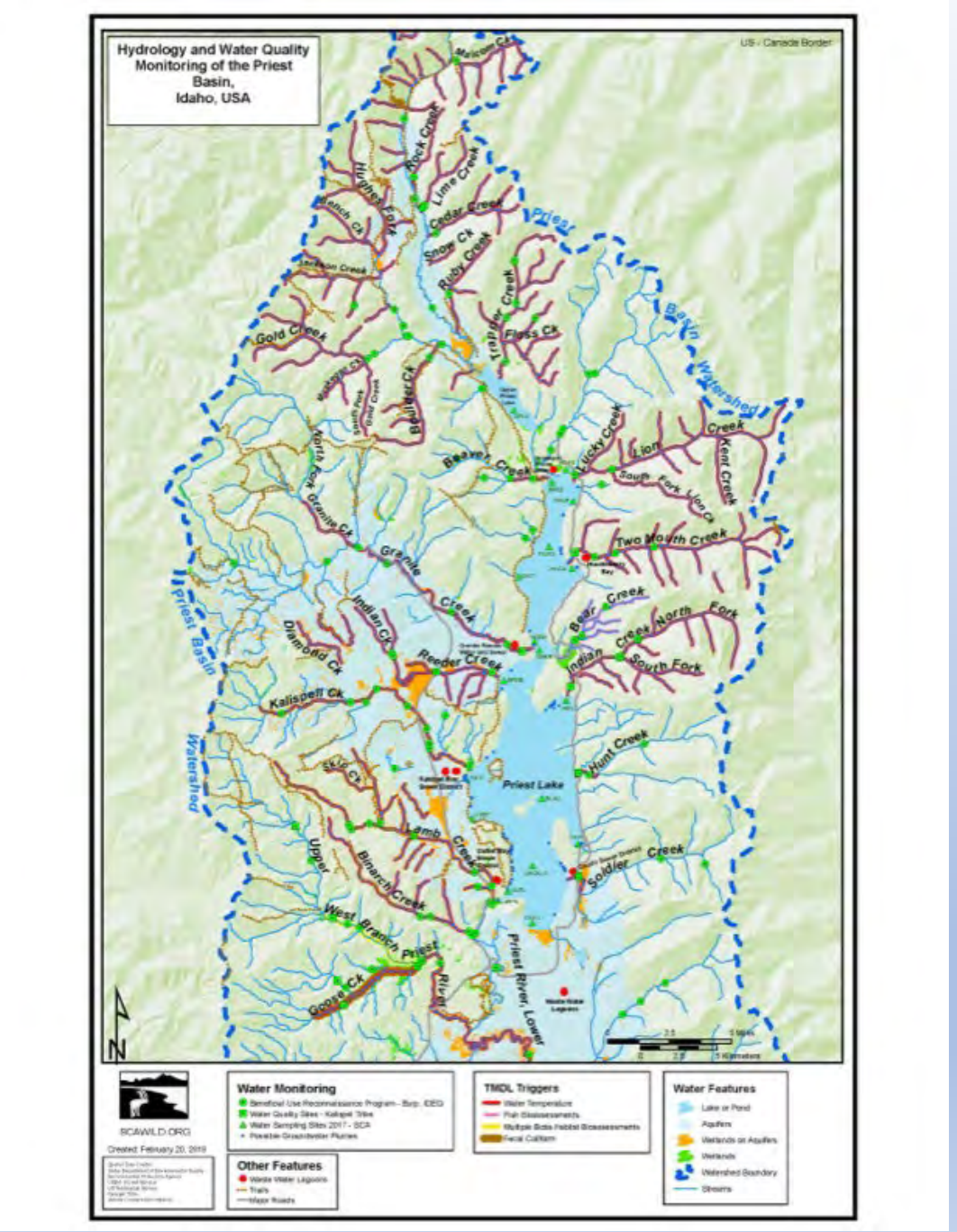
SELKIRK CONSERVATION ALLIANCE

KEEPING THE WILD IN THE SELKIRK ECOSYSTEM

Citizen’s Volunteer Monitoring Program

The Priest Lake Basin: A Key Component of the SCA Work

Priest Lake, Idaho:	41 sq mi – 26,000 acres
Drainage Area:	572 sq mi
Lake Inflow:	12 major tributaries
Shoreline	>50% developed
Ownership	East v West
	E - State W - USFS
Private:	Summer “cabins”
	9 Marinas / Resorts
	5 wastewater district



