Alum Status Report

August 2018

Lake Management Goal

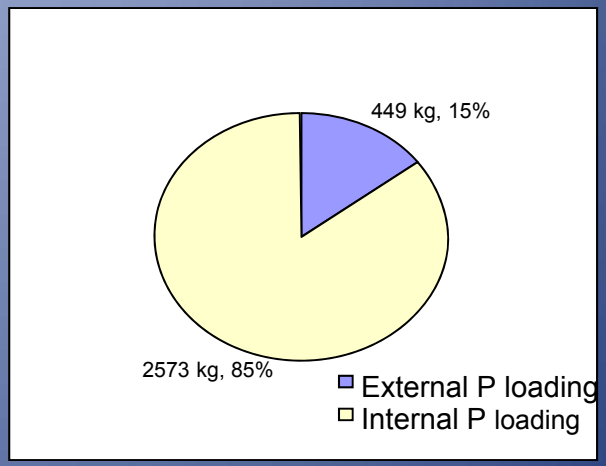
Goal. *Achieve and maintain clear water throughout the summer.*

Objective . Total phosphorus mean of less than 40 *u*g/L.

Alum for Control of Internal P Loading

Cedar Lake is a prime candidate

- Internal P loading is dominant during the summer
- The lake is susceptible to frequent mixing
- Cyanobacteria blooms after mixing can be a human and animal health concern




Algae blooms that can sicken people and pets were reported Monday afternoon at public beaches on Lake Altoona and Lake Eau Claire.
Eau Claire Leader Telegram July 23, 2018
BLUE-GREEN
ALGAE

Alum for Control of Internal P Loading

- Dosage and application are critical to success
- Binding efficiency declines over time
- Multiple doses w/ P present maximizes alum reactivity

PREDICTED RESULTS WITH ALUM

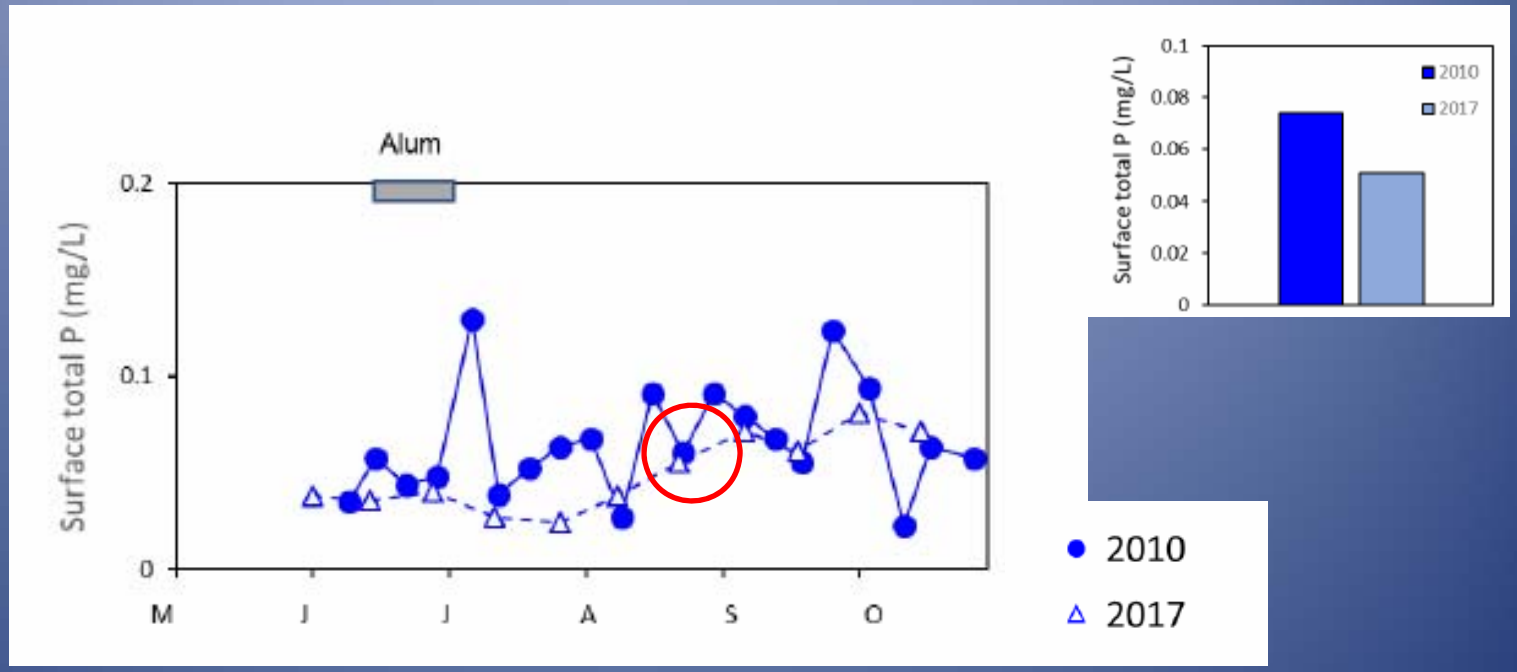
Annual TP = 33ug/L (from 74 ug/L)

