Long Lake

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Meeting Outline

- Background on Algae and Cyanobacteria
- 2015 Known Algae Blooms
- Long Lake Water Quality Data
- Potential Causes of the Bloom
- Q & A
- Recommendations and Next Steps

Not Blue-Green Algae:

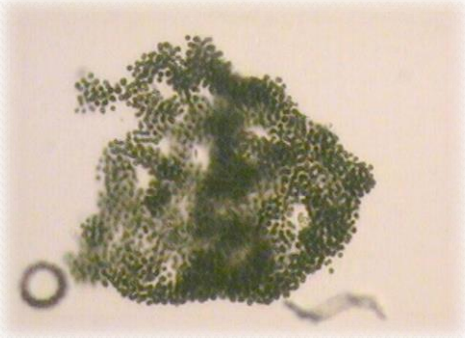
Green Algae

Green Algae

Photos: Steve Heiskary, MNPCB

Blue-green Algae

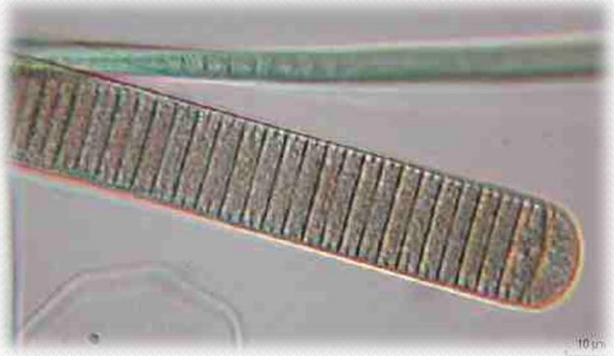
Blue-green Algae Species



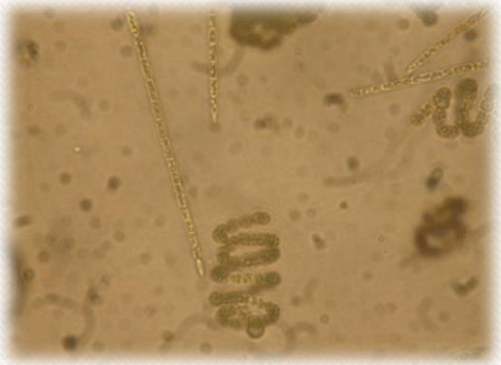
Microcystis

Anabaena

Aphanizomenon



Oscillatoria/Planktothrix



Cylindrospermopsis

Harmful Algae Blooms (HABs)

- Cyanobacteria, not a true algae
- Nutrient-rich waters
- Competitive advantage: nitrogen fixation, buoyancy
- Not all blue-greens produce toxins
- Ingestion, Contact, Inhalation

- **RISK= Hazard (blue-green algae) + Exposure pathway**

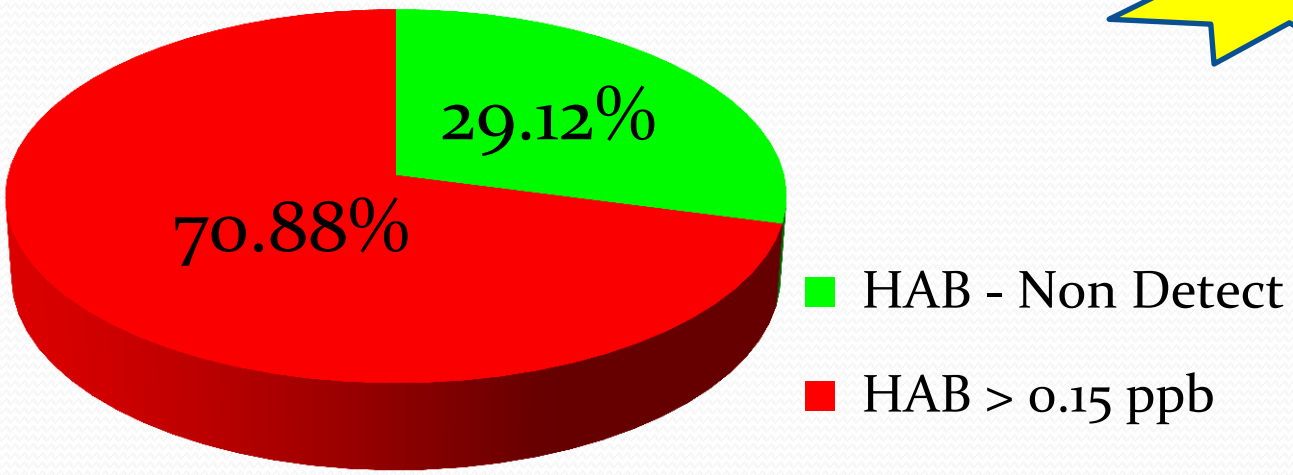
World Health Organization (WHO) Guidance Values

