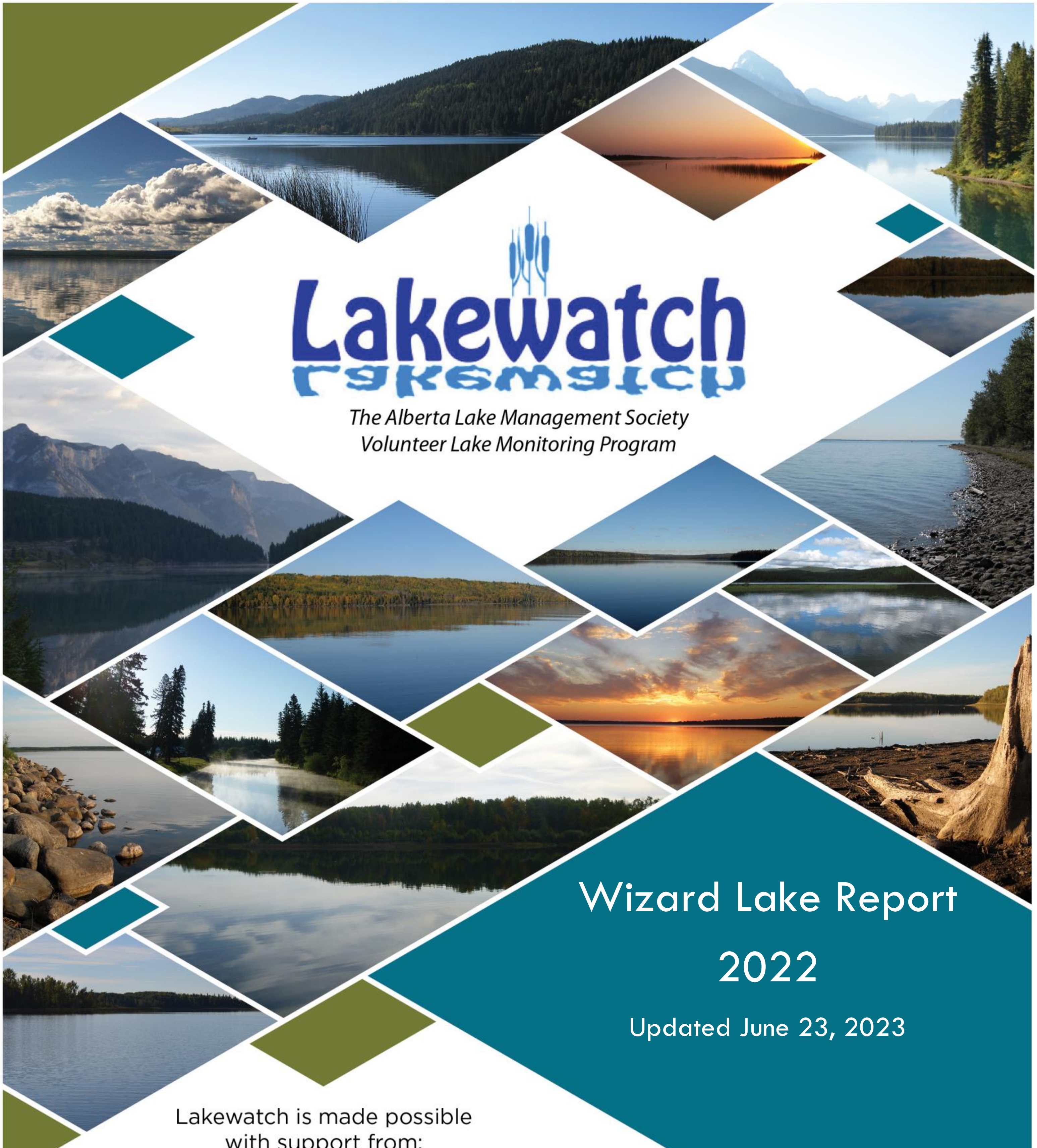


Lakewatch

The Alberta Lake Management Society
Volunteer Lake Monitoring Program

Wizard Lake Report 2022

Updated June 23, 2023

Lakewatch is made possible with support from:

Alberta
Lac La Biche County welcoming by nature.
LICA ENVIRONMENTAL STEWARDS
PIGEON LAKE WATERSHED ASSOCIATION

ALBERTA LAKE MANAGEMENT SOCIETY'S LAKEWATCH PROGRAM

LakeWatch has several important objectives, one of which is to collect and interpret water quality data from Alberta's Lakes. Equally important is educating lake users about aquatic environments, encouraging public involvement in lake management, and facilitating cooperation and partnerships between government, industry, the scientific community and lake users. LakeWatch reports are designed to summarize basic lake data in understandable terms for the widest audience, and are not meant to be a complete synopsis of information about specific lakes. Additional information is available for many lakes that have been included in LakeWatch, and readers requiring more information are encouraged to seek those sources.

ALMS would like to thank all who express interest in Alberta's aquatic environments, and particularly those who have participated in the LakeWatch program. These leaders in stewardship give us hope that our water resources will not be the limiting factor in the health of our environment.

If you require data from this report, please contact ALMS for the raw data files.

ACKNOWLEDGEMENTS

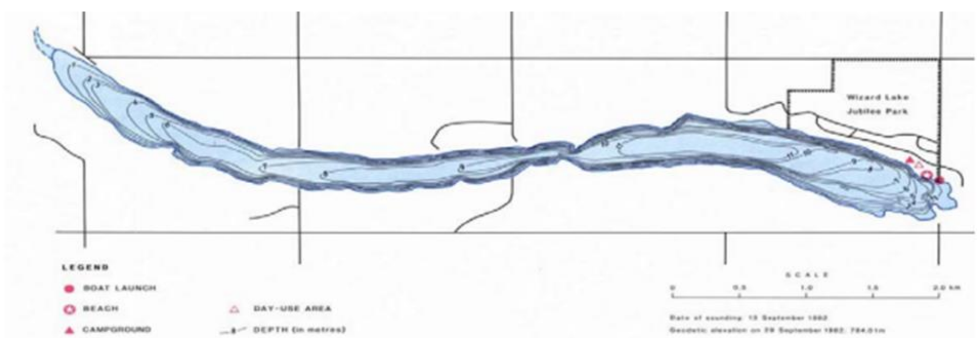
The LakeWatch program is made possible through the dedication of its volunteers. A special thanks to Larry McPhersson for his commitment to collecting data at Wizard Lake. We would also like to thank Kurstyn Perrin and Dominic Wong, who were summer technicians in 2022. Executive Director Bradley Peter and Program Manager Caleb Sinn were instrumental in planning and organizing the field program. This report was prepared by Caleb Sinn and Bradley Peter.

WIZARD LAKE

Wizard Lake is a long serpentine lake lying in a heavily forested, deep glacial meltwater channel 60 km southwest of the city of Edmonton. The valley provides excellent shelter from winds, making this lake very popular for water skiing. The northern shore of the lake is in the county of Leduc and the southern shore of the lake is in the county of Wetaskiwin. The Nehiyawak name for the lake is Seksyawas Sakigan, which translates to Lizard Lake, and until the late 1960's the popular name for the lake was Conjuring Lake[1]. Cree legends said strange noises in the lake came from 'conjuring creatures'; the creek draining the lake, which enters the North Saskatchewan River ~5 km west of Devon, is still called Conjuring Creek[2].

Wizard Lake 2011. Photo by Jessica Davis

The year 1904 saw both the first settlers and the opening of a sawmill in the lake area. The sawmill was short-lived, closing in 1905 when the railway was not built across the area as expected. The sawmill was succeeded by the building of an underground coalmine, in operation until the 1940's. Today, the area surrounding the lake includes Wizard Lake Jubilee Park and 110 cottages on the north shore, 61 cottages on the south, and a subdivision.



