

Washington Park Lakes Update

FANs 10/9/19



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Dept Public Health & Environment



Background

- **Water Source**
- **Management Changes**

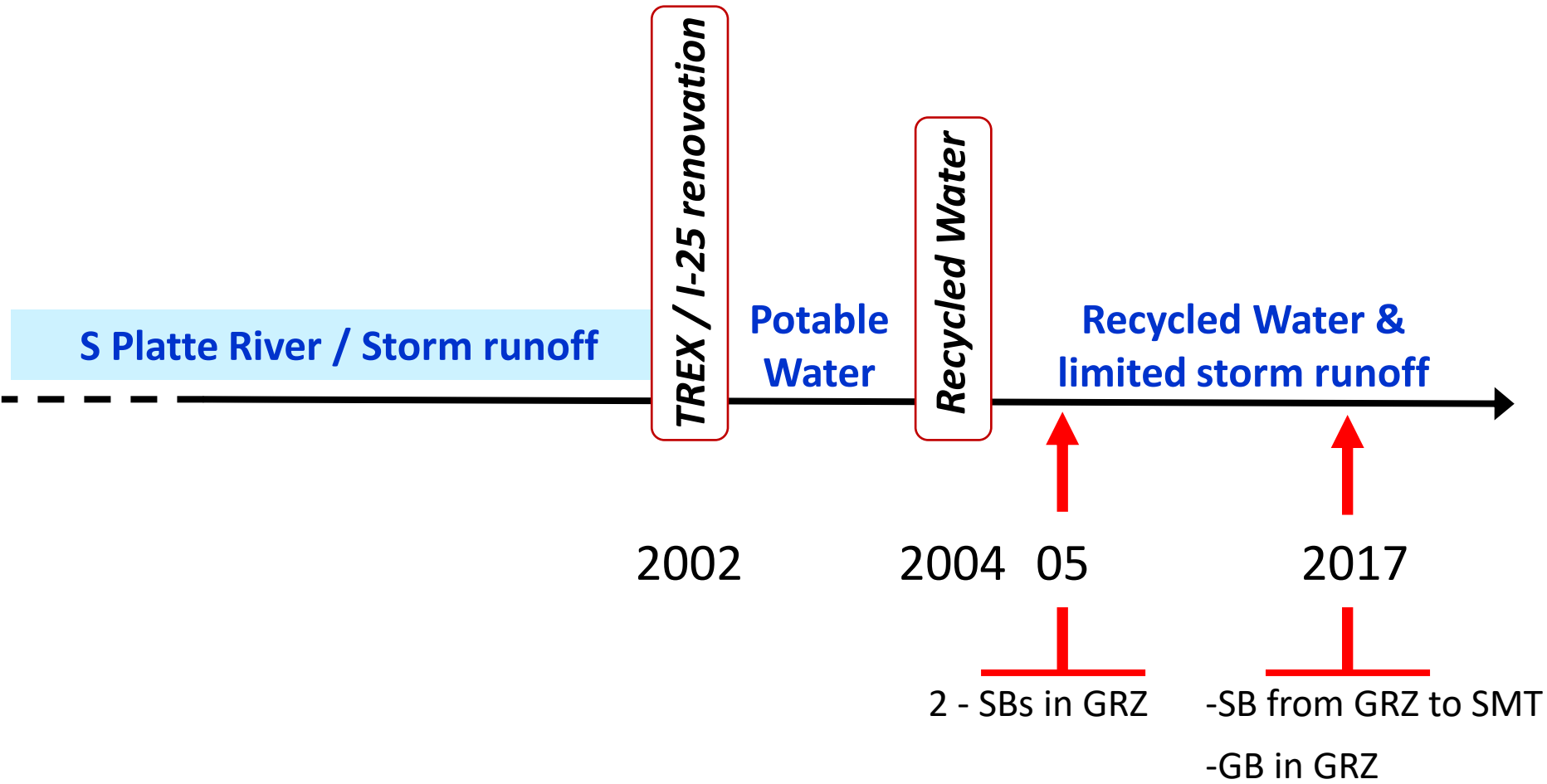
Water Quality – Findings

- **Nutrients**
- **Biological factors**
- **Salt**
- **Profiles**

Issues/Challenges

- **Sustain uses**
- **Botulism**
- **Bluegreens**

Background – Water & Management



Background

Part 2: Cyanobacteria (Blue-Green Algae) Control Mechanisms -White Board Series ...