Early Lake Studies

George Kemmerer, U of Wisconsin: 1924

In the early 1990's IDEQ did an intensive reconnaissance study of PL Water Quality:

- 16 sites
- 4 to 8 months per year
- Full range of chemistry and algal analysis
- DO and Temperature profiles
- Secchi depth measurements

Study Design

- Why are you collecting Data?

  Trend Analysis

  Determine ”trophic” state

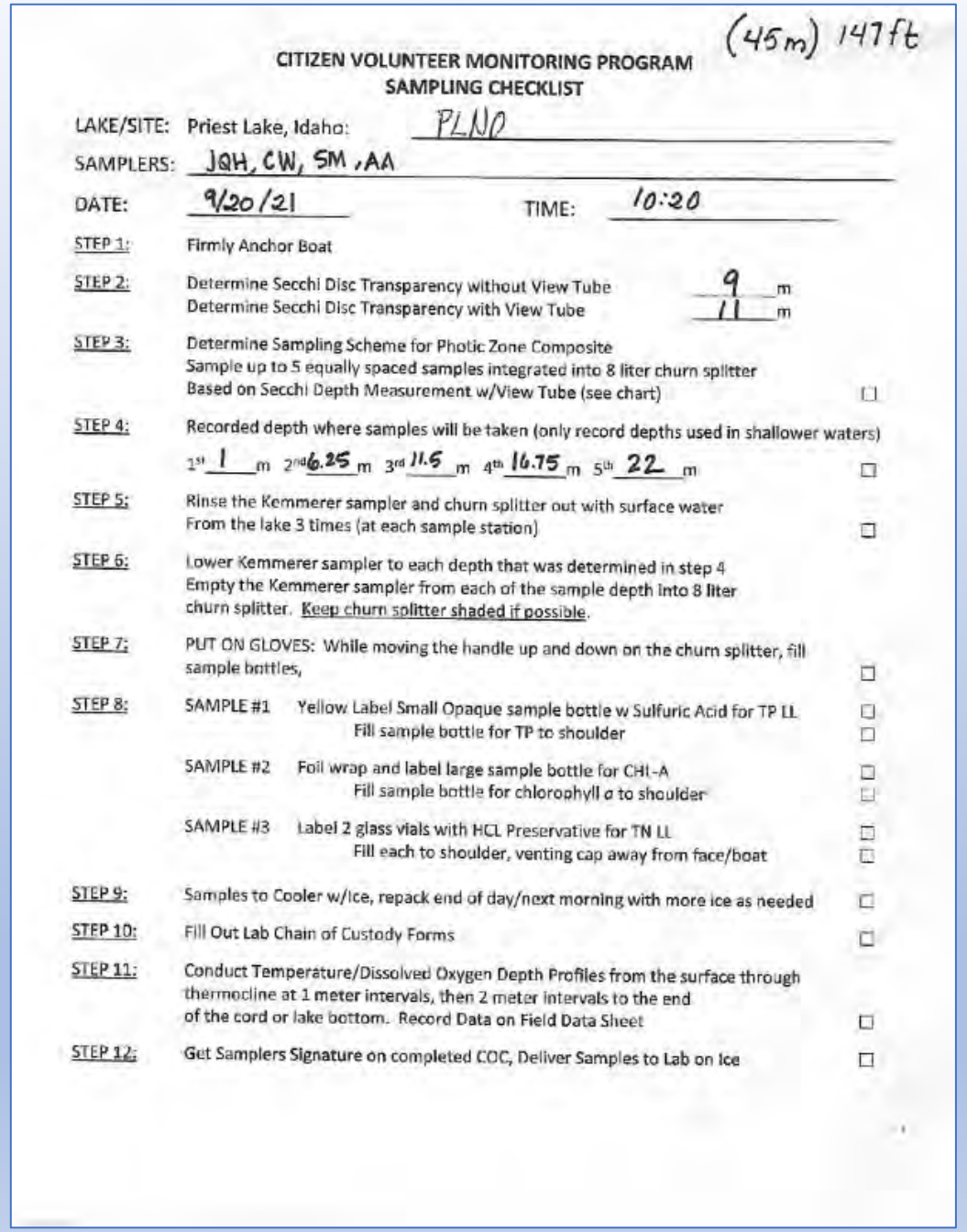
- Select Water Quality parameters
  - Parameters to be covered depends on “why”?

