

# Water Quality Report

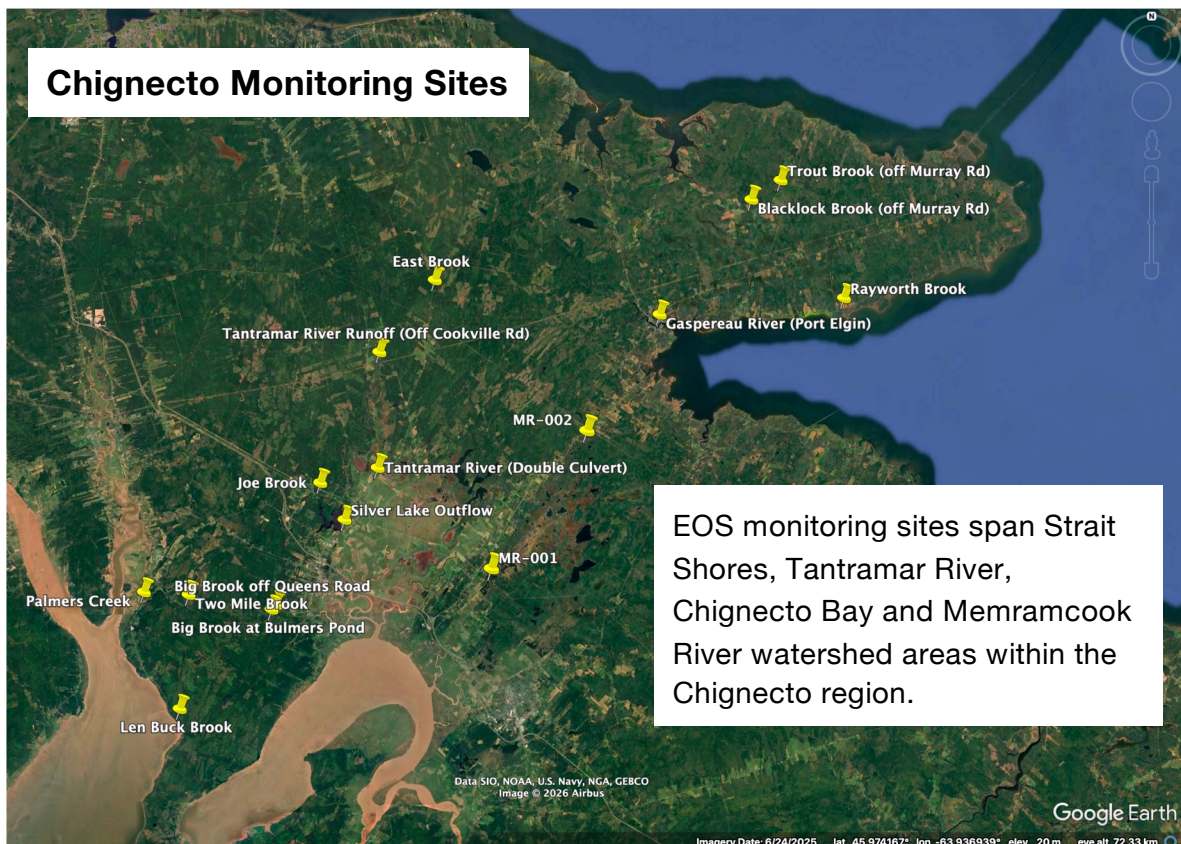
February 2026

## OUR ORGANIZATION

EOS Eco-Energy is a charitable organization based in Sackville, New Brunswick. In 2017, EOS established the Chignecto Area Watersheds Monitoring Program, with an aim to maintain the long-term sustainability of our local watersheds by promoting watershed awareness through citizen science, public education, conducting long-term water quality monitoring, and performing subsequent restoration and protection activities.



## OUR WATERSHED



# WHAT DO WE MEASURE?

## Water Temperature

Water needs to be cold enough for some species (like salmon and trout) to survive.

## Dissolved Oxygen

Ecosystems need a minimum amount of oxygen in the water to support healthy aquatic life.

