

**Jennifer Jespersen, CLM
Ecological Instincts**

**Webber, Threemile &
Threecornered Pond
Tri-Watershed-Based
Management Plan**

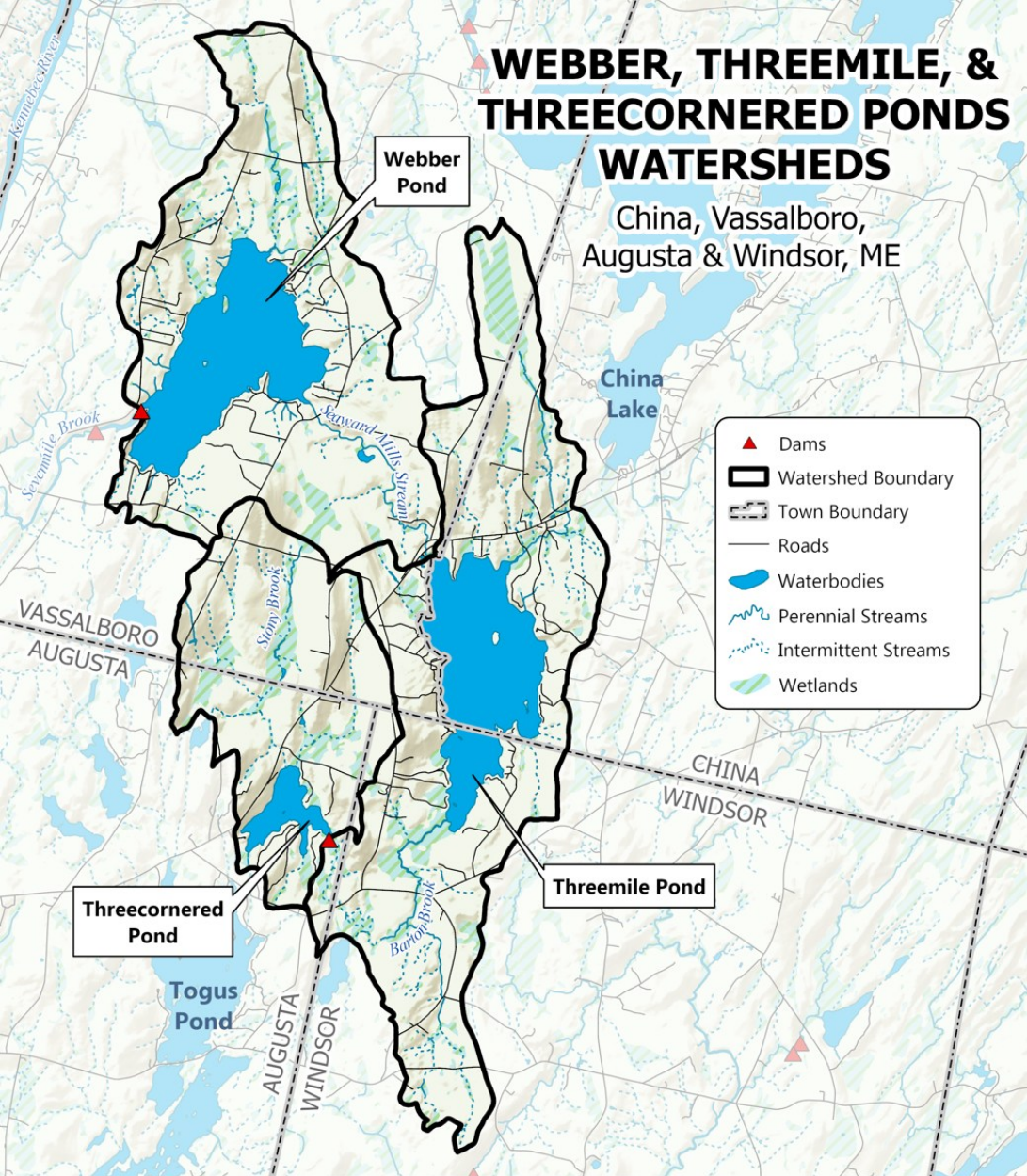


This project was funded in part by the United States Environmental Protection Agency under Section 604(b) of the Clean Water Act in partnership with the Maine Department of Environmental Protection. Funds are administered by the Kennebec County Soil & Water Conservation District.

Tri-Watershed

WEBBER, THREEMILE, & THREECORNERED PONDS WATERSHEDS

China, Vassalboro,
Augusta & Windsor, ME



- ❖ 22.5 square miles
- ❖ 4 Municipalities
(China, Windsor, Augusta & Vassalboro)
- ❖ Flows to Kennebec River
via Sevenmile Brook
- ❖ Webber & Threemile
Pond are “Impaired”
Lakes

Major Components of the Project



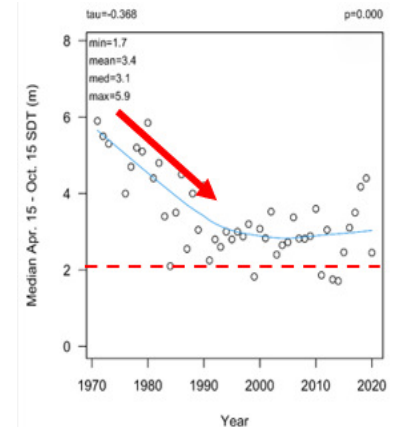
Water Quality Monitoring



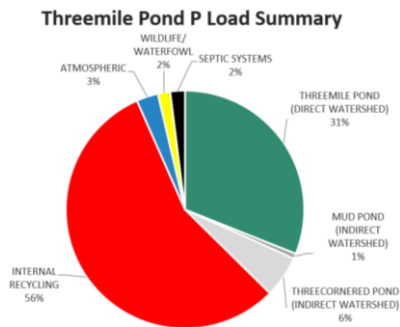
Sediment Sampling & Analysis



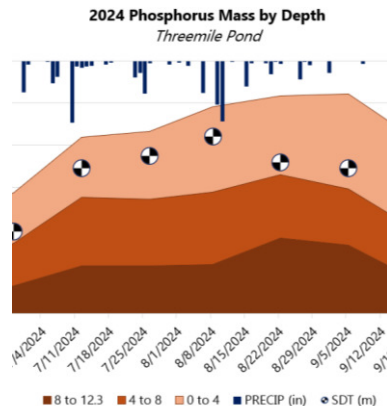
Watershed Assessment



Water Quality Trend Analysis



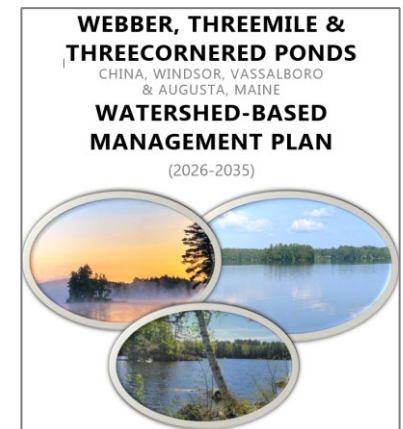
Watershed Modeling



Internal Loading Analysis



Public Outreach/Meeting



Tri-WBMP Development

Webber, TMP & TCP Comparison

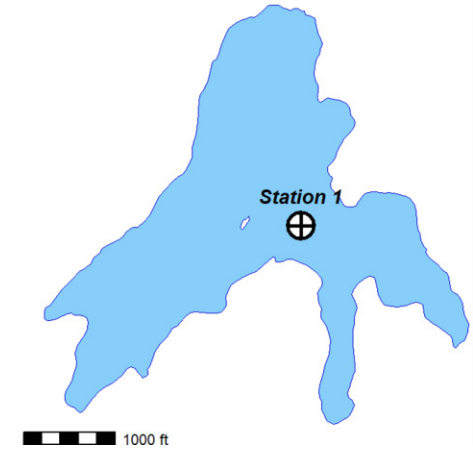
Webber
Pond



Threemile
Pond



Threecornered Pond



Lake/Watershed Characteristics	Webber Pond	Threemile Pond	Threecornered Pond
Drainage Area (mi ²)	8.1	9.3	5.1
Lake Area (acres)	1,233	1,131	178
Maximum Depth (m)	14	12.3	10
Average Depth (m)	5.3	5.5	3.0
Flushing Rate (flushes/yr)	1.4	1.0	3.2

Threemile Water Quality Data

Water Clarity 1977-2025 (49 yrs of data)

- ❑ **Total Phosphorus** 1977-2025 (47 years of data)
- ❑ **Temperature & Dissolved Oxygen** 1978-2025 (46 years)
- ❑ **Chlorophyll-a** 1978-2025 (44 years of data)
- ❑ **Other Chemistry** 1978-2025 (25-32 years of data)



Photo: Adrian Jones
UMCES/AN

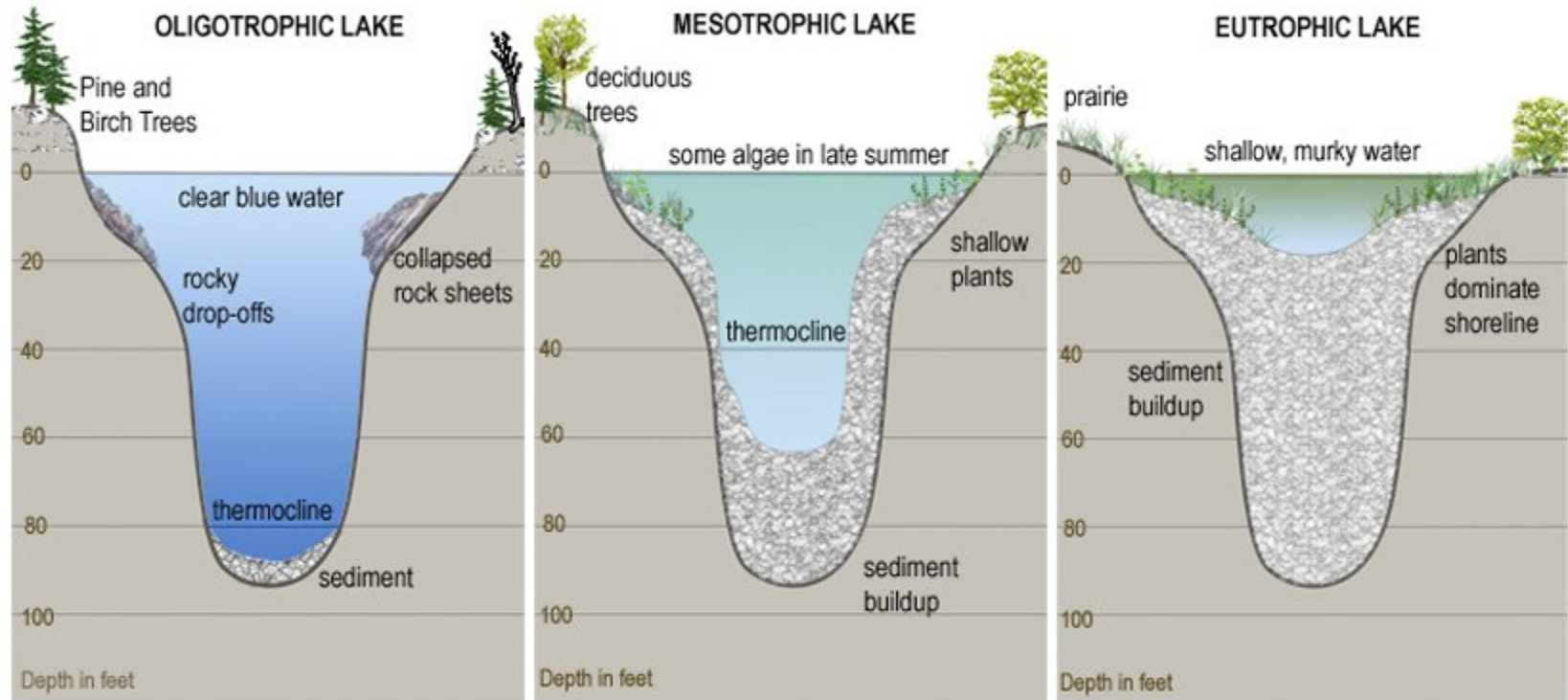


Water Quality Analysis- TMP

Timeframe	Water Clarity (m)	Chl-a (ppb)	Total P (ppb)	AF	MAD	Surface Temp	Alkalinity	Conductivity	Color	pH
Historical Trend (1977-2025)									No trend	No trend
10-Year Trend (2016-2025)	No trend	No trend	No trend	n/a	No trend	No Trend	No trend	No trend	n/a	No trend

Pond	Water Clarity (m)	Chl-a (ppb)	Total P (ppb)	AF	MAD	Surface Temp	Alkalinity	Conductivity	Color	pH
Webber Pond		No Trend	No Trend	No Trend					No Trend	No trend
Threemile Pond									No Trend	No trend
Threecornered Pond	No Trend	No Trend		n/a	No Trend		No trend		No Trend	No trend

Trophic State of Lakes



Images from: <http://www.rmbel.info/reports/Static/trophicstates.aspx>

Control the P, Control the Algae

EXCESS PHOSPHORUS (P)

- ❖ Phosphorus (P) is a nutrient – feeds algae
- ❖ The “limiting nutrient” in freshwater lakes
- ❖ Measured in very small amounts (parts per billion)



2020 Threemile Pond
(Source: TMPA Facebook page)

Effects of Too Much P

Excess algal growth



Less clear water



Oxygen depletion



Internal loading



Algal blooms



Courtesy of Lisa Branch
The surface of Georges Pond in Franklin get churned up by a jet ski during an severe algae bloom in the pond in June 2018.
Property owners on the pond are exploring ways to minimize the threat of such blooms.

