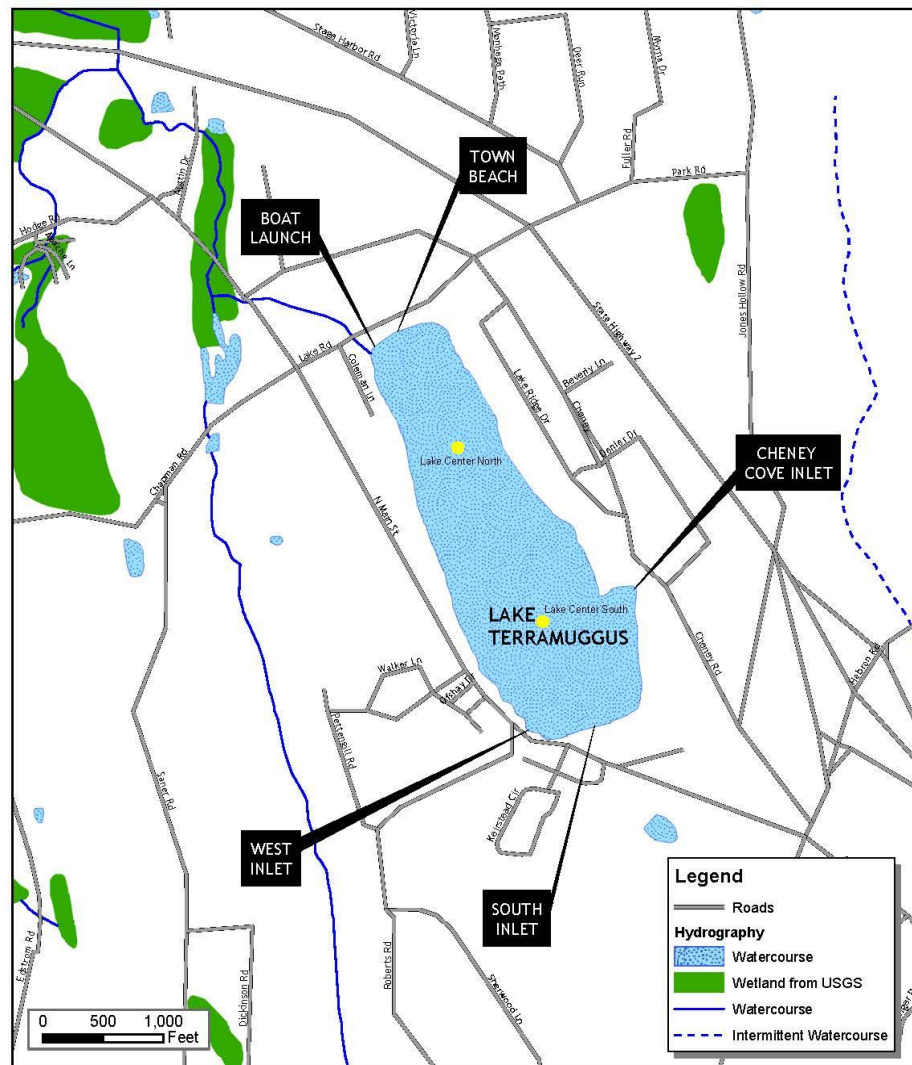


Lake Terramuggus Annual Report

2024



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FIGURE 1
SITE LOCATION MAP
LAKE TERRAMUGGUS
MARLBOROUGH, CT

Map Date: 12.29.2005
Data Source: Connecticut DEP Environmental GIS Data v.2002; NDOB Data v. June 2004
Drawing file: s:/gis/lk_terrarmuggus_marlbrough/basemap.mxd

