)	8
Residence Time (years)	
Direct Drainage (acres)	117
Lake Volume (acre-ft) [1]	
Depth Class	Shallow



Physical Characteristics of Lakes

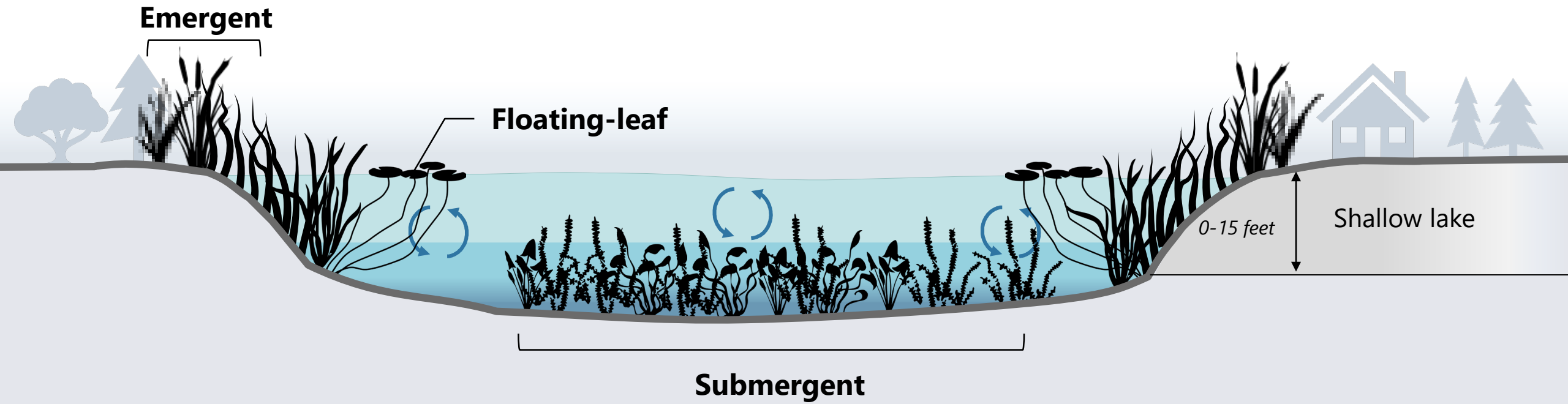
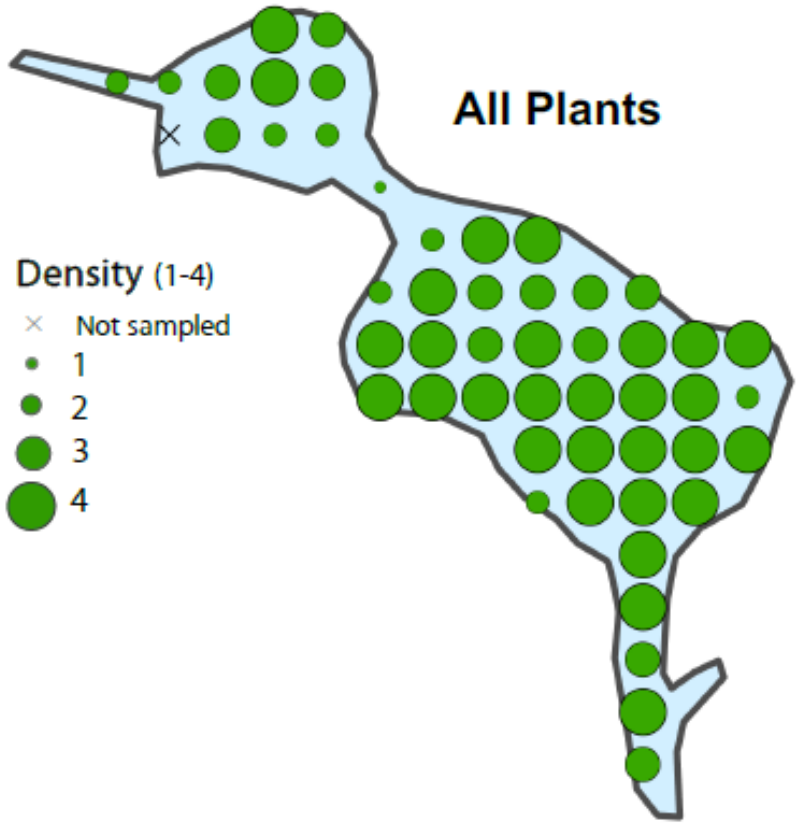
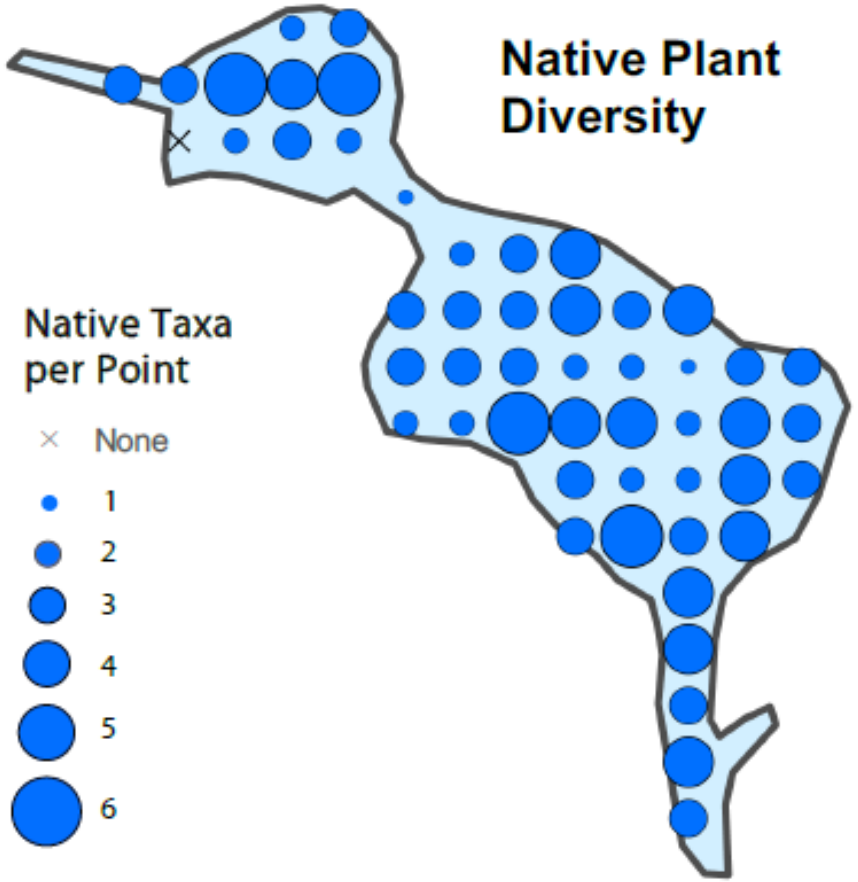