Bathymetric map of Wizard Lake (Mitchell & Prepas 1990)

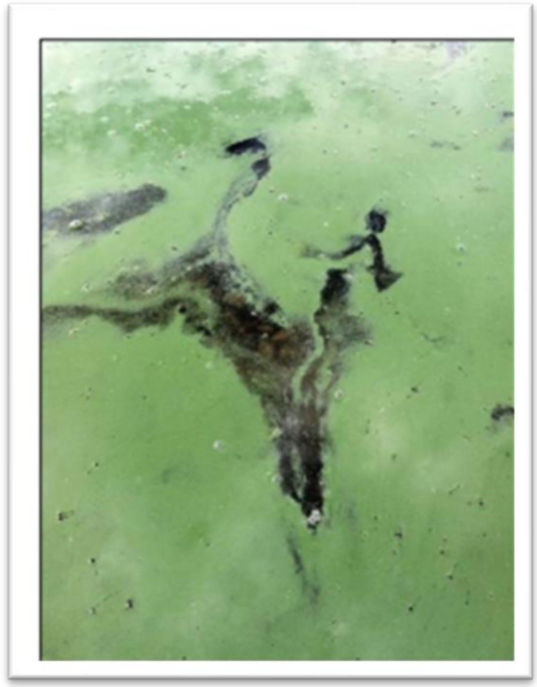
---

[1] 1 Aubrey, M. K. 2006. Concise place names of Alberta. Retrieved from http://www.albertasource.ca/placenames/resources/searchcontent.php?book=1

[2] Aquality Environmental Consulting (2013). Wizard Lake State of the Watershed Report 2012. Retrieved from: http://www.Wizardlake.ca/uploads/1/8/0/3/18037581/state_of_watershed_complete.pdf January 9, 2014.

Wizard Lake is a popular recreation area for water skiing, SCUBA diving, and fishing. Intensive use of the lake, especially on summer weekends, led to conflict between water skiers, high-speed boat operators, canoers, and anglers. A lake management plan was prepared in 1979, which recommended dividing the lake into two zones: the boat speed in the west half of the lake was to be limited to 12 km/hr to facilitate access to anglers, while the boat speed in the east half was to be limited to 65 km/hr to allow water skiing. Yellow perch and northern pike are the most commonly fished species in the lake. Wizard Lake occupies an area of 2.67 km^2, with a maximum depth of 11 m and a mean depth of 6.2 m. The length of the lake stretches 11.5 km and has a maximum width of 0.55 km. Wizard Lake lies in the Strawberry Creek sub-basin of the North Saskatchewan River Watershed[2]. It is a eutrophic lake that can experience dense blue-green algae blooms during the summer months. For more detailed information on Wizard Lake and its watershed, view the State of the Watershed Report available on www.wizardlake.ca.

The watershed area for Wizard Lake is 36.99 km^2 and the lake area is 2.67 km^2. The lake to watershed ratio of Wizard Lake is 1:14. A map of the Wizard Lake watershed area can be found at: http://alms.ca/wp-content/uploads/2016/12/Wizard.pdf



Cyanobacterial bloom on the surface of Wizard Lake, 2011

BEFORE READING THIS REPORT, CHECK OUT A BRIEF INTRODUCTION TO LIMNOLOGY AT ALMS.CA/REPORTS

WATER CHEMISTRY

ALMS measures a suite of water chemistry parameters. Phosphorus, nitrogen, and chlorophyll-a are important because they are indicators of eutrophication, or excess nutrients, which can lead to harmful algal/cyanobacteria blooms. One direct measure of harmful cyanobacteria blooms are Microcystins, a common group of toxins produced by cyanobacteria. See Table 2 for a complete list of parameters.

The average total phosphorus (TP) concentration for Wizard Lake was 37 µg/L (Table 2), falling into the eutrophic, or highly productive trophic classification. This value falls within the middle of the range of historical averages (Table 2). TP ranged from a minimum of 24 µg/L on the June 2nd, to a maximum of 53 µg/L on September 7th (Figure 1).

Average chlorophyll-*a* concentration in 2022 was 31.3 µg/L (Table 2), falling into the hypereutrophic, or very highly productive trophic classification. Chlorophyll-*a* was lowest during the June 2nd sampling event at 7.4 µg/L, and peaked at 50.8 µg/L on September 7th.

The average TKN concentration was 1.3 mg/L (Table 2), and displayed little seasonal variation (Figure 1).

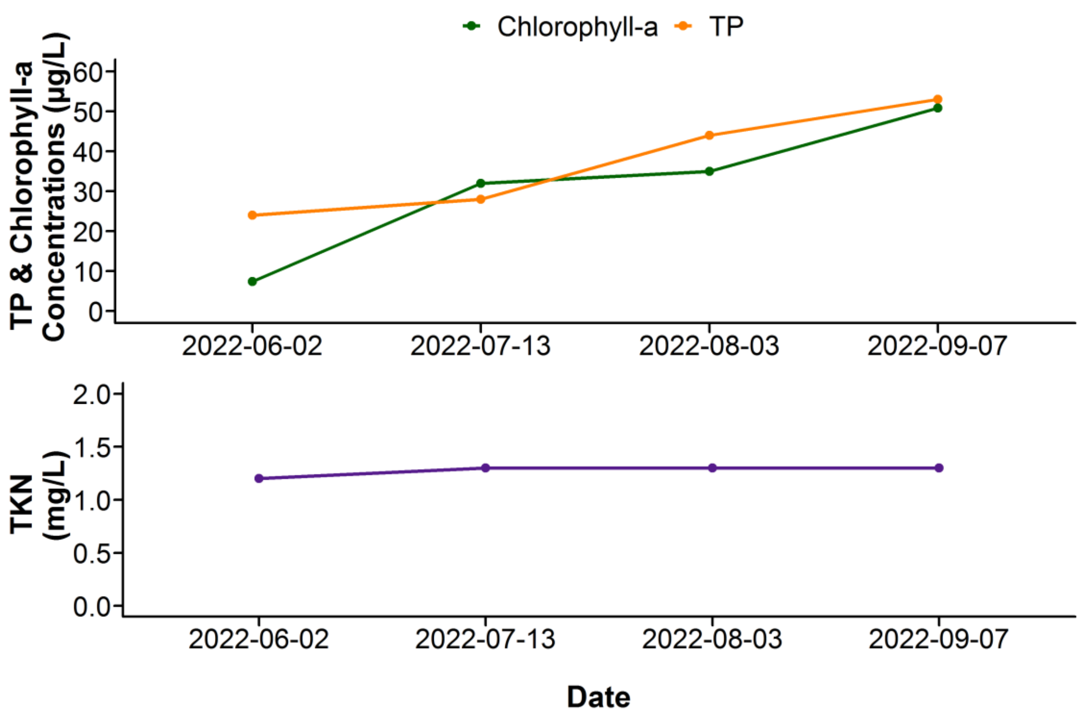


Figure 1. Total Phosphorus (TP), Total Kjeldahl Nitrogen (TKN), and Chlorophyll-*a* concentrations measured four times over the course of the summer at Wizard Lake.

Average pH was measured as 8.31 in 2022, buffered by moderate alkalinity (172 mg/L $CaCO_3$) and bicarbonate (208 mg/L HCO_3). Aside from bicarbonate, sodium and calcium were higher than all other major ions, and together contributed to a moderate conductivity of 355 µS/cm (Figure 2, top; Table 2). Wizard Lake is in the moderate to low end range of ion levels, compared to other LakeWatch lakes sampled in 2022. (Figure 2, bottom).