Fig. 3. Temperature Profile 2024

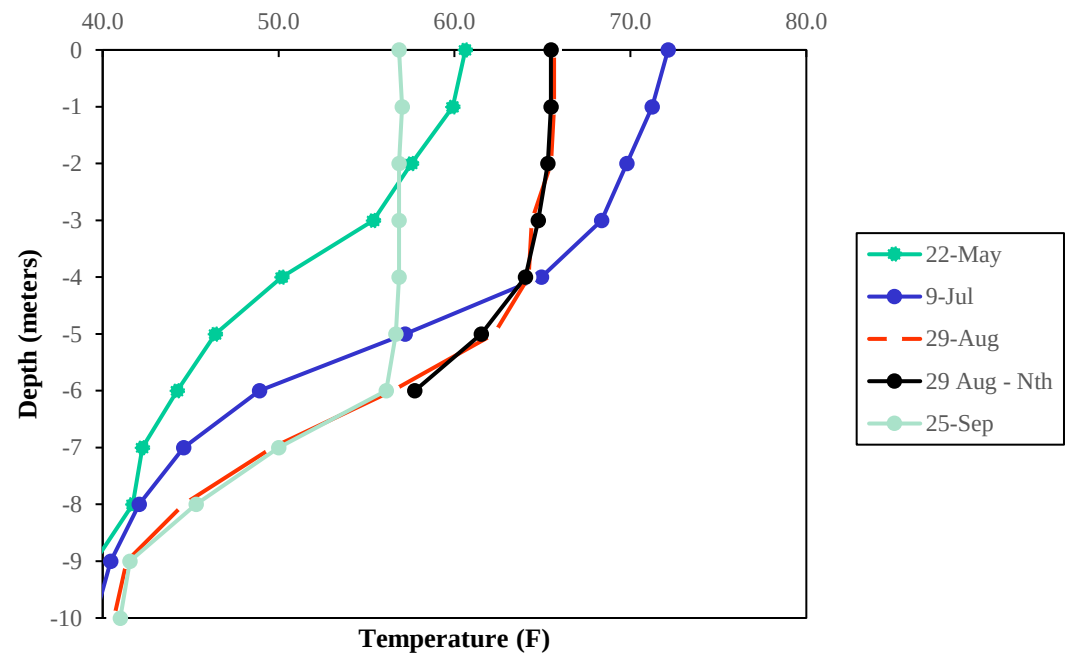


Table 4. Water Temperature

Depth (m)	Sample Date									
	22-May		9-July		29-Aug		29-Aug Nth		25-Sept	
	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F
0	15.9	60.6	22.3	72.1	18.7	65.7	18.68	65.5	13.8	56.8
-1	15.5	59.9	21.8	71.2	18.7	65.7	18.6	65.5	13.9	57.0
-2	14.2	57.6	22.0	69.8	18.6	65.5	18.5	65.3	13.8	56.8
-3	13.0	55.4	20.2	68.4	18.0	64.4	18.2	64.8	13.8	56.8
-4	10.1	50.2	18.3	64.9	17.9	64.2	17.8	64.0	13.8	56.8
-5	8.0	46.4	14.0	57.2	16.8	62.2	16.4	61.5	13.7	56.7
-6	6.8	44.2	9.4	48.9	13.6	56.5	14.3	57.5	13.4	56.1
-7	5.7	42.3	7.0	44.6	9.8	49.6			10.0	50.0
-8	5.4	41.7	5.6	42.1	7.0	44.6			7.4	45.3
-9	4.2	39.6	4.7	40.5	5.2	41.4			5.3	41.5
-10	3.8	38.8	4.2	39.6	4.8	40.6			5.0	41.0

Fig.4. Dissolved Oxygen Profile, 2024

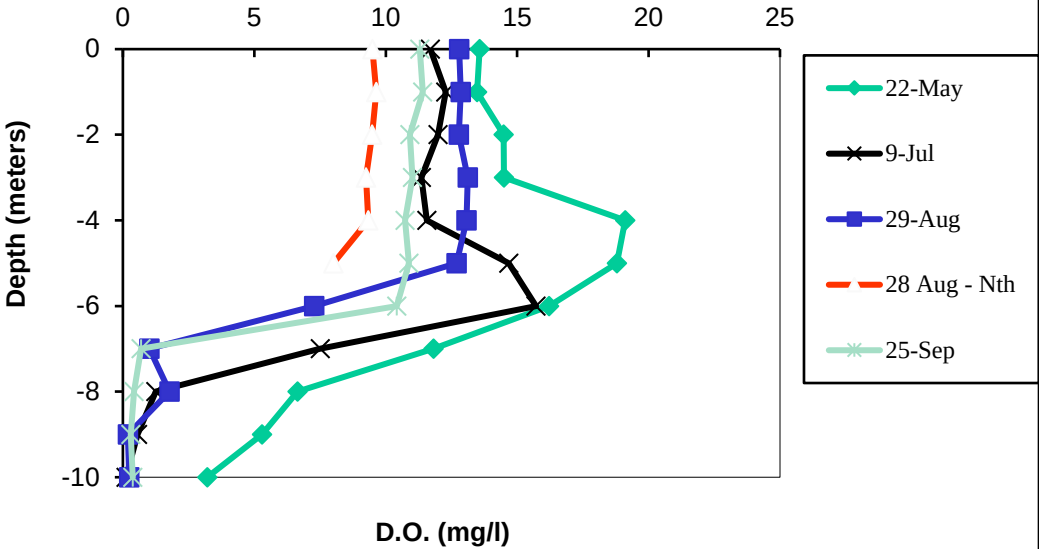


Table 5. Dissolved Oxygen (mg/l)

Depth (m)	Sample Date				
	22-May	9-July	29-Aug	29-Aug Nth	25-Sept
0	13.57	11.7	12.79	9.5	11.3
-1	13.48	12.28	12.86	9.64	11.41
-2	14.48	11.99	12.78	9.48	10.92
-3	14.5	11.36	13.12	9.25	11.02
-4	19.11	11.56	13.07	9.34	10.74
-5	18.8	14.68	12.70	8.01	10.88
-6	16.21	15.72	7.28		10.42
-7	11.82	7.51	1.01		0.69
-8	6.64	1.25	1.78		0.42
-9	5.29	0.56	0.19		0.30
-10	3.21	0.12	0.24		0.37

Table 6.
Secchi Depth-

Sample Date	Depth (feet)
22-May	12'0"
9 July	
29-Aug	12'6"
29-Aug Nth	14'0"
25-Sep	12'2"

Figure 5.a. Secchi Depth and Chlorophyll-a, 2024

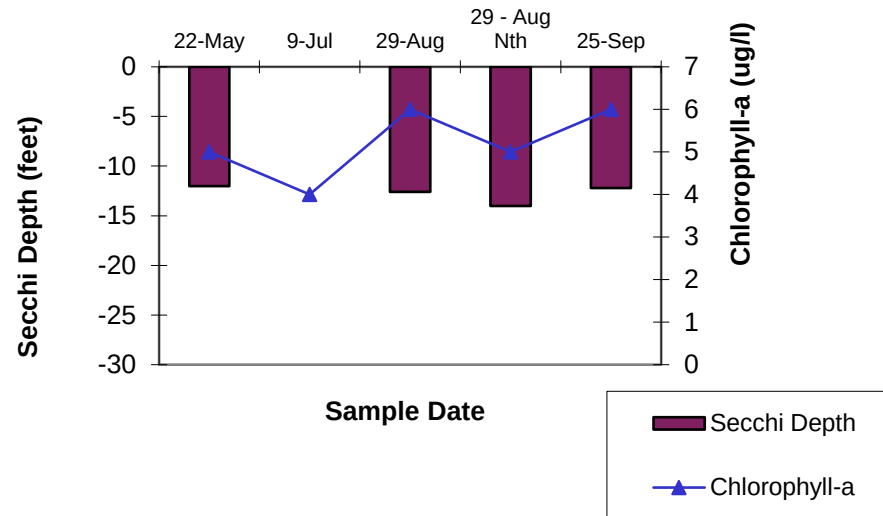


Table 7.
Chlorophyll-a & Turbidity

Sample Date	Chlor. a (ug/l)	Turb. (NTU)
22-May	5	1.5
9-July	4	0.7
29-Aug	6	1.4
29-Aug Nth	5	1.9
25-Sep	6	1.5

