



PRAIRIE PROVINCES WATER BOARD

Report # 5

Interprovincial Water Quality Monitoring Site Descriptions

Technical Report DfYdUfYX>ZcfHY
DfUJfJY'Dfcj]bWg'K UhYf'6cUfx'

April 2024



PRAIRIE PROVINCES WATER BOARD

INTERPROVINCIAL WATER QUALITY MONITORING SITE DESCRIPTIONS

Prepared for the Prairie Provinces Water Board
by the Committee on Water Quality

April 2024

Table of Contents

Alberta-Saskatchewan Boundary

Battle River.....	1
Site Status	2
Typical range (minimum-maximum) in field observations and bacterial values:.....	2
Hydrometric Graphs (Water Survey of Canada, 1944-1979).....	3
Hydrometric Data Website	4
Maps & Diagrams.....	4
Parameters Monitored	5
Beaver River	15
Site Status	16
Typical range (minimum-maximum) in field observations and bacterial values.....	16
Hydrometric Graphs (Water Survey of Canada, 1955-2021).....	17
Hydrometric Data Website	18
Maps & Diagrams.....	18
Parameters Monitored	19
Cold River at Outlet of Cold Lake	29
Site Status	30
Typical range (minimum-maximum) in field observations and bacterial values.....	30
Hydrometric Graphs (Water Survey of Canada, 1952-2021).....	31
Hydrometric Data Website	32
Maps & Diagrams.....	32
Parameters Monitored	33
North Saskatchewan River	41
Site Status	42
Typical range (minimum-maximum) in field observations and bacterial values.....	42
Hydrometric Graphs (Water Survey of Canada, 1958-1971).....	43
Hydrometric Data Website	44
Maps & Diagrams.....	44
Parameters Monitored	45
Red Deer River Near Bindloss	53
Site Status	54

Typical range (minimum-maximum) in field observations and bacterial values.....	54
Hydrometric Graphs (Water Survey of Canada, 1960-2021).....	55
Hydrometric Data Website	56
Maps & Diagrams.....	56
Parameters Monitored	57
South Saskatchewan River	67
Site Status	68
Typical range (minimum-maximum) in field observations and bacterial values.....	69
Hydrometric Graphs (Water Survey of Canada, 1911-2021).....	70
Hydrometric Data Website	70
Maps & Diagrams.....	71
Parameters Monitored	72

Saskatchewan-Manitoba Boundary

Assiniboine River below Kamsack	83
Site Status	84
Typical range (minimum-maximum) in field observations and bacterial values:.....	84
Hydrometric Graphs (Water Survey of Canada, 1944-2021).....	85
Hydrometric Data Website	86
Maps & Diagrams.....	86
Parameters Monitored	87

Carrot River Near Turnberry	99
Site Status	100
Typical range (minimum-maximum) in field observations and bacterial values:.....	100
Hydrometric Graphs (Water Survey of Canada, 1966-2021).....	101
Hydrometric Data Website	102
Maps & Diagrams.....	102
Parameters Monitored	103

Churchill River	113
Site Status	114
Typical range (minimum-maximum) in field observations and bacterial values.....	115
Hydrometric Graphs (Water Survey of Canada, 1928-2021).....	116
Hydrometric Data Website	116

Maps and diagrams.....	117
Parameters Monitored	118
Qu'Appelle River.....	127
Site Status	128
Typical range (minimum-maximum) in field observations and bacterial values:.....	128
Hydrometric Graphs (Water Survey of Canada, 1915-2021).....	129
Hydrometric Data Website	130
Maps & Diagrams.....	130
Parameters Monitored	131
Red Deer River near Erwood.....	141
Site Status	142
Typical range (minimum-maximum) in field observations and bacterial values:.....	142
Hydrometric Graphs (Water Survey of Canada, 1914-2021).....	143
Hydrometric Data Website.....	144
Maps & Diagrams.....	144
Parameters Monitored	145
Saskatchewan River.....	155
Site Status	156
Typical range (minimum-maximum) in field observations and bacterial values:.....	156
Hydrometric Graphs (Water Survey of Canada, 1913-2021).....	157
Hydrometric Data Website.....	158
Maps and diagrams.....	158
Parameters Monitored	159

Battle River

Station Name:	Battle River near Unwin		
Station Number:	SA05FE0001		
Naquadat¹ Number:	00SA05FE0001		
WSC² Reference Number:	05FE001		05FE004
WSC Period of Record:	1944 1948 (seasonal) 1949-1979 (continuous)	Discontinued	1978 – current Active
Project Number:	115 (historically 315)		
Sampling Site Open Water	Latitude 52°56'23.27"N	Longitude 109°52'33.59"W	
Sampling Site Ice Cover	Latitude 52°56'23.72"N	Longitude 109°52'32.74"W	
Drainage Area:	25600 km²		
Effective Drainage Area:	11200 km²		
Ecozone³:	Prairies		
Ecoregion³:	Aspen Parkland		
Water Body:	Battle River		
Water Body Type:	River		
Watershed:	Battle/North Saskatchewan		
Stakeholders:	PPWB		
Site Overview:	<p>The Battle River is situated in east central Alberta and west central Saskatchewan. Battle River water quality samples are collected approximately one mile north of Unwin, near the Alberta/Saskatchewan boundary.</p> <p>Trends are decreasing for nitrogen constituents but increasing for phosphorus. The dissolved ions (Na, Cl, SO₄) all show increasing trends.</p>		
Sampling location:	<p>The sample location is at bridge on secondary road connecting Highway 17 to the town of Unwin. Sampled at centre stream from north side (downstream) of bridge during both ice covered and open water periods. Open water sampling location is at bridge on Township Road 462 connecting Highway 17 to the town of Unwin. Sampled at centre of stream from north side of bridge during open water periods. Under ice sampling location is located 20 metres downstream of bridge on the frozen surface.</p>		
Station Established:	September 1966		
Period of Record:	September 1966 - present		
Data Located:	ACBIS	807 Samples (January 2024)	
Station Type:	Network, PPWB		
Frequency of Observations:	Monthly		

¹Data listing of water quality monitoring stations

²Water Survey of Canada

³<http://www.ecozones.ca/english/zone/index.html>

Site Status

Nutrients	2013	2018	Major Ions	2013	2018	Physicals	2013	2018
Ammonia Dissolved	↓	↔	Chloride Dissolved	↑	↑	Oxygen Dissolved	↔	↔
Nitrate as N	↓	↓	Fluoride Dissolved	↑	↔	pH – Field	↑	↑
Nitrogen Total	↔	↔	Sodium Dissolved/Filtered	↑	↑	Sodium Adsorption Ratio (SAR)	↑	↔
Phosphorous Total	↑	↑	Sulphate Dissolved	↑	↑	Total Suspended Solids (TSS)	↑	↑
Phosphorous Total Dissolved	↑	↑	Total Dissolved Solids (TDS)	↑	↑			

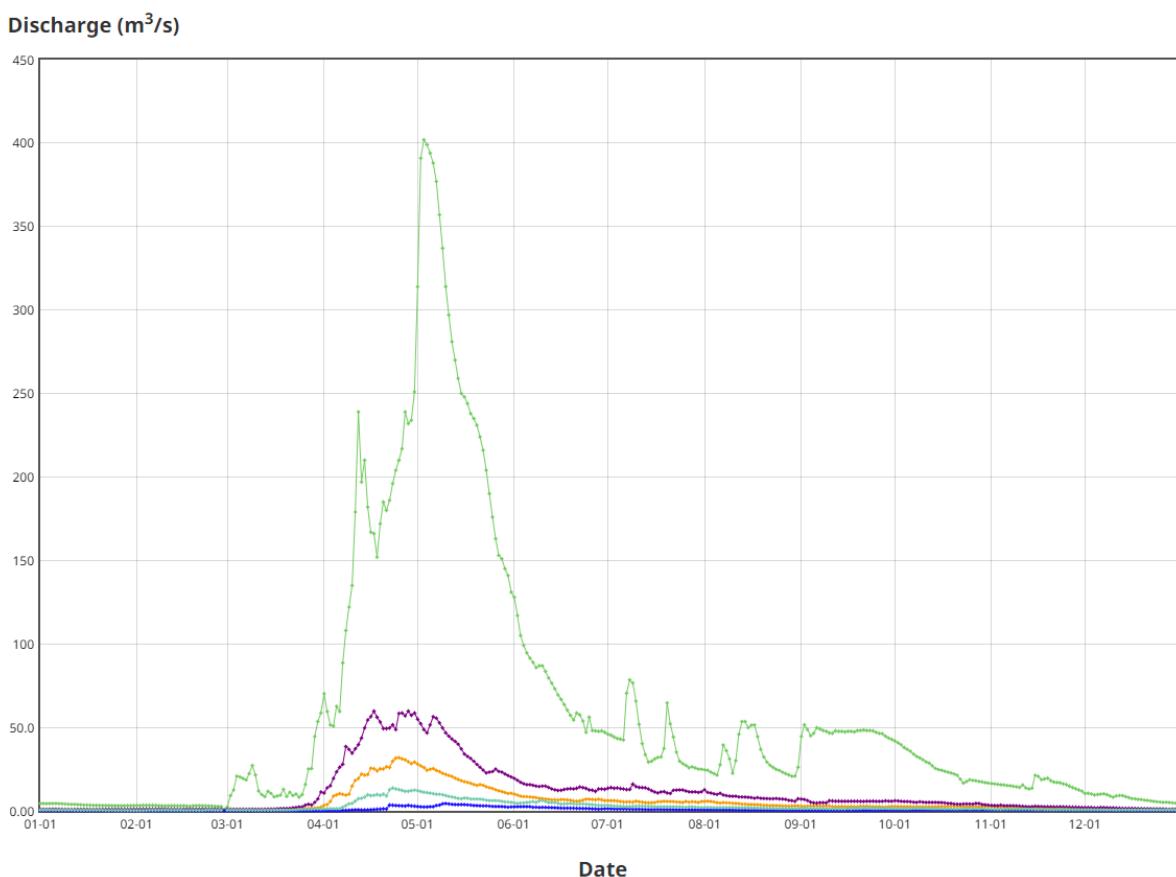
Metals	2013	2018	Metals	2013	2018	Metals	2013	2018
Aluminum Dissolved	↔	↓	Cobalt Dissolved	↔	↔	Nickel Dissolved	↔	↔
Aluminum Total	↔	↓	Cobalt Total	↔	↔	Nickel Total	↔	↔
Arsenic Dissolved	↔	↔	Copper Dissolved	↔	↔	Selenium Dissolved	↔	↔
Arsenic Total	↔	↔	Copper Total	↔	↓	Selenium Total	↔	↔
Barium Dissolved	↔	↔	Iron Dissolved	↔	↔	Silver Dissolved	↔	↓
Barium Total	↔	↔	Iron Total	↔	↔	Silver Total	↔	↓
Beryllium Dissolved	↔	↔	Lead Dissolved	↔	↓	Thallium Dissolved	↔	↑
Beryllium Total	↔	↓	Lead Total	↔	↓	Thallium Total	↔	↔
Boron Dissolved	↔	↔	Lithium Dissolved	↔	↔	Uranium Dissolved	↔	↑
Boron Total	↔	↔	Lithium Total	↔	↔	Uranium Total	↔	↑
Cadmium Dissolved	↔	↑	Manganese Dissolved	↔	↑	Vanadium Dissolved	↔	↔
Cadmium Total	↔	↔	Manganese Total	↔	↔	Vanadium Total	↔	↓
Chromium Dissolved	↔	↔	Molybdenum Dissolved	↔	↔	Zinc Dissolved	↔	↔
Chromium Total	↔	↔	Molybdenum Total	↔	↔	Zinc Total	↔	↔

Typical range (minimum-maximum) in field observations and bacterial values:

Current (2009-2019)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance ($\mu\text{S}/\text{cm}$)	E.Coli (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	0.0-12.0	6.9-7.9	3-16	1030-2463	<2-650	<2-82
Spring (Mar-May)	0.0-15.0	7.0-8.9	4-748	418-1682	<2-150	<2-325
Summer (Jun-Aug)	5.7-10.2	8.0-8.8	6-1114	481-1316	7-1154	<10-1139
Fall (Sep-Nov)	8.1-14.4	7.4-9.1	7-28	660-1383	<2-250	<2-275

Past (1989-2008)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance ($\mu\text{S}/\text{cm}$)	<i>E.Coli</i> (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	0.0-14.2	7.1-8.5	1-64	1030-2680	<2-1236	<2-94
Spring (Mar-May)	0.2-14.5	7.4-8.9	2-795	418-2300	<2-7200	<2-167
Summer (Jun-Aug)	6.2-11.4	8.0-9.2	2-277	481-1316	30-13200	10-1945
Fall (Sep-Nov)	7.7-15.3	8.3-9.2	3-138	660-1522	3-2200	2-2200

Hydrometric Graphs (Water Survey of Canada, 1944-1979)



Hydrometric Data Website

[https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=01&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Grap h&stn=05FE001&dataType=Daily¶meterType=Flow&year=1979](https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=01&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Graph&stn=05FE001&dataType=Daily¶meterType=Flow&year=1979)

Maps & Diagrams

Figure 1. Satellite imagery of the sampling locations for the Battle R. North is at the top of the image. Direction of flow in this image from southwest to northeast and is depicted using the arrow.



Figure 2. Battle R., upstream view



Figure 3. Battle R., downstream view

Parameters Monitored

Note, spelling of parameter names purposely match the spelling in the database.

Field

Parameter	Years monitored
COLIFORMS FECAL	1974-2019 ongoing
COLIFORMS TOTAL	1974-2006
E. COLI	1998-2019 ongoing
FECAL STREPTOCOCCI	1974
PH (FIELD)	1972-2019 ongoing
SPECIFIC CONDUCTANCE (FIELD)	1972-2019 ongoing
TEMPERATURE WATER (FIELD)	1966-2019 ongoing
TURBIDITY (FIELD)	1977, 1979-2019 ongoing

Physicals

Parameter	Years monitored
ALKALINITY GRAN CACO3	2006-2014
ALKALINITY PHENOLPHTHALEIN CACO3	1966-2014
ALKALINITY TOTAL CACO3	1966-2019 ongoing
COLOUR APPARENT	1966-1981
COLOUR TRUE	1981-2005
ODOUR THRESHOLD NUMBER	1974-1978
RESIDUE FILTERABLE	1967-1971
RESIDUE FIXED FILTERABLE	1967-1971
RESIDUE FIXED NONFILTRABLE	1967-2019 ongoing
RESIDUE NONFILTRABLE	1967-2019 ongoing
TEMPERATURE WATER (LAB)	1966-2006
PH (LAB)	1966-2019 ongoing
SPECIFIC CONDUCTANCE (LAB)	1966-2019 ongoing
TURBIDITY (LAB)	1966-2019 ongoing

Nutrients (Carbon, Nitrogen, Phosphorus)

Parameter	Years monitored
AMMONIA DISSOLVED	1966-1971, 1987-2019 ongoing
AMMONIA TOTAL	1970, 1974, 1981-1987
AMMONIA UN-IONIZED (CALCD.)	1986-2019 ongoing
CARBON DISSOLVED INORGANIC	1978-1980
CARBON DISSOLVED ORGANIC	1970, 1978-2019 ongoing
CARBON PARTICULATE ORGANIC	1977-2019 ongoing
CARBON TOTAL INORGANIC	1972-1978
CARBON TOTAL ORGANIC	1969-1978
CARBON TOTAL ORGANIC (CALCD.)	1980-1983, 1985-2019 ongoing

CARBONACEOUS OXYGEN DEMAND BOD10	2015-2019
NITROGEN DISSOLVED NO3 & NO2	1966-2019 ongoing
NITROGEN PARTICULATE	1977-2019 ongoing
NITROGEN TOTAL (CALCD.)	1977-2019 ongoing
NITROGEN TOTAL DISSOLVED	1975-2019 ongoing
NITROGEN TOTAL KJELDAHL	1971-1978
PHOSPHATE DISSOLVED INORGANIC	1966-1973
PHOSPHATE DISSOLVED ORTHO	1972-1973, 1981-1990
PHOSPHOROUS DISSOLVED ORTHO	1990-2019 ongoing
PHOSPHOROUS PARTICULATE (CALCD.)	1975-2019 ongoing
PHOSPHOROUS TOTAL	1972-2019 ongoing
PHOSPHOROUS TOTAL DISSOLVED	1975-2019 ongoing

Major Ions

Parameter	Years monitored
BICARBONATE (CALCD.)	1980-1983, 1985-2019 ongoing
BROMIDE	2016-2017
CALCIUM DISSOLVED/FILTERED	1966-2019 ongoing
CARBONATE (CALCD.)	1980-1983, 1985-2019 ongoing
CHLORIDE DISSOLVED	1966-2019 ongoing
FLUORIDE DISSOLVED	1966-2019 ongoing
FREE CO2 (CALCD.)	1985-2019 ongoing
HARDNESS NON-CARB. (CALCD.)	1985-2019 ongoing
HARDNESS TOTAL (CALCD.) CACO3	1980-1983, 1985-2019 ongoing
HARDNESS TOTAL CACO3	1966-1975
HARDNESS TOTAL LAB (CALCD.) CACO3	1975-1978
HYDROXIDE (CALCD.)	1985-2019 ongoing
MAGNESIUM DISSOLVED/FILTERED	1966, 1975-2019 ongoing
POTASSIUM DISSOLVED/FILTERED	1966-2019 ongoing
SATURATION INDEX (CALCD.)	1985-2019 ongoing
SILICA REACTIVE	1966-1990
SIO2	1990-2019 ongoing
SODIUM ADSORPTION RATIO (CALCD.)	2000-2019 ongoing
SODIUM DISSOLVED/FILTERED	1966-2019 ongoing
SODIUM PERCENTAGE (CALCD.)	1985-2019 ongoing
STABILITY INDEX (CALCD.)	1985-2019 ongoing
SULPHATE DISSOLVED	1966-2019 ongoing
SULPHIDE DISSOLVED	1981-1989
TOTAL DISSOLVED SOLIDS (CALCD.)	1980-1983, 1985-2019 ongoing

Metals

Parameter	Years monitored
ALUMINUM DISSOLVED	1966-1969, 1984-2019 ongoing
ALUMINUM EXTRACTABLE	1971-1993
ALUMINUM TOTAL	1993-2019 ongoing
ANTIMONY DISSOLVED	2003-2019 ongoing
ANTIMONY TOTAL	2003-2019 ongoing
ARSENIC DISSOLVED	1971-1990, 2003-2019 ongoing
ARSENIC TOTAL	2000-2019 ongoing
BARIUM DISSOLVED	1971, 1999-2019 ongoing
BARIUM EXTRACTABLE	1972-1980, 1984
BARIUM TOTAL	1983-2019 ongoing
BARIUM TOTAL RECOVERABLE	1980-1983
BERYLLIUM DISSOLVED	1999-2019 ongoing
BERYLLIUM TOTAL	1997-2019 ongoing
BISMUTH DISSOLVED	2003-2019 ongoing
BISMUTH TOTAL	2003-2019 ongoing
BORON DISSOLVED	1971-1990, 1992-2019 ongoing
BORON TOTAL	1997-1998, 2003-2019 ongoing
CADMIUM DISSOLVED	1999-2019 ongoing
CADMIUM EXTRACTABLE	1971-1980
CADMIUM TOTAL	1983-2019 ongoing
CADMIUM TOTAL RECOVERABLE	1980-1983
CERIUM DISSOLVED	2014-2019 ongoing
CERIUM TOTAL	2014-2019 ongoing
CESIUM DISSOLVED	2014-2019 ongoing
CESIUM TOTAL	2014-2019 ongoing
CHROMIUM DISSOLVED	1999-2019 ongoing
CHROMIUM EXTRACTABLE	1971-1984
CHROMIUM TOTAL	1983-2019 ongoing
COBALT DISSOLVED	1999-2019 ongoing
COBALT EXTRACTABLE	1971-1974, 1978-1980
COBALT TOTAL	1983-2019 ongoing
COBALT TOTAL RECOVERABLE	1980-1983
COPPER DISSOLVED	1972-1973, 1999-2019 ongoing
COPPER EXTRACTABLE	1969, 1971-1980
COPPER TOTAL	1983-2019 ongoing
COPPER TOTAL RECOVERABLE	1980-1983
EUROPIUM DISSOLVED	2019 ongoing
EUROPIUM TOTAL	2019 ongoing
GADOLINIUM DISSOLVED	2019 ongoing
GADOLINIUM TOTAL	2019 ongoing
GALLIUM DISSOLVED	2003-2019 ongoing
GALLIUM TOTAL	2003-2019 ongoing