Diagram not to scale

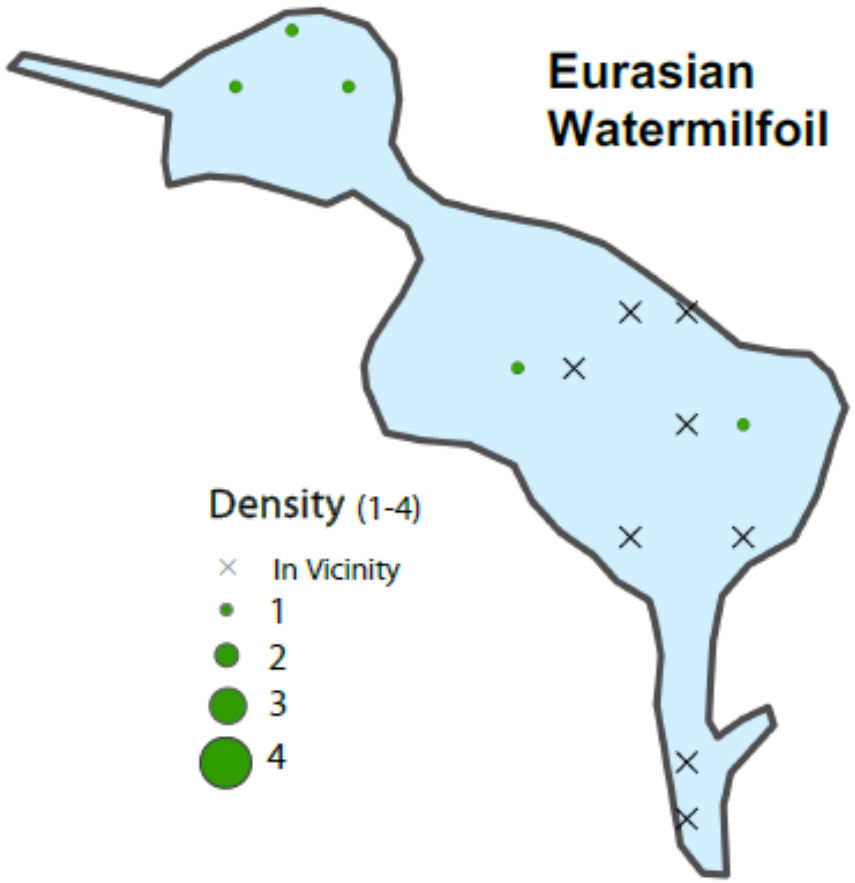
Aquatic Vegetation Survey-2024

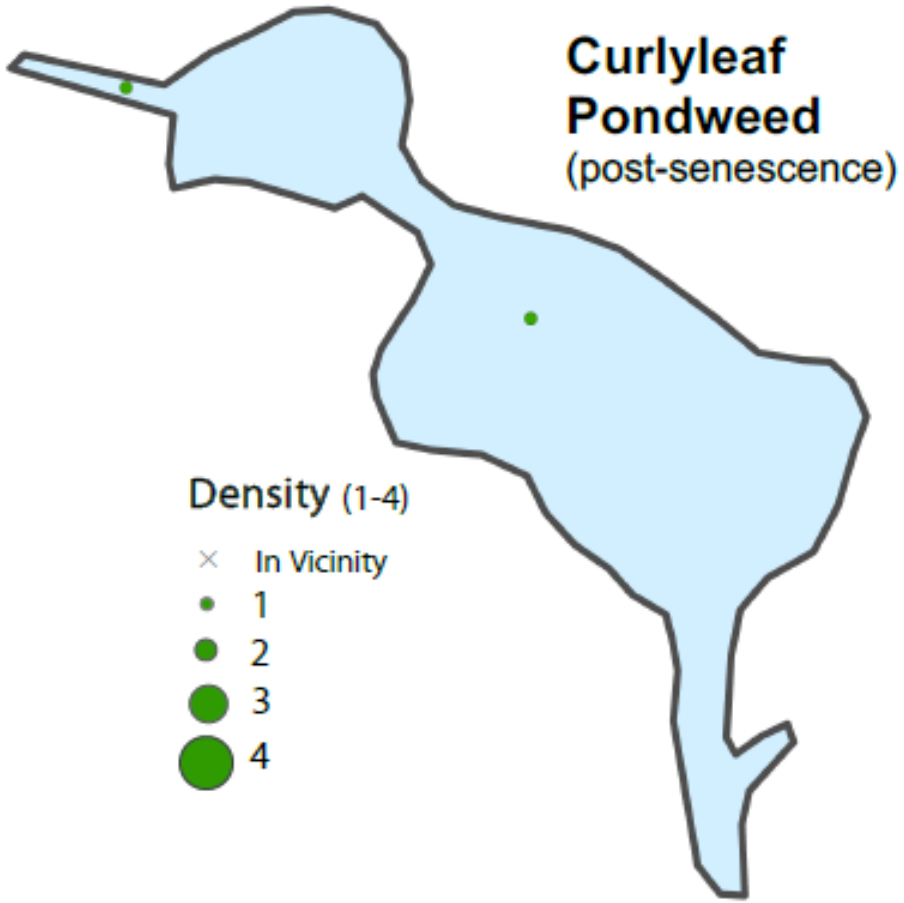




# of native taxa: 14

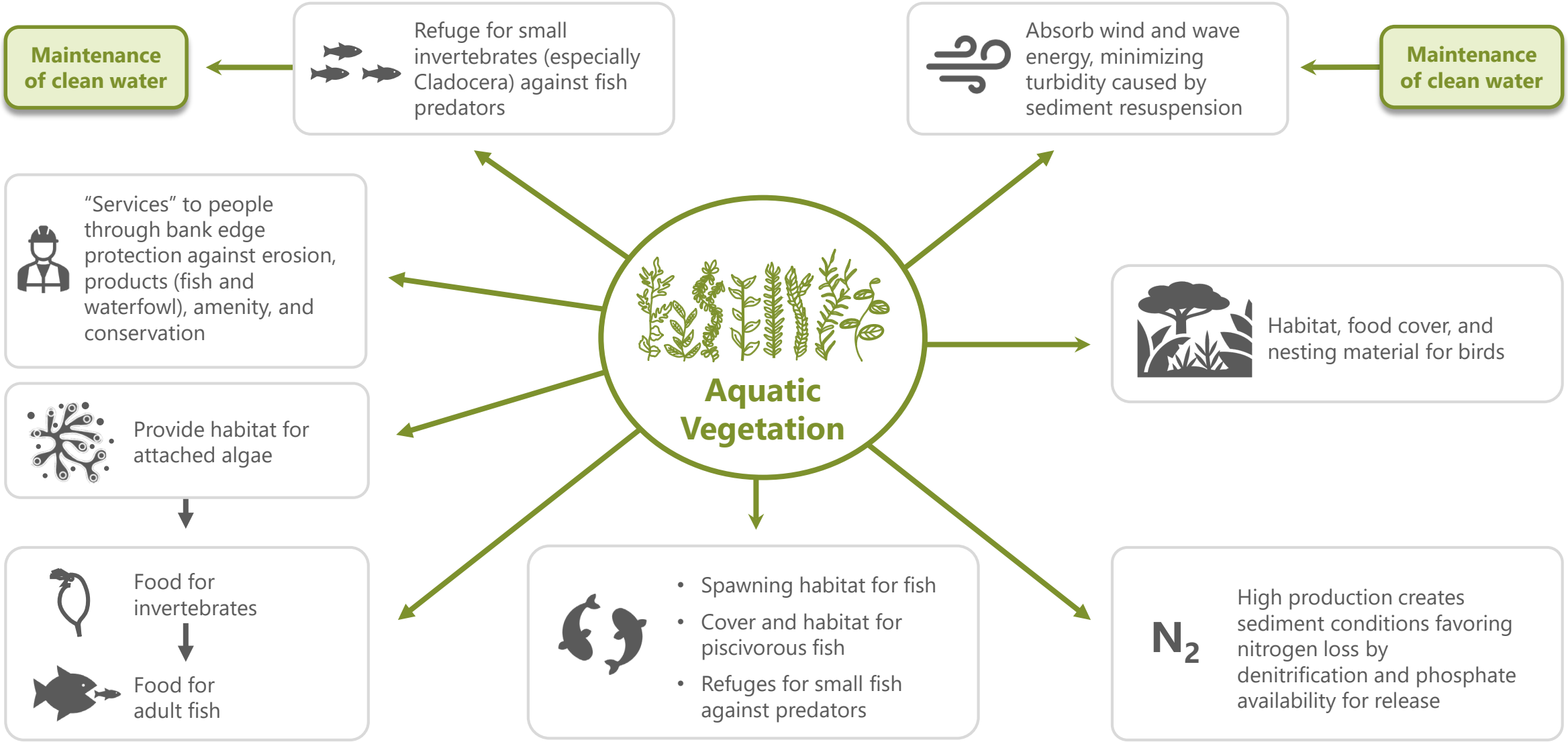
Libbs Lake Invasive Species