Figure 12. Secchi Depth 2004-2024

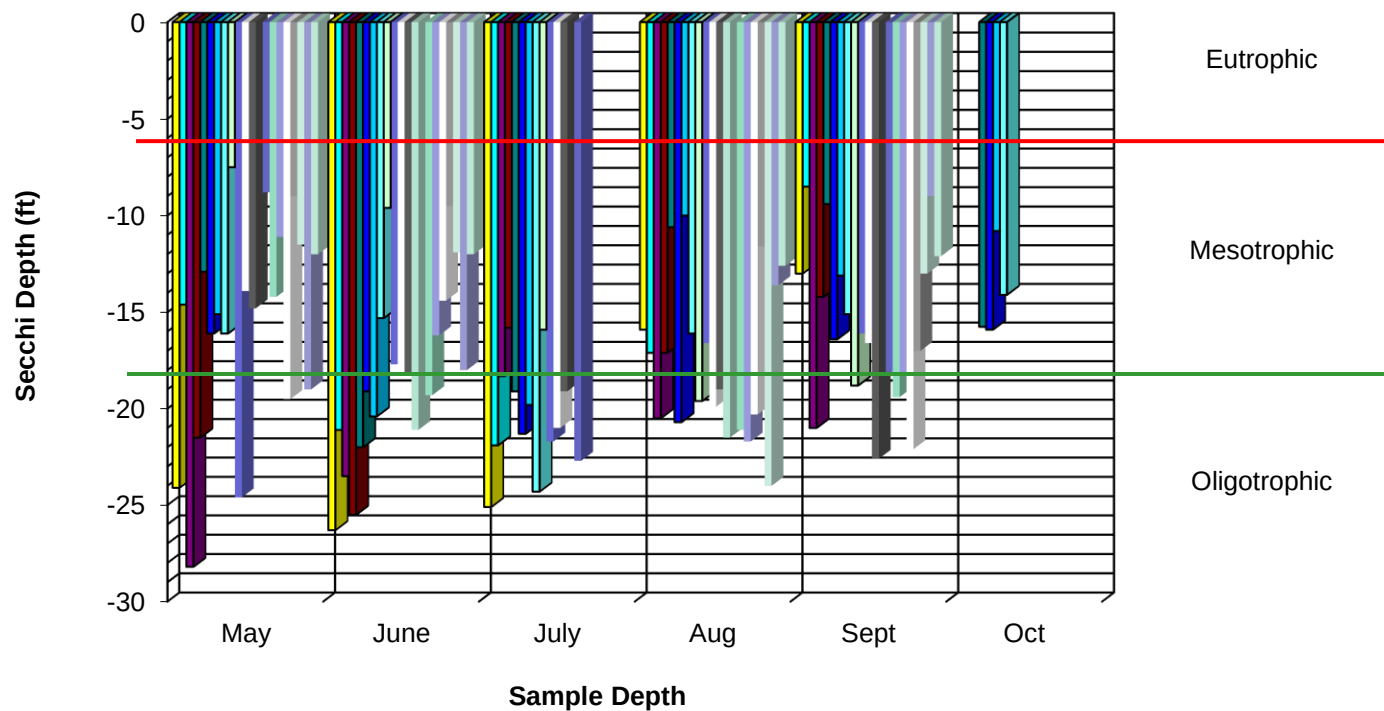


Figure 15. Chlorophyll-a, 1994-2024

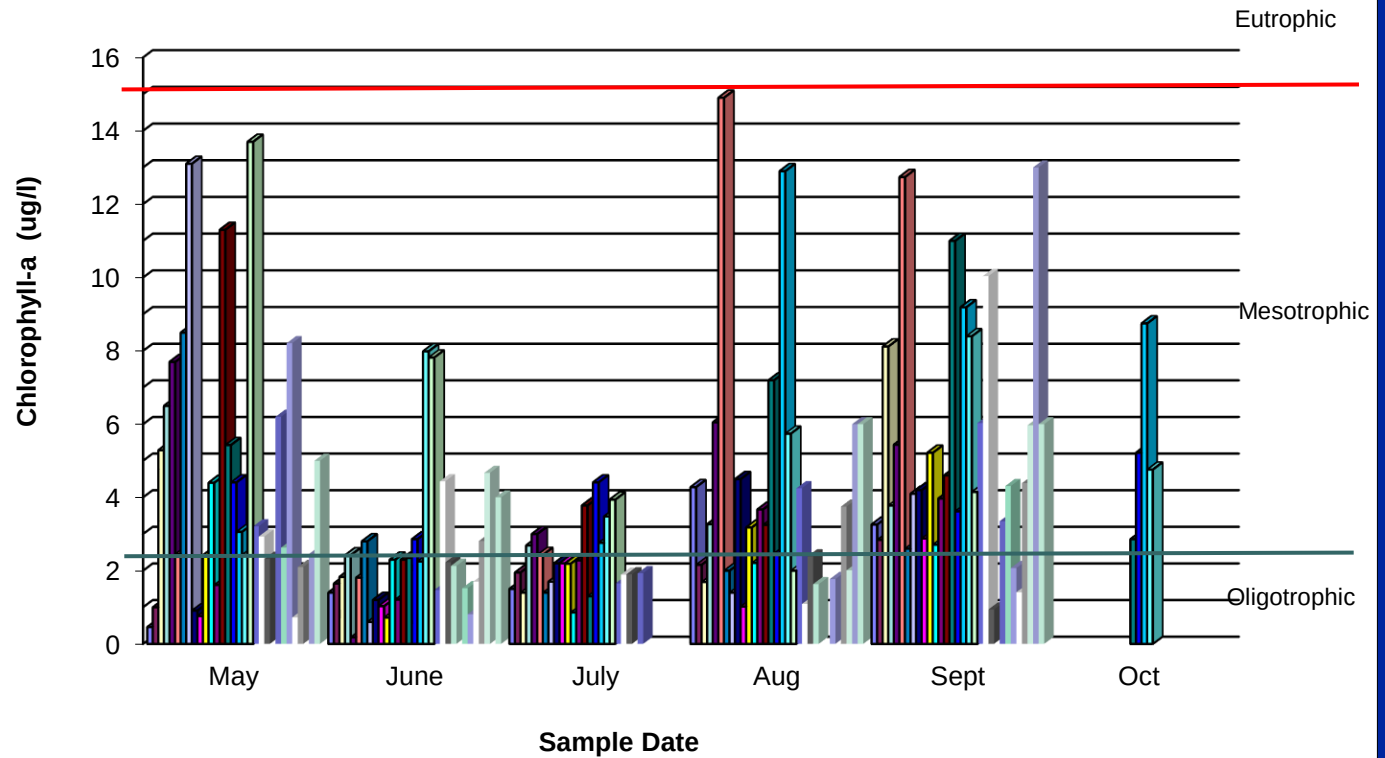


Figure 5.a. Secchi Depth and Chlorophyll-a, 2024

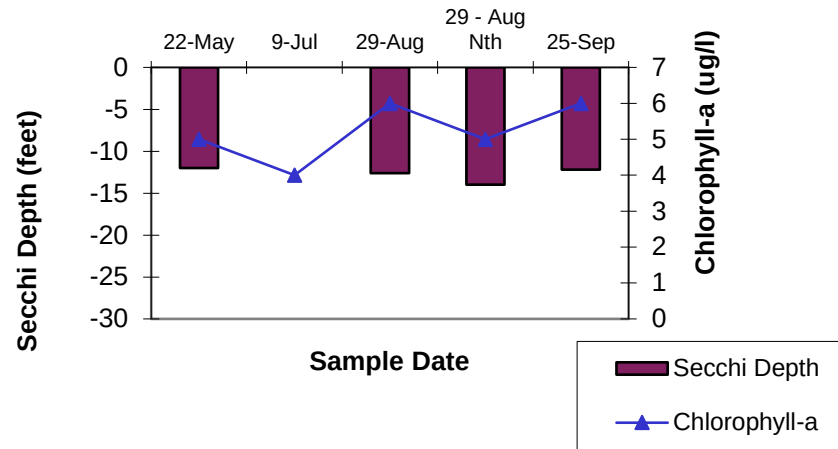


Figure 5.b. Secchi Depth and Turbidity, 2024

