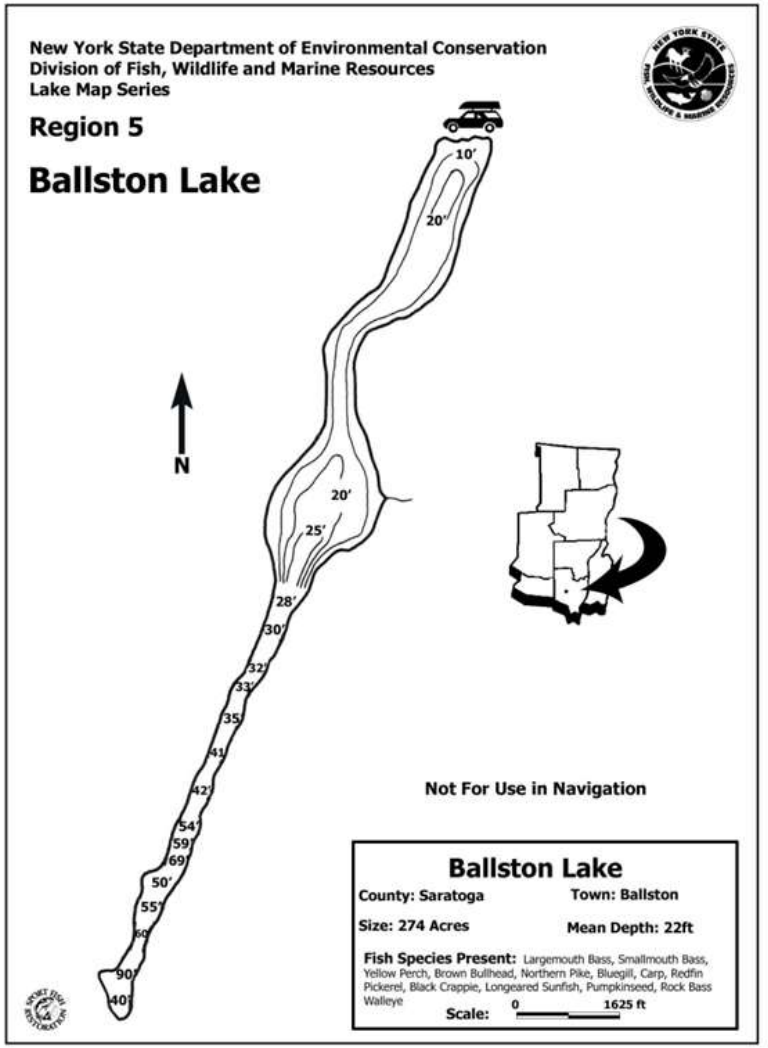
Ballston Lake Improvement Association

How to Use Excel to Analyze Your CSLAP Data

Presentation to NYSFOLA on May 9, 2026

Bob Duncan
Ballston Lake Improvement Association



How to

Link to this presentation:
https://ballstonlake.org/**nysfola2026/**

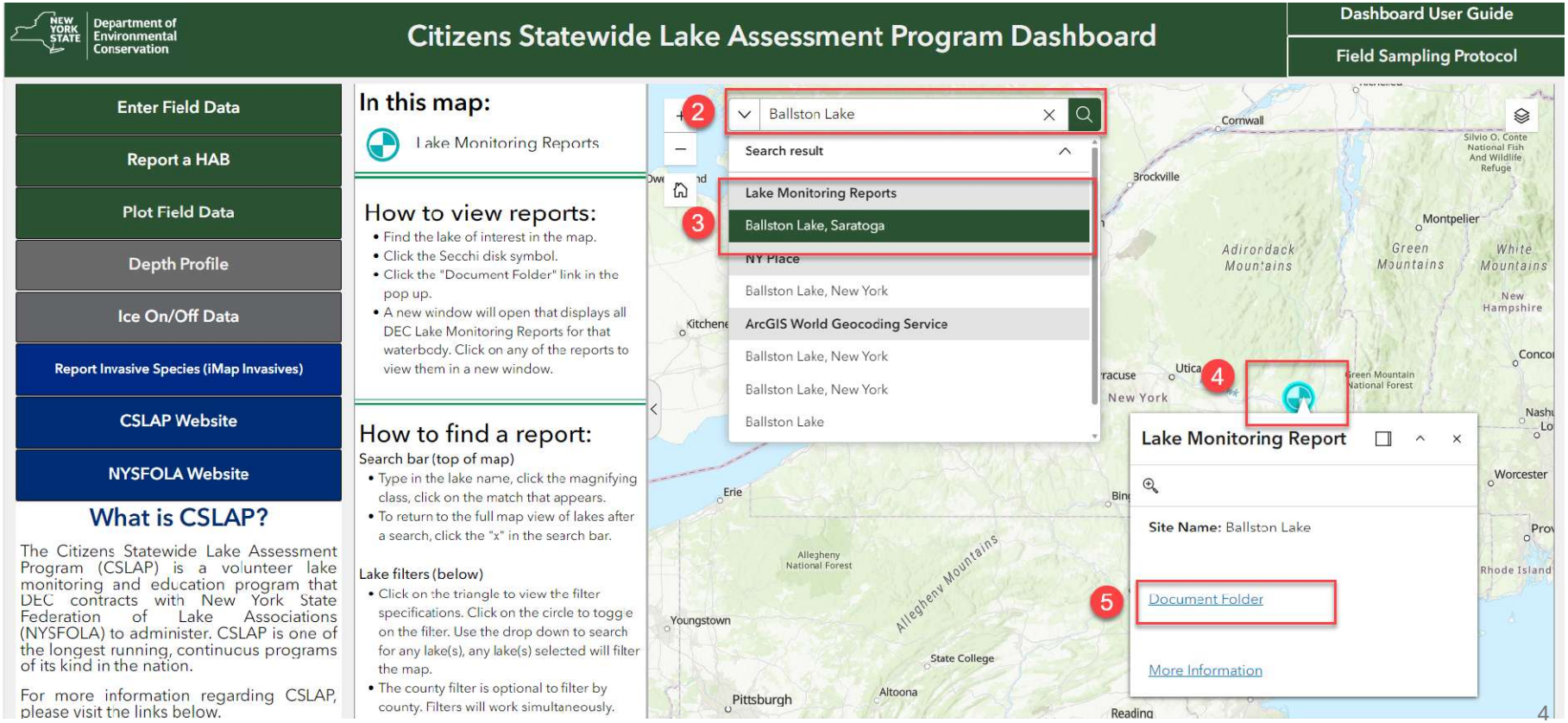
- Find CSLAP report on the Web
- Review Lake Assessment
- Download data
- Edit raw data
- Activate *Power Pivot (one time only)*
- Select data for Pivot Table
- Add a calculated Median Field
- Design the Pivot Table
- Add a pivot chart

How to

- Drill Down – Median vs Average
- Trends
  - Temperature
  - Total P
  - Chlorophyll A
  - Sechi Depth
- Seasonality
  - Temperature
  - Chlorophyll A and Sechi Depth
- Phosphorous Study - 2025
  - 10-Year Trends
  - Seasonality 2025 vs Prior years
  - Other Data – Rain
- What does A.I. say?

CSLAP Dashboard Link:

https://experience.arcgis.com/experience/c32878596a0a47deb5f97ea5e07ec9c5/page/Dashboard



Select the 2025 CSLAP Report

2025

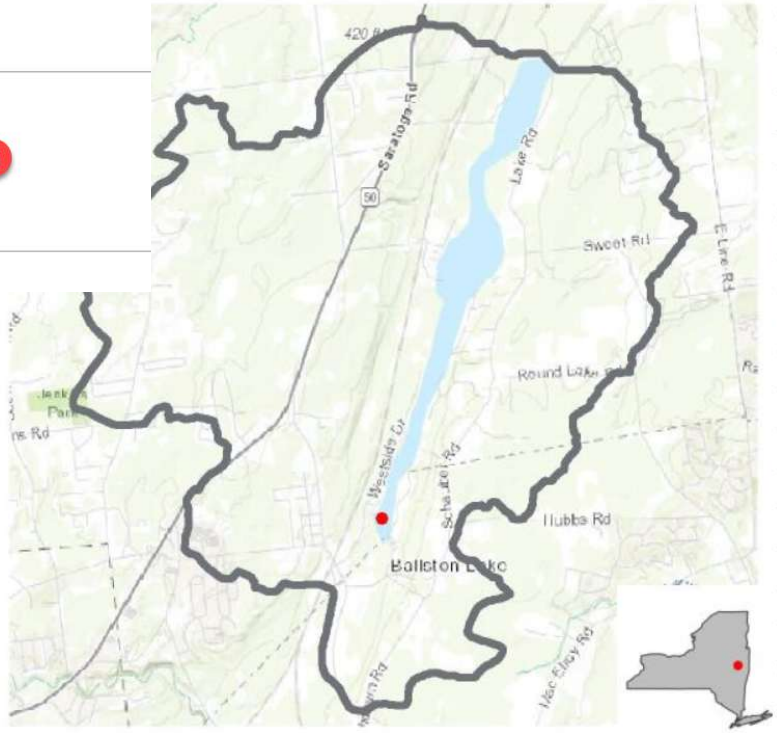
Index of /data/IF/CSLAP/1101BAL1090

Name	Size
2023_Lake_Report_Ballston_Lake_1101BAL1090.html	6.1M
2024_Lake_Report_Ballston_Lake_1101BAL1090.html	6.1M
2025_Lake_Report_Ballston_Lake_1101BAL1090.html	6.4M
cslrpt19ballstonldp.pdf	390K
cslrpt19ballstonlsw.pdf	377K

6

Ballston Lake

Town(s) of Ballston | Saratoga County | Upper Hudson River Basin



LAKE CHARACTERISTICS	
Lake Classification	A
Dam Classification	Not available
Public Water Supply	No
Lake Size (AC)	Not available
Maximum Depth (m)	33
WATERSHED CHARACTERISTICS	
Watershed Area (AC)	6659
Watershed to Lake Ratio	Not available
Open Water %	3
Wetlands %	24
Barren Land %	0
Shrub Scrub %	0
Grassland Herbaceous %	1
Forest %	30
Developed %	18
Agriculture %	23
CSLAP Participation	
Years in CSLAP	1991-2010, 2013-2025

Corrections
0

278 Ac

24

1991 - 2025

Download Assessment
Confirmed Impaired for Total Phosphorus

Waterbody Assessment	Trophic State	HABs Frequency	Invasive Species
Download Assessment Here	Eutrophic	Frequent Blooms	Invasives Reported

2012 403D List NY State Impaired Waterbodies:

- Septic
- Sediment
- Urbanization

Assessment of Best Use

Background

New York State waterbodies are classified to reflect their best use(s), and the assessment of a waterbody is based on the ability of waters to support those uses. This section lists whether this waterbody segment supports its best use(s).

Best Use	Use Assessment	Use Assessment Confirmation	Pollutant(s) Cause(s)	303(d) Year	Integrated Reporting Category
Fishing	Impaired	Unconfirmed	Total Phosphorus	N/A	IR3
Secondary Contact Recreation	Impaired	Confirmed	Total Phosphorus	2012	IR5
Primary Contact Recreation	Impaired	Confirmed	Total Phosphorus	2012	IR5
Source of Water Supply	Impaired	Unconfirmed	Total Phosphorus	N/A	IR3

Trophic State Graphs

Indicators	Chlorophyll A ug/L	Total Phosphorus Mg/L	Secchi Disk Depth Meters
Oligotrophic	< 2	< .01	> 5
Mesotrophic	2 - 8	.01 - .02	2 - 5
Eutrophic	> 8	> .02	< 2

Waterbody Assessment	Trophic State	HABs Frequency	Invasive Species
Download Assessment Here	Eutrophic	Frequent Blooms	Invasives Reported

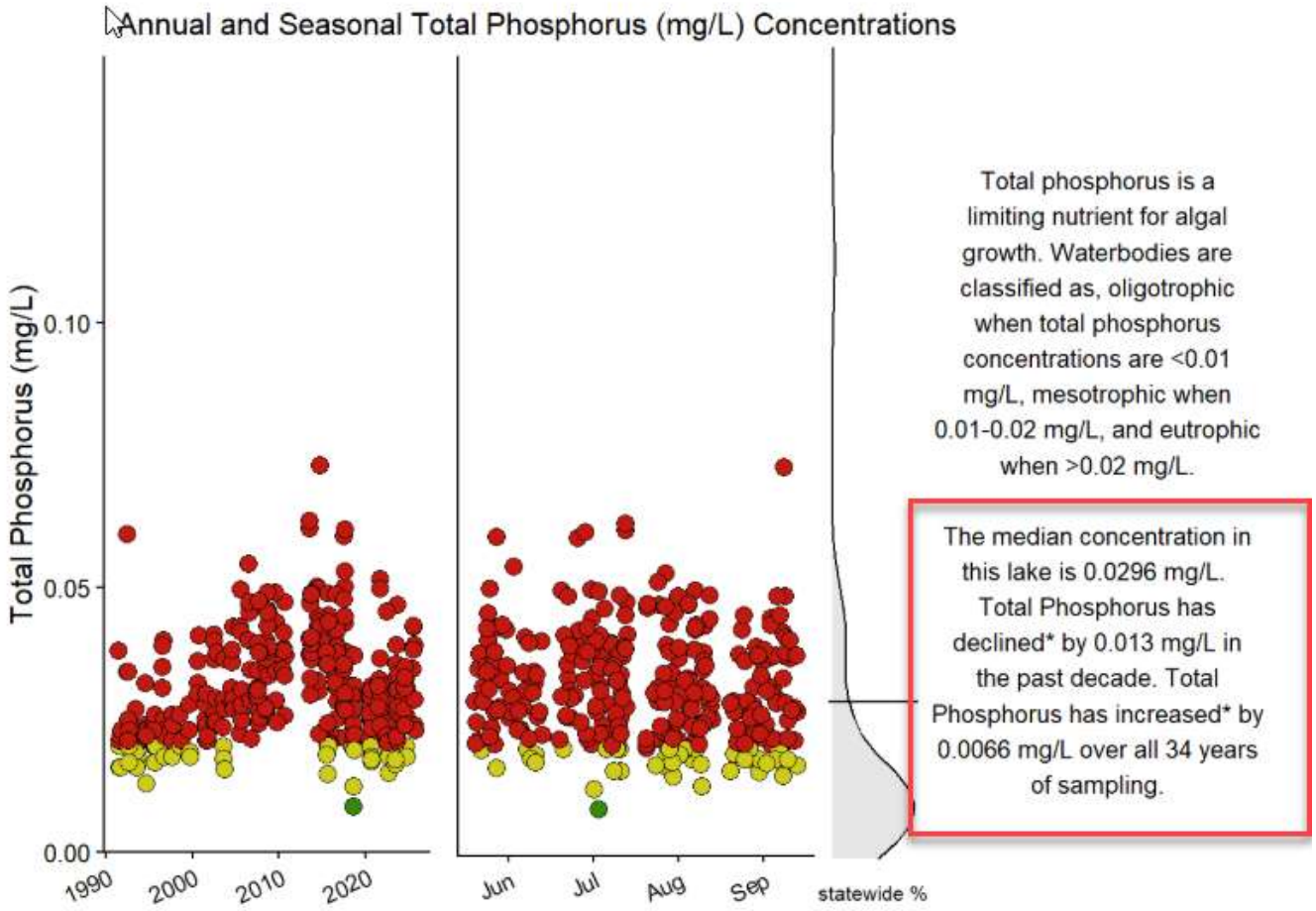
Summary | Evaluated Data | **Trophic State** | HABs | Invasive Species | Depth Profile | Other Parameters | Data

Trophic state refers to the overall biological productivity of a waterbody. Nutrient supply, light availability, regional climate, watershed characteristics, and lake morphology influence a waterbody's trophic state. Based on the amount of overall productivity, waterbodies are classified into three main categories: oligotrophic, mesotrophic, and eutrophic. **Chlorophyll A, total phosphorus,** and **secchi depth** are used as indicators to determine trophic state classifications according thresholds defined in SOP 203.

