

An aerial photograph of a rural landscape, likely in the Sturgeon Chain of Lakes region. The image shows a large, irregularly shaped lake in the center-left, with several smaller lakes and ponds scattered throughout the area. The surrounding land is a mix of green fields and brown patches, possibly indicating different types of vegetation or soil. The overall scene is captured from a high angle, providing a clear view of the water bodies and the surrounding terrain.

Sturgeon Chain of Lakes Water Quality Summary

Side Lake

Becca Reiss, N.
St. Louis SWCD

Matt Gutzmann,
Itasca SWCD

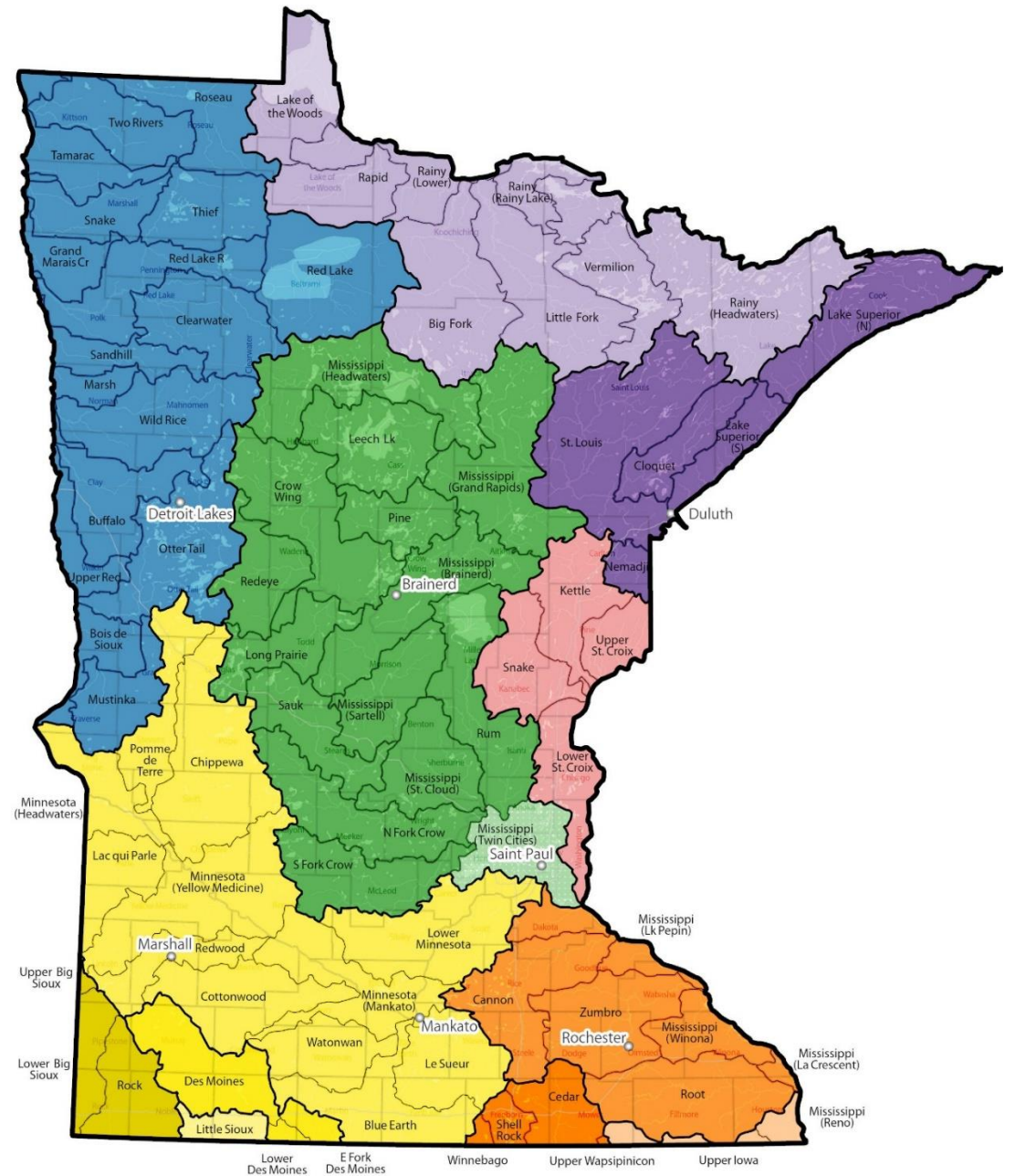
Mike Kennedy,
MN Pollution
Control Agency

Outline

An aerial satellite image of a watershed area, showing a network of roads and several lakes. The largest lake is in the center-left, and a smaller one to its right is labeled 'Side Lake'. The terrain is mostly green, indicating vegetation, with some brown patches that could be fields or bare ground. The overall scene is a top-down view of a rural or semi-rural landscape.

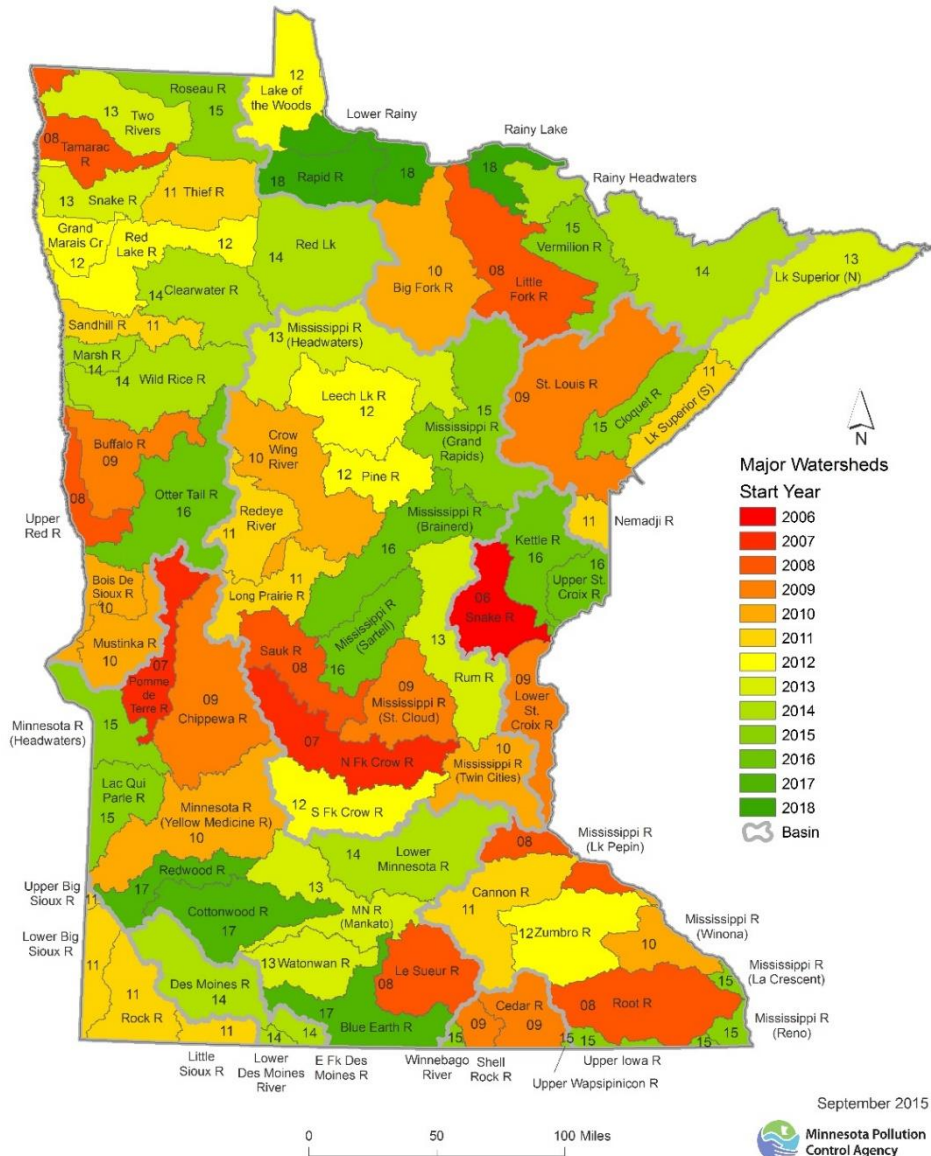
- Introduction
- Data Summaries by Lake
- Trends
- Ways to Improve Water Quality
- Water Quality Survey Results
- Watershed Management Updates and Opportunities in the Little Fork Watershed
 - Becca Reiss – N. St. Louis SWCD
 - Matt Gutzmann – Itasca SWCD
 - Mike Kennedy – MPCA Project Manager

The state is divided into 8 major basins which are composed of several large watersheds (1200-2000 sq. miles)



Little Fork Watershed work began in 2008 and again in 2018.