GERMANIUM DISSOLVED	2019 ongoing
GERMANIUM TOTAL	2019 ongoing
HAFNIUM DISSOLVED	2019 ongoing
HAFNIUM TOTAL	2019 ongoing
HOLMIUM DISSOLVED	2019 ongoing
HOLMIUM TOTAL	2019 ongoing
INDIUM DISSOLVED	2019 ongoing
INDIUM TOTAL	2019 ongoing
IRIDIUM DISSOLVED	2019 ongoing
IRIDIUM TOTAL	2019 ongoing
IRON DISSOLVED	1966-1973, 1980-2019 ongoing
IRON EXTRACTABLE	1971-1980
IRON TOTAL	1997-2019 ongoing
LANTHANUM DISSOLVED	2003-2019 ongoing
LANTHANUM TOTAL	2003-2019 ongoing
LEAD DISSOLVED	1972-1973, 1999-2019 ongoing
LEAD EXTRACTABLE	1972-1980
LEAD TOTAL	1983-2019 ongoing
LEAD TOTAL RECOVERABLE	1980-1983
LITHIUM DISSOLVED	1999-2019 ongoing
LITHIUM TOTAL	1997-2019 ongoing
LUTETIUM DISSOLVED	2019 ongoing
LUTETIUM TOTAL	2019 ongoing
MANGANESE DISSOLVED	1966-1973, 1980-2019 ongoing
MANGANESE EXTRACTABLE	1969, 1971-1980
MANGANESE TOTAL	1997-2019 ongoing
MERCURY EXTRACTABLE	1972-1979
MERCURY TOTAL	1979-1999
MOLYBDENUM DISSOLVED	1999-2019 ongoing
MOLYBDENUM EXTRACTABLE	1973-1974
MOLYBDENUM TOTAL	1997-2019 ongoing
NEODYMIUM DISSOLVED	2019 ongoing
NEODYMIUM TOTAL	2019 ongoing
NICKEL DISSOLVED	1999-2019 ongoing
NICKEL EXTRACTABLE	1971-1974, 1979-1980
NICKEL TOTAL	1983-2019 ongoing
NICKEL TOTAL RECOVERABLE	1980-1983
NIOBIUM DISSOLVED	2014-2019 ongoing
NIOBIUM TOTAL	2014-2019 ongoing
PLATINUM DISSOLVED	2014-2019 ongoing
PLATINUM TOTAL	2014-2019 ongoing
PRASEODYMIUM DISSOLVED	2019 ongoing
PRASEODYMIUM TOTAL	2019 ongoing

RUBIDIUM DISSOLVED	2003-2019 ongoing
RUBIDIUM TOTAL	2003-2019 ongoing
RUTHENIUM DISSOLVED	2019 ongoing
RUTHENIUM TOTAL	2019 ongoing
SAMARIUM DISSOLVED	2019 ongoing
SAMARIUM TOTAL	2019 ongoing
SCANDIUM DISSOLVED	2019 ongoing
SCANDIUM TOTAL	2019 ongoing
SELENIUM DISSOLVED	1974-1990, 2003-2019 ongoing
SELENIUM TOTAL	2000-2019 ongoing
SILVER DISSOLVED	2003-2019 ongoing
SILVER EXTRACTABLE	1972-1979
SILVER TOTAL	1971, 1999-2019 ongoing
STRONTIUM DISSOLVED	1999-2019 ongoing
STRONTIUM EXTRACTABLE	1971-1974
STRONTIUM TOTAL	1997-2019 ongoing
TELLURIUM DISSOLVED	2019 ongoing
TELLURIUM TOTAL	2019 ongoing
TERBIUM DISSOLVED	2019 ongoing
TERBIUM TOTAL	2019 ongoing
THALLIUM DISSOLVED	2003-2019 ongoing
THALLIUM TOTAL	2003-2019 ongoing
TIN DISSOLVED	2014-2019 ongoing
TIN TOTAL	2014-2019 ongoing
TITANIUM DISSOLVED	2016-2019 ongoing
TITANIUM TOTAL	2016-2019 ongoing
TUNGSTEN DISSOLVED	2014-2019 ongoing
TUNGSTEN TOTAL	2014-2019 ongoing
URANIUM DISSOLVED	2003-2019 ongoing
URANIUM TOTAL	2003-2019 ongoing
VANADIUM DISSOLVED	1999-2019 ongoing
VANADIUM EXTRACTABLE	1975-1980
VANADIUM TOTAL	1983-2019 ongoing
VANADIUM TOTAL RECOVERABLE	1980-1983
YTTERBIUM DISSOLVED	2019 ongoing
YTTERBIUM TOTAL	2019 ongoing
YTTRIUM- DISSOLVED	2014-2019 ongoing
YTTRIUM TOTAL	2014-2019 ongoing
ZINC DISSOLVED	1972-1973, 1999-2019 ongoing
ZINC EXTRACTABLE	1969, 1971-1980
ZINC TOTAL	1983-2019 ongoing
ZINC TOTAL RECOVERABLE	1980-1983
ZIRCONIUM DISSOLVED	2019 ongoing

ZIRCONIUM TOTAL	2019 ongoing
-----------------	--------------

Acid Herbicides

Parameter	Years monitored
2-(2,4-DICHLOROPHOXY)-PROPIONIC ACID	2007, 2011, 2013-2019 ongoing
2,3,6-TBA	1985-1992, 2007, 2011, 2013-2017
2,4,5-T	1972-1992, 2007, 2011, 2013-2019 ongoing
2,4-D	1972-1992, 2007, 2011, 2013-2019 ongoing
2,4-DB	1972-1992, 2007, 2011, 2013-2017
ACIFLUORFEN	2019 ongoing
BROMOXYNIL	1988-1992, 2007, 2011, 2013-2019 ongoing
CLOPYRALID	2007, 2011, 2013-2019 ongoing
DICAMBA	1985-1992, 2007, 2011, 2013-2019 ongoing
DICHLORPROP	1972-1992
DINOSEB	2018-2019 ongoing
FENOPROP (SILVEX)	1978-1992
FOMESAFEN	2019 ongoing
IMAZAMETHABENZ-METHYL (A)	2007, 2011, 2013-2019 ongoing
IMAZAMETHABENZ-METHYL (B)	2007, 2011, 2013-2015
IMAZAMOX	2016-2019 ongoing
IMAZAPYR	2016-2019 ongoing
IMAZETHAPYR	2007, 2011, 2013-2019 ongoing
MCPA	1972-1992, 2007, 2011, 2013-2019 ongoing
MCPB	1985-1992, 2007, 2011, 2013-2017
MCPP	2015-2019 ongoing
MECOPROP	2007, 2011, 2013-2015
PICLORAM	1974-1982, 1985-1992, 2007, 2011, 2013-2019 ongoing
SILVEX	2007, 2011, 2013-2019 ongoing
TRICLOPYR	2015-2019 ongoing

Neutral Herbicides

Parameter	Years monitored
ATRAZINE	1989-1990, 2007, 2011, 2015, 2019 ongoing*
ATRAZINE TOTAL	1985-1992
BENZOYLPROP-ETHYL	1985-1992, 2007, 2011, 2015, 2019 ongoing*
BUTYLATE	2007, 2011, 2015, 2019 ongoing*
DESETHYL ATRAZINE	2007, 2011, 2015, 2019 ongoing*
D-ETHYL SIMAZINE	2007, 2011, 2015, 2019 ongoing*
DIALLATE	1985-1992
DIALLATE I	2007, 2011, 2015, 2019 ongoing*

DIALLATE II	2007, 2011, 2015, 2019 ongoing*
DICLOFOP-METHYL	1985-1992, 2007, 2011, 2015, 2019 ongoing*
ETHALFLURALIN	2007, 2011, 2015, 2019 ongoing*
FENOXAPROP-P-ETHYL	2011, 2015, 2019 ongoing*
METOLACHLOR	2007, 2011, 2015, 2019 ongoing*
METRIBUZIN	2007, 2011, 2015, 2019 ongoing*
SIMAZINE	2007, 2011, 2015, 2019 ongoing*
TRIALLATE	1985-1992, 2007, 2011, 2015, 2019 ongoing*
TRIFLURALIN	1974-1977, 1979, 1985-1992, 2007, 2011, 2015, 2019 ongoing*

*sampled on 4-year rotational basis

Organochlorine

Parameter	Years monitored
ALDRIN	1971-1992, 2007, 2011, 2015
ALPHA-BENZENEHEXACHLORIDE	1975-1992, 2007, 2011, 2015, 2019 ongoing*
ALPHA-CHLORDANE	1975-1992, 2007, 2011, 2015, 2019 ongoing*
ALPHA-ENDOSULFAN	1971-1992, 2007, 2011, 2015, 2019 ongoing*
BETA-ENDOSULFAN	1971-1992, 2007, 2011, 2015, 2019 ongoing*
BETA-HCH	2007, 2011, 2015
CIS-NONACHLOR	2007, 2011, 2015
DIELDRIN	1971-1992, 2007, 2011, 2015, 2019 ongoing*
ENDOSULFAN SULPHATE TOTAL	2015, 2019 ongoing*
ENDRIN	1971, 1975-1992, 2007, 2011, 2015
GAMMA-BHC (LINDANE)	1971-1992, 2007, 2011, 2015, 2019 ongoing*
GAMMA-CHLORDANE	1975-1992, 2007, 2011, 2015, 2019 ongoing*
HEPTACHLOR	1971-1992, 2007, 2011, 2015
HEPTACHLOR EPOXIDE	1971-1992, 2007, 2011, 2015
HEXACHLOROBENZENE	1978-1992, 2007, 2011, 2015, 2019 ongoing*
HEXACHLOROBUTADIENE	2007, 2011, 2015, 2019 ongoing*
METHOXYCHLOR (P,P'-METHOXYCHLOR).	1971-1992, 2007, 2011, 2015
MIREX	1978-1992, 2007, 2011, 2015, 2019 ongoing*
O,P'-DDD	2007, 2011, 2015
O,P'-DDE	2007, 2011, 2015
O,P'-DDT	1978-1992, 2007, 2011, 2015, 2019 ongoing*
OXYCHLORDANE	2007, 2011, 2015
P,P'-DDD (TDP)	1971-1992, 2007, 2011, 2015
P,P'-DDE	1971-1992, 2007, 2011, 2015, 2019 ongoing*
P,P'-DDT	1971-1992, 2007, 2011, 2015, 2019 ongoing*
PENTACHLOROANISOLE	2007, 2011, 2015
PENTACHLOROBENZENE	2007, 2011, 2015, 2019 ongoing*
TRANS-NONACHLOR	2007, 2011, 2015, 2019 ongoing*

*sampled on 4-year rotational basis

Glyphosate

Parameter	Years monitored
AMPA	2015, 2019 ongoing*
GLUFOSINATE	2015, 2019 ongoing*
GLYPHOSATE	2015, 2019 ongoing*

*sampled on 4-year rotational basis

Neonicotinoids

Parameter	Years monitored
ACETAMIPRID	2015-2016
CLOTHIANIDIN	2015-2016
DINOTEFURAM	2015-2016
FLONICAMID	2016
FLUPYRADIFURONE	2016
IMIDACLOPRID	2015-2016
THIACLOPRID	2015-2016
THIAMETHOXAM	2015-2016

Carbamates

Parameter	Years monitored
BARBAN	1974-1977, 1985-1992

Organophosphates

Parameter	Years monitored
AZINPHOS ETHYL	1984
AZINPHOS METHYL (GUTHION)	1984
CARBOPHENOTHION	1984
CRUFOMATE	1984
DIAZINON	1984
DIMETHOATE	1985-1987
DISULFOTON	1984
ETHION	1984
FENCHLORPHOS	1984
MALATHION	1984-1987
PARATHION	1984
PARATHION METHYL	1984
PHORATE	1984
PHOSMET (IMIDAN)	1984

Phenols

Parameter	Years monitored
2,3,4,5-TETRACHLOROPHENOL	1990
2,3,4,6-TETRACHLOROPHENOL	1990
2,3,4-TRICHLOROPHENOL	1990
2,3,5,6-TETRACHLOROPHENOL	1990
2,3,5-TRICHLOROPHENOL	1990
2,3,6-TRICHLOROPHENOL	1990
2,3-DICHLOROPHENOL	1990
2,4,5-TRICHLOROPHENOL	1990
2,4,6-TRICHLOROPHENOL	1990
2,4-DICHLOROPHENOL	1990
2,6-DICHLOROPHENOL	1990
2-CHLORO-5-METHYLPHENOL	1990
2-CHLOROPHENOL	1990
3,4,5-TRICHLOROPHENOL	1990
3,4-DICHLOROPHENOL	1990
3,5-DICHLOROPHENOL	1990
3-CHLOROPHENOL	1990
4-CHLORO-3-METHYLPHENOL	1990
4-CHLOROPHENOL	1990
PENTACHLOROPHENOL	1990
PHENOLIC MATERIAL	1971, 1973-1990

Aroclors

Parameter	Years monitored
AROCLOR	1980-1992
AROCLOR 1242	1981-1983
AROCLOR 1248	1972-1981
AROCLOR 1254	1972-1983
AROCLOR 1260	1973-1983

Other Parameters

Parameter	Years monitored
AROMATIC HYDROCARBONS	1974-1982
BETA RADIATION TOTAL	1975-1976
CHLOROPHYLL A	1973-1990, 2017-2019 ongoing
CHLOROPHYLL A (CORRECTED)	2017-2019 ongoing
CYANIDE	1971
CYANIDE TOTAL	1974-1990
DISCHARGE DAILY MEAN	1966-1978
DISCHARGE INSTANTANEOUS	1966-1970
DISCHARGE MONTHLY MEAN	1966-1978
DISCHARGE MONTHLY MEAN PROVISION	1966-1970
N-ALKANES C10 - C26	1974-1982
N-ALKYL SULPHONATES (LAS)	1974-1981
NITRILOTRIACETIC ACID - NTA	1974-1978
OIL AND GREASE	1974-1981
OXYGEN BIOCHEMICAL DEMAND	1974-1979
OXYGEN CONSUMED	1966-1971
OXYGEN DISSOLVED COD	1969
POLYCHLORINATED BIPHENYLS	1989-1990
RADIUM RADIATION TOTAL RA-226	1975-1976
STD. PLATE COUNT 35DEG.C BACT. DENS.	1974
STRONTIUM RADIATION TOTAL 90	1975-1976

Beaver River

Station Name:	Beaver River at Beaver Crossing			
Station Number:	AL06AD0001			
Naquadat¹ Number:	00AL06AD0001			
WSC² Reference Number:	06AD006			
WSC Period of Record:	1955 – current	Active		
Project Number:	115 (historically 315)			
Sampling Site Open Water:	Latitude 54°21'19.08"N	Longitude 110°12'57.12"W		
Sampling Site Ice Cover:	Latitude 54°21'20.00"N	Longitude 110°13'1.03"W		
Drainage Area:	14500 km ²			
Effective Drainage Area:	11800 km ²			
Ecozone³:	Boreal Plains			
Ecoregion³:	Boreal Transition			
Water Body:	Beaver River			
Water Body Type:	River			
Watershed:	Beaver/Churchill River			
Stakeholders:	PPWB			
Site Overview:	<p>The PPWB monitoring site on the Beaver River is located immediately upstream of Alberta-Saskatchewan boundary. The watershed upstream of the site is approximately 14,500 km² in area, which accounts for about 25 % of the total drainage area of the Beaver River watershed. The flow of the Beaver River is unregulated, and flows are considered to be largely natural. Within Saskatchewan the Beaver River is tributary to the Churchill River and joins the Churchill system at Lac Île-à-la-Crosse. The Beaver River at Beaver Crossing site was established in 1966 by Environment Canada to collect water quality data at the interprovincial boundary.</p> <p>Water quality in the Beaver River is generally good due to favourable natural conditions and limited human activities impacting water quality in the headwaters. Trends are decreasing in this river for phosphorus and nitrogen constituents.</p>			
Ice Cover sampling location	Ice-cover site samples are taken 100 m upstream of the bridge.			
Open water sampling location	Sampling location is near the bridge on highway 28 approximately 2 km southwest of Beaver Crossing.			
Station Established:	September 1966			
Period of Record:	1966 – present			
Data Located:	ACBIS	687 Samples (January 2024)		
Station Type:	Network, PPWB			
Frequency of Observations:	Monthly			

¹Data listing of water quality monitoring stations

²Water Survey of Canada

³<http://www.ecozones.ca/english/zone/index.html>

Site Status

Nutrients	2013	2018	Major Ions	2013	2018	Physicals	2013	2018
Ammonia Dissolved	↓	↑	Chloride Dissolved	↓	↔	Oxygen Dissolved	↔	↔
Nitrate as N	↓	↓	Fluoride Dissolved	↓	↓	pH – Field	↑	↑
Nitrogen Total	↔	↔	Sodium Dissolved/Filtered	↓	↓	Sodium Adsorption Ratio (SAR)	↓	↓
Phosphorous Total	↔	↓	Sulphate Dissolved	↓	↓	Total Suspended Solids (TSS)	↑	↑
Phosphorous Total Dissolved	↓	↓	Total Dissolved Solids (TDS)	↓	↔			

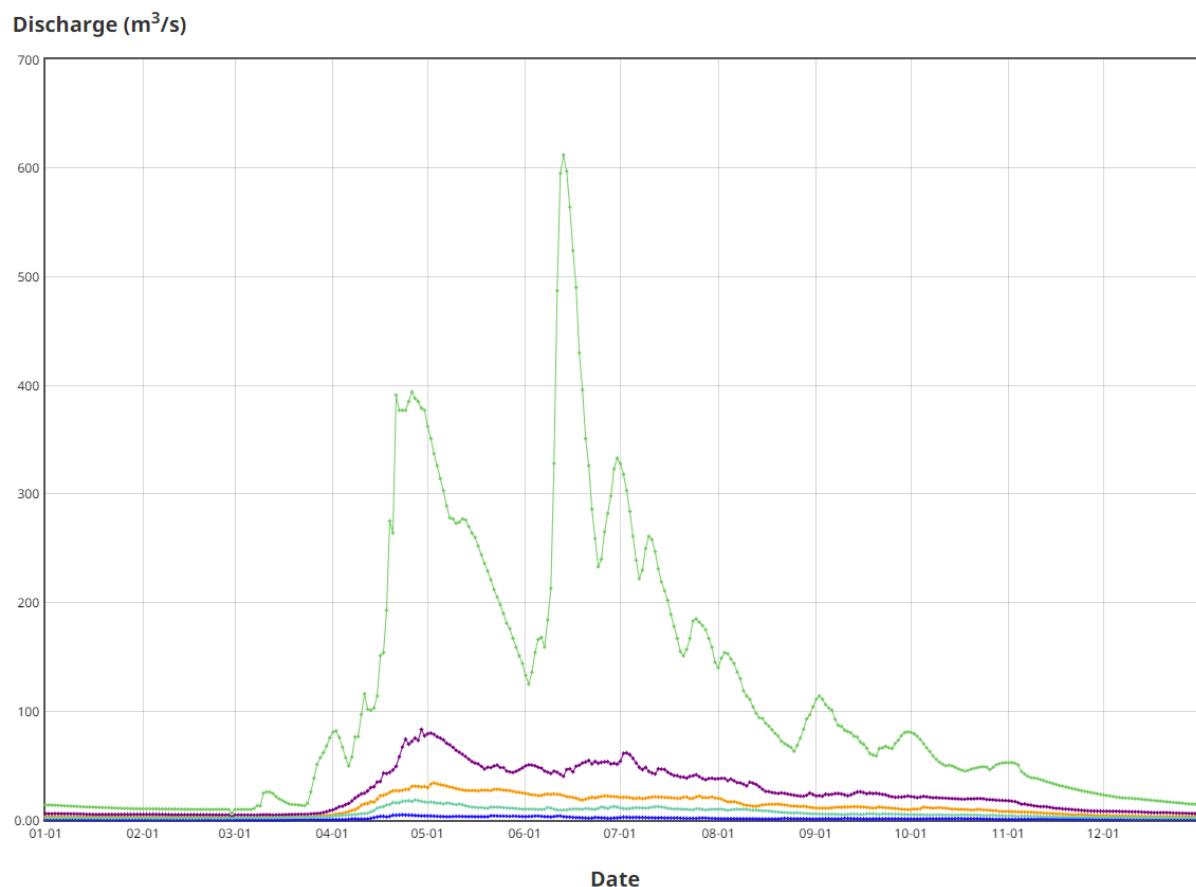
Metals	2013	2018	Metals	2013	2018	Metals	2013	2018
Aluminum Dissolved	↔	↓	Cobalt Dissolved	↔	↔	Nickel Dissolved	↔	↔
Aluminum Total	↔	↓	Cobalt Total	↔	↔	Nickel Total	↔	↔
Arsenic Dissolved	↔	↔	Copper Dissolved	↑	↔	Selenium Dissolved	↔	↔
Arsenic Total	↔	↔	Copper Total	↔	↔	Selenium Total	↔	↓
Barium Dissolved	↔	↔	Iron Dissolved	↔	↔	Silver Dissolved	NA	NA
Barium Total	↔	↔	Iron Total	↔	↔	Silver Total	↓	↔
Beryllium Dissolved	↑	↔	Lead Dissolved	↔	↓	Thallium Dissolved	↑	↔
Beryllium Total	↑	↔	Lead Total	↔	↔	Thallium Total	↑	↔
Boron Dissolved	↔	↑	Lithium Dissolved	↔	↑	Uranium Dissolved	↔	↔
Boron Total	↔	↑	Lithium Total	↔	↑	Uranium Total	↔	↑
Cadmium Dissolved	↑	↑	Manganese Dissolved	↔	↔	Vanadium Dissolved	↔	↔
Cadmium Total	↑	↑	Manganese Total	↔	↔	Vanadium Total	↔	↔
Chromium Dissolved	↑	↔	Molybdenum Dissolved	↔	↓	Zinc Dissolved	↑	↔
Chromium Total	↔	↔	Molybdenum Total	↔	↔	Zinc Total	↔	↔

Typical range (minimum-maximum) in field observations and bacterial values:

Current 2009-2019	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance (µS/cm)	E.Coli (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	0.0-9.0	6.7-8.3	4-11	352-847	<2-22	<2-17
Spring (Mar-May)	0.2-12.4	6.6-8.3	6-139	192-614	<2-1267	<2-20
Summer (Jun-Aug)	7.2-9.7	7.5-9.0	8-43	146-487	5-120	5-120
Fall (Sep-Nov)	4.3-14.2	7.3-8.9	4-96	235-601	5-234	<2-314