Role of Aquatic Vegetation in Shallow Lakes

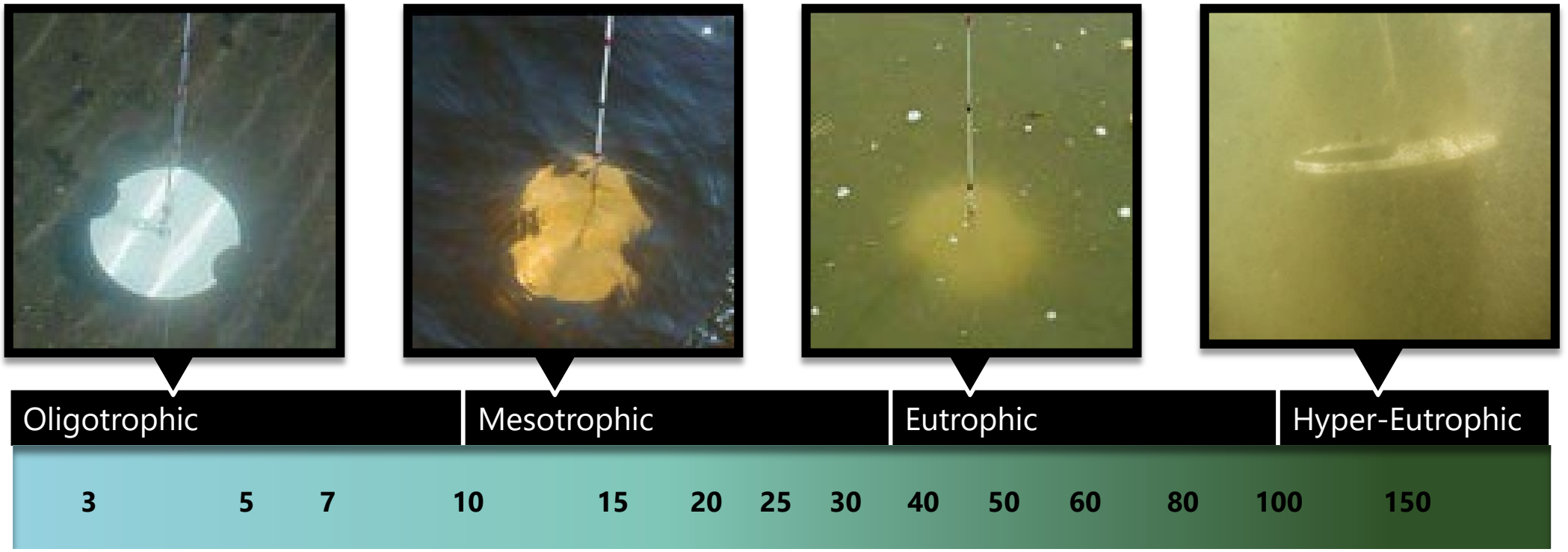
Why the plant dominated state?



Moss et al. 1996

Relationship between Total Phosphorus and Transparency

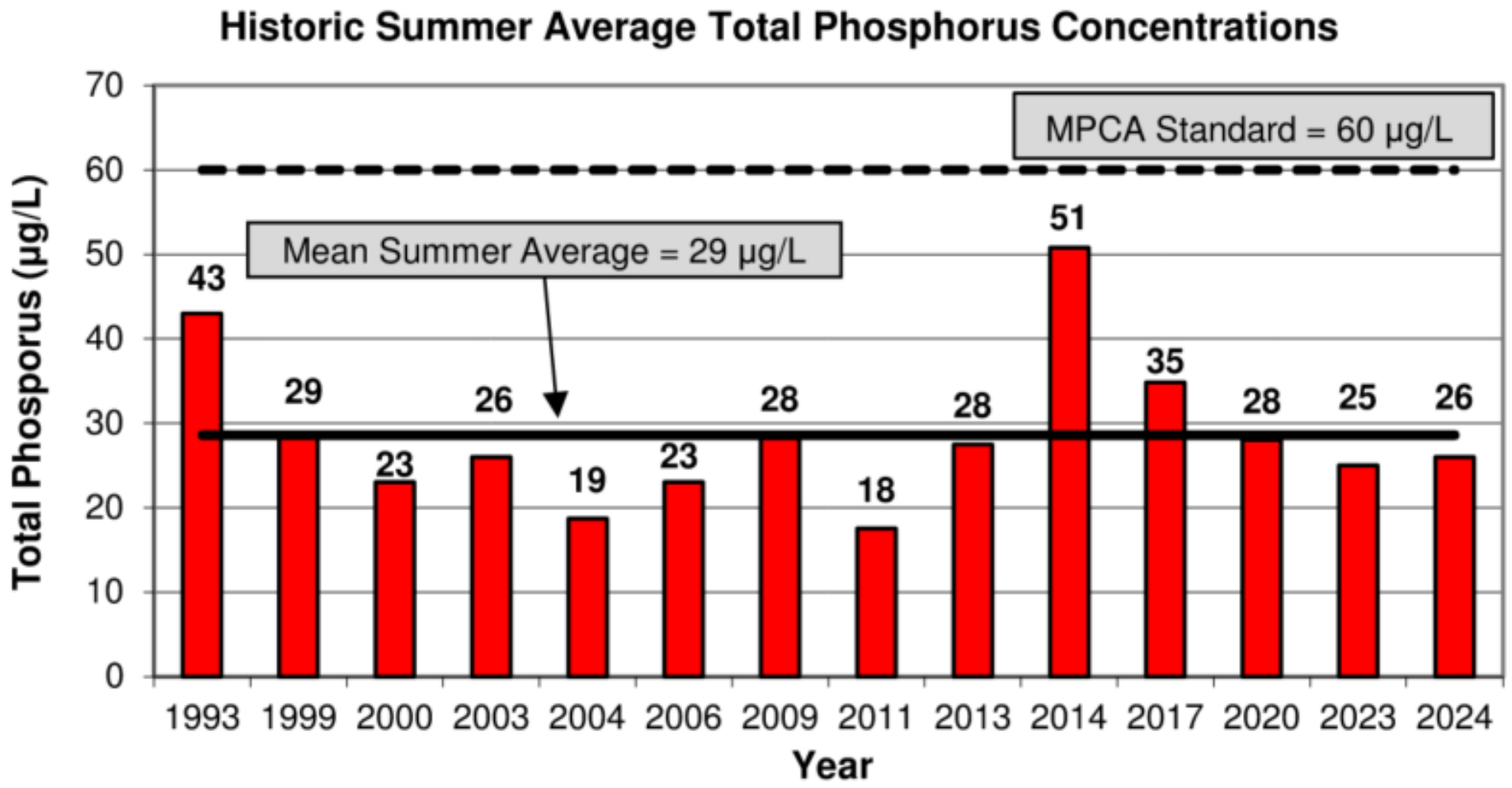
Algal growth (water clarity)