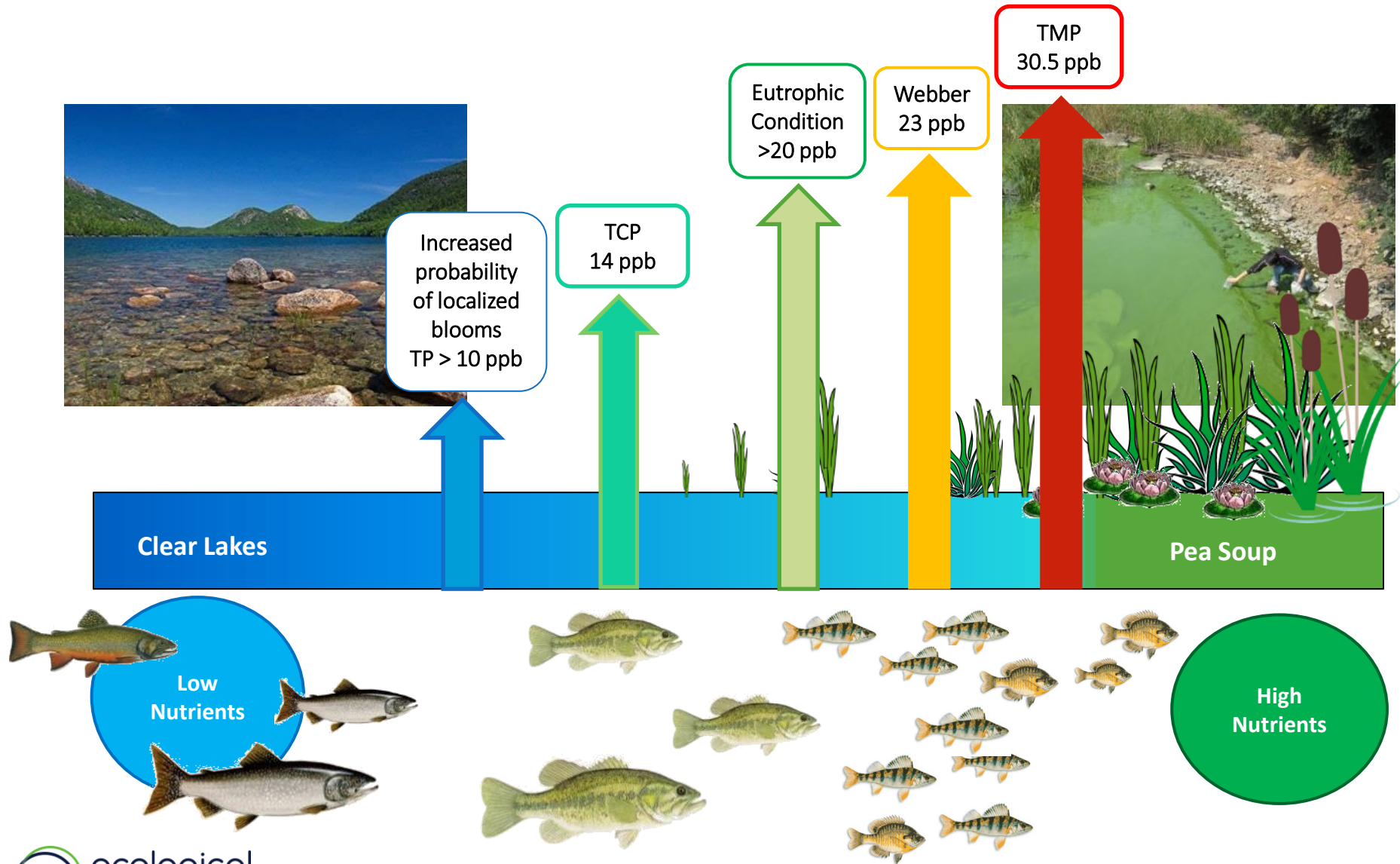
Algae Blooms & Toxins

- ✓ Loss of recreational and aesthetic value
 - ✓ Loss of property value
 - ✓ Threat to the potable water supply
 - ✓ Fish kills
 - ✓ Possibility of toxic algal blooms
-
- ❖ Cyanotoxins are toxins produced by blue-green algae
 - ❖ Algae blooms do not always produce toxins
 - ❖ 2014 study of 7 Maine lakes showed highest toxin concentrations in downwind scum



More Info at the Maine DEP Website:
<https://www.maine.gov/dep/water/lakes/algalbloom.html>

Trophic State & Phosphorus



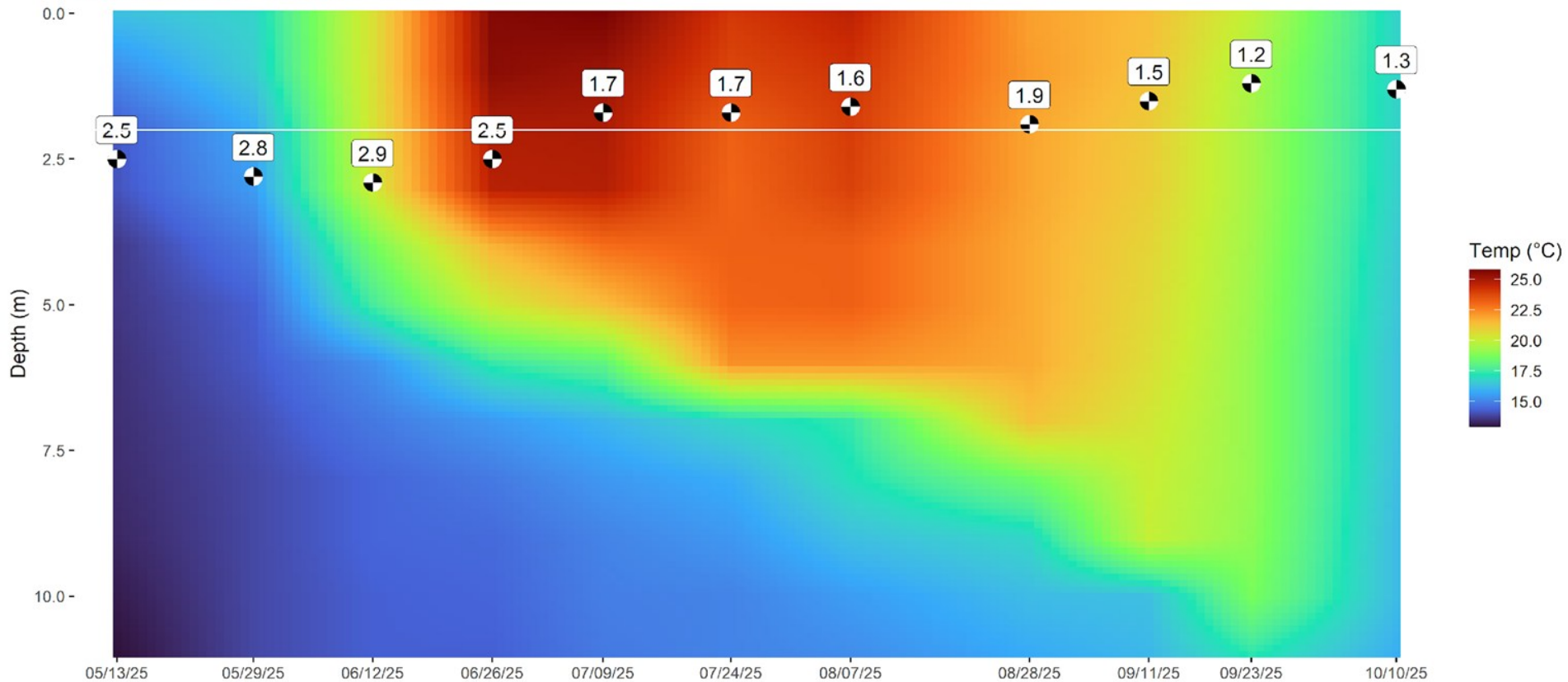
TMP is Highly Productive

Threemile Pond 10-Yr Average* (& Historical Avg)		ME DEP Trophic Status Indicators ¹⁴			Threemile Pond Classification (2016-2025)
		Oligotrophic	Mesotrophic	Eutrophic	
SDT (m)	1.8 (2.6)	> 8	4 – 8	< 4	Eutrophic
Chlorophyll-a (ppb)	26.1 (17.0)	< 1.5	1.5 – 7	> 7	Eutrophic
Total Phosphorus (ppb)	30.5 (28.0)	< 4.5	4.5 – 20	> 20	Eutrophic

- ❖ Threemile Pond is classified as **Eutrophic**
- ❖ Worse clarity, double Chl-a & higher TP than Webber