Watch later

Consistent Epilimnetic Circulation

MORE VIDEOS

Epilimnion

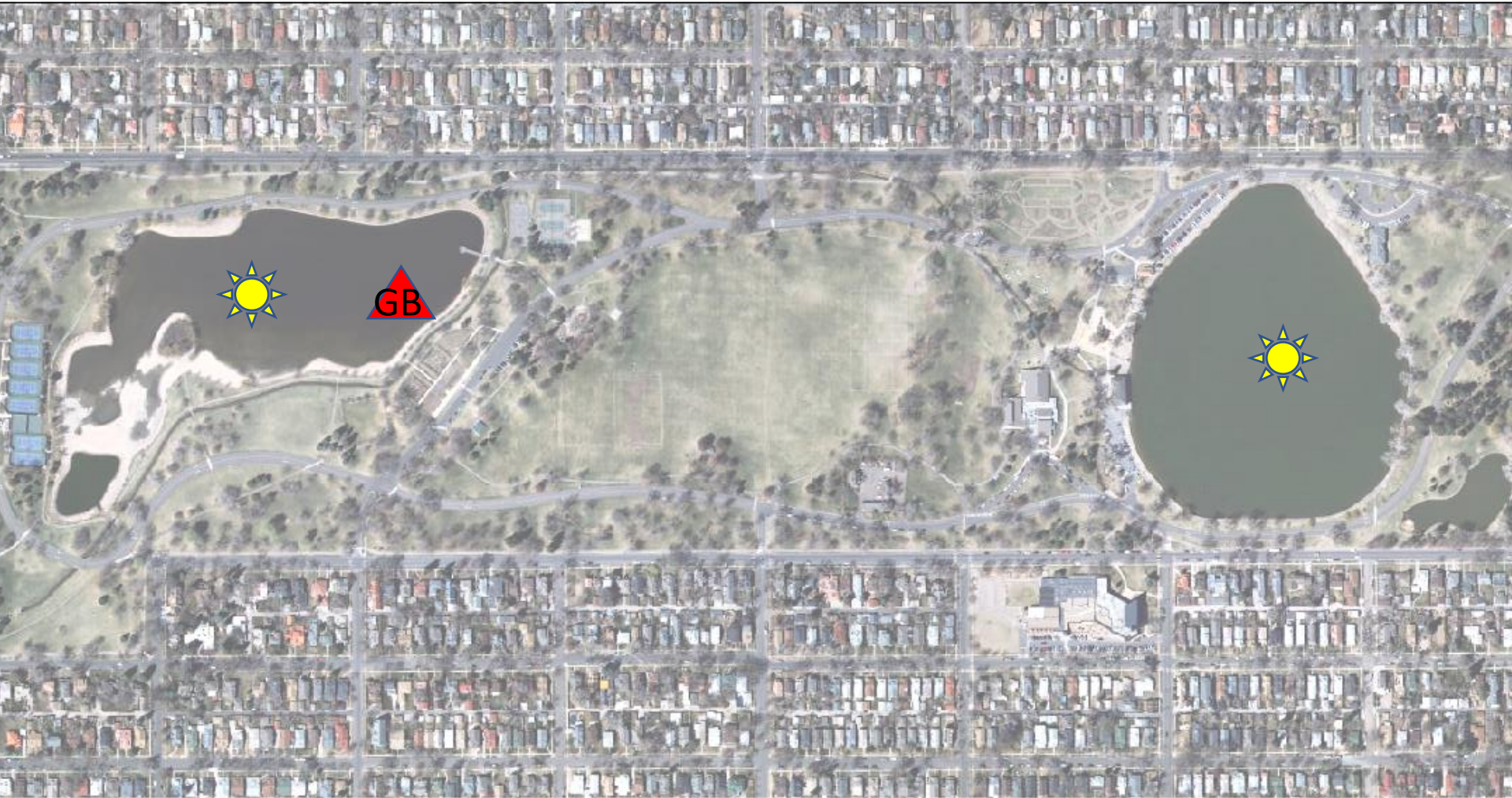