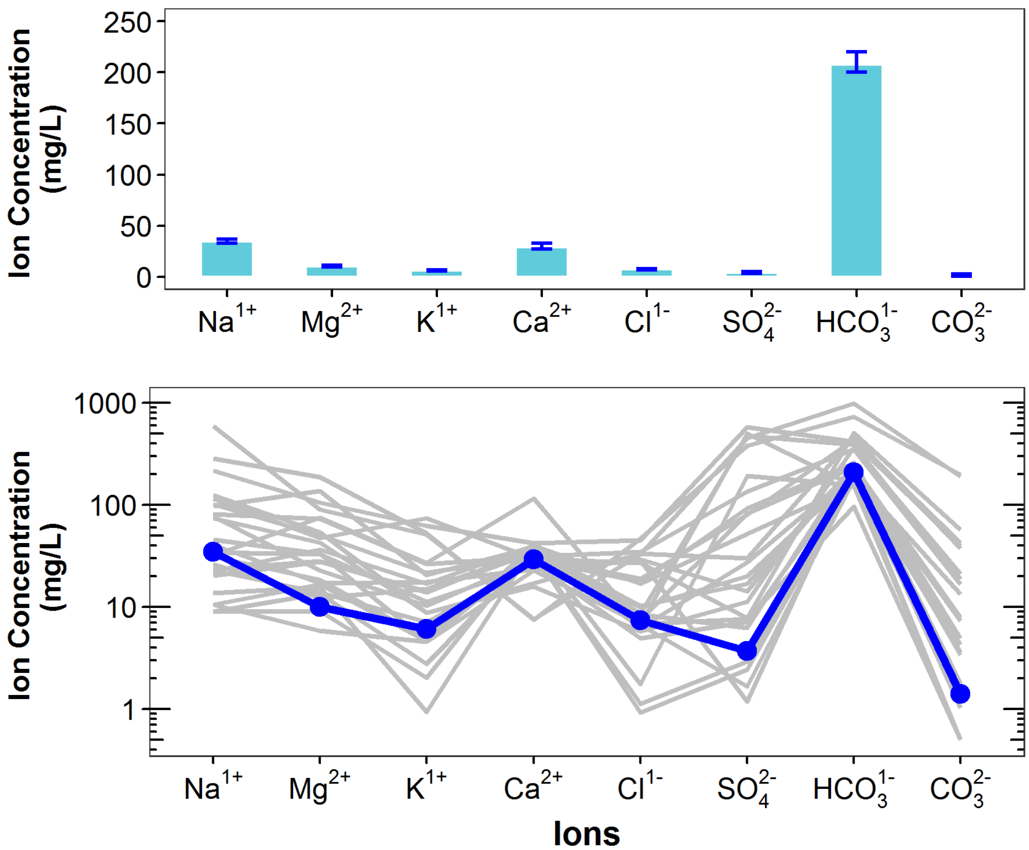


Figure 2. Average levels of cations (sodium = Na^{1+}, magnesium = Mg^{2+}, potassium = K^{1+}, calcium = Ca^{2+}) and anions (chloride = Cl^{1-}, sulphate = SO_4^{2-}, bicarbonate = HCO_3^{1-}, carbonate = CO_3^{2-}) from four measurements over the course of the summer at Wizard Lake. Top) bars indicate range of values measured, and bottom) Schoeller diagram of average ion levels at Wizard Lake (blue line) compared to 26 lake basins (gray lines) sampled through the LakeWatch program in 2022 (note $\log_{10}$ scale on y-axis of bottom figure).

Metals

Metals will naturally be present in aquatic environments due to in-lake processes or the erosion of rocks, or introduced to the environment from human activities such as urban, agricultural, or industrial developments. Many metals have a unique guideline as they may become toxic at higher concentrations. Where current metal data are not available, historical concentrations for 27 metals have been provided (Table 3).

Metals were not measured at Wizard Lake in 2022, and historical levels can be found in Table 3.

WATER CLARITY AND EUPHOTIC DEPTH

Water clarity is influenced by suspended materials, both living and dead, as well as dissolved colored compounds in the water column. During the melting of snow and ice in spring, lake water can become turbid (cloudy) from silt transported into the lake. Lake water usually clears in late spring, but then becomes more turbid with increased algal growth as the summer progresses. The easiest and most widely used measure of lake water clarity is the Secchi depth. Two times the Secchi depth equals the euphotic depth – the depth to which there is enough light for photosynthesis.

The average euphotic depth of Wizard Lake in 2022 was 3.90 m, corresponding to an average Secchi depth of 1.95 m (Table 2). Euphotic depth varied over the season, ranging from as deep as 8.60 m on June 2nd, to 2.20 m on August 3rd (Figure 3).

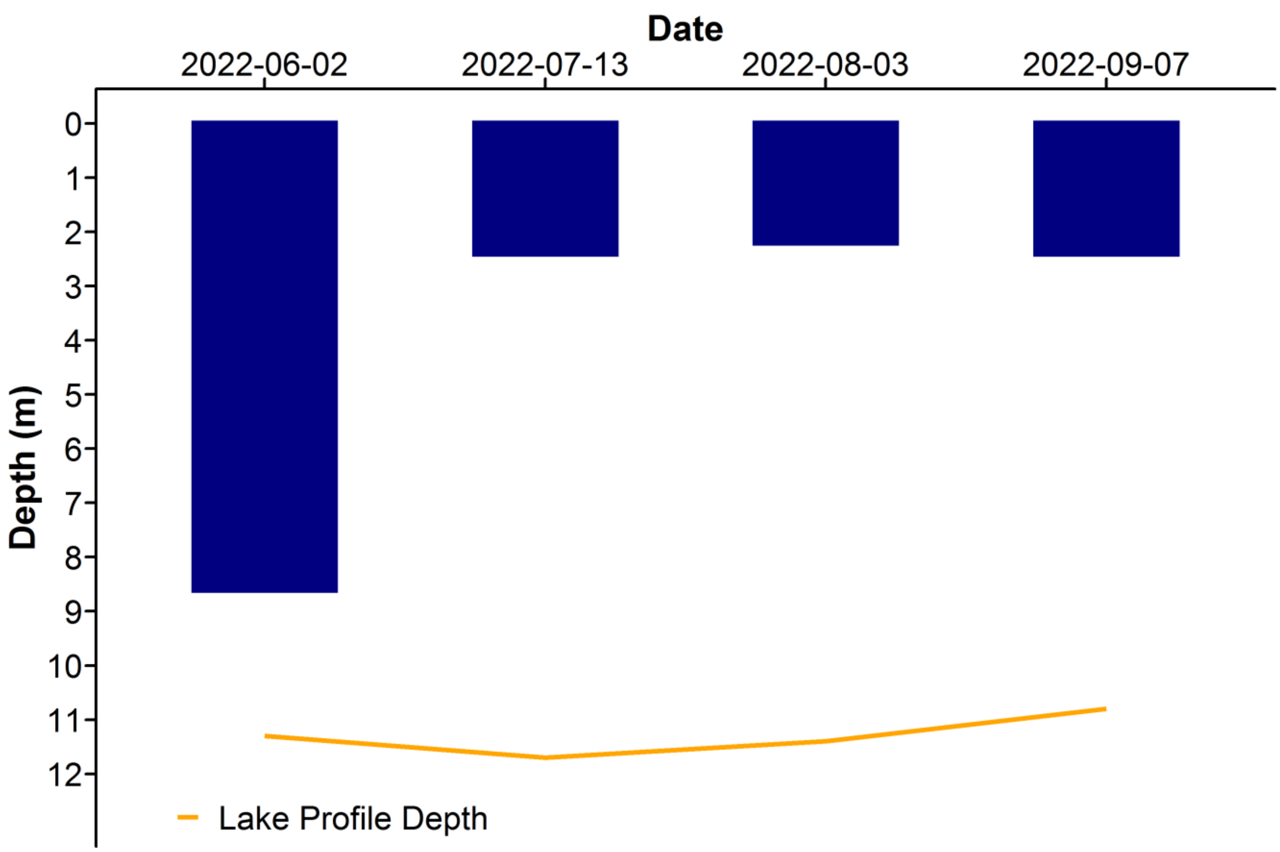


Figure 3. Euphotic depth values measured four times over the course of the summer at Wizard Lake in 2022.

WATER TEMPERATURE AND DISSOLVED OXYGEN

Water temperature and dissolved oxygen (DO) profiles in the water column can provide information on water quality and fish habitat. The depth of the thermocline is important in determining the depth to which dissolved oxygen from the surface can be mixed. Please refer to the end of this report for descriptions of technical terms.

Surface temperatures of Wizard Lake varied throughout the summer, with the August 3rd sampling date having the warmest temperatures at 21.8°C (Figure 4a). The lake was weakly stratified during each sampling trip. While a well-defined mixing depth (thermocline) was never detected, weak thermoclines increased with depth through the season, starting as shallow as about 5 m on June 2nd, and as deep as about 9 m on September 7th.

Wizard Lake was well oxygenated in the surface waters on all sampling dates, measuring above the CCME guidelines of 6.5 mg/L dissolved oxygen (Figure 4b). Oxygen levels in the surface waters were much higher during the June and July sampling events, compared to the August and September sampling events. Below the weak thermocline, oxygen levels decreased. During each date, oxygen levels eventually reached anoxia (<1 mg/L), with anoxia being detected as deep as 10.5 m on June 2nd, to as shallow as 6.5 m on August 3rd.