Past (1989-2018)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance ($\mu\text{S}/\text{cm}$)	<i>E.Coli</i> (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	0.1-7.2	7.1-7.9	3-24	364-906	8-110	<2-50
Spring (Mar-May)	0.4-13.2	7.2-8.6	3-83	167-1130	<2-5200	<2-100
Summer (Jun-Aug)	5.9-11.1	7.3-8.9	4-77	193-513	36-9000	6-227
Fall (Sep-Nov)	6.4-14.0	7.5-8.7	4-42	181-623	49-1672	<2-167

Hydrometric Graphs (Water Survey of Canada, 1955-2021)



Hydrometric Data Website

[https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=01&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Grap h&stn=06AD006&dataType=Daily¶meterType=Flow&year=2021](https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=01&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Graph&stn=06AD006&dataType=Daily¶meterType=Flow&year=2021)

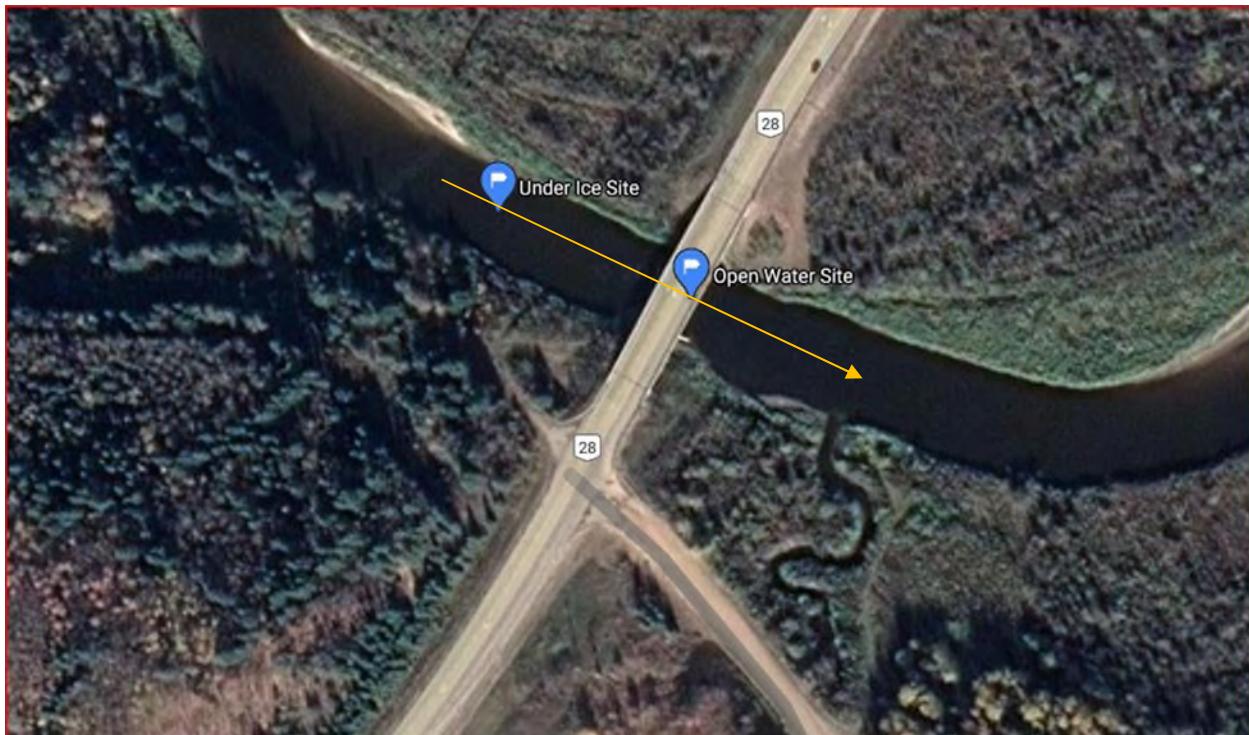
Maps & Diagrams

Figure 1. Satellite imagery of the sampling locations for the Beaver River. North is at the top of the image. Direction of flow in this image from northwest to southeast and is depicted using the arrow.



Figure 2. Beaver R., from bridge upstream view



Figure 3. Beaver R., from bridge downstream view

Parameters Monitored

Note, spelling of parameter names purposely match the spelling in the database.

Field

Parameter	Years monitored
COLIFORMS FECAL	1974-1990, 1999-2019 ongoing
COLIFORMS TOTAL	1974-1990, 1999-2006
E. COLI	1999-2019 ongoing
FECAL STREPTOCOCCI	1974
OXYGEN DISSOLVED	1973-2019 ongoing
PH (FIELD)	1972-2019 ongoing
SPECIFIC CONDUCTANCE (FIELD)	1972-2019 ongoing
TEMPERATURE WATER (FIELD)	1967-2019 ongoing
TURBIDITY (FIELD)	1977, 1979-2019 ongoing

Physicals

Parameter	Years monitored
ALKALINITY GRAN CACO3	2005-2014
ALKALINITY PHENOLPHTHALEIN CACO3	1967-1970, 1972-2014
ALKALINITY TOTAL CACO3	1967-1970, 1972-2019 ongoing
COLOUR APPARENT	1967-1970, 1972-1981
COLOUR TRUE	1974, 1981-2005
ODOUR THRESHOLD NUMBER	1974-1978
RESIDUE FILTERABLE	1967, 1970, 1979
RESIDUE FIXED FILTERABLE	1967, 1970, 1979
RESIDUE FIXED NONFILTRABLE	1967, 1969-1970, 1972-2019 ongoing
RESIDUE NONFILTRABLE	1967, 1969-1970, 1972-2019 ongoing
TEMPERATURE WATER (LAB)	1967-1970, 1972-2006
SPECIFIC CONDUCTANCE (LAB)	1967-1970, 1972-2019 ongoing
PH (LAB)	1967-1970, 1972-2019 ongoing
TURBIDITY (LAB)	1967-1970, 1972-2019 ongoing

Nutrients (Carbon, Nitrogen, Phosphorus)

Parameter	Years monitored
AMMONIA DISSOLVED	1967-1970, 1987-2019 ongoing
AMMONIA TOTAL	1974, 1981-1987
AMMONIA UN-IONIZED (CALCD.)	1986-2019 ongoing
CARBON DISSOLVED INORGANIC	1978-1980
CARBON DISSOLVED ORGANIC	1978-2019 ongoing
CARBON PARTICULATE ORGANIC	1977-2019 ongoing
CARBON TOTAL INORGANIC	1972-1978

CARBON TOTAL ORGANIC	1972-1978
CARBON TOTAL ORGANIC (CALCD.)	1980-1982, 1985-2019 ongoing
CARBONACEOUS OXYGEN DEMAND BOD10	2015-2019
NITROGEN DISSOLVED NO3 & NO2	1967-1970, 1972-2019 ongoing
NITROGEN PARTICULATE	1977-2019 ongoing
NITROGEN TOTAL (CALCD.)	1977-1983, 1985-2019 ongoing
NITROGEN TOTAL DISSOLVED	1975-2019 ongoing
NITROGEN TOTAL KJELDAHL	1973-1978
PHOSPHATE DISSOLVED INORGANIC	1967, 1970, 1972-1974
PHOSPHATE DISSOLVED ORTHO	1967, 1969-1970, 1972-1974, 1981-1990
PHOSPHATE TOTAL INORGANIC	1969-1970
PHOSPHOROUS DISSOLVED ORTHO	1990-2019 ongoing
PHOSPHOROUS PARTICULATE (CALCD.)	1975-2019 ongoing
PHOSPHOROUS TOTAL	1967-1968, 1973-2019 ongoing
PHOSPHOROUS TOTAL DISSOLVED	1975-2019 ongoing
NITROGEN DISSOLVED NITRITE	1968

Major Ions

Parameter	Years monitored
BICARBONATE (CALCD.)	1980-1982, 1985-2019 ongoing
BROMIDE	2016-2017
CALCIUM DISSOLVED/FILTERED	1967-1970, 1972-2019 ongoing
CARBONATE (CALCD.)	1980-1982, 1985-2019 ongoing
CHLORIDE DISSOLVED	1967-1970, 1972-2019 ongoing
FLUORIDE DISSOLVED	1967-1970, 1972-2019 ongoing
FREE CO2 (CALCD.)	1985-2019 ongoing
HARDNESS NON-CARB. (CALCD.)	1985-2019 ongoing
HARDNESS TOTAL (CALCD.) CACO3	1980-1982, 1985-2019 ongoing
HARDNESS TOTAL CACO3	1967-1970, 1972-1975
HARDNESS TOTAL LAB (CALCD.) CACO3	1975-1978
HYDROXIDE (CALCD.)	1985-2019 ongoing
MAGNESIUM DISSOLVED/FILTERED	1975-2019 ongoing
POTASSIUM DISSOLVED/FILTERED	1967-1970, 1972-2019 ongoing
SATURATION INDEX (CALCD.)	1985-2019 ongoing
SILICA REACTIVE	1967-1970, 1972-1990
SIO2	1990-2019 ongoing
SODIUM ADSORPTION RATIO (CALCD.)	2000-2019 ongoing
SODIUM DISSOLVED/FILTERED	1967-1970, 1972-2019 ongoing
SODIUM PERCENTAGE (CALCD.)	1985-2019 ongoing
STABILITY INDEX (CALCD.)	1985-2019 ongoing
SULPHATE DISSOLVED	1967-1970, 1972-2019 ongoing
SULPHIDE DISSOLVED	1981-1989

TOTAL DISSOLVED SOLIDS (CALCD.)	1980-1982, 1985-2019 ongoing
---------------------------------	------------------------------

Metals

Parameter	Years monitored
ALUMINUM DISSOLVED	1967, 1979, 1984-1990, 1992-2019 ongoing
ALUMINUM EXTRACTABLE	1971-1990, 1992-1993
ALUMINUM TOTAL	1993-2019 ongoing
ANTIMONY DISSOLVED	2003-2019 ongoing
ANTIMONY EXTRACTABLE	1971-1973
ANTIMONY TOTAL	2003-2019 ongoing
ARSENIC DISSOLVED	1971-1990, 2003-2019 ongoing
ARSENIC TOTAL	2000-2019 ongoing
BARIUM DISSOLVED	1999-2019 ongoing
BARIUM EXTRACTABLE	1971-1980, 1984
BARIUM TOTAL	1983-1990, 1992-2019 ongoing
BARIUM TOTAL RECOVERABLE	1980-1983
BERYLLIUM DISSOLVED	1999-2019 ongoing
BERYLLIUM TOTAL	1997-2019 ongoing
BISMUTH DISSOLVED	2003-2019 ongoing
BISMUTH TOTAL	2003-2019 ongoing
BORON DISSOLVED	1973-1990, 1992-2019 ongoing
BORON TOTAL	1997-1998, 2003-2019 ongoing
CADMIUM DISSOLVED	1999-2019 ongoing
CADMIUM EXTRACTABLE	1971-1980
CADMIUM TOTAL	1983-1990, 1992-2019 ongoing
CADMIUM TOTAL RECOVERABLE	1980-1983
CERIUM DISSOLVED	2014-2019 ongoing
CERIUM TOTAL	2014-2019 ongoing
CESIUM DISSOLVED	2014-2019 ongoing
CESIUM TOTAL	2014-2019 ongoing
CHROMIUM DISSOLVED	1999-2019 ongoing
CHROMIUM EXTRACTABLE	1971-1984
CHROMIUM TOTAL	1983-1990, 1992-2019 ongoing
COBALT DISSOLVED	1999-2019 ongoing
COBALT EXTRACTABLE	1971-1974, 1978-1980
COBALT TOTAL	1983-1990, 1992-2019 ongoing
COBALT TOTAL RECOVERABLE	1980-1983
COPPER DISSOLVED	1967, 1972-1974, 1979, 1999-2019 ongoing
COPPER EXTRACTABLE	1967, 1969-1980
COPPER TOTAL	1983-1990, 1992-2019 ongoing
COPPER TOTAL RECOVERABLE	1980-1983
EUROPIUM DISSOLVED	2019 ongoing

EUROPIUM TOTAL	2019 ongoing
GADOLINIUM DISSOLVED	2019 ongoing
GADOLINIUM TOTAL	2019 ongoing
GALLIUM DISSOLVED	2003-2019 ongoing
GALLIUM TOTAL	2003-2019 ongoing
GERMANIUM DISSOLVED	2019 ongoing
GERMANIUM TOTAL	2019 ongoing
HAFNIUM DISSOLVED	2019 ongoing
HAFNIUM TOTAL	2019 ongoing
HOLMIUM DISSOLVED	2019 ongoing
HOLMIUM TOTAL	2019 ongoing
INDIUM DISSOLVED	2019 ongoing
INDIUM TOTAL	2019 ongoing
IRIDIUM DISSOLVED	2019 ongoing
IRIDIUM TOTAL	2019 ongoing
IRON DISSOLVED	1967-1970, 1972-1974, 1979-1990, 1992-2019 ongoing
IRON EXTRACTABLE	1967, 1971-1980
IRON TOTAL	1997-2019 ongoing
LANTHANUM DISSOLVED	2003-2019 ongoing
LANTHANUM TOTAL	2003-2019 ongoing
LEAD DISSOLVED	1967, 1972-1974, 1979, 1999-2019 ongoing
LEAD EXTRACTABLE	1969-1980
LEAD TOTAL	1983-1990, 1992-2019 ongoing
LEAD TOTAL RECOVERABLE	1980-1983
LITHIUM DISSOLVED	1999-2019 ongoing
LITHIUM EXTRACTABLE	1971-1973
LITHIUM TOTAL	1997-2019 ongoing
LUTETIUM DISSOLVED	2019 ongoing
LUTETIUM TOTAL	2019 ongoing
MANGANESE DISSOLVED	1967, 1970, 1972-1974, 1979-1990, 1992-2019 ongoing
MANGANESE EXTRACTABLE	1967, 1971-1980
MANGANESE TOTAL	1997-2019 ongoing
MERCURY EXTRACTABLE	1973-1979
MERCURY TOTAL	1979-1990, 1992-1999
MOLYBDENUM DISSOLVED	1999-2019 ongoing
MOLYBDENUM EXTRACTABLE	1971-1974
MOLYBDENUM TOTAL	1997-2019 ongoing
NEODYMIUM DISSOLVED	2019 ongoing
NEODYMIUM TOTAL	2019 ongoing
NICKEL DISSOLVED	1979, 1999-2019 ongoing
NICKEL EXTRACTABLE	1971-1974, 1979-1980

NICKEL TOTAL	1983-1990, 1992-2019 ongoing
NICKEL TOTAL RECOVERABLE	1980-1983
NIOBIUM DISSOLVED	2014-2019 ongoing
NIOBIUM TOTAL	2014-2019 ongoing
PLATINUM DISSOLVED	2014-2019 ongoing
PLATINUM TOTAL	2014-2019 ongoing
PRASEODYMIUM DISSOLVED	2019 ongoing
PRASEODYMIUM TOTAL	2019 ongoing
RUBIDIUM DISSOLVED	2003-2019 ongoing
RUBIDIUM TOTAL	2003-2019 ongoing
RUTHENIUM DISSOLVED	2019 ongoing
RUTHENIUM TOTAL	2019 ongoing
SAMARIUM DISSOLVED	2019 ongoing
SAMARIUM TOTAL	2019 ongoing
SCANDIUM DISSOLVED	2019 ongoing
SCANDIUM TOTAL	2019 ongoing
SELENIUM DISSOLVED	1974-1990, 2003-2019 ongoing
SELENIUM TOTAL	2000-2019 ongoing
SILVER DISSOLVED	2003-2019 ongoing
SILVER EXTRACTABLE	1971-1979
SILVER TOTAL	1999-2019 ongoing
STRONTIUM DISSOLVED	1999-2019 ongoing
STRONTIUM EXTRACTABLE	1971-1974
STRONTIUM TOTAL	1997-2019 ongoing
TELLURIUM DISSOLVED	2019 ongoing
TELLURIUM TOTAL	2019 ongoing
TERBIUM DISSOLVED	2019 ongoing
TERBIUM TOTAL	2019 ongoing
THALLIUM DISSOLVED	2003-2019 ongoing
THALLIUM EXTRACTABLE	1971-1973
THALLIUM TOTAL	2003-2019 ongoing
TIN DISSOLVED	2014-2019 ongoing
TIN TOTAL	2014-2019 ongoing
TITANIUM DISSOLVED	2016-2019 ongoing
TITANIUM TOTAL	2016-2019 ongoing
TUNGSTEN DISSOLVED	2014-2019 ongoing
TUNGSTEN TOTAL	2014-2019 ongoing
URANIUM DISSOLVED	2003-2019 ongoing
URANIUM TOTAL	2003-2019 ongoing
VANADIUM DISSOLVED	1999-2019 ongoing
VANADIUM EXTRACTABLE	1971-1973, 1975-1980
VANADIUM TOTAL	1983-1990, 1992-2019 ongoing
VANADIUM TOTAL RECOVERABLE	1980-1983

YTTERBIUM DISSOLVED	2019 ongoing
YTTERBIUM TOTAL	2019 ongoing
YTTRIUM- DISSOLVED	2014-2019 ongoing
YTTRIUM TOTAL	2014-2019 ongoing
ZINC DISSOLVED	1967, 1972-1974, 1979, 1999-2019 ongoing
ZINC EXTRACTABLE	1967, 1969-1980
ZINC TOTAL	1983-1990, 1992-2019 ongoing
ZINC TOTAL RECOVERABLE	1980-1983
ZIRCONIUM DISSOLVED	2019 ongoing
ZIRCONIUM TOTAL	2019 ongoing

Acid Herbicides

Parameter	Years monitored
2-(2,4-DICHLOROPHOENOXY)-PROPIONIC ACID	2009, 2011, 2013-2014, 2017 ongoing*
2,3,6-TBA	1985-1990, 2009, 2011, 2013-2014, 2017
2,4,5-T	1974-1990, 2009, 2011, 2013-2014, 2017 ongoing*
2,4-D	1974-1990, 2009, 2011, 2013-2014, 2017 ongoing*
2,4-DB	1974-1990, 2009, 2011, 2013-2014, 2017
BROMOXYNIL	1988-1990, 2009, 2011, 2013-2014, 2017 ongoing*
CLOPYRALID	2009, 2011, 2013-2014, 2017 ongoing*
DICAMBA	1985-1990, 2009, 2011, 2013-2014, 2017 ongoing*
DICHLORPROP	1974-1990
FENOPROP (SILVEX)	1978-1990
IMAZAMETHABENZ-METHYL (A)	2009, 2011, 2013-2014, 2017 ongoing*
IMAZAMETHABENZ-METHYL (B)	2009, 2011, 2013-2014
IMAZAMOX	2017 ongoing*
IMAZAPYR	2017 ongoing*
IMAZETHAPYR	2009, 2011, 2013-2014, 2017 ongoing*
MCPA	1974-1990, 2009, 2011, 2013-2014, 2017 ongoing*
MCPB	1985-1990, 2009, 2011, 2013-2014, 2017
MCPP	2017 ongoing*
MECOPROP	2009, 2011, 2013-2014
PICLORAM	1974-1990, 2009, 2011, 2013-2014, 2017 ongoing*
SILVEX	2009, 2011, 2013-2014, 2017 ongoing*
TRICLOPYR	2017 ongoing*

*sampled on 4-year rotational basis

Neutral Herbicides

Parameter	Years monitored
ATRAZINE	2009, 2011, 2013-2014, 2017 ongoing*
ATRAZINE TOTAL	1985-1990
BENZOYLPROP-ETHYL	1985-1990, 2009, 2011, 2013-2014, 2017 ongoing*

BUTYRATE	2009, 2011, 2013-2014, 2017 ongoing*
DESETHYL ATRAZINE	2009, 2011, 2013-2014, 2017 ongoing*
D-ETHYL SIMAZINE	2009, 2011, 2013-2014, 2017 ongoing*
DIALLATE	1985-1990
DIALLATE I	2009, 2011, 2013-2014, 2017 ongoing*
DIALLATE II	2009, 2011, 2013-2014, 2017 ongoing*
DICLOFOP-METHYL	1985-1990, 2009, 2011, 2013-2014, 2017 ongoing*
ETHALFLURALIN	2009, 2011, 2013-2014, 2017 ongoing*
FENOXPAPROP-P-ETHYL	2009, 2011, 2013-2014, 2017 ongoing*
METOLACHLOR	2009, 2011, 2013-2014, 2017 ongoing*
METRIBUZIN	2009, 2011, 2013-2014, 2017 ongoing*
SIMAZINE	2009, 2011, 2013-2014, 2017 ongoing*
TRIALLATE	1985-1990, 2009, 2011, 2013-2014, 2017 ongoing*
TRIFLURALIN	1974-1977, 1979, 1985-1990, 2009, 2011, 2013-2014, 2017 ongoing*