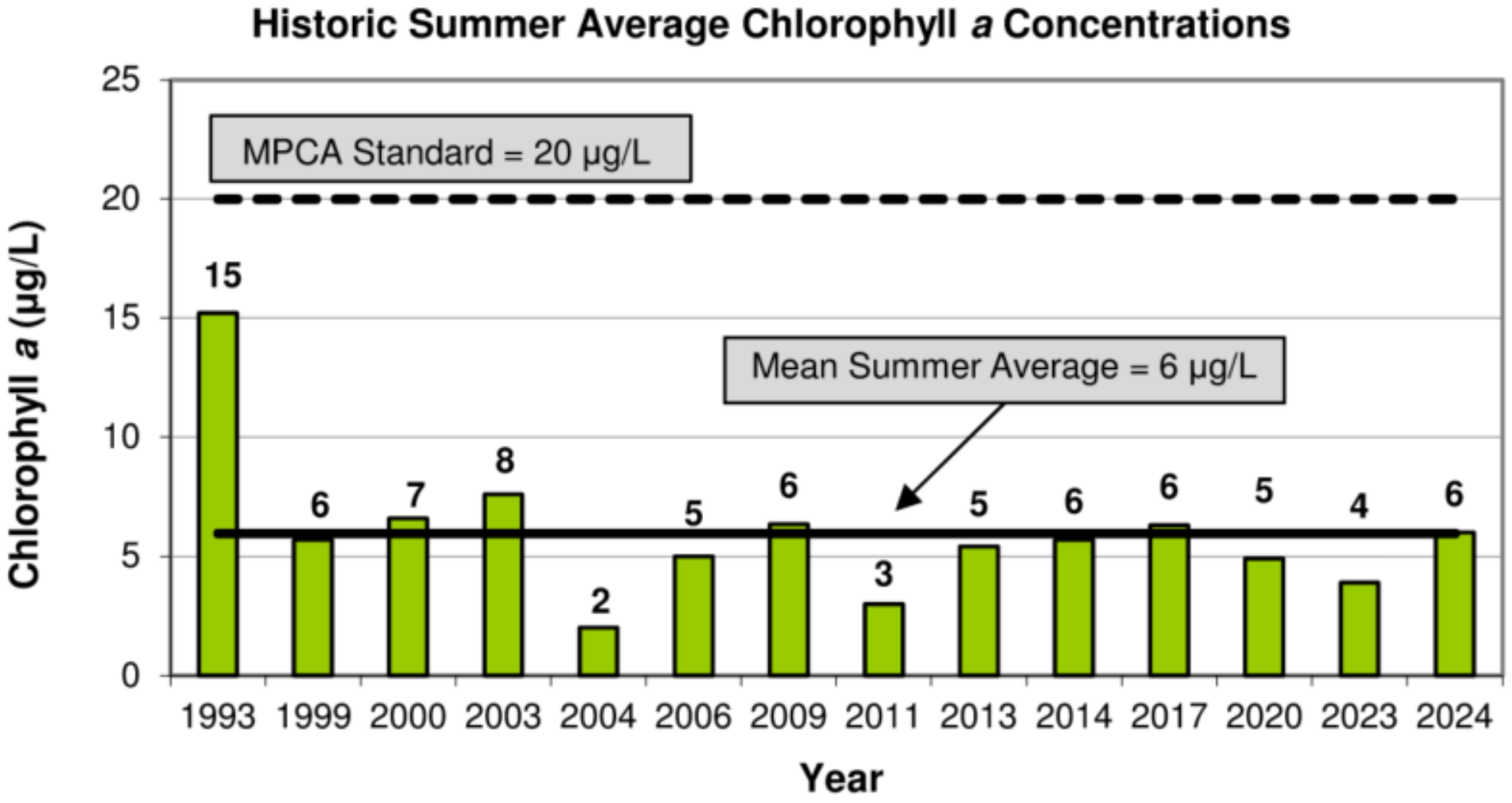
Total Phosphorus (µg/L)