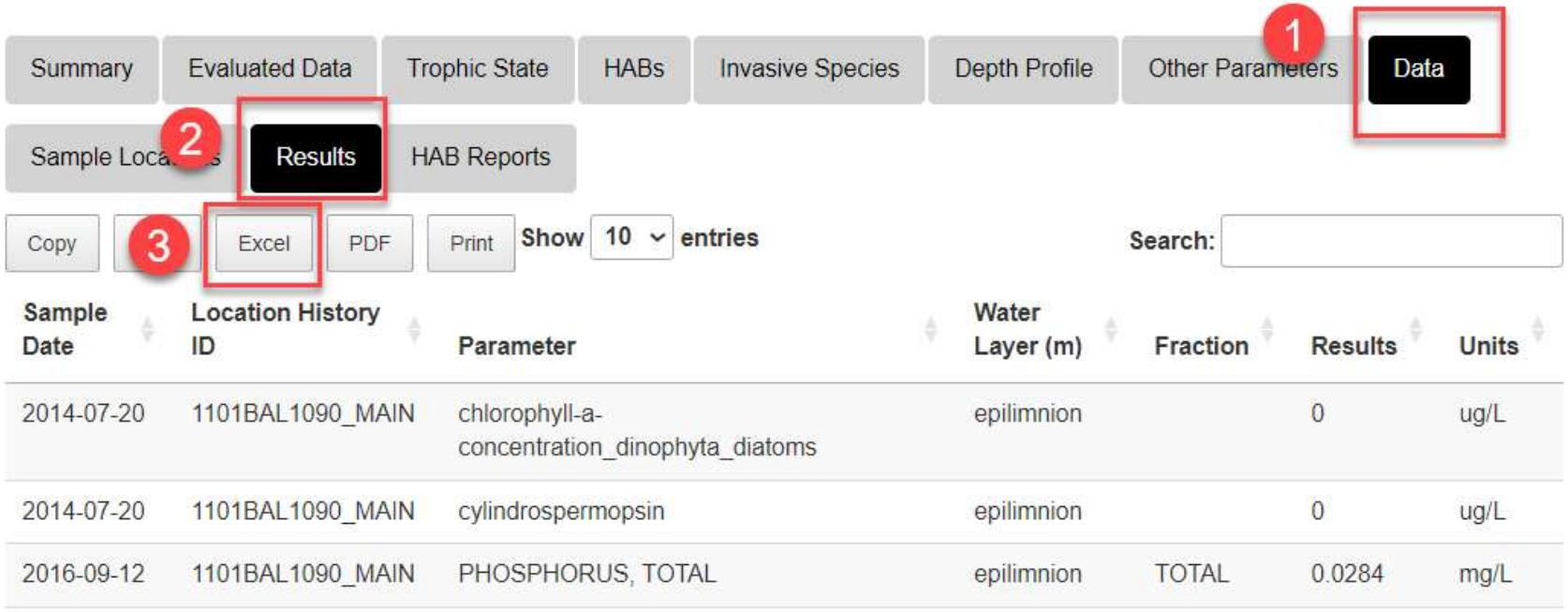
The trophic state of Ballston Lake is **Eutrophic.**

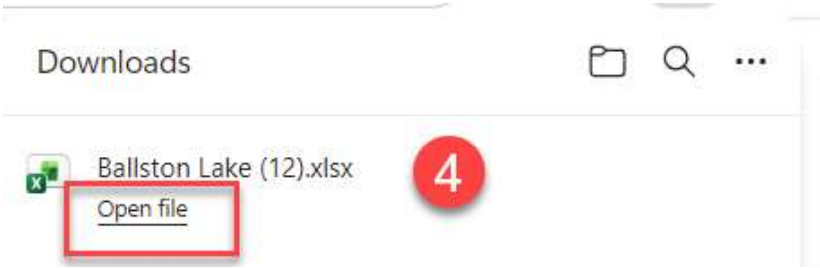
- **Oligotrophic** lakes carry low levels of nutrients and have less productivity. These lakes are often clear, cold, and have high oxygen levels.
- **Mesotrophic** lakes are an intermediate classification between oligotrophic and eutrophic lakes. They contain a moderate amount of nutrients and support a healthy, diverse population of aquatic plants, animals, and algae.
- **Eutrophic** lakes carry high levels of nutrients and have high productivity. These lakes may support an overgrowth of aquatic plants and/or algae. They are typically murky, warm, and have low oxygen levels.

CSLAP Graphs of Total Phosphorus Median Concentration of 0.0296 mg/L

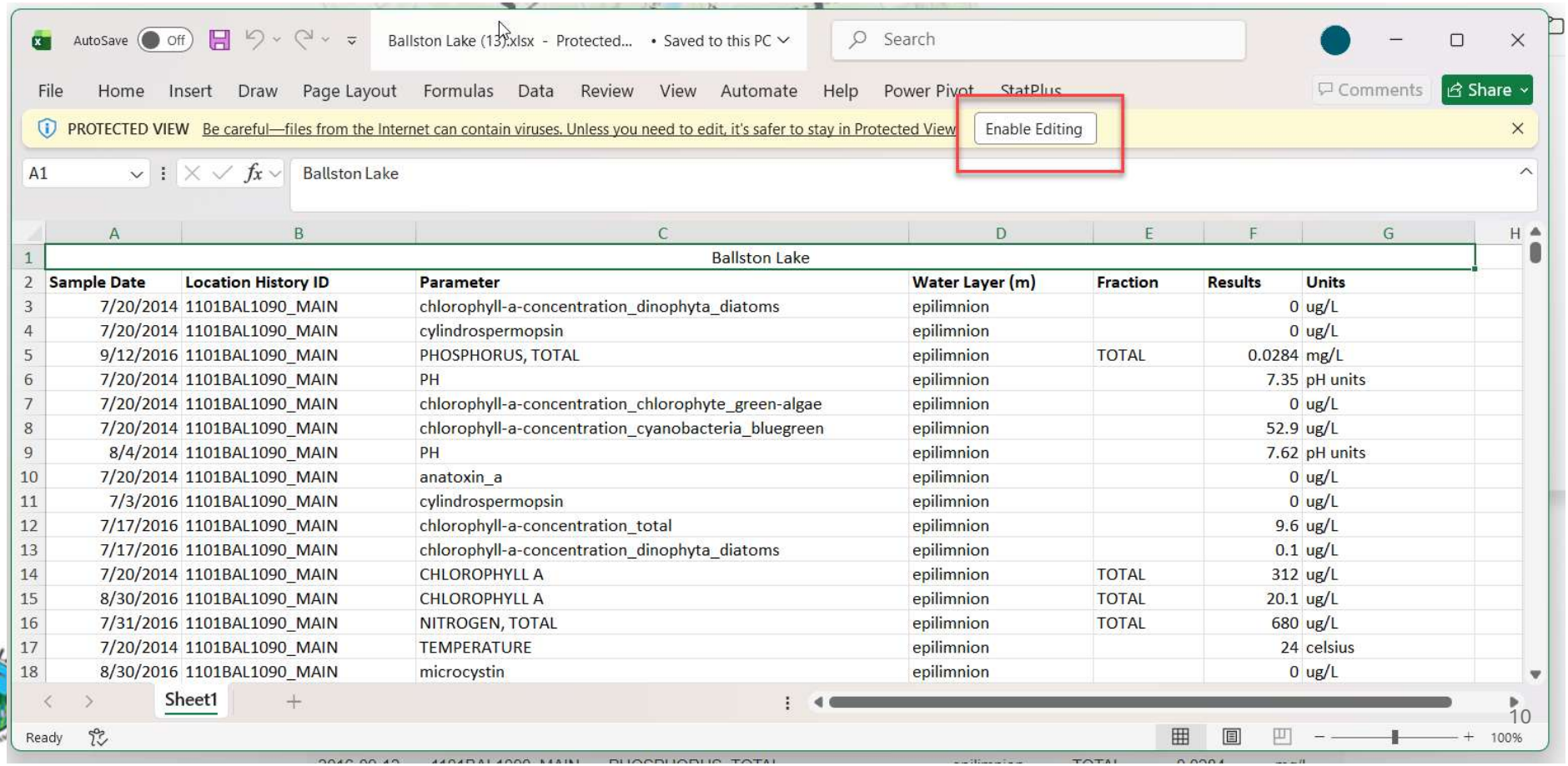


Download the Data





Downloaded Data: 5,392 Rows & 7 Columns



	A	B	C	D	E	F	G
1			Ballston Lake				
2	**Sample Date**	**Location History ID**	**Parameter**	**Water Layer (m)**	**Fraction**	**Results**	**Units**
3	7/20/2014	1101BAL1090_MAIN	chlorophyll-a-concentration_dinophyta_diatoms	epilimnion		0	ug/L
4	7/20/2014	1101BAL1090_MAIN	cylindrospermopsin	epilimnion		0	ug/L
5	9/12/2016	1101BAL1090_MAIN	PHOSPHORUS, TOTAL	epilimnion	TOTAL	0.0284	mg/L
6	7/20/2014	1101BAL1090_MAIN	PH	epilimnion		7.35	pH units
7	7/20/2014	1101BAL1090_MAIN	chlorophyll-a-concentration_chlorophyte_green-algae	epilimnion		0	ug/L
8	7/20/2014	1101BAL1090_MAIN	chlorophyll-a-concentration_cyanobacteria_bluegreen	epilimnion		52.9	ug/L
9	8/4/2014	1101BAL1090_MAIN	PH	epilimnion		7.62	pH units
10	7/20/2014	1101BAL1090_MAIN	anatoxin_a	epilimnion		0	ug/L
11	7/3/2016	1101BAL1090_MAIN	cylindrospermopsin	epilimnion		0	ug/L
12	7/17/2016	1101BAL1090_MAIN	chlorophyll-a-concentration_total	epilimnion		9.6	ug/L
13	7/17/2016	1101BAL1090_MAIN	chlorophyll-a-concentration_dinophyta_diatoms	epilimnion		0.1	ug/L
14	7/20/2014	1101BAL1090_MAIN	CHLOROPHYLL A	epilimnion	TOTAL	312	ug/L
15	8/30/2016	1101BAL1090_MAIN	CHLOROPHYLL A	epilimnion	TOTAL	20.1	ug/L
16	7/31/2016	1101BAL1090_MAIN	NITROGEN, TOTAL	epilimnion	TOTAL	680	ug/L
17	7/20/2014	1101BAL1090_MAIN	TEMPERATURE	epilimnion		24	celsius
18	8/30/2016	1101BAL1090_MAIN	microcystin	epilimnion		0	ug/L

Edit Raw Data in Excel

1. Delete Lake Name
2. Add filters to review data
3. Rename 2024 and 2025 *epilimnion temperature* to *TEMPERATURE* to be consistent with other years.

	A	B	C	D	E	F	
1	Sample Date	Location History ID	Parameter	Water Layer (m)	Fraction	Results	Units
2247	9/15/2024	1101BAL1090_SEC	TEMPERATURE	epilimnion		23	celsius
2525	6/24/2024	1101BAL1090_MAIN	epilimnion_temperature	epilimnion		26	celsius
2538	7/8/2024	1101BAL1090_MAIN	epilimnion_temperature	epilimnion		29	celsius
2557	7/21/2024	1101BAL1090_MAIN	epilimnion_temperature	epilimnion		25	celsius
2561	8/3/2024	1101BAL1090_MAIN	epilimnion_temperature	epilimnion		28	celsius
2593	8/18/2024	1101BAL1090_MAIN	epilimnion_temperature	epilimnion		25	celsius
2605	9/1/2024	1101BAL1090_MAIN	epilimnion_temperature	epilimnion		24	celsius
2623	9/15/2024	1101BAL1090_MAIN	epilimnion_temperature	epilimnion		23	celsius

Add 2025 Weekly RAINFALL data for TP Study (from other device)

	A	B	C	D	E	F	G
1	Sample Date	Location History ID	Parameter	Water Layer (m)	Fraction	Results	Units
5555	9/9/2018	1101BAL1090_SEC	chlorophyll-a-concentration_dinophyta_diatoms	epilimnion		0	ug/L
5556	9/23/2018	1101BAL1090_SEC	chlorophyll-a-concentration_total	epilimnion		14.7	ug/L
5557	9/20/2020	1101BAL1090_SEC	chlorophyll-a-concentration_cryptophyta_cryptophytes	epilimnion		0.78	ug/L
5932	5/13/2025	1101BAL1090_MAIN	RAINFALL	not applicable		**4.13**	inches
5933	5/20/2025	1101BAL1090_MAIN	RAINFALL	not applicable		**1.04**	inches
5934	5/27/2025	1101BAL1090_MAIN	RAINFALL	not applicable		**0.43**	inches
5935	6/3/2025	1101BAL1090_MAIN	RAINFALL	not applicable		**1.98**	inches
5936	6/10/2025	1101BAL1090_MAIN	RAINFALL	not applicable		**2.64**	inches
5937	6/17/2025	1101BAL1090_MAIN	RAINFALL	not applicable		**0.85**	inches
5938	6/24/2025	1101BAL1090_MAIN	RAINFALL	not applicable		**0.39**	inches

Add 4 more columns and drag down the rows.