    For Trend Analysis need detection limits comparable to historic data

    For trophic state in lakes: TP, Chl a, and Secchi Depth
  - DO and Temperature profiles

Data Quality Assurance

- Quality Assurance Project Plan (QAPP)
  - Calibration of Instruments
  - Sample Collection Methods
  - Sample Duplicates
- Chain of Custody form
- SCA Field Forms generally outline the QAPP



(45m) 147ft

CITIZEN VOLUNTEER MONITORING PROGRAM
SAMPLING CHECKLIST

LAKE/SITE: Priest Lake, Idaho: PLNO

SAMPLERS: JQH, CW, SM, AA

DATE: 9/20/21 TIME: 10:20

STEP 1: Firmly Anchor Boat

STEP 2: Determine Secchi Disc Transparency without View Tube 9 m
Determine Secchi Disc Transparency with View Tube 11 m

STEP 3: Determine Sampling Scheme for Photic Zone Composite
Sample up to 5 equally spaced samples integrated into 8 liter churn splitter
Based on Secchi Depth Measurement w/View Tube (see chart) ☐

STEP 4: Recorded depth where samples will be taken (only record depths used in shallower waters)
1st 1 m 2nd 6.25 m 3rd 11.5 m 4th 16.75 m 5th 22 m ☐

STEP 5: Rinse the Kemmerer sampler and churn splitter out with surface water
From the lake 3 times (at each sample station) ☐

STEP 6: Lower Kemmerer sampler to each depth that was determined in step 4
Empty the Kemmerer sampler from each of the sample depth into 8 liter
churn splitter. Keep churn splitter shaded if possible.

STEP 7: PUT ON GLOVES: While moving the handle up and down on the churn splitter, fill
sample bottles, ☐

STEP 8: SAMPLE #1 Yellow Label Small Opaque sample bottle w Sulfuric Acid for TP LL ☐
Fill sample bottle for TP to shoulder ☐

SAMPLE #2 Foil wrap and label large sample bottle for CHL-A ☐
Fill sample bottle for chlorophyll *a* to shoulder ☐