Intensive Watershed Monitoring

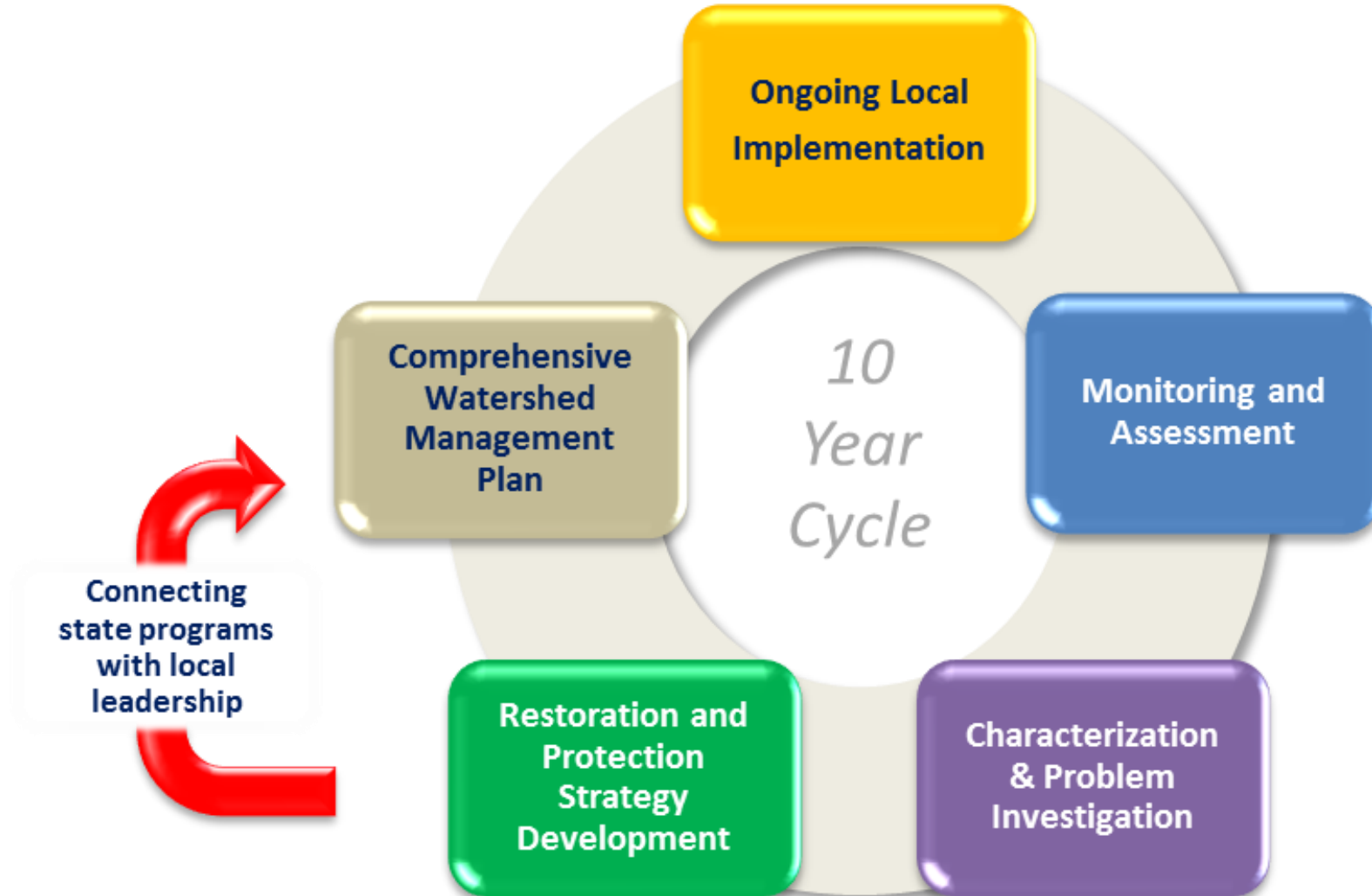


- Over 76 miles (48% of the entire 160-mile flow length) of the Little Fork River have been designated as exceptional use waters.
- 34 of the 62 fish samples (55%) collected from streams and rivers produced exceptional fish index of biological integrity (FIBI) scores.
- 19 of the 54 macroinvertebrate samples (35%) were exceptional.
- 26 of 28 lakes in watershed considered high quality
- Extensive (over 100 miles) sediment issues/impairments in the stream system of Little Fork

- **Watershed Restoration and Protection Strategies – WRAPS**
- WRAPS includes IWM + SID + TMDL + other state agency work + local input
- Key element: Addresses both restoration and protection
- Informs local water planning efforts
- Help to target implementation funds



WRAPS document “feeds” BWSR Planning Program—One Watershed, One Plan (1W1P)



Sturgeon Chain of Lakes Past Work

- MPCA has been monitoring and working with local SWCD staff in both counties as well as citizen volunteers for over 20 years.
- The lakes in the chain are holding steady for most of that time frame.
- MPCA/Local Partners/volunteers are concerned with preventing the lakes or any one of them from tipping into impairment status for recreational use (ie..swimming).
- Harmful Algae Blooms – HAB are for real and have happened in this chain of lakes
- WE are all in this together...

Severe algal blooms a product of too much nutrients

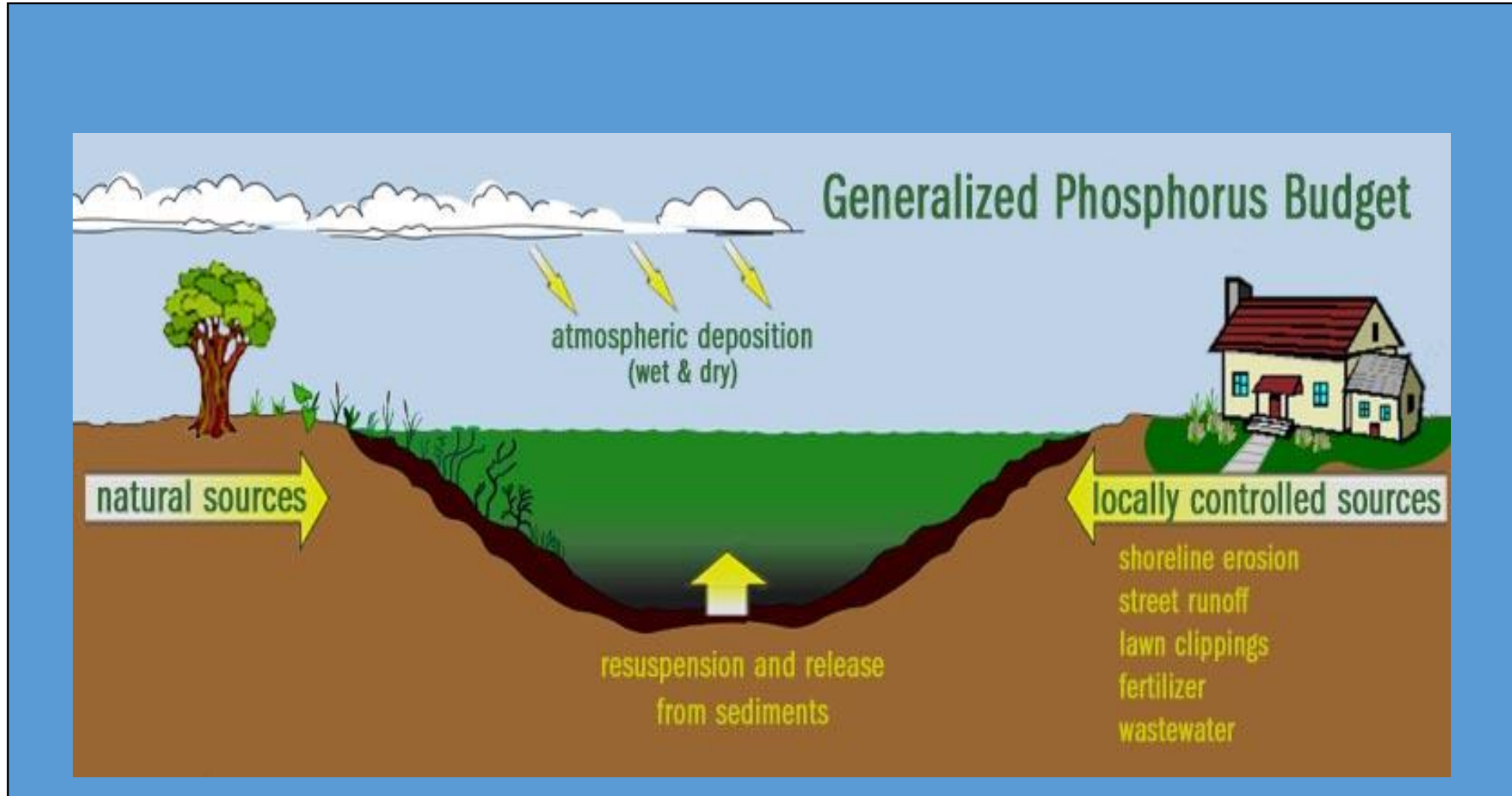
- **Blue-green algae (sometimes harmful algal blooms)**
- **Causes: High phosphorus, warm water >75-80 F & calm sunny conditions**



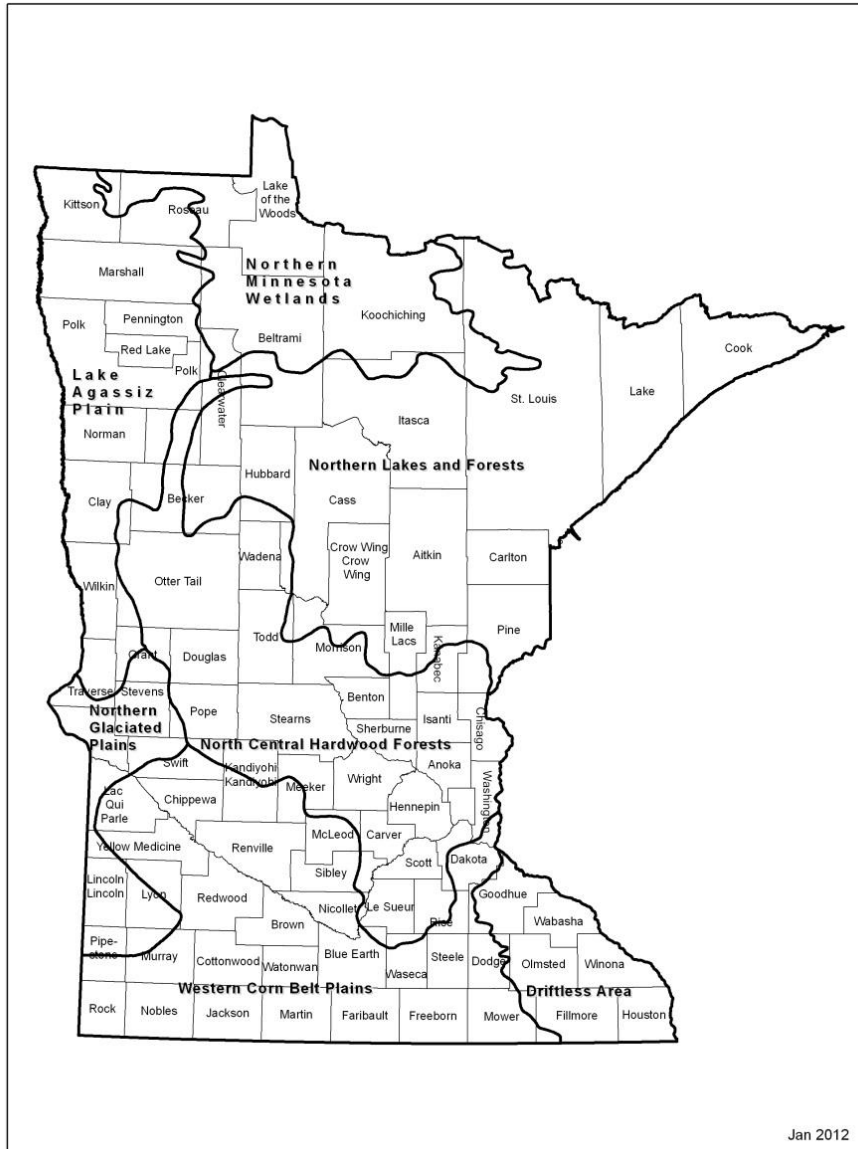
Perch Lake Harmful Algal Bloom reported to MPCA , summer 2018
Potential role of water temperatures, climate change...