Year: =YEAR(A3)
Month: =MONTH(A3)
Weeknum: =WEEKNUM(A3)
BiWeek: = IF(ISEVEN(J2),J2+1,J2)
where J2 is week

The purpose of BiWeek is to group results into a bi-weekly calendar by rounding up even weeks into odd weeks.

The results will be summarized (median, average, or total) for the two-week period.

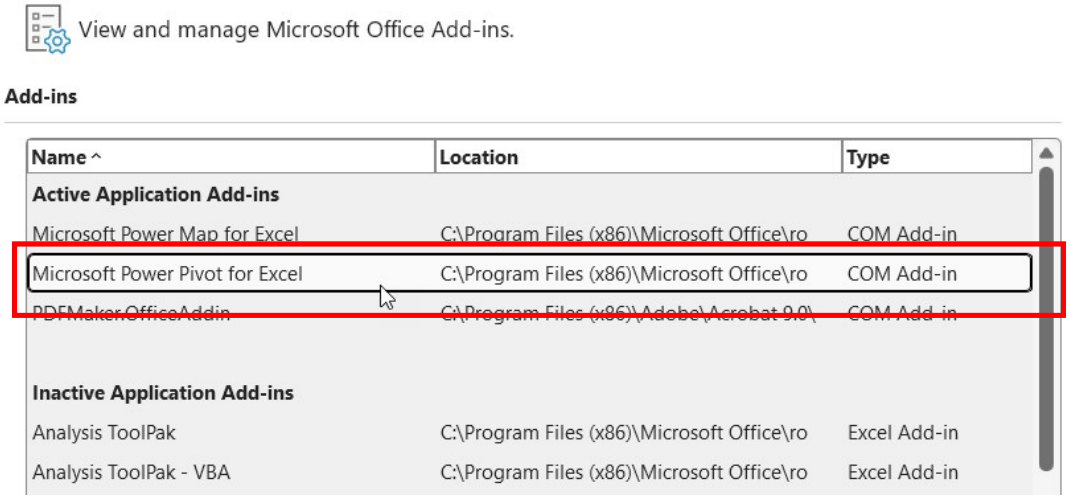
Since data is collected every two weeks, creating periods with more data allows for smoother results in seasonality analysis.

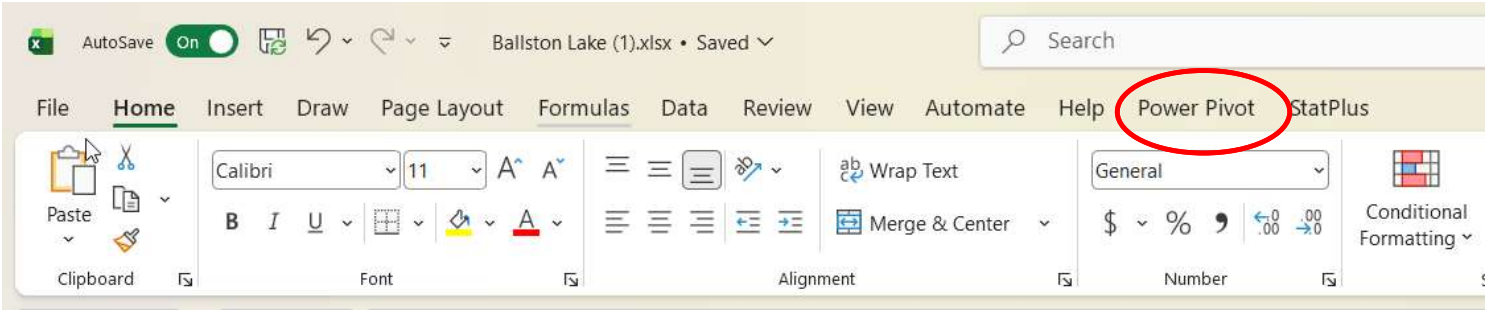
Results	Units	Year	Month	Week	BiWeek
0.027	mg/L	2015	6	25	25
2.14	ug/L	2015	6	25	25
22	celsius	2015	6	25	25
7.41E-09	pH units	2001	9	36	37
11.7	ug/L	2015	6	25	25
11	color units	2015	6	25	25
0.67	mg/L	2015	6	25	25
0	ug/L				

Activate Power Pivot Add-In (*one time only*) in Excel 2013+

- Go to **File** > **Options** > **Add-ins**
- In the manage box, select **Com Add-Ins**
- Select **Microsoft Power Pivot for Excel**

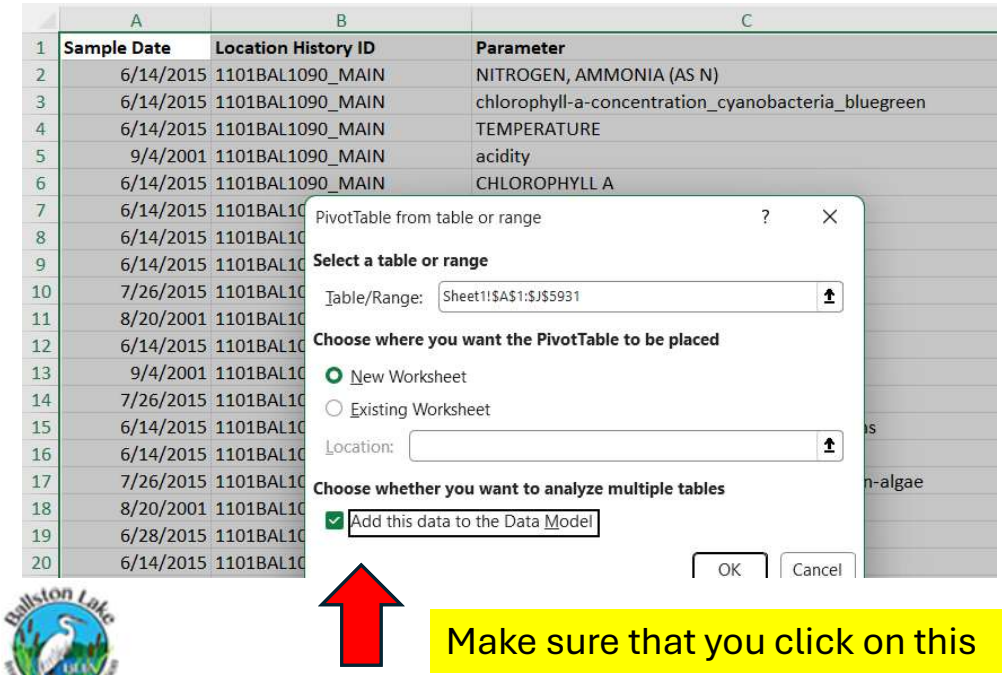
https://www.exceldemy.com/how-to-calculate-median-in-excel-pivot-table/



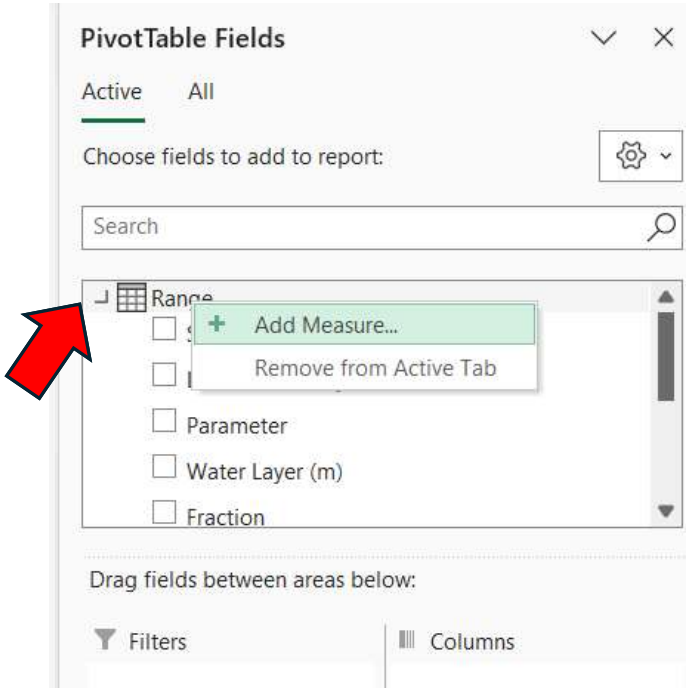


Create a Pivot Table and add Median Measure

1. Highlight Entire Data Range
2. **Insert, Pivot Table**
3. Add this data to the **Data Model** in New Worksheet
4. Go to new ***PivotTable Fields***
5. Right Click the **Range Icon**
6. **+ Add Measure.**

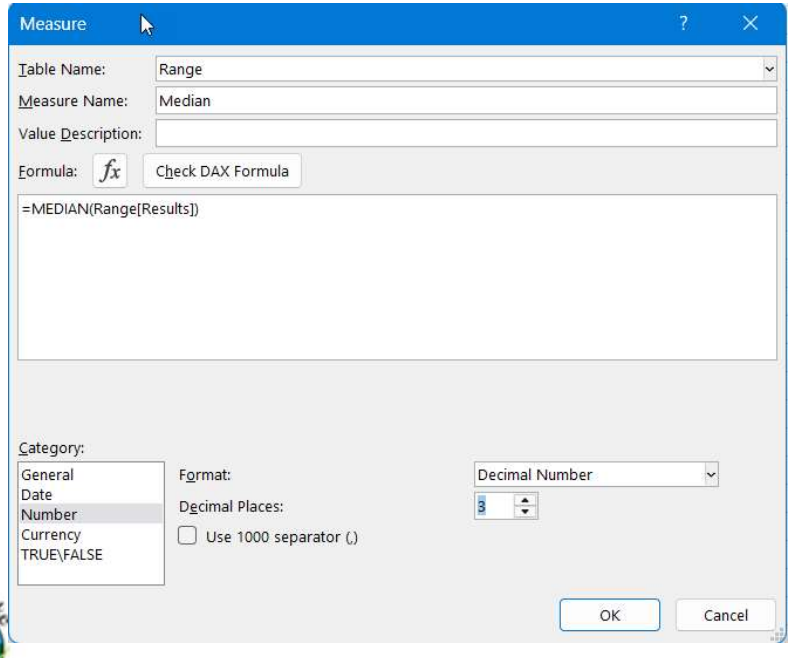


Make sure that you click on this



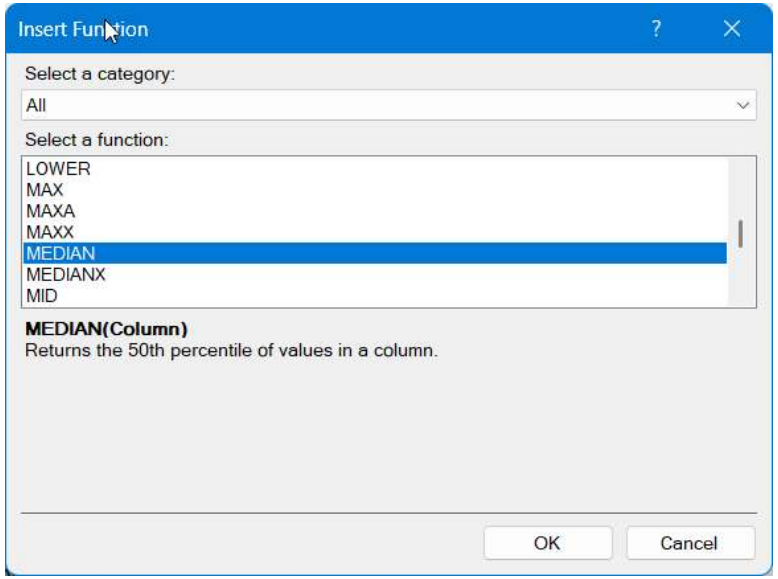
Create a calculated field - Median Result

Create a new Measure called Median and make a formula.



Select the Median Function.