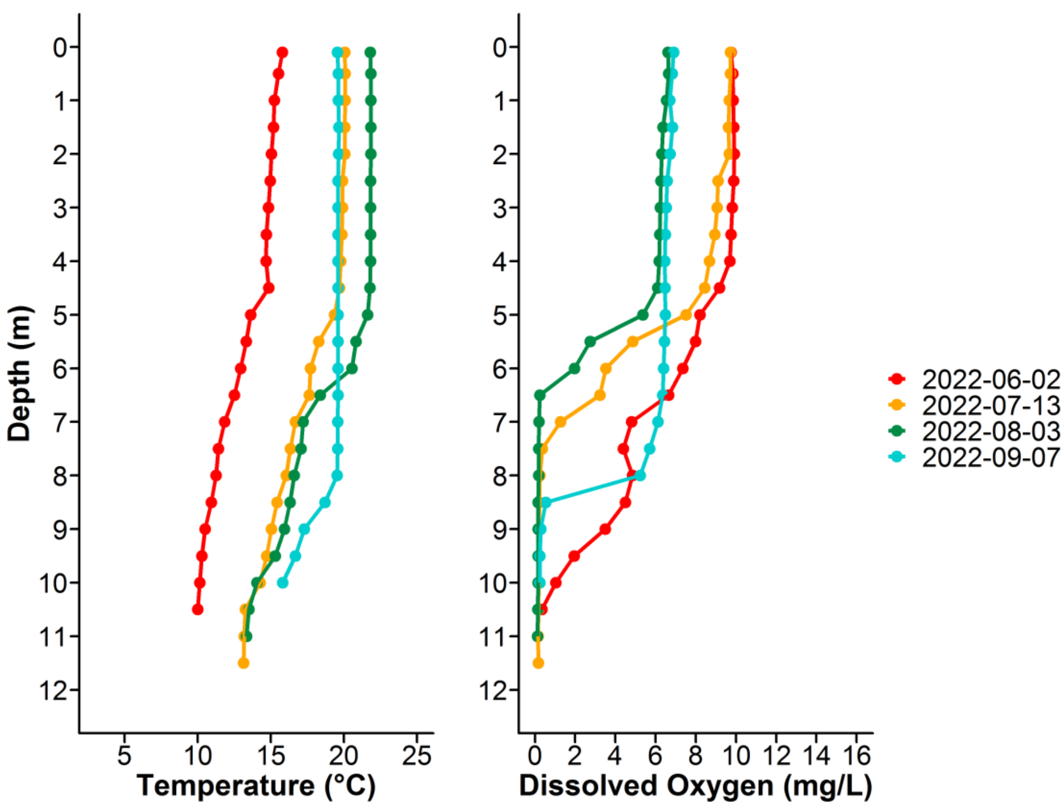


Figure 4. a) Temperature (°C) and b) dissolved oxygen (mg/L) profiles for Wizard Lake measured four times over the course of the summer of 2022.

MICROCYSTIN

Microcystins are toxins produced by cyanobacteria (blue-green algae) which, when ingested, can cause severe liver damage. Microcystins are produced by many species of cyanobacteria which are common to Alberta's Lakes, and are thought to be one of the most common cyanobacteria toxins. In Alberta, recreational guidelines for microcystin are set at 10 μg/L. Blue-green algae advisories are managed by Alberta Health Services. Recreating in algal blooms, even if microcystin concentrations are not above guidelines, is not recommended.

Microcystin levels in Wizard Lake fell below the recreational guideline of 10 μg/L during every sampling event in 2022. In addition, microcystin levels from the June 2^{nd} sampling event was below the laboratory detection limit of 0.10 μg/L. A value of 0.05 μg/L is assigned to each date that is below detection, in order to calculate an average. Even though low levels of microcystin were detected, caution should always be observed when recreating around cyanobacteria.

Table 1. Microcystin concentrations measured four times at Wizard Lake in 2022.

Date	**Microcystin Concentration (μg/L)**
2-Jun-22	<0.1
13-Jul-22	0.51
3-Aug-22	0.51
7-Sep-22	1.14
Average	0.55

INVASIVE SPECIES MONITORING

Dreissenid mussels pose a significant concern for Alberta because they impair the function of water conveyance infrastructure and adversely impact the aquatic environment. These invasive mussels can change lake conditions which can then lead to toxic cyanobacteria blooms, decrease the amount of nutrients needed for fish and other native species, and cause millions of dollars in annual costs for repair and maintenance of water-operated infrastructure and facilities. Spiny water flea pose a concern for Alberta because they alter the abundance and diversity of native zooplankton, as they are aggressive zooplankton predators. Through over-predation, they will impact higher trophic levels such as fish. They also disrupt fishing equipment by attaching in large numbers to fishing lines.

Monitoring for aquatic invasive species involved sampling with a 63 μm plankton net at three sample sites. This monitoring is designed to detect juvenile Dreissenid mussel veligers and spiny water flea. In 2022, no mussels or spiny water flea were detected at Wizard Lake.

Eurasian watermilfoil is a non-native aquatic plant that poses a threat to aquatic habitats in Alberta because it grows in dense mats preventing light penetration through the water column, reduces oxygen levels when the dense mats decompose, and outcompetes native aquatic plants. Eurasian watermilfoil can look similar to the native Northern watermilfoil, thus genetic analysis is ideal for suspect watermilfoil species identification.

A watermilfoil specimen was collected from Wizard Lake during the July 13th sampling event and was confirmed to be the native Northern Watermilfoil.

WATER LEVELS

There are many factors influencing water quantity. Some of these factors include the size of the lake's drainage basin, precipitation, evaporation, water consumption, ground water influences, and the efficiency of the outlet channel structure at removing water from the lake. Requests for water quantity monitoring should go through Alberta Environment and Parks Monitoring and Science division.

Water levels at Wizard Lake in 2022 were slightly above the historical average during the beginning of the year, and then decreased appreciably. Levels have been relatively stable since measurements began in 1968 (Figure 5).

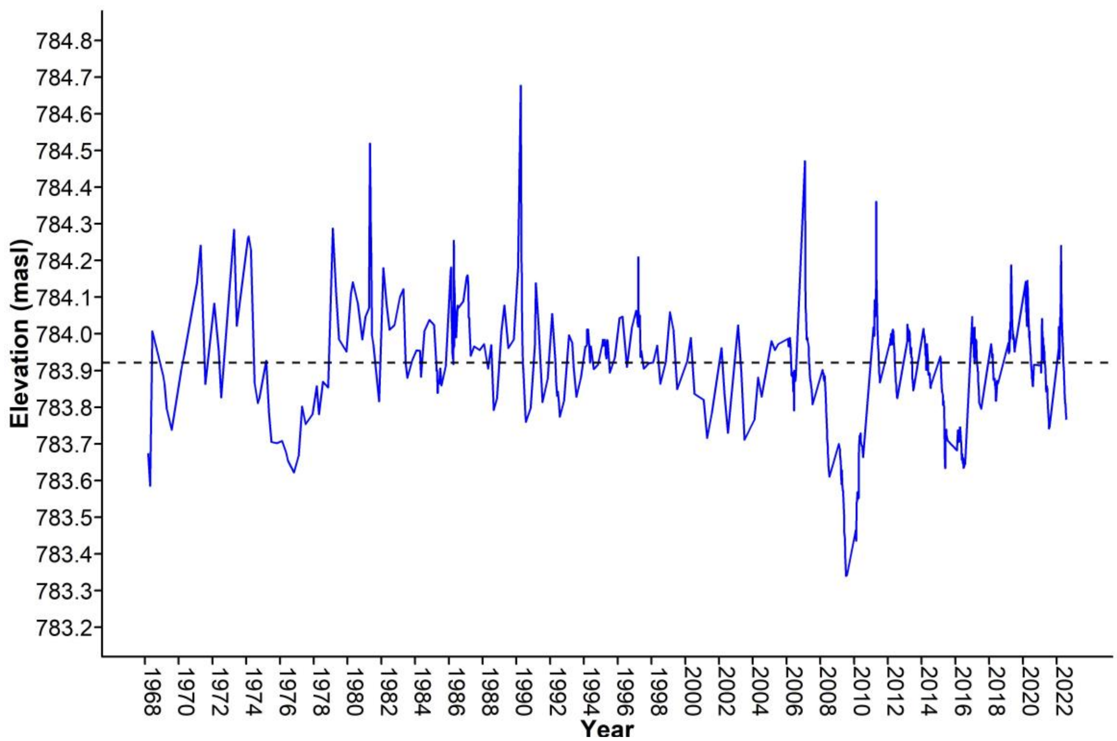


Figure 5. Water levels measured at Wizard Lake in metres above sea level (masl) from 1968-2022. Data retrieved from Alberta Environment and Parks and/or Environment and Climate Change Canada. Black dashed line represents historical yearly average water level.

WEATHER & LAKE STRATIFICATION

Air temperature will directly impact lake temperatures, and result in different temperature layers (stratification) throughout the lake, depending on its depth. Wind will also impact the degree to which a lake mixes, and how it will stratify. The amount of precipitation that falls within a lake's watershed will have important implications, depending on the context of the watershed and the amount of precipitation that has fallen. Solar radiation represents the amount of energy that reaches the earth's surface, and has implications for lake temperature & productivity.