Where does phosphorus come from?

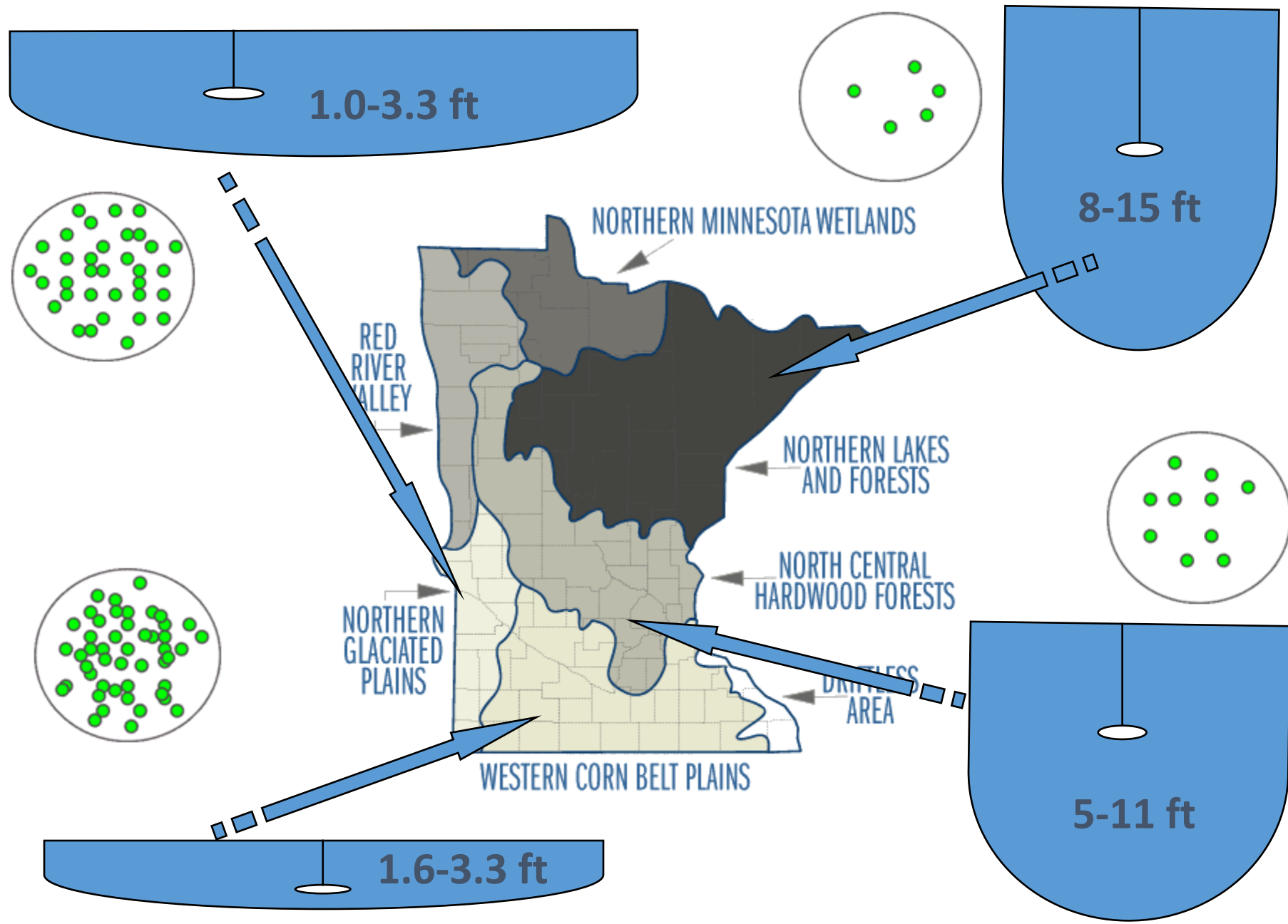


Aquatic recreation use – standards to protect swimming

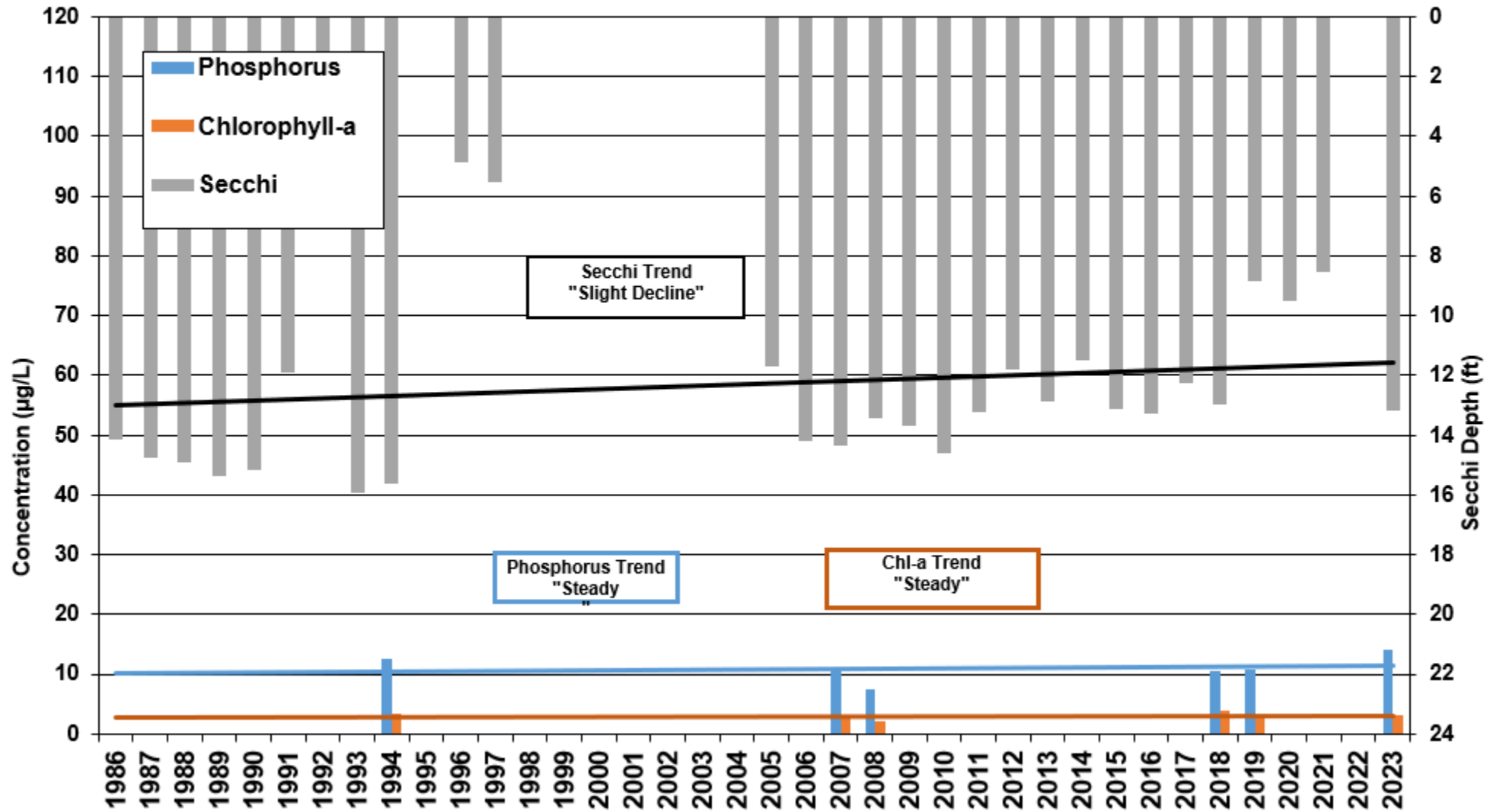


Ecoregion	TP	Chl-a	Secchi
	ppb	ppb	meters
NLF – Lake trout (Class 2A)	< 12	< 3	> 4.8
NLF – Stream trout (Class 2A)	< 20	< 6	> 2.5
NLF – Aquatic Rec. Use (Class 2B)	< 30	< 9	> 2.0
NCHF – Stream trout (Class 2a)	< 20	< 6	> 2.5
NCHF – Aquatic Rec. Use (Class 2b)	< 40	< 14	> 1.4
NCHF – Aquatic Rec. Use (Class 2b) Shallow lakes	< 60	< 20	> 1.0
WCBP & NGP – Aquatic Rec. Use (Class 2B)	< 65	< 22	> 0.9
WCBP & NGP – Aquatic Rec. Use (Class 2b) Shallow lakes	< 90	< 30	> 0.7