Hypolimnion

3:38 / 4:23

CC

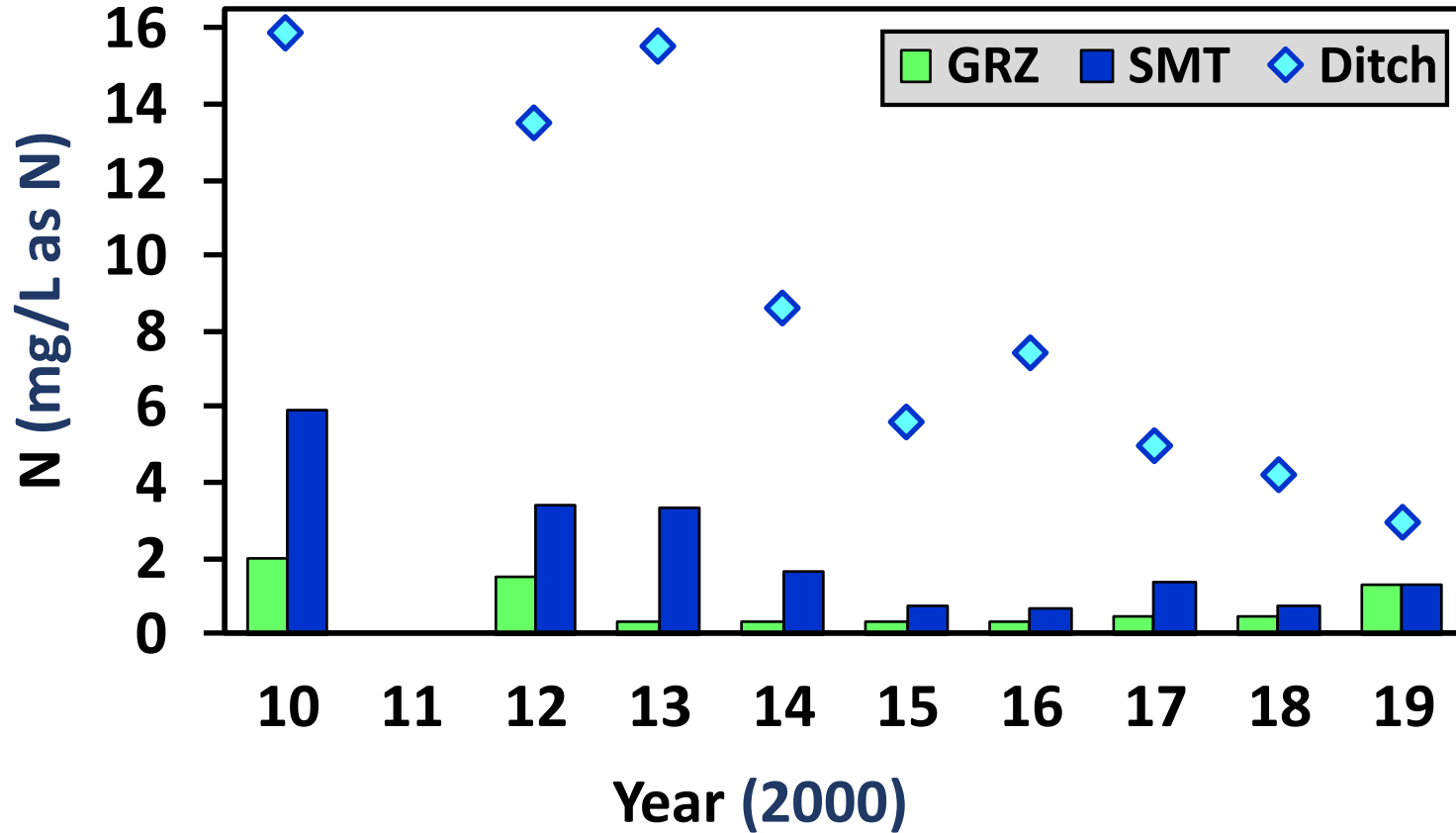
Management Actions - 2017

Background