Relative Probability of Acute Health Effects (Advisory Level)	Microcystin-LR (ug/L)	Total Cyanobacteria (cells/mL)
Low	<10	<20,000
Moderate	10-20	20,000-100,000
High	20-2,000	100,000-10,000,000
Very High	>2,000	>10,000,000

The World Health Organization (WHO 1999)

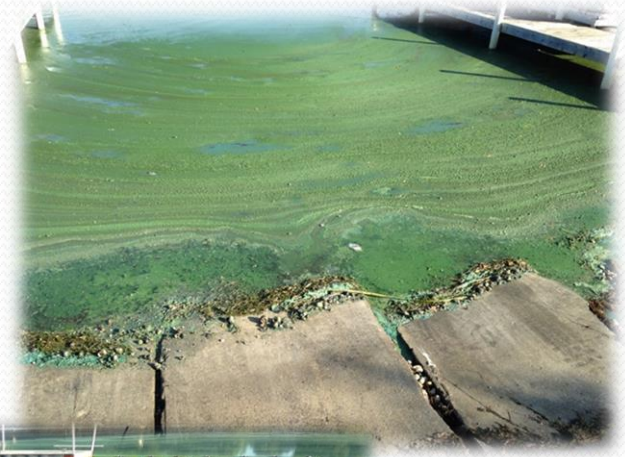
Routine Beach Monitoring - 2013

28 of 30 lakes



2015 Algae Blooms

- Higher than normal year
  - Possible reasons: wetter spring, timing of warm spells
- Other known blooms in Lake County:
  - Countryside Lake
  - Loch Lomond Lake
  - Slocum Lake
  - Diamond Lake
  - Island Lake
  - Lake Louise