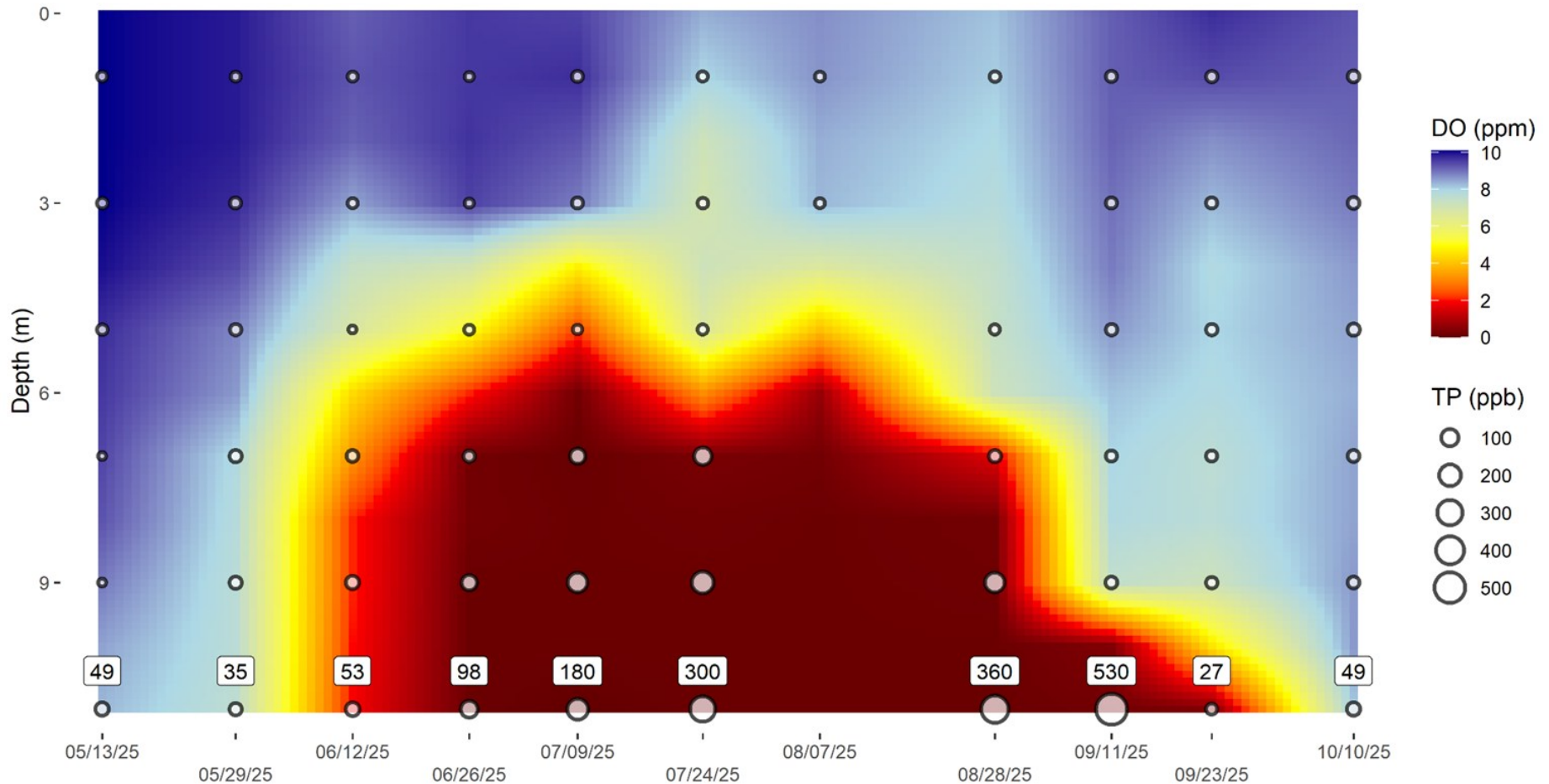
Temperature

Threemile Pond - Station 1 - 2025



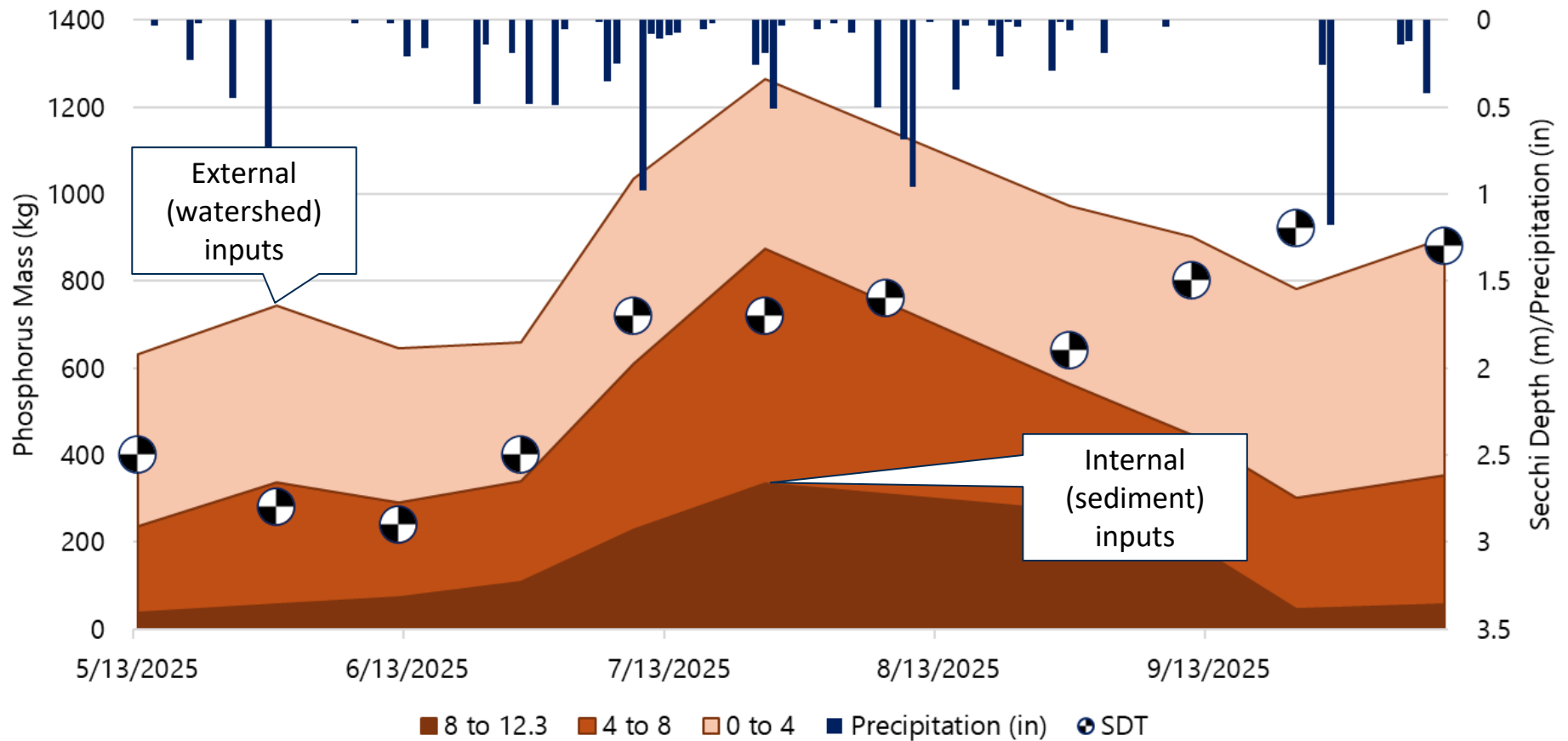
Dissolved Oxygen & Phosphorus

Threemile Pond - Station 1 - 2025

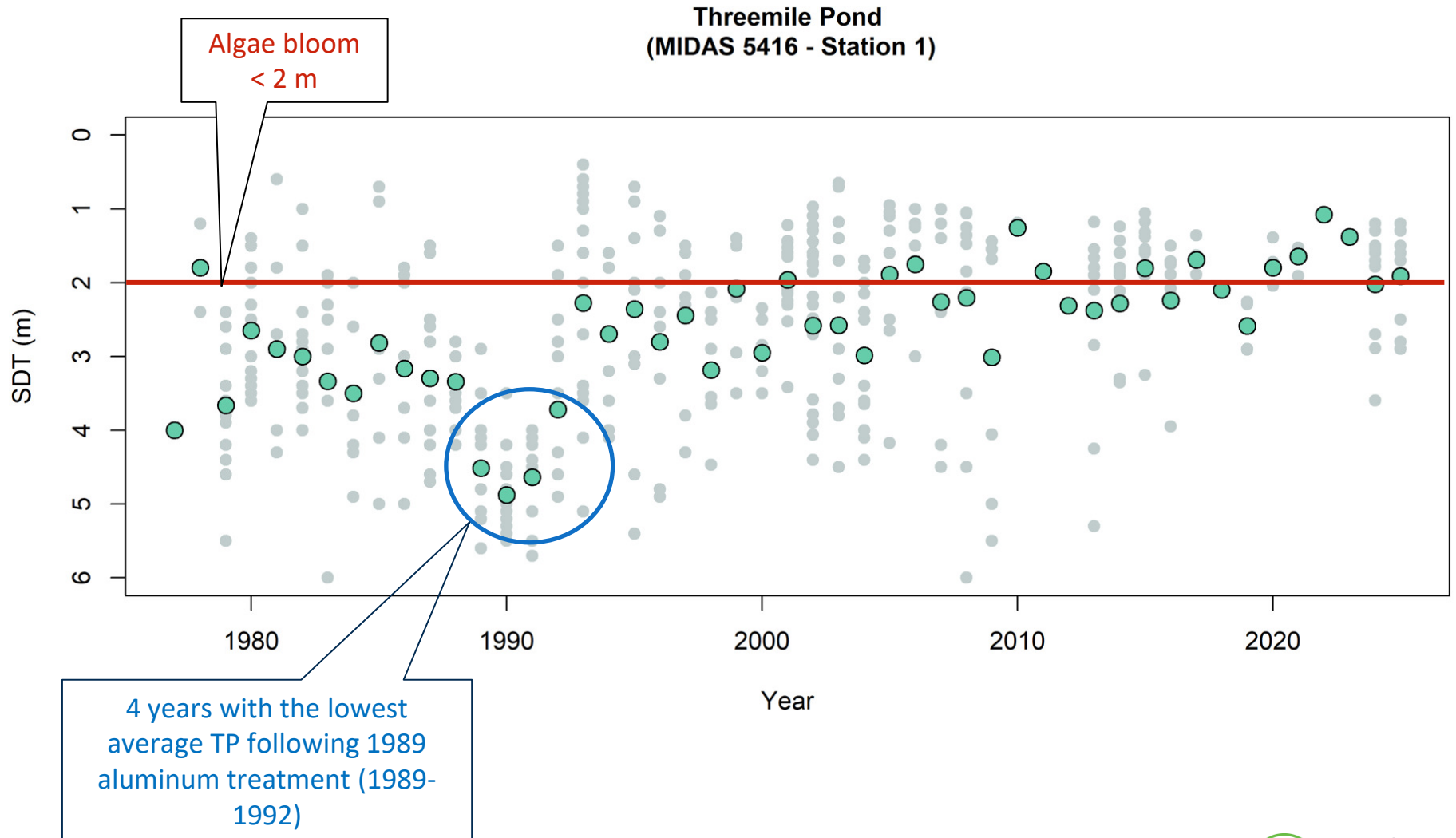


Phosphorus Mass

2025 Phosphorus Mass by Depth
Threemile Pond

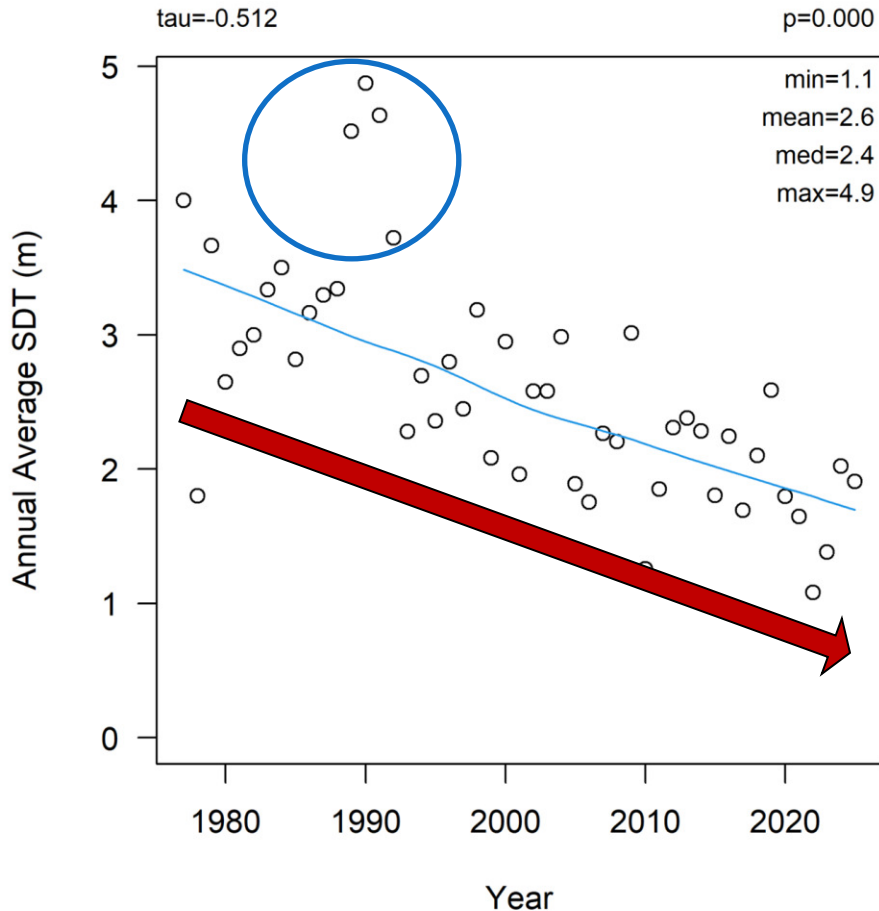


Water Clarity



Water Clarity Trend

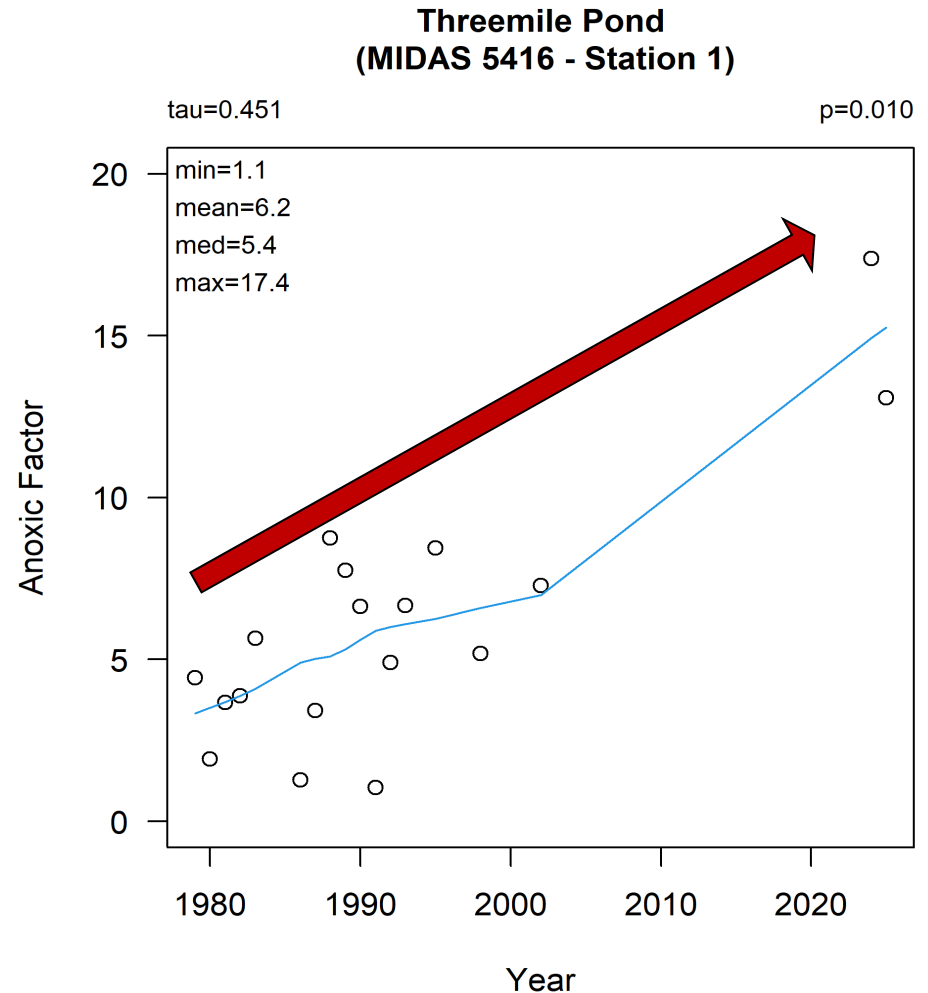