*sampled on 4-year rotational basis

Organochlorine

Parameter	Years monitored
ALDRIN	1974-1990, 2009, 2011, 2013-2014
ALPHA-BENZENEHEXACHLORIDE	1975-1990, 2009, 2011, 2013-2014, 2017 ongoing*
ALPHA-CHLORDANE	1975-1990, 2009, 2011, 2013-2014, 2017 ongoing*
ALPHA-ENDOSULFAN	1974-1990, 2009, 2011, 2013-2014, 2017 ongoing*
BETA-ENDOSULFAN	1974-1990, 2009, 2011, 2013-2014, 2017 ongoing*
BETA-HCH	2009, 2011, 2013-2014
CIS-NONACHLOR	2009, 2011, 2013-2014
DIELDRIN	1974-1990, 2009, 2011, 2013-2014, 2017 ongoing*
ENDOSULFAN SULPHATE TOTAL	2017 ongoing*
ENDRIN	1975-1990, 2009, 2011, 2013-2014
GAMMA-BHC (LINDANE)	1974-1990, 2009, 2011, 2013-2014, 2017 ongoing*
GAMMA-CHLORDANE	1975-1990, 2009, 2011, 2013-2014, 2017 ongoing*
HEPTACHLOR	1974-1990, 2009, 2011, 2013-2014
HEPTACHLOR EPOXIDE	1974-1990, 2009, 2011, 2013-2014
HEXACHLOROBENZENE	1978-1990, 2009, 2011, 2013-2014, 2017 ongoing*
HEXACHLOROBUTADIENE	2009, 2011, 2013-2014, 2017 ongoing*
METHOXYCHLOR (P,P'-METHOXYCHLOR).	1974-1990, 2009, 2011, 2013-2014
MIREX	1978-1990, 2009, 2011, 2013-2014, 2017 ongoing*
O,P'-DDD	2009, 2011, 2013-2014
O,P'-DDE	2009, 2011, 2013-2014
O,P'-DDT	1978-1990, 2009, 2011, 2013-2014, 2017 ongoing*
OXYCHLORDANE	2009, 2011, 2013-2014
P,P'-DDD (TDP)	1974-1990, 2009, 2011, 2013-2014
P,P'-DDE	1974-1990, 2009, 2011, 2013-2014, 2017 ongoing*

P,P'-DDT	1974-1990, 2009, 2011, 2013-2014, 2017 ongoing*
PENTACHLOROANISOLE	2009, 2011, 2013-2014
PENTACHLOROBENZENE	2009, 2011, 2013-2014, 2017 ongoing*
TRANS-NONACHLOR	2009, 2011, 2013-2014, 2017 ongoing*

*sampled on 4-year rotational basis

Glyphosate

Parameter	Years monitored
AMPA	2013-2014, 2017 ongoing*
GLUFOSINATE	2013-2014, 2017 ongoing*
GLYPHOSATE	2013-2014, 2017 ongoing*

*sampled on 4-year rotational basis

Carbamates

Parameter	Years monitored
BARBAN	1974-1977, 1985-1990

Organophosphates

Parameter	Years monitored
DIMETHOATE	1985
MALATHION	1985, 1987

Phenols

Parameter	Years monitored
2,3,4,5-TETRACHLOROPHENOL	1990
2,3,4,6-TETRACHLOROPHENOL	1990
2,3,4-TRICHLOROPHENOL	1990
2,3,5,6-TETRACHLOROPHENOL	1990
2,3,5-TRICHLOROPHENOL	1990
2,3,6-TRICHLOROPHENOL	1990
2,3-DICHLOROPHENOL	1990
2,4,5-TRICHLOROPHENOL	1990
2,4,6-TRICHLOROPHENOL	1990
2,4-DICHLOROPHENOL	1990
2,6-DICHLOROPHENOL	1990
2-CHLORO-5-METHYLPHENOL	1990
2-CHLOROPHENOL	1990
3,4,5-TRICHLOROPHENOL	1990
3,4-DICHLOROPHENOL	1990
3,5-DICHLOROPHENOL	1990
3-CHLOROPHENOL	1990
4-CHLORO-3-METHYLPHENOL	1990
4-CHLOROPHENOL	1990
PENTACHLOROPHENOL	1990
PHENOLIC MATERIAL	1973-1990

Aroclors

Parameter	Years monitored
AROCLOR	1980-1990
AROCLOR 1242	1981-1983
AROCLOR 1248	1973-1981
AROCLOR 1254	1973-1983
AROCLOR 1260	1973-1983

Other Parameters

Parameter	Years monitored
AROMATIC HYDROCARBONS	1974-1982
BETA RADIATION TOTAL	1975-1976
CHLOROPHYLL A	1973-1990, 2017-2019 ongoing
CHLOROPHYLL A (CORRECTED)	2017-2019 ongoing
CYANIDE TOTAL	1974-1990
DISCHARGE DAILY MEAN	1967-1981

DISCHARGE MONTHLY MEAN	1967-1978
N-ALKANES C10 - C26	1974-1982
N-ALKYL SULPHONATES (LAS)	1974-1981
NITRILOTRIACETIC ACID - NTA	1974-1978
OIL AND GREASE	1974-1981
OXYGEN BIOCHEMICAL DEMAND	1974-1979
OXYGEN CONSUMED	1967-1968, 1970
RADIUM RADIATION TOTAL RA-226	1975-1976
STD. PLATE COUNT 35DEG.C BACT. DENS.	1974
STRONTIUM RADIATION TOTAL 90	1975-1976

Cold River at Outlet of Cold Lake

Station Name:	Cold River at Outlet of Cold Lake		
Station Number:	SA06AF0001		
Naquidat¹ Number:	00SA06AF0001		
WSC² Reference Number:	06AF001		
WSC Period of Record:	1993 – current	Active	
Project Number:	115 (historically 315)		
Sampling Site:	Latitude 54°33'57.19"N	Longitude 109°50'28.76"W	
Drainage Area:	6520 km²		
Effective Drainage Area:	6260 km²		
Ecozone³:	Boreal Plains		
Ecoregion³:	Mid Boreal Uplands		
Water Body:	Cold Lake/Waterhen River		
Water Body Type:	River		
Watershed:	Beaver		
Stakeholders:	PPWB		
Site Overview:	<p>The Cold R. sampling site is at the head of the river. The sampling station is located at the outlet of Cold Lake. The Cold River flows eastward into several small lakes and becomes the Waterhen River, which eventually flows into the Beaver River approximately 40km north of the town of Green Lake. Water quality is typically good at this site. However, the greater Beaver-Cold Lake watershed has come under increasing development pressure for water quantity.</p> <p>Trends are increasing in this river for some nitrogen constituents. The dissolved ions all show decreasing trends.</p>		
Sampling location:	<p>Sampling is done year round off of Hwy 919 N bridge on the east side next to Cold Lake Campground at outlet of Cold Lake.</p>		
Station Established:	May 14, 1993		
Period of Record:	1993 – present		
Data Located:	ACBIS	268 Samples (January 2024)	
Station Type:	Network PPWB		
Frequency of Observations:	Monthly starting 2009 till present	Quarterly 1993 to 2009	

¹Data listing of water quality monitoring stations

²Water Survey of Canada

³<http://www.ecozones.ca/english/zone/index.html>

Site Status

Nutrients	2013	2018	Major Ions	2013	2018	Physicals	2013	2018
Ammonia Dissolved	↔	↔	Chloride Dissolved	↓	↓	Oxygen Dissolved	↑	↑
Nitrate as N	↑	↑	Fluoride Dissolved	↔	↓	pH – Field	↔	↔
Nitrogen Total	↑	↔	Sodium Dissolved/Filtered	↔	↓	Sodium Adsorption Ratio (SAR)	↔	↓
Phosphorous Total	↔	↔	Sulphate Dissolved	↓	↓	Total Suspended Solids (TSS)	↓	↓
Phosphorous Total Dissolved	↔	↔	Total Dissolved Solids (TDS)	↔	↔			

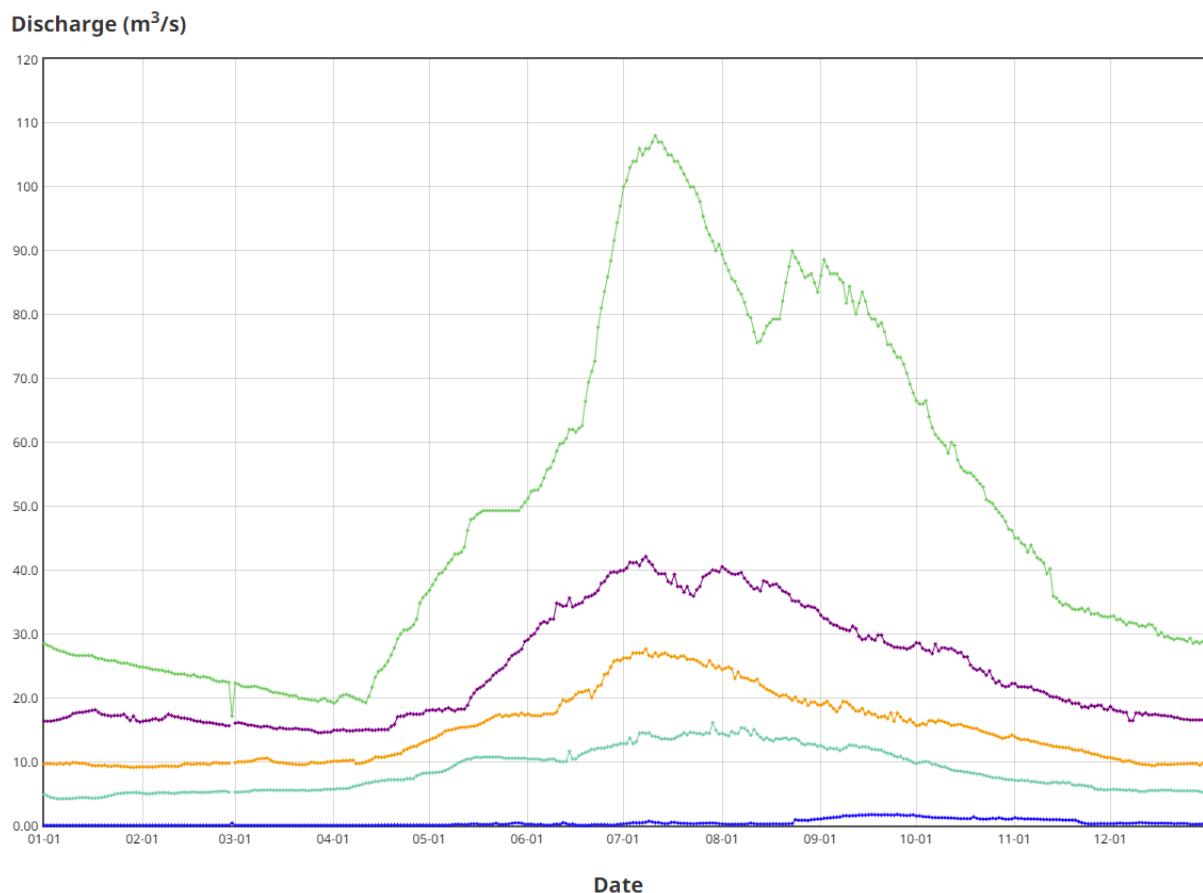
Metals	2013	2018	Metals	2013	2018	Metals	2013	2018
Aluminum Dissolved	↔	↔	Cobalt Dissolved	↑	↑	Nickel Dissolved	↑	↔
Aluminum Total	↔	↔	Cobalt Total	↔	↔	Nickel Total	↔	↔
Arsenic Dissolved	↔	↓	Copper Dissolved	↑	↔	Selenium Dissolved	NA	↑
Arsenic Total	↓	↓	Copper Total	↑	↔	Selenium Total	NA	↑
Barium Dissolved	↔	↔	Iron Dissolved	↑	↔	Silver Dissolved	NA	NA
Barium Total	↔	↔	Iron Total	↓	↔	Silver Total	NA	NA
Beryllium Dissolved	>20%	>20%	Lead Dissolved	>20%	>20%	Thallium Dissolved	NA	NA
Beryllium Total	>20%	>20%	Lead Total	>20%	>20%	Thallium Total	NA	NA
Boron Dissolved	↔	↔	Lithium Dissolved	↓	↓	Uranium Dissolved	↔	↔
Boron Total	↔	↓	Lithium Total	↔	↓	Uranium Total	↓	↓
Cadmium Dissolved	↑	↔	Manganese Dissolved	↑	↔	Vanadium Dissolved	↓	↔
Cadmium Total	↑	↔	Manganese Total	↔	↔	Vanadium Total	↓	↔
Chromium Dissolved	↑	↔	Molybdenum Dissolved	↓	↓	Zinc Dissolved	↔	↓
Chromium Total	↔	↑	Molybdenum Total	↓	↓	Zinc Total	NA	NA

Typical range (minimum-maximum) in field observations and bacterial values:

Current (2009-2019)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance (µS/cm)	E.Coli (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	11.7-14.1	7.4-8.7	1-5	242-314	<2	<2
Spring (Mar-May)	12.1-15.0	7.5-8.5	1-9	225-291	<2-4	<2-<10
Summer (Jun-Aug)	9.3-14.5	8.1-9.7	1-11	209-270	<2-18	<2-20
Fall (Sep-Nov)	9.7-11.9	7.8-9.2	1-9	210-270	<2-2	<2-2

Past (*1993-2008)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance ($\mu\text{S}/\text{cm}$)	<i>E.Coli</i> (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	7.5-13.2	7.5-8.5	0-2	253-303	NA	NA
Spring (Mar-May)	11.7-14.0	7.8-8.6	0-12	240-303	NA	NA
Summer (Jun-Aug)	8.9-12.8	7.8-8.8	0-3	257-274	NA	NA
Fall (Sep-Nov)	7.0-11.5	7.9-8.8	0-5	248-289	NA	NA

Hydrometric Graphs (Water Survey of Canada, 1952-2021)



Hydrometric Data Website

https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=1&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Graph&stn=06AF001&dataType=Daily¶meterType=Flow&year=2021

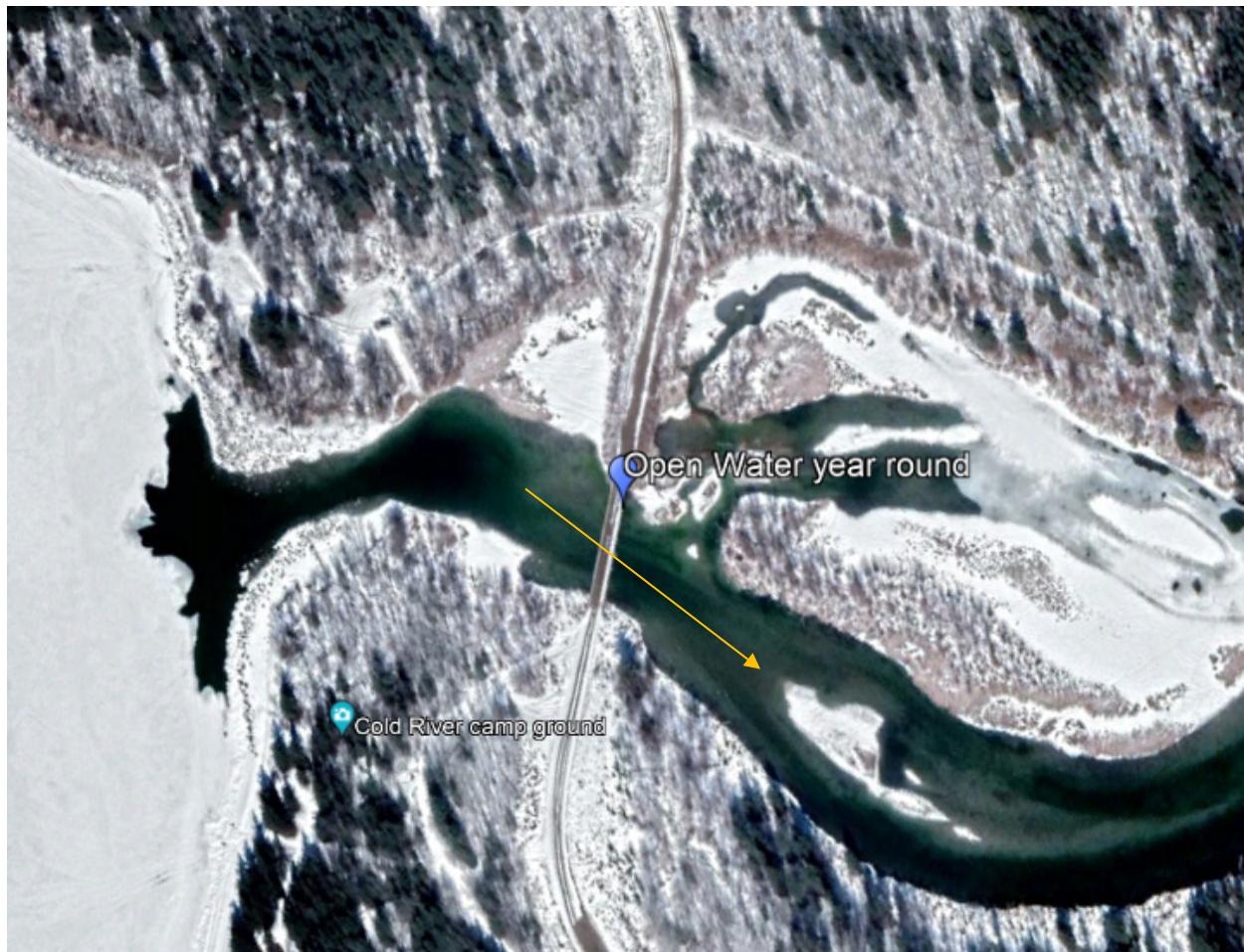
Maps & Diagrams

Figure 1. Imagery of the sampling location for the Cold R. North is at the top of the image. Direction of flow in this image from northwest to southeast and is depicted using the arrow.



Figure 2. Cold R., from the bridge upstream view
bridge



Figure 3. Cold R., downstream view of sampling

Parameters Monitored

Note, spelling of parameter names purposely match the spelling in the database.

Field

Parameter	Years monitored
COLIFORMS FECAL	2012-2019 ongoing
E. COLI	2012-2019 ongoing
OXYGEN DISSOLVED	1993-2019 ongoing
PH (FIELD)	1993-2019 ongoing
SPECIFIC CONDUCTANCE (FIELD)	1993-2019 ongoing
TEMPERATURE WATER (FIELD)	1993-2019 ongoing
TURBIDITY (FIELD)	1993-2019 ongoing

Physicals

Parameter	Years monitored
ALKALINITY GRAN CACO3	2006-2015
ALKALINITY PHENOLPHTHALEIN CACO3	1993-2015
ALKALINITY TOTAL CACO3	1993-2019 ongoing
COLOUR TRUE	1993-2005
RESIDUE FIXED NONFILTRABLE	1995-2019 ongoing
RESIDUE NONFILTRABLE	1995-2019 ongoing
SPECIFIC CONDUCTANCE (LAB)	1993-2019 ongoing
TEMPERATURE WATER (LAB)	1993-2006
TURBIDITY (LAB)	1993-2019 ongoing
PH (LAB)	1993-2019 ongoing

Nutrients (Carbon, Nitrogen, Phosphorus)

Parameter	Years monitored
AMMONIA DISSOLVED	1995-2019 ongoing
AMMONIA UN-IONIZED (CALCD.)	1993-2019 ongoing
CARBON DISSOLVED ORGANIC	1995-2019 ongoing
CARBON PARTICULATE ORGANIC	1995-2019 ongoing
CARBON TOTAL ORGANIC (CALCD.)	1993-2019 ongoing
NITROGEN DISSOLVED NO ₃ & NO ₂	1995-2019 ongoing
NITROGEN PARTICULATE	1995-2019 ongoing
NITROGEN TOTAL (CALCD.)	1993-2019 ongoing
NITROGEN TOTAL DISSOLVED	1995-2019 ongoing
PHOSPHOROUS DISSOLVED ORTHO	1995-2019 ongoing
PHOSPHOROUS PARTICULATE (CALCD.)	1993-2019 ongoing
PHOSPHOROUS TOTAL	1995-2019 ongoing
PHOSPHOROUS TOTAL DISSOLVED	1995-2019 ongoing

Major Ions

Parameter	Years monitored
BICARBONATE (CALCD.)	1993-2019 ongoing
BROMIDE	2016-2017
CALCIUM DISSOLVED/FILTERED	1993-2019 ongoing
CARBONATE (CALCD.)	1993-2019 ongoing
CHLORIDE DISSOLVED	1993-2019 ongoing
FLUORIDE DISSOLVED	1993-2019 ongoing
FREE CO ₂ (CALCD.)	1993-2019 ongoing
HARDNESS NON-CARB. (CALCD.)	1993-2019 ongoing
HARDNESS TOTAL (CALCD.) CACO ₃	1993-2019 ongoing
HYDROXIDE (CALCD.)	1993-2019 ongoing
MAGNESIUM DISSOLVED/FILTERED	1993-2019 ongoing
POTASSIUM DISSOLVED/FILTERED	1993-2019 ongoing
SATURATION INDEX (CALCD.)	1993-2019 ongoing
SIO ₂	1993-2019 ongoing
SODIUM ADSORPTION RATIO (CALCD.)	2000-2019 ongoing
SODIUM DISSOLVED/FILTERED	1993-2019 ongoing
SODIUM PERCENTAGE (CALCD.)	1993-2019 ongoing
STABILITY INDEX (CALCD.)	1993-2019 ongoing
SULPHATE DISSOLVED	1993-2019 ongoing
TOTAL DISSOLVED SOLIDS (CALCD.)	1993-2019 ongoing