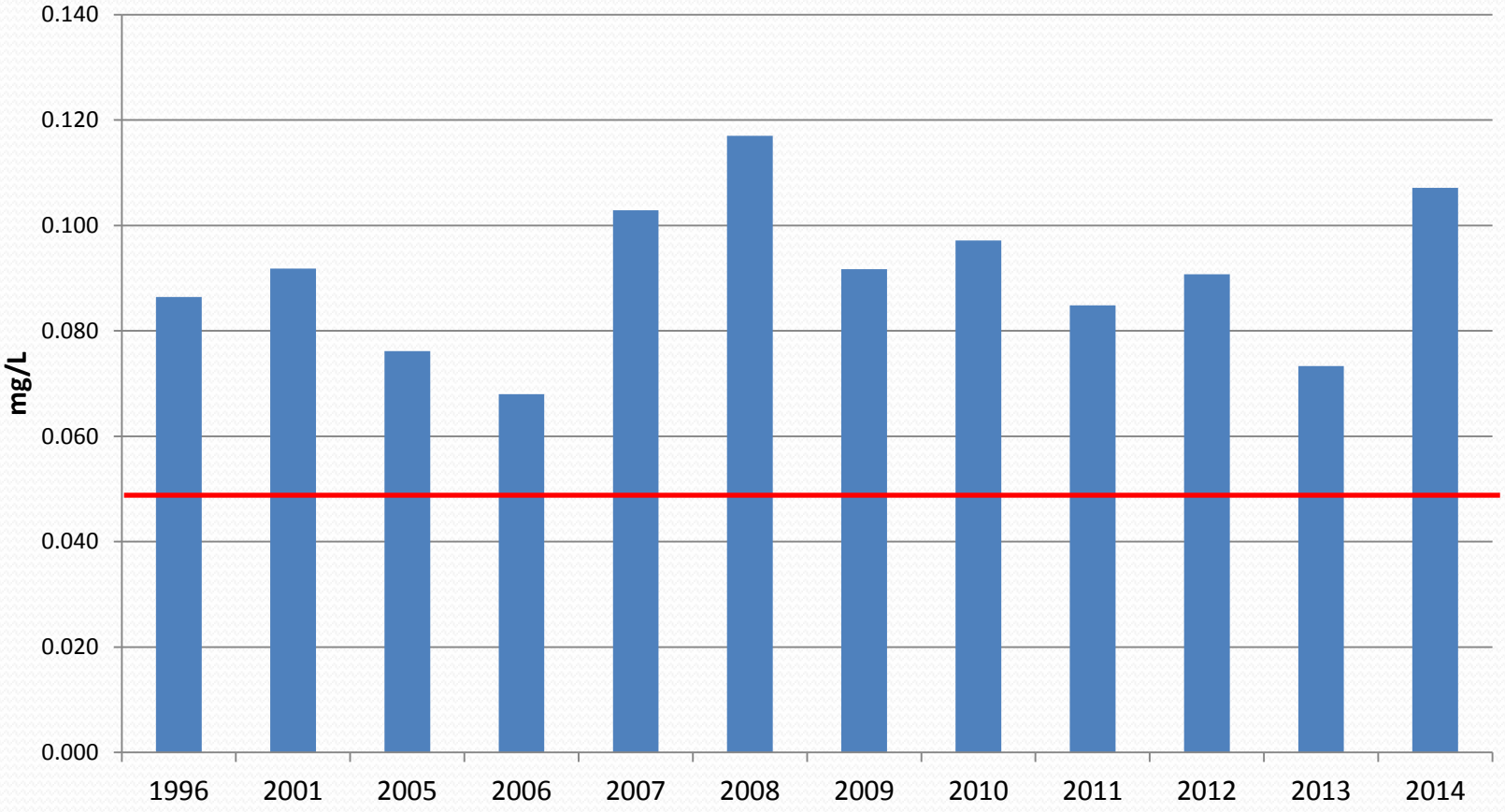


HABs and Lake Impairments

Lakes w/HAB >20 ppb	TN:TP	TP (mg/L)
Loch Lomond	6:1	0.295
Lake Louise	11:1	0.156
Lake Barrington	16:1	0.060
Slocum Lake	16:1	0.152
Tower Lake	19:1	0.083
LONG LAKE	20:1	0.107
Island Lake	20:1	0.121
Wooster Lake	21:1	0.068
Fish Lake	23:1	0.096
Dunn's Lake	24:1	0.095
Channel Lake	27:1	0.036
Cedar Lake	52:1	0.020

IEPA Impairment = 0.05 mg/L

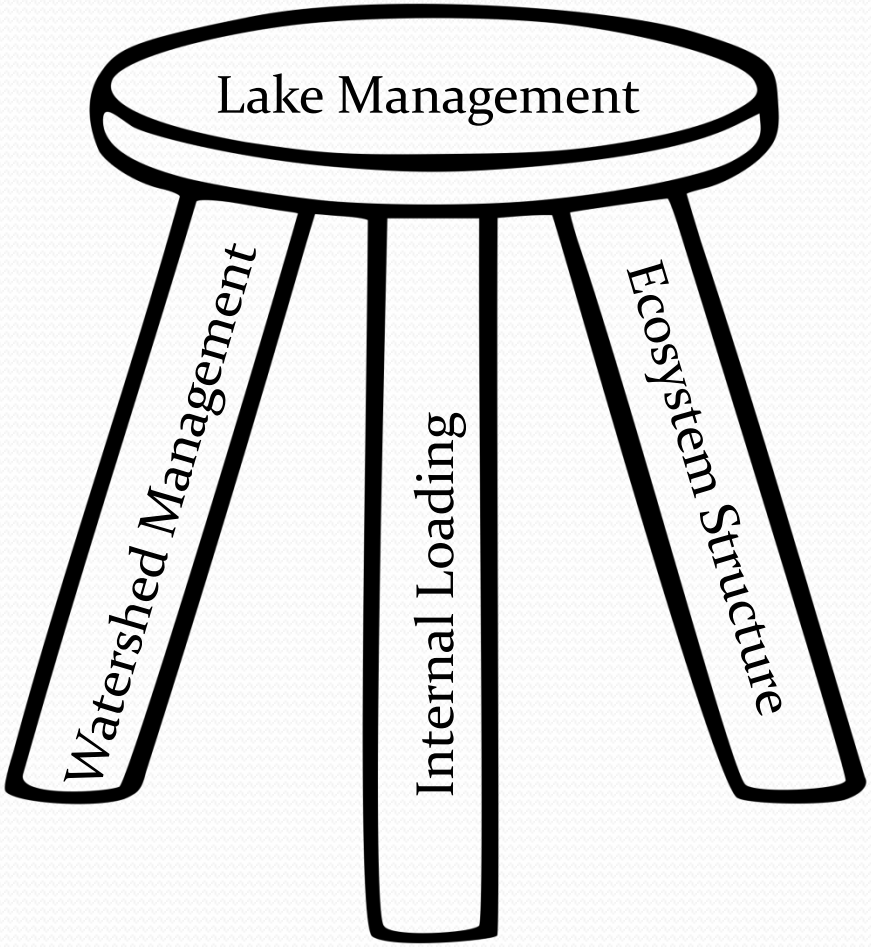
Long Lake
Total Phosphorus – 1996 to 2014