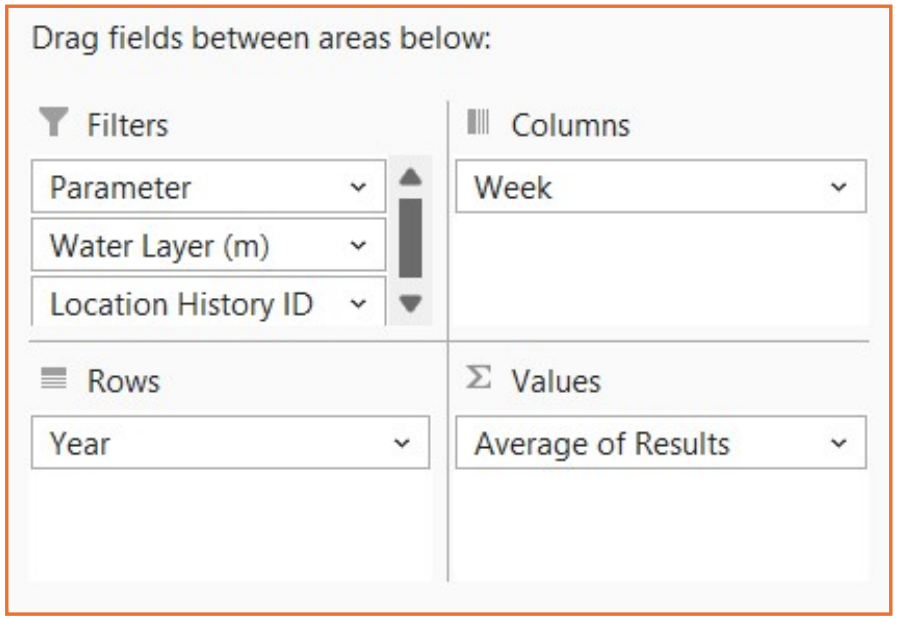
= MEDIAN(Range[Results])



Review Total P Data
Rows: Year
Columns: WeekNum
Values: Average of Results
Conditional Formatting (red high)

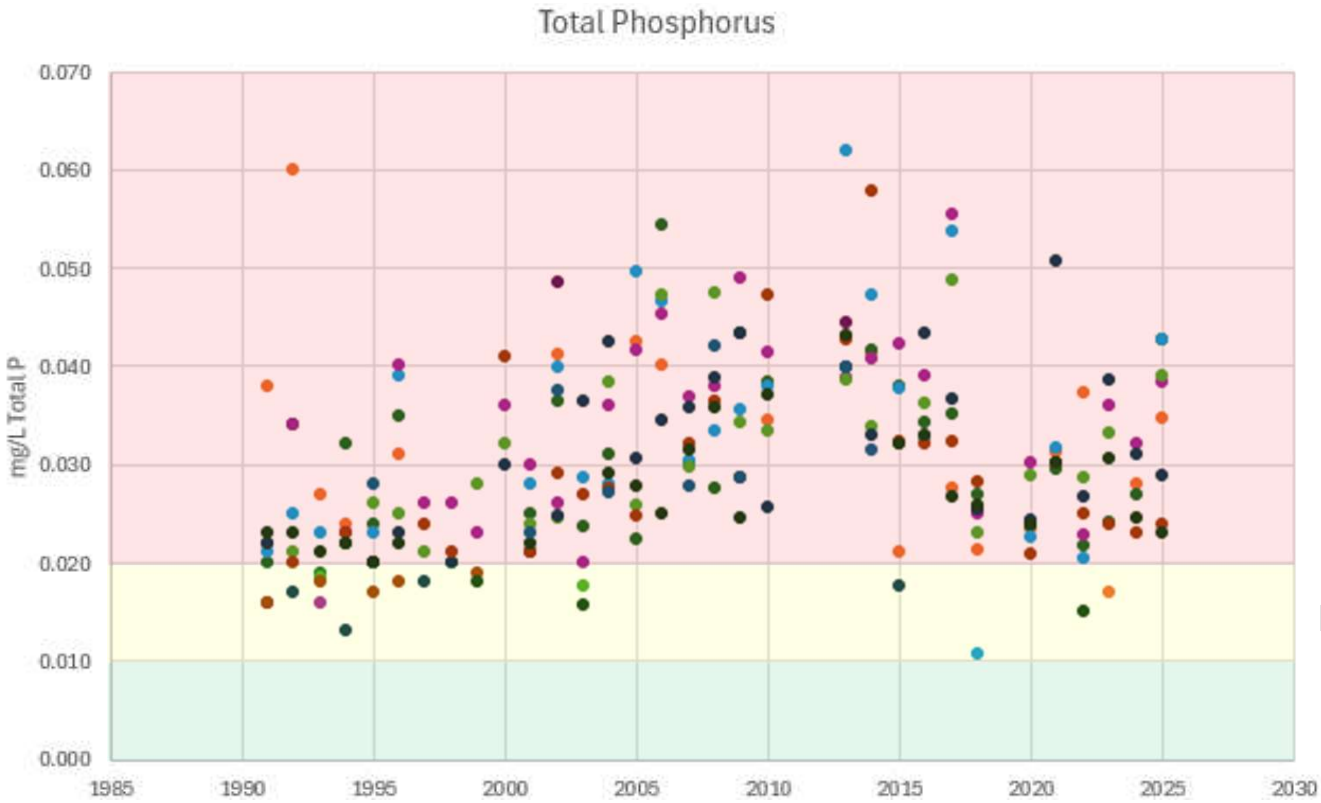
Location History ID	(Multiple Items)
Water Layer (m)	epilimnion
Parameter	PHOSPHORUS, TOTAL

Average of Results	Column Labels																			
Row Labels	22	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	Grand Total
1991		0.038			0.02		0.021		0.016		0.022		0.022		0.016		0.023				0.02225
1992		0.06		0.034		0.025		0.034		0.021		0.017		0.02		0.023					0.02925
1993		0.027		0.019		0.023		0.016		0.02	0.017			0.018		0.021					0.020125
1994			0.024		0.032		0.022		0.023		0.022		0.013		0.023		0.022				0.022625
1995				0.024		0.023		0.02		0.026		0.02		0.017		0.02		0.028			0.02225
1996			0.031		0.035		0.039		0.04		0.025		0.023		0.018	0.022					0.029125
1997									0.026		0.021		0.018		0.024						0.02225
1998								0.026			0.02		0.02		0.021						0.02175
1999									0.023		0.028			0.019		0.018					0.022
2000									0.036		0.032	0.03			0.041						0.03475
2001				0.025		0.028		0.03		0.024		0.021		0.021		0.022		0.023			0.02425
2002		0.041		0.037		0.04		0.026		0.025			0.025		0.029			0.038		0.049	0.034222222
2003				0.024		0.029		0.02		0.018		0.037		0.027		0.016					0.024171429
2004				0.031		0.028		0.036		0.038		0.043		0.028		0.029		0.027			0.03245
2005			0.043		0.022		0.05		0.042		0.026		0.031		0.025		0.028				0.03315
2006		0.04		0.054		0.047		0.045		0.047		0.034				0.029	0.021				0.0397125
2007				0.03		0.03		0.037		0.03		0.036		0.032		0.032		0.028			0.031775
2008				0.028		0.033		0.038		0.047		0.039		0.036		0.036		0.042			0.03739375
2009					0.043		0.036		0.049		0.034		0.043		0.029		0.025		0.029		0.0359125
2010		0.034		0.038		0.038		0.042		0.033		0.026		0.047		0.037					0.03695
2013						0.062		0.039		0.039		0.04		0.043		0.043		0.04		0.044	0.0436625
2014	0.0314	0.041		0.042		0.047		0.041		0.034		0.033		0.058							0.0408625
2015			0.021		0.038		0.038		0.042		0.032		0.018		0.032		0.032				0.0316125
2016				0.034		0.033		0.039		0.036		0.043		0.032		0.033	0.032				0.03531875
2017		0.028		0.035		0.054		0.056		0.049		0.037		0.032		0.027					0.03955
2018			0.021		0.027		0.011		0.025	0.023			0.025		0.028		0.026				0.02329375
2020			0.023		0.024		0.023		0.03		0.029		0.024		0.021		0.024				0.024366667
2021			0.031		0.03		0.032						0.051		0.03		0.03				0.034181818
2022			0.037		0.022		0.02		0.023		0.029		0.027		0.025		0.015				0.02536
2023			0.017		0.024			0.036		0.033		0.039		0.024		0.031					0.029057143
2024		0.028		0.027				0.034	0.028			0.031		0.023		0.025					0.027857143
2025			0.035		0.043		0.043		0.038		0.039		0.029		0.024		0.023				0.03415
Grand Total	0.0314	0.036	0.027	0.032	0.029	0.038	0.028	0.036	0.031	0.033	0.027	0.034	0.027	0.032	0.026	0.029	0.026	0.034	0.029	0.046	0.031207207

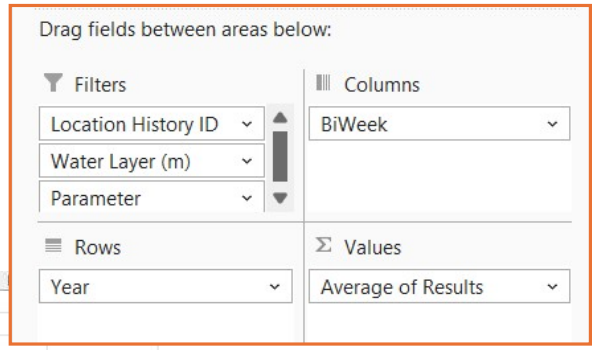


Note that weeks 22 -23, 40-42 have very few samples and will be excluded.

Copy data to another page
Create a Scatter Chart



Change Columns to BiWeek



Location History ID	(Multiple Items)
Water Layer (m)	epilimnion
Parameter	PHOSPHORUS, TOTAL

Average of Results	Column Labels											
Row Labels	23	25	27	29	31	33	35	37	39	41	43	Grand Total
1991		0.038	0.02	0.021	0.016	0.022	0.022	0.016	0.023			0.02225
1992		0.06	0.034	0.025	0.034	0.021	0.017	0.02	0.023			0.02925
1993		0.027	0.019	0.023	0.016	0.0185		0.018	0.021			0.020125
1994		0.024	0.032	0.022	0.023	0.022	0.013	0.023	0.022			0.022625
1995			0.024	0.023	0.02	0.026	0.02	0.017	0.02	0.028		0.02225
1996		0.031	0.035	0.039	0.04	0.025	0.023	0.018	0.022			0.029125
1997					0.026	0.021	0.018	0.024				0.02225
1998					0.026	0.02	0.02	0.021				0.02175
1999					0.023	0.028		0.019	0.018			0.022
2000					0.036	0.032	0.03	0.041				0.03475
2001			0.025	0.028	0.03	0.024	0.021	0.021	0.022	0.023		0.02425
2002		0.0411	0.0365	0.0398	0.0261	0.0246	0.0247	0.0291		0.0376	0.0485	0.034222222
2003			0.0237	0.0287	0.02	0.0176	0.0365	0.027	0.0157			0.024171429
2004			0.031	0.0281	0.0359	0.0383	0.0425	0.0276	0.0291	0.0271		0.03245
2005		0.0425	0.0224	0.0496	0.0416	0.0258	0.0307	0.0248	0.0278			0.03315
2006		0.04	0.0544	0.0465	0.0452	0.0472	0.0344		0.025			0.0397125
2007			0.0301	0.0303	0.0368	0.02975	0.03585	0.03205	0.03155	0.0278		0.031775
2008			0.0276	0.0333	0.0379	0.0474	0.03885	0.03635	0.03575	0.042		0.03739375
2009			0.0434	0.0355	0.049	0.0342	0.0434	0.0286	0.0245	0.0287		0.0359125
2010		0.0344	0.0384	0.038	0.0415	0.0333	0.0257	0.0472	0.0371			0.03695
2013				0.06185	0.0389	0.0385	0.0398	0.04265	0.0432	0.03995	0.04445	0.0436625
2014	0.0314	0.04135	0.04165	0.0472	0.04085	0.0338	0.0329	0.05775				0.0408625
2015		0.02105	0.03795	0.03765	0.0422	0.03205	0.01755	0.03235	0.0321			0.0316125
2016			0.0342	0.03285	0.039	0.03625	0.04345	0.032	0.0324			0.03531875
2017		0.02765	0.0351	0.0537	0.0555	0.0488	0.03655	0.03235	0.02675			0.03955
2018		0.0213	0.027	0.0106	0.025	0.0231	0.0254	0.02815	0.0258			0.02329375
2020		0.0234	0.0237	0.02265	0.0302	0.02885	0.02425	0.0208	0.024			0.024366667
2021		0.0313	0.0296	0.03165			0.05065	0.03025	0.0302			0.034181818
2022		0.0373	0.0218	0.02035	0.0228	0.0287	0.0268	0.02495	0.015			0.02536
2023		0.017	0.02405		0.0361	0.03315	0.03865	0.02385	0.0306			0.029057143
2024		0.028	0.027		0.03075		0.031	0.023	0.0245			0.027857143
2025		0.0346	0.0426	0.0428	0.0383	0.0391	0.0289	0.0239	0.023			0.03415
Grand Total	0.0314	0.031037037	0.030792308	0.033897297	0.033884091	0.03092381	0.031027907	0.029072727	0.027602439	0.033081818	0.0458	0.031207207

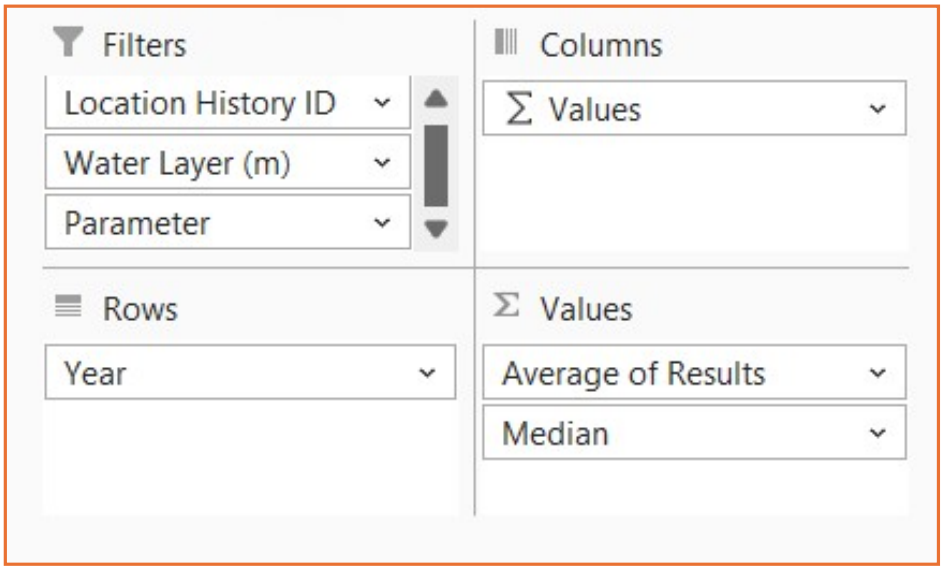
The BiWeek calendar rounds up the data from the even number week to the nearest odd number week.

This will be helpful for seasonality studies.