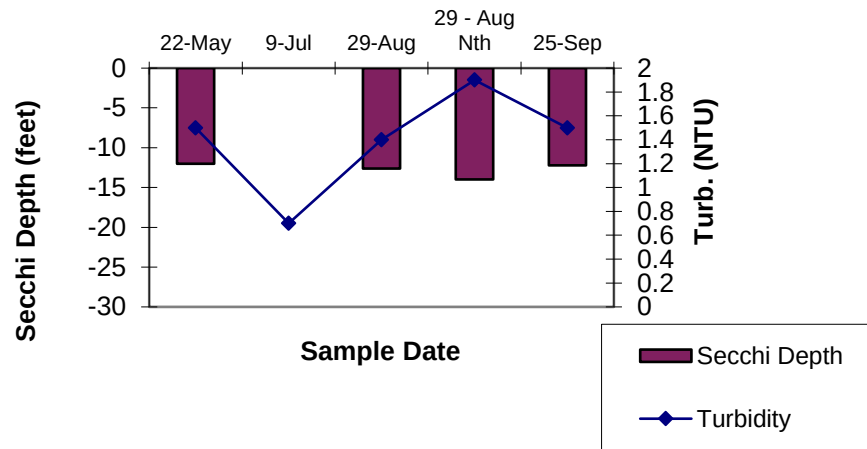


Figure 6. Specific Conductance, 2024

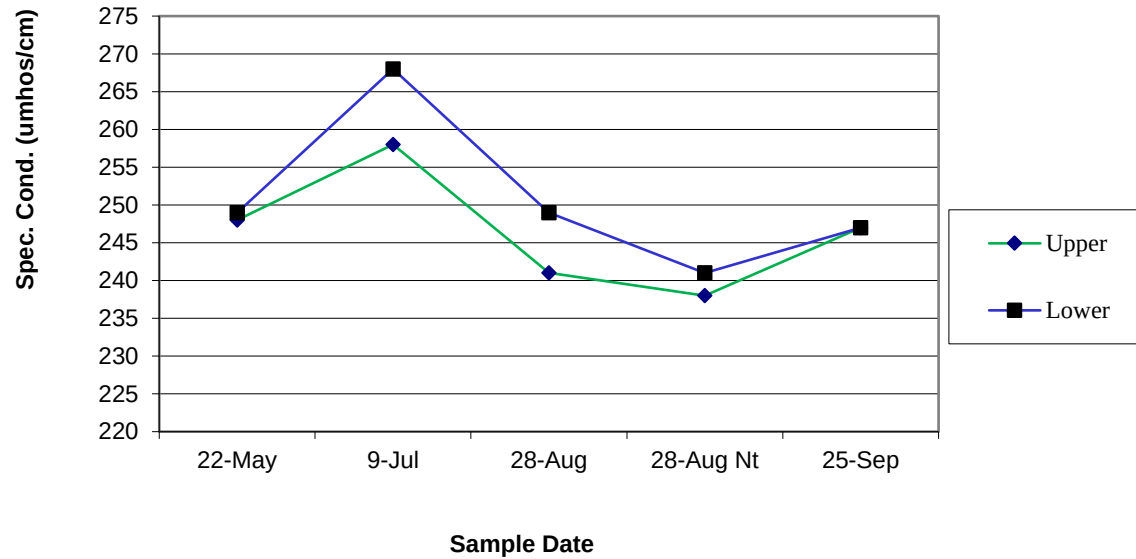


Table 8. Specific Conductance

Sample Date	Upper (µmhos/cm)	Lower (µmhos/cm)
22-May	248	249
9-July	258	268
29-Aug	241	249
29-Aug Nth	238	241
25-Sep	247	247

