Jensen Lakes

Jensen Lake Monitoring

Data Trend Sheets

2024 Annual Compilation

Date Prepared: December 31, 2024

ENVIRO MAK Inc.
Environmental Management Consultants

Jensen Lake Monitoring
Year in Review
2024

In 2024, water quality and limnological monitoring of Jensen Lake was conducted in March, May, July, August and October. Key water quality and limnological parameters were selected for sampling and for interpretation of acceptability to applicable guidelines and/or best practices and for analysis of trends over time for consideration in the overall management of the lake. This compilation of trend data does not include results of all sampling and analysis conducted but focuses on key parameters relevant to the recreational, aesthetic and ecological targets for Jensen Lake and its users.

Highlighted results for 2024 include the following.

- Jensen Lake continues to provide suitable water quality and environment for human bodily contact lake recreation and aesthetics. Of note is that one key parameter for human recreation in the lake, enterococcus/coliforms, is being sampled and monitored by Jensen Lake staff internally. Therefore, results assume that this parameter has also been suitable for continued human recreation in the lake.
- Jensen Lake continues to provide suitable water quality and environment for stocked fish survival.
- Relatively short duration proliferation of green algae was observed in the 2024 summer season in parts of the lake at times. Green algae is not toxic to humans or pets, however, it can be aesthetically displeasing and undesirable for recreation. No blue-green algae (cyanobacteria), which is toxic, was present in any significantly measurable concentration in any samples in 2024. 2025 trend analysis will be expanded to include aquatic vegetation abundance and diversity data for consideration in strategy and management of this matter.

Prepared by:

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Principal, EnviroMak Inc. Environmental Management Consultants

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Trendsheet Parameter Sampling Summary

Sampling Parameter	Date Sampled in 2024				
	March 27	May 22 and/or May 28	July 9	August 21	October 10
Alkalinity	◆	◆	◆	◆	◆
Chlorophyll a				◆	
Dissolved Oxygen (DO)	◆	◆	◆	◆	◆
Microcystin		◆	◆	◆	◆
pH	◆	◆	◆	◆	◆
Phaeophytin				◆	
Phosphorus	◆	◆	◆	◆	◆
Threshold Odour Number (TON)	◆	◆	◆	◆	
Total Dissolved Solids (TDS)	◆	◆	◆	◆	◆
Total Kjeldahl Nitrogen (TKN)	◆	◆	◆	◆	◆
Turbidity (NTU)	◆	◆	◆	◆	◆
New trendsheets coming soon …					
Aquatic Vegetation Abundance					
Aquatic Vegetation Diversity					

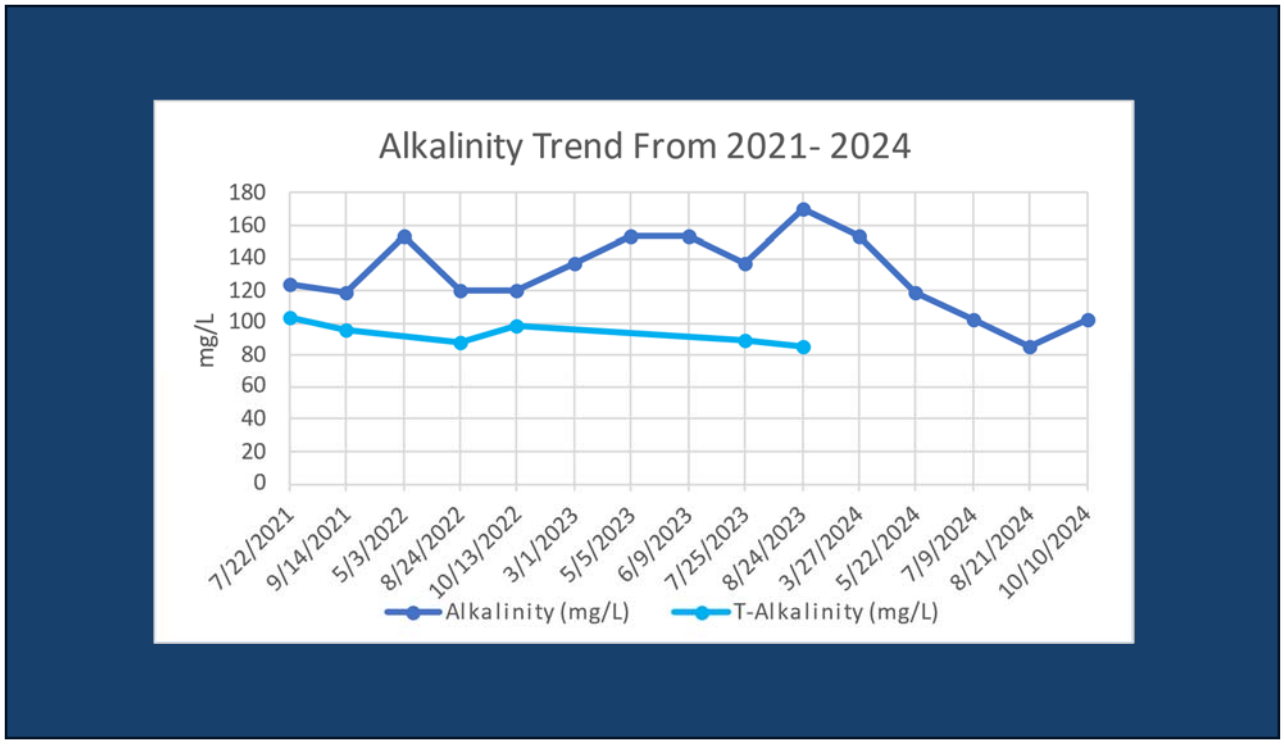
Not all parameters sampled are depicted in trend sheets.

Jensen Lakes

Jensen Lake Data Trend Sheet

Alkalinity:

Alkalinity is the measurement of water's ability to neutralize an acid due to dissolved alkaline substances present within water. Alkalinity of lakes can be influenced by bedrock or the till over which the lake has formed. Reporting as "T-alkalinity (as $CaCO_3$)" specifies that the sample has an alkalinity equal to that of a solution with a certain amount of calcium carbonate ($CaCO_3$) dissolved in water. The long-term MINIMUM guideline for the protection of aquatic life for T-alkalinity (as $CaCO_3$) is 20 mg/L unless natural conditions are less, in which case the guideline cannot be lower than 25% of natural level.



Current Status:

Acceptable as per the Environmental Quality Guidelines for Alberta Surface Water for the Protection of Aquatic Life (EQGASW 2018) with consideration of site-specific conditions.