Secchi depth: from 6.5 feet to 13 feet

Nuisance summer algae blooms: from 44% to 7% of the time

Toxin-producing algae blooms likely: from 17% to 1% of the summer

Surface Total Phosphorus

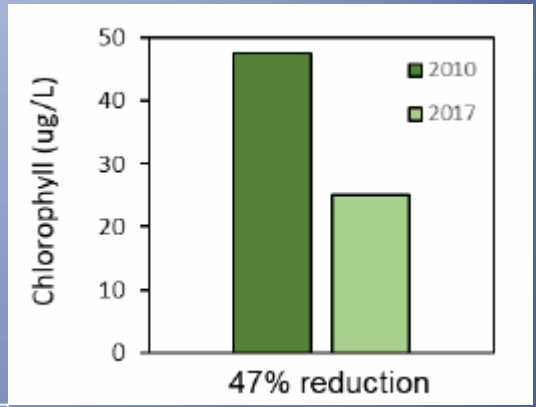


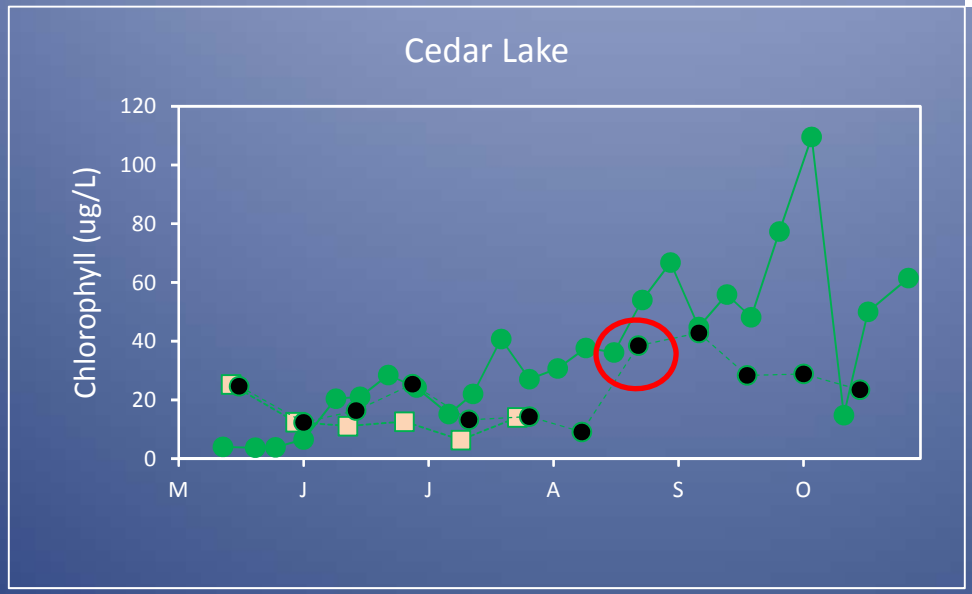
2017

51 *ug/L (31% lower)*

Chlorophyll

2017: 25 *ug/L (47% lower)*

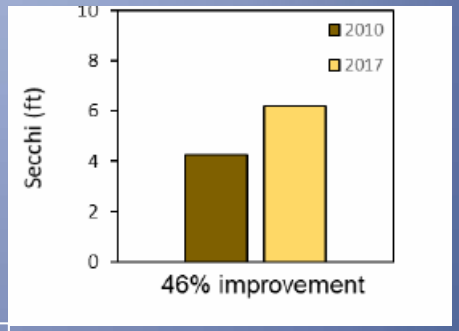


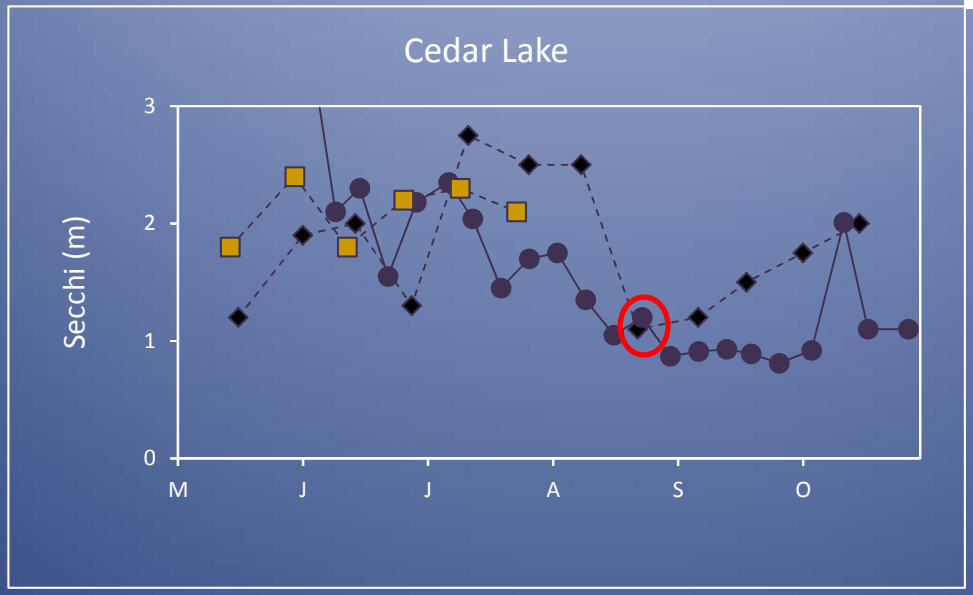


2010
2017
2018

Secchi Depth

2017: 6.28 ft. (46% clearer)