Exclude BiWeeks from Column 23,41,43

Select Pivot Table Fields for *Secchi Depth* with Average and Median Values

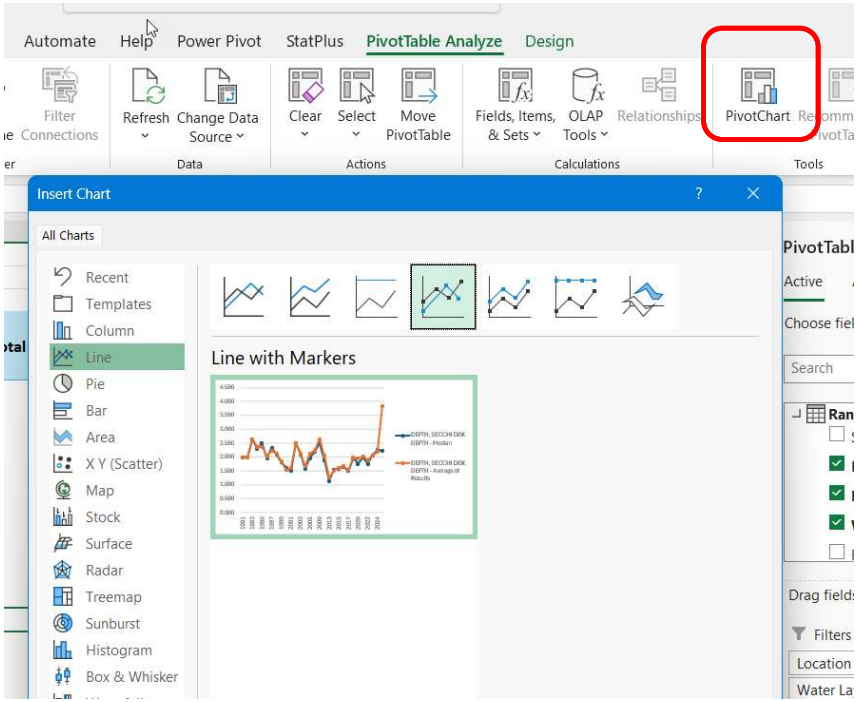
Filters, Rows, Columns, and Values

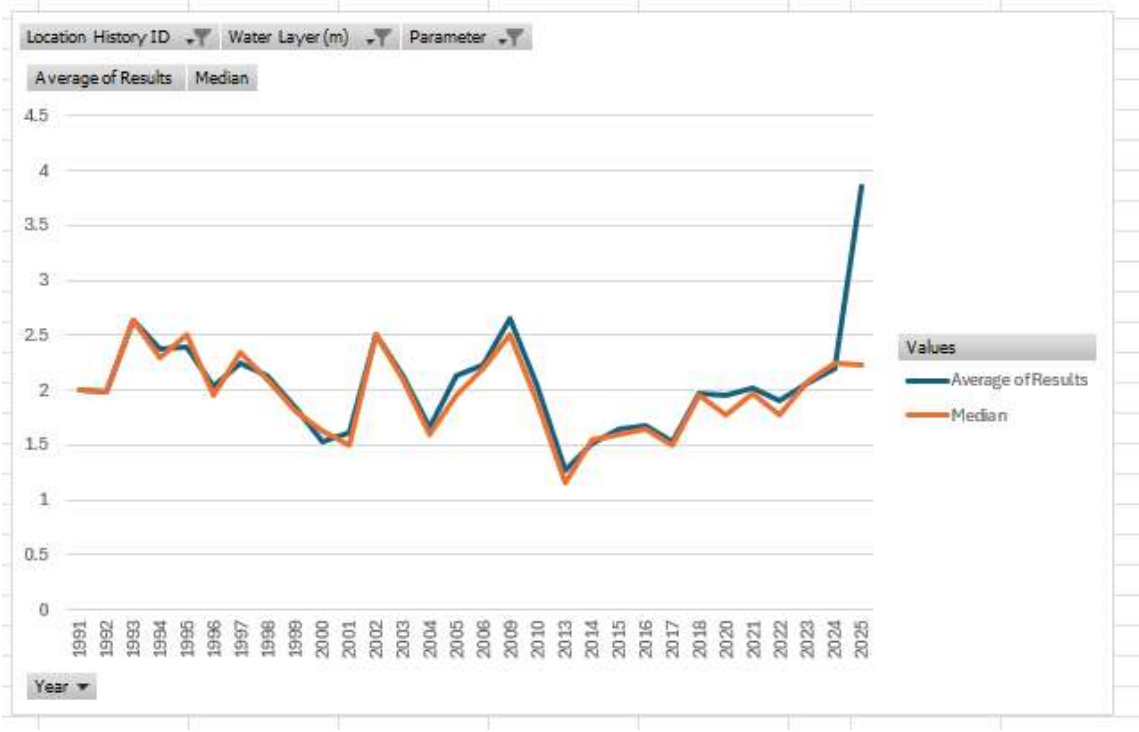


Resulting Pivot Table

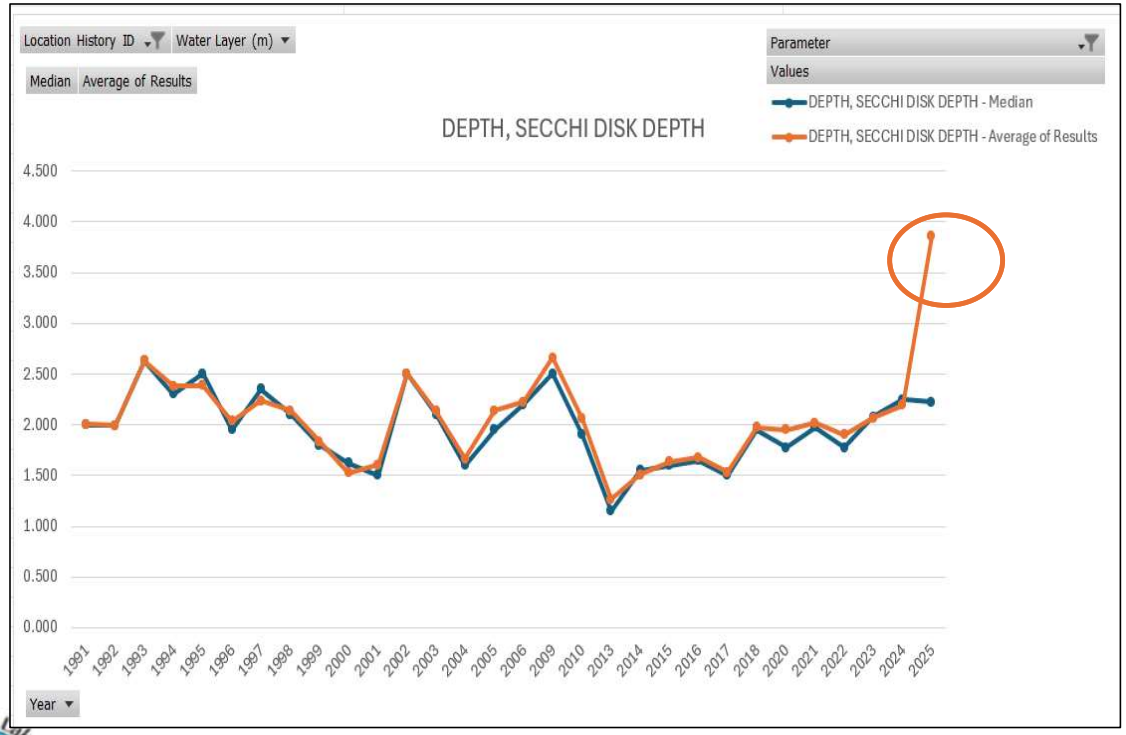
	A	B	C
1	Location History ID	(Multiple Items)	
2	Water Layer (m)	not applicable	
3	Parameter	DEPTH, SECCHI DISK DEPTH	
4			
5	**Row Labels**	**Average of Results**	**Median**
6	1991	2.00625	2.000
7	1992	1.9925	1.990
8	1993	2.62875	2.630
9	1994	2.378888889	2.300
10	1995	2.3875	2.500
11	1996	2.0375	1.950
12	1997	2.2375	2.350
13	1998	2.1375	2.100
14	1999	1.8375	1.800
15	2000	1.525	1.625
16	2001	1.60625	1.500
17	2002	2.5	2.500
18	2003	2.13125	2.100
19	2004	1.6625	1.600
20	2005	2.1375	1.950
21	2006	2.225	2.200
22	2009	2.66	2.500
23	2010	2.057142857	1.900
24	2013	1.264285714	1.150
25	2014	1.51	1.550
26	2015	1.6375	1.600
27	2016	1.675	1.650
28	2017	1.534375	1.500
29	2018	1.976666667	1.950
30	2020	1.953125	1.775
31	2021	2.01875	1.975
32	2022	1.9	1.775
33	2023	2.063571429	2.075
34	2024	2.193125	2.250
35	2025	3.85625	2.225
36	**Grand Total**	**1.976677966**	**1.900**

Add a Pivot Chart with Averages and Medians, line graph, add title.





The Average Depth for 2025 is high.
Click the questionable value to see the details.



20	2005	2.1375	1.950
21	2006	2.225	2.200
22	2009	2.66	2.500
23	2010	2.057142857	1.900
24	2013	1.264285714	1.150
25	2014	1.51	1.550
26	2015	1.6375	1.600
27	2016	1.675	1.650
28	2017	1.534375	1.500
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33	2023	2.063571429	2.075
34	2024	2.193125	2.250
35	2025	3.85625	2.225
36	**Grand Total**	**1.976677966**	**1.900**
37		Average	Median

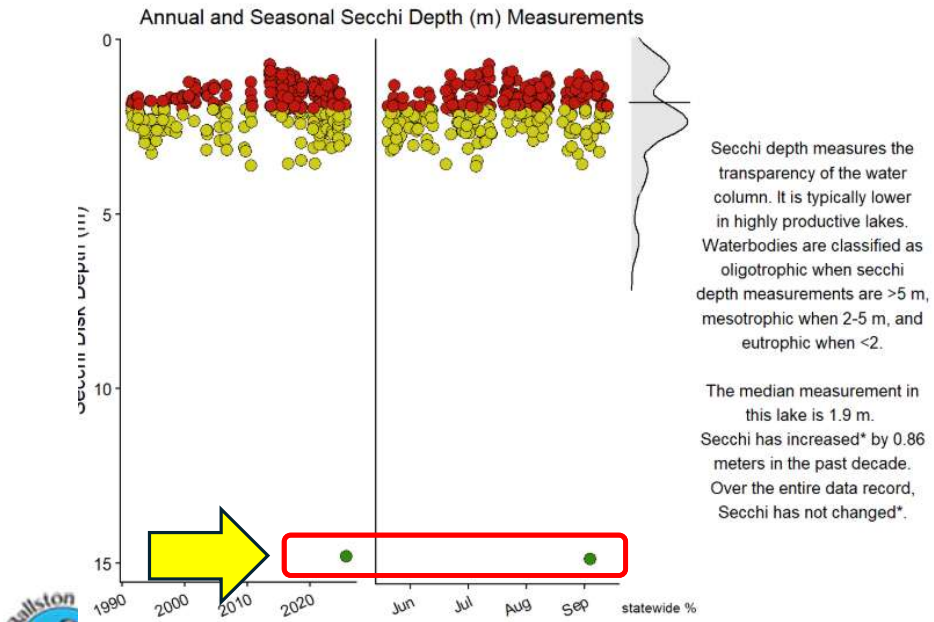
The Outlier is 14.8 meters deep on 9/21/25 Average (3.8) vs. Medians (2.2)?

	A	B	C	D	E	F	G	H	I	J
1	**Data returned for Average of Results, 2025 (First 1000 rows).**									
2										
3	Range[Sample	Range[Location History	Range[Parameter]	Range[Water I	Rang	Range[Resu	Range[Units]	Range[Ye	Range[Month]	Range[WeekNum]
4	7/13/2025	1101BAL1090_MAIN	DEPTH, SECCHI DISK DEPTH	not applicable		1.85	meters	2025	7	29
5	9/21/2025	1101BAL1090_MAIN	DEPTH, SECCHI DISK DEPTH	not applicable		14.8	meters	2025	9	39
6	9/7/2025	1101BAL1090_MAIN	DEPTH, SECCHI DISK DEPTH	not applicable		2.85	meters	2025	9	37
7	8/24/2025	1101BAL1090_MAIN	DEPTH, SECCHI DISK DEPTH	not applicable		2.1	meters	2025	8	35
8	8/10/2025	1101BAL1090_MAIN	DEPTH, SECCHI DISK DEPTH	not applicable		1.9	meters	2025	8	33
9	7/27/2025	1101BAL1090_MAIN	DEPTH, SECCHI DISK DEPTH	not applicable		2.35	meters	2025	7	31
10	6/29/2025	1101BAL1090_MAIN	DEPTH, SECCHI DISK DEPTH	not applicable		2.9	meters	2025	6	27
11	6/15/2025	1101BAL1090_MAIN	DEPTH, SECCHI DISK DEPTH	not applicable		2.1	meters	2025	6	25
12										
13					Average	3.85625		1.85	Out	
14					Median	2.225		1.9	Out	
15								2.1	Out	
16								2.1	In	Average of "In"
17								2.35	In	2.225
18								2.85	Out	
19								2.9	Out	
20								14.8	Out	
21										

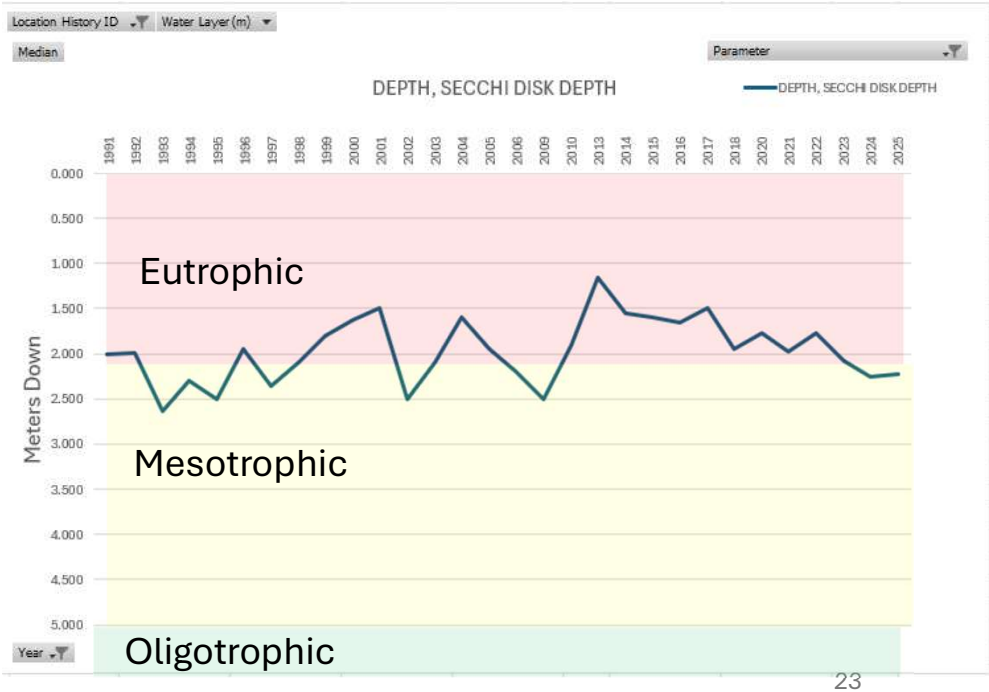
The Median for 8 samples excludes the top 3, the bottom 3, and averages the middle 2.