Threemile Pond
(MIDAS 5416 - Station 1)



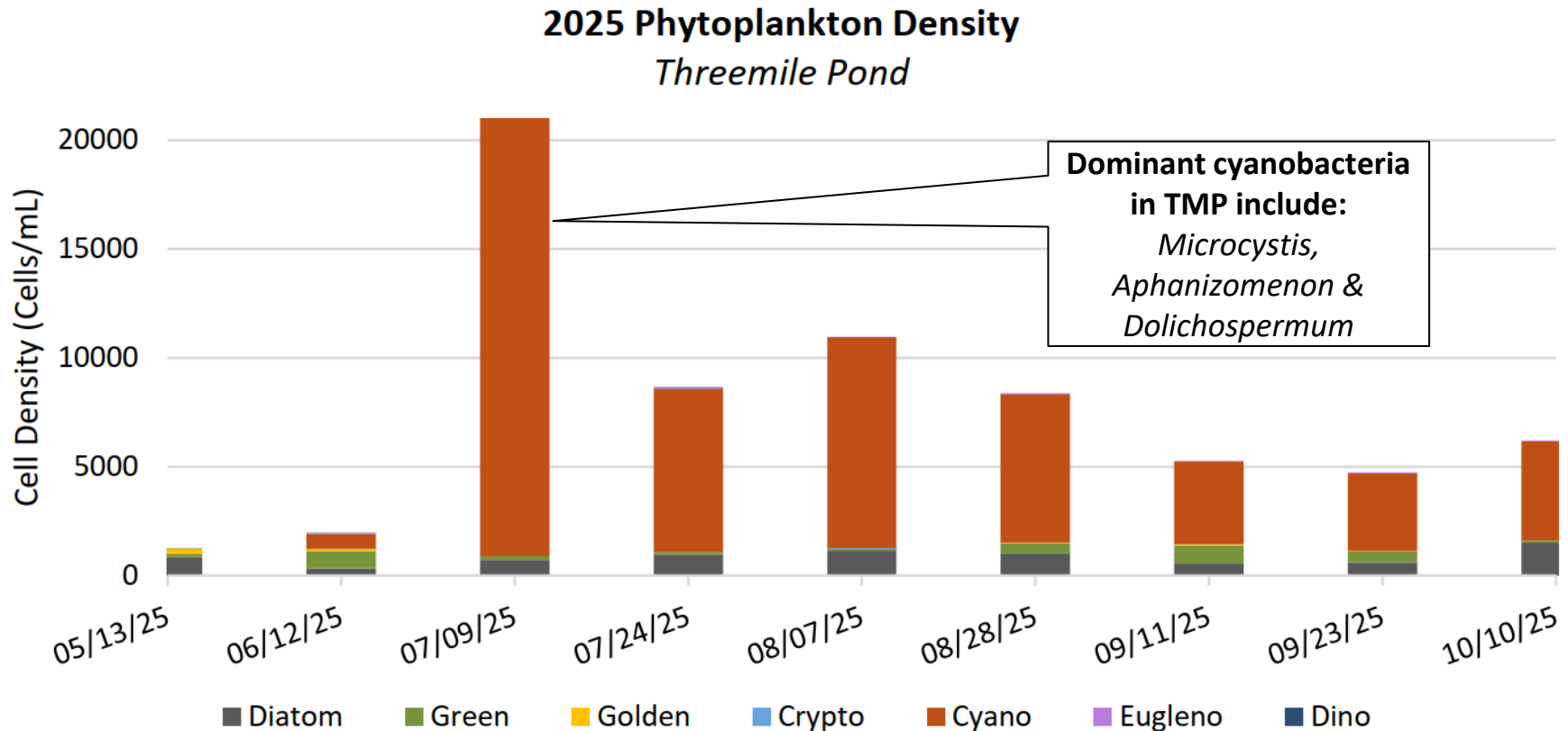
❖ **Significant decline** in water clarity over time

Anoxic Factor Trend

- ❖ **Anoxic Factor (AF) has increased significantly** in Threemile Pond
- ✓ Length of time the pond is anoxic
- ✓ Volume of anoxic water



2025 Plankton Analysis



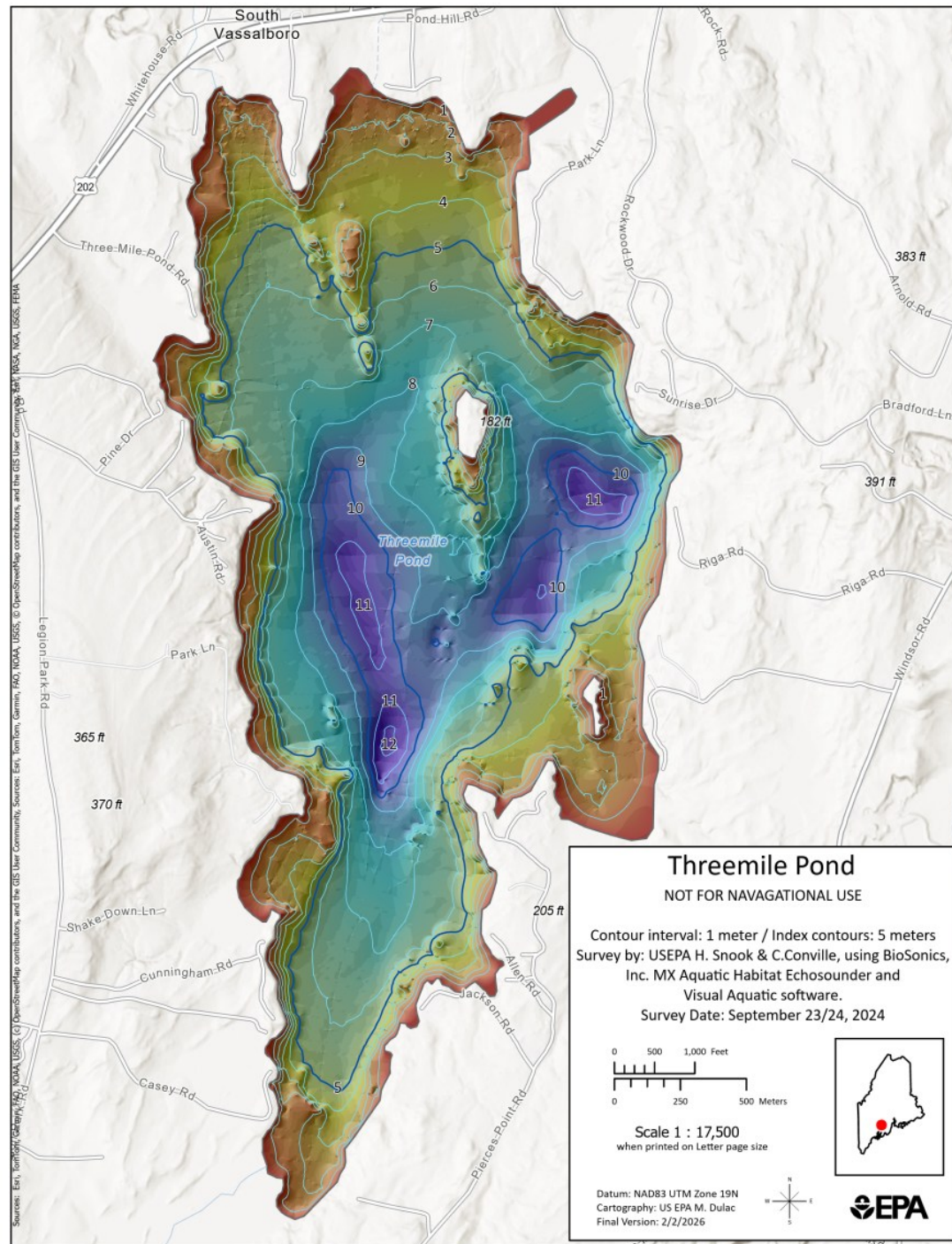
❖ All 3 dominant cyano species are **known toxin producers**