Date Prepared: October 11, 2024

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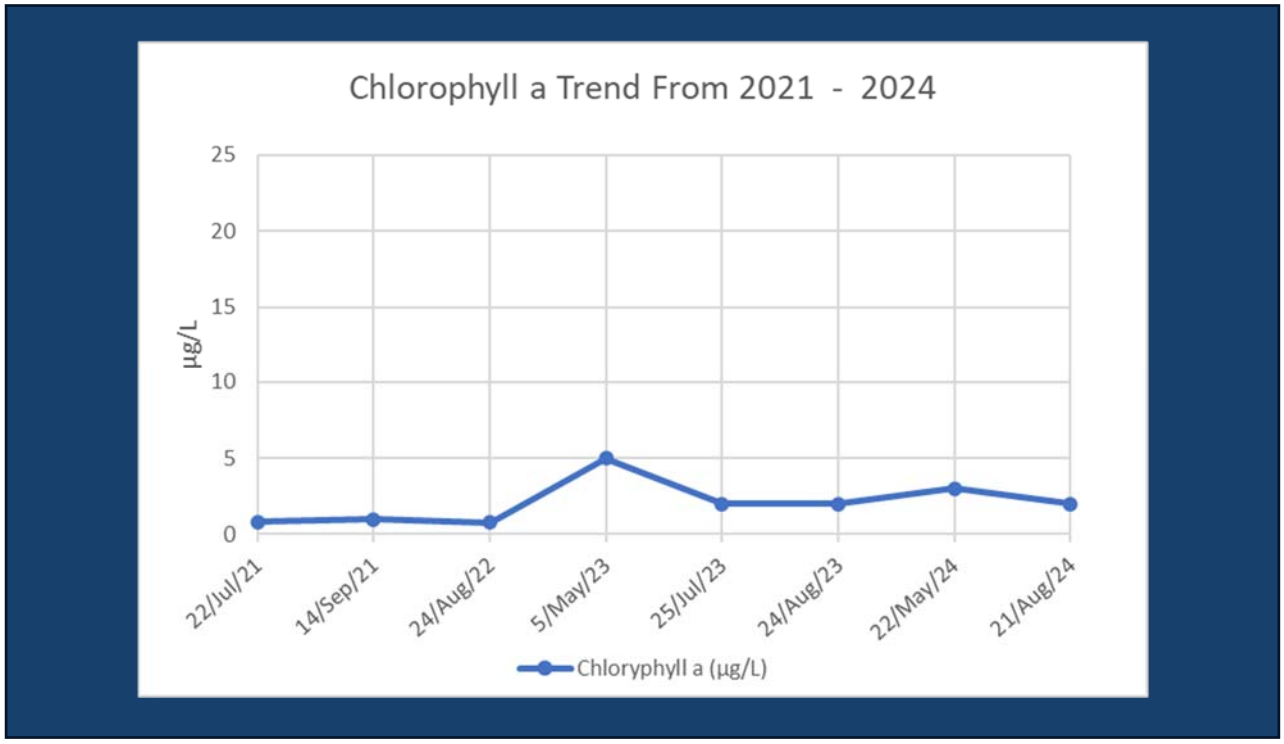
Chlorophyll a:

Chlorophyll a is a green pigment in plants and algae that allows them to undergo photosynthesis. Thus, it is used as a measure of the amount of algae growing in and can be used to classify the trophic condition of a lake. While chlorophyll a is expected to fluctuate, particularly in summer; generally, the higher the chlorophyll a, the poorer the water quality. A range of 2.5 - 25 µg/L is considered suitable from a lake trophic status.



Current Status:

Acceptable as per the Environmental Quality Guidelines for Alberta Surface Water Guidelines (EQGASW) (2018) and with consideration of site-specific conditions.

Date Prepared: September 16, 2024

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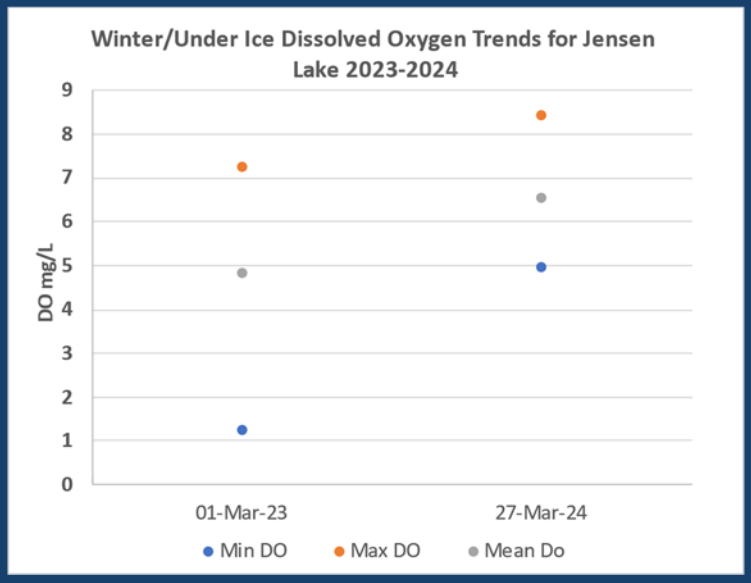
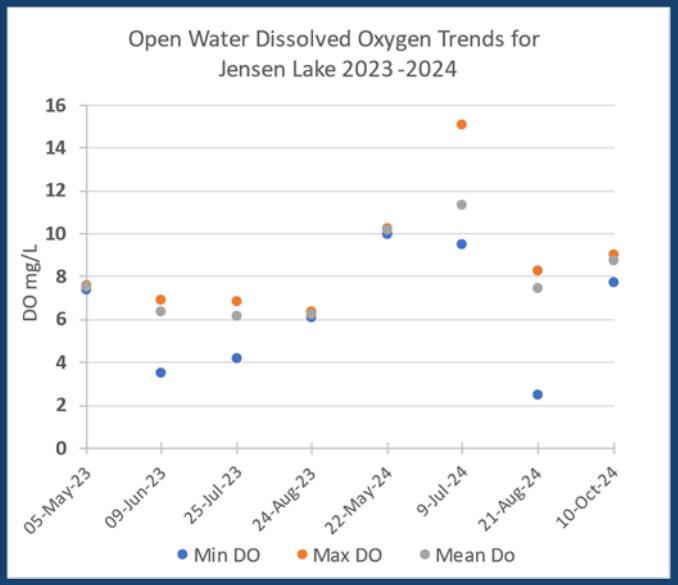
Jensen Lake Data Trend Sheet

Dissolved Oxygen (DO):

Dissolved oxygen is essential to the survival of fish and other aquatic organisms. It is also a vital indicator of water quality. DO should ideally be a minimum of 5 mg/L short-term (acute) and a minimum of 6.5 mg/L long term (chronic). However, considerable deviation from these guidelines may be suitable in certain natural settings for fish survival and aquatic ecosystem health. DO typically decreases with water depth and under ice cover winter conditions.