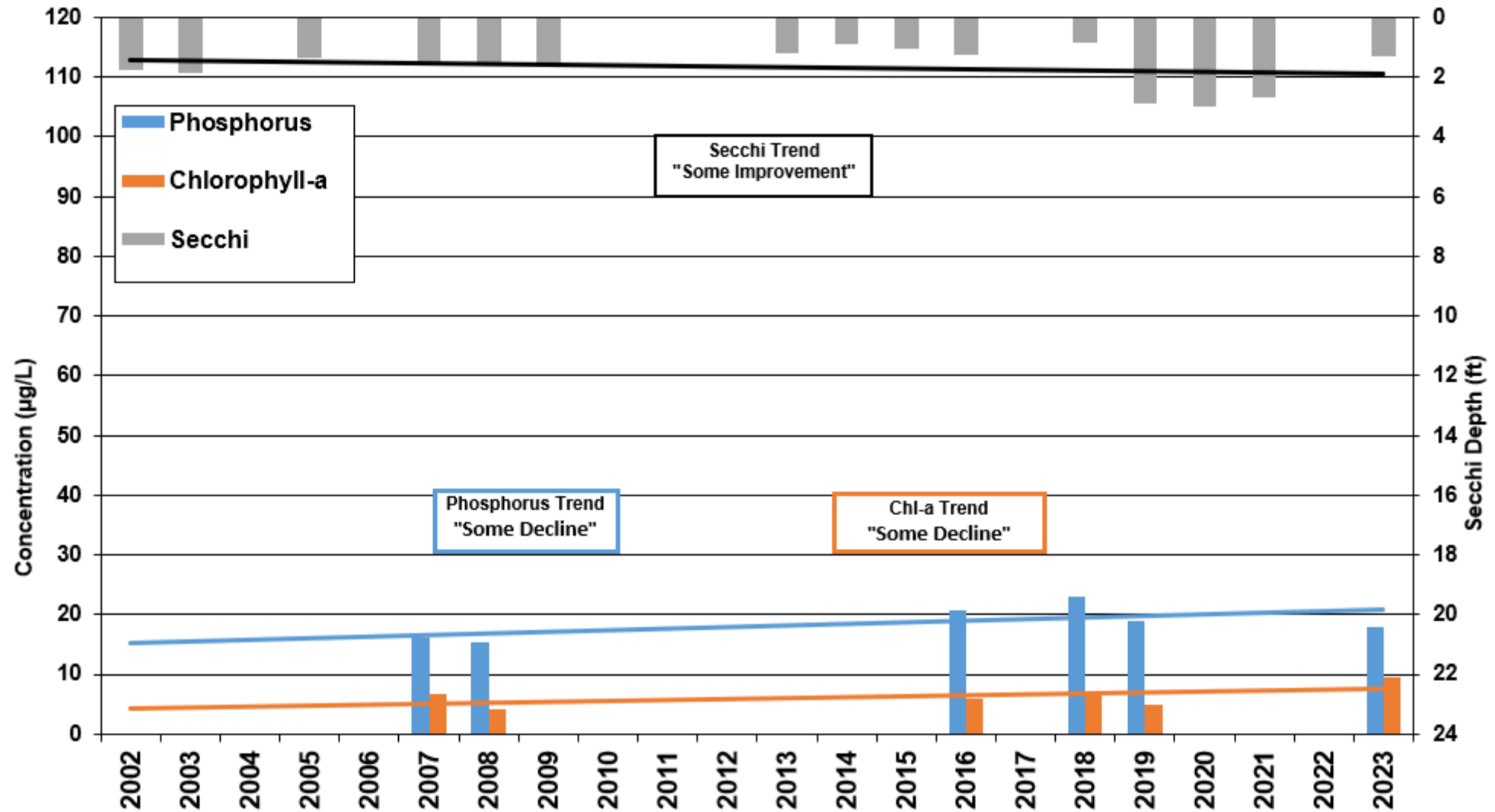
Assessment Time Frame June - September



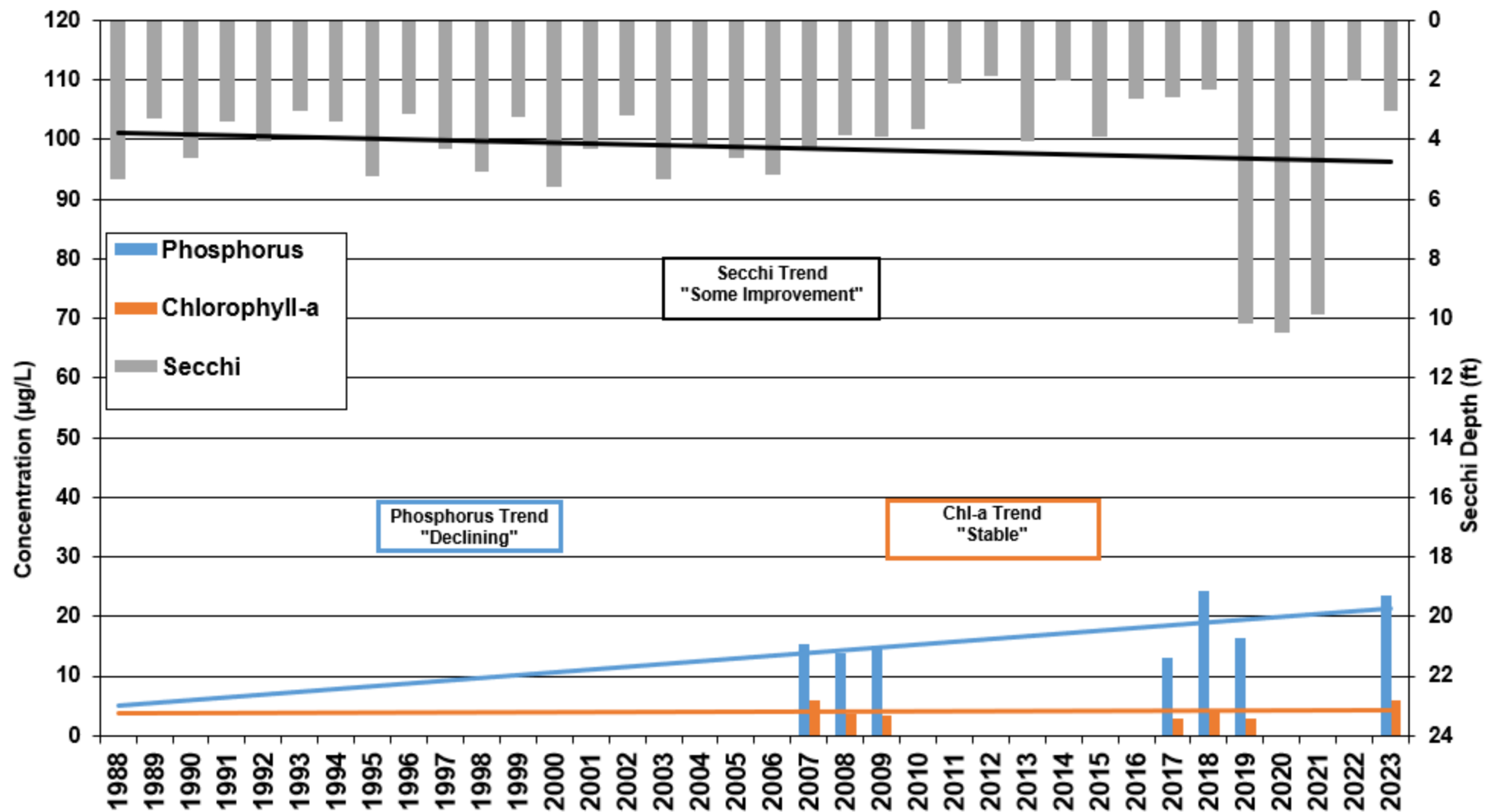
Big Sturgeon Lake Summer Mean Trophic Status Indicators



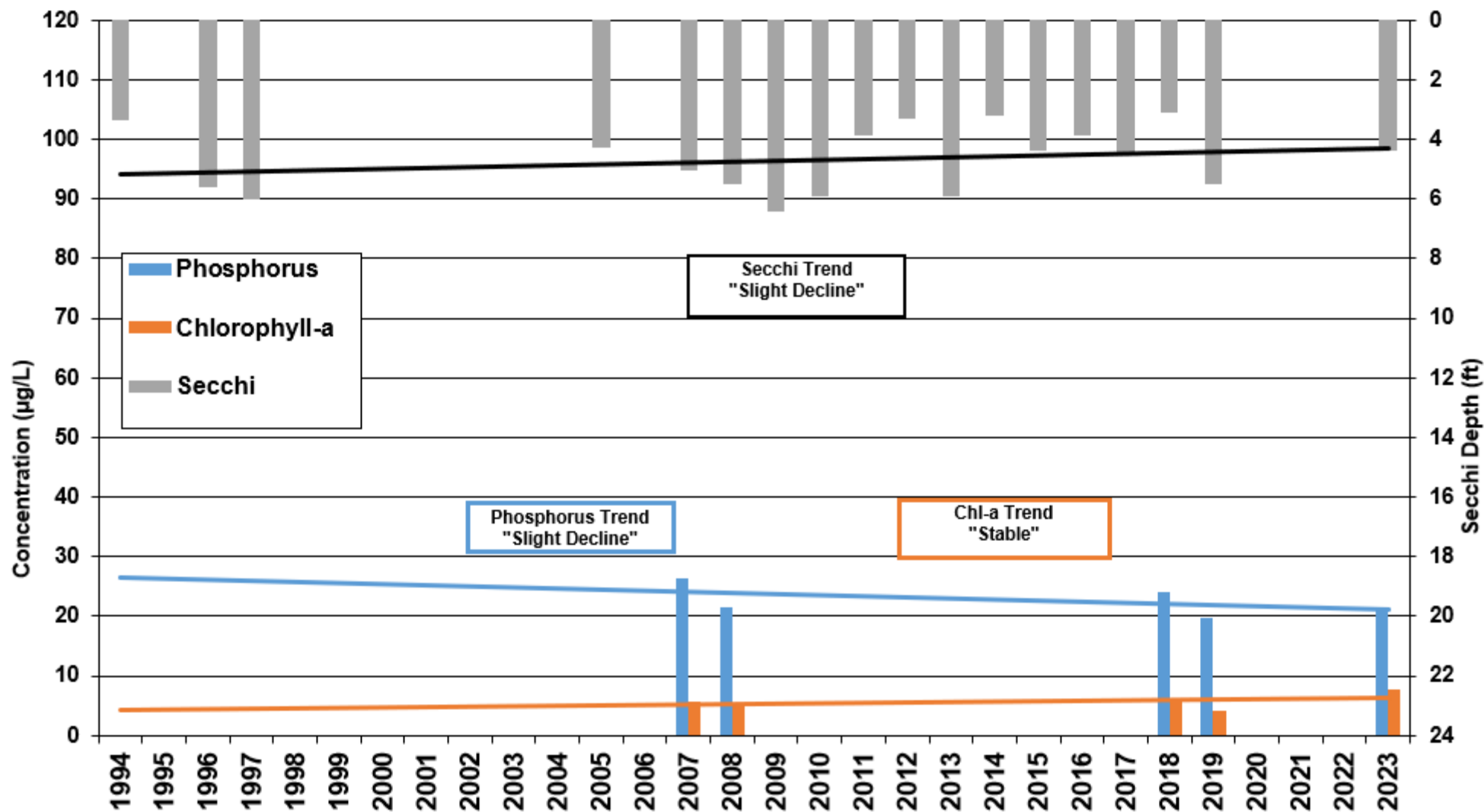
W. Sturgeon Lake Summer Mean Trophic Status Indicators