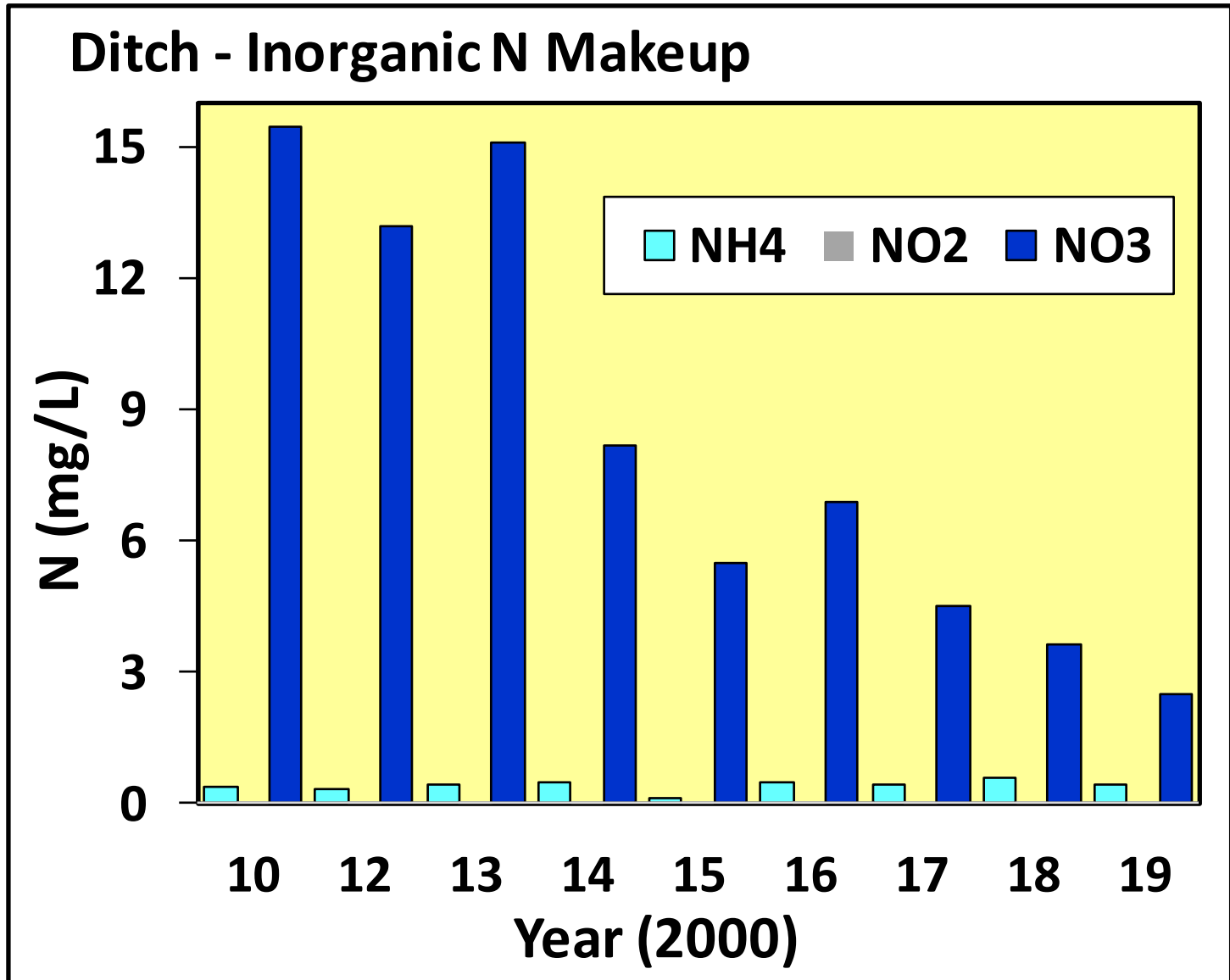


Nutrients

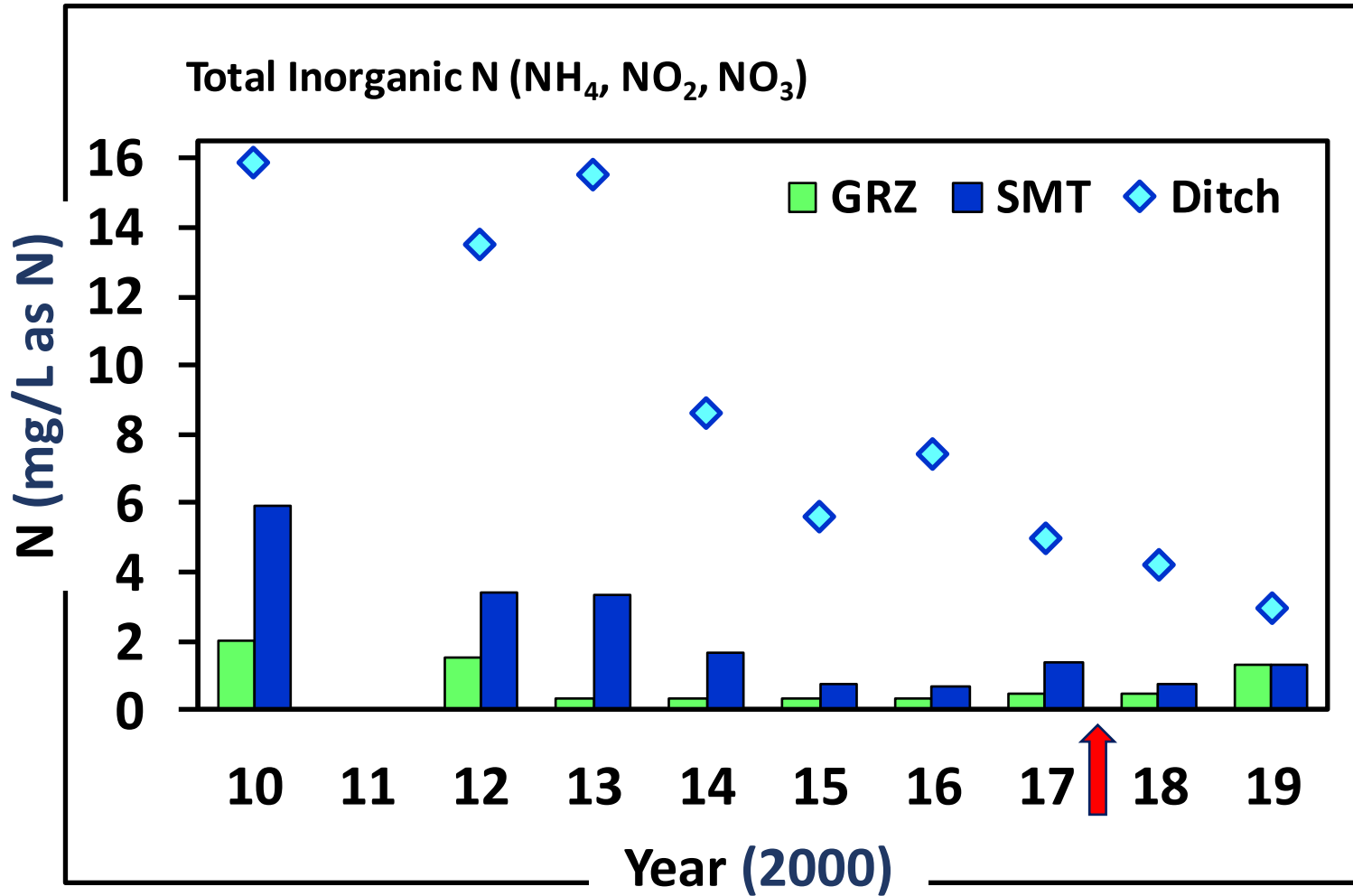
Total Inorganic N (NH_4 , NO_2 , NO_3)