Table 9. Nitrogen

	TKN (µg/l)		Ammonia (µg/l)		Nitrate-nitrite (µg/l)	
Sample Date	Upper	Lower	Upper	Lower	Upper	Lower
22-May	450	340	90	<50	<20	<20
9-July	310	310	<50	<50	<20	<20
29-Aug	410	420	<50	<50	<20	<20
29-Aug Nth	470	390	<50	50	<20	<20
25-Sep	530	790	60	320	<20	<20

Figure 7a. Nitrogen-Upper Level, 2024

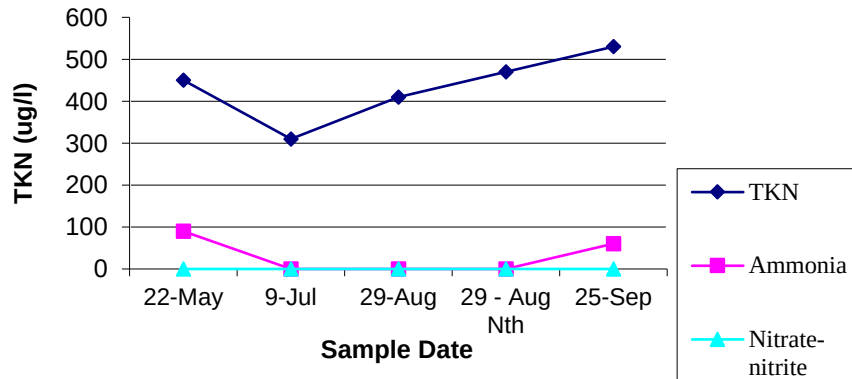


Figure 7b. Nitrogen-Lower Level, 2024

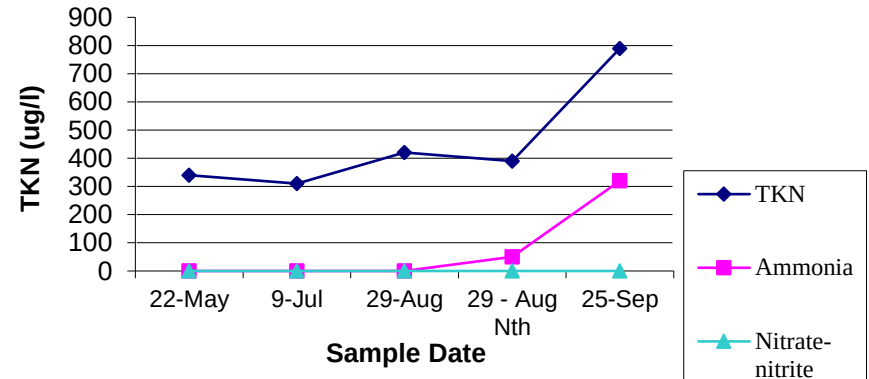


Figure 13a. Epilimnion TKN, 2004-2024

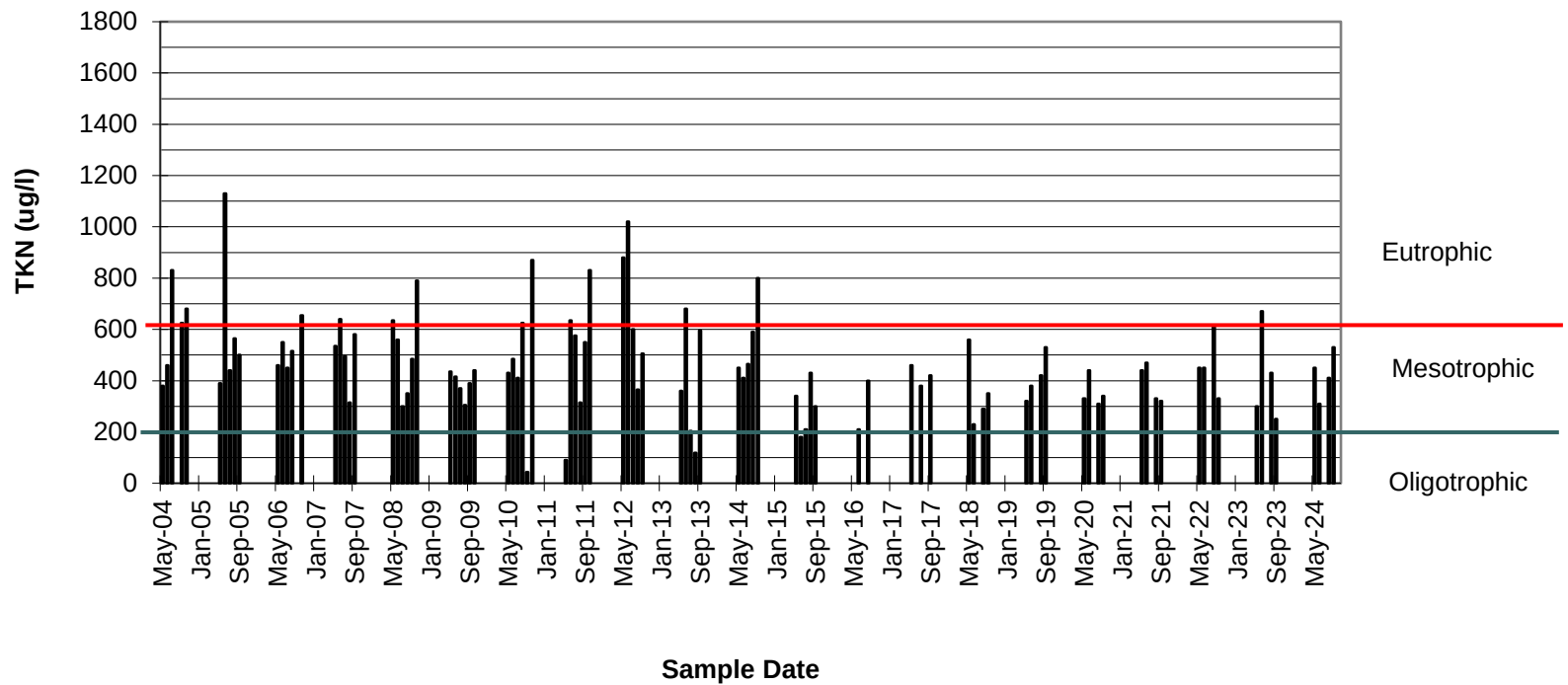