Current Status:

Acceptable as per the Environmental Quality Guidelines for Alberta Surface Water Guidelines (EQGASW) for the Protection of Freshwater Aquatic Life (2018) and with consideration of site-specific conditions and biologist experience and knowledge.

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Date Prepared: December 31, 2024

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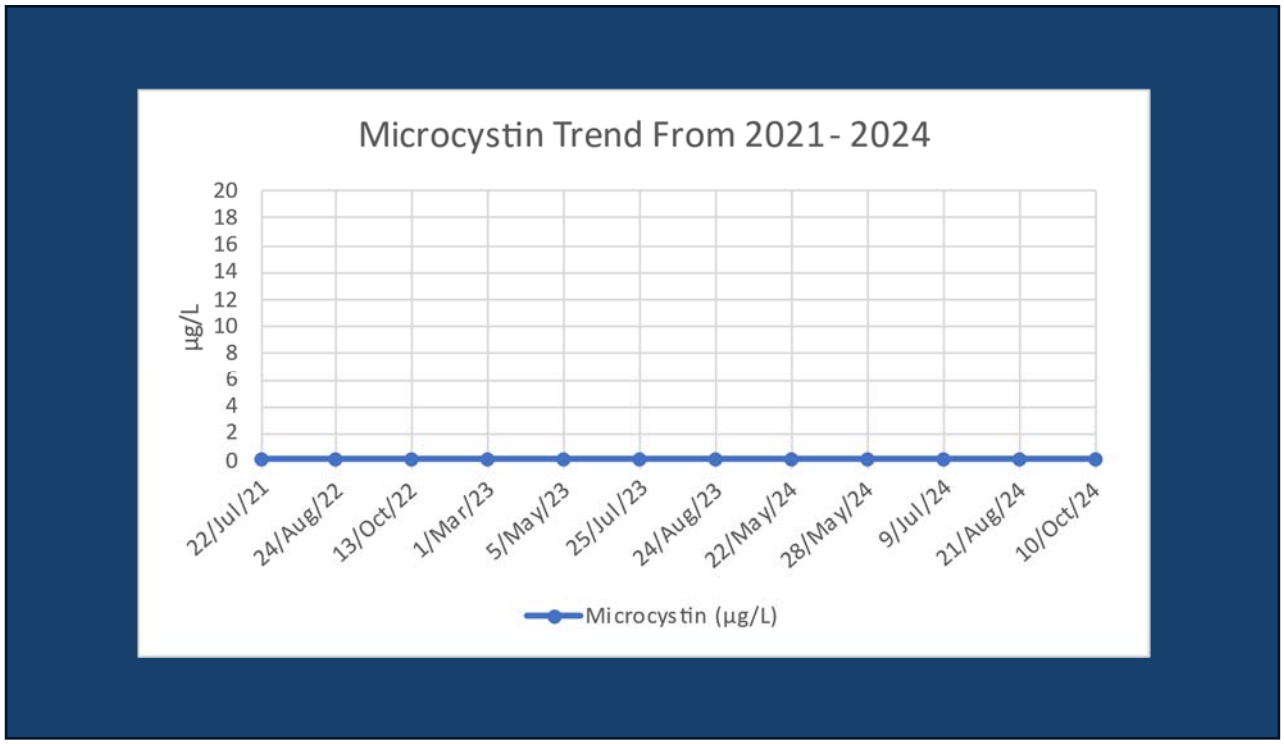
Total Microcystins (Blue-Green Algae):

Microcystin is a class of toxin that is produced by certain freshwater cyanobacteria (blue-green algae). The amount of microcystin within a lake will correlate to the presence of cyanobacteria (blue-green algae). Negative effects can occur from ingesting and/or recreational contact with water contaminated with microcystin for humans, wildlife and pets. The limit for microcystin, based on Alberta Safe Beach Protocol (2022) is 10 µg/L or less (expressed as microcystin-LR). Microcystin has been measured consistently at <0.2 µg/L at Jensen Lake since 2021.



Current Status:

Acceptable as per the Environmental Quality Guidelines for on Alberta Safe Beach Protocol (2022)

Date Prepared: October 23, 2024

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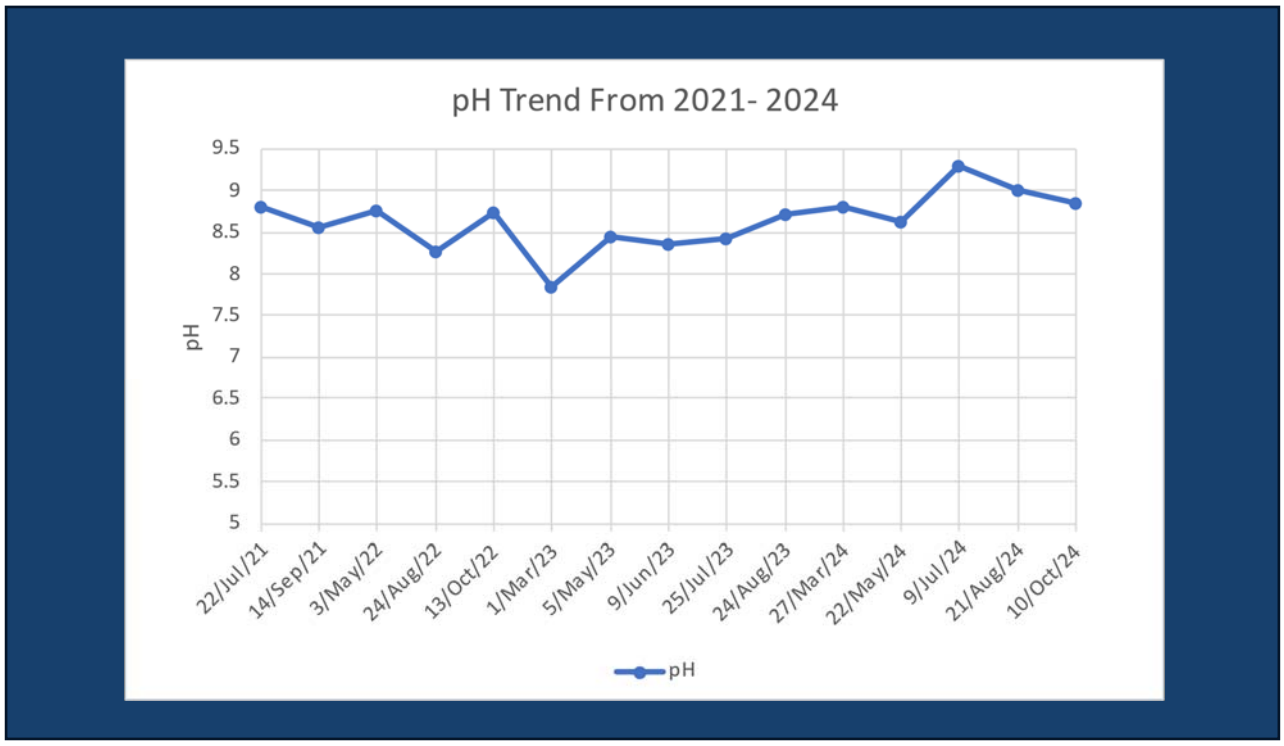
pH:

The pH of water is determined by the amount of hydrogen (ions) in a solution in order to give an indication of the acidity. pH is measured on a scale of 1 to 14 with 1 indicating an acidic solution and 14 indicating a basic solution. Most aquatic organisms can only survive within a certain pH range with a neutral pH (7) allowing the greatest variety of organisms to survive. A range of approximately 6.5 to 9.0 is considered suitable for lakes within Alberta. For primary human recreational contact, water should have a pH range of 5.0 to 9.0.



Current Status:

Acceptable as per the Environmental Quality Guidelines for Alberta Surface Water Guidelines (EQGASW) (2018) and Environmental Quality Guidelines for Alberta Surface Waters' Surface Water Quality Guidelines (AB WQG) for Recreation and Aesthetics (2018).

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Date Prepared: October 11, 2024

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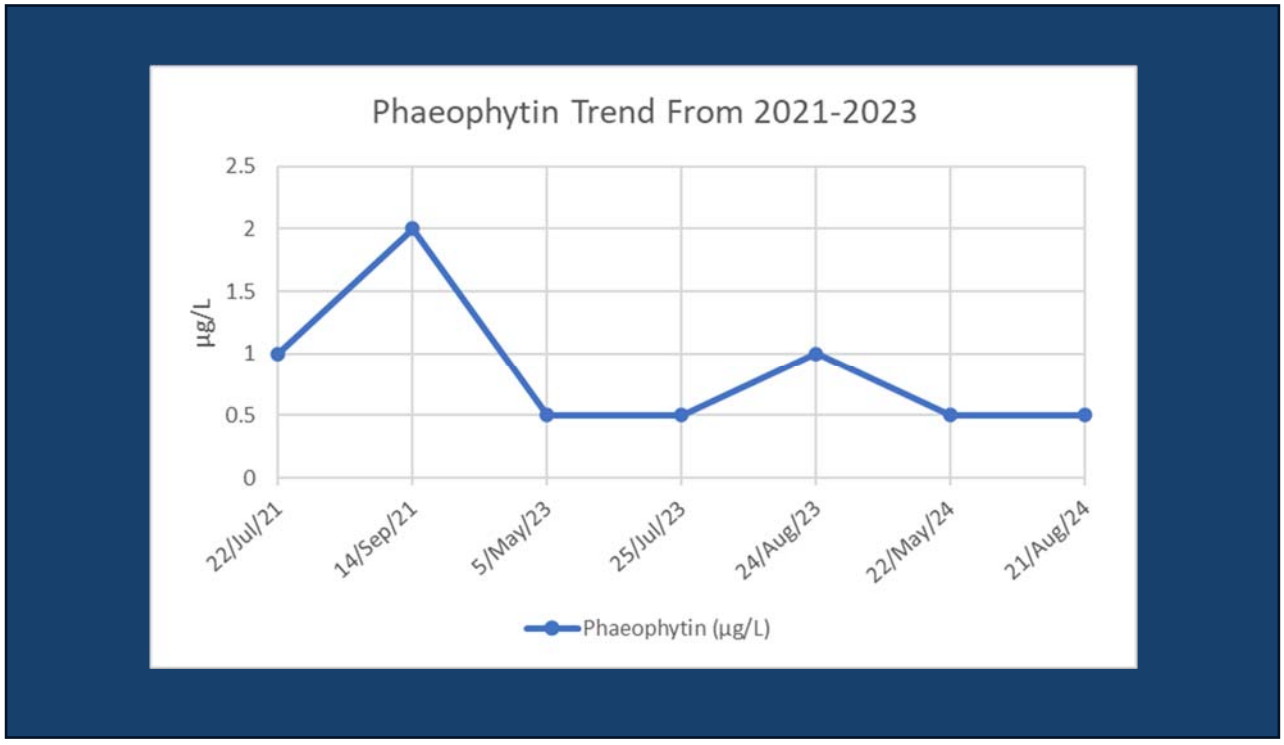
Phaeophytin:

Phaeophytin is one of the byproducts of the breakdown of chlorophyll. It remains pigmented but is not involved in the process of photosynthesis. The amount of phaeophytin and its ratio to chlorophyll can indicate the physiological condition of phytoplankton within the water. There is no guideline for phaeophytin within Alberta for lakes.



Current Status:

Stable, the concentration has not varied significantly from previous sampling dates.