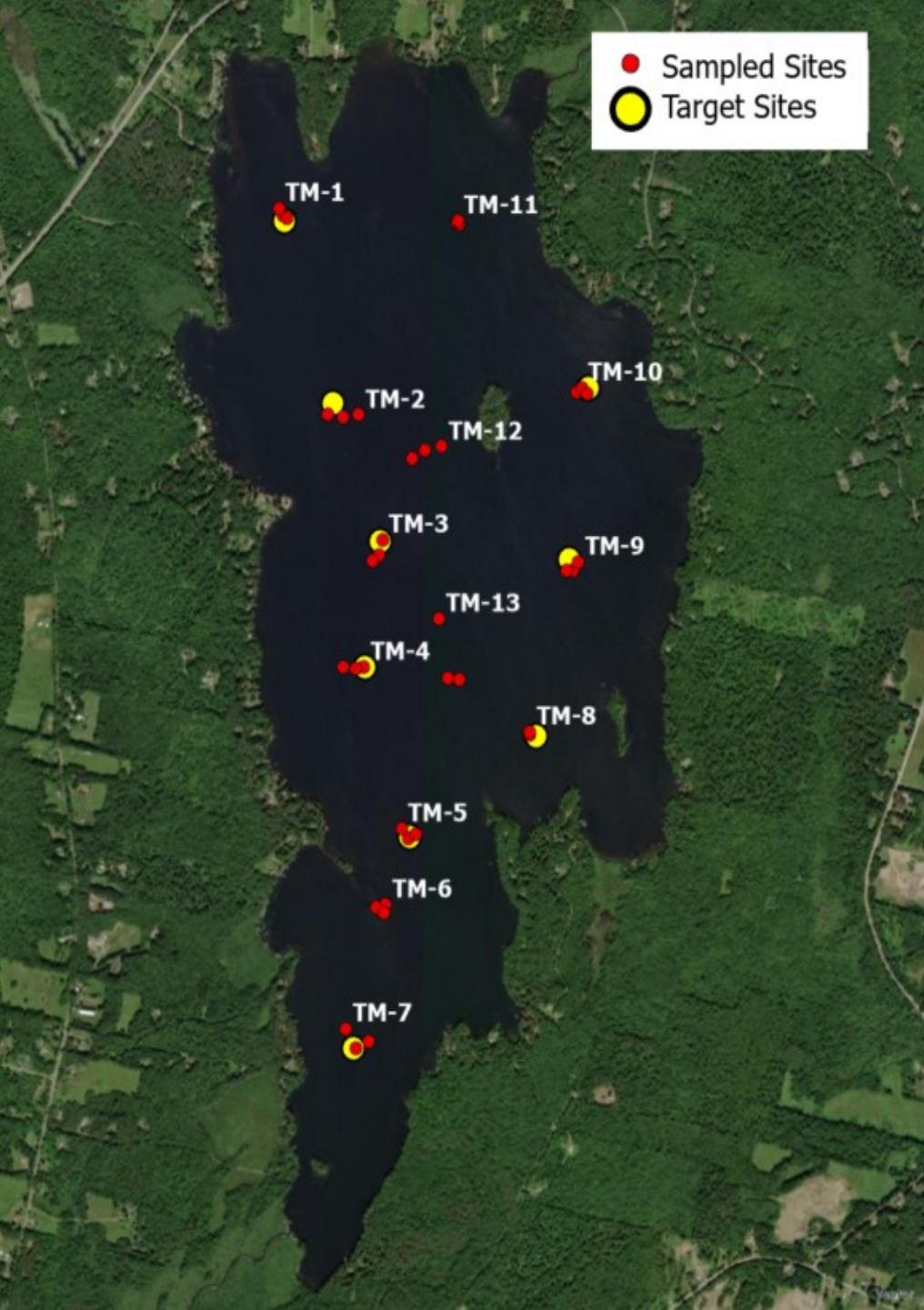
❖ If in doubt- stay out!

Bathymetry

❖ Updated Bathymetric Map (US EPA)

- ✓ More accurate than 1950s maps
- ✓ Useful for estimating P mass, volume of anoxic water, etc.



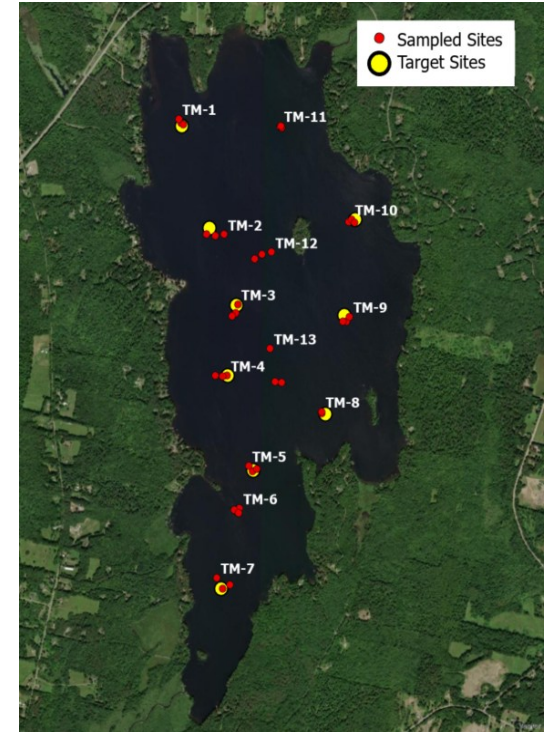
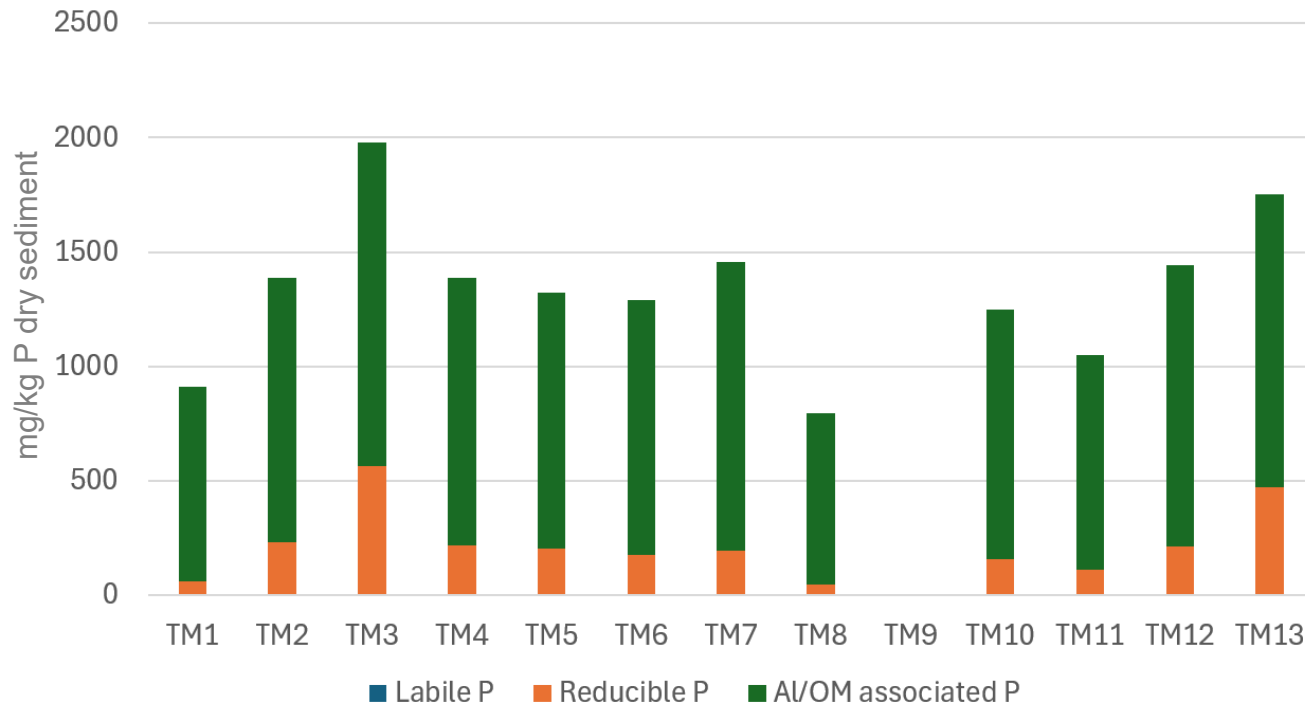


Sediments

- ❖ **How much available phosphorus is in the sediment?**
- ❖ **How does it differ by depth?**
 - ✓ 13 sampling locations (Maine DEP)
 - ✓ Processed at St. Joseph's College

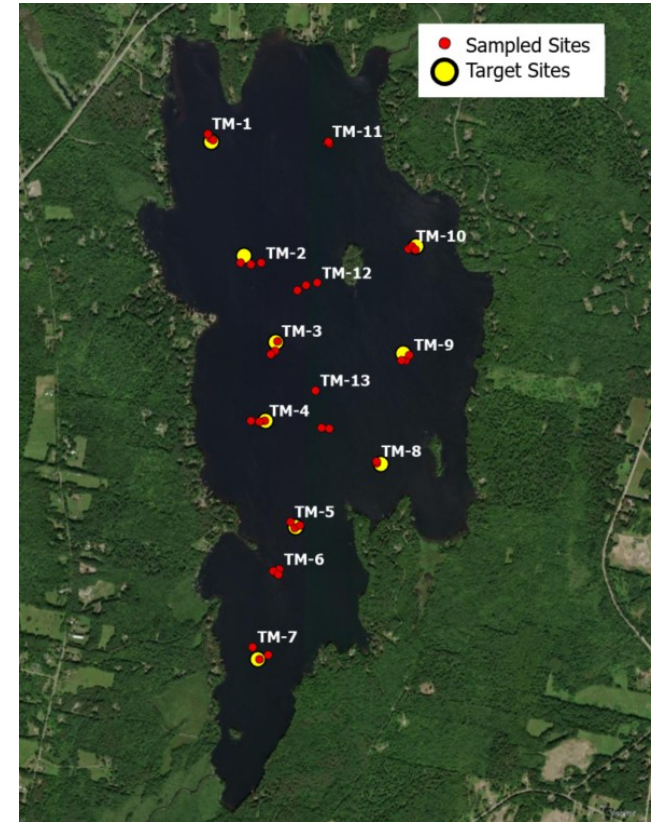
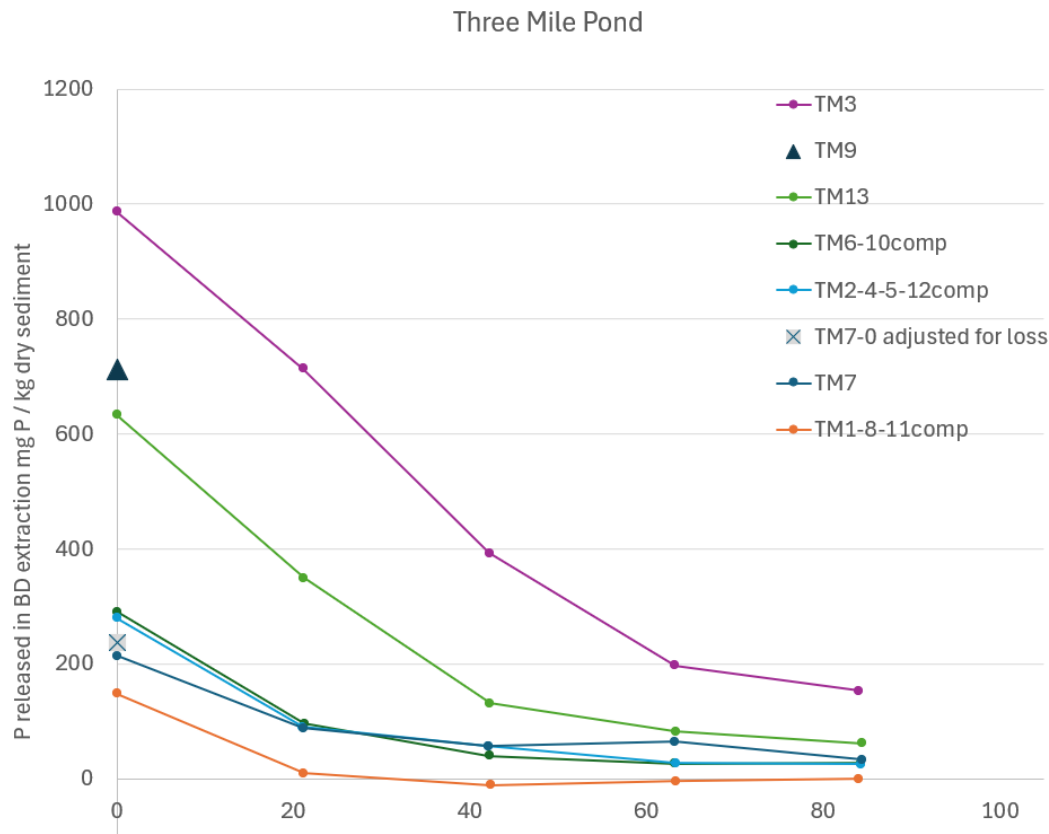
Sediment Results