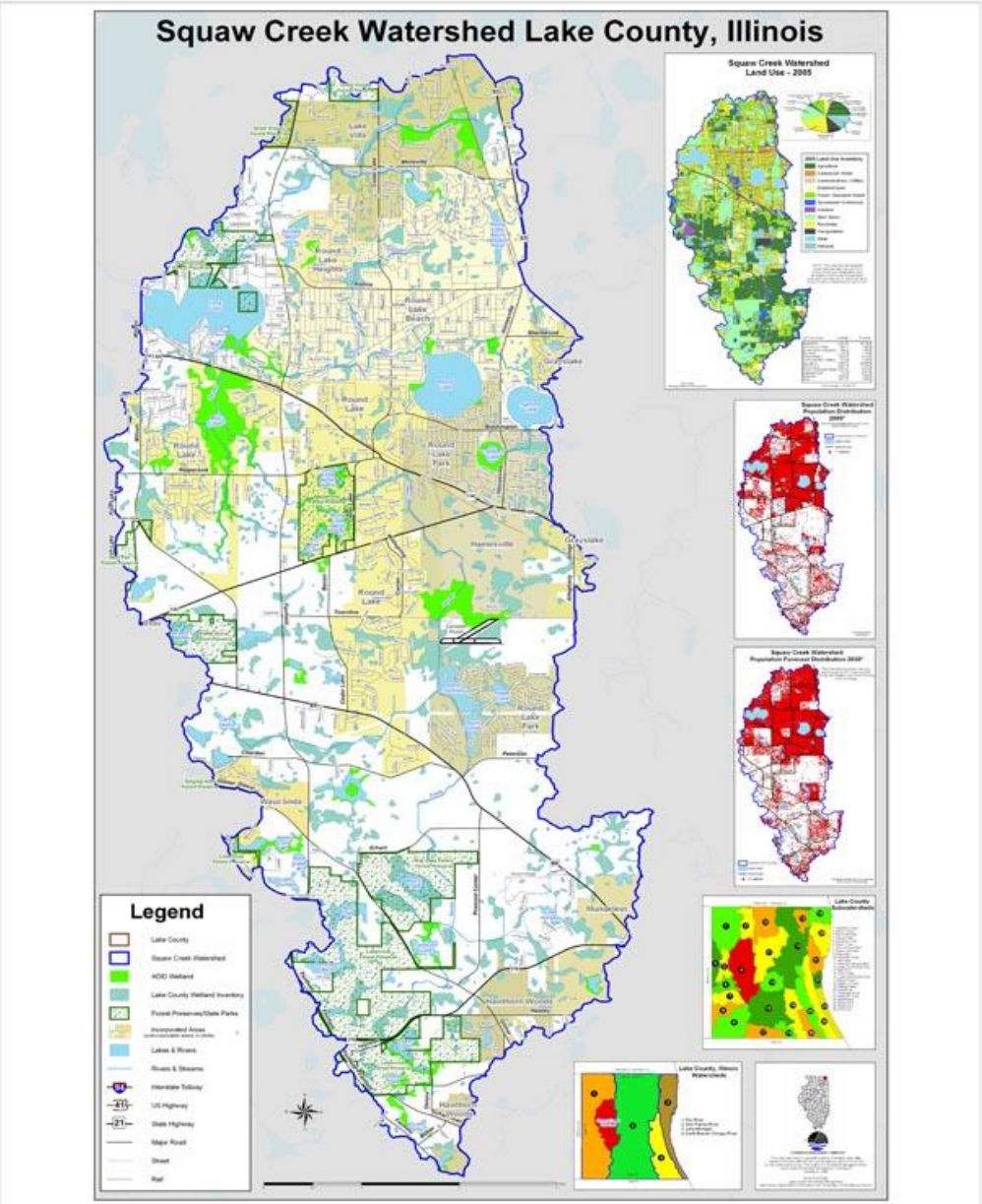
IEPA Impairment = 0.05 mg/L

Lake Management

- **The 3 Legged Stool**



Watershed Management

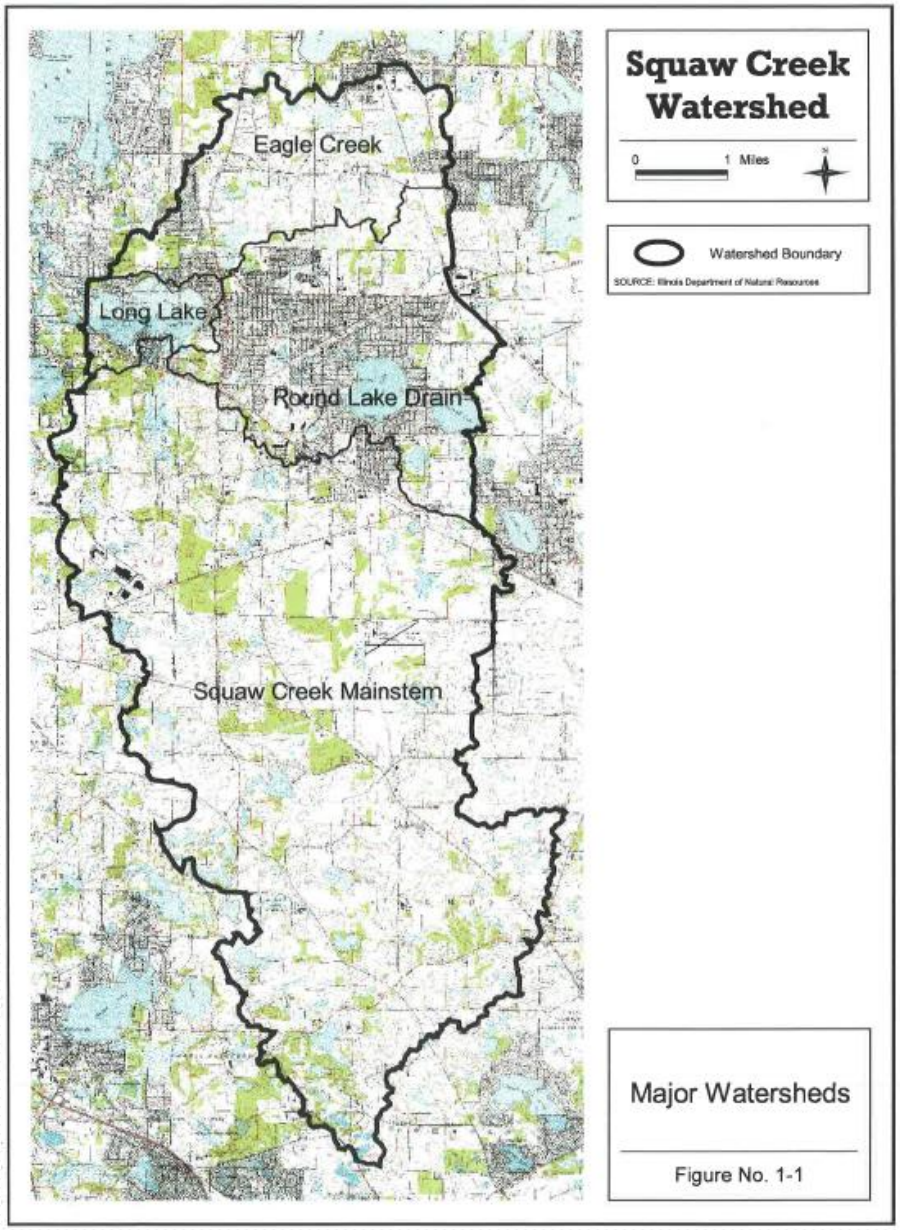


Squaw Creek Watershed Plan - 2004

http://www.lakecountyil.gov/Stormwater/LakeCountyWatersheds/FoxRiver/Pages/SquawCreek.aspx

Land Use

- Eagle Creek (2,992 acres)
  - Wetlands: 32.5%
- Round Lake Drain (4,588 acres)
  - Residential: 49.6%
- Mainstem (16,892 acres)
  - Agriculture: 40.4%