Metals

Parameter	Years monitored
ALUMINUM DISSOLVED	1993-2019 ongoing
ALUMINUM TOTAL	1993-2019 ongoing
ANTIMONY DISSOLVED	2003-2019 ongoing
ANTIMONY TOTAL	2003-2019 ongoing
ARSENIC DISSOLVED	2003-2019 ongoing
ARSENIC TOTAL	2000-2019 ongoing
BARIUM DISSOLVED	1999-2019 ongoing
BARIUM TOTAL	1993-2019 ongoing
BERYLLIUM DISSOLVED	1999-2019 ongoing
BERYLLIUM TOTAL	1994, 1998-2019 ongoing
BISMUTH DISSOLVED	2003-2019 ongoing
BISMUTH TOTAL	2003-2019 ongoing
BORON DISSOLVED	1993-2019 ongoing
BORON TOTAL	1998, 2003-2019 ongoing
CADMUM DISSOLVED	1999-2019 ongoing
CADMUM TOTAL	1993-2019 ongoing
CERIUM DISSOLVED	2014-2019 ongoing
CERIUM TOTAL	2014-2019 ongoing
CESIUM DISSOLVED	2014-2019 ongoing
CESIUM TOTAL	2014-2019 ongoing
CHROMIUM DISSOLVED	1999-2019 ongoing
CHROMIUM TOTAL	1993-2019 ongoing
COBALT DISSOLVED	1999-2019 ongoing
COBALT TOTAL	1993-2019 ongoing
COPPER DISSOLVED	1999-2019 ongoing
COPPER TOTAL	1993-2019 ongoing
EUROPIUM DISSOLVED	2019 ongoing
EUROPIUM TOTAL	2019 ongoing
GADOLINIUM DISSOLVED	2019 ongoing
GADOLINIUM TOTAL	2019 ongoing
GALLIUM DISSOLVED	2003-2019 ongoing
GALLIUM TOTAL	2003-2019 ongoing
GERMANIUM DISSOLVED	2019 ongoing
GERMANIUM TOTAL	2019 ongoing
HAFNIUM DISSOLVED	2019 ongoing
HAFNIUM TOTAL	2019 ongoing
HOLMIUM DISSOLVED	2019 ongoing
HOLMIUM TOTAL	2019 ongoing
INDIUM DISSOLVED	2019 ongoing
INDIUM TOTAL	2019 ongoing

IRIDIUM DISSOLVED	2019 ongoing
IRIDIUM TOTAL	2019 ongoing
IRON DISSOLVED	1993-2019 ongoing
IRON TOTAL	1994, 1998-2019 ongoing
LANTHANUM DISSOLVED	2003-2019 ongoing
LANTHANUM TOTAL	2003-2019 ongoing
LEAD DISSOLVED	1999-2019 ongoing
LEAD TOTAL	1993-2019 ongoing
LITHIUM DISSOLVED	1999-2019 ongoing
LITHIUM TOTAL	1994, 1998-2019 ongoing
LUTETIUM DISSOLVED	2019 ongoing
LUTETIUM TOTAL	2019 ongoing
MANGANESE DISSOLVED	1993-2019 ongoing
MANGANESE TOTAL	1994, 1998-2019 ongoing
MERCURY TOTAL	1993-1999
MOLYBDENUM DISSOLVED	1999-2019 ongoing
MOLYBDENUM TOTAL	1994, 1998-2019 ongoing
NEODYMIUM DISSOLVED	2019 ongoing
NEODYMIUM TOTAL	2019 ongoing
NICKEL DISSOLVED	1999-2019 ongoing
NICKEL TOTAL	1993-2019 ongoing
NIOBIUM DISSOLVED	2014-2019 ongoing
NIOBIUM TOTAL	2014-2019 ongoing
PLATINUM DISSOLVED	2014-2019 ongoing
PLATINUM TOTAL	2014-2019 ongoing
PRASEODYMIUM DISSOLVED	2019 ongoing
PRASEODYMIUM TOTAL	2019 ongoing
RUBIDIUM DISSOLVED	2003-2019 ongoing
RUBIDIUM TOTAL	2003-2019 ongoing
RUTHENIUM DISSOLVED	2019 ongoing
RUTHENIUM TOTAL	2019 ongoing
SAMARIUM DISSOLVED	2019 ongoing
SAMARIUM TOTAL	2019 ongoing
SCANDIUM DISSOLVED	2019 ongoing
SCANDIUM TOTAL	2019 ongoing
SELENIUM DISSOLVED	2003-2019 ongoing
SELENIUM TOTAL	2000-2019 ongoing
SILVER DISSOLVED	2003-2019 ongoing
SILVER TOTAL	1999-2019 ongoing
STRONTIUM DISSOLVED	1999-2019 ongoing
STRONTIUM TOTAL	1994, 1998-2019 ongoing
TELLURIUM DISSOLVED	2019 ongoing
TELLURIUM TOTAL	2019 ongoing

TERBIUM DISSOLVED	2019 ongoing
TERBIUM TOTAL	2019 ongoing
THALLIUM DISSOLVED	2003-2019 ongoing
THALLIUM TOTAL	2003-2019 ongoing
TIN DISSOLVED	2014-2019 ongoing
TIN TOTAL	2014-2019 ongoing
TITANIUM DISSOLVED	2016-2019 ongoing
TITANIUM TOTAL	2016-2019 ongoing
TUNGSTEN DISSOLVED	2014-2019 ongoing
TUNGSTEN TOTAL	2014-2019 ongoing
URANIUM DISSOLVED	2003-2019 ongoing
URANIUM TOTAL	2003-2019 ongoing
VANADIUM DISSOLVED	1999-2019 ongoing
VANADIUM TOTAL	1993-2019 ongoing
YTTERBIUM DISSOLVED	2019 ongoing
YTTERBIUM TOTAL	2019 ongoing
YTTRIUM- DISSOLVED	2014-2019 ongoing
YTTRIUM TOTAL	2014-2019 ongoing
ZINC DISSOLVED	1999-2019 ongoing
ZINC TOTAL	1993-2019 ongoing
ZIRCONIUM DISSOLVED	2019 ongoing
ZIRCONIUM TOTAL	2019 ongoing

Acid Herbicides

Parameter	Years monitored
2-(2,4-DICHLOROPHOXY)-PROPIONIC ACID	2010, 2014, 2018 ongoing*
2,3,6-TBA	2010, 2014
2,4,5-T	2010, 2014, 2018 ongoing*
2,4-D	2010, 2014, 2018 ongoing*
2,4-DB	2010, 2014
BROMOXYNIL	2010, 2014, 2018 ongoing*
CLOPYRALID	2010, 2014, 2018 ongoing*
DICAMBA	2010, 2014, 2018 ongoing*
DINOSEB	2018
IMAZAMETHABENZ-METHYL (A)	2010, 2014, 2018 ongoing*
IMAZAMETHABENZ-METHYL (B)	2010, 2014
IMAZAMOX	2018 ongoing*
IMAZAPYR	2018 ongoing*
IMAZETHAPYR	2010, 2014, 2018 ongoing*
MCPA	2010, 2014, 2018 ongoing*
MCPB	2010, 2014
MCPP	2018 ongoing*

MECOPROP	2010, 2014
PICLORAM	2010, 2014, 2018 ongoing*
SILVEX	2010, 2014, 2018 ongoing*
TRICLOPYR	2018 ongoing*

*sampled on 4-year rotational basis

Neutral Herbicides

Parameter	Years monitored
ATRAZINE	2010, 2014, 2018 ongoing*
BENZOYLPROP-ETHYL	2010, 2014, 2018 ongoing*
BUTYRATE	2010, 2014, 2018 ongoing*
DESETHYL ATRAZINE	2010, 2014, 2018 ongoing*
D-ETHYL SIMAZINE	2010, 2014, 2018 ongoing*
DIALLATE I	2010, 2014, 2018 ongoing*
DIALLATE II	2010, 2014, 2018 ongoing*
DICLOFOP-METHYL	2010, 2014, 2018 ongoing*
ETHALFLURALIN	2010, 2014, 2018 ongoing*
FENOXAPROP-P-ETHYL	2010, 2014, 2018 ongoing*
METOLACHLOR	2010, 2014, 2018 ongoing*
METRIBUZIN	2010, 2014, 2018 ongoing*
SIMAZINE	2010, 2014, 2018 ongoing*
TRIALLATE	2010, 2014, 2018 ongoing*
TRIFLURALIN	2010, 2014, 2018 ongoing*

*sampled on 4-year rotational basis

Organochlorine

Parameter	Years monitored
ALDRIN	2010, 2014
ALPHA-BENZENEHEXACHLORIDE	2010, 2014, 2018 ongoing*
ALPHA-CHLORDANE	2010, 2014, 2018 ongoing*
ALPHA-ENDOSULFAN	2010, 2014, 2018 ongoing*
BETA-ENDOSULFAN	2010, 2014, 2018 ongoing*
BETA-HCH	2010, 2014
CIS-NONACHLOR	2010, 2014
DIELDRIN	2010, 2014, 2018 ongoing*
ENDOSULFAN SULPHATE TOTAL	2018 ongoing*
ENDRIN	2010, 2014
GAMMA-BHC (LINDANE)	2010, 2014, 2018 ongoing*
GAMMA-CHLORDANE	2010, 2014, 2018 ongoing*
HEPTACHLOR	2010, 2014
HEPTACHLOR EPOXIDE	2010, 2014
HEXACHLOROBENZENE	2010, 2014, 2018 ongoing*
HEXACHLOROBUTADIENE	2010, 2014, 2018 ongoing*

METHOXYCHLOR (P,P'-METHOXYCHLOR).	2010, 2014
MIREX	2010, 2014, 2018 ongoing*
O,P'-DDD	2010, 2014
O,P'-DDE	2010, 2014
O,P'-DDT	2010, 2014, 2018 ongoing*
OXYCHLORDANE	2010, 2014
P,P'-DDD (TDP)	2010, 2014
P,P'-DDE	2010, 2014, 2018 ongoing*
P,P'-DDT	2010, 2014, 2018 ongoing*
PENTACHLOROANISOLE	2010, 2014
PENTACHLOROBENZENE	2010, 2014, 2018 ongoing*
TRANS-NONACHLOR	2010, 2014, 2018 ongoing*

*sampled on 4-year rotational basis

Glyphosate

Parameter	Years monitored
AMPA	2014, 2018 ongoing*
GLUFOSINATE	2014, 2018 ongoing*
GLYPHOSATE	2014, 2018 ongoing*

*sampled on 4-year rotational basis

Other Parameters

Parameter	Years monitored
CHLOROPHYLL A	2017-2019 ongoing
CHLOROPHYLL A (CORRECTED)	2017-2019 ongoing

North Saskatchewan River

Station Name:	North Saskatchewan River at Highway 17			
Station Number:	AL05EF0003			
Naqudat¹ Number:	00AL05EF0003			
WSC² Reference Number:	05EF003		05EF001	
WSC Period of Record:	1959-1971 Discontinued		1917-1922, 1944-1958, 1969-2020 Active	
Project Number:	115 (historically 315)			
Sampling Site Open Water:	Latitude 53°36'11.4"N	Longitude 110°00'41.3"W		
Sampling Site Ice Cover:	Latitude 53°35'50.4"N	Longitude 109°59'31.6"W		
Drainage Area:	47700 km²			
Effective Drainage Area:	38200 km²			
Ecozone³:	Prairies			
Ecoregion³:	Boreal Transition			
Water Body:	North Saskatchewan River			
Water Body Type:	River			
Watershed:	Central North Saskatchewan			
Stakeholders:	PPWB			
Site Overview:	<p>The North Saskatchewan River headwaters are on the eastern slopes of the Rocky Mountains. Upstream from the monitoring site, the major water users are the city of Edmonton and the industry located adjacent to the river at Fort Saskatchewan. There are also a number of hydroelectric dams along the North Saskatchewan River and its tributaries that affect the river flow. The cities of Lloydminster and North Battleford, located downstream of the interprovincial boundary, obtain their drinking water from the river.</p> <p>Historic Interprovincial water quality concerns: In the 1950s and 1960s there was heavy industrial use of the river. There are also concerns regarding eutrophication resulting from phosphorus loads to the river from numerous upstream municipalities. The Edmonton sewage treatment plant was upgraded in 2001 and since then significant declines in nutrients have occurred.</p> <p>Trends are decreasing in this river for phosphorus and nitrogen constituents. The dissolved ions (Cl, SO₄) show an increasing trend.</p>			
Ice Cover sampling location	Located 1.45 km downstream of bridge site. The site is located mid-stream at the old ferry crossing.			
Open water sampling location	Located at bridge centre on east(downstream) side.			
Station Established:	1988; Replaced previous location at Lea Park (AL05EF0001; 110°20'20.004" W, 53°39'29.016" N; years active 1966-1988)			
Period of Record:	1988- present			

Data Located	ACBIS	525 samples (January 2024)	
Station Type:	Network, Heavy metal and Herbicide, PPWB		
Frequency of Observations:	Monthly		

¹Data listing of water quality monitoring stations

²Water Survey of Canada

³<http://www.ecozones.ca/english/zone/index.html>

Site Status

Nutrients	2013	2018	Major Ions	2013	2018	Physicals	2013	2018
Ammonia Dissolved	↔	↓	Chloride Dissolved	↑	↑	Oxygen Dissolved	↑	↑
Nitrate as N	↓	↓	Fluoride Dissolved	↓	↓	pH – Field	↔	↔
Nitrogen Total	↓	↓	Sodium Dissolved/Filtered	↔	↔	Sodium Adsorption Ratio (SAR)	↔	↔
Phosphorous Total	↓	↓	Sulphate Dissolved	↑	↑	Total Suspended Solids (TSS)	↔	↓
Phosphorous Total Dissolved	↓	↓	Total Dissolved Solids (TDS)	↑	↑			

Metals	2013	2018	Metals	2013	2018	Metals	2013	2018
Aluminum Dissolved	↓	↓	Cobalt Dissolved	↓	↓	Nickel Dissolved	↔	↓
Aluminum Total	↔	↓	Cobalt Total	↔	↓	Nickel Total	↔	↓
Arsenic Dissolved	↓	↓	Copper Dissolved	↔	↓	Selenium Dissolved	↓	↓
Arsenic Total	↓	↓	Copper Total	↔	↓	Selenium Total	↓	↓
Barium Dissolved	↔	↔	Iron Dissolved	↔	↓	Silver Dissolved	>20%	>20%
Barium Total	↔	↓	Iron Total	↔	↓	Silver Total	↔	↓
Beryllium Dissolved	↑	↔	Lead Dissolved	↓	↓	Thallium Dissolved	↑	↔
Beryllium Total	↔	↓	Lead Total	↔	↓	Thallium Total	↔	↓
Boron Dissolved	↓	↔	Lithium Dissolved	↓	↔	Uranium Dissolved	↔	↑
Boron Total	↔	↔	Lithium Total	↔	↔	Uranium Total	↔	↑
Cadmium Dissolved	↑	↑	Manganese Dissolved	↓	↓	Vanadium Dissolved	↓	↓
Cadmium Total	↑	↔	Manganese Total	↔	↓	Vanadium Total	↓	↓
Chromium Dissolved	↑	↔	Molybdenum Dissolved	↓	↓	Zinc Dissolved	↑	↔
Chromium Total	↔	↓	Molybdenum Total	↓	↓	Zinc Total	↔	↓

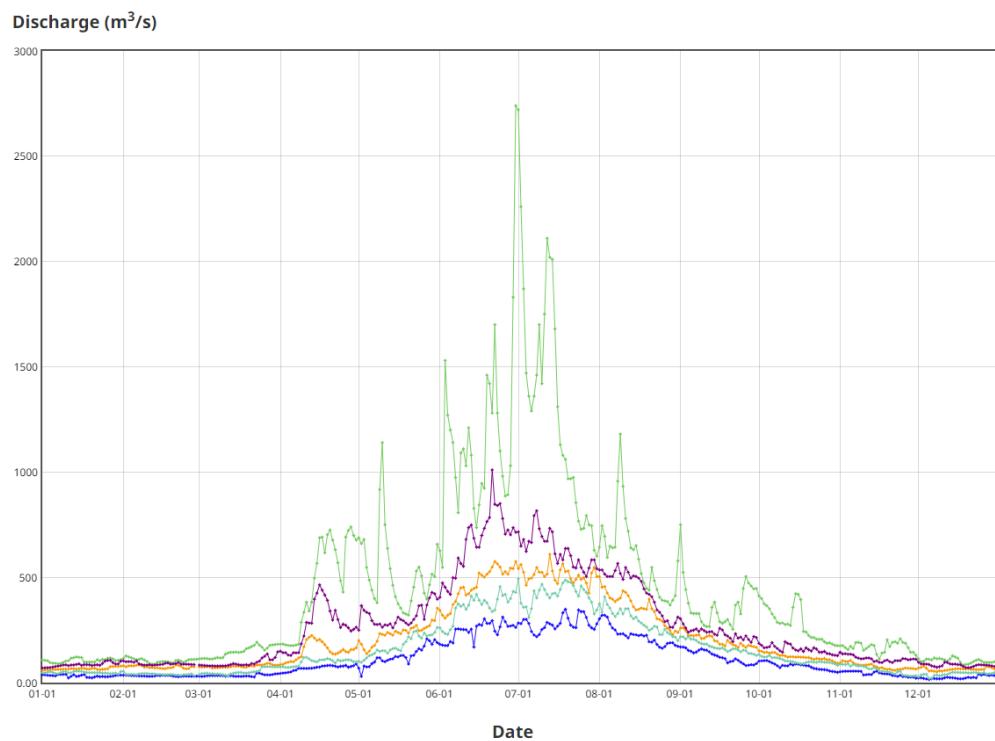
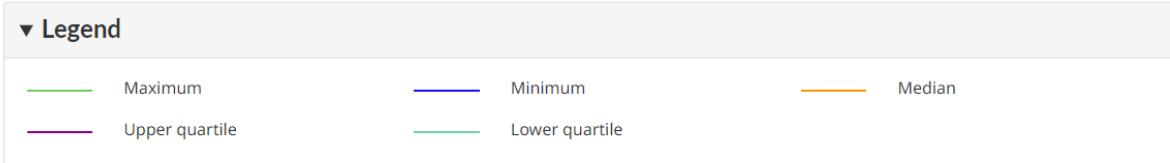
Typical range (minimum-maximum) in field observations and bacterial values:

Current (2009-2019)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance (µS/cm)	E.Coli (cfu/dL)	Fecal Coliform (cfu/dL)
<i>Winter (Dec-Feb)</i>	9.9-15.0	7.3-8.4	3-70	34-479	<2-217	<2-111
<i>Spring</i>	8.3-13.6	7.3-8.7	4-378	240-426	<2-1953	<2-1585

(Mar-May)						
Summer (Jun-Aug)	7.3-10.1	7.8-9.1	4-2888	240-385	3-544	7-1025
Fall (Sep-Nov)	8.8-14.7	6.6-9.0	2-64	230-410	<2-388	<2-319

Past (1989-2008)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance ($\mu\text{S}/\text{cm}$)	<i>E.Coli</i> (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	5.6-13.9	7.3-8.4	2-55	333-489	<2-680	<2-136
Spring (Mar-May)	6.8-14.2	7.3-9.1	3-535	232-440	<2-6100	<2-3000
Summer (Jun-Aug)	5.9-11.7	7.8-9.0	3-830	229-381	23-8450	2-3000
Fall (Sep-Nov)	6.8-15.0	7.6-9.1	2-67	254-420	<2-3600	<2-1100

Hydrometric Graphs (Water Survey of Canada, 1958-1971)



Hydrometric Data Website

[https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=1&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Grap h&stn=05EF003&dataType=Daily¶meterType=Flow&year=1971](https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=1&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Graph&stn=05EF003&dataType=Daily¶meterType=Flow&year=1971)

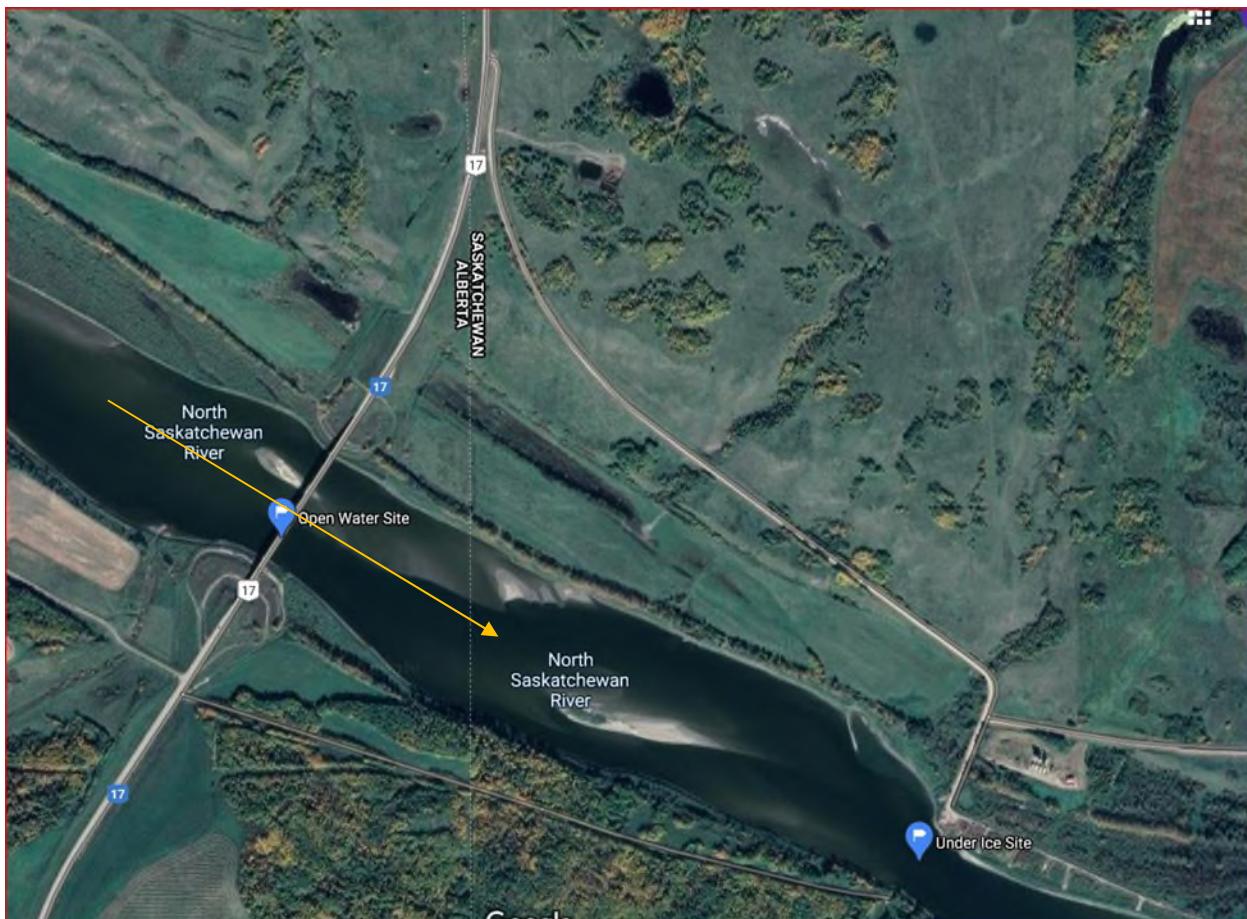
Maps & Diagrams

Figure 1. Satellite imagery of the sampling locations for the North Saskatchewan R. North is at the top of the image. Direction of flow in this image from northwest to southeast and is depicted using the arrow.