Wizard Lake experienced a warmer, wetter, and less windy summer than normal (Figure 6). A few warm spells and a prolonged period of low wind likely led to the high surface water temperatures measured during the August 3rd sampling event, along with the degree of stratification being higher than the other sampling events.

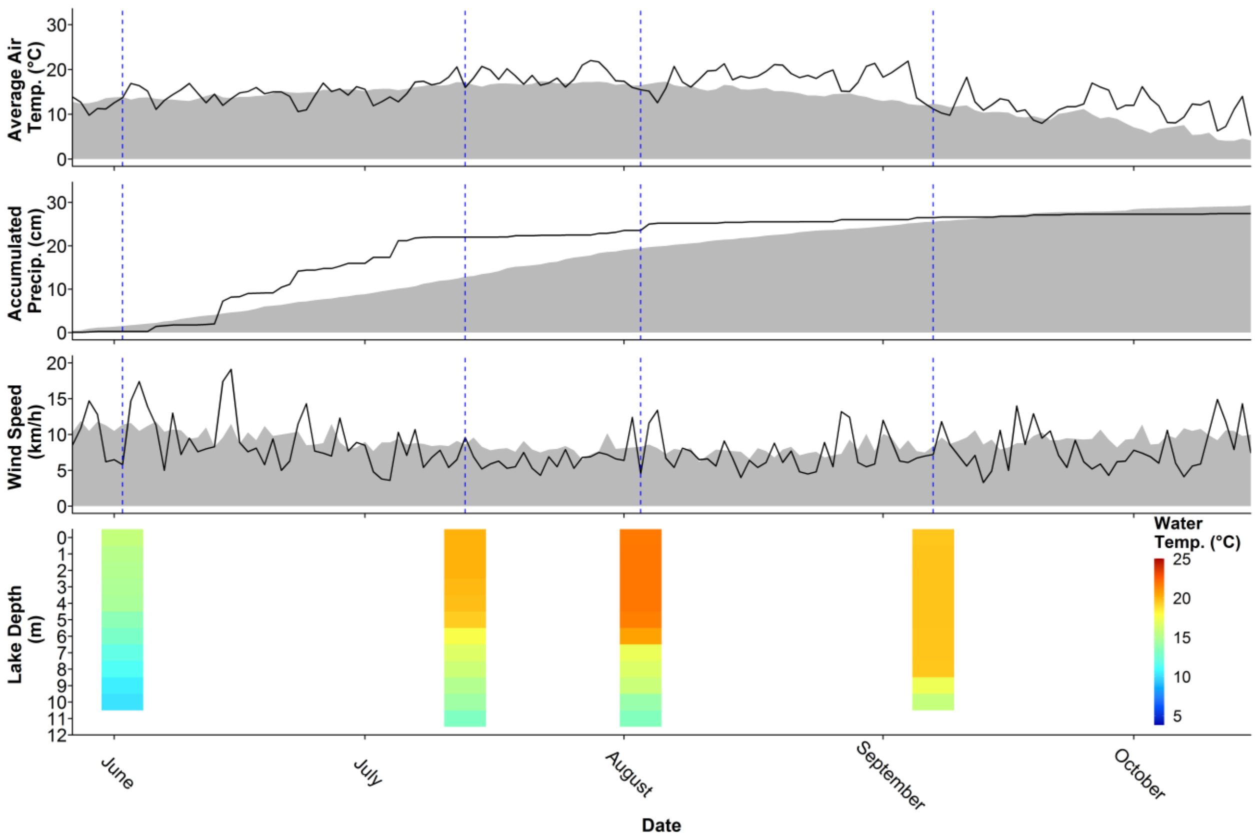


Figure 6. Average air temperature (°C) accumulated precipitation (cm), and wind speed (km/h) measured from 'Thorsby AGCM' weather station, as well as Wizard Lake temperature profiles, interpolated (°C). Black lines indicate 2022 levels, gray indicates long-term normals, and blue lines indicate sampling dates for Wizard Lake over the summer. Further information about the weather data provided is available in the LakeWatch 2022 Methods report. Weather data provided by Agriculture, Forestry and Rural Economic Development, Alberta Climate Information Service (ACIS) https://acis.alberta.ca (retrieved March 2023). *Note that solar radiation is unavailable for the 'Thorsby AGCM' weather station.

Table 2. Average Secchi depth and water chemistry values for Wizard Lake. Note that M = Whole lake sampling event, and E,W = East and West Basins sampled separately, but data averaged between each basin.

Parameter	1983	1988	1996	2006	2008	2009	2010	2011	2013	2016	2018	2020	2022
TP (µg/L)	46	42	62	48	50	52	48	76	53	43	46	41	37
TDP (µg/L)	14	/	28	14	12	18	20	14	19	6	6	8	5
Chlorophyll-a (µg/L)	23.1	20	31.9	32.6	24	26.8	17.1	39.2	23.8	44	35.3	33.4	31.3
Secchi depth (m)	1.7	3.65	2	1.36	1.46	1.85	2.72	1.18	1.36	1.54	1.18	1.55	1.95
TKN (mg/L)	0.9	/	1.2	1.3	1.2	1.3	1.3	1.6	1.2	1.2	1.3	1.4	1.3
NO2 and NO3 (µg/L)	4	10	4	4	3	44	20	2	6	2	2	4	6
NH3 (µg/L)	1	/	38	31	21	29	81	19	28	25	25	38	19
DOC (mg/L)	/	/	/	13	14	14	12	15	13	12	12	14	16
Ca (mg/L)	36	30	30	/	/	/	/	/	/	26	25	31	29
Mg (mg/L)	10	9	9	/	/	/	/	/	/	11	10	10	10
Na (mg/L)	27	32	30	36	35	38	38	32	37	39	41	36	34
K (mg/L)	5	5	6	6	6	6	6	6	6	7	7	6	6
SO42- (mg/L)	10	5	4	3	4	4	4	3	6	3	2	14	4
Cl- (mg/L)	3	4	4	5	4	5	6	5	5	6	7	7	7
CO3 (mg/L)	2.5	2.5	1.5	6	10	5.2	/	3.6	5.1	3.9	4	3.4	1.4
HCO3 (mg/L)	192	201	196	202	206	207	216	200	202	210	208	200	208
pH	8.4	8.35	8.12	8.3	8.31	8.44	8.29	8.47	8.47	8.5	8.48	8.25	8.31
Conductivity (µS/cm)	327	332	322	335	337	341	346	337	354	350	350	360	355
Hardness (mg/L)	131	113	113	97	106	109	99	107	110	105	102	118	115
TDS (mg/L)	189	186	182	186	191	196	193	185	197	202	200	212	195
Microcystin (µg/L)	/	/	/	/	/	/	0.09	0.25	0.25	1.41	0.38	0.27	0.55
Total Alkalinity (mg/L CaCO3)	164	169	163	172	175	176	176	170	174	176	172	170	172
Basin Sampled	M	M	E, W	M	M	M	M	M	M	M	M	M	M

Table 3. Concentrations of metals measured in Wizard Lake. The CCME heavy metal Guidelines for the Protection of Freshwater Aquatic Life (unless otherwise indicated) are presented for reference. Note that metal sample collection method changed in 2016 from composite to single surface grab at the profile location.

Metals (Total Recoverable)	2013	2016	Guidelines
Aluminum μg/L	18	7.7	100[a]
Antimony μg/L	0.06565	0.074	/
Arsenic μg/L	1.205	1.17	5
Barium μg/L	60.35	52.8	/
Beryllium μg/L	0.0015	0.029	100[c,d]
Bismuth μg/L	0.00255	0.004	/
Boron μg/L	43.85	39.3	1500
Cadmium μg/L	0.00225	0.029	0.17[b]
Chromium μg/L	0.3215	0.08	/
Cobalt μg/L	0.0312	0.06	50,1000[c,d]
Copper μg/L	0.7635	0.51	2.47[b]
Iron μg/L	52.15	56.3	300
Lead μg/L	0.0277	0.053	3.39[b]
Lithium μg/L	15.5	12.4	2500[d]
Manganese μg/L	74.6	88.1	220[e]
Molybdenum μg/L	0.3795	0.376	73
Nickel μg/L	0.2135	0.095	99.2 [b]
Selenium μg/L	0.095	0.23	1
Silver μg/L	0.011475	0.028	0.25
Strontium μg/L	230.5	211	/
Thallium μg/L	0.001175	0.0358	0.8
Thorium μg/L	0.00015	0.0148	/
Tin μg/L	0.015	0.033	/
Titanium μg/L	0.7815	0.9	/
Uranium μg/L	0.328	0.342	15
Vanadium μg/L	0.1915	0.23	100[c,d]
Zinc μg/L	1.914	0.5	30 [f]