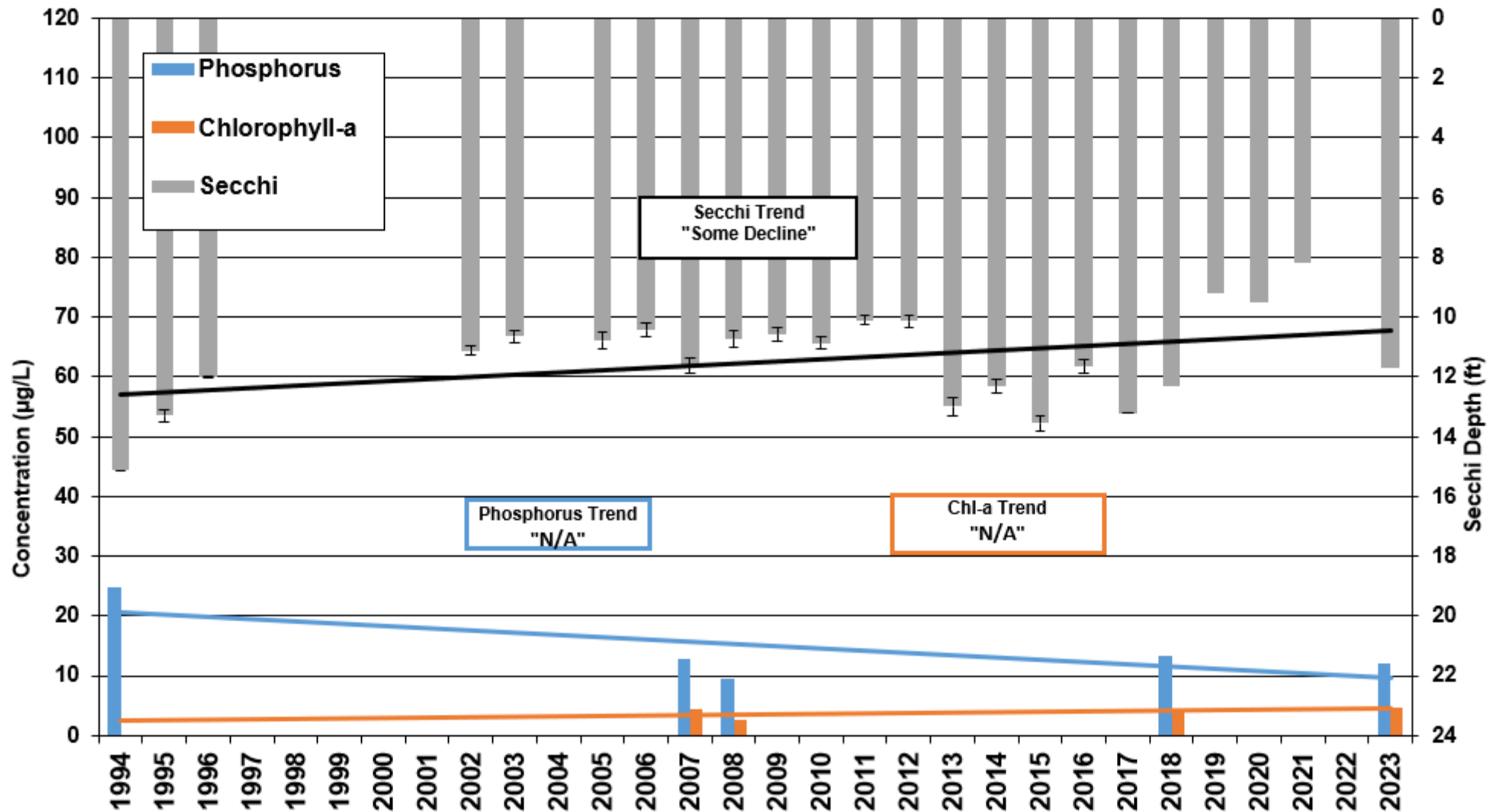
S. Sturgeon Lake Summer Mean Trophic Status Indicators



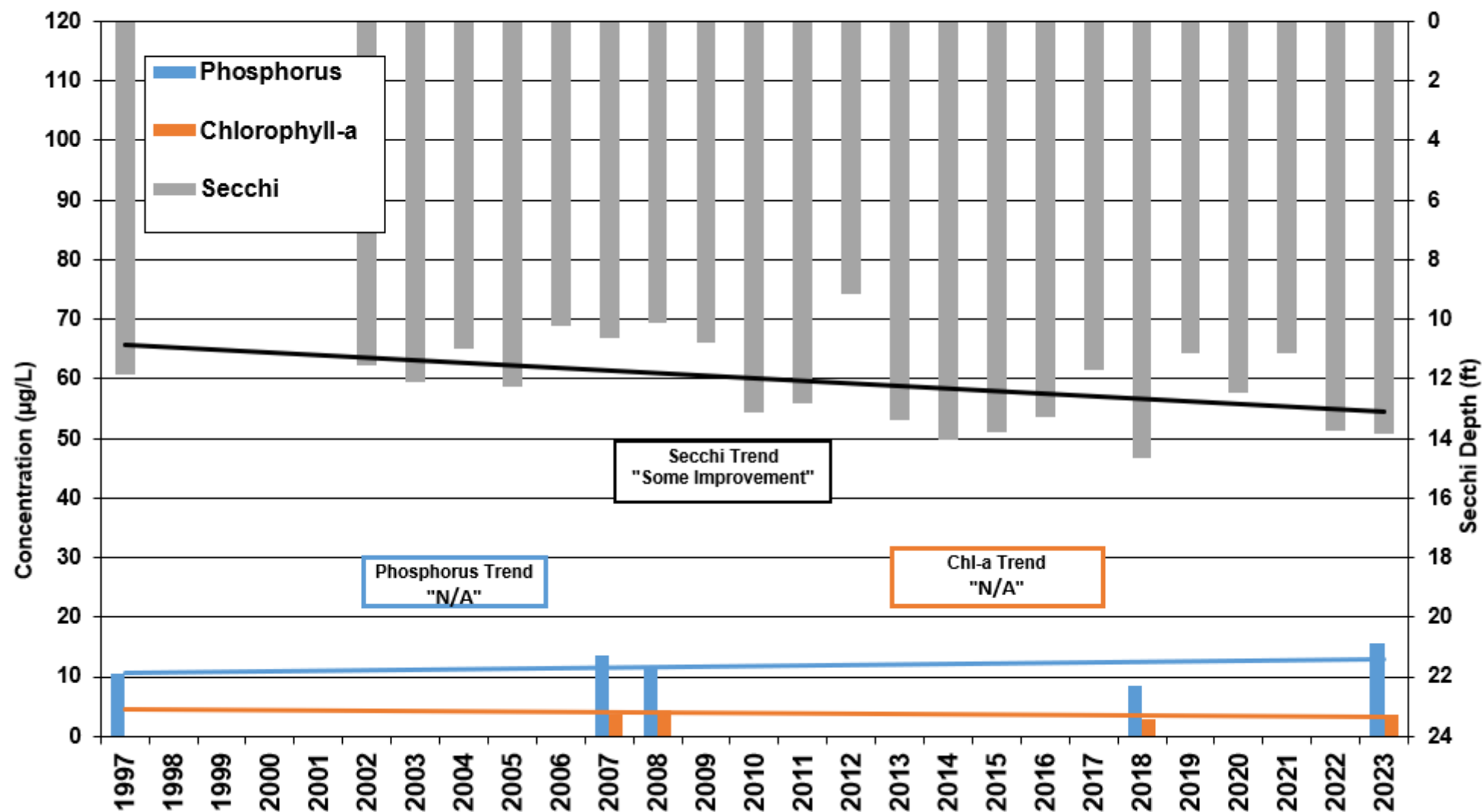
Little Sturgeon Lake Summer Mean Trophic Status Indicators



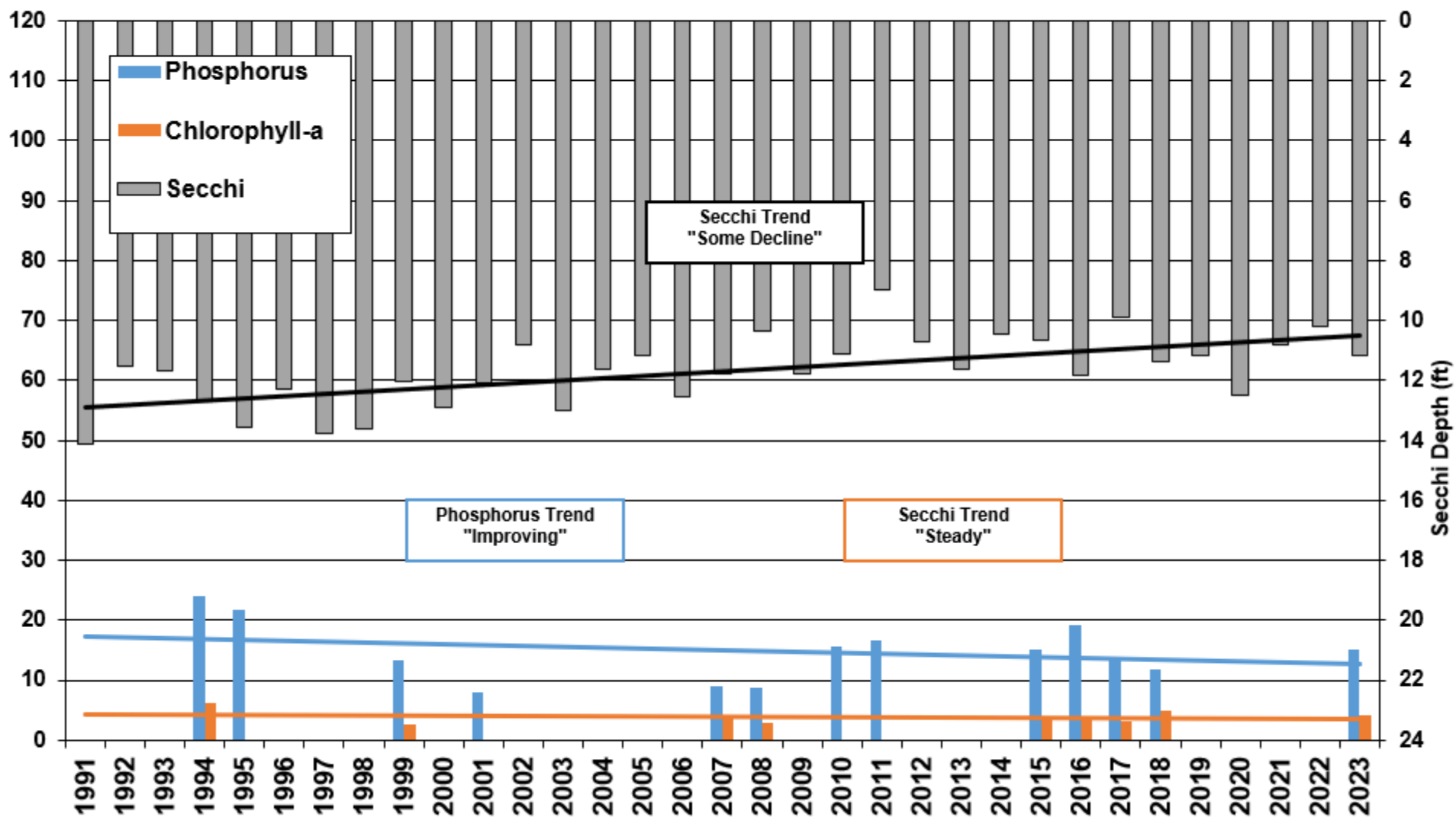
Side Lake Summer Mean Trophic Status Indicators