**Figure 2. N. Saskatchewan R., upstream view****Figure 3. N. Saskatchewan R., downstream view**

Parameters Monitored

Note, spelling of parameter names purposely match the spelling in the database.

Field

Parameter	Years monitored
COLIFORMS FECAL	1988-2019 ongoing
COLIFORMS TOTAL	1988-2006
E. COLI	1998-2019 ongoing
OXYGEN DISSOLVED	1988-2019 ongoing
PH (FIELD)	1988-2019 ongoing
SPECIFIC CONDUCTANCE (FIELD)	1988-2019 ongoing
TEMPERATURE WATER (FIELD)	1988-2019 ongoing
TURBIDITY (FIELD)	1988-2019 ongoing

Physicals

Parameter	Years monitored
ALKALINITY GRAN CACO3	2006-2014
ALKALINITY PHENOLPHTHALEIN CACO3	1988-2014
ALKALINITY TOTAL CACO3	1988-2019 ongoing
COLOUR TRUE	1988-2005
RESIDUE FIXED NONFILTRABLE	1988-2019 ongoing
RESIDUE NONFILTRABLE	1988-2019 ongoing
TURBIDITY (LAB)	1988-2019 ongoing
PH (LAB)	1988-2019 ongoing
SPECIFIC CONDUCTANCE (LAB)	1988-2019 ongoing
TEMPERATURE WATER (LAB)	1988-2006

Nutrients (Carbon, Nitrogen, Phosphorus)

Parameter	Years monitored
AMMONIA DISSOLVED	1988-2019 ongoing
AMMONIA UN-IONIZED (CALCD.)	1988-2019 ongoing
CARBON DISSOLVED ORGANIC	1988-2019 ongoing
CARBON PARTICULATE ORGANIC	1988-2019 ongoing
CARBON TOTAL ORGANIC (CALCD.)	1988-2019 ongoing
NITROGEN DISSOLVED NO ₃ & NO ₂	1988-2019 ongoing
NITROGEN PARTICULATE	1988-2019 ongoing
NITROGEN TOTAL (CALCD.)	1988-2019 ongoing
NITROGEN TOTAL DISSOLVED	1988-2019 ongoing
PHOSPHATE DISSOLVED ORTHO	1988-1990
PHOSPHOROUS DISSOLVED ORTHO	1990-2019 ongoing
PHOSPHOROUS PARTICULATE (CALCD.)	1988-2019 ongoing
PHOSPHOROUS TOTAL	1988-2019 ongoing
PHOSPHOROUS TOTAL DISSOLVED	1988-2019 ongoing

Major Ions

Parameter	Years monitored
BICARBONATE (CALCD.)	1988-2019 ongoing
BROMIDE	2016-2017
CALCIUM DISSOLVED/FILTERED	1988-2019 ongoing
CARBONATE (CALCD.)	1988-2019 ongoing
CHLORIDE DISSOLVED	1988-2019 ongoing
FLUORIDE DISSOLVED	1988-2019 ongoing
FREE CO ₂ (CALCD.)	1988-2019 ongoing
HARDNESS NON-CARB. (CALCD.)	1988-2019 ongoing
HARDNESS TOTAL (CALCD.) CACO ₃	1988-2019 ongoing
HYDROXIDE (CALCD.)	1988-2019 ongoing
MAGNESIUM DISSOLVED/FILTERED	1988-2019 ongoing
POTASSIUM DISSOLVED/FILTERED	1988-2019 ongoing
SATURATION INDEX (CALCD.)	1988-2019 ongoing
SILICA REACTIVE	1988-1990
SIO ₂	1990-2019 ongoing
SODIUM ADOPTION RATIO (CALCD.)	2000-2019 ongoing
SODIUM DISSOLVED/FILTERED	1988-2019 ongoing
SODIUM PERCENTAGE (CALCD.)	1988-2019 ongoing
STABILITY INDEX (CALCD.)	1988-2019 ongoing
SULPHATE DISSOLVED	1988-2019 ongoing
SULPHIDE DISSOLVED	1988-1989
TOTAL DISSOLVED SOLIDS (CALCD.)	1988-2019 ongoing

Metals

Parameter	Years monitored
ALUMINUM DISSOLVED	1988-2019 ongoing
ALUMINUM EXTRACTABLE	1988-1993
ALUMINUM TOTAL	1993-2019 ongoing
ANTIMONY DISSOLVED	2003-2019 ongoing
ANTIMONY TOTAL	2003-2019 ongoing
ARSENIC DISSOLVED	1988-1990, 2003-2019 ongoing
ARSENIC TOTAL	2000-2019 ongoing
BARIUM DISSOLVED	1999-2019 ongoing
BARIUM TOTAL	1988-2019 ongoing
BERYLLIUM DISSOLVED	1999-2019 ongoing
BERYLLIUM TOTAL	1997-2019 ongoing
BISMUTH DISSOLVED	2003-2019 ongoing
BISMUTH TOTAL	2003-2019 ongoing
BORON DISSOLVED	1988-1990, 1992-2019 ongoing
BORON TOTAL	1997-1998, 2003-2019 ongoing
CADMIUM DISSOLVED	1999-2019 ongoing
CADMIUM TOTAL	1988-2019 ongoing
CERIUM DISSOLVED	2014-2019 ongoing
CERIUM TOTAL	2014-2019 ongoing
CESIUM DISSOLVED	2014-2019 ongoing
CESIUM TOTAL	2014-2019 ongoing
CHROMIUM DISSOLVED	1999-2019 ongoing
CHROMIUM TOTAL	1988-2019 ongoing
COBALT DISSOLVED	1999-2019 ongoing
COBALT TOTAL	1988-2019 ongoing
COPPER DISSOLVED	1999-2019 ongoing
COPPER TOTAL	1988-2019 ongoing
EUROPIUM DISSOLVED	2019 ongoing
EUROPIUM TOTAL	2019 ongoing
GADOLINIUM DISSOLVED	2019 ongoing
GADOLINIUM TOTAL	2019 ongoing
GALLIUM DISSOLVED	2003-2019 ongoing
GALLIUM TOTAL	2003-2019 ongoing
GERMANIUM DISSOLVED	2019 ongoing
GERMANIUM TOTAL	2019 ongoing
HAFNIUM DISSOLVED	2019 ongoing
HAFNIUM TOTAL	2019 ongoing
HOLMIUM DISSOLVED	2019 ongoing
HOLMIUM TOTAL	2019 ongoing
INDIUM DISSOLVED	2019 ongoing

INDIUM TOTAL	2019 ongoing
IRIDIUM DISSOLVED	2019 ongoing
IRIDIUM TOTAL	2019 ongoing
IRON DISSOLVED	1988-2019 ongoing
IRON TOTAL	1997-2019 ongoing
LANTHANUM DISSOLVED	2003-2019 ongoing
LANTHANUM TOTAL	2003-2019 ongoing
LEAD DISSOLVED	1999-2019 ongoing
LEAD TOTAL	1988-2019 ongoing
LITHIUM DISSOLVED	1999-2019 ongoing
LITHIUM TOTAL	1997-2019 ongoing
LUTETIUM DISSOLVED	2019 ongoing
LUTETIUM TOTAL	2019 ongoing
MANGANESE DISSOLVED	1988-2019 ongoing
MANGANESE TOTAL	1997-2019 ongoing
MERCURY TOTAL	1988-1998
MOLYBDENUM DISSOLVED	1999-2019 ongoing
MOLYBDENUM TOTAL	1997-2019 ongoing
NEODYMIUM DISSOLVED	2019 ongoing
NEODYMIUM TOTAL	2019 ongoing
NICKEL DISSOLVED	1999-2019 ongoing
NICKEL TOTAL	1988-2019 ongoing
NIOBIUM DISSOLVED	2014-2019 ongoing
NIOBIUM TOTAL	2014-2019 ongoing
PLATINUM DISSOLVED	2014-2019 ongoing
PLATINUM TOTAL	2014-2019 ongoing
PRASEODYMIUM DISSOLVED	2019 ongoing
PRASEODYMIUM TOTAL	2019 ongoing
RUBIDIUM DISSOLVED	2003-2019 ongoing
RUBIDIUM TOTAL	2003-2019 ongoing
RUTHENIUM DISSOLVED	2019 ongoing
RUTHENIUM TOTAL	2019 ongoing
SAMARIUM DISSOLVED	2019 ongoing
SAMARIUM TOTAL	2019 ongoing
SCANDIUM DISSOLVED	2019 ongoing
SCANDIUM TOTAL	2019 ongoing
SELENIUM DISSOLVED	1988-1990, 2003-2019 ongoing
SELENIUM TOTAL	2000-2019 ongoing
SILVER DISSOLVED	2003-2019 ongoing
SILVER TOTAL	1999-2019 ongoing
STRONTIUM DISSOLVED	1999-2019 ongoing
STRONTIUM TOTAL	1997-2019 ongoing
TELLURIUM DISSOLVED	2019 ongoing

TELLURIUM TOTAL	2019 ongoing
TERBIUM DISSOLVED	2019 ongoing
TERBIUM TOTAL	2019 ongoing
THALLIUM DISSOLVED	2003-2019 ongoing
THALLIUM TOTAL	2003-2019 ongoing
TIN DISSOLVED	2014-2019 ongoing
TIN TOTAL	2014-2019 ongoing
TITANIUM DISSOLVED	2016-2019 ongoing
TITANIUM TOTAL	2016-2019 ongoing
TUNGSTEN DISSOLVED	2014-2019 ongoing
TUNGSTEN TOTAL	2014-2019 ongoing
URANIUM DISSOLVED	2003-2019 ongoing
URANIUM TOTAL	2003-2019 ongoing
VANADIUM DISSOLVED	1999-2019 ongoing
VANADIUM TOTAL	1988-2019 ongoing
YTTERBIUM DISSOLVED	2019 ongoing
YTTERBIUM TOTAL	2019 ongoing
YTTRIUM- DISSOLVED	2014-2019 ongoing
YTTRIUM TOTAL	2014-2019 ongoing
ZINC DISSOLVED	1999-2019 ongoing
ZINC TOTAL	1988-2019 ongoing
ZIRCONIUM DISSOLVED	2019 ongoing
ZIRCONIUM TOTAL	2019 ongoing

Acid Herbicides

Parameter	Years monitored
2-(2,4-DICHLOROPHOXY)-PROPIONIC ACID	2006, 2010-2011, 2014, 2017-2019 ongoing
2,3,6-TBA	1988-1992, 2006, 2010-2011, 2014, 2017
2,4,5-T	1988-1992, 2006, 2010-2011, 2014, 2017-2019 ongoing
2,4-D	1988-1992, 2006, 2010-2011, 2014, 2017-2019 ongoing
2,4-DB	1988-1992, 2006, 2010-2011, 2014, 2017
ACIFLUORFEN	2019 ongoing
BROMOXYNIL	1988-1992, 2006, 2010-2011, 2014, 2017-2019 ongoing
CLOPYRALID	2006, 2010-2011, 2014, 2017-2019 ongoing
DICAMBA	1988-1992, 2006, 2010-2011, 2014, 2017-2019 ongoing
DICHLORPROP	1988-1992
DINOSEB	2018-2019 ongoing
FENOPROP (SILVEX)	1988-1992

FOMESAFEN	2019 ongoing
IMAZAMETHABENZ-METHYL (A)	2006, 2010-2011, 2014, 2017-2019 ongoing
IMAZAMETHABENZ-METHYL (B)	2006, 2010-2011, 2014
IMAZAMOX	2017-2019 ongoing
IMAZAPYR	2017-2019 ongoing
IMAZETHAPYR	2006, 2010-2011, 2014, 2017-2019 ongoing
MCPA	1988-1992, 2006, 2010-2011, 2014, 2017-2019 ongoing
MCPB	1988-1992, 2006, 2010-2011, 2014, 2017
MCPP	2017-2019 ongoing
MECOPROP	2006, 2010-2011, 2014
PICLORAM	1988-1992, 2006, 2010-2011, 2014, 2017-2019 ongoing
SILVEX	2006, 2010-2011, 2014, 2017-2019 ongoing
TRICLOPYR	2017-2019 ongoing

Neutral Herbicides

Parameter	Years monitored
ATRAZINE	2006, 2010-2011, 2014, 2018 ongoing*
ATRAZINE TOTAL	1988-1992
BENZOYLPROP-ETHYL	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
BUTYLATE	2006, 2010-2011, 2014, 2018 ongoing*
DESETHYL ATRAZINE	2006, 2010-2011, 2014, 2018 ongoing*
D-ETHYL SIMAZINE	2006, 2010-2011, 2014, 2018 ongoing*
DIALLATE	1988-1992
DIALLATE I	2006, 2010-2011, 2014, 2018 ongoing*
DIALLATE II	2006, 2010-2011, 2014, 2018 ongoing*
DICLOFOP-METHYL	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
ETHALFLURALIN	2006, 2010-2011, 2014, 2018 ongoing*
FENOXAPROP-P-ETHYL	2010-2011, 2014, 2018 ongoing*
METOLACHLOR	2006, 2010-2011, 2014, 2018 ongoing*
METRIBUZIN	2006, 2010-2011, 2014, 2018 ongoing*
SIMAZINE	2006, 2010-2011, 2014, 2018 ongoing*
TRIALLATE	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
TRIFLURALIN	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*

*sampled on 4-year rotational basis

Organochlorine

Parameter	Years monitored
ALDRIN	1988-1992, 2006, 2010-2011, 2014
ALPHA-BENZENEHEXACHLORIDE	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
ALPHA-CHLORDANE	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
ALPHA-ENDOSULFAN	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
BETA-ENDOSULFAN	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
BETA-HCH	2006, 2010-2011, 2014
CIS-NONACHLOR	2006, 2010-2011, 2014
DIELDRIN	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
ENDOSULFAN SULPHATE TOTAL	2018 ongoing*
ENDRIN	1988-1992, 2006, 2010-2011, 2014
GAMMA-BHC (LINDANE)	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
GAMMA-CHLORDANE	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
HEPTACHLOR	1988-1992, 2006, 2010-2011, 2014
HEPTACHLOR EPOXIDE	1988-1992, 2006, 2010-2011, 2014
HEXACHLOROBENZENE	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
HEXACHLOROBUTADIENE	2006, 2010-2011, 2014, 2018 ongoing*
METHOXYCHLOR (P,P'-METHOXYCHLOR).	1988-1992, 2006, 2010-2011, 2014
MIREX	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
O,P'-DDD	2006, 2010-2011, 2014
O,P'-DDE	2006, 2010-2011, 2014
O,P'-DDT	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
OXYCHLORDANE	2006, 2010-2011, 2014
P,P'-DDD (TDP)	1988-1992, 2006, 2010-2011, 2014
P,P'-DDE	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
P,P'-DDT	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
PENTACHLOROANISOLE	2006, 2010-2011, 2014
PENTACHLOROBENZENE	2006, 2010-2011, 2014, 2018 ongoing*
TRANS-NONACHLOR	2006, 2010-2011, 2014, 2018 ongoing*

*sampled on 4-year rotational basis

Glyphosate

Parameter	Years monitored
AMPA	2014, 2018-2019 ongoing
GLUFOSINATE	2014, 2018-2019 ongoing
GLYPHOSATE	2014, 2018-2019 ongoing

Carbamates

Parameter	Years monitored
BARBAN	1988-1992

Phenols

Parameter	Years monitored
2,3,4,5-TETRACHLOROPHENOL	1990, 1992-1995
2,3,4,6-TETRACHLOROPHENOL	1990, 1992-1995
2,3,4-TRICHLOROPHENOL	1990, 1992-1995
2,3,5,6-TETRACHLOROPHENOL	1990, 1992-1995
2,3,5-TRICHLOROPHENOL	1990, 1992-1995
2,3,6-TRICHLOROPHENOL	1990, 1992-1995
2,3-DICHLOROPHENOL	1990, 1992-1995
2,4,5-TRICHLOROPHENOL	1990, 1992-1995
2,4,6-TRICHLOROPHENOL	1990, 1992-1995
2,4-DICHLOROPHENOL	1990, 1992-1995
2,6-DICHLOROPHENOL	1990, 1992-1995
2-CHLORO-5-METHYLPHENOL	1990, 1992-1995
2-CHLOROPHENOL	1990, 1992-1995
3,4,5-TRICHLOROPHENOL	1990, 1992-1995
3,4-DICHLOROPHENOL	1990, 1992-1995
3,5-DICHLOROPHENOL	1990, 1992-1995
3-CHLOROPHENOL	1990, 1992-1995
4-CHLORO-3-METHYLPHENOL	1990, 1992-1995
4-CHLOROPHENOL	1990, 1992-1995
PENTACHLOROPHENOL	1990, 1992-1995
PHENOLIC MATERIAL	1988-1990

Aroclors

Parameter	Years monitored
AROCLOR	1988-1992

Other Parameters

Parameter	Years monitored
CHLOROPHYLL A	1988-1990, 2017-2019 ongoing
CHLOROPHYLL A (CORRECTED)	2017-2019 ongoing
CYANIDE TOTAL	1988-1990

Red Deer River Near Bindloss

Station Name:	Red Deer River Near Bindloss			
Station Number:	AL05CK0001			
Naqudat¹ Number:	00AL05CK0001			
WSC² Reference Number:	05CK004			
WSC Period of Record:	1961 – current	Active		
Project Number:	115 (historically 315)			
Sampling Site Open Water:	Latitude 50°54'11.91"N	Longitude 110°17'57.69"W		
Sampling Site Ice Cover:	Latitude 50°54'8.90"N	Longitude 110°17'47.81"W		
Drainage Area:	47800 km ²			
Effective Drainage Area:	28200 km ²			
Ecozone³:	Prairies			
Ecoregion³:	Mixed Grasslands			
Water Body:	Red Deer River			
Water Body Type:	River			
Watershed:	Red Deer/South Saskatchewan			
Stakeholders	PPWB			
Site Overview:	<p>The Red Deer River Basin, upstream of the Red Deer River near Bindloss site, has a gross drainage area of 44,683 km² and an effective drainage area of 31,618 km². The PPWB Water Quality Monitoring site is located near Bindloss. Water quality monitoring has been conducted historically since 1966. With the completion of construction in 1983 of the 165,000 dam³ Gleniffer Reservoir in the western part of the basin, winter flows have been increased. The Red Deer and South Saskatchewan rivers join approximately 8 km east of the Alberta-Saskatchewan border.</p> <p>Trends are generally decreasing in this river for phosphorus although nitrogen constituents have an increasing trend. The dissolved ions (Na, Cl, SO₄) also show an increasing trend.</p>			
Sampling location:	Summer sampling location is a bridge on Range Road 30A, 38 km northwest of the community of Bindloss. Winter sampling location (under ice) is 200 metres downstream of Range Road 30A bridge.			
Station Established:	1966			
Period of Record:	1966 – present			
Data Located:	ACBIS	831 Samples (January 2024)		
Station Type:	Network, PPWB			
Frequency of Observations:	Monthly			

¹Data listing of water quality monitoring stations

²Water Survey of Canada

³<http://www.ecozones.ca/english/zone/index.html>

Site Status

Nutrients	2013	2018	Major Ions	2013	2018	Physicals	2013	2018
Ammonia Dissolved	↓	↑	Chloride Dissolved	↑	↑	Oxygen Dissolved	↔	↔
Nitrate as N	↓	↔	Fluoride Dissolved	↔	↓	pH – Field	↑	↑
Nitrogen Total	↑	↑	Sodium Dissolved/Filtered	↑	↑	Sodium Adsorption Ratio (SAR)	↑	↔
Phosphorous Total	↔	↔	Sulphate Dissolved	↔	↑	Total Suspended Solids (TSS)	↔	↔
Phosphorous Total Dissolved	↓	↓	Total Dissolved Solids (TDS)	↑	↑			