Figure 13b. Hypolimnion TKN, 2004-2024

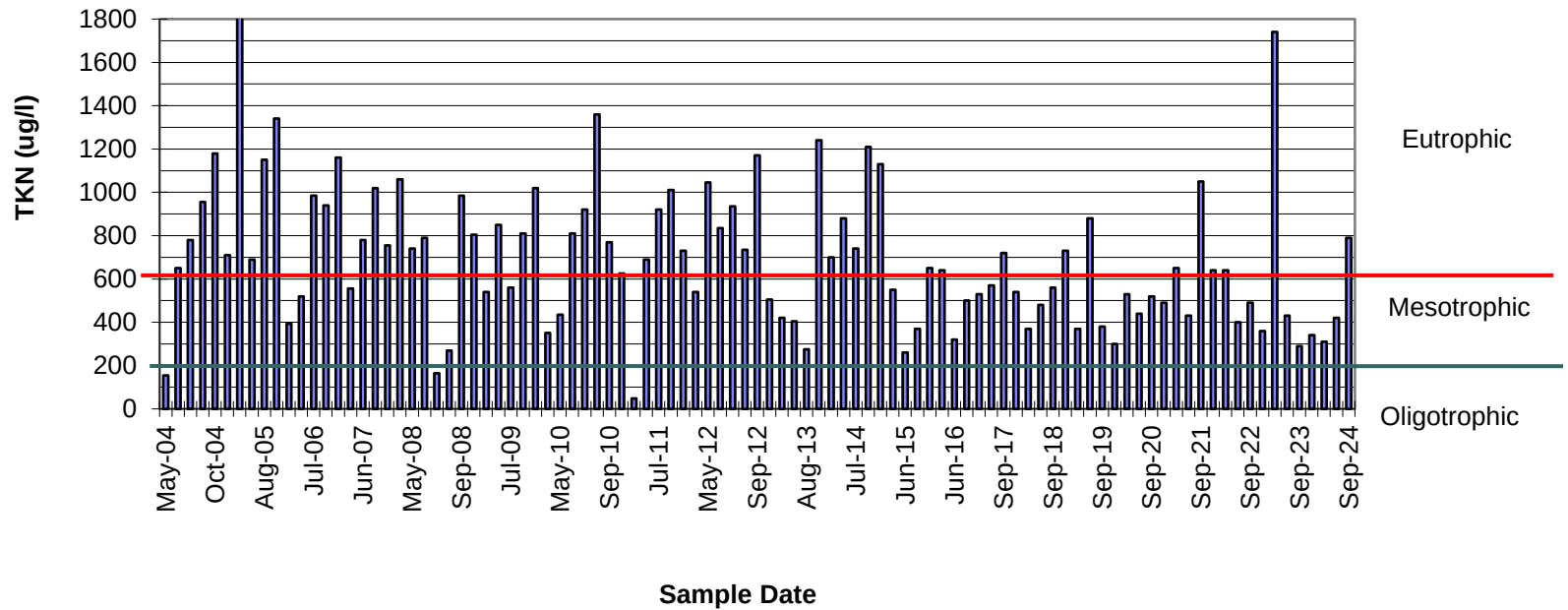


Figure 8a. Phosphorus-Upper Level, 2024

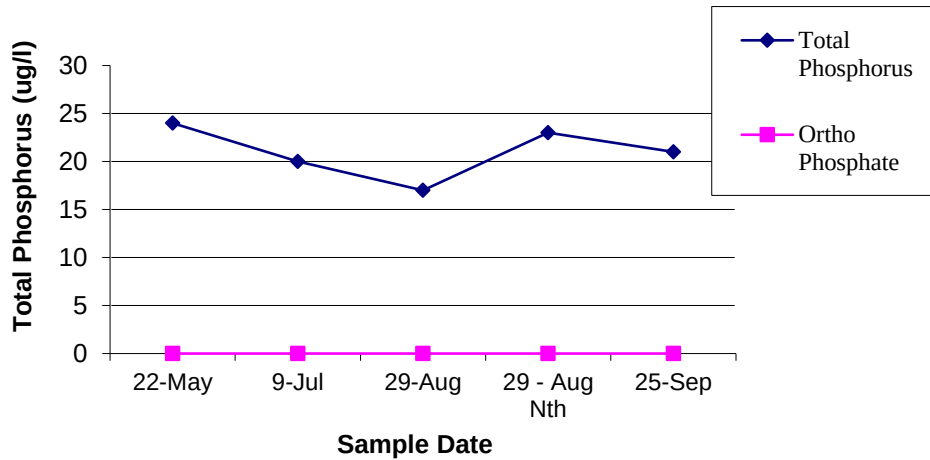


Figure 8b. Phosphorus-Lower Level, 2024

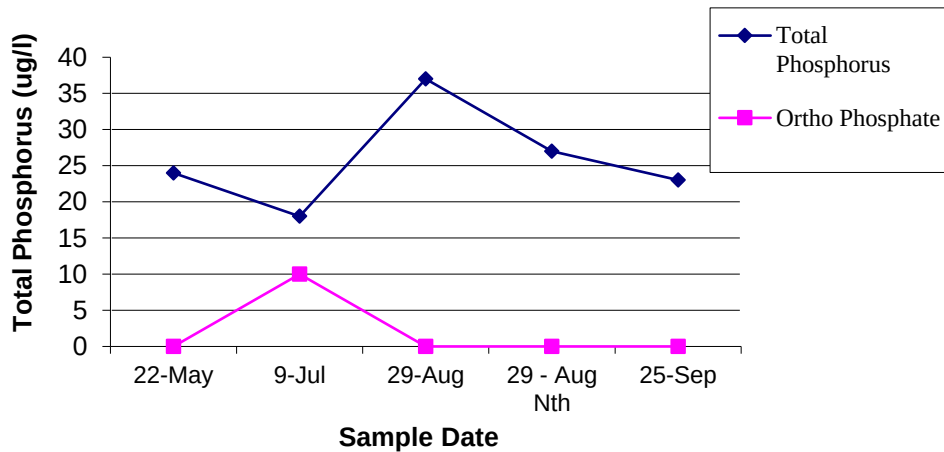


Table 10. Phosphorus

Sample Date	Total Phosphorus		Ortho Phosphate	
	Upper (µg/l)	Lower (µg/l)	Upper (µg/l)	Lower (µg/l)
22-May	24	24	<10	<10
9-July	20	18	<10	<10
29-Aug	17	37	<10	<10
29-Aug Nth	23	27	<10	<10
25-Sep	21	23	<10	<10