Perch Lake Summer Mean Trophic Status Indicators



Beatrice Lake Summer Mean Trophic Status Indicators



Secchi Transparency Trends By Lake

Lake	Years of Data (2023)	Avg. Clarity (feet)	Trend
Big Sturgeon	29	12.3	Slight Decline
W. Sturgeon	15	5.5	Improving
S. Sturgeon	37	4.3	Improving
Little Sturgeon	18	4.7	Slight Decline
Side	23	11.3	Some Decline
Perch	23	12	Improving
Beatrice	34	11.5	Some Decline

Water Quality Summary; Standards are attained. (Citizen + SWCD+ DNR + MPCA datasets)

Lake	Total Phosphorus Lake Avg. (Standard = 30)	Chlorophyll-a Lake Avg. (Standard = 9)	Secchi Transparency (meters) Lake Avg. (Standard =6.6ft)
Big Sturgeon	11	3.1	12.3
West Sturgeon	19	6.3	5.4
South Sturgeon	17	4.2	4.3
Little Sturgeon	23	5.7	4.7
Side	14	4.3	11.3
Perch	12	3.6	12.1
Beatrice	15	3.9	11.7

Priorities for Water Quality **Protection**

Lakes are close to targeted P concentrations

Optional local goal – don't wait for an impairment for a call to action !

Lake Name	LPSS Priority Class	Mean Monitored TP (ug/L)	Predicted Pre-disturbance TP (ug/l)	Target TP (ug/L)
Sturgeon	Highest	9.1	8	8
Perch	Highest	11.8	11	11
South Sturgeon	Highest	14.9	13	14
Side	Highest	15.6	12	10
Beatrice	Highest	15.8	14	13
West Sturgeon	Highest	17.4	15	15
Little Sturgeon	High	26.2	24	23

What you can do to protect your lake

- Maintain a natural shoreline
 - Sturgeon chain of lakes has high relative amounts of development density
- Minimize turf-grass lawns, don't use fertilizer
 - 1 pound of phosphorus can produce up to 500 pounds of plants or algae
- Properly maintain your septic system
- Continue your lake monitoring / stewardship / local partnerships (Thank you!)
- Talk with your local SWCD



Maintain a natural shoreline

- Keeping native vegetation along the shoreline helps prevent erosion



Before



After monsoon



3 Months after the Coir log installation

Maintain or
restore a natural
shoreline





Minimize turf-grass lawns

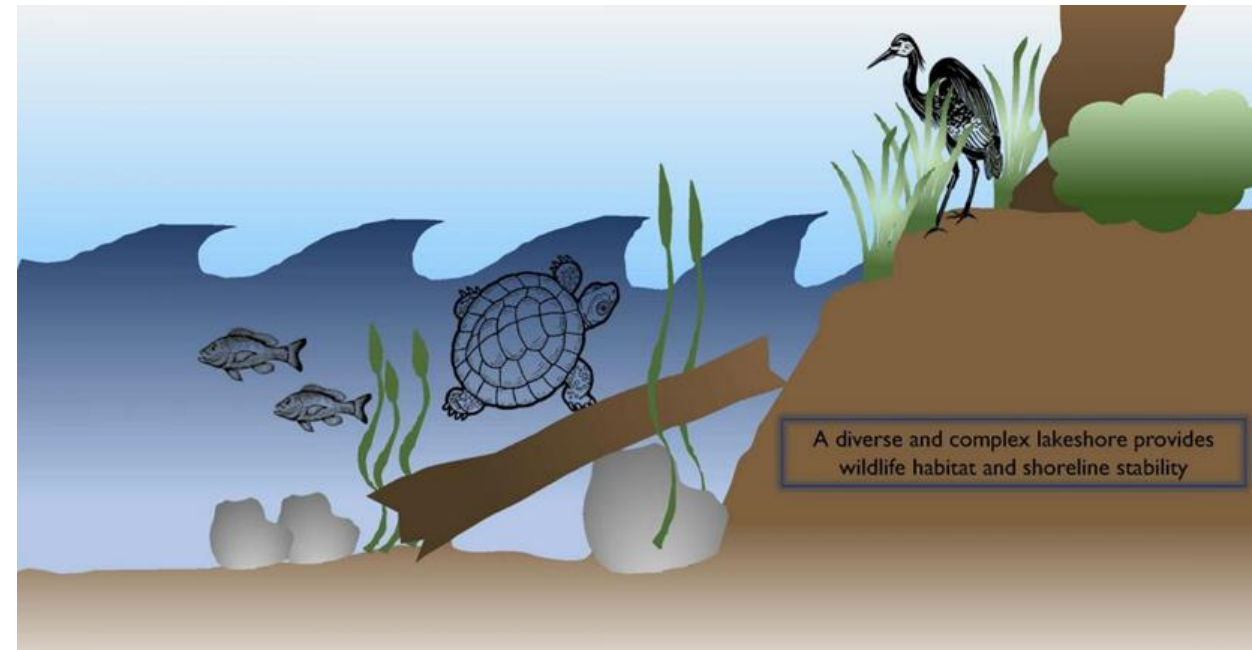
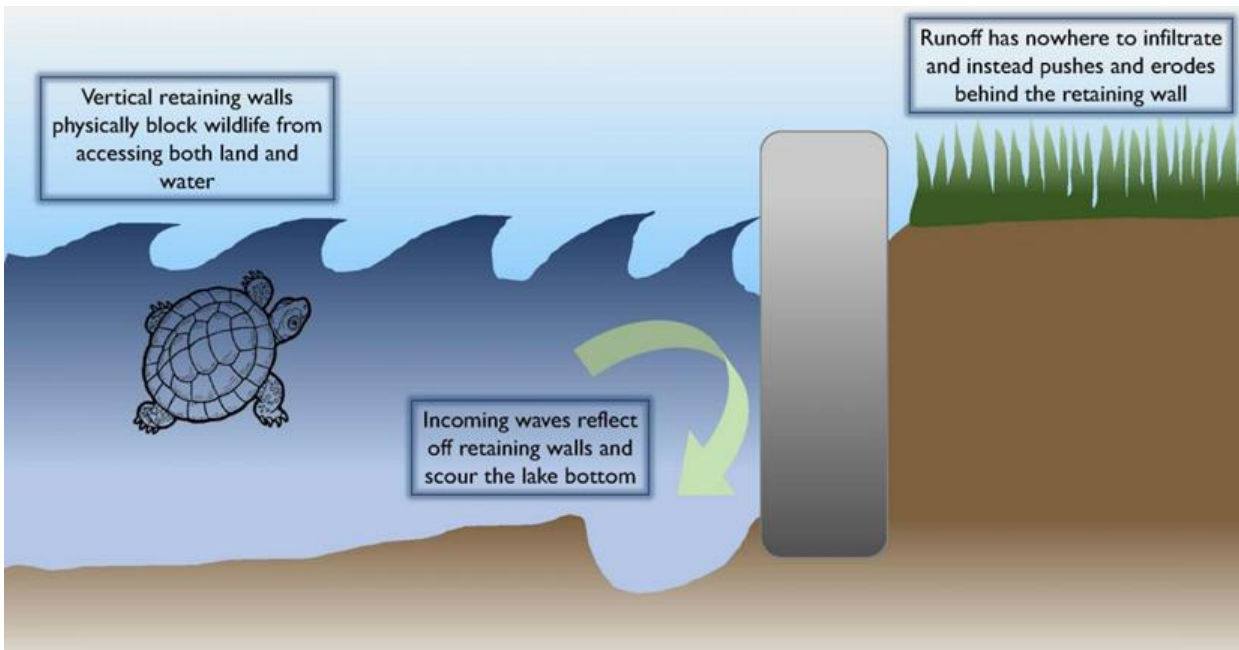
- Not much to stop stormwater from running directly into the lake
- If you must, use fertilizer with zero phosphorus
- Minimal vegetation puts higher risk of shoreline erosion