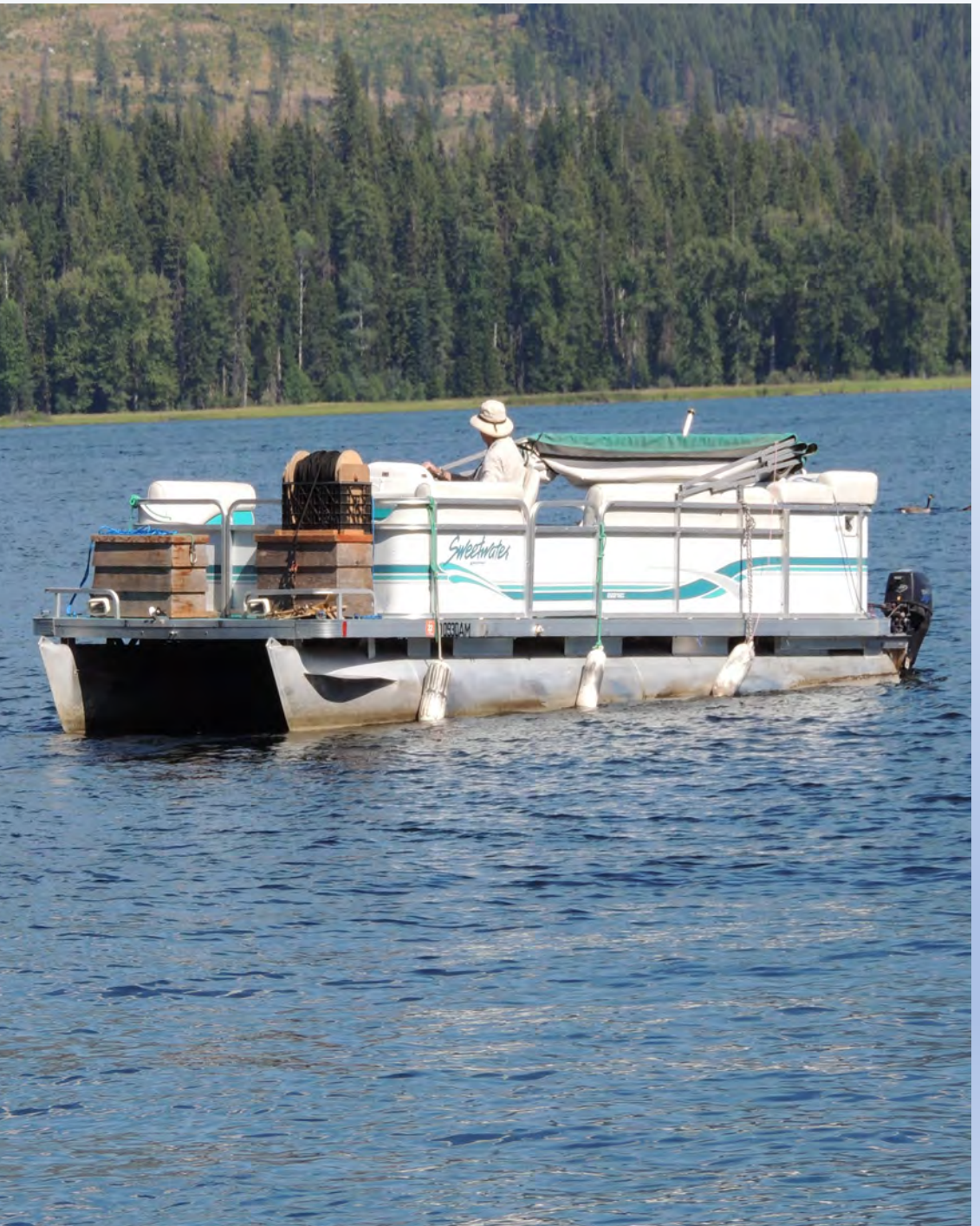
SAMPLE #3 Label 2 glass vials with HCL Preservative for TN LL ☐
Fill each to shoulder, venting cap away from face/boat ☐

STEP 9: Samples to Cooler w/Ice, repack end of day/next morning with more ice as needed ☐

STEP 10: Fill Out Lab Chain of Custody Forms ☐

STEP 11: Conduct Temperature/Dissolved Oxygen Depth Profiles from the surface through
thermocline at 1 meter intervals, then 2 meter intervals to the end
of the cord or lake bottom. Record Data on Field Data Sheet ☐

STEP 12: Get Samplers Signature on completed COC, Deliver Samples to Lab on Ice ☐



2008 SCA begins lake CVMP

- Limited funding
  - Only TP, TN and Chl a routinely monitored
  - Occasional algal survey
  - Some equipment ”loaned” by DEQ
- Pontoon Boat Donated
  - Outfitted by volunteers
- Sampling limited
  - June, July, August, September
  - 8 sites per year: alternate years to cover all sites
  - 14 years of data since 2008 (2009 was skipped??)

2021 SCA begins Stream Monitoring

- Initially East Side Streams
  - PL Cabin Owners Assn. Funding
- Continuous Temp Monitoring in 12+ streams
  - Outfitted with Hobo Tidbits by volunteers
  - Monthly field temp checks six times per year
- Grab samples taken for Phosphorus analysis monthly
- 2022 Added Turbidity testing monthly

Evaluation of Lake Results

- A detailed report on the 1990's work was not prepared
  - An interim report came out in 1992
  - Lake was oligotrophic to ultra oligotrophic
- SCA had not done any significant work until 2021
  - No comprehensive data base
  - SCA began developing an inhouse compilation of data
  - Discovered that in spite of alternate year sampling 2 sites had been sampled most years.
- Nutrient and transparency data indicate the lake is still oligotrophic
- Epilimnion Temperature data shows interesting trends

