

Edmonton North Saskatchewan River Water Quality Data

School Program Fall Season 2019

RiverWatch Institute of Alberta

Award-winning RiverWatch School Programs engage Alberta's secondary students in authentic science. Students are provided the tools and guided instruction that help them answer "How healthy is our river?". Using first-hand observations of their local river combined with data collection conducted at water quality test sites located above and below a wastewater treatment plant (WWTP), students generate their own conclusions on river health and stewardship actions. This type of citizen science is best described as "community-based environmental monitoring".

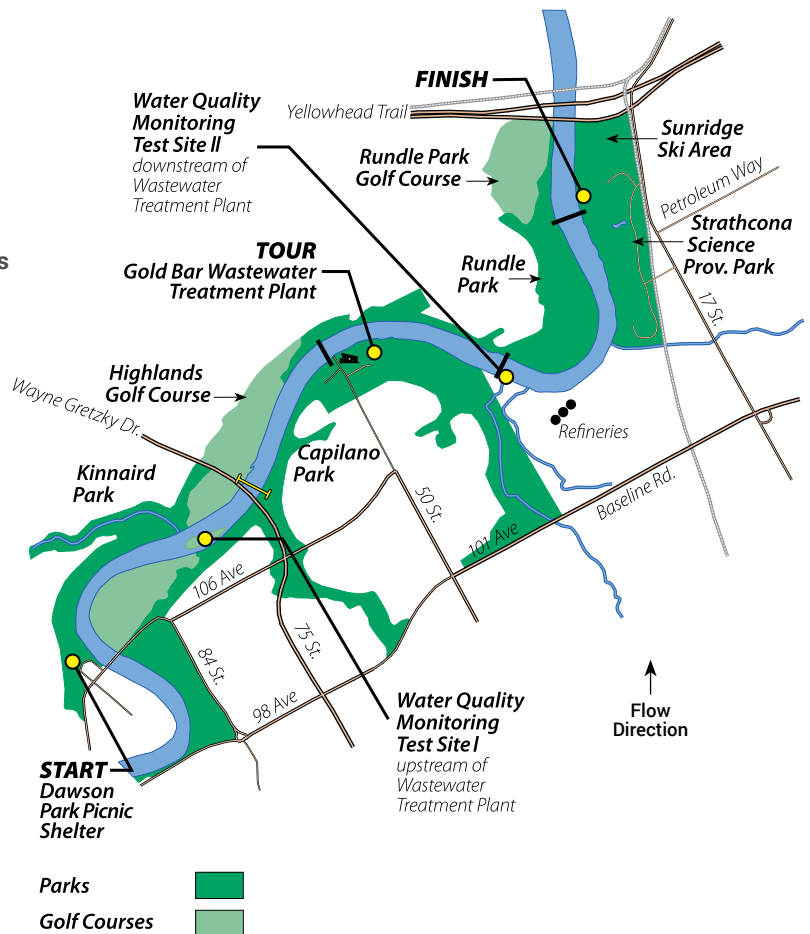
The combined efforts of approximately 150,000 thousand students across Alberta for more than two decades has generated substantial water quality data regarding the health of our rivers. You can view a data snapshot in the attached graphs generated by our website's user-friendly and responsive [graphing tool](#). This season's data suggests some water quality impact associated with wastewater treatment effluent.

Edmonton By-the-Numbers Fall Season 2019

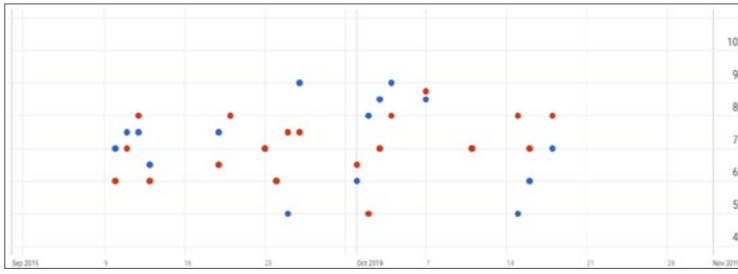
Number of Monitoring Days	19
Number of Schools	29
Number of Students	1,503
Number of Data Points	1,912