Rain Gardens

- Help capture runoff water, help it soak into the ground

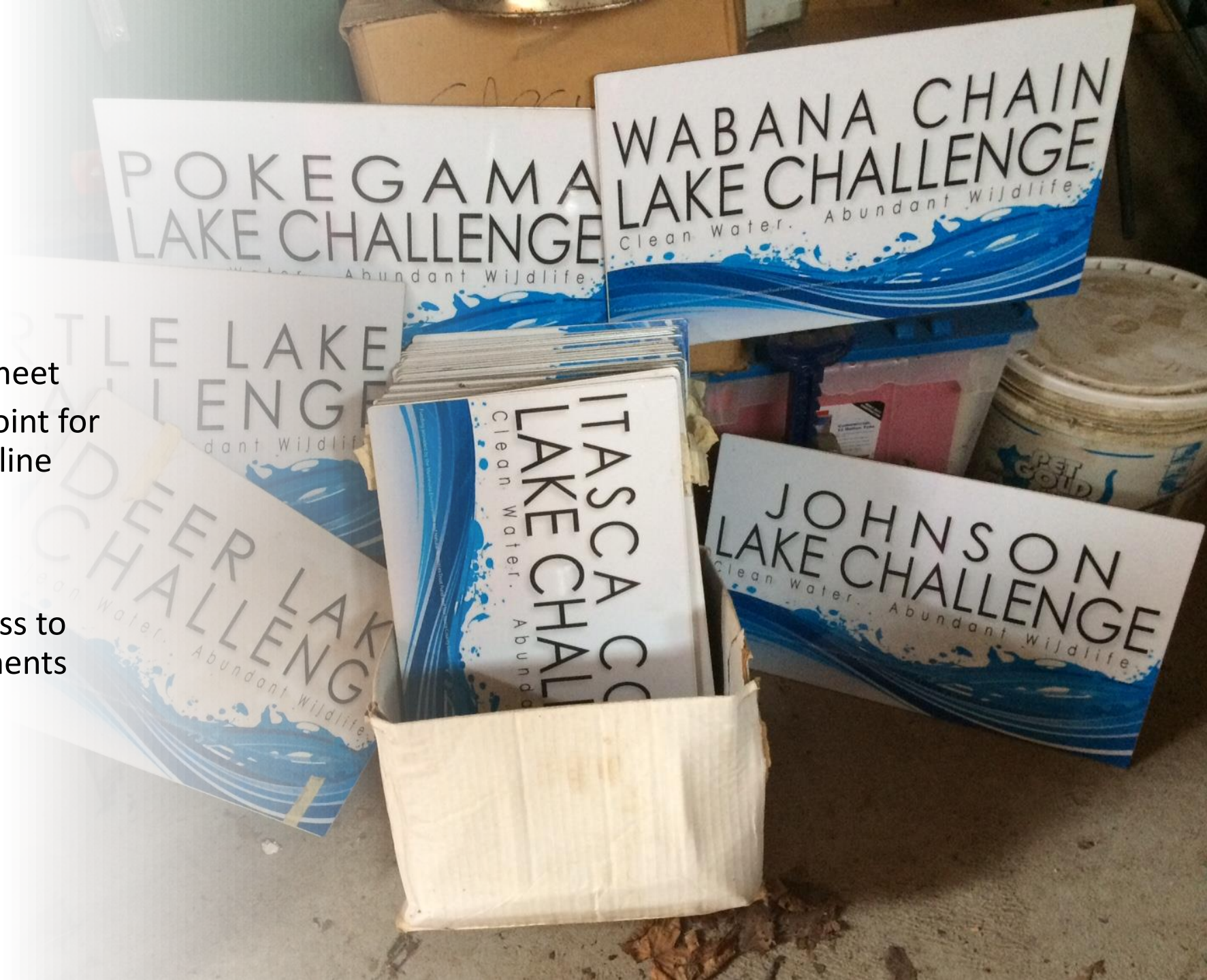


Riprap and retaining walls are not always the answer



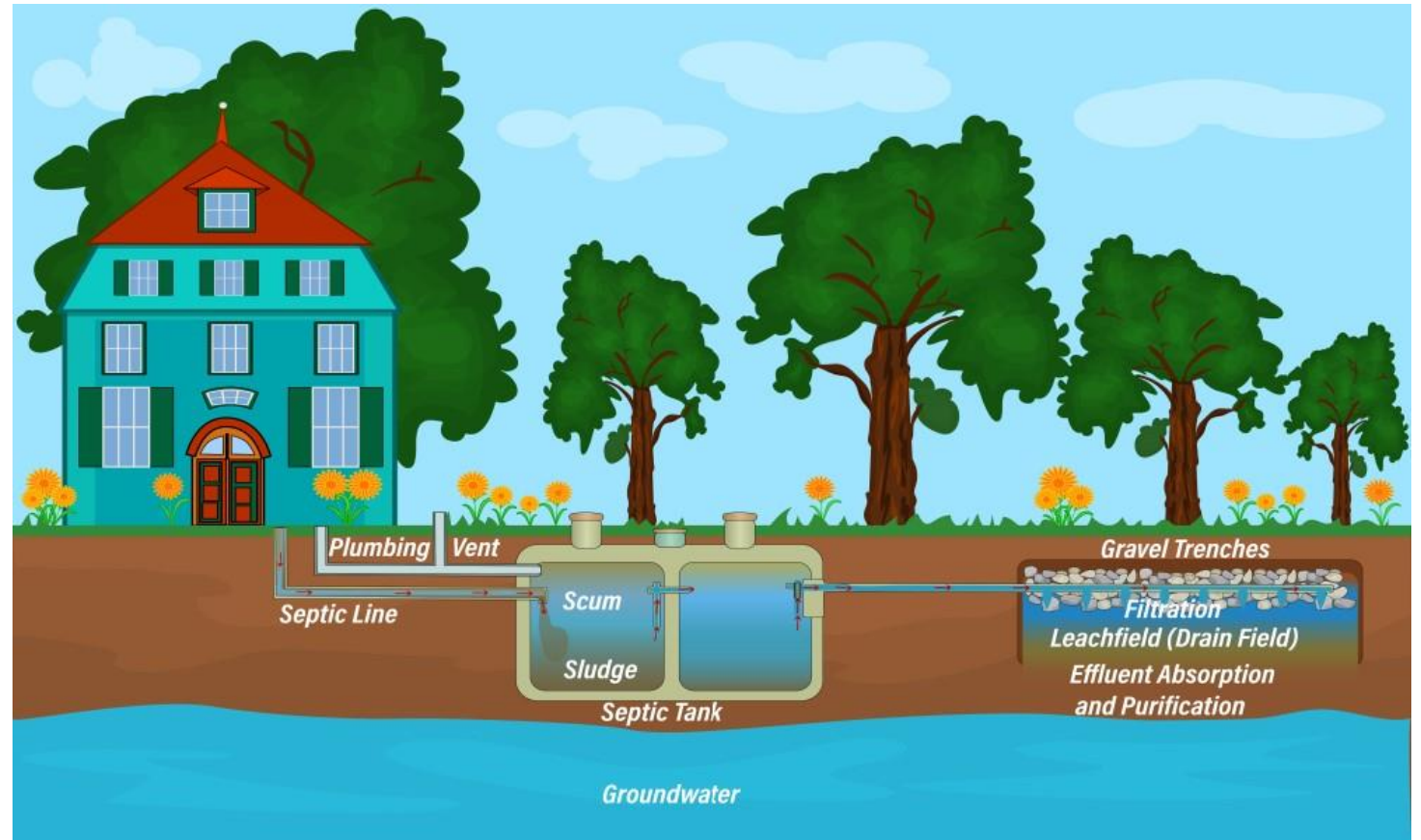
Assess your shoreline

- "Lake Challenge" Score Sheet
 - Helps as a starting point for assessing your shoreline
- Lake Challenge signs
 - Brings local awareness to lake shore improvements



Properly maintain your septic system

- Have your septic tank pumped every 2-3 years
- Clear woody vegetation around tanks and drain field
- Don't drive over the drain field
- Nothing should go into the septic except from toilet and sink water.



Sturgeon Chain Water Quality Summary

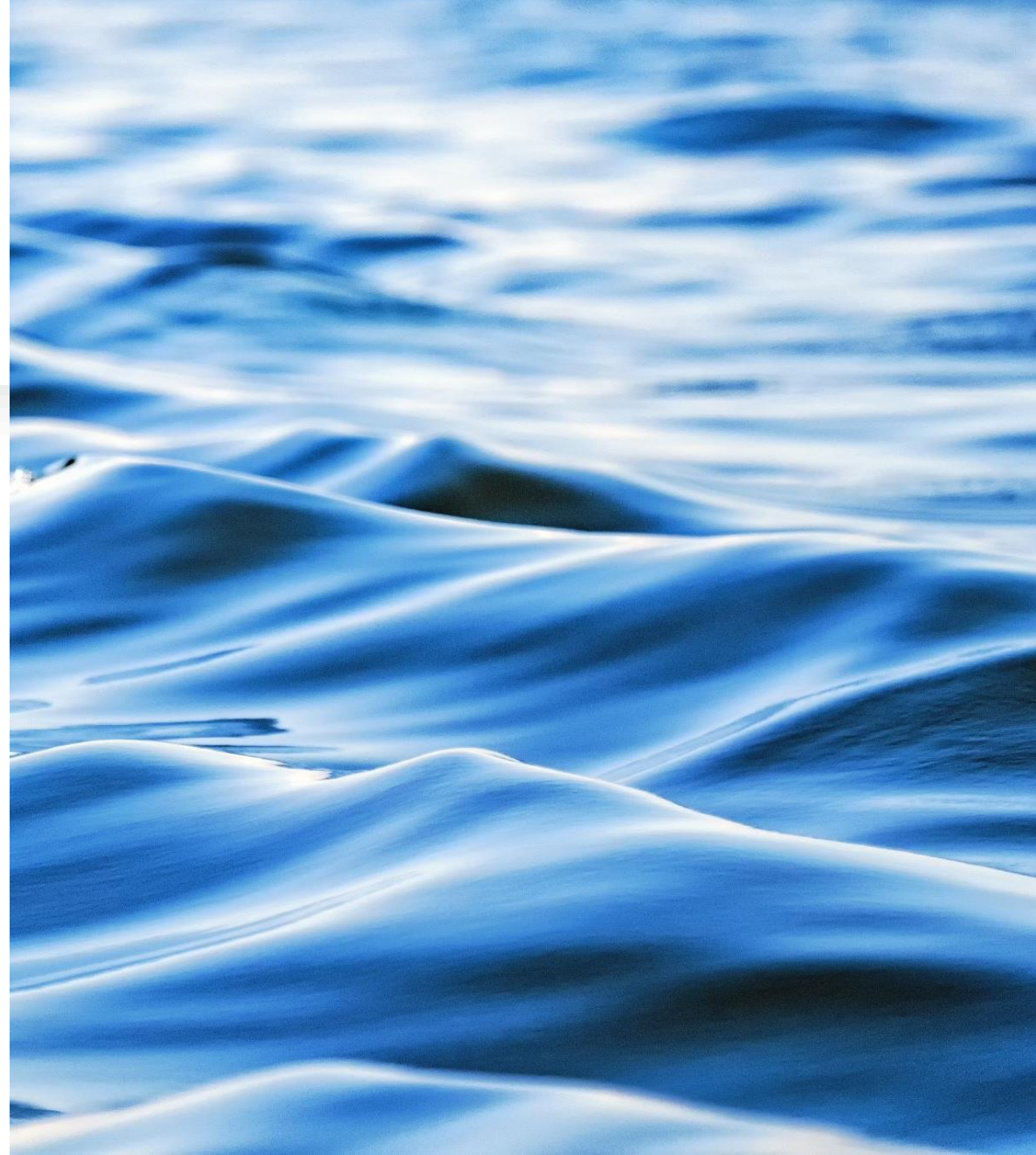
- All lakes are meeting nutrient standards, meant to protect swimmable use
- Most lakes have (slight) declining trends in Secchi transparency
- Some lakes have naturally low transparency due to bog staining
- **THANK YOU** to citizen monitors, importance of long-term monitoring
- MPCA has developed lake-specific phosphorus targets to help with local water quality planning / protection With climate change, it's important to keep on the lookout for harmful algal blooms

Before we move along.....