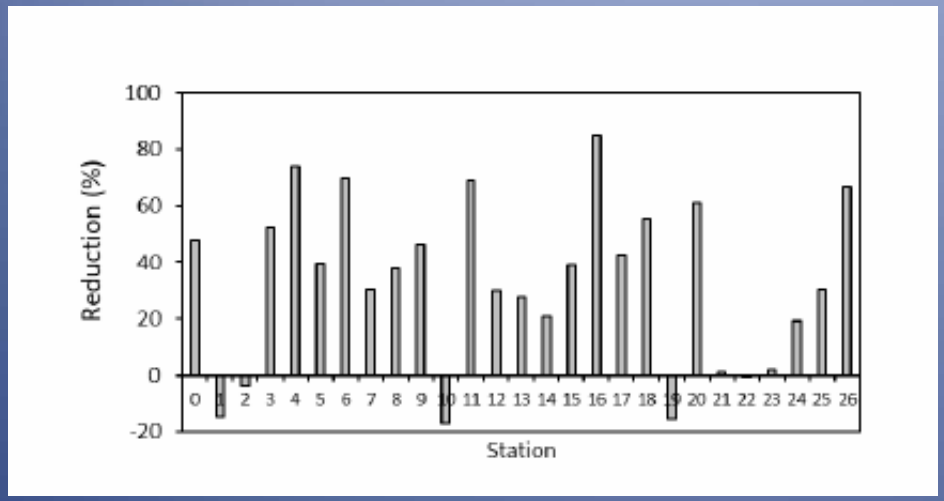


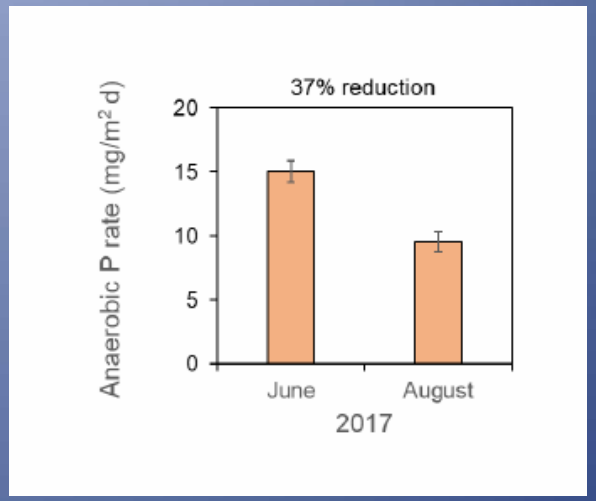
2010

2017

2018

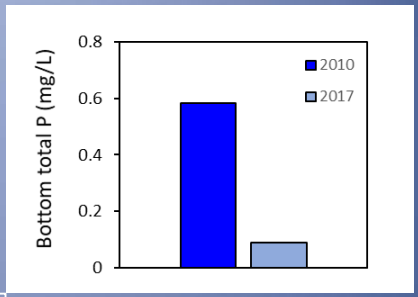
Release of P from Lake Sediments (LAB)

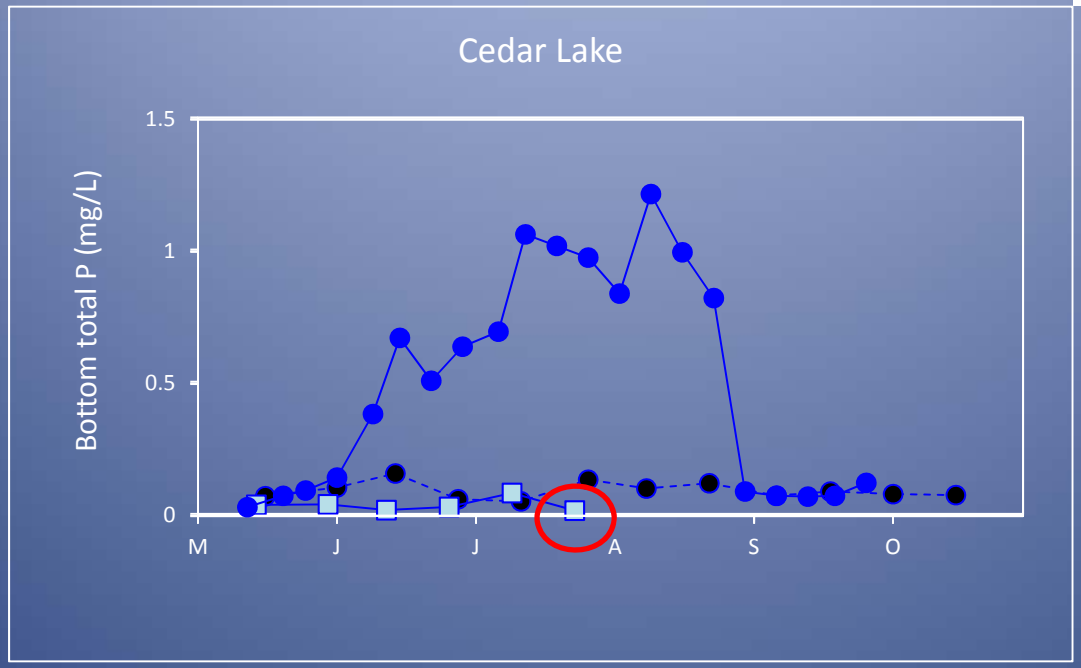




20% of Alum
37% Reduction in
Sediment P Release

Bottom Total Phosphorus





2017: 0.58 mg/L (85% lower)

July 2018: 0!!

Alum Application Strategy (2017)

	Treatment	Cumulative Al dose (g/m^2)	
Year	(mid-June)	20-25 ft	> 25 ft
2017		20	26
2018			
2019			
2020		40	52
2021			
2022			
2023		60	78
2024			
2025			
2026		80	104
2027			
2028			
2029		100	130

Alum Application Strategy (2018)

	Treatment	Cumulative Al dose (g/m^2)	
Year	(mid-June)	20-25 ft	> 25 ft
2017		20	26
2018			
2019		XX	XX
2020		?	?
2021			
2022		?	?
2023			
2024			
2025			
2026		?	?
2027			
2028			
2029		100	130

2017 Alum Treatment:
$504,671
20% dose
$1.76/gal

2019 Alum Treatment:
$593,661
22% dose
$1.88/gal

2019 Alum Treatment
$200,000 DNR grant
$337,373 Special Assessment
$56,627 Non-Lapsable Fund

Adaptive Management:
Maintain flexibility for 2020