Beneficial Uses Reconnaissance Program

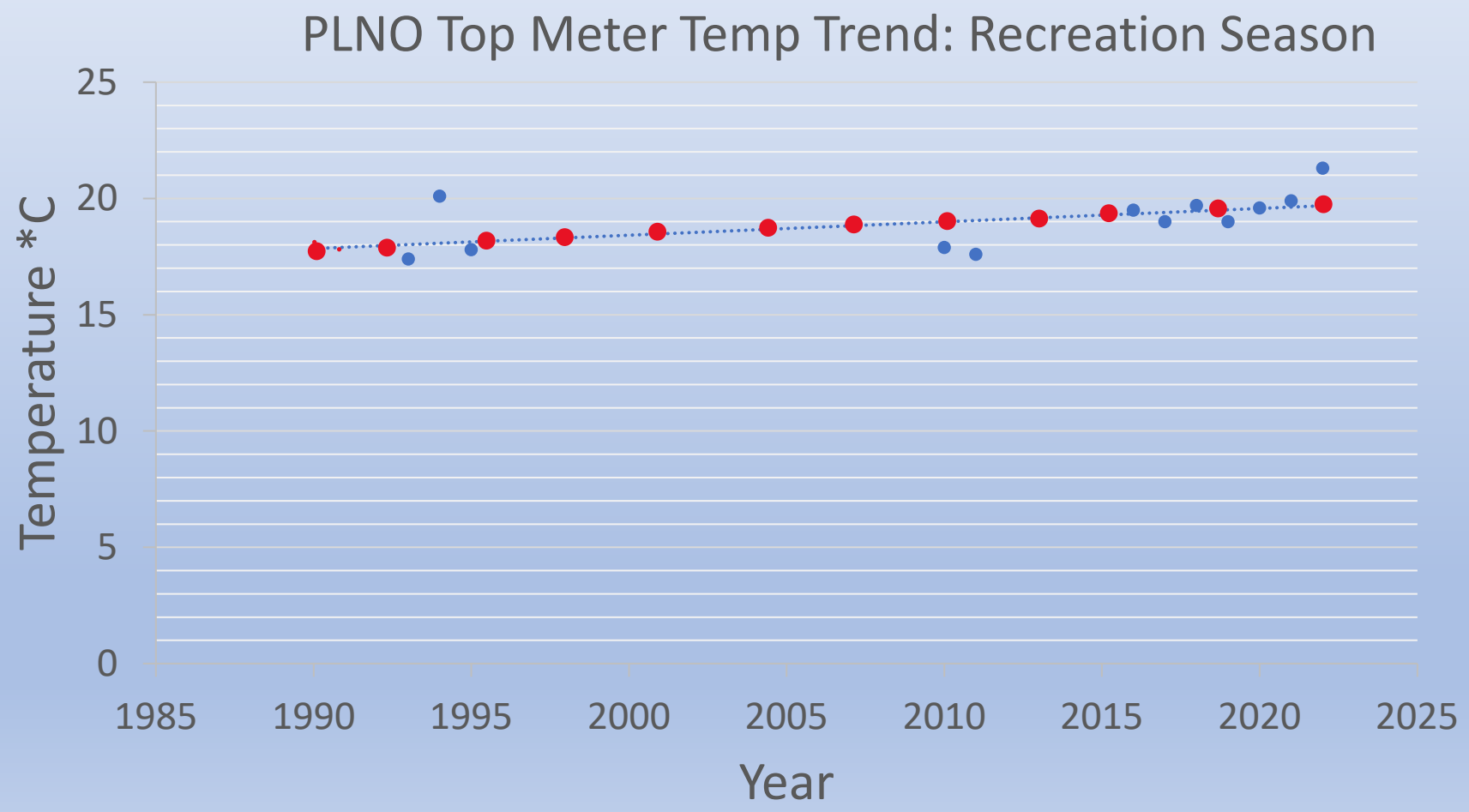
- The Idaho Department of Environmental Quality uses the SCA Data to comply with the EPA BURP evaluations

Using a YSI Pro20 meter

Run a Temperature / DO profile at each sample site.