Secchi - 35 Year Median Trend

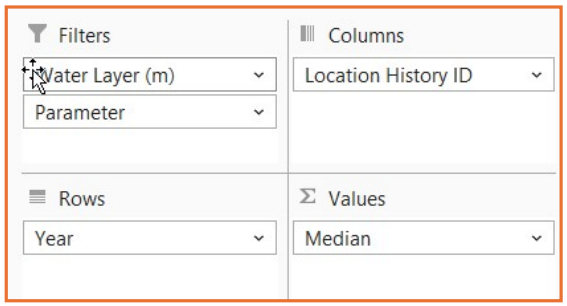
The 14 meter dot on the CSLAP report for Secchi Depth.



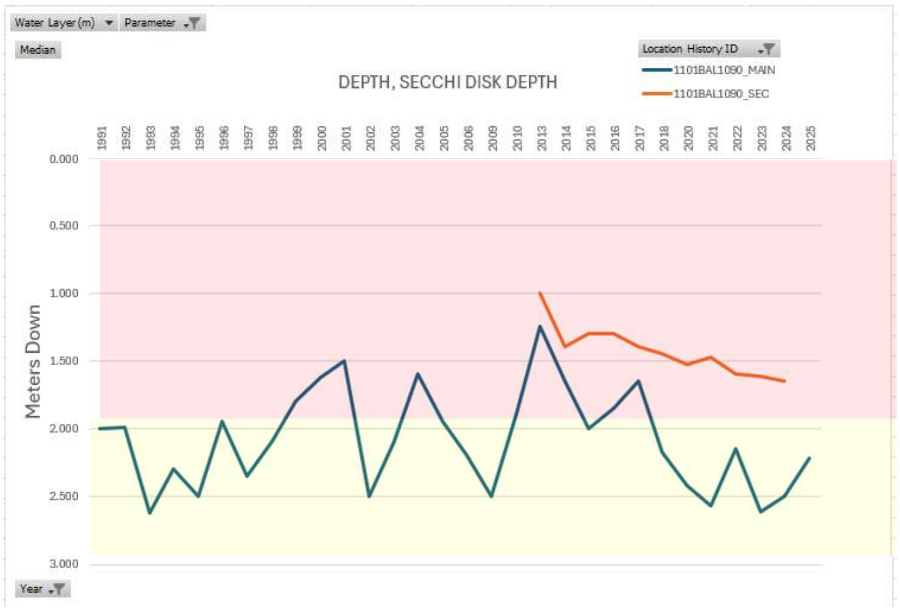
Exclude Averages, Reverse Scale, for the Yearly Medians



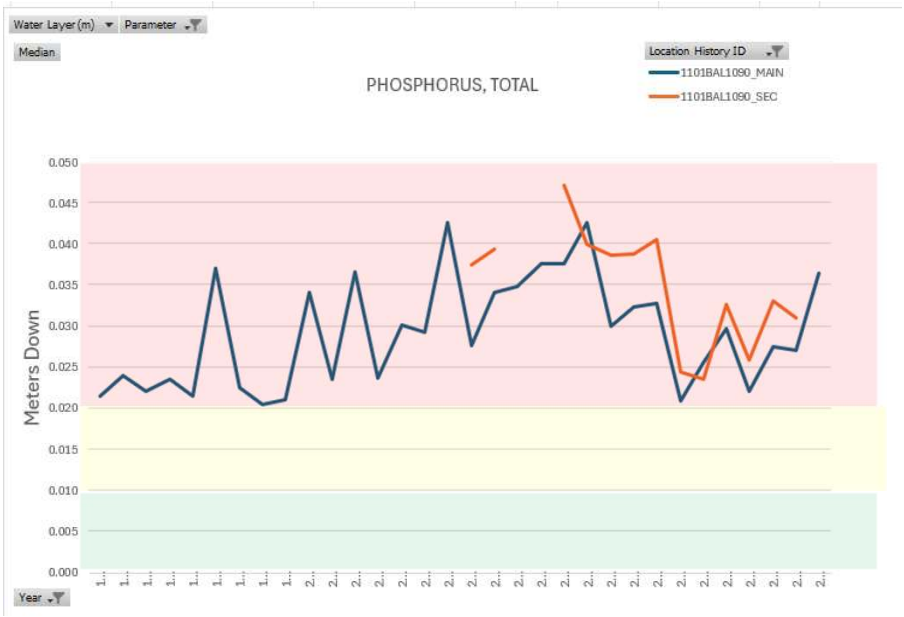
Compare 2 Sites for Secchi Depth
Main is deep site, Secondary is shallow site



Secchi Disk – Shallow site is less clear



TP – Deep site has slightly less TP

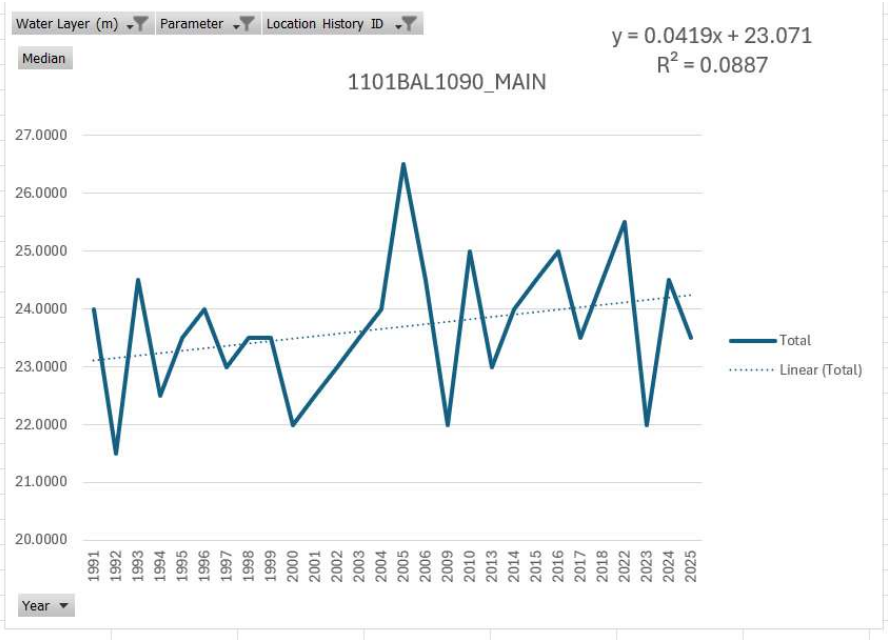


Temperature – Trends and Seasonality

Long Term Trend .0419 degrees C / Year

= 2.7 degrees F over 36 years

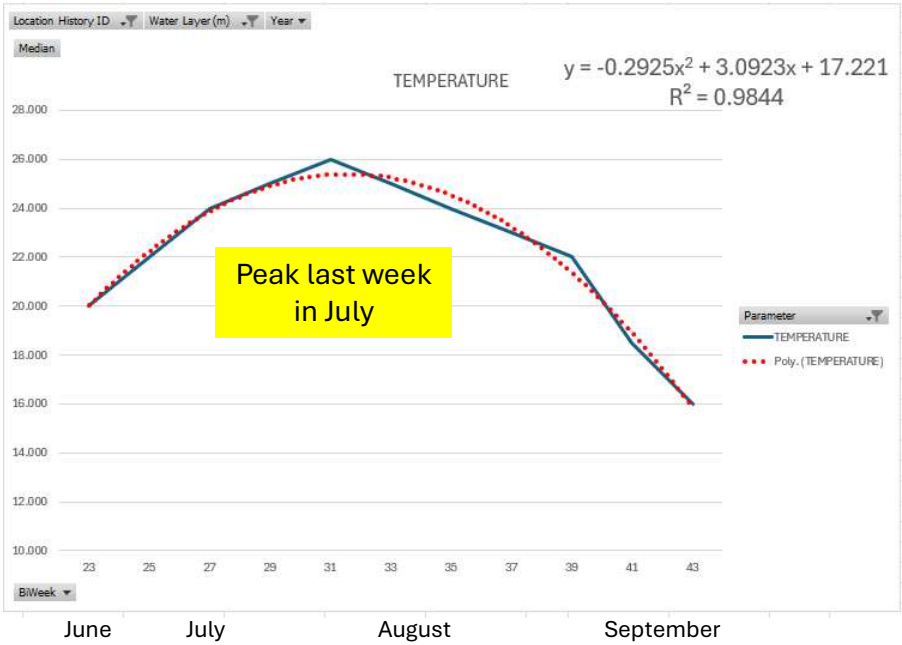
Add **linear trend** and formula



Axis is Yearly

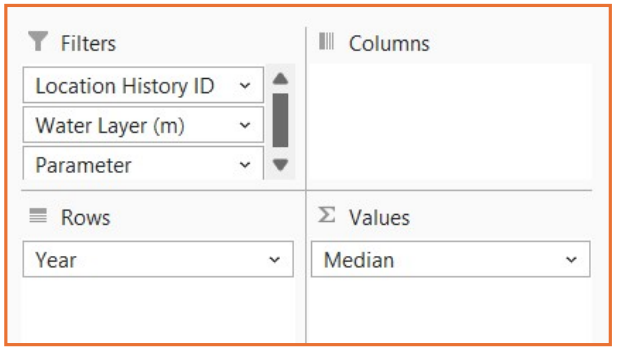
Change Rows from **Years** to **BiWeek** for