## Conductivity

This is the water's ability to transmit electricity- changes are due to dissolved solids, and may impair the survival of some species.

## pH

This measures how acidic/basic the water is- neutral levels are best for fish. Changes to the natural pH might impact the nutrients or toxins in the water.

## Total Dissolved Solids

Dissolved solids can be anything from organic material, to minerals, to pollutants. Too many dissolved solids harm aquatic life and may indicate contaminated runoff.

## Nutrients

While some nutrients are healthy, too many nutrients (like phosphorus and nitrogen) can cause algal blooms and harm ecosystems. Nutrients often come from manure and fertilizer in runoff.

## Metals

Many metals occur naturally and are essential for sustaining life in aquatic ecosystems. However, they can become toxic to aquatic organisms at high concentrations.

## Bacteria

*Escherichia coli* is an indicator of faecal contamination in fresh water. The presence of fecal indicators could mean there are other disease-causing pathogens present.

## HOW DO WE MEASURE IT?



A YSI ProQuatro handheld multiparameter meter is used to measure in-situ water quality parameters such as temperature, dissolved oxygen, conductivity, pH, total dissolved solids and salinity. In addition, bottle samples collected are analyzed at a certified laboratory for a full suite of surface water parameters including nutrients, major ions, trace metals and bacteria. Monitoring activities follow guidelines set by the New Brunswick Department of Environment and Local Government (NB DELG).

# The Water Quality Index

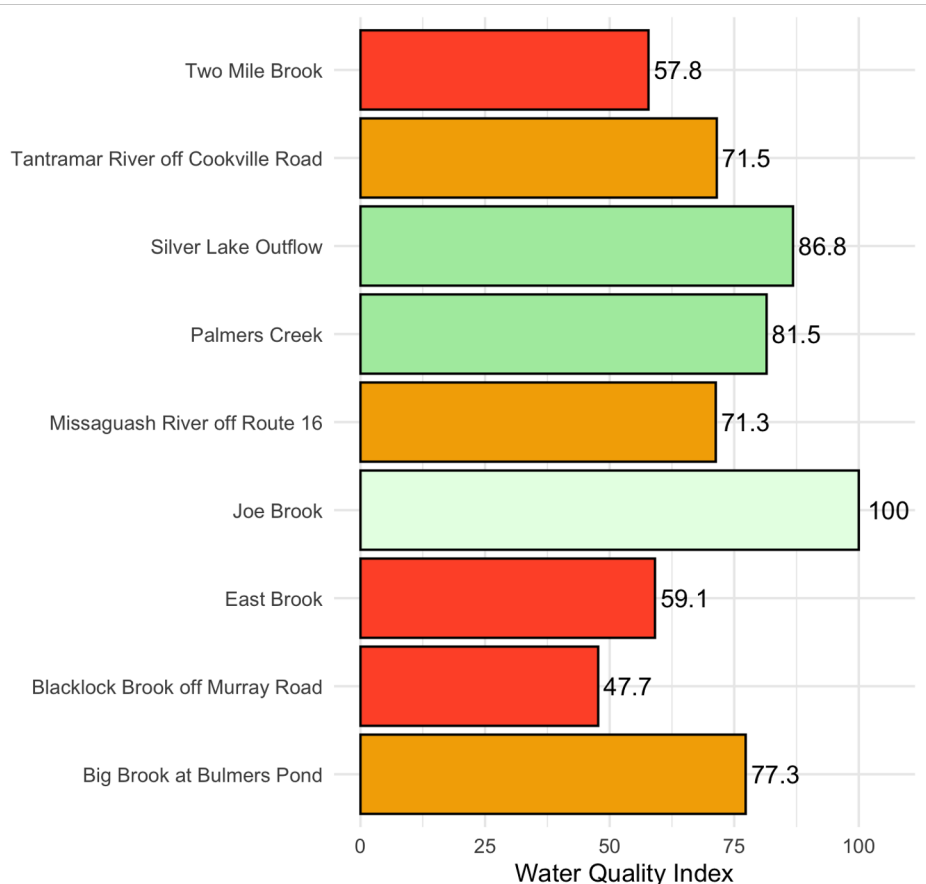
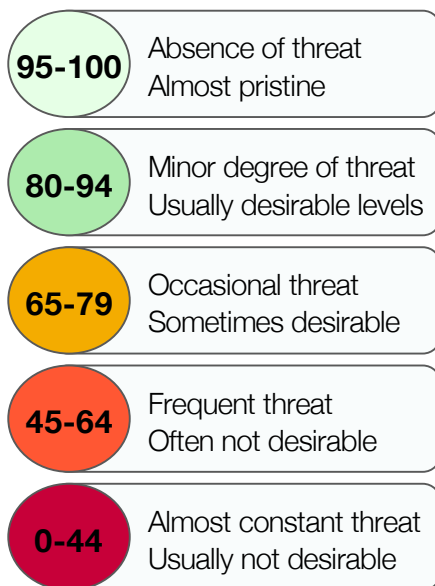
Using the Canadian Council of Ministers of the Environment water quality guidelines, the Water Quality Index (WQI) combines multiple parameters into a single value that summarizes water quality at a site. It is calculated based on:

- the number of parameters that exceed guidelines,
- the number of times guidelines are exceeded,
- and the amount by which they are exceeded.

For an accurate WQI, a site is required to have 4 samples per year with at least 4 variables measured.

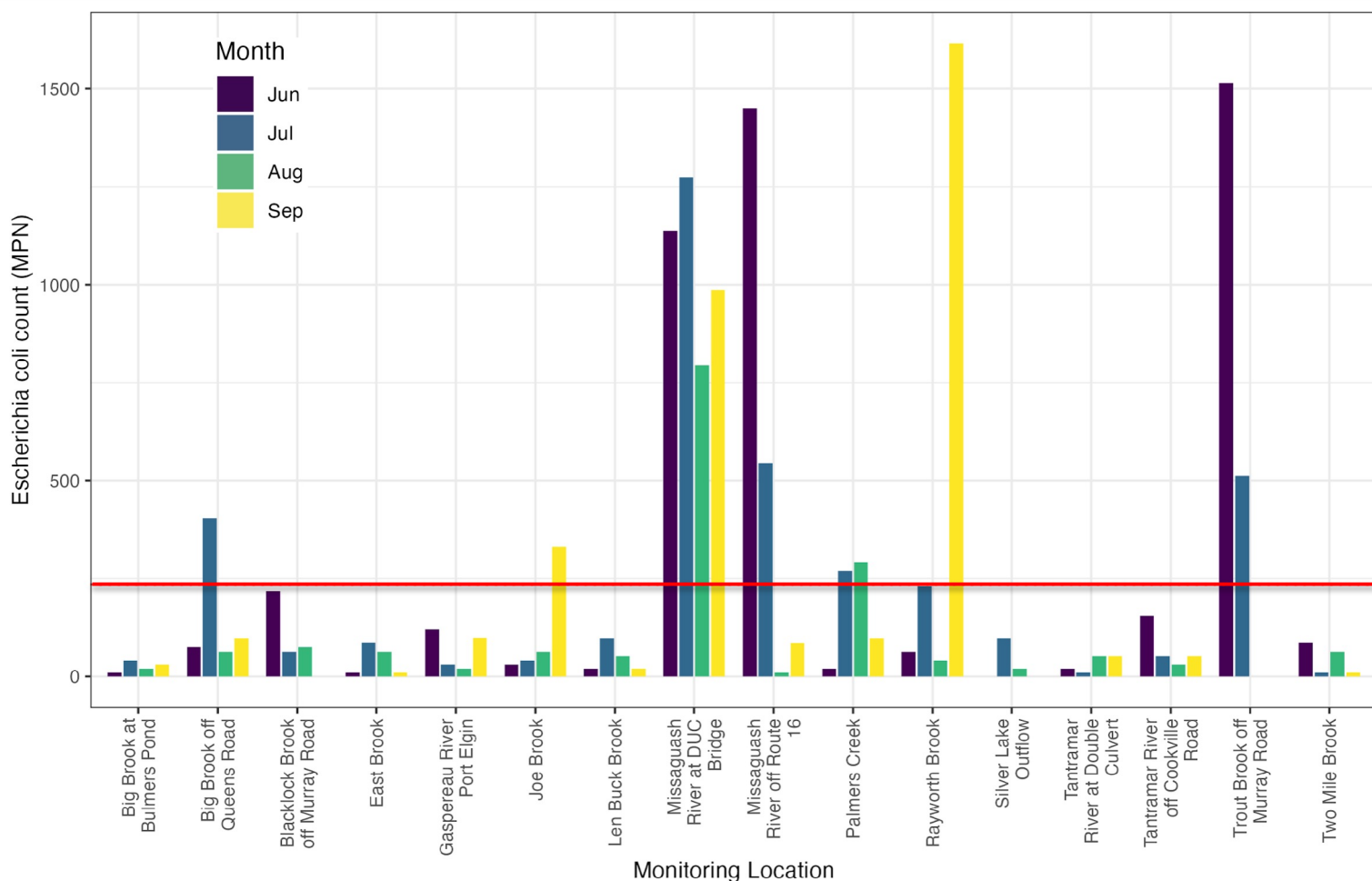
## WQI RESULTS

The WQI was calculated for 9 sites using: pH, dissolved oxygen, chloride, turbidity, total phosphorous, nitrate, iron, zinc and arsenic (parameters chosen based on NB DELG guidelines).



## FURTHER ANALYSIS

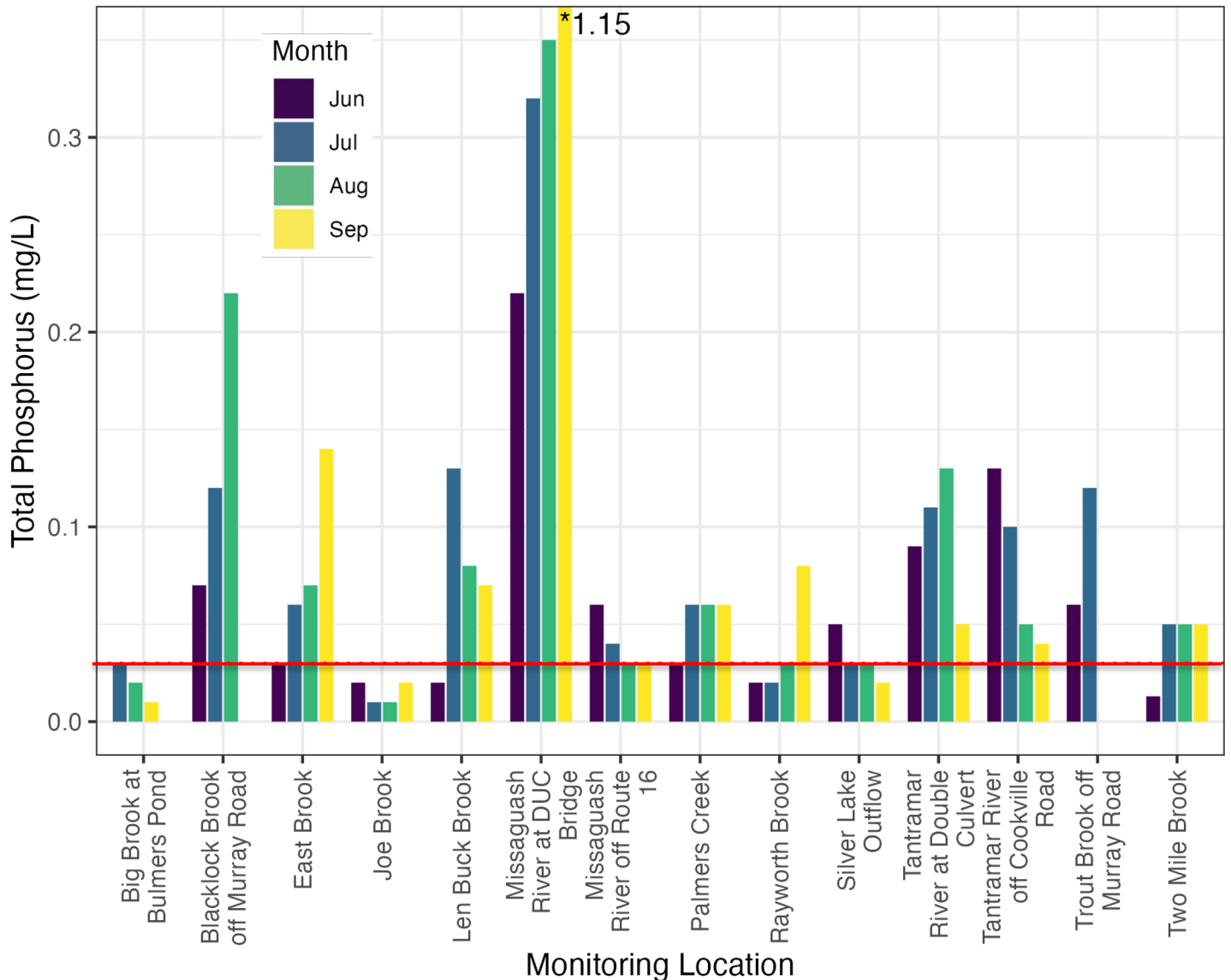
Monthly *Escherichia coli* bacteria counts for 2025 field season with 235 MPN/100mL cut off (Health Canada) indicated by red line.