Figure 14a. Epilimnion Total Phosphorus, 2004-2024

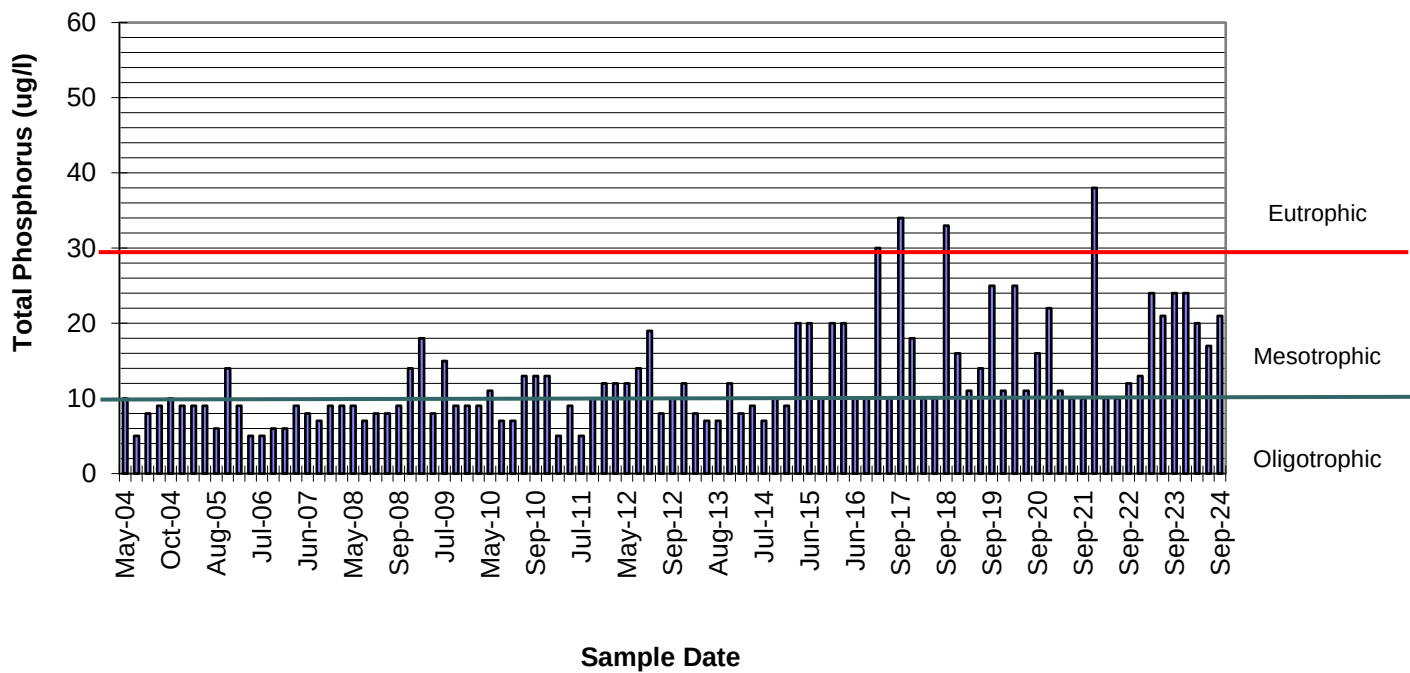
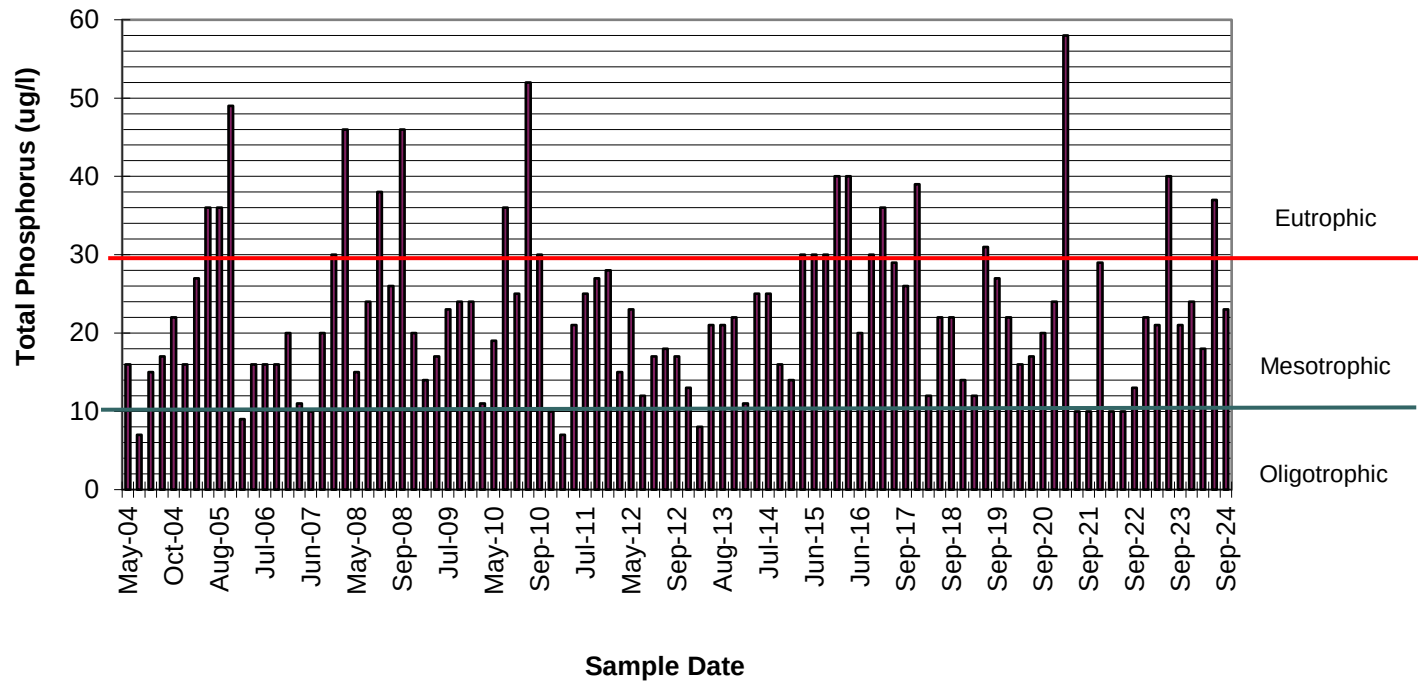