- What are your initial thoughts on what you saw in the WQ trends?
- What surprised you the most?
- What can **YOU** do?

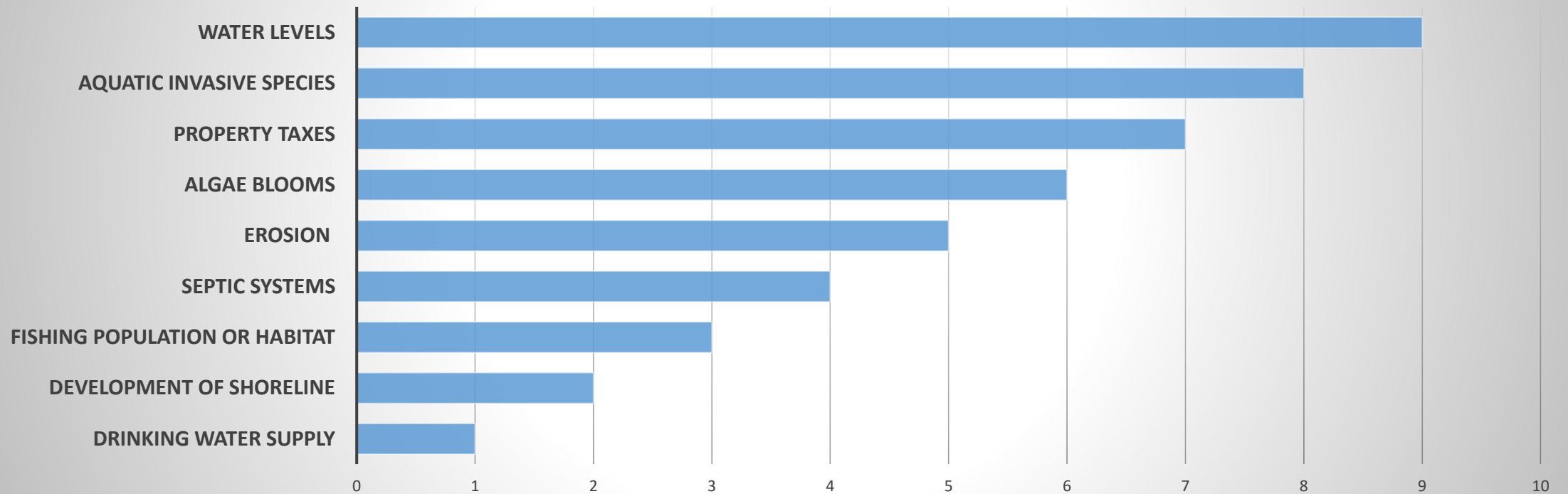
Sturgeon Chain Water Quality Survey

- 8 questions about water quality
- Help us focus on what parts of water quality matter to people here
- About 40 people took the survey



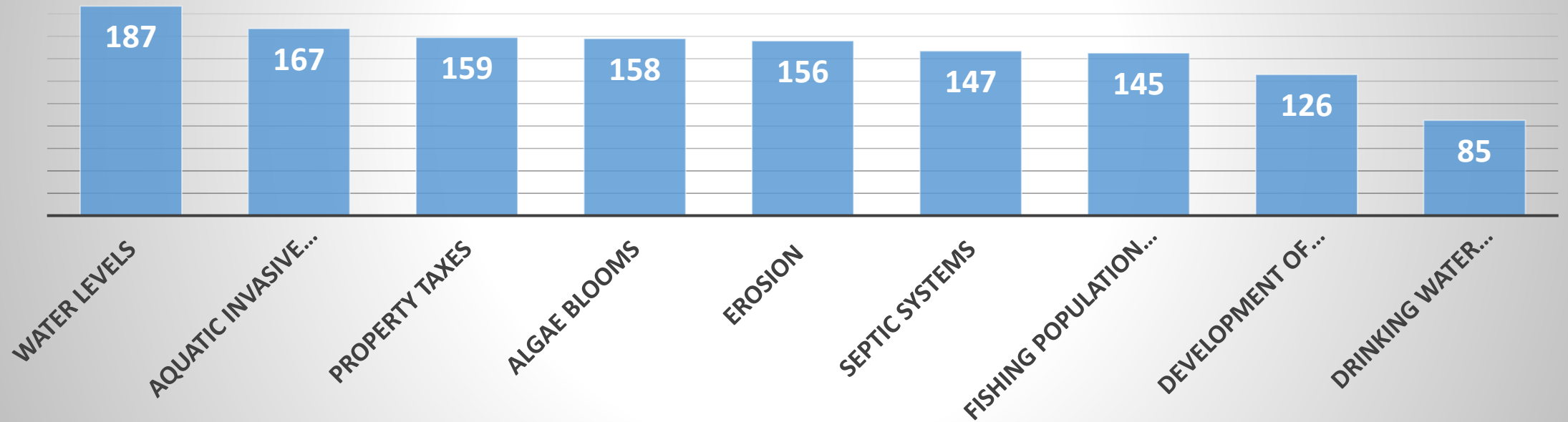
Sturgeon Chain Water Quality Survey

**WQ Issues Ranked by Importance (most to least important)
All Respondents**



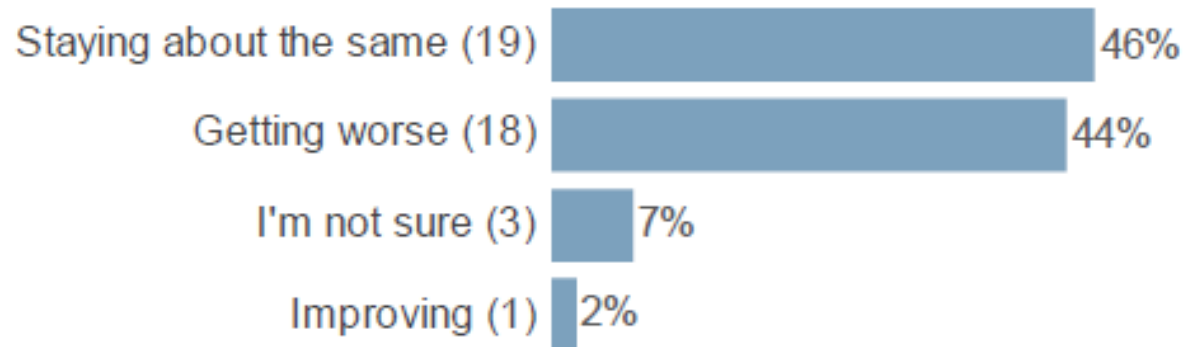
Sturgeon Chain Water Quality Survey

**WQ Issues Ranked by Importance
(most to least important)
All Respondents**



Sturgeon Chain Water Quality Survey

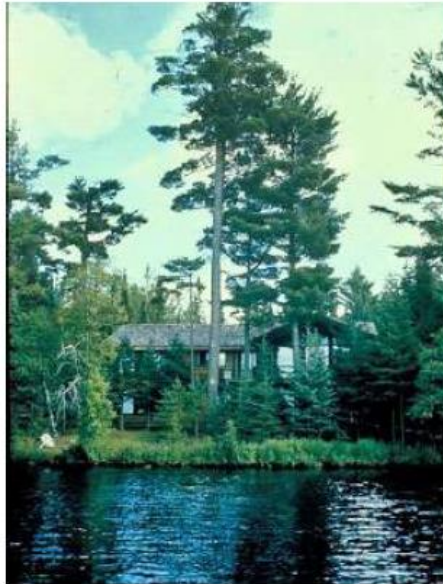
Currently, would you say the water quality in the Sturgeon Chain of Lakes is:



Sturgeon Chain Water Quality Survey

5. Which of the following pictures is the closest to your vision of a perfect lakeshore?

18 (44%)



14 (34%)



5 (12%)

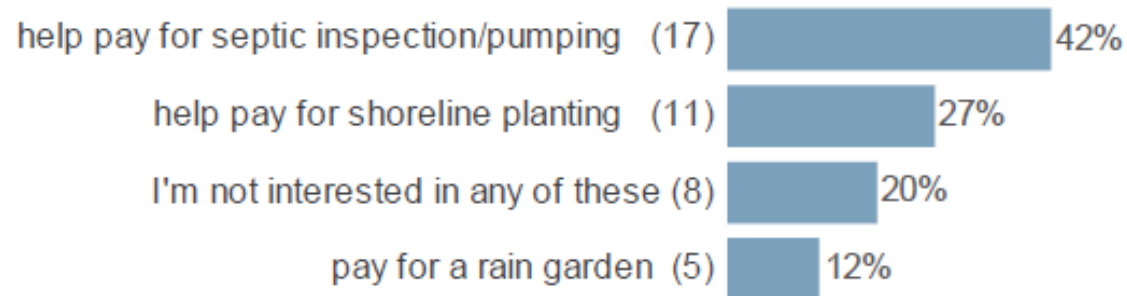


4 (10%)



Sturgeon Chain Water Quality Survey

If there was a program to help you pay for a project, which of the following would you most likely be interested in:



Sturgeon Chain Water Quality Survey Word Cloud



Thank you for your time

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