Date Prepared: September 16, 2024

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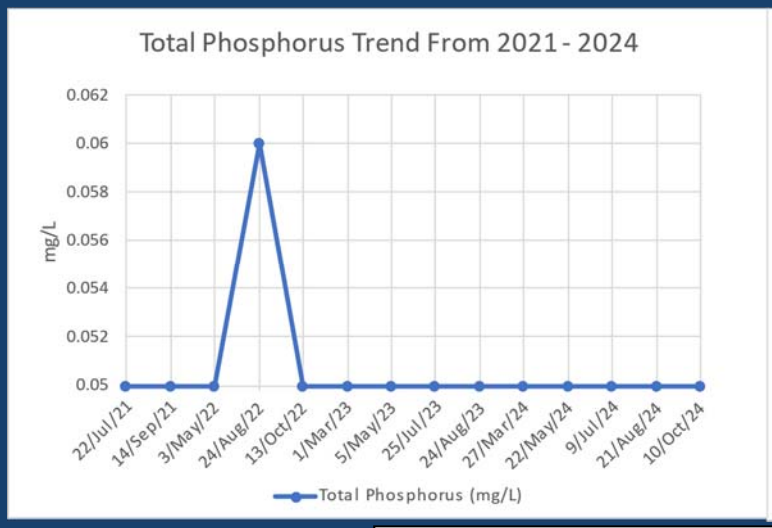
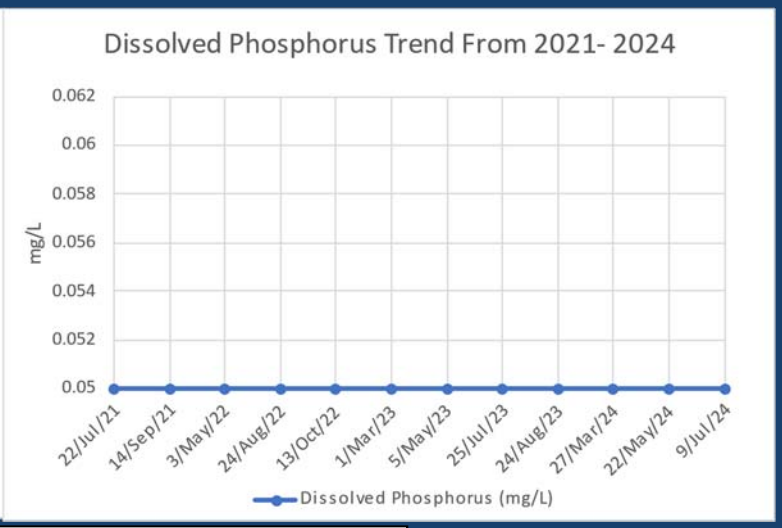
Jensen Lakes

Jensen Lake Data Trend Sheet

Phosphorus (Total and Dissolved):

Excess phosphorus can lead to explosive growth of aquatic plants and algae leading to decreased dissolved oxygen levels and degraded water and recreational quality. For surface waters not covered by specific guidelines, phosphorus concentrations should be maintained so as to prevent detrimental changes to algal and aquatic plant communities, aquatic biodiversity, oxygen levels and recreational quality. In previous guidelines, a maximum short-term guideline of 0.05 mg/L for total phosphorus (TP) was noted. Phosphorus is an indicator of the trophic status of the lake, and generally a range of 0.01 - 0.035 mg/L is considered suitable.





0.05 mg/L is low range limit of laboratory analysis. Therefore 0.05 mg/L is ≤0.05 mg/L.

Current Status:

Acceptable as per the Environmental Quality Guidelines for Alberta Surface Water Guidelines (EQGASW) for the Protection of Freshwater Aquatic Life (2018) and with consideration of site-specific conditions.

Date Prepared: October 23, 2024

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Jensen Lake Data Trend Sheet

Odour:

For the purposes of recreation, lakes should be free from materials that produce odour in such a degree as to be objectionable or impair use. There is no specific level of odour set as a guideline as the determination of what is objectional, and the characteristics and severity of an odour can be subjective. To provide some metric by which to gauge and monitor odour, a test is conducted to measure threshold odour number (TON) which represents the dilution ratio at which odour is hardly detectable within a water sample. A TON of <8 is considered desirable for recreational lake use. (Odour associated with chemical spills or contamination should be absent.)

Current Status:

TON is <8 and within a desirable range.

Date Prepared: September 16, 2024

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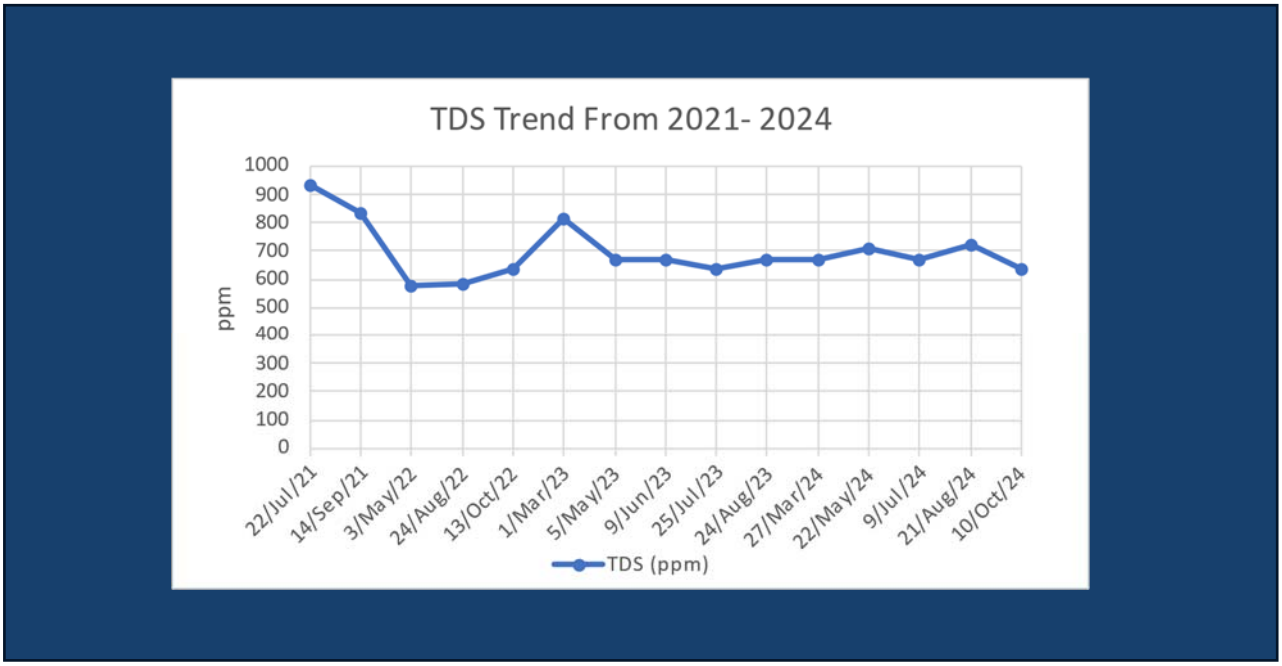
Jensen Lakes

Jensen Lake Data Trend Sheet

Total Dissolved Solids (TDS):

TDS is the total concentration of dissolved substances in water comprised of a combination of primarily inorganic salt materials and small amount of organic matter. TDS relates to the mineral content of the water, which is important to survival of aquatic life, and, it can be an indicator of potential harmful contaminants, such as iron, manganese, sulfate, bromide, arsenic and fertilizers. Changes to TDS can influence the pH and temperature of the water which can also impact aquatic organisms. Lake water level and "topping up" of the lake may be anticipated to influence TDS. There are no specific guidelines for TDS for lake aquatic life or recreation; however, it is an important indicator to watch for changes and its results may prompt testing of other parameters. The aesthetic objective of TDS for drinking water is ≤500 ppm.