Readings every meter through the thermocline, then every 1 to 5 meters to the bottom

Priest Lake Open Water Temperature Trend



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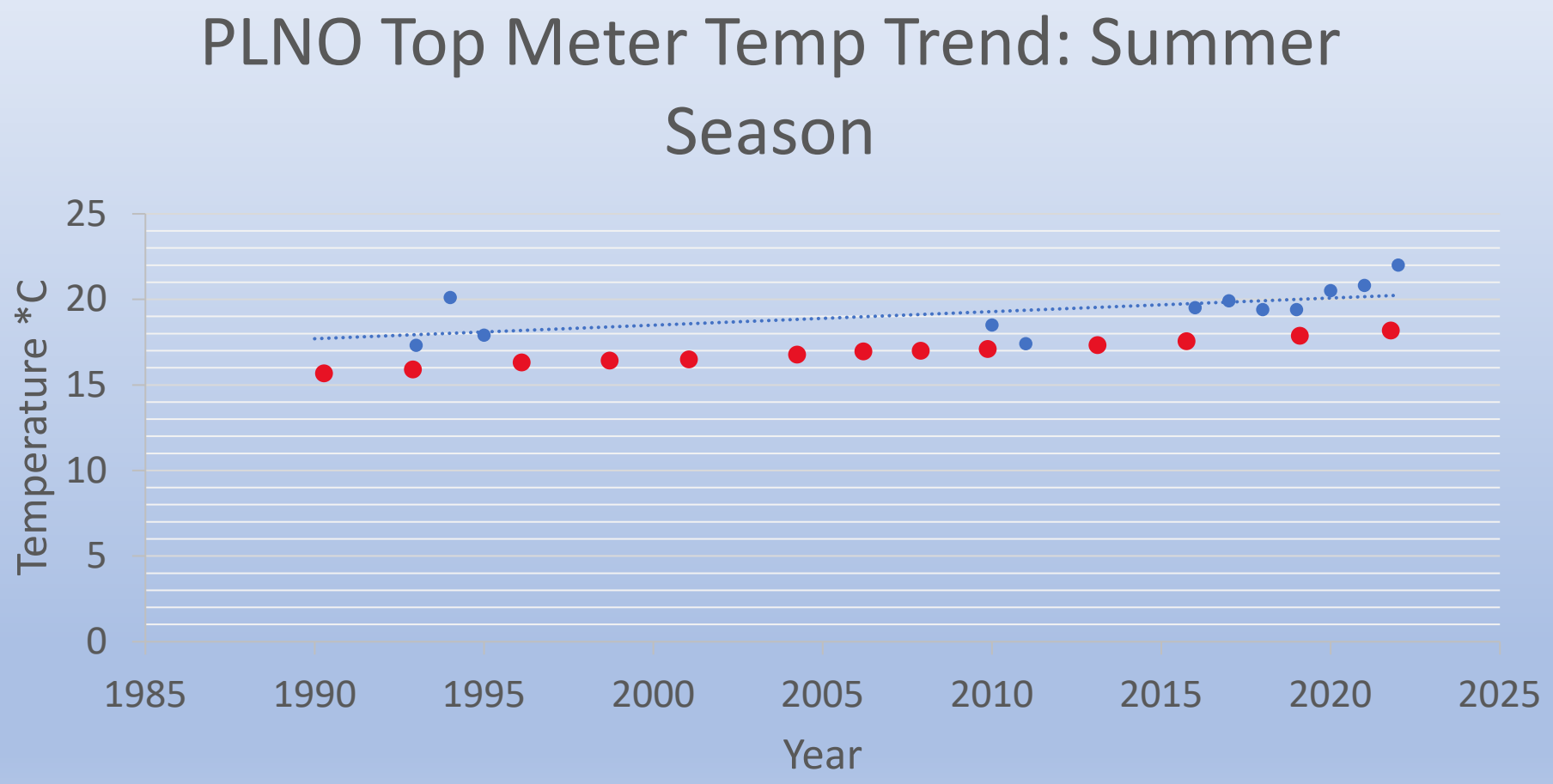