North Saskatchewan River Water Quality Data Comparisons Fall Season September – October 2019 Median Values

Parameter	Above WWTP (a.m.)	Below WWTP (p.m.)
Dissolved Oxygen mg/L	7	7
Water Temperature °C	11.4	12.5
Turbidity NTU	11	11
pH	8.0	7.6
Ammonia Nitrogen mg/L	0.13	0.38
Phosphate mg/L	0.02	0.04
Stonefly Nymph m ²	1	2
Mayfly Nymph m ²	2	2
Caddisfly Larva m ²	0	0
Crane fly Larva m ²	0	0
Midge Larva m ²	1	0
Blackfly Larva m ²	0	0



Dissolved Oxygen (mg/L)

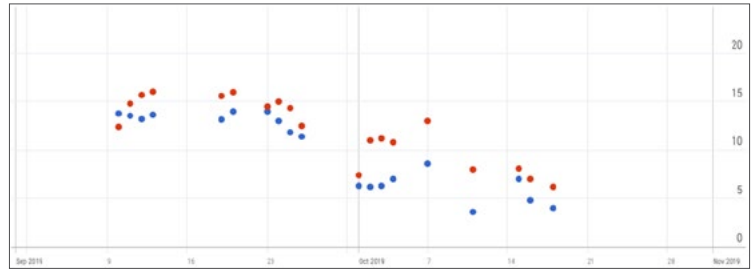


● North Saskatchewan River at Gretzky Gravel Bar (Upstream) ● North Saskatchewan River at Gold Bar Creek (Downstream)

Median **7** **7**

Dissolved oxygen concentrations are measured using Hach kits with a drop-by-drop titration to show a change in water color until totally clear. Dissolved oxygen is tested during daylight while macrophyte and algae photosynthesis is underway and generating oxygen. The first upstream test site is sampled in the morning; the second downstream test site is sampled in the early afternoon.

Water Temperature (°C)

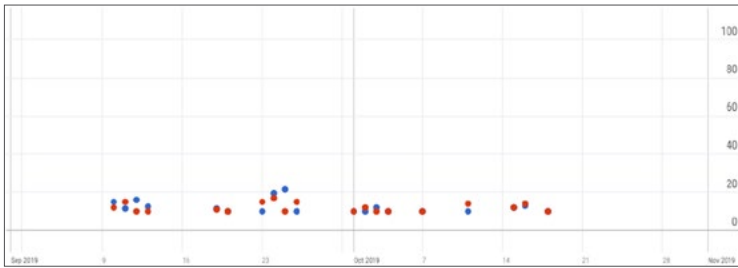


● North Saskatchewan River at Gretzky Gravel Bar (Upstream) ● North Saskatchewan River at Gold Bar Creek (Downstream)

Median **11.4** **12.5**

Water temperatures are measured using a digital thermometer placed in flowing, shallow water near shore. The first upstream test site is sampled in the morning; the second downstream test site is sampled in the early afternoon.

Turbidity (NTU)

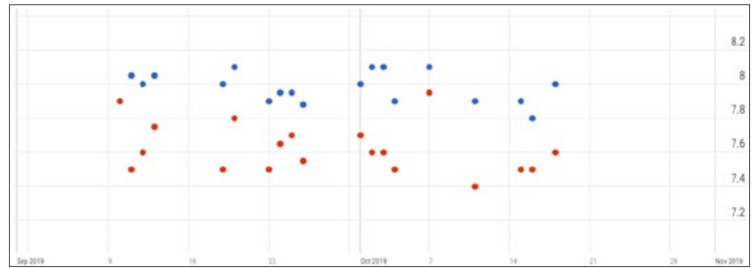


● North Saskatchewan River at Gretzky Gravel Bar (Upstream) ● North Saskatchewan River at Gold Bar Creek (Downstream)

Median **11** **11**

Turbidity is measured by slowly pouring water into a graduated cylinder marked with "Nephelometric Turbidity Units" or NTU's.

