

Big St Germain Area Lakes District

**Lakes Management Planning
Project Update**

September 6, 2020

**Reports Still in Draft Stage
Awaiting DNR Review and
Approval**

**The Following is a Condensed
Summary**

Agenda

- Study Results
 - Water Quality
 - Watershed
 - Shoreland Condition
 - Aquatic Plants
- Conclusions

Summary of Project Results

Water Quality

Parameters measured in 2019 fell within good to excellent categories for respective lake type
Phosphorus concentrations higher than expected on BSG and Lake Content
Evidence for Internal Nutrient Loading

Watershed & Immediate Shoreline

Watersheds are in overall good condition – primarily comprised of forests and wetlands

Aquatic Plant Communities

Plant communities stable in BSG, Lake Content and Fawn lake
Non-native plants: Narrow leaved cattail in BSG & Lake Content
NO Eurasian watermilfoil detected in BSG, Lake Content and Fawn Lake



Introduction to Lake Water Quality

- **Phosphorus**

- Naturally occurring & essential for all life
 - Regulates phytoplankton biomass in most WI lakes
 - Most often 'limiting plant nutrient' (shortest supply)
 - Human development often increases P delivery to lakes

- **Chlorophyll-a**

- Pigment used in photosynthesis
 - Used as surrogate for phytoplankton biomass

- **Succhi Disk Transparency**

- Measure of water clarity
 - Measured using a Succhi disk



Water Quality Trends

- No trends detected for phosphorus or chlorophyll-*a*
 - Good to excellent for respective lake types (with exception of Big St. Germain Lake – two story)
- No significant change in water clarity in recent years

Internal Phosphorus Loading

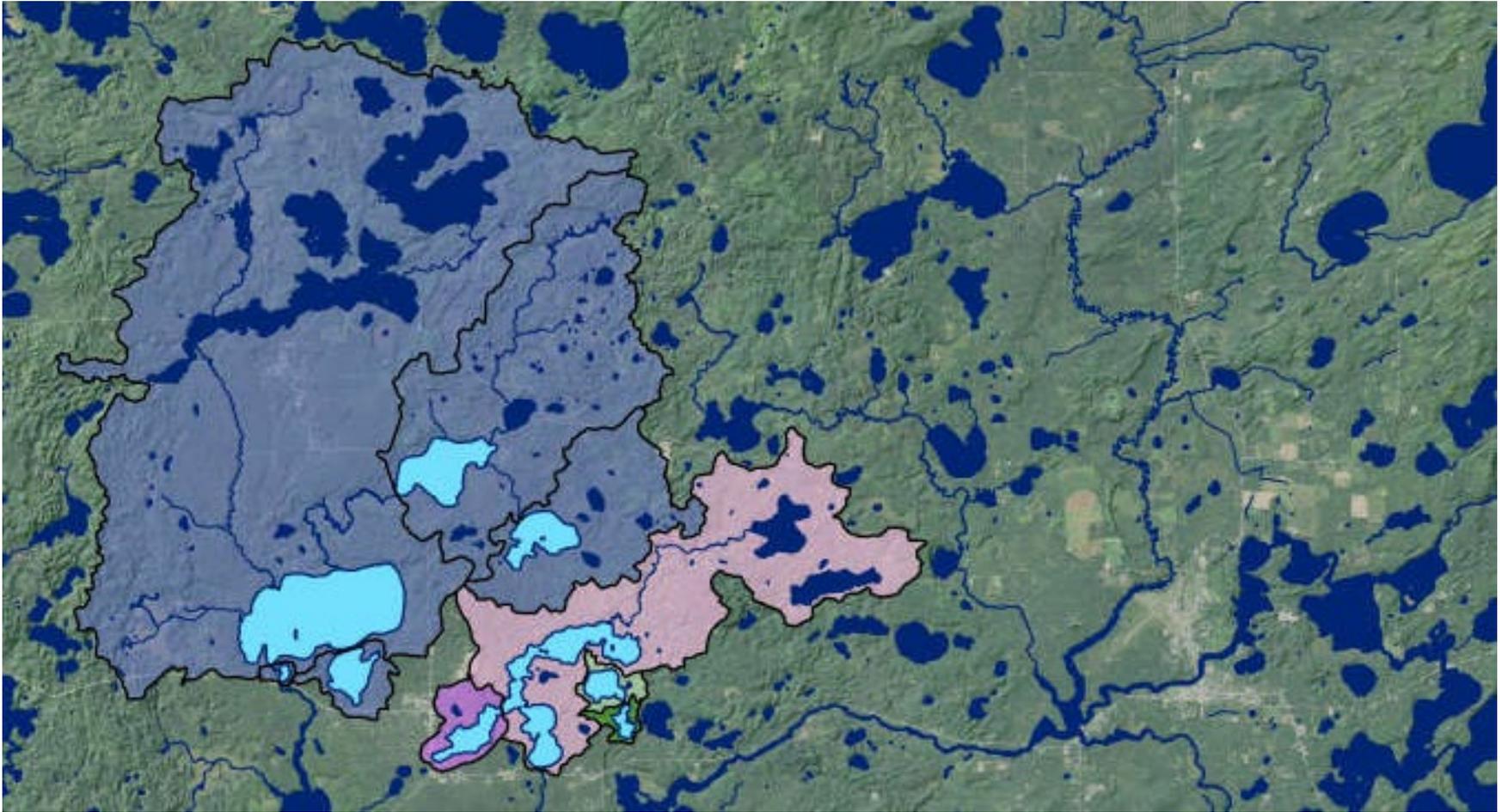
- Phosphorus concentrations in Big Saint Germain & Lake Content are higher than expected
- Evidence suggest *internal phosphorus loading* (like was discovered in LSG and Lost lakes)
- Varies from year to year, but can elevate phosphorus concentrations significantly in BSG and Lake Content later in summer