Values represent means of total recoverable metal concentrations.
[a] Based on pH ≥ 6.5
[b] Based on 2016 avg. water hardness (as CaCO3) with CCME equation
[c] Based on CCME Guidelines for Agricultural use (Livestock).
[d] Based on CCME Guidelines for Agricultural Use (Irrigation).
[e] Based on CCME Manganese variable calculation (https://ccme.ca/en/chemical/129#_aql_fresh_concentration), using 2016avg. water hardness (as CaCO3) and avg. pH
[f] Based on 2016 avg. water hardness (as CaCO3), avg. pH, and avg. DOC with CCME equation
A forward slash (/) indicates an absence of data or guideline

LONG TERM TRENDS

Trend analysis was conducted on the parameters total phosphorus (TP), chlorophyll-*a*, total dissolved solids (TDS) and Secchi depth to look for changes over time in Wizard Lake. In sum, a significant increasing trend was observed in TDS, a significant decreasing trend were observed in TP, and no significant trends were detected for chlorophyll-*a* or Secchi depth. Secchi depth can be subjective and is sensitive to variation in weather; therefore, trend analysis must be interpreted with caution. Data is presented below as both line and box-and-whisker plots. Detailed methods are available in the *ALMS Guide to Trend Analysis on Alberta Lakes.*

Table 4. Summary table of trend analysis on Wizard Lake data from 2006 to 2022.

Parameter	Date Range	Direction of Significant Trend
Total Phosphorus	2006-2022	Decreasing
Chlorophyll-*a*	2006-2022	No Change
Total Dissolved Solids	2006-2022	Increasing
Secchi Depth	2006-2022	No Change

Definitions:

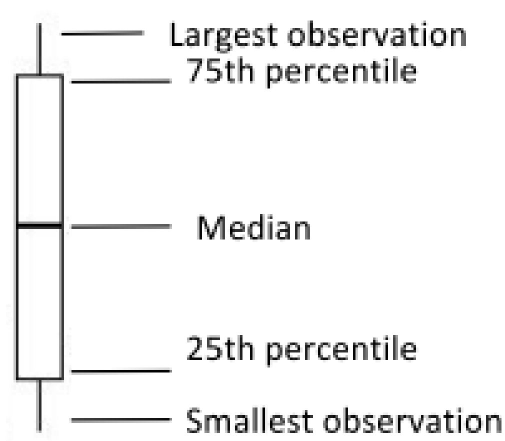
Median: the value in a range of ordered numbers that falls in the middle.

Trend: a general direction in which something is changing.

Monotonic trend: a gradual change in a single direction.

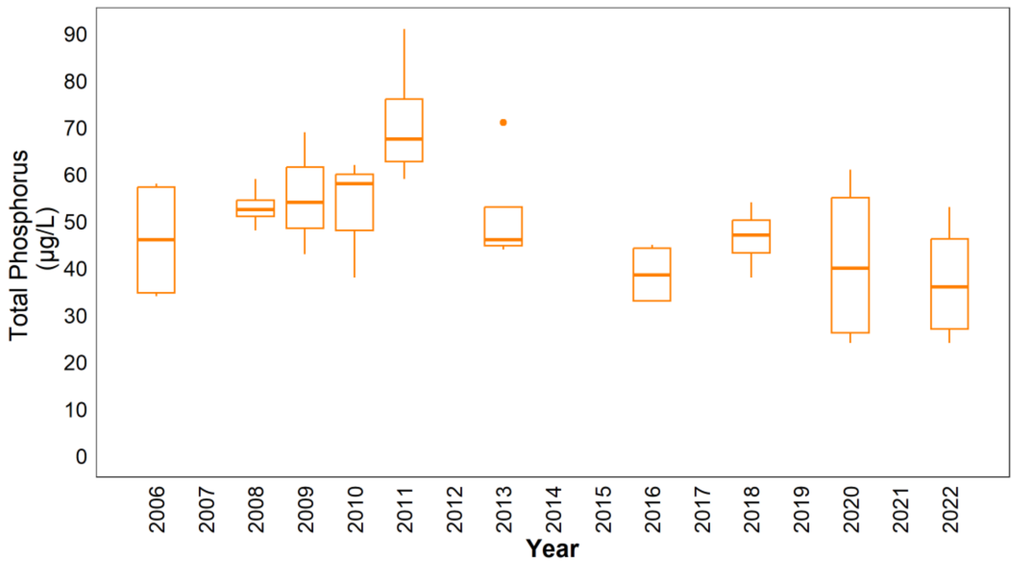
Statistically significant: The likelihood that a relationship between variables is caused by something other than random chance. This is indicated by a p-value of <0.05. Variability: the extent by which data is inconsistent or scattered.

Box and Whisker Plot: a box-and-whisker plot, or boxplot, is a way of displaying all of our annual data. The median splits the data in half. The 75th percentile is the upper quartile of the data, and the 25th percentile is the lower quartile of the data. The top and bottom points are the largest and smallest observations.



Total Phosphorus (TP)

Trend analysis of TP over time showed that it has significantly decreased in Wizard Lake since 2006 (Tau = -0.37, p = 0.005).



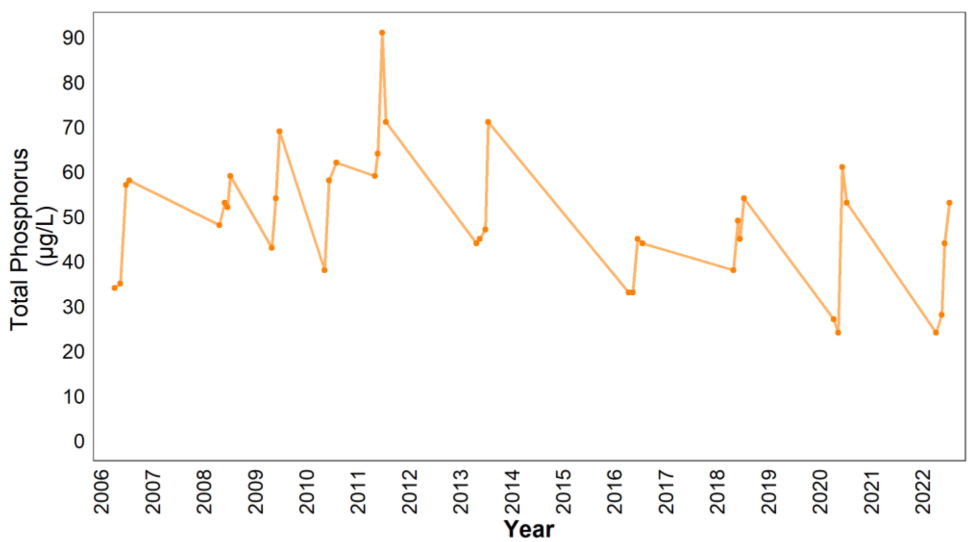
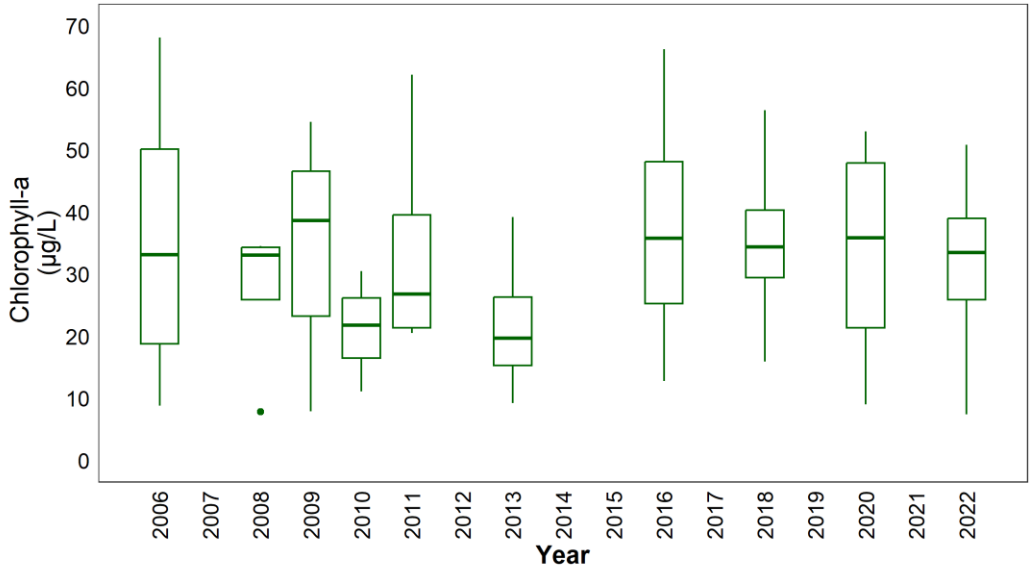


Figure 7. Monthly total phosphorus (TP) concentrations measured between June and September over the long term sampling dates between 2006 and 2022 (n = 38). The value closest to the 15^{th} day of the month was chosen to represent the monthly value in cases with multiple monthly samples.