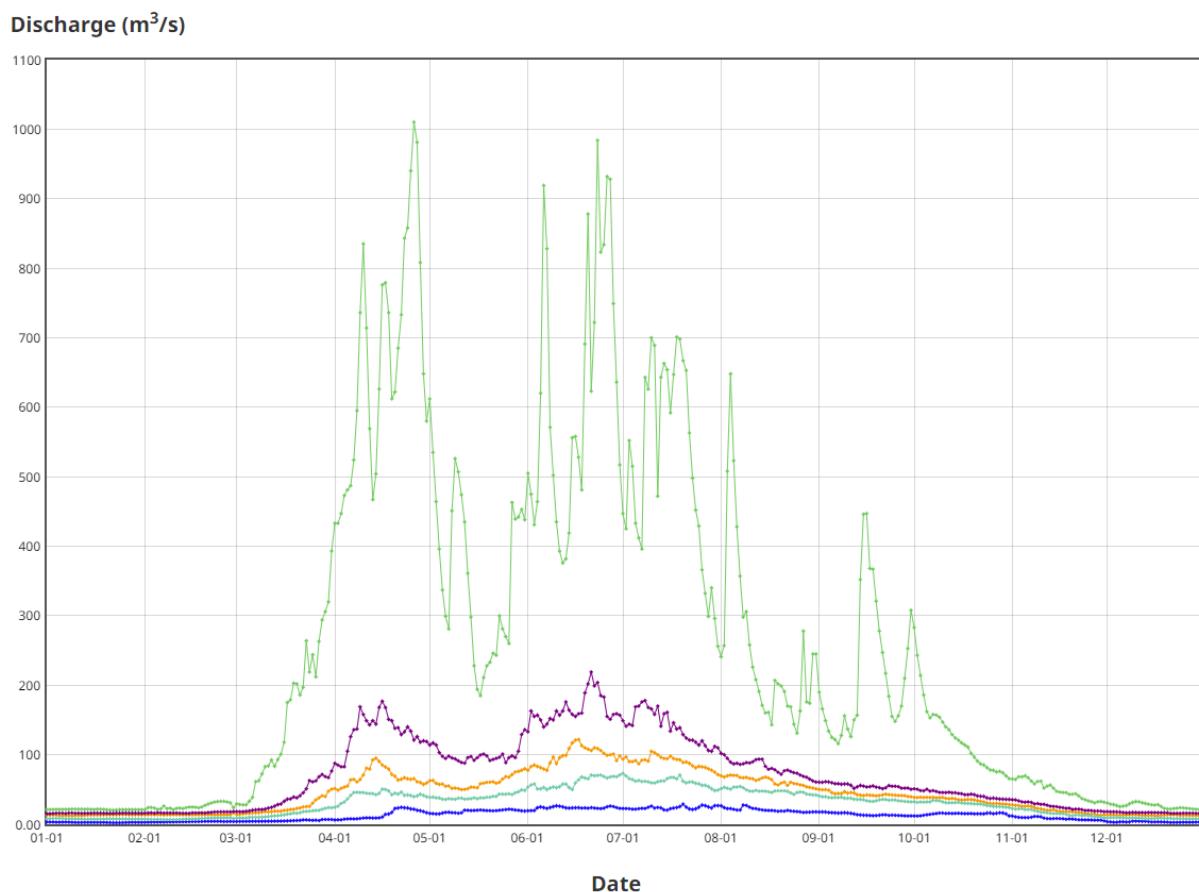
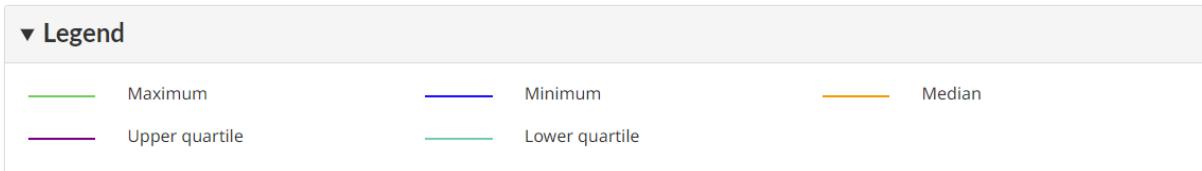
Metals	2013	2018	Metals	2013	2018	Metals	2013	2018
Aluminum Dissolved	↑	↔	Cobalt Dissolved	↔	↔	Nickel Dissolved	↔	↔
Aluminum Total	↔	↔	Cobalt Total	↔	↔	Nickel Total	↔	↔
Arsenic Dissolved	↔	↔	Copper Dissolved	↔	↔	Selenium Dissolved	↔	↔
Arsenic Total	↔	↔	Copper Total	↔	↔	Selenium Total	↑	↑
Barium Dissolved	↔	↔	Iron Dissolved	↑	↔	Silver Dissolved	NA	NA
Barium Total	↔	↔	Iron Total	↔	↔	Silver Total	↔	↔
Beryllium Dissolved	↑	↔	Lead Dissolved	↔	↓	Thallium Dissolved	↔	↔
Beryllium Total	↔	↔	Lead Total	↔	↔	Thallium Total	↔	↔
Boron Dissolved	↑	↔	Lithium Dissolved	↔	↔	Uranium Dissolved	↑	↑
Boron Total	↑	↑	Lithium Total	↔	↔	Uranium Total	↑	↑
Cadmium Dissolved	↑	↑	Manganese Dissolved	↔	↔	Vanadium Dissolved	↔	↔
Cadmium Total	↔	↑	Manganese Total	↔	↔	Vanadium Total	↔	↔
Chromium Dissolved	↑	↔	Molybdenum Dissolved	↓	↓	Zinc Dissolved	↔	↔
Chromium Total	↔	↔	Molybdenum Total	↔	↔	Zinc Total	↔	↔

Typical range (minimum-maximum) in field observations and bacterial values:

Current (2009-2019)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance (µS/cm)	E.Coli (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	0.4-15.2	7.0-8.5	2-227	537-1778	<2-88	<2-69
Spring (Mar-May)	6.5-12.8	7.1-8.9	3-2580	384-734	<2-150	<2-680
Summer (Jun-Aug)	7.2-9.3	8.0-9.2	17-58300	347-631	5-5067	7-4734
Fall (Sep-Nov)	8.5-14.4	8.0-9.0	5-990	270-729	<2-831	<2-750

Past (1989-2008)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance ($\mu\text{S}/\text{cm}$)	<i>E.Coli</i> (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	0.8-16.2	7.5-9.0	1-56	347-919	6-80	<2-30
Spring (Mar-May)	3.3-18.3	7.4-8.8	2-2253	287-632	6-316	<2-1534
Summer (Jun-Aug)	5.8-10.2	7.7-8.6	19-2800	328-666	10-4100	<5-5834
Fall (Sep-Nov)	7.0-14.1	7.8-8.9	6->1000	368-672	<2-3472	<2-615

Hydrometric Graphs (Water Survey of Canada, 1960-2021)



Hydrometric Data Website

[https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=01&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Grap h&stn=05CK004&56atatype=Daily¶meterType=Flow&year=2021](https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=01&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Graph&stn=05CK004&56atatype=Daily¶meterType=Flow&year=2021)

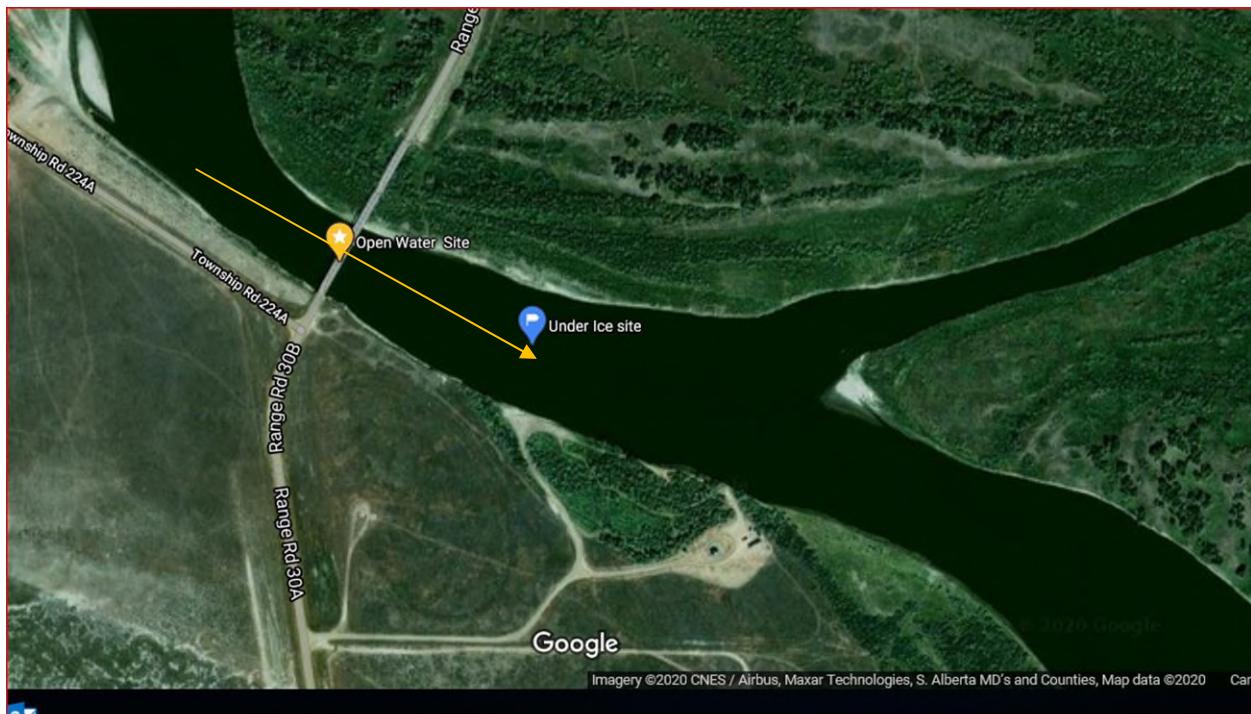
Maps & Diagrams

Figure 1. Satellite imagery of the sampling locations for the Red Deer River at Bindloss. North is at the top of the image. Direction of flow in this image from northwest to southeast and is depicted using the arrow.

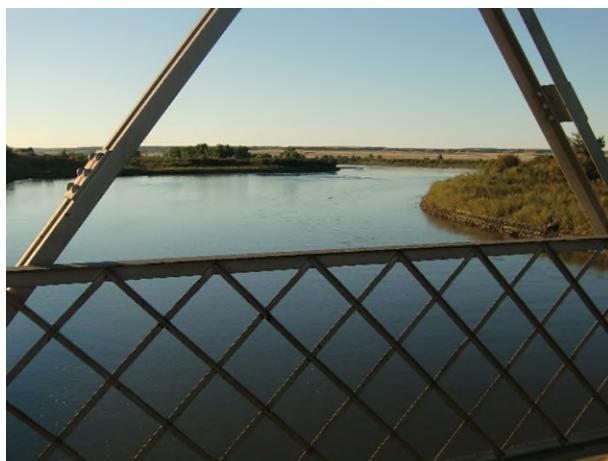


Figure 2. Red Deer R., upstream view



Figure 3. Red Deer R., downstream view

Parameters Monitored

Note, spelling of parameter names purposely match the spelling in the database.

Field

Parameter	Years monitored
SPECIFIC CONDUCTANCE (FIELD)	1972-2019 ongoing
TEMPERATURE WATER (FIELD)	1966-2019 ongoing
TURBIDITY (FIELD)	1977, 1979-2019 ongoing
OXYGEN DISSOLVED	1974-2019 ongoing
PH (FIELD)	1972-2019 ongoing
COLIFORMS FECAL	1974-2019 ongoing
COLIFORMS TOTAL	1974-2004, 2006
E. COLI	1998-2019 ongoing
FECAL STREPTOCOCCI	1974

Physicals

Parameter	Years monitored
COLOUR TRUE	1974, 1981-2005
ALKALINITY GRAN CACO3	2006-2015
ALKALINITY PHENOLPHTHALEIN CACO3	1966-2015
ALKALINITY TOTAL CACO3	1966-2019 ongoing
COLOUR APPARENT	1966-1981
ODOUR THRESHOLD NUMBER	1974-1978
RESIDUE FILTERABLE	1966-1967, 1970, 1979
RESIDUE FIXED FILTERABLE	1966-1967, 1970, 1979
RESIDUE FIXED NONFILTRABLE	1966-2019 ongoing
RESIDUE NONFILTRABLE	1966-2019 ongoing
TURBIDITY (LAB)	1966-2019 ongoing
PH (LAB)	1966-2019 ongoing
TEMPERATURE WATER (LAB)	1966-2006
SPECIFIC CONDUCTANCE (LAB)	1966-2019 ongoing

Nutrients (Carbon, Nitrogen, Phosphorus)

Parameter	Years monitored
AMMONIA DISSOLVED	1967-1970, 1987-2019 ongoing
AMMONIA TOTAL	1974, 1981-1987
AMMONIA UN-IONIZED (CALCD.)	1986-2019 ongoing
CARBON DISSOLVED INORGANIC	1974, 1978-1980
CARBON DISSOLVED ORGANIC	1974, 1978-2019 ongoing
CARBON PARTICULATE ORGANIC	1977-2019
CARBON TOTAL INORGANIC	1971-1978

CARBON TOTAL ORGANIC	1971-1978
CARBON TOTAL ORGANIC (CALCD.)	1980-1982, 1985-2019 ongoing
NITROGEN DISSOLVED NO ₃ & NO ₂	1966-2019 ongoing
NITROGEN PARTICULATE	1977-2019 ongoing
NITROGEN TOTAL (CALCD.)	1977-2019 ongoing
NITROGEN TOTAL DISSOLVED	1975-2019 ongoing
NITROGEN TOTAL KJELDAHL	1973-1978
PHOSPHATE DISSOLVED INORGANIC	1966-1967, 1970-1973
PHOSPHATE DISSOLVED ORTHO	1969-1973, 1981-1990
PHOSPHATE TOTAL INORGANIC	1969-1970
PHOSPHOROUS DISSOLVED ORTHO	1990-2019 ongoing
PHOSPHOROUS PARTICULATE (CALCD.)	1975-2019 ongoing
PHOSPHOROUS TOTAL DISSOLVED	1975-2019 ongoing
PHOSPHOROUS TOTAL INORGANIC	1977
PHOSPHOROUS TOTAL	1967-1969, 1971, 1973-2019 ongoing

Major Ions

Parameter	Years monitored
BICARBONATE (CALCD.)	1980-1982, 1985-2019 ongoing
BROMIDE	2016-2017
CALCIUM DISSOLVED/FILTERED	1966-2019 ongoing
CARBONATE (CALCD.)	1980-1982, 1985-2019 ongoing
CHLORIDE DISSOLVED	1966-2019 ongoing
FLUORIDE DISSOLVED	1966-2019 ongoing
FREE CO ₂ (CALCD.)	1985-2019 ongoing
HARDNESS NON-CARB. (CALCD.)	1985-2019 ongoing
HARDNESS TOTAL (CALCD.) CACO ₃	1980-1982, 1985-2019 ongoing
HARDNESS TOTAL CACO ₃	1967-1975
HARDNESS TOTAL LAB (CALCD.) CACO ₃	1975-1978
HYDROXIDE (CALCD.)	1985-2019 ongoing
MAGNESIUM DISSOLVED/FILTERED	1966, 1975-2019 ongoing
POTASSIUM DISSOLVED/FILTERED	1966-2019 ongoing
SATURATION INDEX (CALCD.)	1985-2019 ongoing
SILICA REACTIVE	1966-1990
SIO ₂	1990-2019 ongoing
SODIUM ADSORPTION RATIO (CALCD.)	2000-2019 ongoing
SODIUM DISSOLVED/FILTERED	1966-2019 ongoing
SODIUM PERCENTAGE (CALCD.)	1985-2019 ongoing
STABILITY INDEX (CALCD.)	1985-2019 ongoing
SULPHATE DISSOLVED	1966-2019 ongoing
TOTAL DISSOLVED SOLIDS (CALCD.)	1980-1982, 1985-2019 ongoing
SULPHIDE DISSOLVED	1981-1989

Metals

Parameter	Years monitored
ALUMINUM DISSOLVED	1966-1967, 1984-1990, 1992-2019 ongoing
ALUMINUM EXTRACTABLE	1971-1990, 1992-1993
ALUMINUM TOTAL	1993-2019 ongoing
ANTIMONY DISSOLVED	2003-2019 ongoing
ANTIMONY EXTRACTABLE	1971-1973
ANTIMONY TOTAL	2003-2019 ongoing
ARSENIC DISSOLVED	1971-1990, 2003-2019 ongoing
ARSENIC TOTAL	2000-2019 ongoing
BARIUM DISSOLVED	1999-2019 ongoing
BARIUM EXTRACTABLE	1971-1980, 1984
BARIUM TOTAL	1983-1990, 1992-2019 ongoing
BARIUM TOTAL RECOVERABLE	1980-1983
BERYLLIUM DISSOLVED	1999-2019 ongoing
BERYLLIUM TOTAL	1997-2019 ongoing
BISMUTH DISSOLVED	2003-2019 ongoing
BISMUTH TOTAL	2003-2019 ongoing
BORON DISSOLVED	1973-1990, 1992-2019 ongoing
BORON TOTAL	1997-1998, 2003-2019 ongoing
CADMUM DISSOLVED	1999-2019 ongoing
CADMUM EXTRACTABLE	1971-1980
CADMUM TOTAL	1983-1990, 1992-2019 ongoing
CADMUM TOTAL RECOVERABLE	1980-1983
CERIUM DISSOLVED	2014-2019 ongoing
CERIUM TOTAL	2014-2019 ongoing
CESIUM DISSOLVED	2014-2019 ongoing
CESIUM TOTAL	2014-2019 ongoing
CHROMIUM DISSOLVED	1999-2019 ongoing
CHROMIUM EXTRACTABLE	1971-1984
CHROMIUM TOTAL	1983-1990, 1992-2019 ongoing
COBALT DISSOLVED	1999-2019 ongoing
COBALT EXTRACTABLE	1971-1975, 1978-1980
COBALT TOTAL	1983-1990, 1992-2019 ongoing
COBALT TOTAL RECOVERABLE	1980-1983
COPPER DISSOLVED	1967-1968, 1971-1973, 1999-2019 ongoing
COPPER EXTRACTABLE	1969-1980
COPPER SUSPENDED	1978
COPPER TOTAL	1983-1990, 1992-2019 ongoing
COPPER TOTAL RECOVERABLE	1980-1983
EUROPIUM DISSOLVED	2019 ongoing
EUROPIUM TOTAL	2019 ongoing

GADOLINIUM DISSOLVED	2019 ongoing
GADOLINIUM TOTAL	2019 ongoing
GALLIUM DISSOLVED	2003-2019 ongoing
GALLIUM TOTAL	2003-2019 ongoing
GERMANIUM DISSOLVED	2019 ongoing
GERMANIUM TOTAL	2019 ongoing
HAFNIUM DISSOLVED	2019 ongoing
HAFNIUM TOTAL	2019 ongoing
HOLMIUM DISSOLVED	2019 ongoing
HOLMIUM TOTAL	2019 ongoing
INDIUM DISSOLVED	2019 ongoing
INDIUM TOTAL	2019 ongoing
IRIDIUM DISSOLVED	2019 ongoing
IRIDIUM TOTAL	2019 ongoing
IRON DISSOLVED	1966-1973, 1980-1990, 1992-2019 ongoing
IRON EXTRACTABLE	1971-1980
IRON TOTAL	1997-2019 ongoing
LANTHANUM DISSOLVED	2003-2019 ongoing
LANTHANUM TOTAL	2003-2019 ongoing
LEAD DISSOLVED	1967-1969, 1971-1973, 1999-2019 ongoing
LEAD EXTRACTABLE	1969-1980
LEAD TOTAL	1983-1990, 1992-2019 ongoing
LEAD TOTAL RECOVERABLE	1980-1983
LITHIUM DISSOLVED	1999-2019 ongoing
LITHIUM EXTRACTABLE	1971-1973
LITHIUM TOTAL	1997-2019 ongoing
LUTETIUM DISSOLVED	2019 ongoing
LUTETIUM TOTAL	2019 ongoing
MANGANESE DISSOLVED	1966-1973, 1980-1990, 1992-2019 ongoing
MANGANESE EXTRACTABLE	1969-1980
MANGANESE TOTAL	1997-2019 ongoing
MERCURY EXTRACTABLE	1973-1979
MERCURY TOTAL	1979-1990, 1992-1999
MOLYBDENUM DISSOLVED	1999-2019 ongoing
MOLYBDENUM EXTRACTABLE	1971-1974
MOLYBDENUM TOTAL	1997-2019 ongoing
NEODYMIUM DISSOLVED	2019 ongoing
NEODYMIUM TOTAL	2019 ongoing
NICKEL DISSOLVED	1999-2019 ongoing
NICKEL EXTRACTABLE	1971-1975, 1979-1980
NICKEL TOTAL	1983-1990, 1992-2019 ongoing
NICKEL TOTAL RECOVERABLE	1980-1983
NIOBIUM DISSOLVED	2014-2019 ongoing