P Speciation - Three Mile Pond



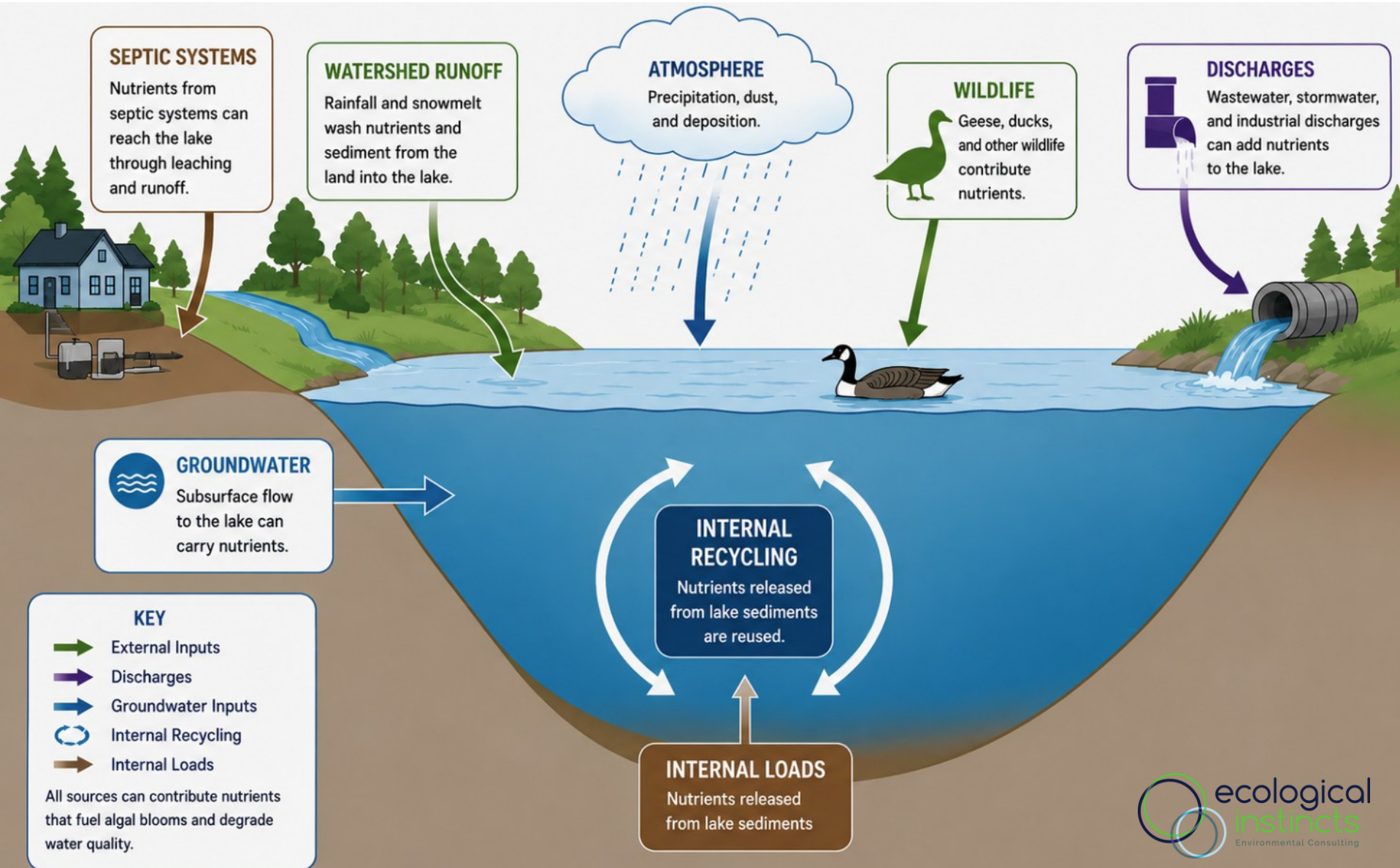
❖ **Deeper areas have more available phosphorus**

Sediment Results



- ❖ Alum assays indicate a much higher dose of aluminum is needed to inactivate P in the sediment compared to 1989 treatment
- ❖ Higher dose needed for areas >9 m

Where is P coming from?



"External" Sources of P



OCTOBER 2025

In partnership with:

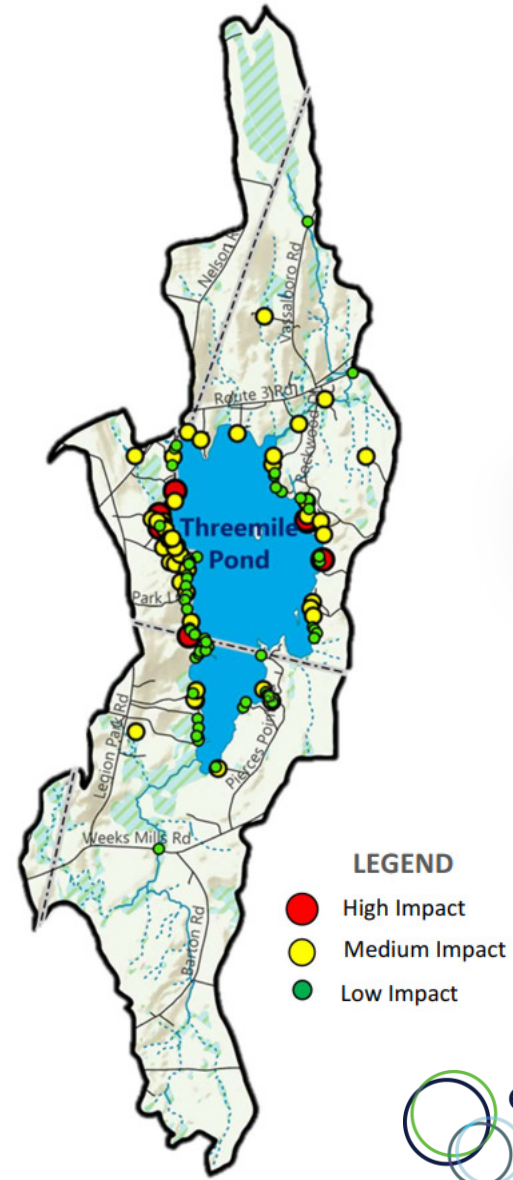
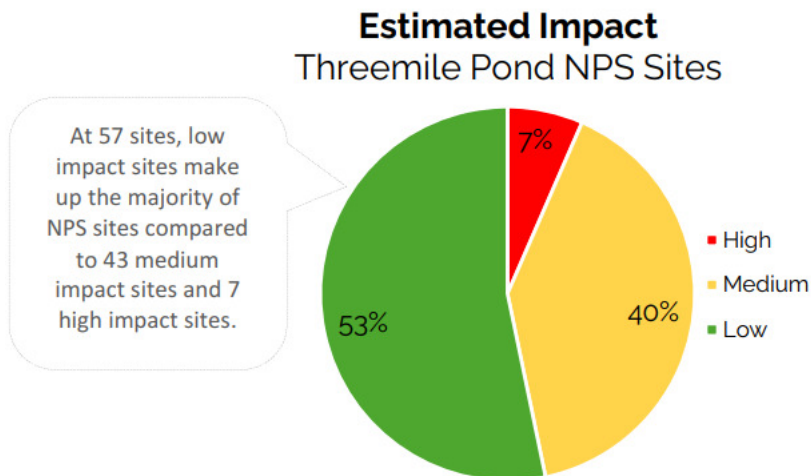
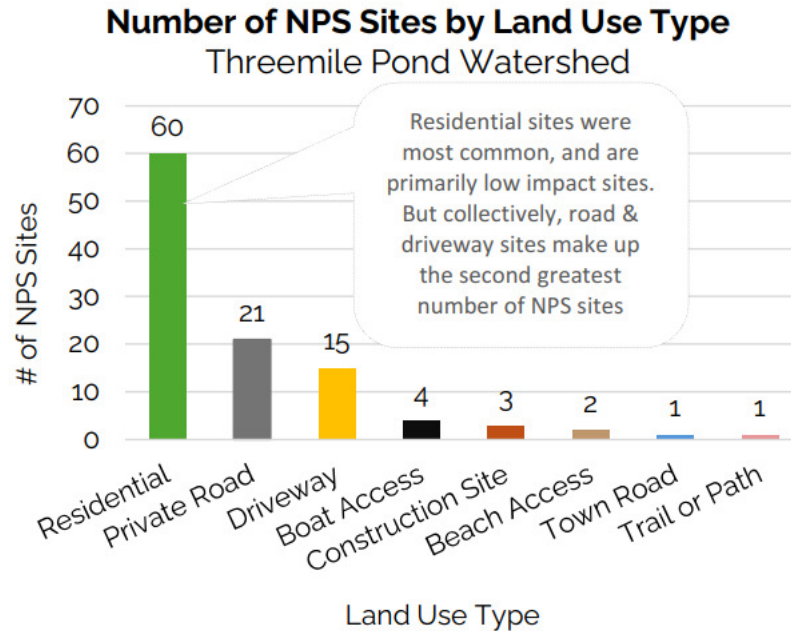


❖ May 2025 Watershed Survey

- ✓ 107 sites documented
- ✓ Shoreline residential sites (60 sites)
- ✓ Private road sites (21 sites)
- ✓ Driveways (15 sites)



"External" Sources of P



Simple Buffer Solutions!



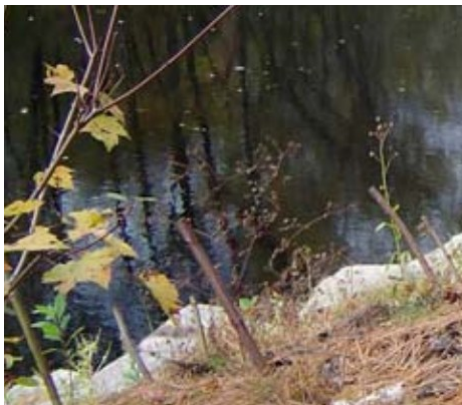
ESTABLISH A NO MOW ZONE

Designate areas as low or no mow zones and restrict lawn solely to pathway areas (“mow where you go”) helps protect the shoreline and dissipates stormwater runoff.



PLANT WILDFLOWER SEEDS

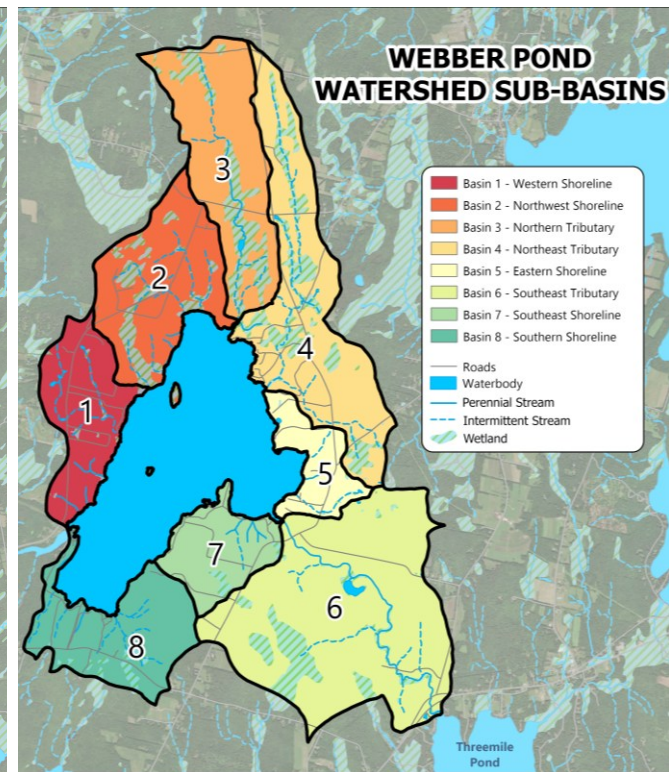
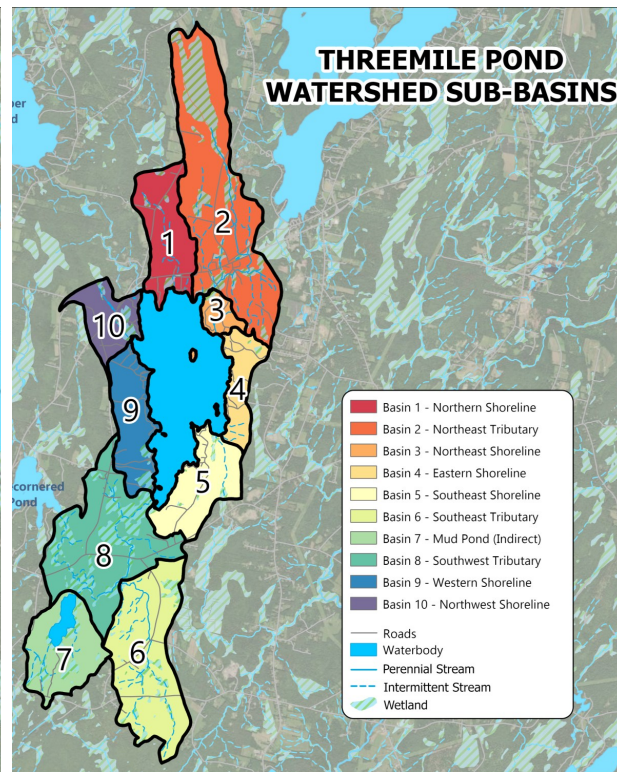
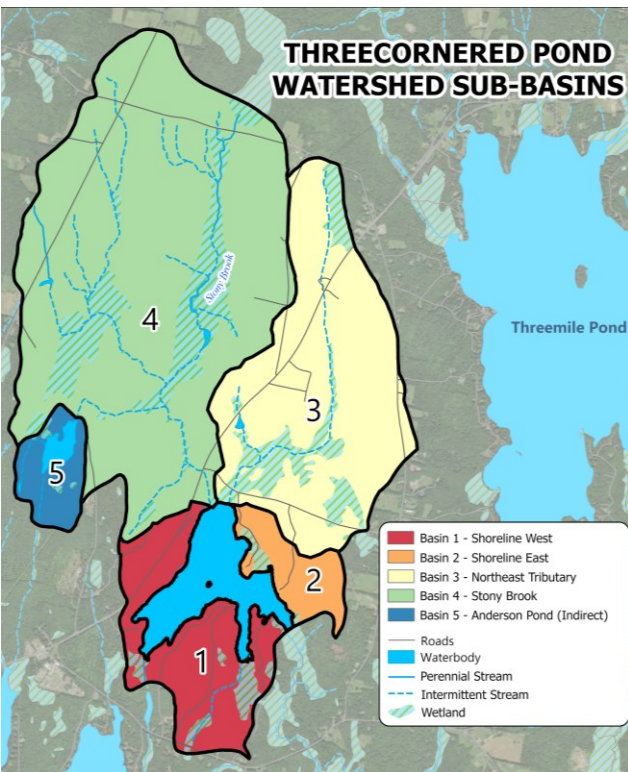
Overseed shoreline areas with a native wildflower seed mix for a bounty of color from spring through fall and reap the benefits of aesthetics and improved wildlife habitat.