Photos: Minnesota Pollution Control Agency

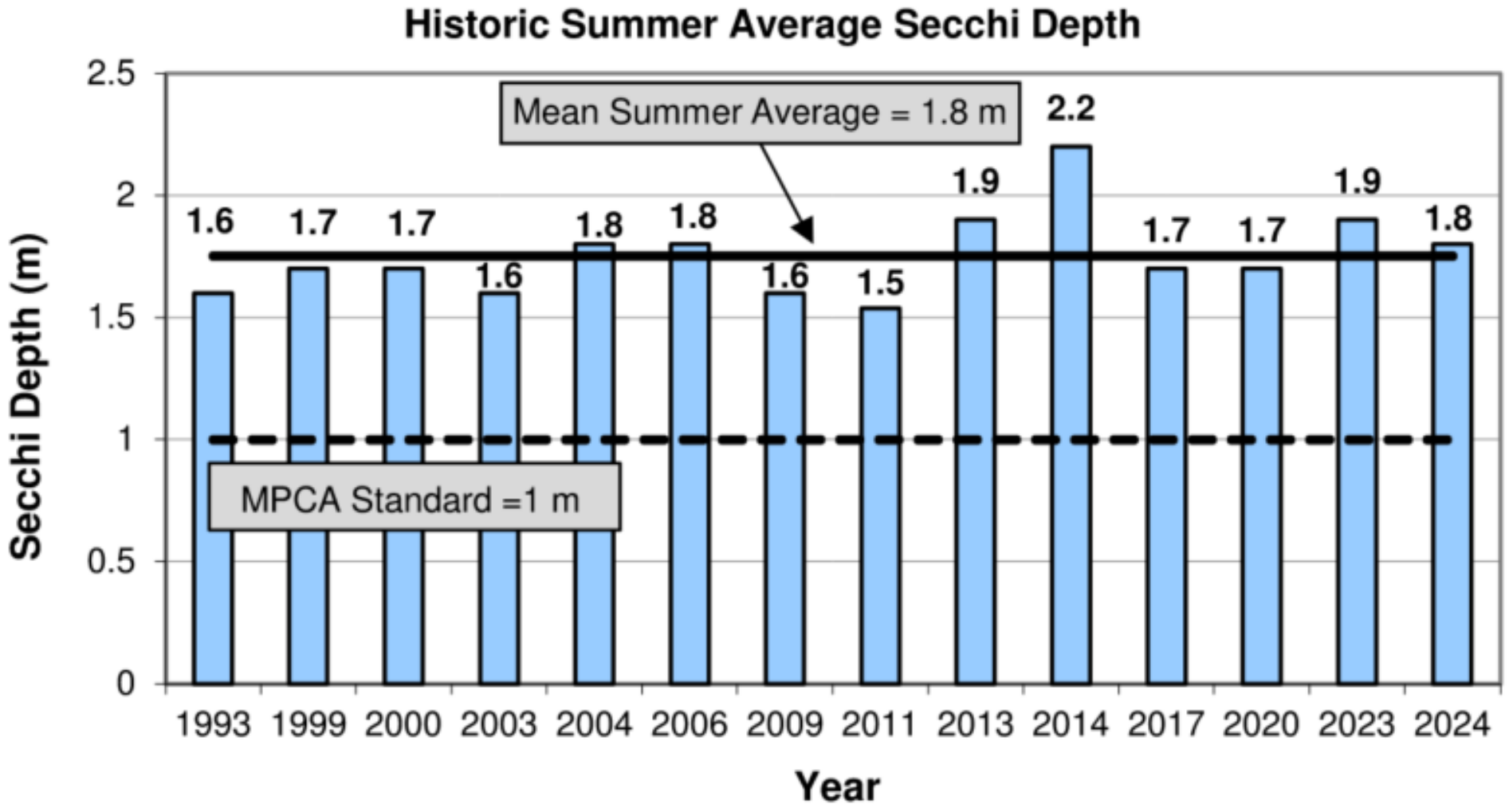
Total Phosphorus – Libbs Lake



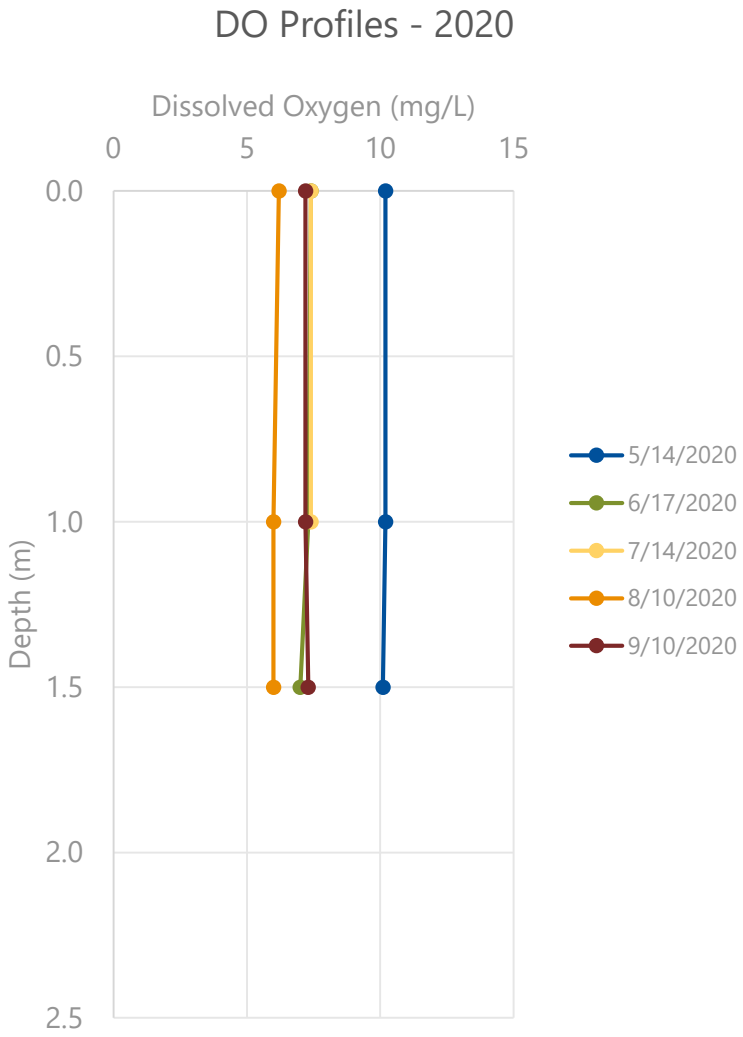
Chlorophyll a – Libbs Lake

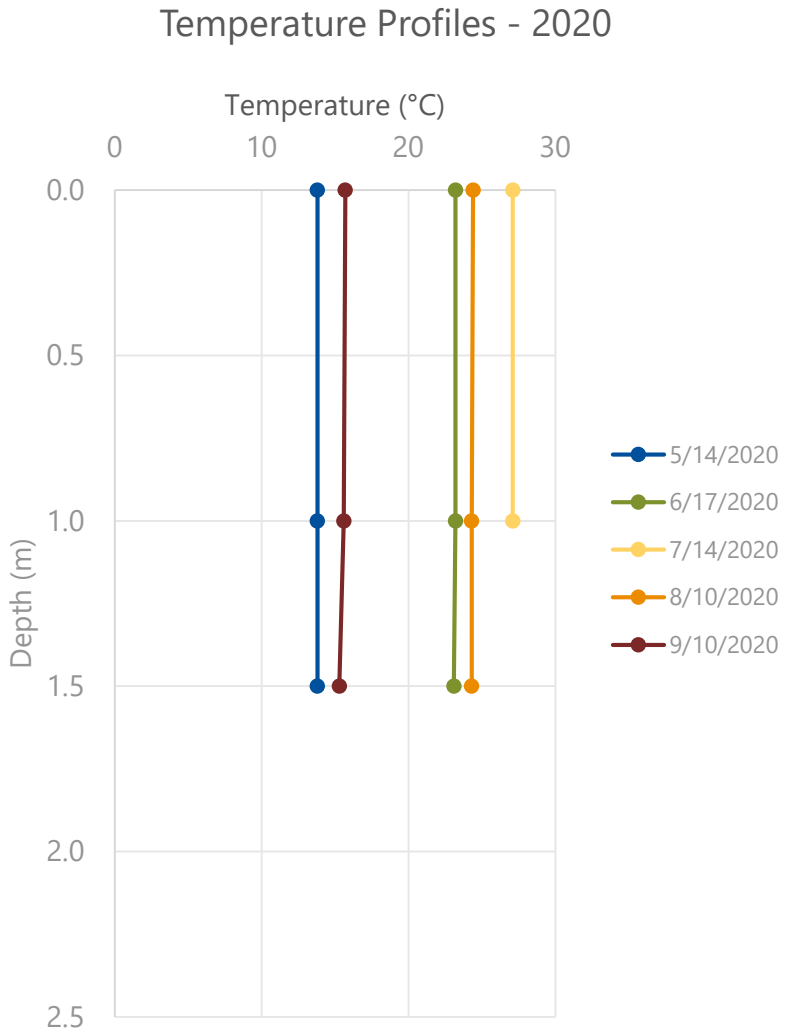


Secchi Depth– Libbs Lake



Temp and Dissolved Oxygen (DO) Profiles

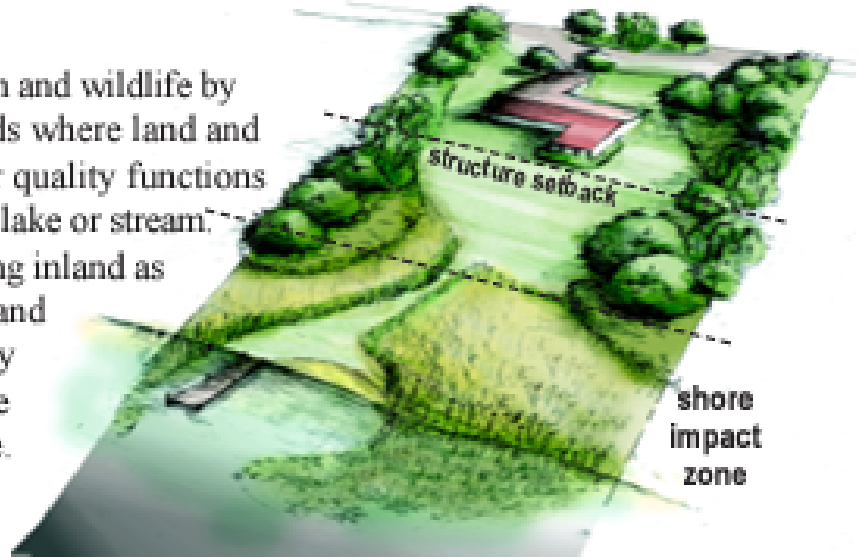




Shoreline Development

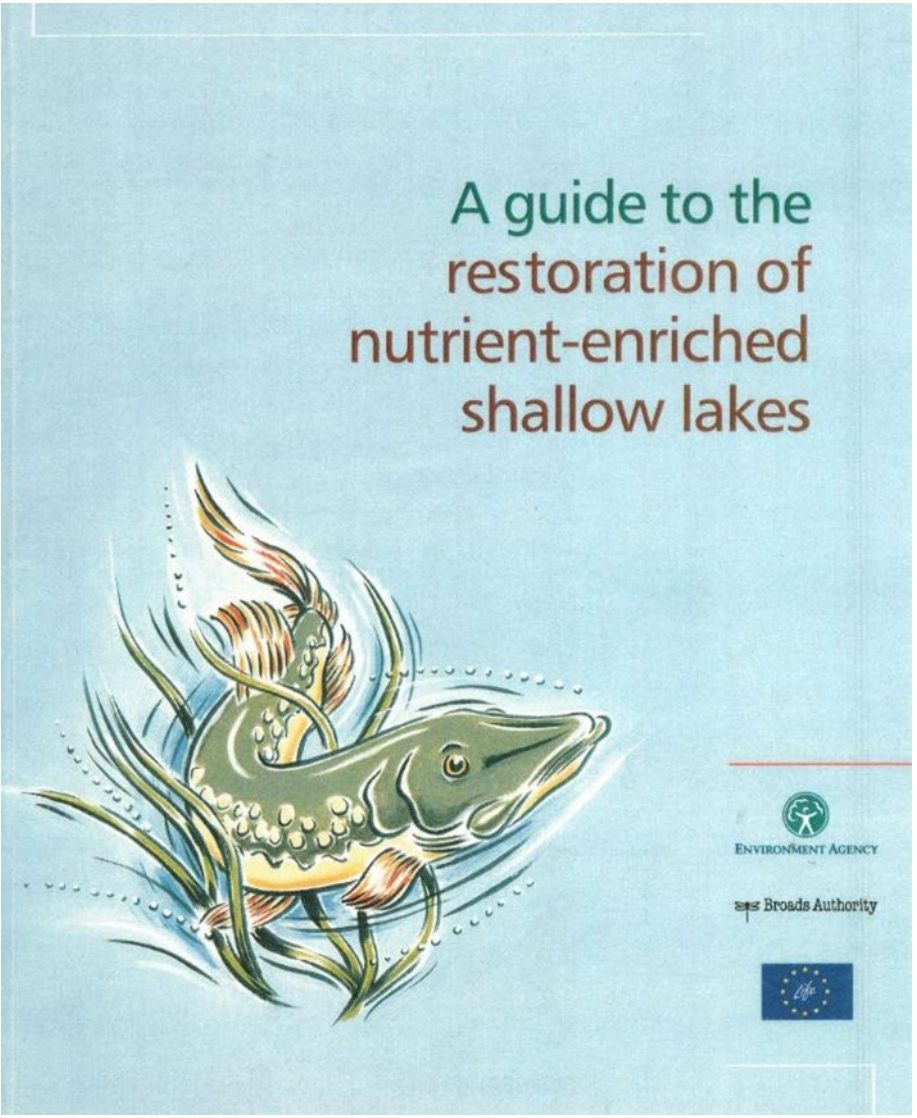
What is a Healthy Shoreline?