Historic Watershed Inputs

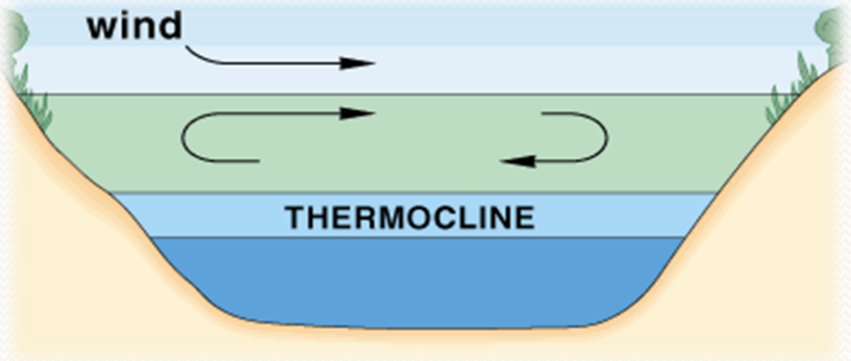
- Two Wastewater Treatment Plants operated until the 1980's
  - Lake Villa (0.3 million gallons per day – MGD)
  - Round Lake (1.6 MGD)
- Legacy nutrients in lake sediment

Baxter's NPDES Permit

- Minimal to No Impact
  - IEPA permit
  - Flow rate over last 2.5 years down by 25,000 gallons per day (average 0.16 MGD)
    - Squaw Creek flow at Highway 134: 15.4 MGD
    - Baxter contribution:
      - 1.0% of the flow

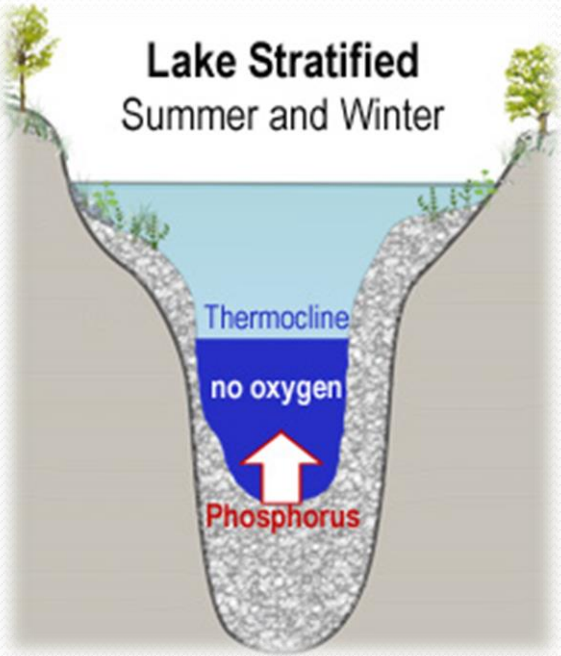
Internal Loading - Stratification

- Nutrient release under anoxic conditions



When stratified, the lower and upper layers of water do not mix, and the lower layer typically becomes anoxic

Internal Loading



H_2S, PO_4, Fe

Ecosystem Structure

- Total Phosphorus equal inside and outside enclosure

Clear water, plants, NO panfish

Turbid water, algae, LOTS of panfish

Zebra mussels change your lake

- Long Lake 2012
- Other lakes:
  - Diamond Lake
  - Gages Lake
  - Druce Lake
- ~3-5 years post infestation, impacts to:
  - Algae: don't like blue-greens!
  - Plants
  - Plankton

Frequently Asked Questions

Q: Is the bloom caused by someone “dumping” something?
A: No. Historic and current inputs are cumulative.

Q: Is this something new?
A: No. Blue-green algae have always been in Long Lake and in other lakes.

Q: Can I eat the fish?
A: Toxin may accumulate in tissue (primarily viscera “guts”). Minimal evidence of impacts. Best to avoid fishing in blooms.

Q: Are children more affected than adults?
A: Yes.

Q: Can my dog get sick?
A: Yes. Watch for vomiting, diarrhea, shock.

Frequently Asked Questions

Q: How long will the bloom last?

A: Some blooms last only a week, others can persist for many weeks. Duration will depend in part on temperature and rainfall.

Q: Should we chemically treat the bloom?

A: No. Treating the bloom may release the toxins.

Q: Can I irrigate my lawn or garden?

A: Do not irrigate until the bloom has dissipated.

Q: Can I take my pier out of the water?

A: Yes, but avoid any visible scum, shower after.

Q: Will this happen next year?

A: Possibly, depending on conditions.

General Recommendations

- Use common sense: stay away from visible scums
- Minimize recreational activities that disturb the blooms
- Do not drink the lake water
- Keep children and pets away from scums
- After coming out of the lake, take a shower (or give the dog a bath)
- If you feel ill, contact your physician
- If you pet is ill, contact your veterinarian