Figure 14b. Hypolimnion Total Phosphorus, 2004-2024



E. Coli - 2024

Table 3. E.Coli Bacteria, 2024

Sample Date	Boat Launch		Town Beach Center		Town Beach North		Cheney Cove East Side		South End		West Side	
	E.Coli Bacteria #/100ml	Geometric Mean (Y=5)	E.Coli Bacteria #/100ml	Geometric Mean (Y=5)	E.Coli Bacteria #/100ml	Geometric Mean (Y=5)	E.Coli Bacteria #/100ml	Geometric Mean (Y=5)	E.Coli Bacteria #/100ml	Geometric Mean (Y=5)	E.Coli Bacteria #/100ml	Geometric Mean (Y=5)
5/22/2024*	10		41		<10		31		886		20	
5/24/2024			10		10							
5/31/2024			20		10							
6/7/2024			42		20							
6/14/2024			140	34.41	20	14.14						
6/21/2024			53	36.22	99	20.87						
6/28/2024			64	52.50	31	26.17						
7/5/2024			53	63.80	<10	33.29						
07/09/2024*	10		187	86.01	<10	39.45	10		52		20	
7/12/2024			64	73.54	64	58.13						
7/19/2024			20	60.52	31	39.47						
7/26/2024			20	32.56	42	42.00						
8/2/2024			10	34.36	10	30.21						
8/9/2024			<10	22.49	<10	30.21						
8/16/2023			20	16.82	<10	23.53						
8/23/2024			10	14.14	10	16.13						
8/29/2024*	160		41	16.92	31	14.58	41		<10		20	
8/30/2024			<10	20.17	<10	17.61						
09/25/2024*	<10		10	16.92	10	14.58	<10		<10		<10	

*indicates samples collected by LandTech and analyzed by Phoenix Environmental Laboratory

all other samples collected by Chatham Health Dept and analyzed by State Laboratory

Resample when E.Coli exceeds 235/100ml

Geometric mean above 126 indicates unacceptable bathing water quality

Table 12. Inlet Stream Results						
	May 22, 2024			August 29, 2024		
Parameter	Cheney Rd	South Inlet	West Inlet	Cheney Rd	South Inlet	West Inlet
E. Coli (#/100ml)	31	886	20	41	1.1	<10
Sp. Cond. (µmhos/cm)	274	244	246	249	240	244
Turbidity (NTU)	1.9	3	1.1	1.4	1.1	1.3
TKN (µg/l)	460	410	420	410	330	410
Nitrate (µg/l)	<20	30	<20	<20	<20	<20
Ammonia (µg/l)	80	60	80	<50	<50	80
Total Phosphorus (µg/l)	24	20	23	<10	26	21
Ortho Phosphate (µg/l)	<10	<10	<10	<10	<10	<10

Trophic State Index - 2024

Parameter						Average
	22-May	9-July	29-Aug	29-Aug Nth	25-Sep	
Secchi Depth	41.31	41.31	40.61	39.09	41.07	40.68
Chlorophyll-a	46.39	44.20	48.18	46.39	48.18	46.74
Total phosphorus-upper	49.98	47.35	45.00	49.36	48.05	47.95
Monthly Avg.	45.89	44.29	42.81	44.23	45.77	

Trophic Status	TSI Score	Lake Productivity
Oligotrophic	< 37	Low
Mesotrophic	37-51	Moderate
Eutrophic	> 51	High

Lake Center Results - 2024

Table 2.
Lake Center Results, 2024

Parameter	Upper Depth (0-5m)					Lower Depth (5-10m)				
	22-May	9-July	29-Aug	29-Aug Nth	25-Sep	22-May	9-July	29-Aug	29-Aug Nth	25-Sep
Temperature(°C)*	14.2	20.2	18.5.4	18.2	13.8	5.7	7.0	9.8		10.0
D.O. (mg/l)*	14.48	11.36	13.12	13.29	11.02	11.82	7.51	1.01		0.69
Secchi Depth (ft)	19'0"	18'0"	13'7.2' ,	12'6"	9'	**	**	**	**	**
Ortho Phosphate (µg/l)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Total Phosphorus (µg/l)	24	20	17	23	21	24	18	37	10	23
TKN (µg/l)	450	310	410	470	530	340	310	420	390	790
Ammonia (µg/l)	90	<50	<50	<50	60	<50	<50	<50	50	320
Nitrate (µg/l)	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Turbidity (NTU)	1.5	.70	1.4	1.9	1.5	1.3	1.2	2.9	1.1	1.9
Sp. Cond. (µmhos/cm)	248	258	241	238	247	249	268	249	241	247
Chlorophyll-a (µg/l)	5	4	6	5	6	**	**	**	**	**

* Value reported is near the mid-point of measurements taken in this depth range.

** Measurement is a single value; reported under Upper Depth category.

ND Not Detected