•What is Internal Phosphorus Loading?

In general, net movement of phosphorus to the sediment in lakes

- Under certain conditions, phosphorus (and other nutrients) get released from bottom sediments into the overlying water
- Anoxic (devoid of oxygen) conditions cause phosphorus release
- Becomes problematic if phosphorus is mobilized to surface in summer

Watersheds



Aquatic Plants

- Aquatic Plants



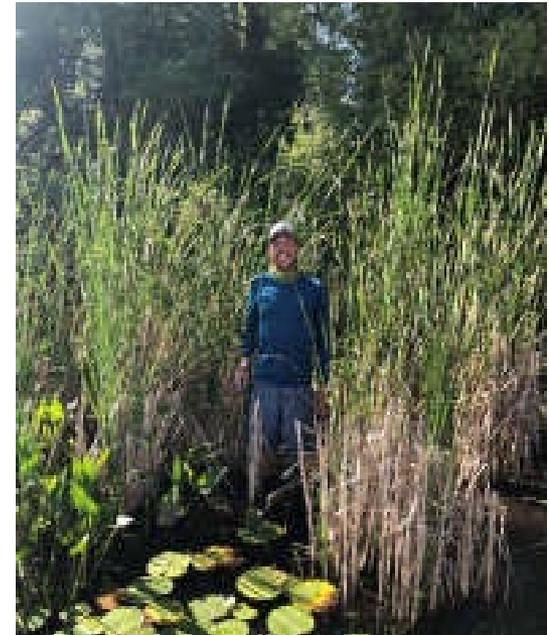
Aquatic Plant Survey Results-Town of St Germain Lakes Studied

- 97 native aquatic plant species located among 6 project lakes since 2004/05
- 4 non-native species:
 - Eurasian watermilfoil (Found Lake 2018)
 - Purple loosestrife (Found Lake in 2010)
 - Narrow-leaved cattail (BSG & Lake Content 2019)
 - Green arrow-arum (Moon Lake [Engle Bog] 2019)
- Significant reductions in plant abundance in Alma, Moon, & Found Lakes
- Plant communities of Big Saint, Content, & Fawn relatively stable
- Overall, native plant communities still very healthy and high quality

Aquatic Invasive Plants: Narrow-leaved cattail

- Small colonies found on Big Saint Germain & Lake Content in 2019
 - A 0.1 acre colony was located on the northern shore of Lake Content, while two smaller colonies were located on the eastern and southern shorelines
 - A small colony was located on the southern shore of Big St Germain Lake

Given the isolated nature of these colonies, the best method of control is likely the cutting of stems in mid-to-late summer or early fall to below the water line.



Stakeholder Survey Results

- 143 owners responded out of 478 (30%)
- 3 Most Important Reasons for Owning Property
 - Open Water Fishing
 - Ice Fishing
 - Motor Boating
- Top 3 Concerns Regarding Lakes
 - Water Quality Degradation
 - Loss of Aquatic Habitat
 - Shoreline Erosion/Development

Conclusions

- **Overall, lakes are still in good shape with good to excellent water quality & healthy native plant communities**
- **Internal phosphorus loading can cause late-summer algal blooms on Big Saint Germain & Lake Content**
- **Invasive species populations are small and currently at manageable levels**