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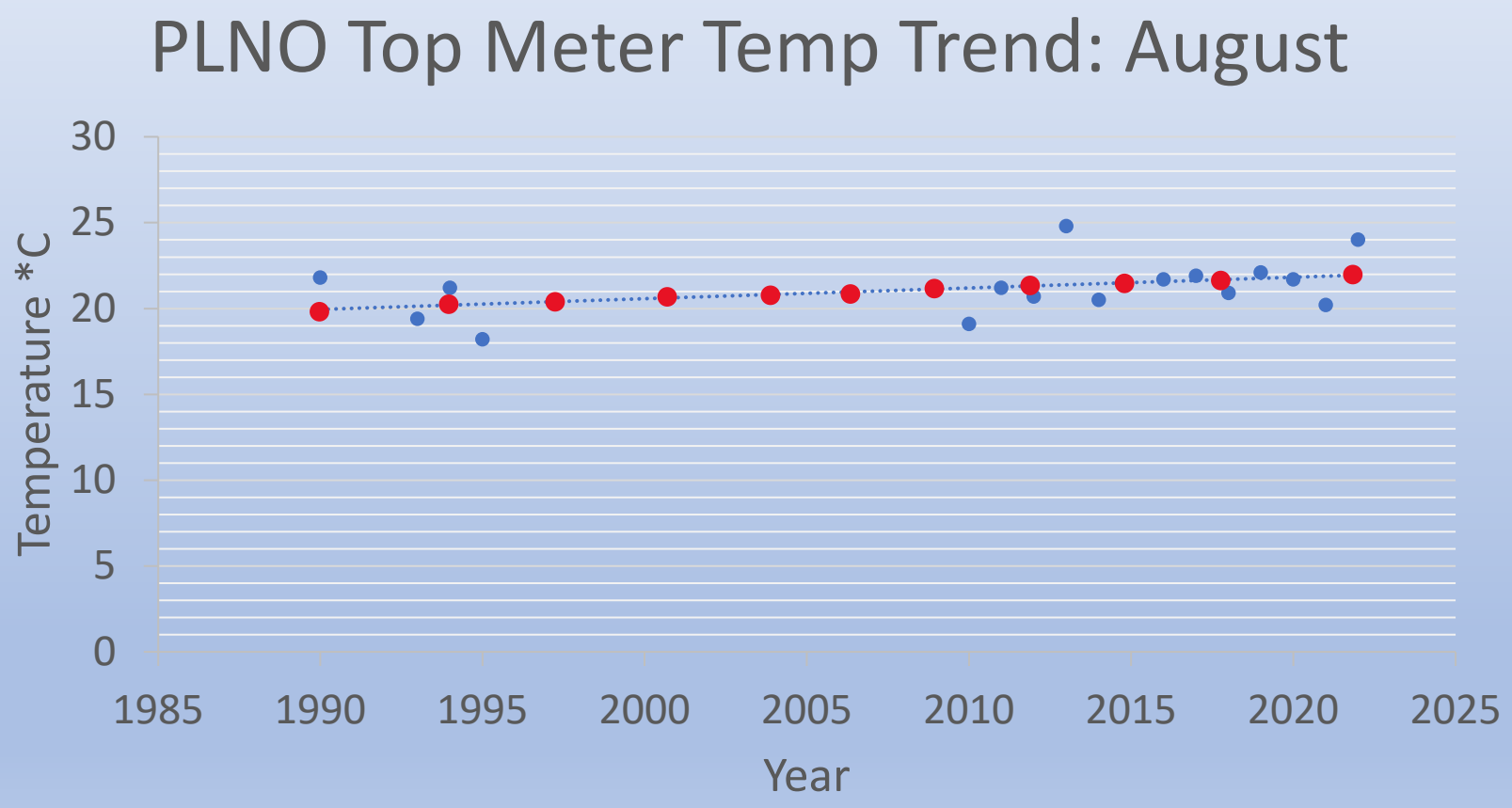

Stream Monitoring

- Many of the streams do not meet temperature standards much of the year
  - Logging in tributary stream basins?
- Elevated Phosphorus in some streams
  - Increased recreational cabin use and overall population growth?

The End