PLANT LIVE STAKES

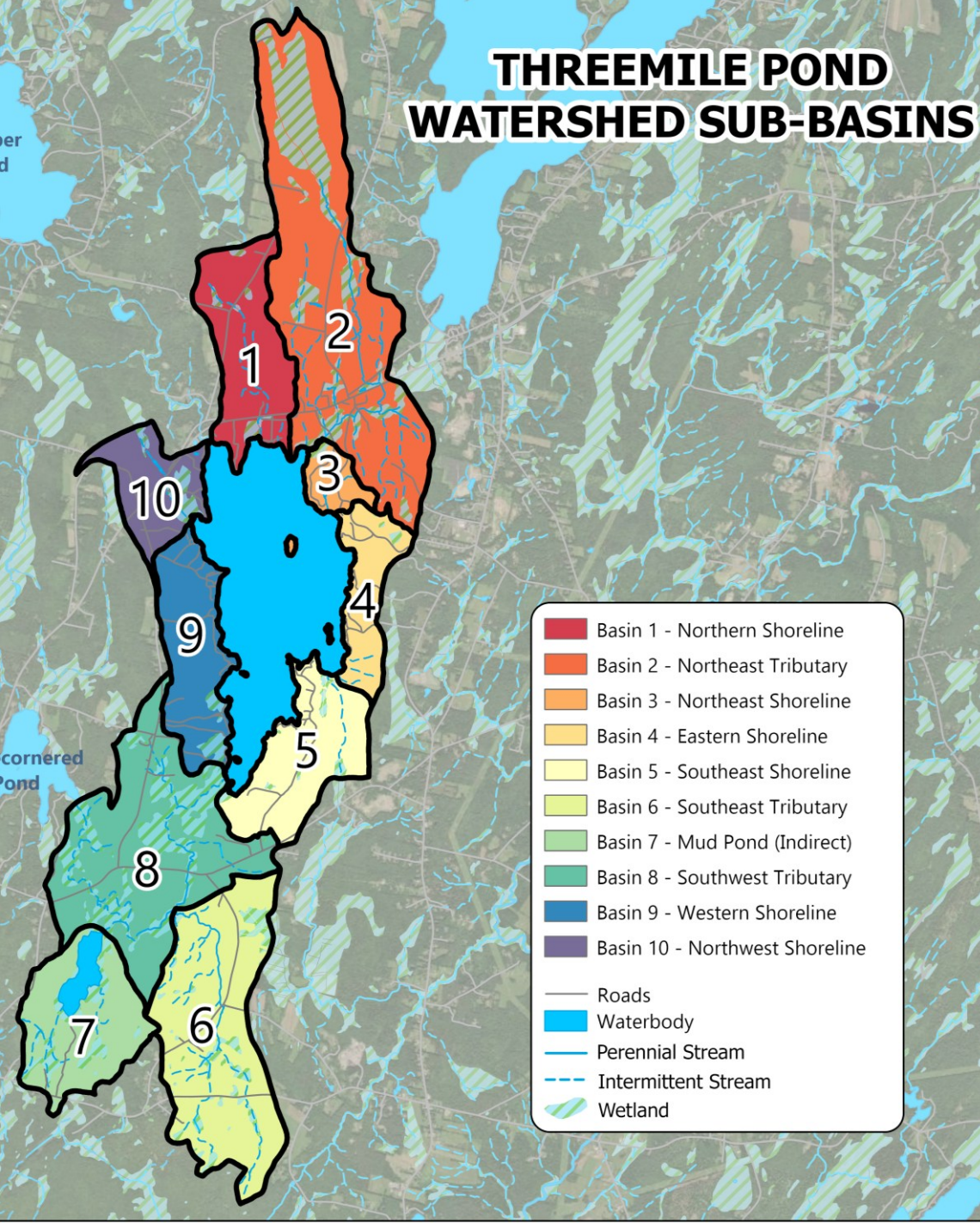
Collect cuttings from willow, dogwood, meadow sweet and other native woody plants in spring and fall when plants are dormant and within 1-2 growing seasons you will help stabilize your shoreline at low to no cost.

Watershed Modeling



- ❖ Where in the watershed is the most P coming from?
- ❖ How much P is being delivered to TMP from TCP?
- ❖ What influence does TMP have on Webber Pond?
- ❖ How much P needs to be reduced to prevent algal blooms?