Chlorophyll-*a*

Chlorophyll-*a* has not significantly changed over time at Wizard Lake (Tau = 0.10, *p* = 0.47). Chlorophyll-*a* trends follow TP trends with a positive correlation over time (r = 0.41, *p* = 0.01).



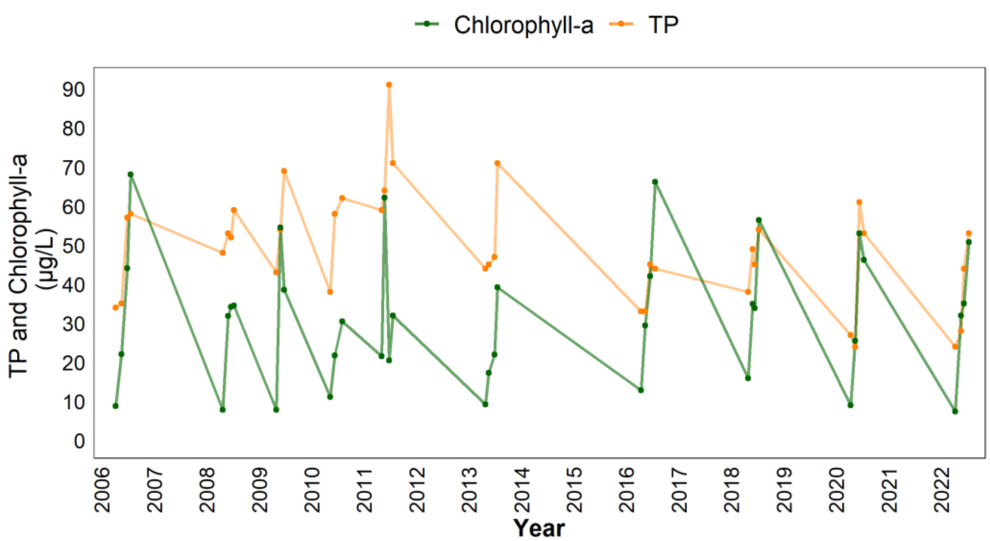
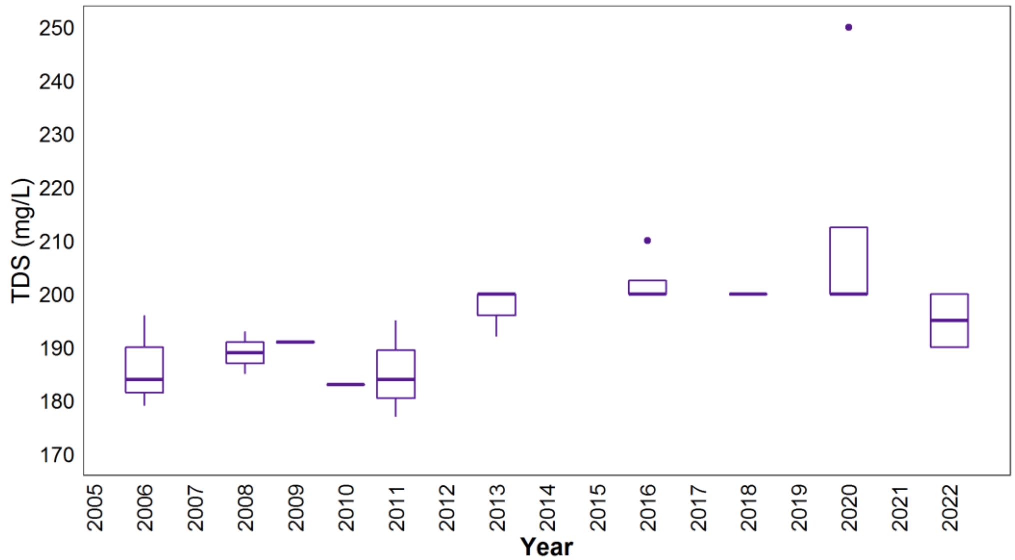


Figure 8. Monthly chlorophyll-*a* concentrations measured between June and September over the long term sampling dates between 2006 and 2022 (n = 38). The value closest to the 15th day of the month was chosen to represent the monthly value in cases with multiple monthly samples. Line graph is overlain by TP concentrations.

Total Dissolved Solids (TDS)

Trend analysis showed a significant increasing trend in TDS between 2006 and 2022 (Tau = 0.46, *p* = 0.001).



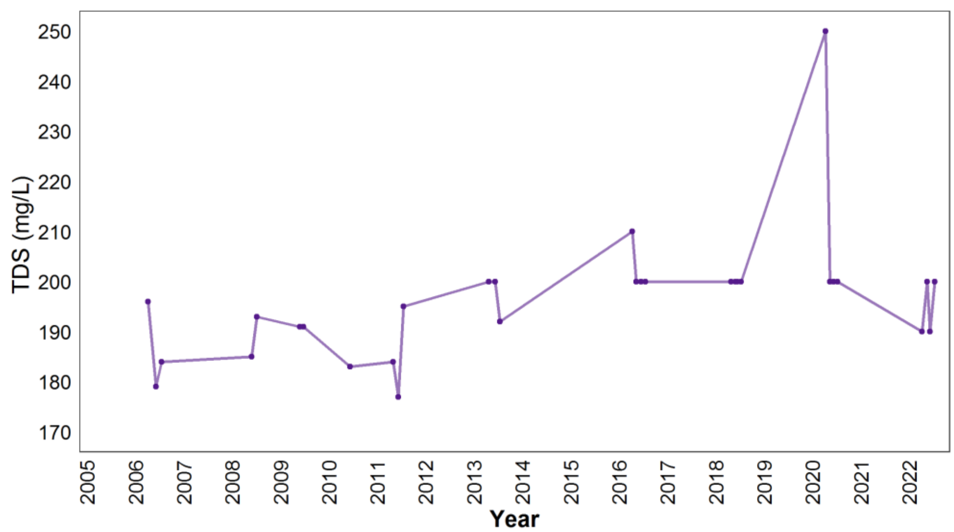


Figure 9. Monthly TDS values measured between June and September over the long term sampling dates between 2006 and 2022 (n = 30). The value closest to the 15th day of the month was chosen to represent the monthly value in cases with multiple monthly samples.

Due to the significant increasing trend of TDS in Wizard Lake, exploring the specific major ions which may be driving this trend is important to determine. Trend analysis of major ions at Wizard Lake indicates that chloride is likely the key parameter that is driving the increase in TDS (Figure 10). Chloride is the only parameter that displays a significant increasing trend, however the difference in slopes between TDS and chloride indicate over parameters may be impacting TDS as well. It is possible that magnesium and calcium, which have insufficient data to perform trend analysis, could factor in to the observed increase in TDS within the lake.