pH

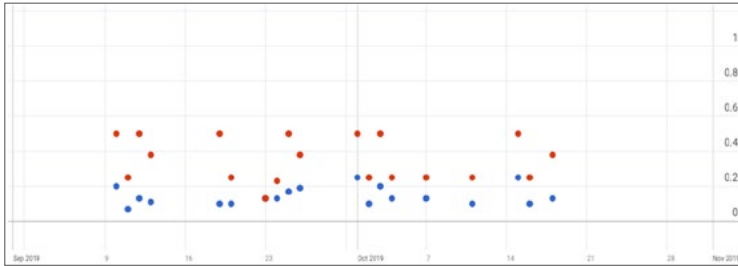


● North Saskatchewan River at Gretzky Gravel Bar (Upstream) ● North Saskatchewan River at Gold Bar Creek (Downstream)

Median **8.0** **7.6**

River pH is measured using Hach kits that compare a change in water color.

Ammonia Nitrogen (mg/L)

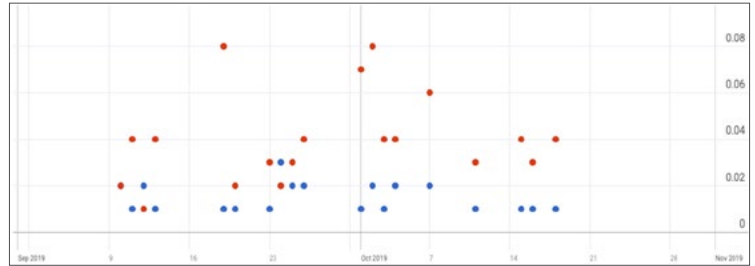


● North Saskatchewan River at Gretzky Gravel Bar (Upstream) ● North Saskatchewan River at Gold Bar Creek (Downstream)

Median **0.13** **0.38**

Ammonia nitrogen concentrations are measured by dipping Hach test strips into water and noting the color change.

Phosphorus (mg/L)



● North Saskatchewan River at Gretzky Gravel Bar (Upstream) ● North Saskatchewan River at Gold Bar Creek (Downstream)

Median **0.02** **0.04**

Orthophosphate concentrations are measured with Hach kits that compare a change in water color.

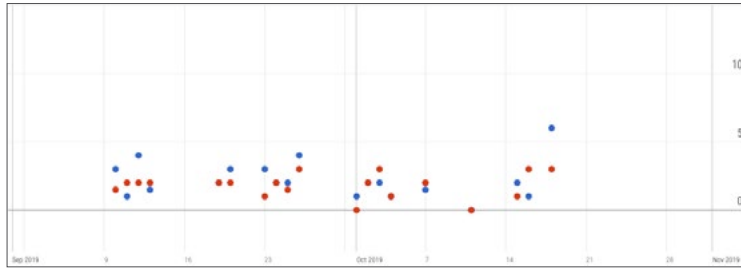
To review data with our online graphing tool, visit www.riverwatch.ab.ca/science/data

Aquatic Invertebrates

Benthic or bottom-hiding aquatic insects are dislodged when students use their boots to kick-up a square meter of river gravel, and then capture floating organisms in a net.

Pollution Sensitive Aquatic Invertebrates

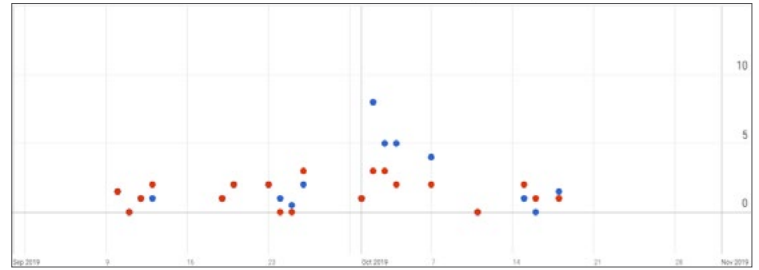
Mayfly Nymph (m²)