Current Status:

Total Dissolved Solids (TDS) are acceptable, similar to previous recent sampling dates and lower than in March 2023. Will continue to be monitored and trends analyzed.

Date Prepared: October 11, 2024

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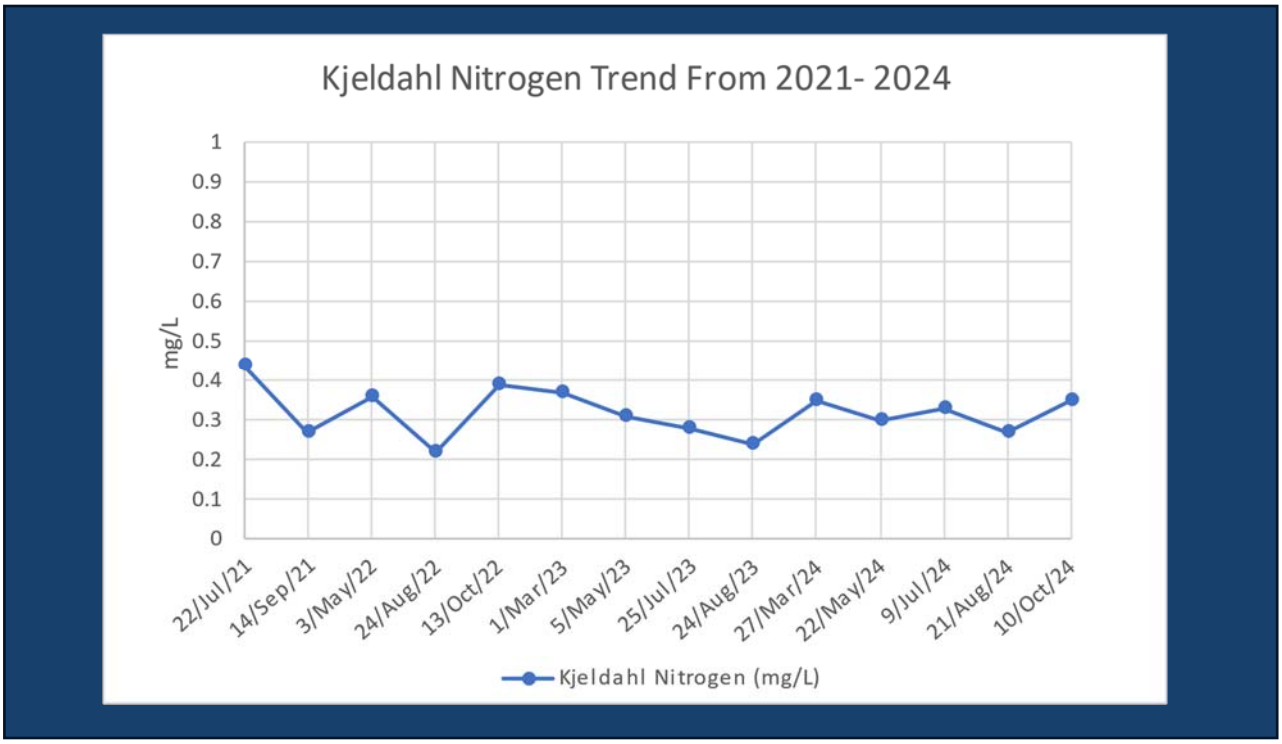
Jensen Lake Data Trend Sheet

Total Kjeldahl Nitrogen (TKN):

Nitrogen occurs in lakes in multiple forms. Excess nitrogen can cause overstimulation of growth of aquatic plants and algae. Total Kjeldahl Nitrogen (TKN) is the sum of ammonia nitrogen and organic nitrogenous compounds. For surface waters not covered by specific guidelines, nitrogen (total) should be maintained so as to prevent detrimental changes to algal and aquatic plant communities, aquatic biodiversity, oxygen levels and recreational quality. In previous guidelines, a maximum short-term guideline of 1 mg/L for TKN was noted.



Current Status:

Acceptable as per the Environmental Quality Guidelines for Alberta Surface Water Guidelines (EQGASW) for the Protection of Freshwater Aquatic Life (2018) and with consideration of site-specific conditions.

ENVIRO MAK Inc.
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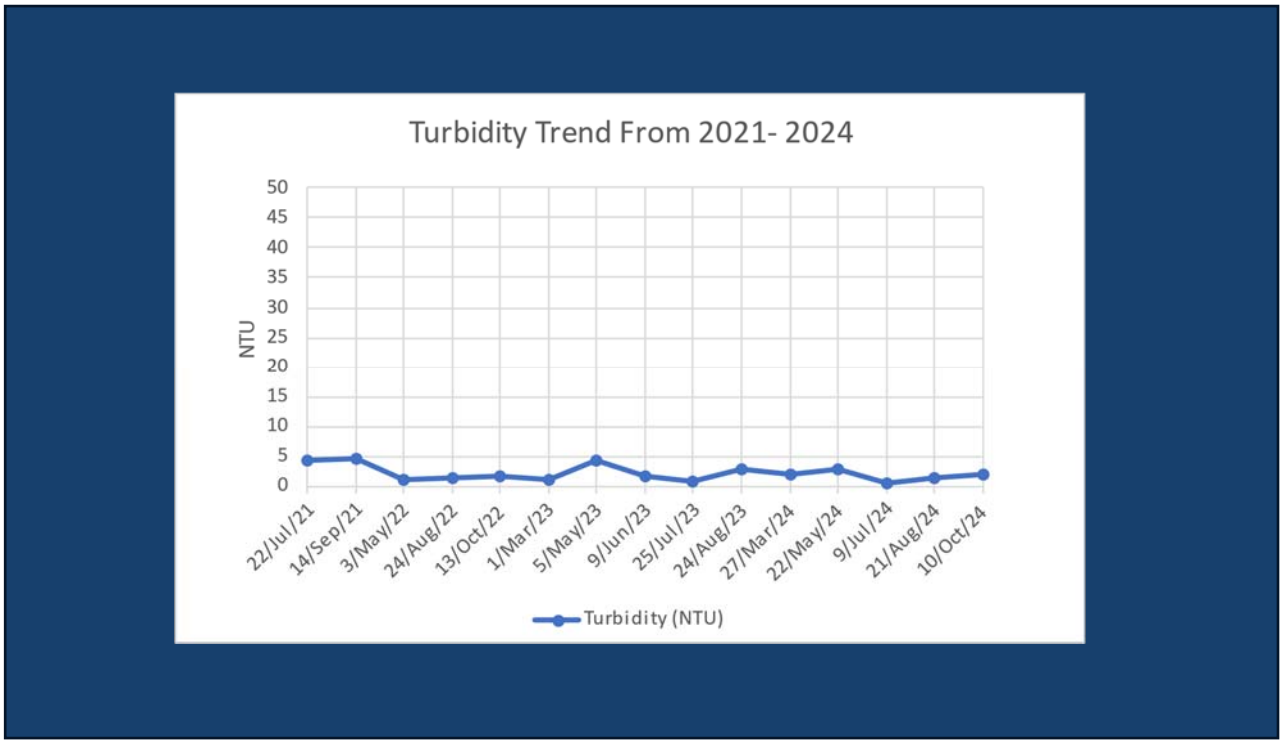
Date Prepared: October 23, 2024