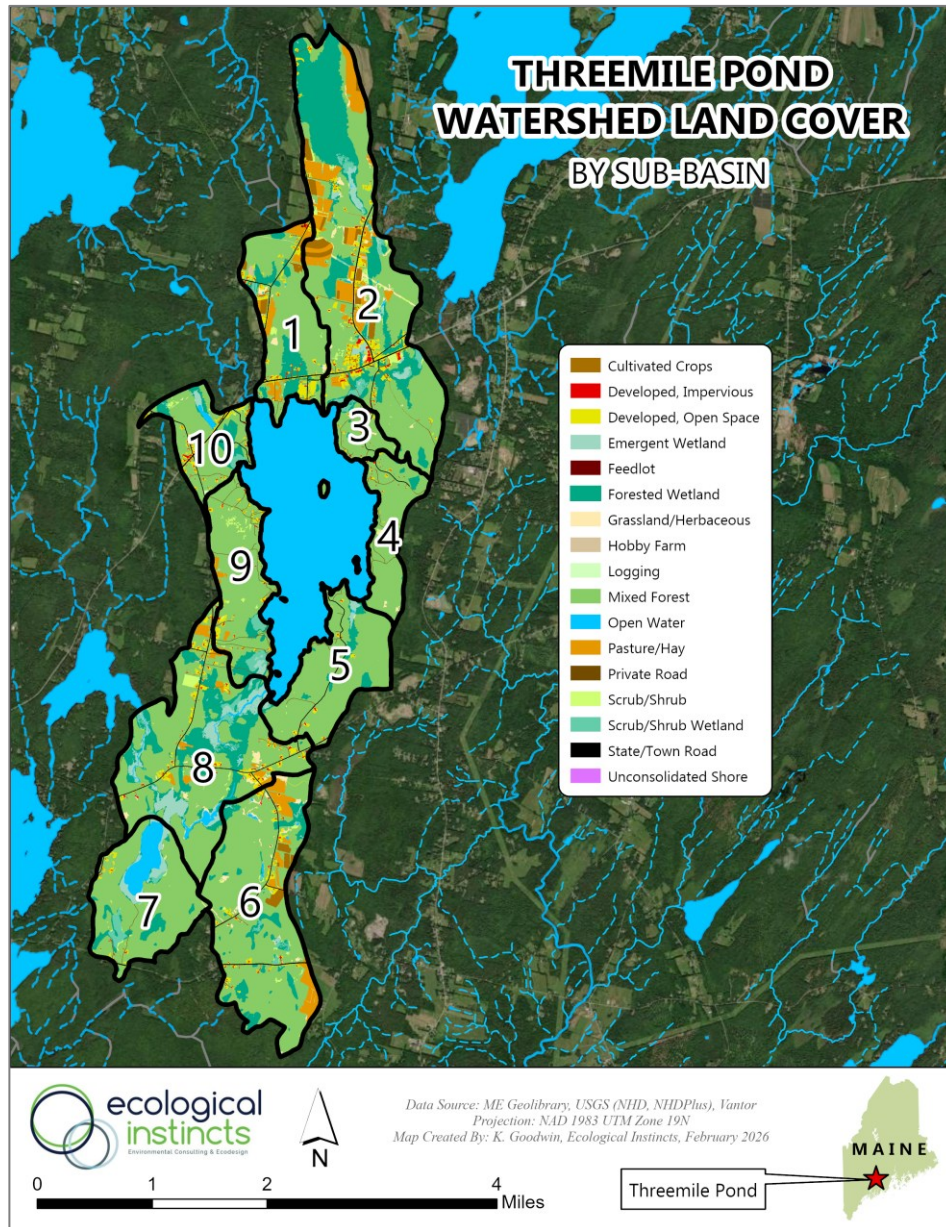
THREEMILE POND WATERSHED SUB-BASINS



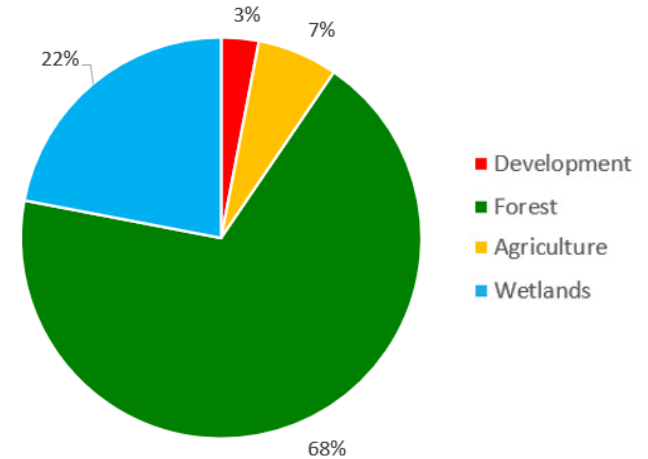
Watershed Modeling

- ❖ 10 Sub-Basins
- ❖ + Upstream TCP

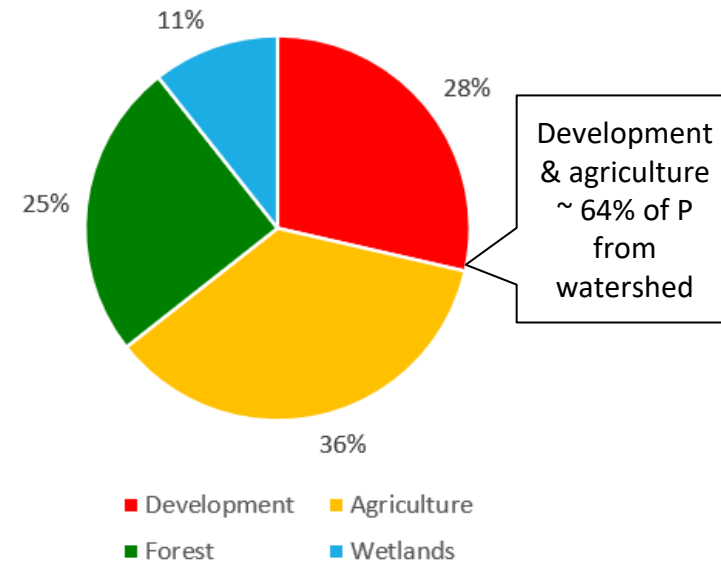
Watershed Modeling



Threemile Pond Watershed
% Land Cover

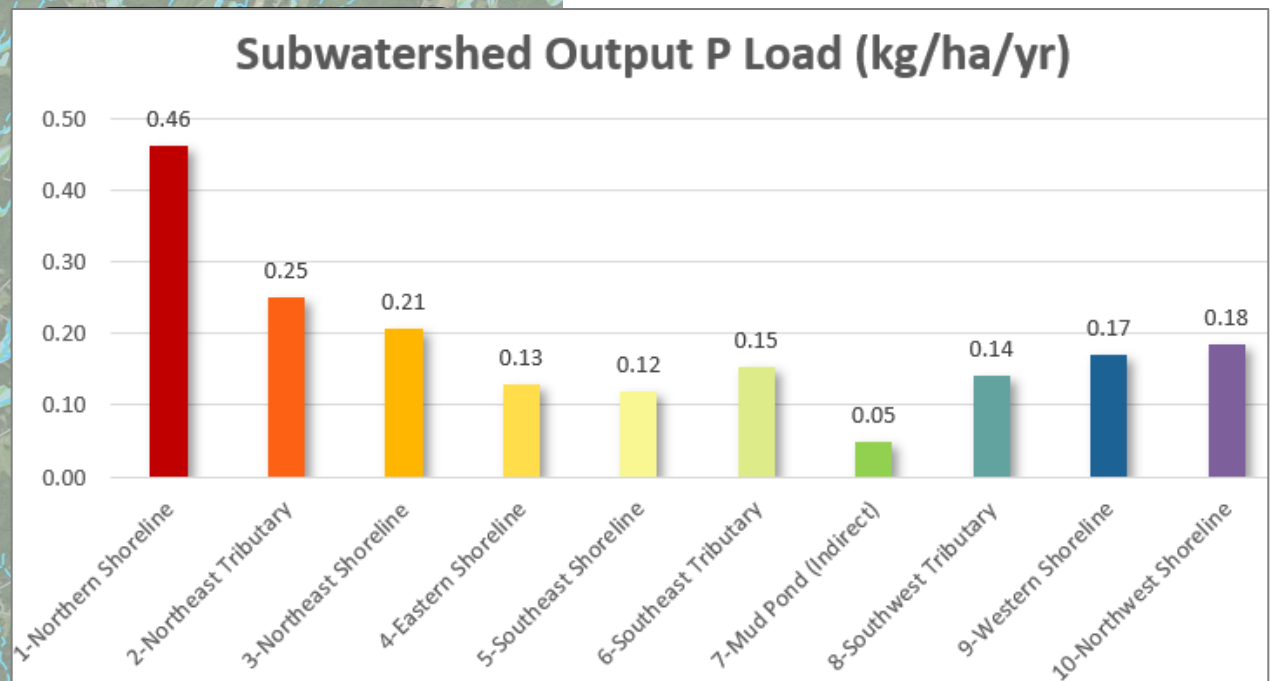


Load Generation (kg/yr) by Land Cover Category
(Baseflow + Runoff P)



THREEMILE POND WATERSHED SUB-BASINS

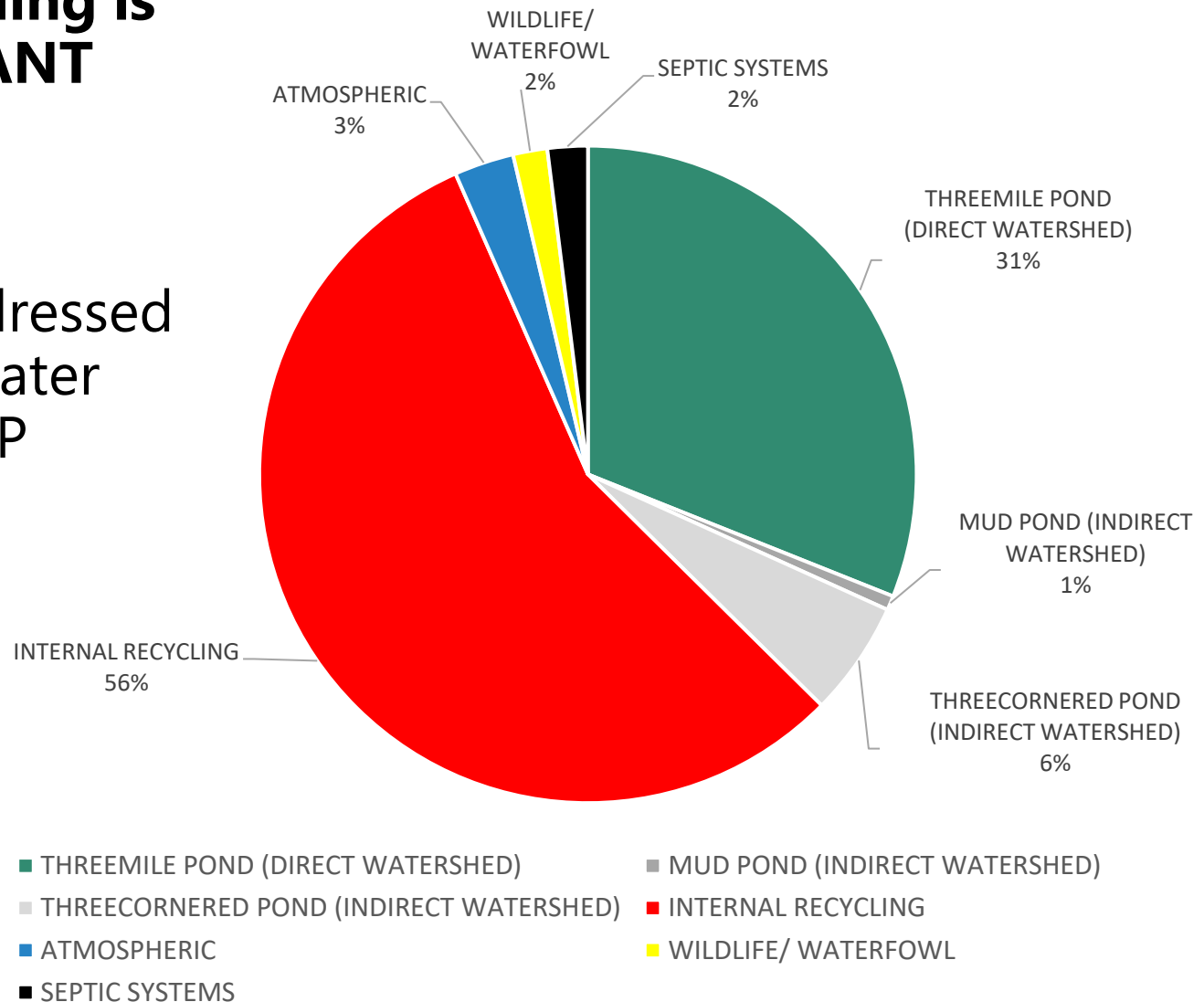
❖ Basins 1, 2 & 3
have the highest
P load/area



Watershed Modeling- Results

- ❖ **Internal loading is the DOMINANT source of phosphorus**
- ❖ MUST be addressed to improve water quality in TMP

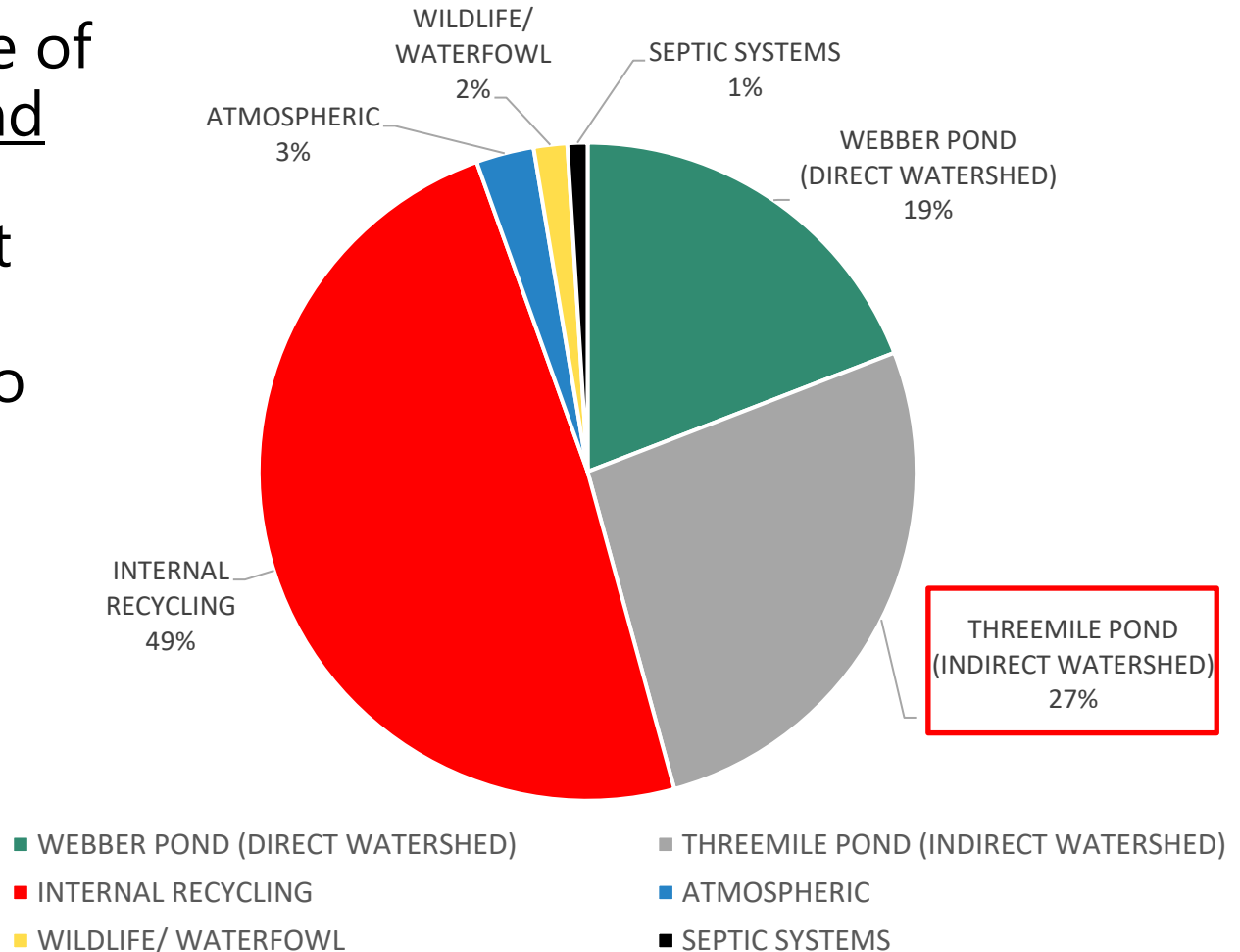
Threemile Pond P Load Summary



Watershed Modeling- Results

- ❖ TMP is an important source of P in Webber Pond
- ❖ Improvements at TMP MUST be incorporated into Webber Pond restoration priorities

Webber Pond P Load Summary*



**The Webber Pond internal loading analysis is still in progress as of 6/27/26. Final modeling results may differ from the graphics shown on this slide.*

Next Steps & Questions

- ☐ Finalize Internal Loading Analysis & Watershed Modeling
- ☐ Prepare Draft Watershed Action Plan
- ☐ TCP & Webber Pond Public Meetings (July-August)
- ☐ Prepare Draft WBMP
- ☐ Committee Review of WBMP (October '26)
- ☐ Final WBMP (December '26)
- ☐ Submit 319 Grant Application (Spring '27)
- ☐ Funding (October '27)