Three sites exceeded Health Canada guidelines in June, five in July, two in August and three in September. The summer was hot and dry and many of these brooks and rivers (i.e. Missaguash River, Palmers Creek and Trout Brook) run through agricultural land which may have contributed to high bacterial counts. The highest single count this season was observed at Rayworth Brook in September (1616 MPN/100 mL). This spike coincided with a time of extremely low freshwater levels which may have resulted in saltwater intrusion from the Northumberland.

## FURTHER ANALYSIS

Monthly Total Phosphorous amounts for 2025 field season with 0.03 mg/L cut off (NB DELG) indicated by red line.



Thirteen out of 14 sites sampled met or exceeded the New Brunswick total phosphorus guideline limit of 0.03 mg/L for the protection of aquatic life. The highest value (1.15 mg/L) was recorded was at Missaguash River at DUC Bridge in September. This river winds through agricultural lands along the New Brunswick/Nova Scotia border with minimal riparian buffer zone vegetation. Joe Brook, which feeds Silver Lake, remains one of our most pristine sites with no samples in exceedance of the total phosphorus guideline.

## Ecological Corridors Project

In 2025, an Ecological Corridors project funded by Parks Canada and in collaboration with Birds Canada and Nature NB has allowed EOS to extend monitoring efforts to two sites in the Missaquash Watershed across the Chignecto Isthmus. In addition to standard water quality measurements, two temperature data loggers are deployed at these sites. These activities will gauge the health of aquatic habitat corridors, with special attention to cold water fish species.



## Swim Guide Sites

*Is it safe to swim?* Water quality data collected at Big Brook off Queens Road and Gaspereau River Port Elgin, two popular local swimming sites, is deposited onto “Swim Guide”, a Swim Drink Fish initiative that provides accessible information about beach water quality (<https://www.theswimguide.org>).



# GET INVOLVED IN YOUR WATERSHED!

There are many ways to get involved in watershed stewardship! Whether you're a landowner, angler, swimmer, or simply interested in learning about water quality, EOS is happy to help find the right activity or effort for you. From water conservation strategies to citizen science opportunities, every bit counts. Contact [water@eosecoenergy.com](mailto:water@eosecoenergy.com) for more information today!



## Acknowledgements

This project would not be possible without our main funder, the New Brunswick Environmental Trust Fund. Ecological Corridors project funded by Parks Canada. Thank you to the Atlantic Water Network for providing this report template.



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Canada

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