A healthy shoreline supports a diverse community of fish and wildlife by providing native vegetation that fulfills their habitat needs where land and water meet. Native vegetation provides important water quality functions by slowing and filtering water runoff as it moves to the lake or stream. Shorelines with a diverse mixture of native plants extending inland as well as offshore of the bank are more resilient to wave and ice erosion. Our lakes, streams and wetlands need healthy shorelines to reduce runoff, filter pollutants, and provide important habitat functions that benefit fish and wildlife.



https://www.dnr.state.mn.us/lakescaping/maintaining-and-restoring-natural-shorelines.html

Management Plan Approach



- **Summarize Existing Conditions**
  - Water quality and physical conditions
  - Biological conditions (aquatic plants, fisheries, zoo/phytoplankton)
- **Nutrient/Water Budget (watershed and in-lake models)**
- **Identify problem areas and solutions**
  - Watershed projects
  - In-lake management
  - Biological management (fisheries, aquatic plants)

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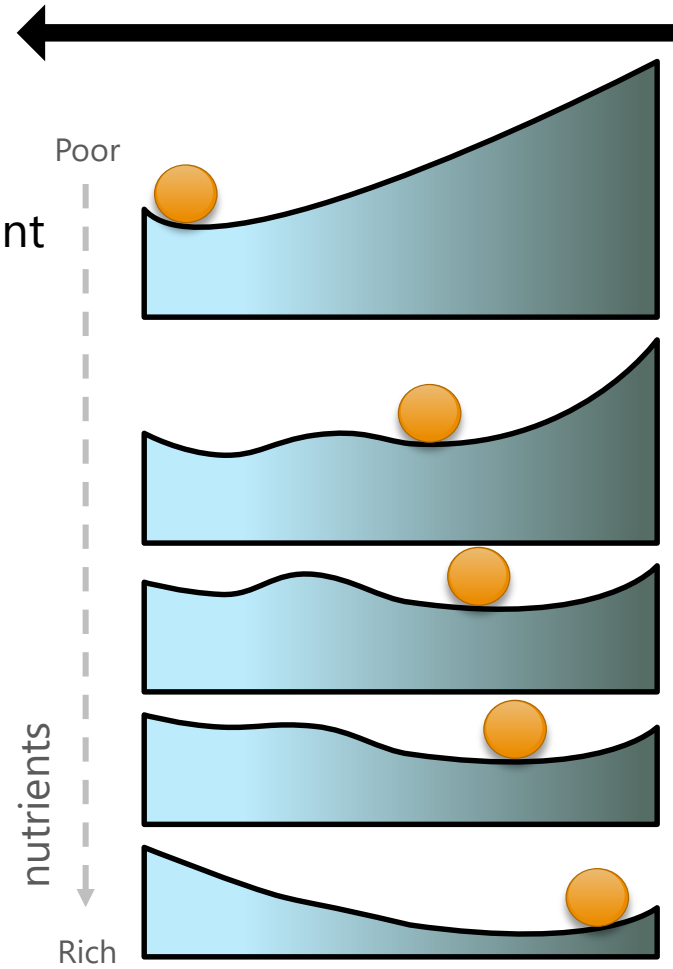
Turbid and Clearwater States

Competing Equilibria in Shallow Lakes

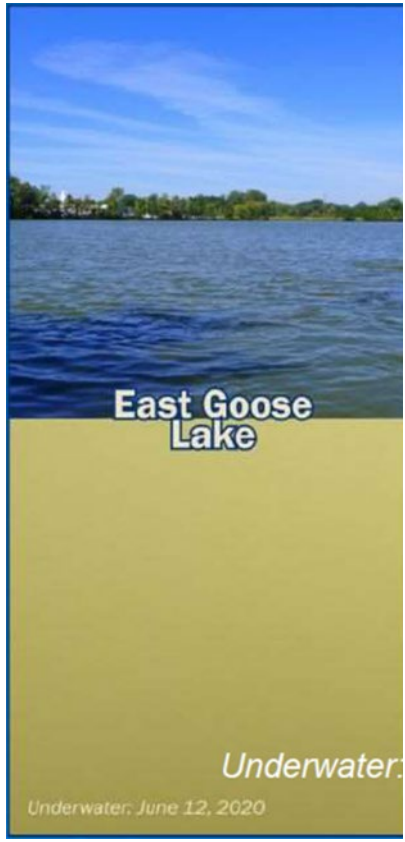
Clearwater State

- Large aquatic plant community
- Low algal productivity
- Large grazer population



Turbid State

- High algal productivity
- Low aquatic plant productivity
- Low grazer (zooplankton) productivity



Scheffer et al. 2004

A dichotomy of choices

Algae Dominated State

Potential Limits:

- Contact recreation
  - nuisance and harmful algal blooms
- Poor recreational fishery
- Minimal wildlife habitat
- User-specific aesthetics

Supports:

- Minimal inhibition of recreational boating

Photo credit: Vadnais Lakes Watershed Management Organization

Plant Dominated State

Potential Limits:

- recreational boating
- User-specific aesthetics
- Can be managed

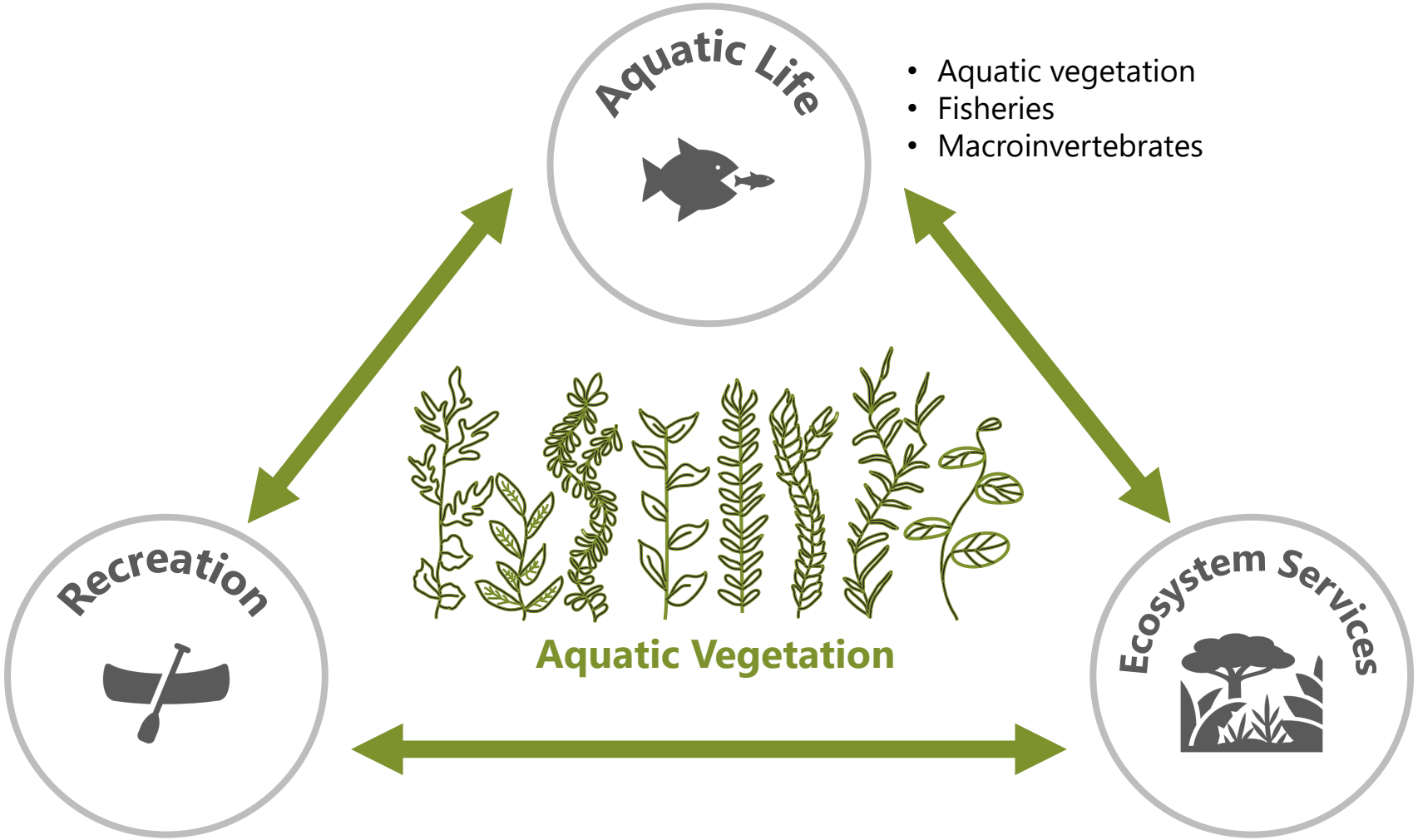
Supports:

- Contact recreation
  - Minimal nuisance and harmful algal blooms
- Recreational fishery
- Wildlife habitat

Cyanobacteria Blooms – Centerville Lake

Balancing Aquatic Vegetation and Recreation in Shallow Lakes

Why the plant dominated state?

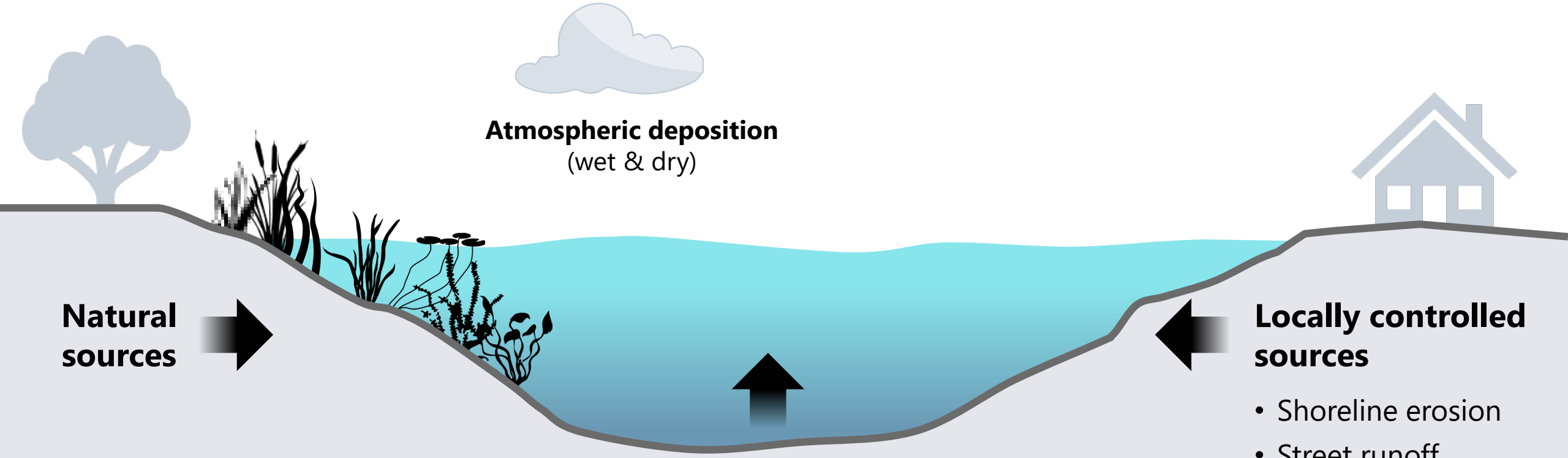


- Aquatic vegetation
- Fisheries
- Macroinvertebrates

- Boating
- Fishing
- Swimming

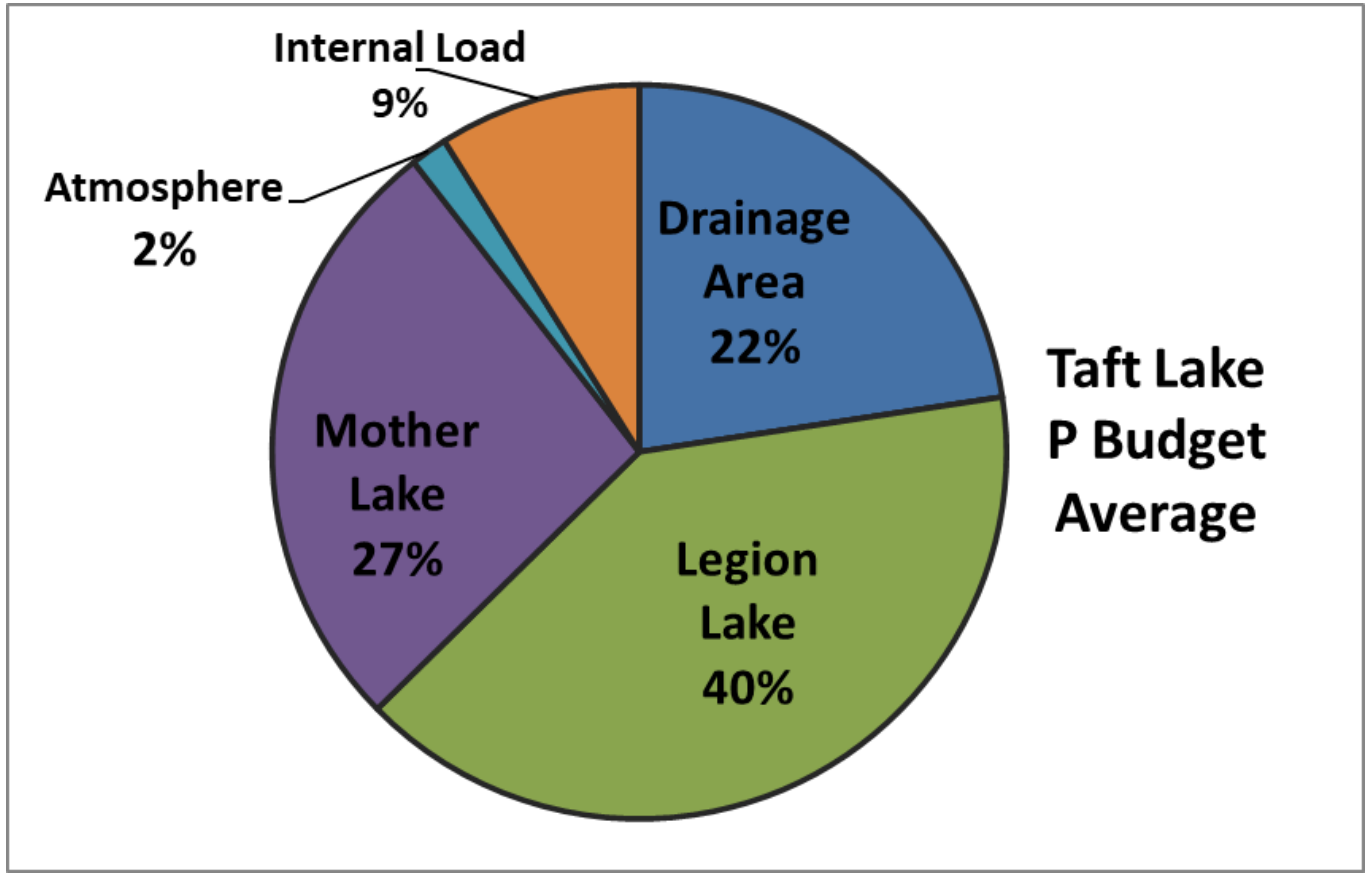
- Fish habitat
- Waterfowl habitat
- Biodiversity