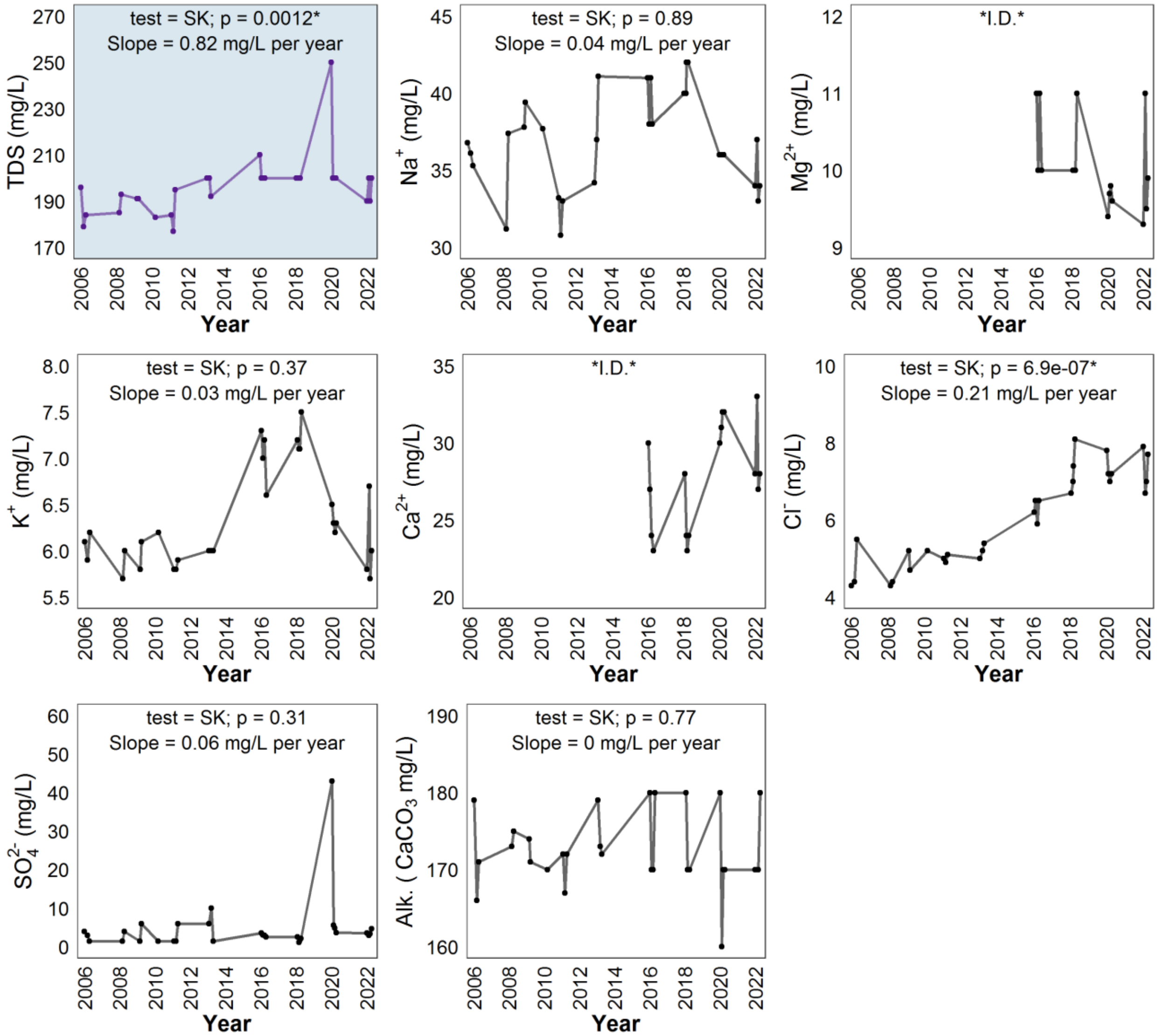
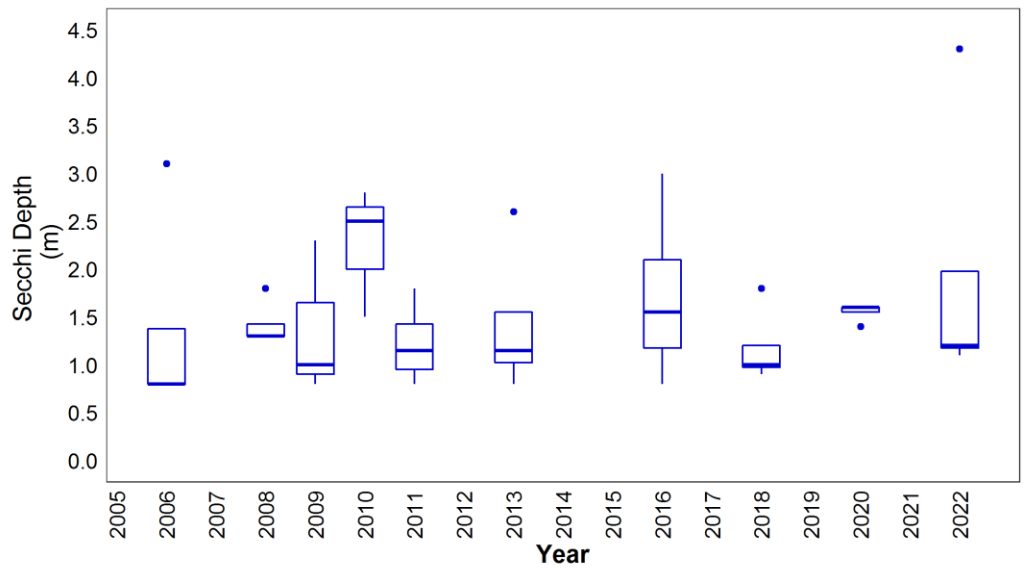


Figure 10. Concentrations of TDS (top left, blue panel), major ions (sodium = Na^+, magnesium = Mg^{2+}, potassium = K^+, calcium = Ca^{2+}, chloride = Cl^-, sulphate = SO_4^{2-}), and total alkalinity (Alk., as mg/L $CaCO_3$) measured monthly between June and September on sampling dates between 2006 and 2022. Also represented is the monotonic trend results for each parameter; test used (MK = Mann Kendall, SK = Seasonal Kendall), significance of test (p; assessed as significance when $p < 0.05$, marked with '*' if significant), and the slope of the trend. Test selection follows method outline in the *ALMS Guide to Trend Analysis on Alberta Lakes.* Note that some ions had insufficient data (*I.D.*) therefore trends were not calculated. The value closest to the 15th day of the month was chosen to represent the monthly value in cases with multiple monthly samples.

Secchi Depth

Secchi depth has not significantly changed in Wizard Lake since 2006 (Tau = 0.12, p = 0.33).



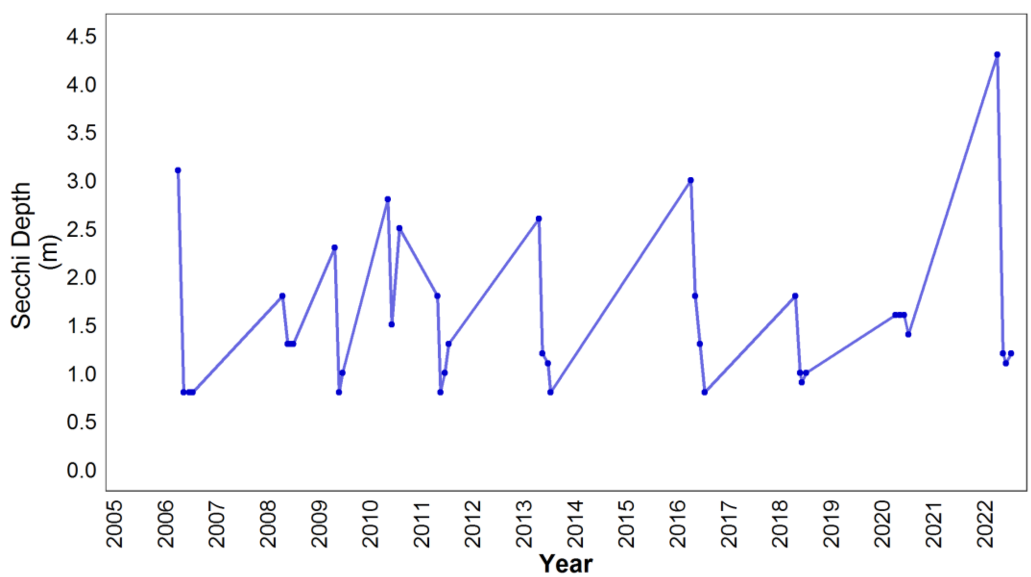


Figure 11. Monthly Secchi depth values measured between June and September over the long term sampling dates between 2006 and 2022 (n = 38). The value closest to the 15th day of the month was chosen to represent the monthly value in cases with multiple monthly samples.

Table 5. Results of trend tests using total phosphorus (TP), chlorophyll-*a*, total dissolved solids (TDS) and Secchi depth data from June to September, for sampled years from 2006 – 2022 on Wizard Lake data.

Definition	Unit	Total Phosphorus (TP)	Chlorophyll-a	Total Dissolved Solids (TDS)	Secchi Depth
Statistical Method	-	Seasonal Kendall	Seasonal Kendall	Seasonal Kendall	Seasonal Kendall
The strength and direction (+ or -) of the trend between -1 and 1	Tau	-0.37	0.10	0.46	0.12
The extent of the trend	Slope (units per Year)	-0.82	0.17	0.82	0.01
The statistic used to find significance of the trend	Z	-2.84	0.72	3.24	0.98
Number of samples included	n	38	38	30	38
The significance of the trend	p	4.48×10^{-3}*	0.47	1.18×10^{-3}*	0.32

*$p < 0.05$ is significant within 95%