● North Saskatchewan River at Gretzky Gravel Bar (Upstream) ● North Saskatchewan River at Gold Bar Creek (Downstream)

Median 2 2

Stonefly Nymph (m²)

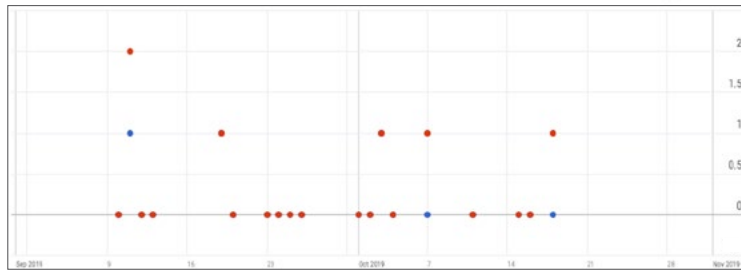


● North Saskatchewan River at Gretzky Gravel Bar (Upstream) ● North Saskatchewan River at Gold Bar Creek (Downstream)

Median 1 2

Moderately Pollution Tolerant Aquatic Invertebrates

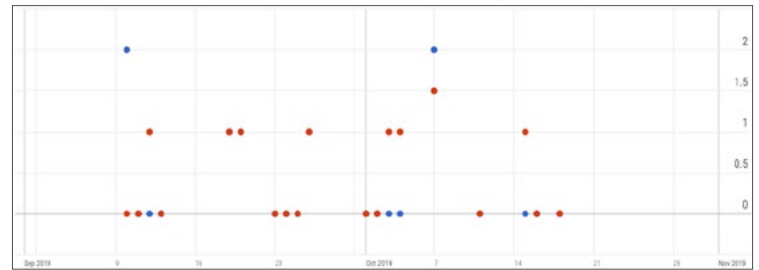
Cranefly Larva (m²)



● North Saskatchewan River at Gretzky Gravel Bar (Upstream) ● North Saskatchewan River at Gold Bar Creek (Downstream)

Median 0 0

Caddisfly Larva (m²)

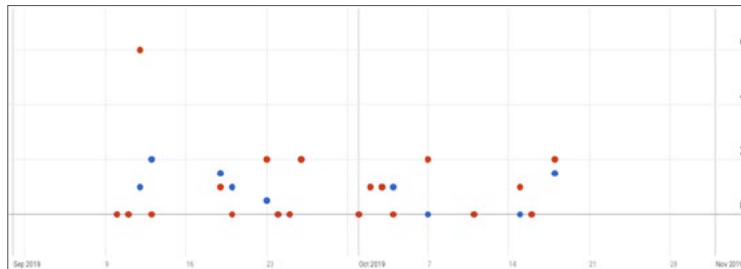


● North Saskatchewan River at Gretzky Gravel Bar (Upstream) ● North Saskatchewan River at Gold Bar Creek (Downstream)

Median 0 0

Pollution Tolerant Aquatic Invertebrates

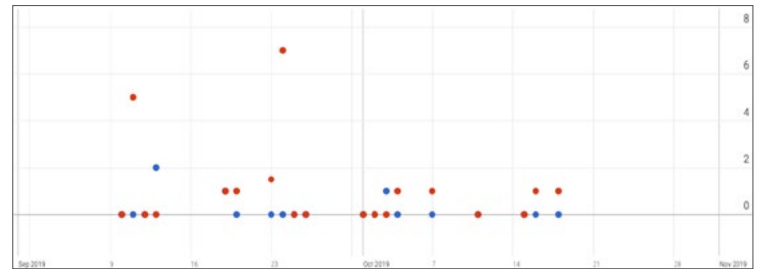
Midge Larva (m²)



● North Saskatchewan River at Gretzky Gravel Bar (Upstream) ● North Saskatchewan River at Gold Bar Creek (Downstream)

Median 1 0

Blackfly Larva (m²)



● North Saskatchewan River at Gretzky Gravel Bar (Upstream) ● North Saskatchewan River at Gold Bar Creek (Downstream)

Median 0 0

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