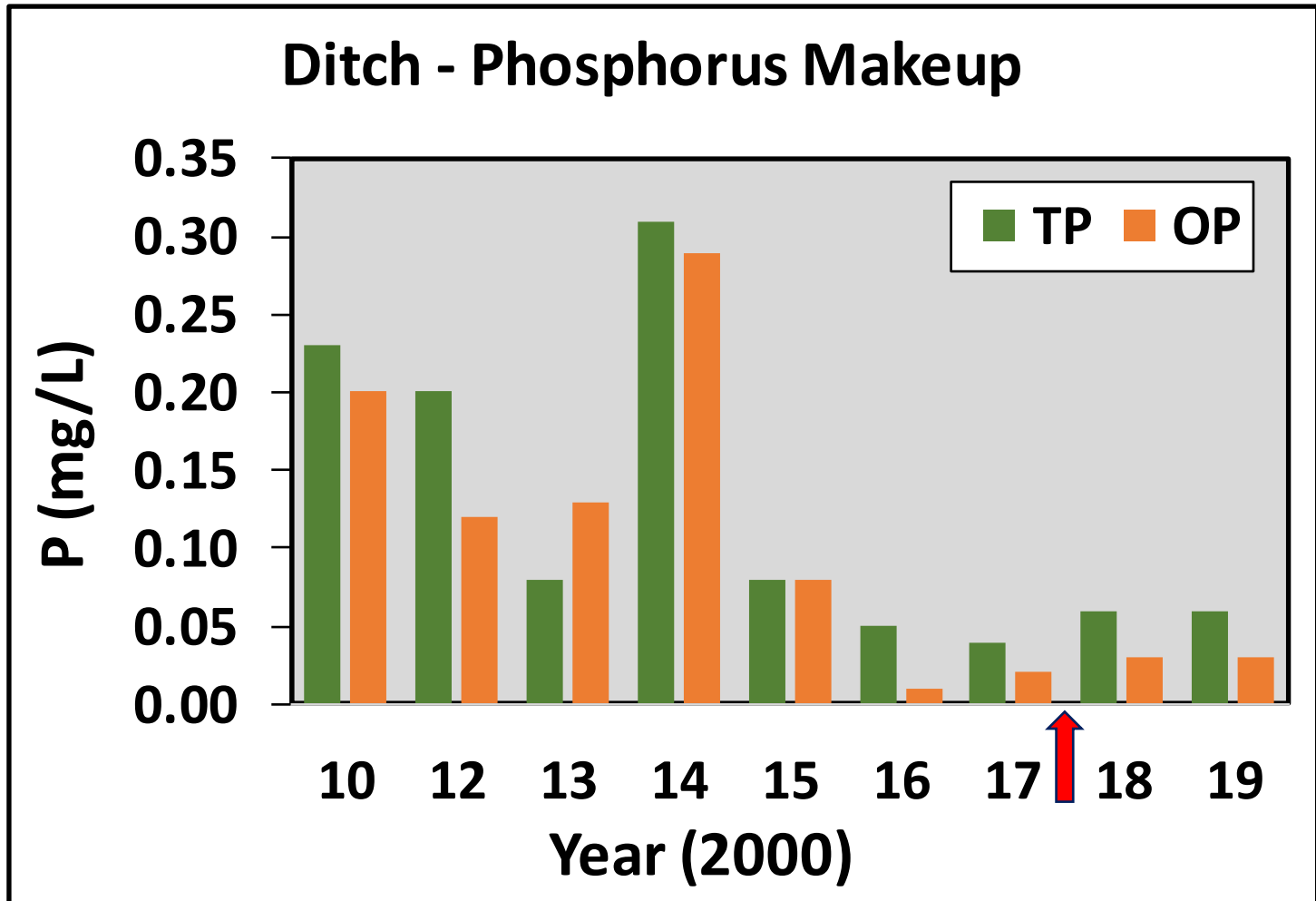
Nutrients



Nutrients

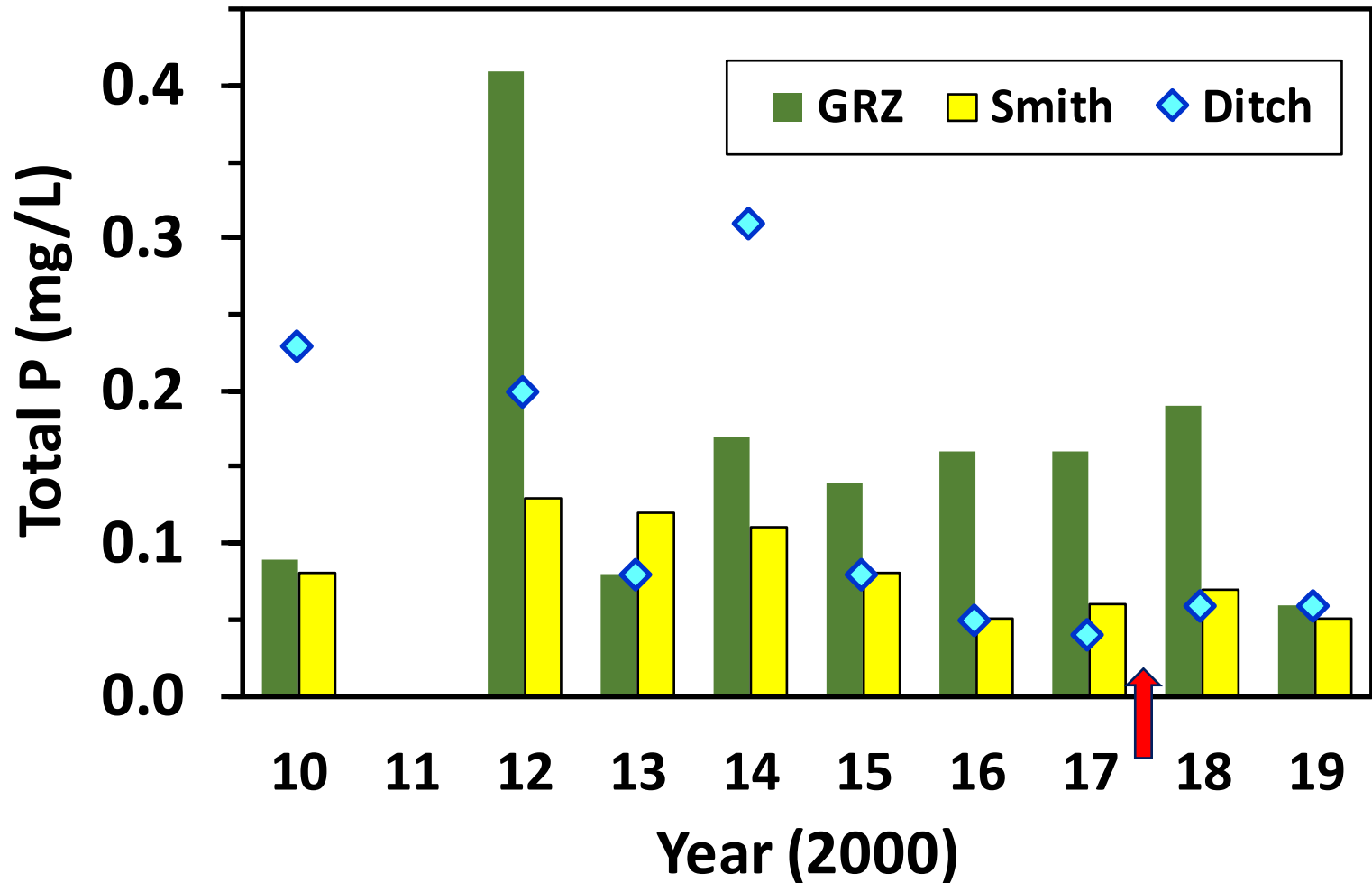


Nutrients

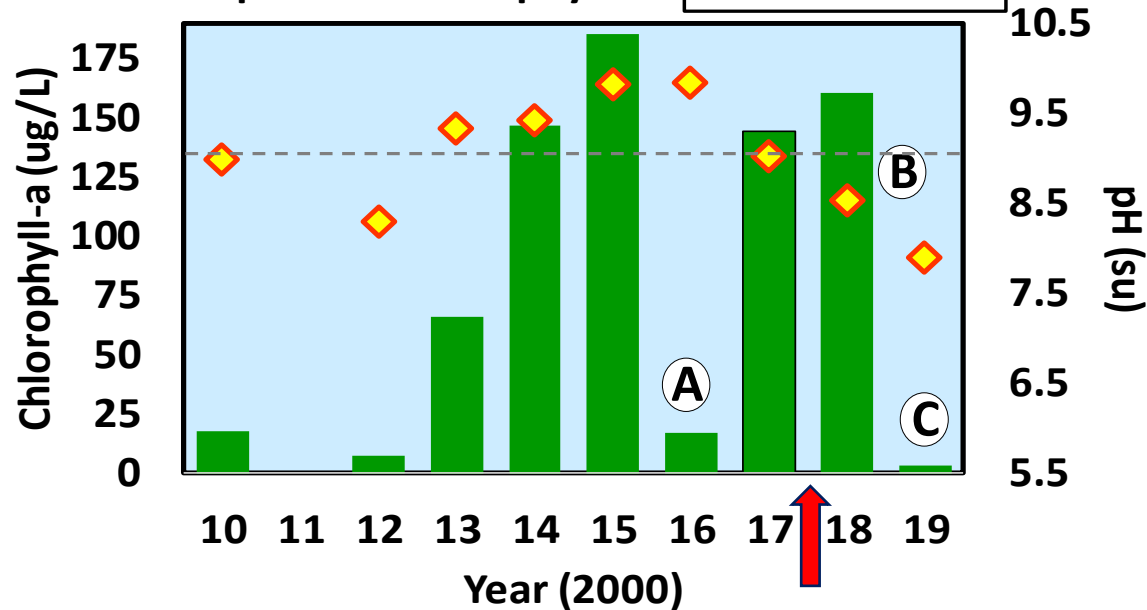


Nutrients

Total Phosphorus - Wash Park



Grasmere - pH and Chlorophyll-a



A) possibly recent chemical treatment

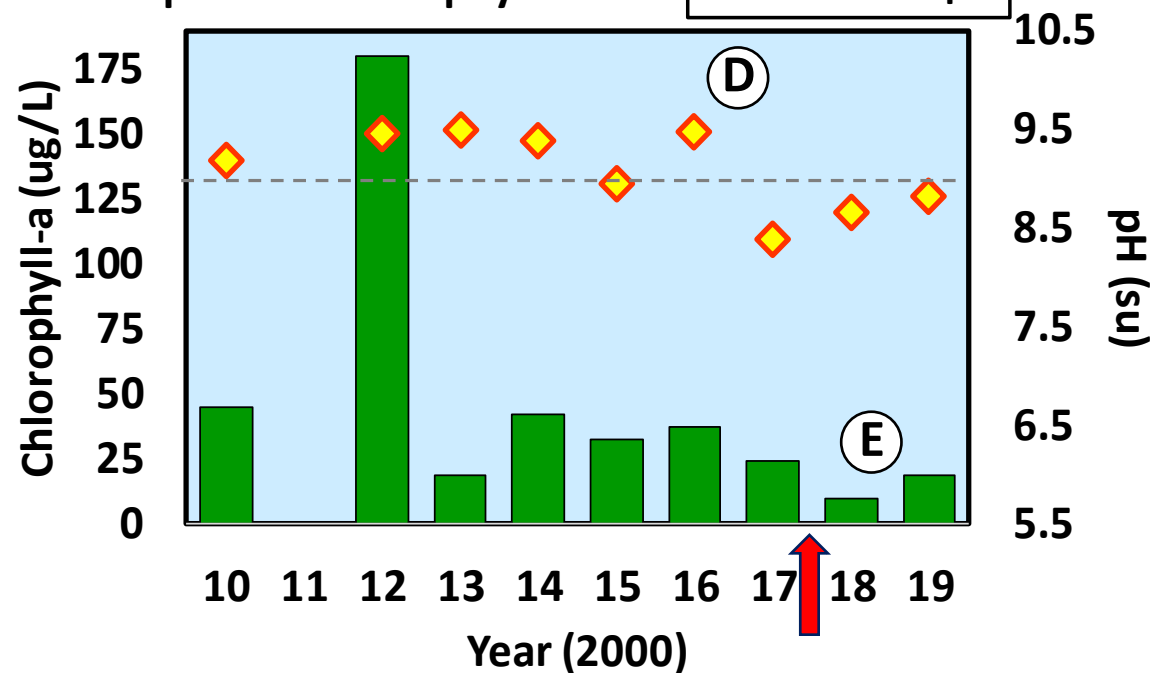
B) pH trending down

C) rooted veg & filamentous algae

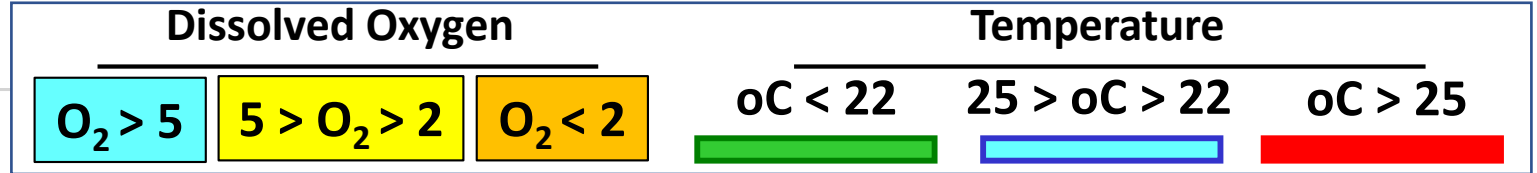
D) dropped below WQ standard

E) slight dip in chloro, but pH trending up . . . time will tell

Smith - pH and Chlorophyll-a



GRASMERE



Depth (ft)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
	Aug 19	Jun 22	Aug 16	Aug 12	Jul 24	Jul 27	Jul 14	Jul 17	Jul 30	Aug 1
1	Cyan	Yellow	Orange	Cyan	Cyan	Cyan	Cyan	Cyan	Cyan	Yellow
2	Cyan	Yellow	Orange	Cyan	Cyan	Cyan	Cyan	Cyan	Cyan	Yellow
3	Cyan	Yellow	Orange	Cyan	Cyan	Cyan	Cyan	Cyan	Cyan	Yellow
4	Cyan	Yellow	Orange	Cyan	Cyan	Orange	Cyan	Yellow	Cyan	Yellow
5	Cyan	Yellow	Orange	Cyan	Cyan	Orange	Orange	Yellow	Cyan	Yellow
6	Cyan	Yellow	Orange	Yellow	Yellow	Orange	Orange	Orange	Cyan	Yellow
7	Yellow	Orange	Orange		Orange	Orange	Orange		Yellow	Orange
8										Orange