Issue: Nutrient and Pollutant Sources



Lake P Concentration = Watershed + Internal - Sedimentation

Phosphorus Budget - Example



Watershed Nutrient Reduction Practices

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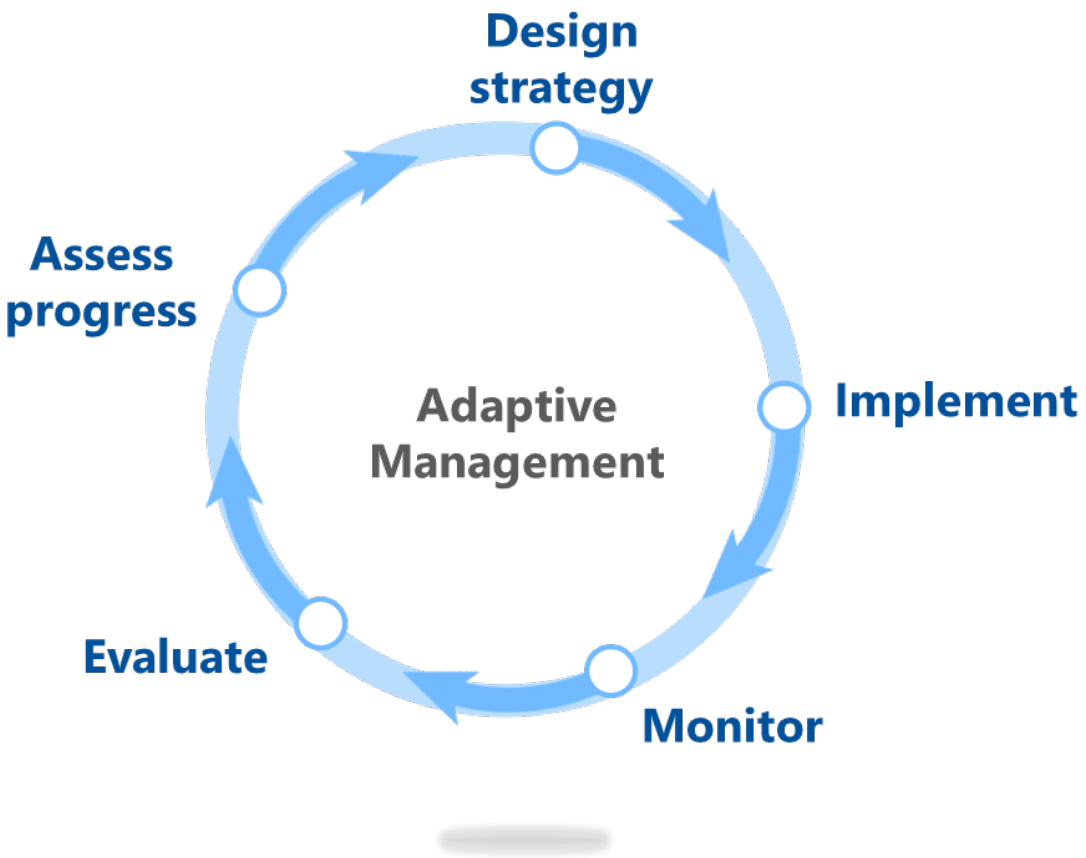
Aquatic Invasive Species Management

Photos: Minnesota public radio; University of Minnesota

Adaptive Management in Shallow Lake Management

Stabilize and Manage the Lake



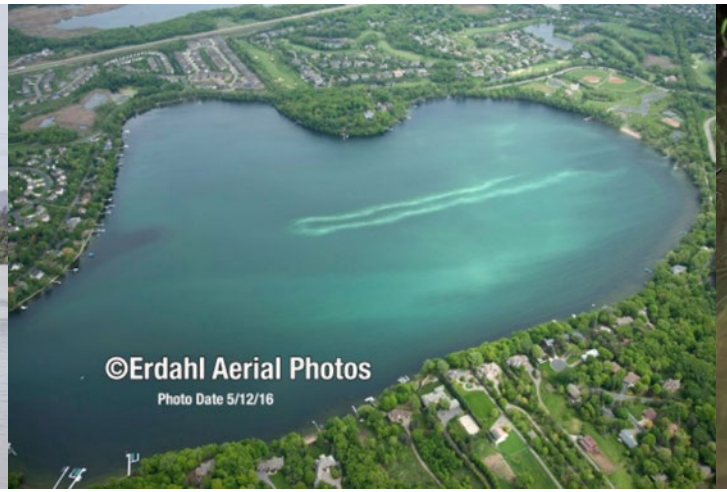
- Managing clear, shallow lakes for multiple uses requires **active management**
  - Monitoring (aquatic plants, water quality, fisheries)
  - Aquatic invasive species control
  - Maintain balanced fishery
  - Maintain native plants population
    - Balance with recreational uses
  - Naturalized shorelines
  - Periodic drawdown

Project Schedule

- Existing data review: Data compiled and reviewed
- Lake Response modeling: In progress
- Bathymetric Survey: Complete
- Aquatic Vegetation Survey: Complete
- Draft Lake Management Plan: February 2025
  - Shoreline management guidance
  - Aquatic plant management plan
  - Water quality protection strategies
- Final stakeholder meeting: March 2025
- Final Lake Management Plan: April 2025

Questions?

Joe Bischoff, jbischoff@barr.com
Mark Origer, moriger@barr.com



LIBBS LAKE ASSOCIATION

Who we are, what we do

Updates

RESIDENT INPUT

Questions…

Write answers on post-it notes…one per post-it, please!

If it isn't written down, it never happened!

1. What do you value most about Libbs Lake?
2. What issues or concerns do you have?
3. What is your vision for the future of Libbs Lake?

RESOURCES AVAILABLE

Resilient Minnetonka program – education, technical assistance, incentives

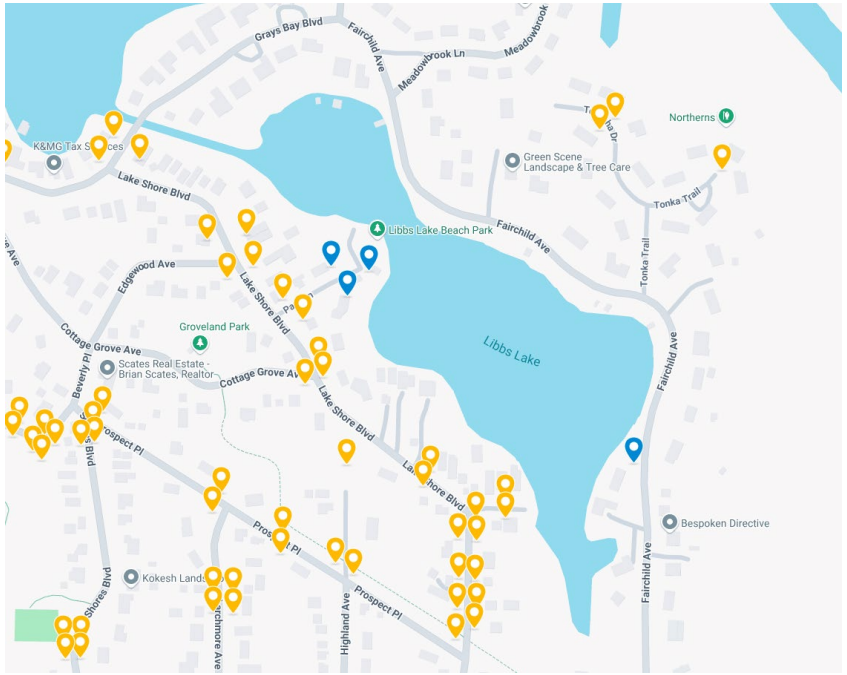
https://www.minnetonkamatters.com/resilient-minnetonka

Adopt-a-Drain – storm drain protection

https://mn.adopt-a-drain.org/

Natural Resources volunteer program

Council Lake and Pond Policy 12.11



NEXT STEPS…

Minnetonka Matters web page – information and feedback survey (in progress)

https://www.minnetonkamatters.com/libbs-lake-management-plan

- Update with presentation
- Provide survey for resident input and feedback
- Provide information and resources for residents
- Upload draft plan for review and comments

Follow-up meeting to discuss goals, strategies etc. and gather feedback on a draft plan

- March, 2025

Final plan by late spring, 2025

NEXT STEPS…

Questions/Comments?

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