36 year seasonality

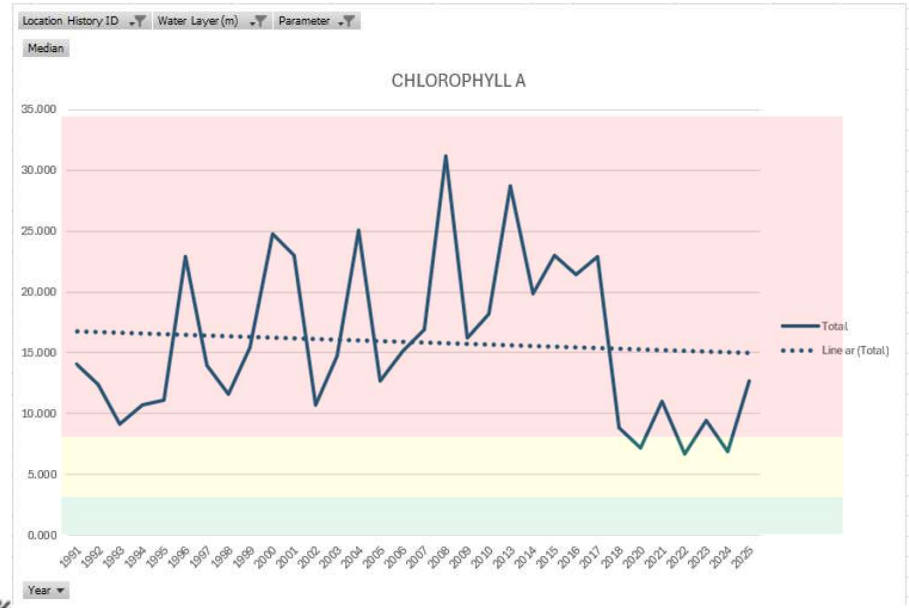


Axis is BiWeek

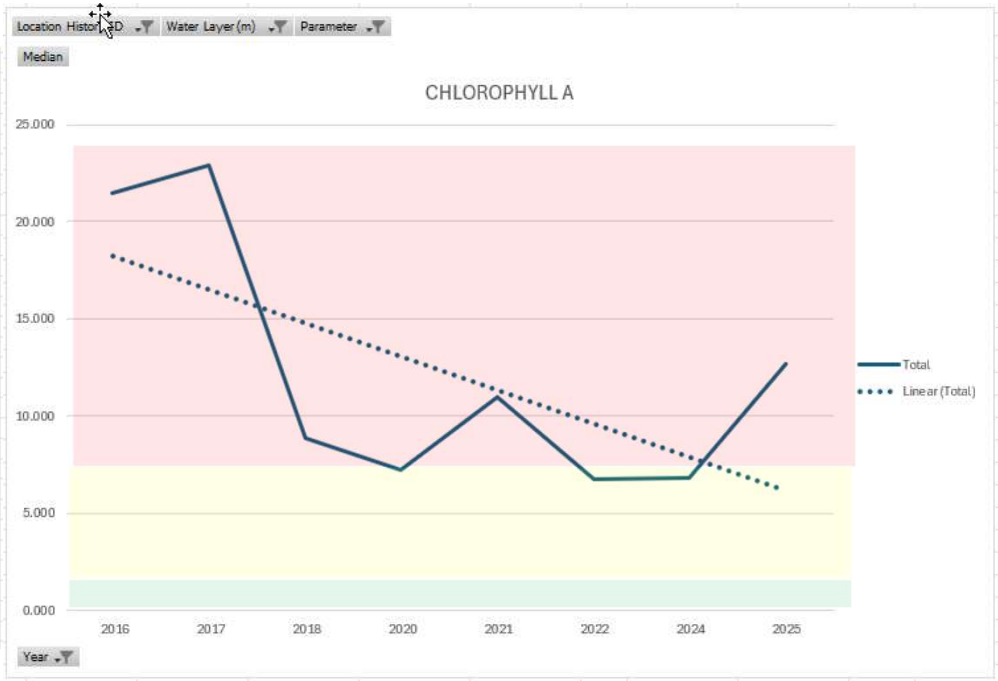
Trend Chlorophyll A



35 Years

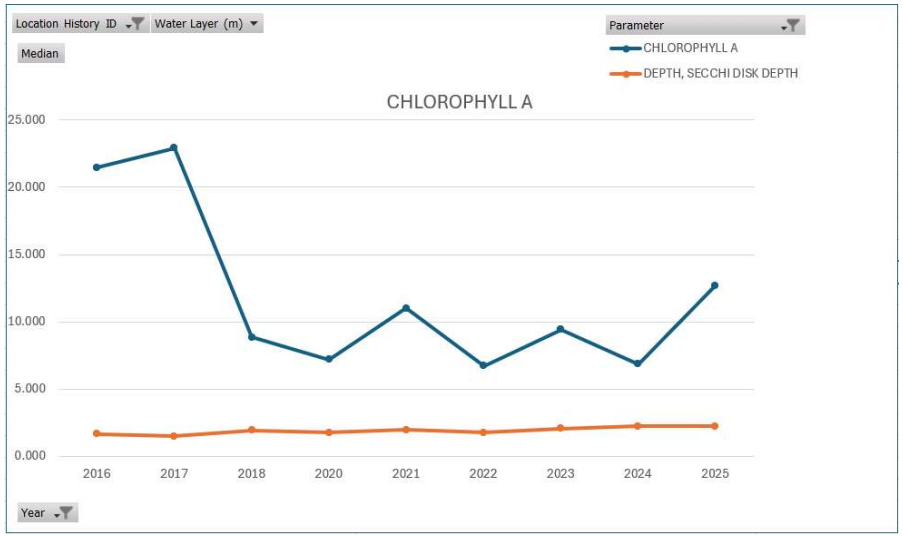


Last 10 Years

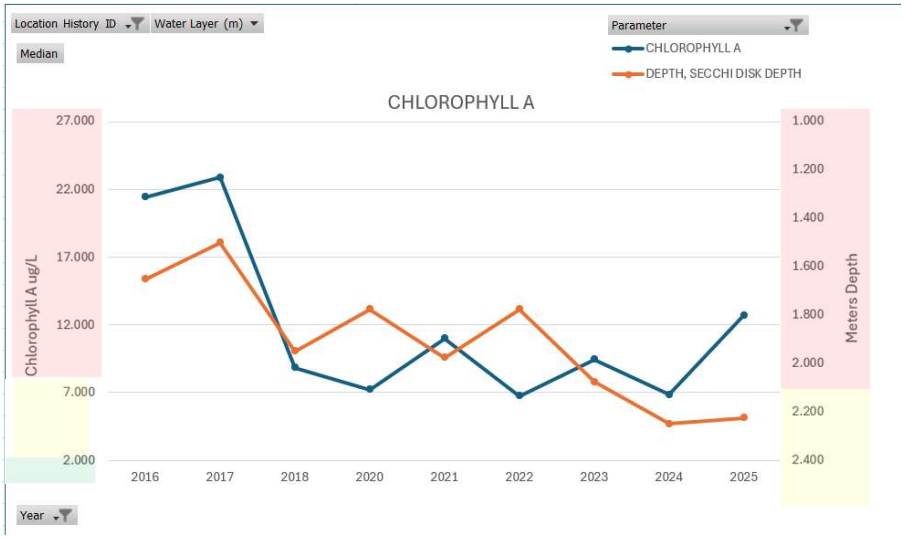


10-Year Trend
Chlorophyll A and Secchi Depth

Add Secchi Depth Parameter

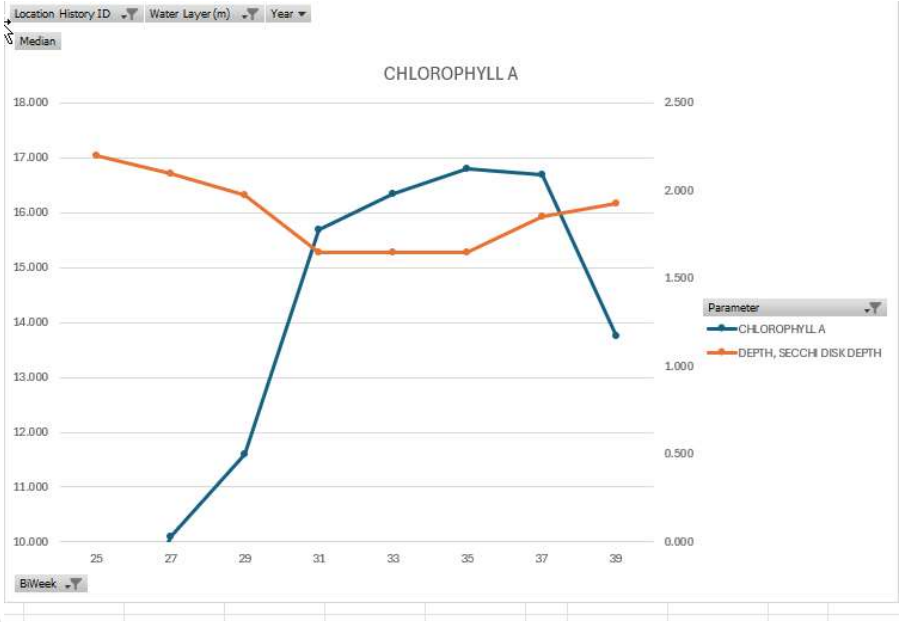


Edit 2nd Axis (Secchi) – Reverse , Rescale



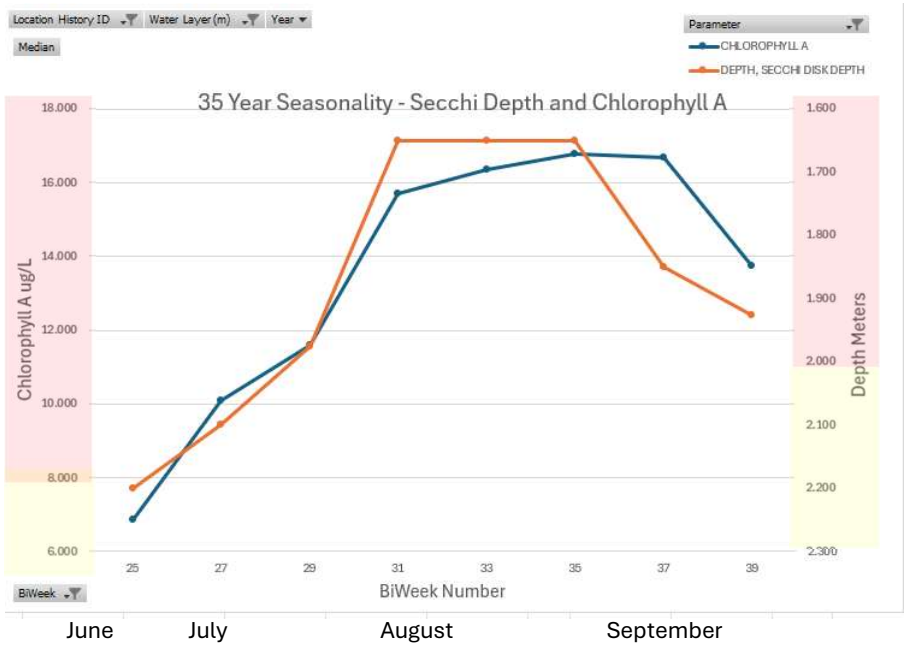
35 Year Seasonality
Chlorophyll A vs Secchi Depth

Initial Data



Edit Secchi Axis

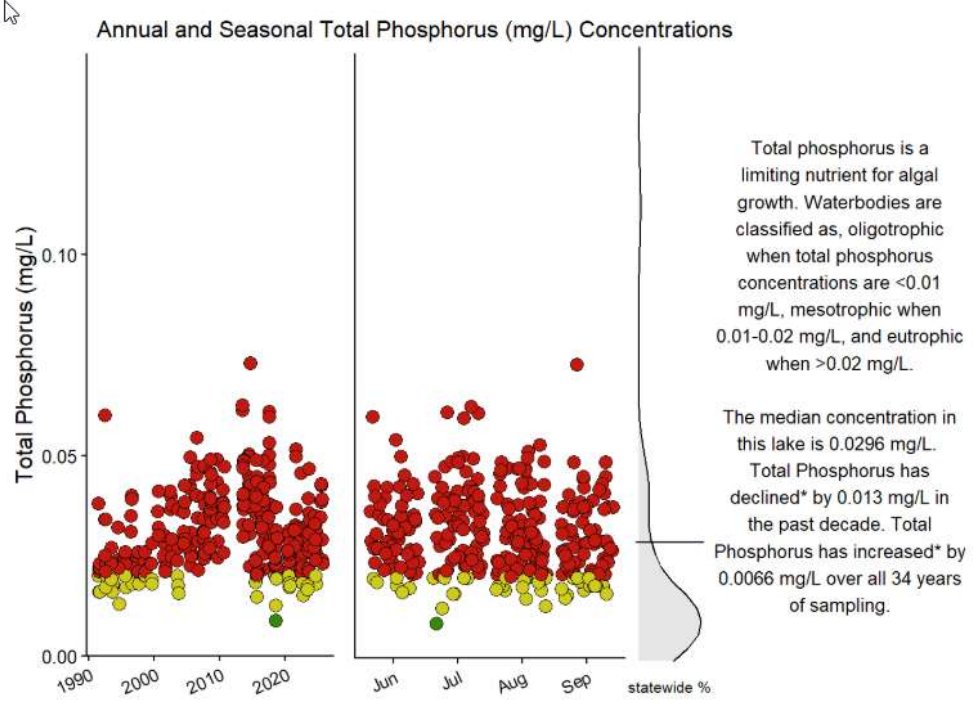
Reverse Depth , Rescale



35 Year Trend – Total Phosphorus

	A	B
1	Parameter	PHOSPHORUS, TOTAL
2	Water Layer (m)	epilimnion
3	Location History ID	(Multiple Items)
4		
5	Row Labels	Median
6	1991	0.022
7	1992	0.024
8	1993	0.020

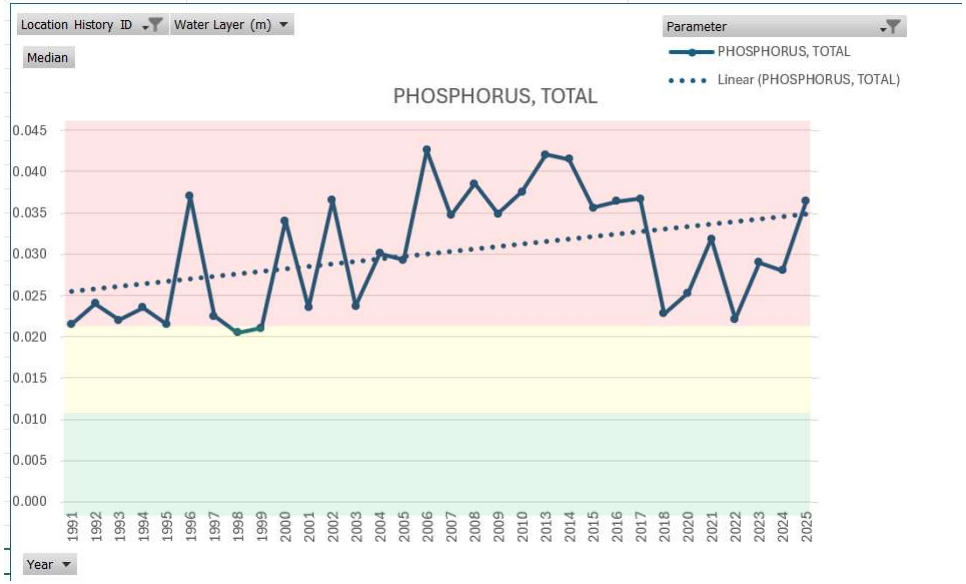
CSLAP Report



Total phosphorus is a limiting nutrient for algal growth. Waterbodies are classified as, oligotrophic when total phosphorus concentrations are <0.01 mg/L, mesotrophic when 0.01-0.02 mg/L, and eutrophic when >0.02 mg/L.

The median concentration in this lake is 0.0296 mg/L. Total Phosphorus has declined* by 0.013 mg/L in the past decade. Total Phosphorus has increased* by 0.0066 mg/L over all 34 years of sampling.