Jensen Lakes

Jensen Lake Data Trend Sheet

Turbidity:

Turbidity (NTU) is the measurement of the cloudiness of a solution due to the number of particles within it. The more hazy or cloudy it is, the more particles suspended within the solution and the higher the turbidity. Turbidity is expected to fluctuate due to clay and silt, fine organic and inorganic matter, soluble colored organic compounds, algae and other microscopic organisms that can be suspended within the water. Generally, low turbidity is beneficial for aquatic life and fish survival as well as for human recreational use. For recreation, less than 50 NTU is desirable. By comparison, treated drinking water is expected to be less than 1 NTU.



Current Status:

Acceptable as per the as per the Environmental Quality Guidelines for Alberta Surface Waters for the Protection of Aquatic Life and for Recreation and Aesthetics (2018).

ENVIRO MAK Inc.
Environmental Management Consultants

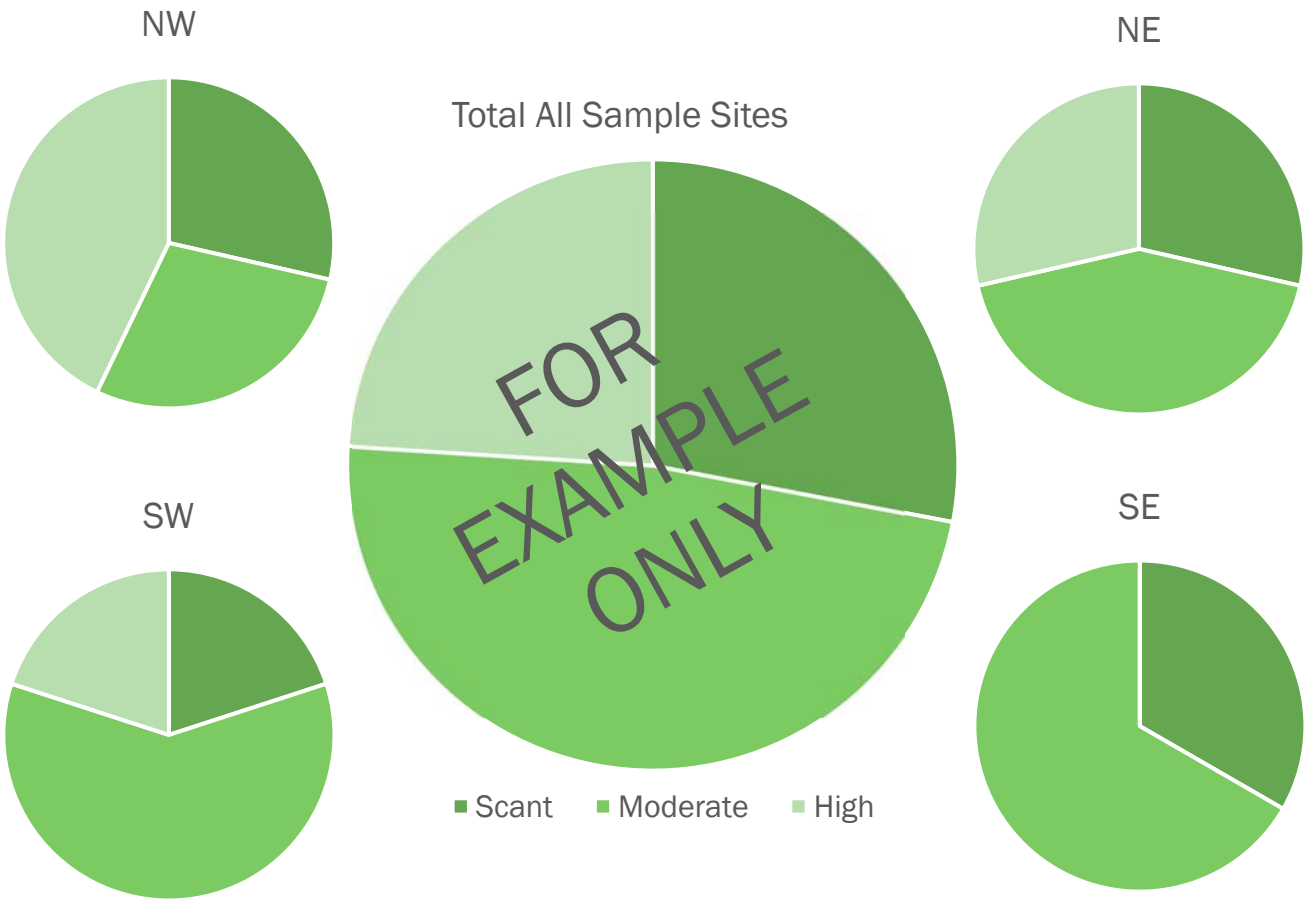
Date Prepared: October 11, 2024

Jensen Lakes

Jensen Lake Data Trend Sheet – COMING SOON

Aquatic Vegetation Abundance:

In 2025, trend analysis of aquatic vegetation abundance and diversity will be added to the annual summary. Vegetation data gathered from 2021 to 2025 will be analyzed and presented.



Current Status:

Coming soon…

Date Prepared: March 11, 2025

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Attachment

Photographs

Facing north from the center of the lake.

Facing east from the center of the lake.

Facing south from the center of the lake.

Facing west from the center of the lake.

Facing southwest bay of lake where new developments are located.

Ditch alongside new developments on southwest shore of lake.

New dock on northeast side of lake.

New dock on east side of lake.