SMITH

Dissolved Oxygen

Temperature

$O_2 > 5$

$5 > O_2 > 2$

$O_2 < 2$

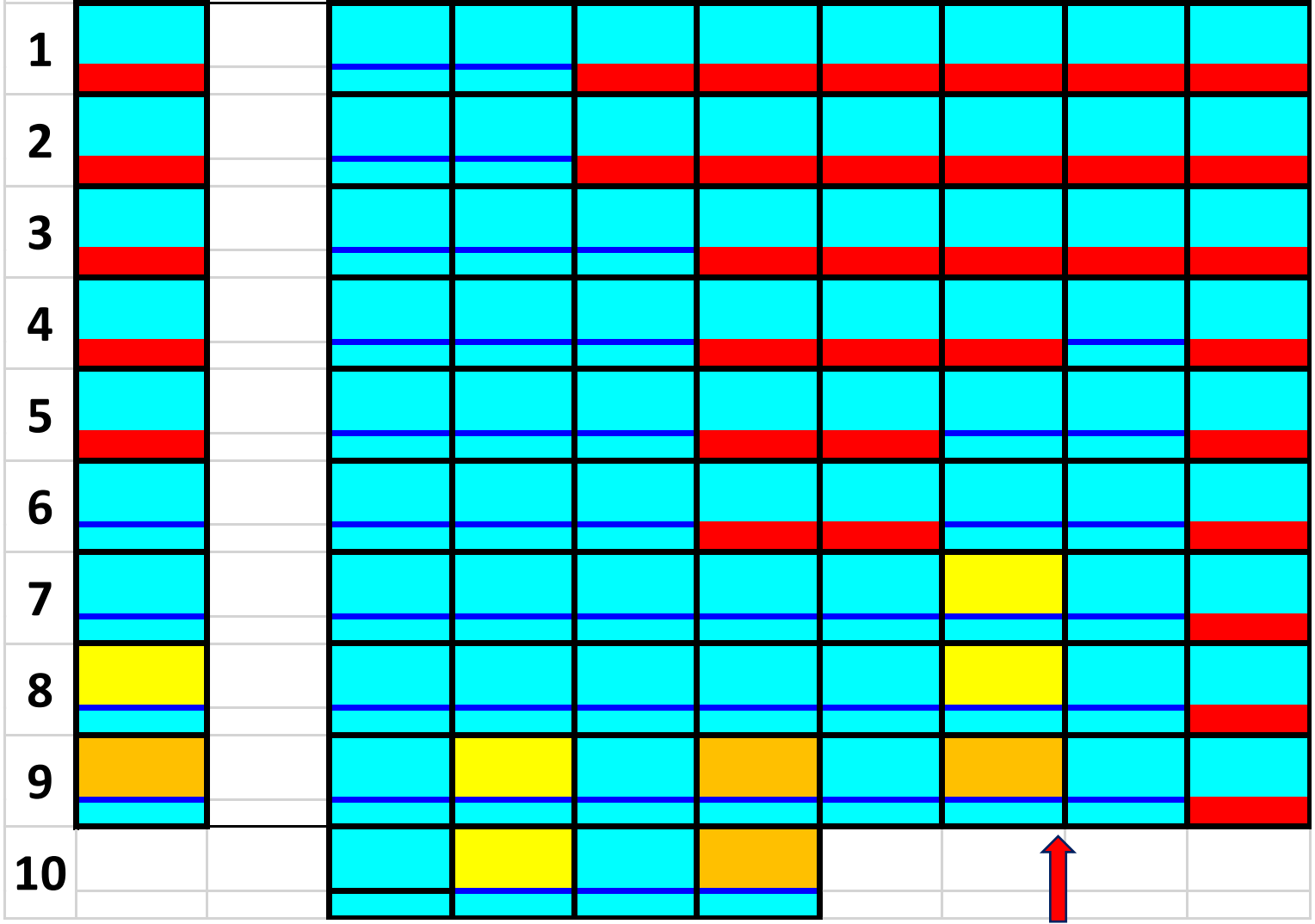
$oC < 22$

$25 > oC > 22$

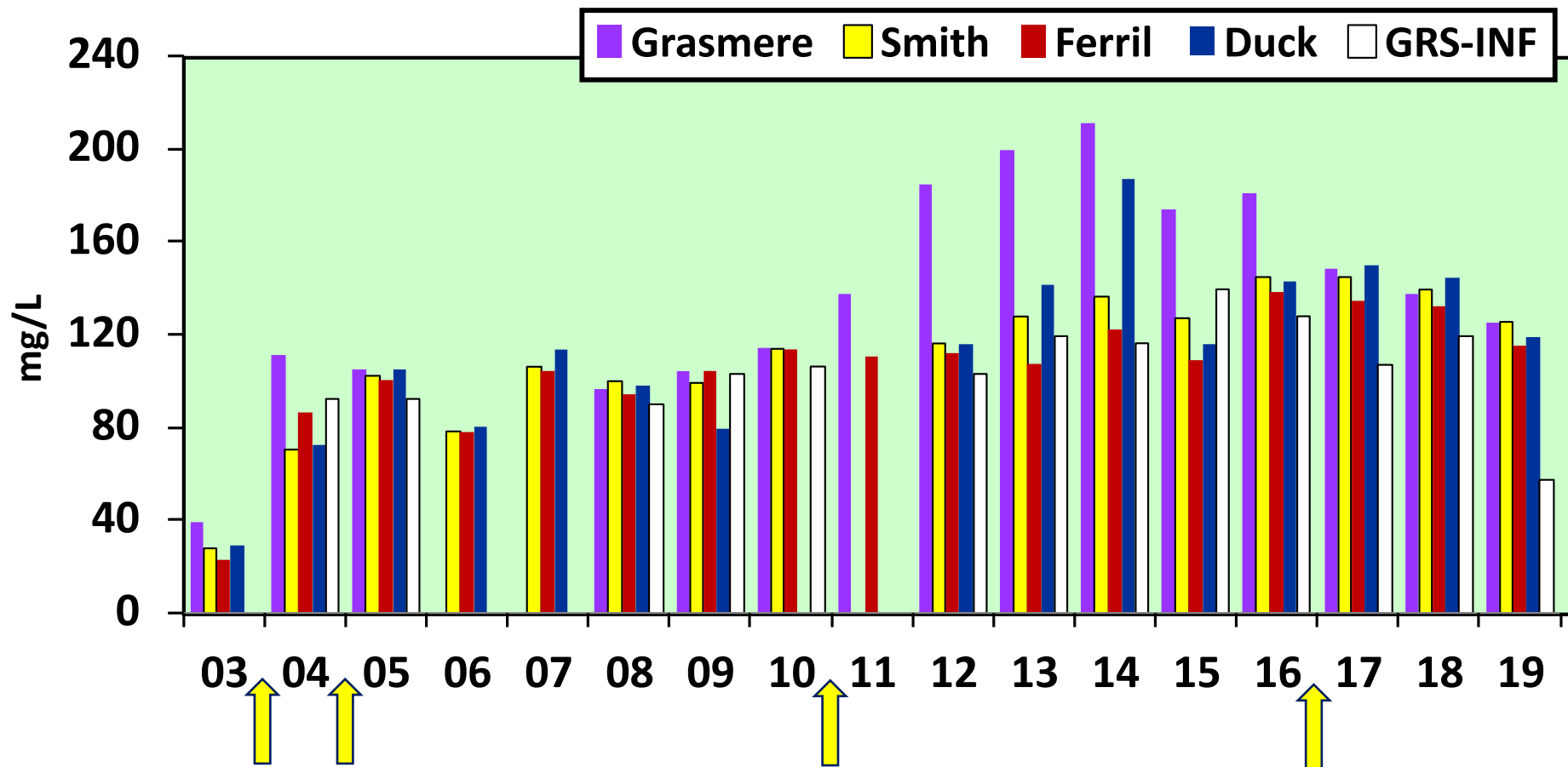
$oC > 25$

Depth(ft)