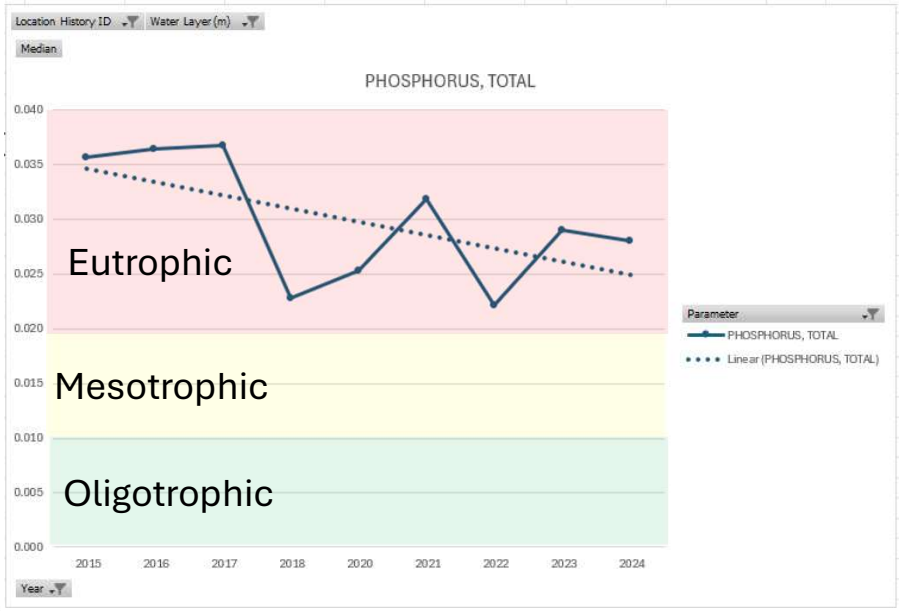
Long Term Trend Up



Compare 10-year Phosphorus Trends

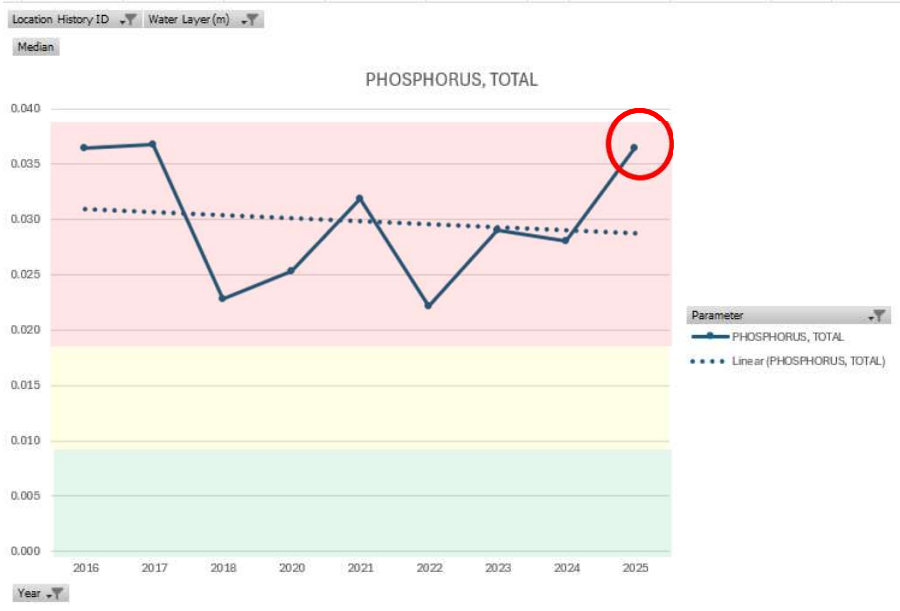
20224 Report

2015-2024 – Declining Trend



2025 Report – highest TP in a decade

2016-2025 Level Trend

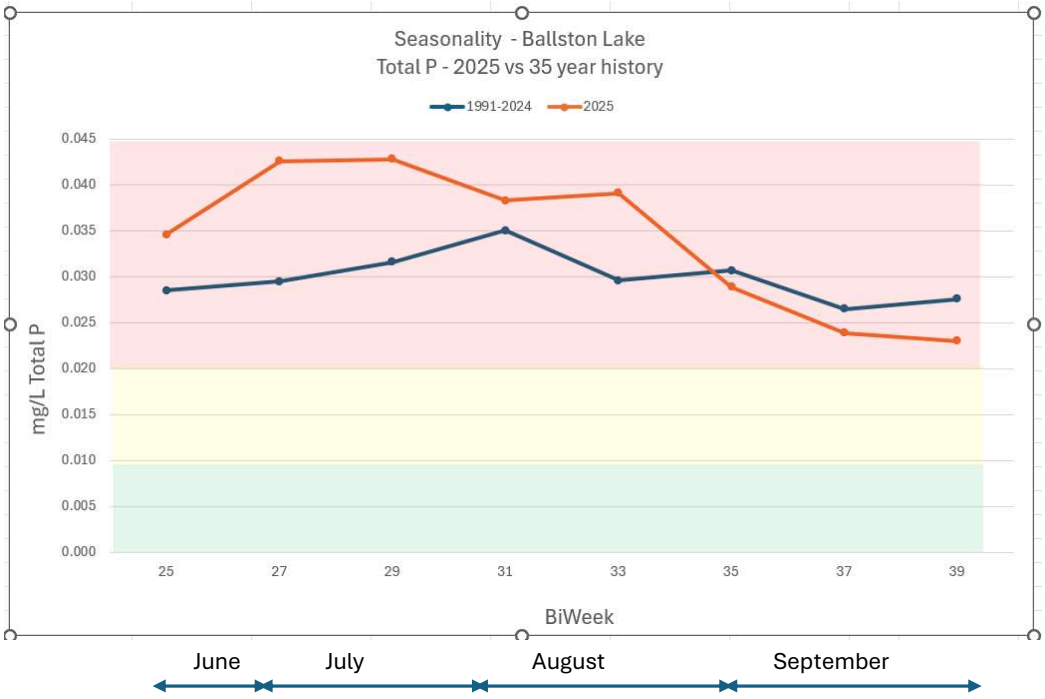


Compare 2025 TP Seasonality with prior years

2025 – Copy Pivot Table Data to a spreadsheet

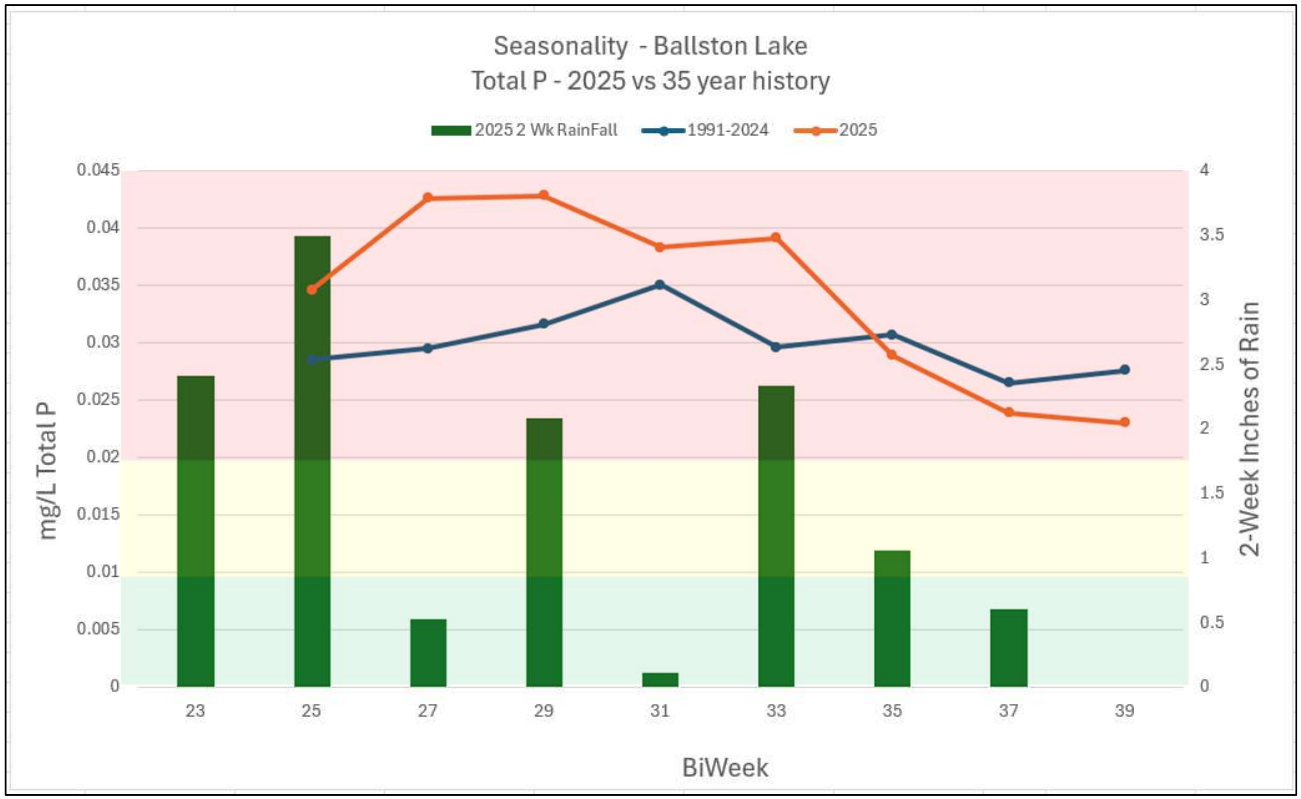
	A	B
1	Location History ID	(Multiple Item
2	Water Layer (m)	(Multiple Item
3	Year	2025
4		
5	**Sum of Results**	**Column Label**
6	**Row Labels**	**PHOSPHORUS, TOTAL**
7	25	0.0346
8	27	0.0426
9	29	0.0428
10	31	0.0383
11	33	0.0391
12	35	0.0289
13	37	0.0239
14	39	0.023

Compare 2025 vs prior 34 years

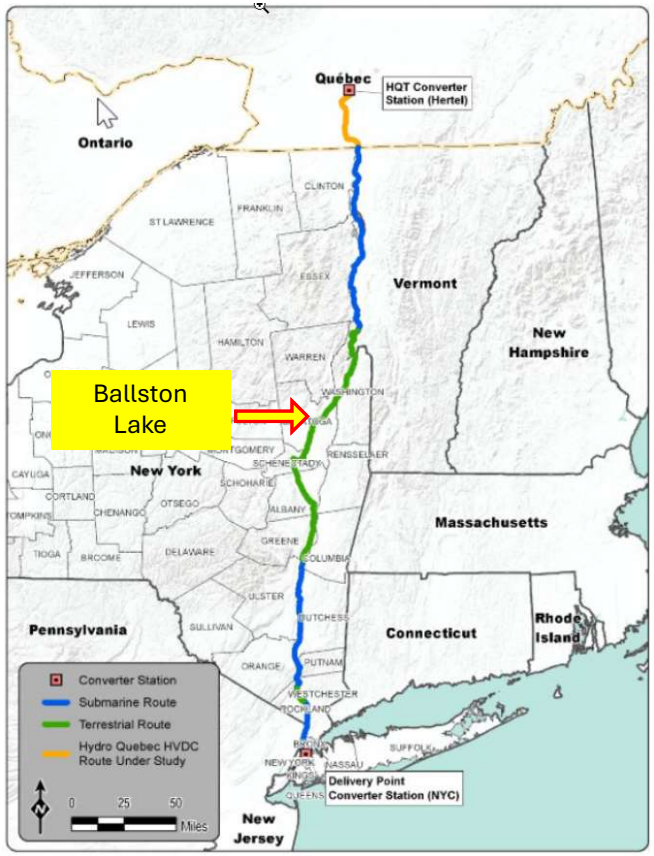


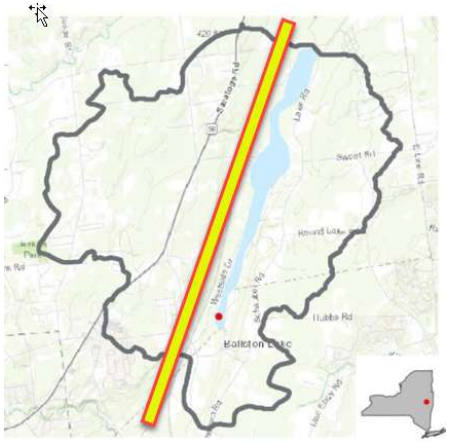
Compare 2025 Rainfall & TP vs 33 yrs of Seasonal History

BiWeek	total P 1991-2024	total P 2025	2025 2 Wk RainFall
23			2.41
25	0.029	0.035	3.49
27	0.030	0.043	0.53
29	0.032	0.043	2.08
31	0.035	0.038	0.11
33	0.030	0.039	2.33
35	0.031	0.029	1.06
37	0.027	0.024	0.6
39	0.028	0.023	0



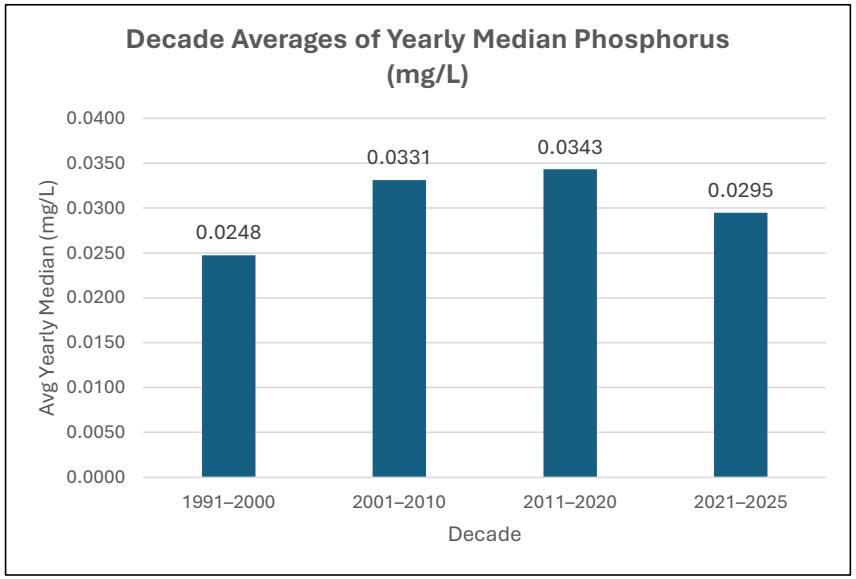
Weeks 20–32 bring heavy rains, saturated soil, flash flooding, and mud from the Champlain Hudson Power Express Project





What does A.I. say about trends?

- Create a separate workbook of Total P samples (weeks and years)
- Click on Copilot logo
- Comments on data
  - Year-to-year swings are large (e.g., 1996 spike 0.184 mg/L dominates the max).
  - Within each year, mid-summer weeks (27–32) carry most data; fall weeks (40–42) are sparse.
  - Gaps in 2011, 2012, 2019 weaken trend certainty; R^2 will reflect this.



Bottom line	Phosphorus **rose ~23–40%** from the early-1990s era to the 2006–2015 peak, then partially recovered in 2021–2025. The trend is **statistically upward but noisy** ($R^2 \approx 0.14$), so individual year swings matter as much as the long-term slope.

Link to this presentation: https://ballstonlake.org/**nysfola2026/**