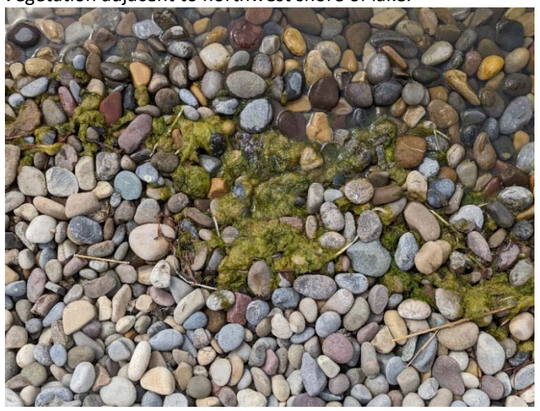
ENVIRO MAK Inc.	**Jensen Lake**
PHOTOGRAPH LOG - May 22, 2024	
SE17-54-25-W4M **St. Albert, Alberta**	**Project No.** **14-10-04-03**

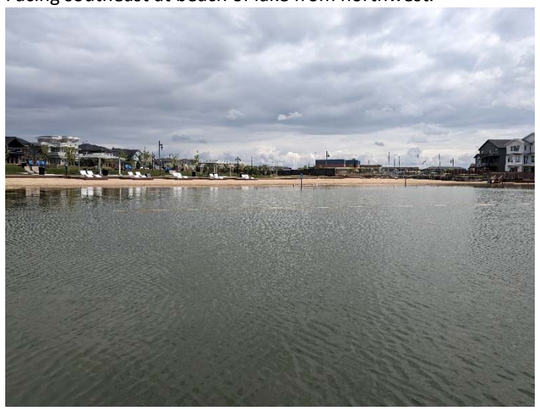

Vegetation adjacent to northwest shore of lake.


Facing southeast at beach of lake from northwest.


View of lake from boat launch area.


Green algae on shore adjacent to boat launch.


Green algae on shore adjacent to boat launch.

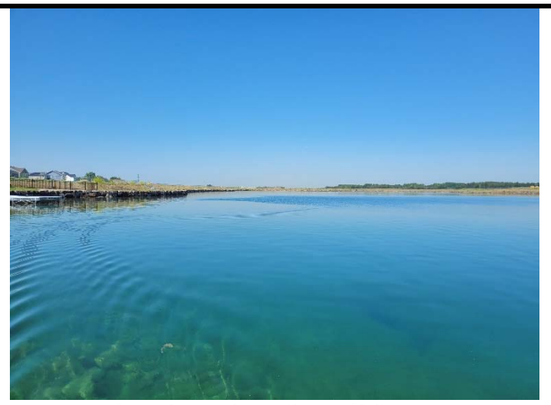

Beach area along southeast shore of lake.


Facing northeast from west side of lake.

	Jensen Lake
PHOTOGRAPH LOG - May 22, 2024,	
SE17-54-25-W4M **St. Albert, Alberta**	**Project No.** **14-10-04-03**

Facing south shore from center of lake.

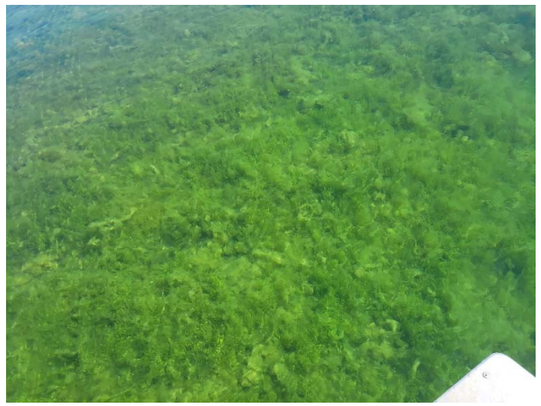
Facing east shore and beach from west shore.



Facing west from the southeast shore of lake.

Facing northeast bay from south shore.

Algae in northeast bay.



Aquatic vegetation along north shore.

Aquatic vegetation from center of lake.

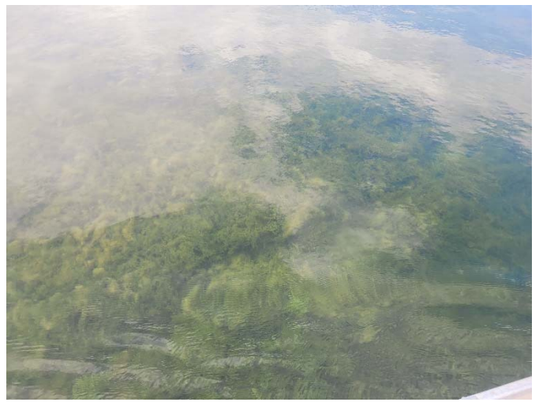
ENVIRO MAK Inc. Environmental Management Consultants	**Jensen Lake**
July 9, 2024, PHOTOGRAPH LOG	
SE17-54-25-W4M **St. Albert, Alberta**	**Project No.** **14-10-04-03**

Facing east toward the beach area.

Facing south shore from center of the lake.

Facing northeast from the center of the lake.

Facing west shore from the center of the lake.



Aquatic vegetation in northwest bay.

Aquatic vegetation along boat launch / beach area.

Aquatic vegetation sample from north shore.

Jensen Lake

August 21, 2024, PHOTOGRAPH LOG

SE17-54-25-W4M **St. Albert, Alberta**	**Project No.** **14-10-04-03**


Facing north from the center of the lake.

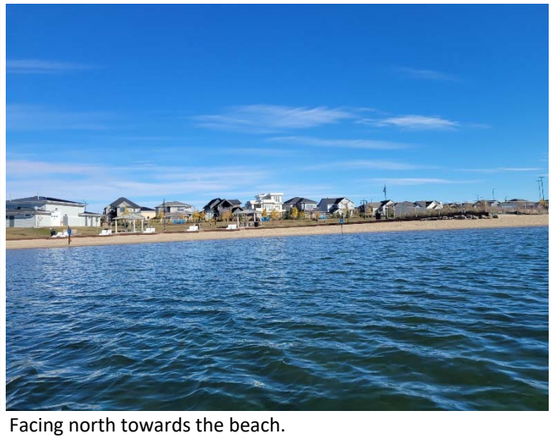

Facing east shore from the center of the lake.


Facing south shore from the center of the lake.


Facing west shore from the center of the lake.


Facing into the water along the west side of the lake.


Facing northwest from the boat launch along the north shore.


Facing north towards the beach.


Facing northwest towards the bay west of the boat launch.


Workers placing gravel along southeast shore.


Workers placing gravel along southeast shore.

	Jensen Lake
October 10, 2024, PHOTOGRAPH LOG	
SE17-54-25-W4M **St. Albert, Alberta**	**Project No.** **14-10-04-03**