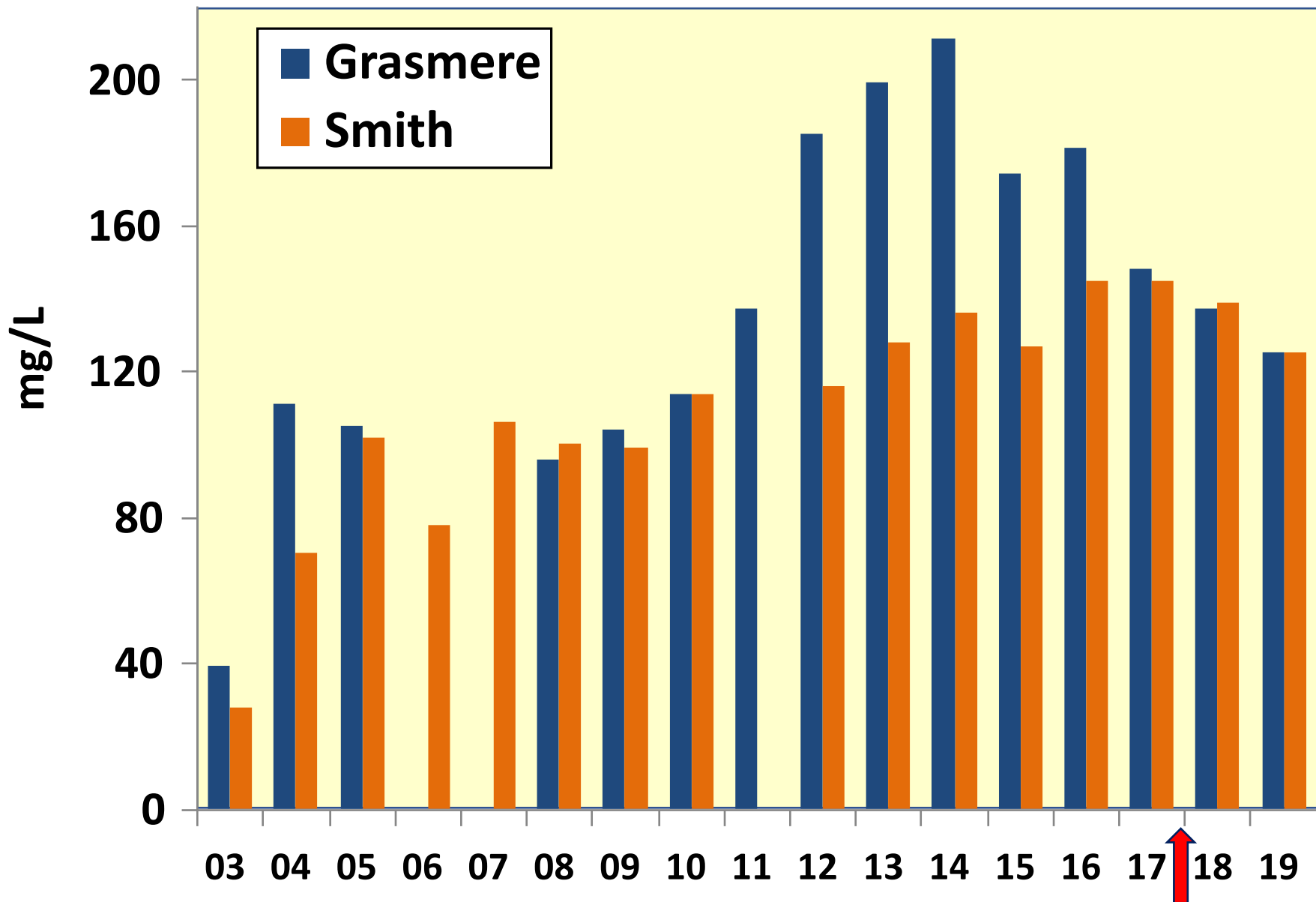
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aug 19	Jun 22	Aug 16	Aug 12	Jul 24	Jul 27	Jul 14	Jul 17	Jul 30	Aug 1



Chloride – City Ditch Lakes (2003 – 2019)



Chloride - Washington Park Lakes (2003 – 2019)



Did it Help?

Nutrients

- wastewater treatment more important, but mixing water SHOULD help
- Total-P in 2019 could indicate impact (decrease)

Productivity

- Slight improvements, but too early to tell

Salt

- Slight improvements, but may be attributable to other factors (*ditch chloride levels*)

Profiles

- Slight improvements, but may be attributable to other factors (*ditch chloride levels*)

Issues

Avian Botulism

- Steady problem, but not too bad in 2019
- *Need to maintain water quality at as high a level as possible (control pH, avoid anoxic conditions, remove organic source)*

Bluegreen Algae

- Both Grasmere and Smith have had blooms in the past, continued to a degree in 2019.
- *Water movement is key – source water, SBs, aeration*

Salt

- Slight improvements, but may be attributable to other factors (*ditch chloride levels*)
- *Trending downward, track and consider options if needed*

Issues (continued)

Algae

- Will always be a challenge
- *Regularly assess and take actions as needed;*
- *Accept some of it as an important component in the system*

Support info

chloride

epa guidance see: <http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm>

Canadian WQ Guideline: <http://ceqg-rcqe.ccme.ca/download/en/337>

	EPA	CWQG		
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acute:	860	640		
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chronic:	230	120		
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D.magna:		621		
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D. ambigua (SSD method):		259		
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mussel/clams most sensitive

48hr EC₅₀

10 day EC₁₀

*most impacts on cladocerans
start in the 400's or higher