NIOBIUM TOTAL	2014-2019 ongoing
PLATINUM DISSOLVED	2014-2019 ongoing
PLATINUM TOTAL	2014-2019 ongoing
PRASEODYMIUM DISSOLVED	2019 ongoing
PRASEODYMIUM TOTAL	2019 ongoing
RUBIDIUM DISSOLVED	2003-2019 ongoing
RUBIDIUM TOTAL	2003-2019 ongoing
RUTHENIUM DISSOLVED	2019 ongoing
RUTHENIUM TOTAL	2019 ongoing
SAMARIUM DISSOLVED	2019 ongoing
SAMARIUM TOTAL	2019 ongoing
SCANDIUM DISSOLVED	2019 ongoing
SCANDIUM TOTAL	2019 ongoing
SELENIUM DISSOLVED	1974-1990, 2003-2019 ongoing
SELENIUM TOTAL	2000-2019 ongoing
SILVER DISSOLVED	2003-2019 ongoing
SILVER EXTRACTABLE	1971-1979
SILVER TOTAL	1999-2019 ongoing
STRONTIUM DISSOLVED	1999-2019 ongoing
STRONTIUM EXTRACTABLE	1971-1974
STRONTIUM TOTAL	1997-2019 ongoing
TELLURIUM DISSOLVED	2019 ongoing
TELLURIUM TOTAL	2019 ongoing
TERBIUM DISSOLVED	2019 ongoing
TERBIUM TOTAL	2019 ongoing
THALLIUM DISSOLVED	2003-2019 ongoing
THALLIUM EXTRACTABLE	1971-1973
THALLIUM TOTAL	2003-2019 ongoing
TIN DISSOLVED	2014-2019 ongoing
TIN TOTAL	2014-2019 ongoing
TITANIUM DISSOLVED	2016-2019 ongoing
TITANIUM TOTAL	2016-2019 ongoing
TUNGSTEN DISSOLVED	2014-2019 ongoing
TUNGSTEN TOTAL	2014-2019 ongoing
URANIUM DISSOLVED	2003-2019 ongoing
URANIUM TOTAL	2003-2019 ongoing
VANADIUM DISSOLVED	1999-2019 ongoing
VANADIUM EXTRACTABLE	1971-1973, 1975-1980
VANADIUM TOTAL	1983-1990, 1992-2019 ongoing
VANADIUM TOTAL RECOVERABLE	1980-1983
YTTERBIUM DISSOLVED	2019 ongoing
YTTERBIUM TOTAL	2019 ongoing
YTTRIUM- DISSOLVED	2014-2019 ongoing

YTTRIUM TOTAL	2014-2019 ongoing
ZINC DISSOLVED	1967-1968, 1971-1973, 1999-2019 ongoing
ZINC EXTRACTABLE	1969-1980
ZINC TOTAL	1983-1990, 1992-2019 ongoing
ZINC TOTAL RECOVERABLE	1980-1983
ZIRCONIUM DISSOLVED	2019 ongoing
ZIRCONIUM TOTAL	2019 ongoing

Acid Herbicides

Parameter	Years monitored
2-(2,4-DICHLOROPHOXY)-PROPIONIC ACID	2007, 2011, 2015, 2017-2019 ongoing
2,3,6-TBA	1985-1992, 2007, 2011, 2015, 2017
2,4,5-T	1972-1992, 2007, 2011, 2015, 2017-2019 ongoing
2,4-D	1972-1992, 2007, 2011, 2015, 2017-2019 ongoing
2,4-DB	1972-1992, 2007, 2011, 2015, 2017
ACIFLUORFEN	2019 ongoing
BROMOXYNIL	1988-1992, 2007, 2011, 2015, 2017-2019 ongoing
CLOPYRALID	2007, 2011, 2015, 2017-2019 ongoing
DICAMBA	1985-1992, 2007, 2011, 2015, 2017-2019 ongoing
DICHLORPROP	1972-1992
DINOSEB	2018-2019 ongoing
FENOPROP (SILVEX)	1978-1992
FOMESAFEN	2019 ongoing
IMAZAMETHABENZ-METHYL (A)	2007, 2011, 2015, 2017-2019 ongoing
IMAZAMETHABENZ-METHYL (B)	2007, 2011, 2015
IMAZAMOX	2017-2019 ongoing
IMAZAPYR	2017-2019 ongoing
IMAZETHAPYR	2007, 2011, 2015, 2017-2019 ongoing
MCPA	1973-1992, 2007, 2011, 2015, 2017-2019 ongoing
MCPB	1985-1992, 2007, 2011, 2015, 2017
MCPP	2015, 2017-2019
MECOPROP	2007, 2011, 2015
PICLORAM	1974-1982, 1985-1992, 2007, 2011, 2015, 2017-2019 ongoing
SILVEX	2007, 2011, 2015, 2017-2019 ongoing
TRICLOPYR	2015, 2017-2019 ongoing

Neutral Herbicides

Parameter	Years monitored
ATRAZINE	2007, 2011, 2015, 2019 ongoing*
ATRAZINE TOTAL	1985-1992

BENZOYLPROP-ETHYL	1985-1992, 2007, 2011, 2015, 2019 ongoing*
BUTYLATE	2007, 2011, 2015, 2019 ongoing*
DESETHYL ATRAZINE	2007, 2011, 2015, 2019 ongoing*
D-ETHYL SIMAZINE	2007, 2011, 2015, 2019 ongoing*
DIALLATE	1985-1992
DIALLATE I	2007, 2011, 2015, 2019 ongoing*
DIALLATE II	2007, 2011, 2015, 2019 ongoing*
DICLOFOP-METHYL	1985-1992, 2007, 2011, 2015, 2019 ongoing*
ETHALFLURALIN	2007, 2011, 2015, 2019 ongoing*
FENOXAPROP-P-ETHYL	2011, 2015, 2019 ongoing*
METOLACHLOR	2007, 2011, 2015, 2019 ongoing*
METRIBUZIN	2007, 2011, 2015, 2019 ongoing*
SIMAZINE	2007, 2011, 2015, 2019 ongoing*
TRIALLATE	1985-1992, 2007, 2011, 2015, 2019 ongoing*
TRIFLURALIN	1974-1976, 1979, 1985-1992, 2007, 2011, 2015, 2019 ongoing*

*sampled on 4-year rotational basis

Organochlorine

Parameter	Years monitored
ALDRIN	1971-1992, 2007, 2011, 2015
ALPHA-BENZENEHEXACHLORIDE	1975-1992, 2007, 2011, 2015, 2019 ongoing*
ALPHA-CHLORDANE	1976-1992, 2007, 2011, 2015, 2019 ongoing*
ALPHA-ENDOSULFAN	1971-1992, 2007, 2011, 2015, 2019 ongoing*
BETA-ENDOSULFAN	1971-1992, 2007, 2011, 2015, 2019 ongoing*
BETA-HCH	2007, 2011, 2015
CIS-NONACHLOR	2007, 2011, 2015
DIELDRIN	1971-1992, 2007, 2011, 2015, 2019 ongoing*
ENDOSULFAN SULPHATE TOTAL	2015, 2019 ongoing*
ENDRIN	1975-1992, 2007, 2011, 2015
GAMMA-BHC (LINDANE)	1971-1992, 2007, 2011, 2015, 2019 ongoing*
GAMMA-CHLORDANE	1976-1992, 2007, 2011, 2015, 2019 ongoing*
HEPTACHLOR	1971-1992, 2007, 2011, 2015
HEPTACHLOR EPOXIDE	1971-1992, 2007, 2011, 2015
HEXACHLOROBENZENE	1978-1992, 2007, 2011, 2015, 2019 ongoing*
HEXACHLOROBUTADIENE	2007, 2011, 2015, 2019 ongoing*
METHOXYCHLOR (P,P'-METHOXYCHLOR).	1971-1992, 2007, 2011, 2015
MIREX	1978-1992, 2007, 2011, 2015, 2019 ongoing*
O,P'-DDD	2007, 2011, 2015
O,P'-DDE	2007, 2011, 2015
O,P'-DDT	1978-1992, 2007, 2011, 2015, 2019 ongoing*
OXYCHLORDANE	2007, 2011, 2015
P,P'-DDD (TDP)	1971-1992, 2007, 2011, 2015

P,P'-DDE	1971-1992, 2007, 2011, 2015, 2019 ongoing*
P,P'-DDT	1971-1992, 2007, 2011, 2015, 2019 ongoing*
PENTACHLOROANISOLE	2007, 2011, 2015
PENTACHLOROBENZENE	2007, 2011, 2015, 2019 ongoing*
TRANS-NONACHLOR	2007, 2011, 2015, 2019 ongoing*

*sampled on 4-year rotational basis

Glyphosate

Parameter	Years monitored
AMPA	2015, 2019 ongoing
GLUFOSINATE	2015, 2019 ongoing
GLYPHOSATE	2015, 2019 ongoing

Neonicotinoids

Parameter	Years monitored
ACETAMIPRID	2015, 2017
CLOTHIANIDIN	2015, 2017
DINOTEFURAM	2015, 2017
FLONICAMID	2017
FLUPYRADIFURONE	2017
IMIDACLOPRID	2015, 2017
THIACLOPRID	2015, 2017
THIAMETHOXAM	2015, 2017

Carbamates

Parameter	Years monitored
BARBAN	1974-1977, 1985-1992

Organophosphates

Parameter	Years monitored
AZINPHOS ETHYL	1984, 1986
AZINPHOS METHYL (GUTHION)	1984, 1986
CARBOPHENOTHION	1984, 1986
CRUFOMATE	1984, 1986
DIAZINON	1984, 1986
DIMETHOATE	1985-1987
DISULFOTON	1984, 1986
ETHION	1984, 1986
FENCHLORPHOS	1984, 1986
MALATHION	1984-1987

PARATHION	1984, 1986
PARATHION METHYL	1984, 1986
PHORATE	1984, 1986
PHOSMET (IMIDAN)	1984, 1986

Phenols

Parameter	Years monitored
2,3,4,5-TETRACHLOROPHENOL	1990
2,3,4,6-TETRACHLOROPHENOL	1990
2,3,4-TRICHLOROPHENOL	1990
2,3,5,6-TETRACHLOROPHENOL	1990
2,3,5-TRICHLOROPHENOL	1990
2,3,6-TRICHLOROPHENOL	1990
2,3-DICHLOROPHENOL	1990
2,4,5-TRICHLOROPHENOL	1990
2,4,6-TRICHLOROPHENOL	1990
2,4-DICHLOROPHENOL	1990
2,6-DICHLOROPHENOL	1990
2-CHLORO-5-METHYLPHENOL	1990
2-CHLOROPHENOL	1990
3,4,5-TRICHLOROPHENOL	1990
3,4-DICHLOROPHENOL	1990
3,5-DICHLOROPHENOL	1990
3-CHLOROPHENOL	1990
4-CHLORO-3-METHYLPHENOL	1990
4-CHLOROPHENOL	1990
PENTACHLOROPHENOL	1990
PHENOLIC MATERIAL	1973-1990

Aroclors

Parameter	Years monitored
AROCLOL	1980-1992
AROCLOL 1242	1981-1983
AROCLOL 1248	1973-1981
AROCLOL 1254	1973-1983
AROCLOL 1260	1973-1983

Other Parameters

Parameter	Years monitored
AROMATIC HYDROCARBONS	1974-1982

BETA RADIATION TOTAL	1975-1976
CHLOROPHYLL A	1973-1990, 2017-2019 ongoing
CHLOROPHYLL A (CORRECTED)	2017-2019 ongoing
CYANIDE TOTAL	1974-1990
DISCHARGE DAILY MEAN	1966-1978
DISCHARGE MONTHLY MEAN	1966-1978
N-ALKANES C10 – C26	1974-1982
N-ALKYL SULPHONATES (LAS)	1974-1981
NITRILOTRIACETIC ACID – NTA	1975-1978
OIL AND GREASE	1974-1981
OXYGEN BIOCHEMICAL DEMAND	1974-1979
OXYGEN CONSUMED	1966-1968, 1970
RADIUM RADIATION TOTAL RA-226	1975-1976
STD. PLATE COUNT 35DEG.C BACT. DENS.	1974
STRONTIUM RADIATION TOTAL 90	1975-1976

South Saskatchewan River

Station Name:	South Saskatchewan River at Highway 41	
Station Number:	AL05AK0001	
Naqudat¹ Number:	00AL05AK0001	
WSC² Reference Number:	05AK001	
WSC Period of Record:	1966 – 1993	Discontinued. For the water quality station on the South Saskatchewan River at Hwy 41, flow data from the hydrometric station at Medicine Hat (Stn05AJ001) are added to flows from two small tributaries (Seven Person Creek (Stn05AH005) and Ross Creek (Stn05AH052)). Total flows were lagged by two days (Brian Yee, personnel comm.) to estimate mean daily flows on the South Saskatchewan River at Hwy 41.”
Project Number:	115 (historically 315)	
Sampling Site Open Water:	Latitude 50°43'51.58"N	Longitude: 110°4'12.19"W
Sampling Site Ice Cover:	Latitude 50°44'1.24"N	Longitude 110°5'2.88"W
Drainage Area:	66,000 km²	
Effective Drainage Area:	46,700 km²	
Ecozone³:	Prairies	
Ecoregion:	Mixed Grassland	
Water Body:	South Saskatchewan River	
Water Body Type:	River	
Watershed:	Upper South Saskatchewan	
Stakeholders:	PPWB	
Site Overview:	<p>The South Saskatchewan River originates at the confluence of Bow and Oldman rivers, approximately 30 km west of Medicine Hat, Alberta. The South Saskatchewan River is regulated downstream of Alberta-Saskatchewan boundary by the Gardiner Dam and upstream of the border by numerous irrigation and reservoirs along the Oldman and Bow rivers. Irrigation is the major consumptive use of water within the basin, and nutrient enrichment from municipal sewage has been an historical problem. In 2011, Calgary completed WWTP upgrades. The PPWB water quality monitoring site on the South Saskatchewan River is located on highway 41 in Alberta. Trends are decreasing in this river for TP and TDP although nitrogen constituents show a stable to increasing trend. The dissolved ions (Na, Cl, SO₄) also show an increasing trend.</p>	
Ice Cover sampling location:	<p>Sampling one kilometre upstream from bridge on secondary road used for campers and picnickers. Sampled 20 metres from the south shore near cobble beach. Sampling carried out at this site when ice-covered</p>	
Open water sampling location:	<p>Sampling is carried out from bridge. The field lab is parked on the north side of the Hwy 41 bridge. Equipment is carried 250m to the</p>	

	sampling site on the bridge. Sampling takes place approximately 150m from the northern edge of the bridge on the downstream side.	
Station Established:	January 28, 1970	
Period of Record:	January 1970 – current (in ACBIS database from 1968)	
Data Located:	ACBIS	964 samples (January 2024)
Station Type:	PPWB	
Frequency of Observations:	Monthly	

¹Data listing of water quality monitoring stations

²Water Survey of Canada

³<http://www.ecozones.ca/english/zone/index.html>

Site Status

Nutrients	2013	2018	Major Ions	2013	2018	Physicals	2013	2018
Ammonia Dissolved	↓	↔	Chloride Dissolved	↑	↑	Oxygen Dissolved	↔	↔
Nitrate as N	↔	↑	Fluoride Dissolved	↑	↔	pH – Field	↑	↑
Nitrogen Total	↑	↔	Sodium Dissolved/Filtered	↑	↑	Sodium Adsorption Ratio (SAR)	↑	↑
Phosphorous Total	↓	↓	Sulphate Dissolved	↑	↑	Total Suspended Solids (TSS)	↓	↔
Phosphorous Total Dissolved	↓	↓	Total Dissolved Solids (TDS)	↑	↑			

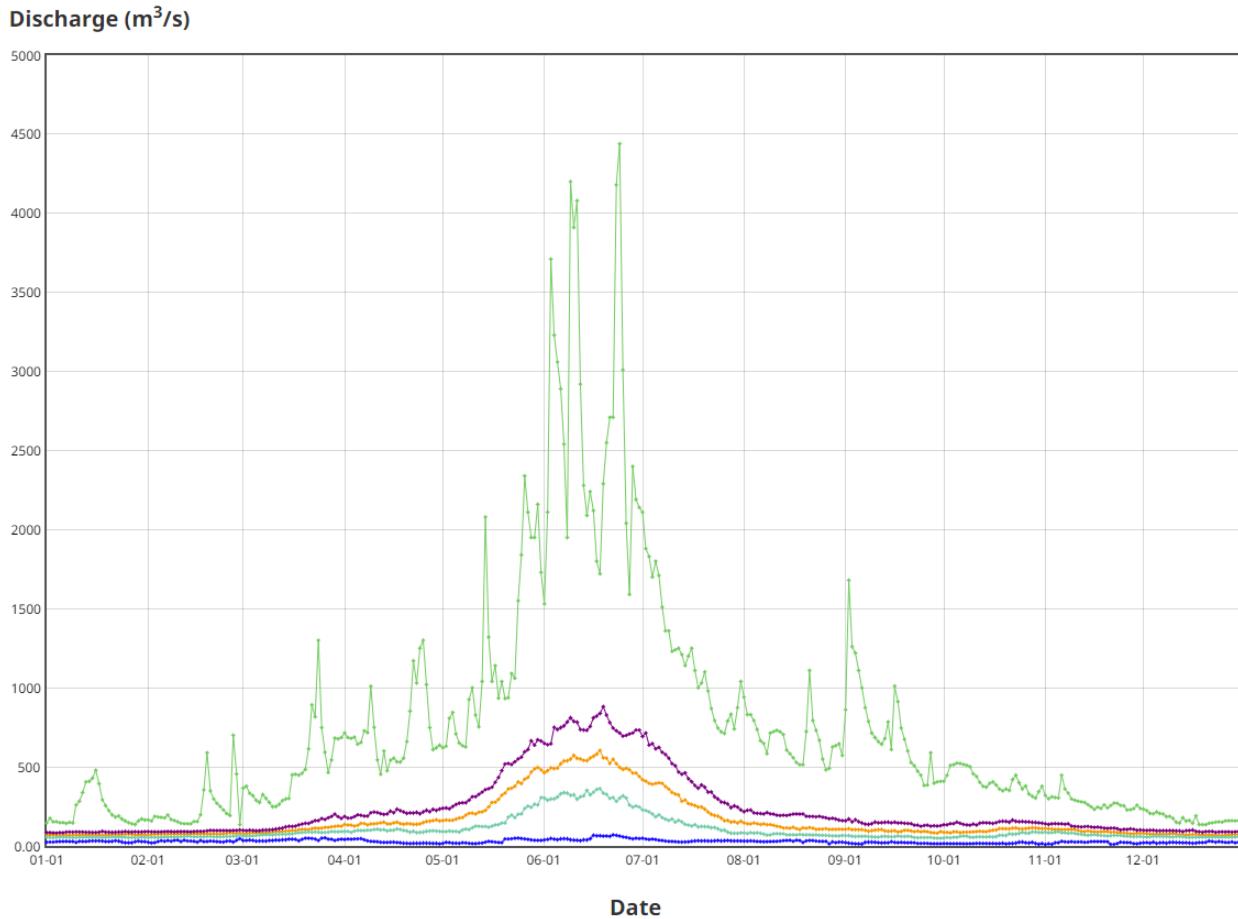
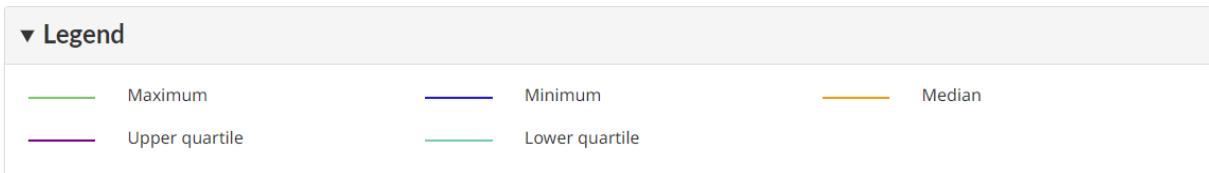
Metals	2013	2018	Metals	2013	2018	Metals	2013	2018
Aluminum Dissolved	↔	↔	Cobalt Dissolved	↔	↔	Nickel Dissolved	↔	↑
Aluminum Total	↓	↔	Cobalt Total	↓	↔	Nickel Total	↓	↔
Arsenic Dissolved	↓	↓	Copper Dissolved	↔	↔	Selenium Dissolved	↑	↔
Arsenic Total	↓	↔	Copper Total	↔	↔	Selenium Total	↑	↔
Barium Dissolved	↔	↑	Iron Dissolved	↑	↔	Silver Dissolved	↔	↔
Barium Total	↔	↑	Iron Total	↓	↔	Silver Total	↔	↔
Beryllium Dissolved	↔	↔	Lead Dissolved	↔	↓	Thallium Dissolved	↑	↔
Beryllium Total	NA	↔	Lead Total	↓	↔	Thallium Total	↔	↑
Boron Dissolved	↔	↓	Lithium Dissolved	↔	↔	Uranium Dissolved	↔	↔
Boron Total	↔	↓	Lithium Total	↔	↔	Uranium Total	↔	↑
Cadmium Dissolved	↑	↑	Manganese Dissolved	↔	↔	Vanadium Dissolved	↓	↓
Cadmium Total	↔	↑	Manganese Total	↓	↔	Vanadium Total	↓	↔
Chromium Dissolved	↑	↑	Molybdenum Dissolved	↓	↓	Zinc Dissolved	↑	↔
Chromium Total	↔	↔	Molybdenum Total	↓	↓	Zinc Total	↔	↔

Typical range (minimum-maximum) in field observations and bacterial values:

Current (2009-2019)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance ($\mu\text{S}/\text{cm}$)	<i>E.Coli</i> (cfu/dL)	Fecal Coliform (cfu/dL)
<i>Winter (Dec-Feb)</i>	10.7-16.4	7.1-8.9	4-23	319-690	<2-14	<2-25
<i>Spring (Mar-May)</i>	8.6-15.0	7.5-9.0	4-424	324-661	<2-119	<2-1600
<i>Summer (Jun-Aug)</i>	7.7-9.8	7.8-9.3	6-1866	303-469	<2-1570	<2-6367
<i>Fall (Sep-Nov)</i>	8.8-14.7	7.9-9.0	3-160	360-558	<2-338	<2-469

Past (1989-2008)	DO	pH	Turbidity	Spec Cond	Total Coliform	Fecal Coliform
<i>Winter (Dec-Feb)</i>	6.2-16.1	7.6-9.0	2-311	357-642	20-600	<2-130
<i>Spring (Mar-May)</i>	6.5-15.9	7.5-9.2	3-281	315-563	<2-1083	<2-50
<i>Summer (Jun-Aug)</i>	5.8-10.5	7.7-9.0	3-1448	274-475	<2-4066	<2-8334
<i>Fall (Sep-Nov)</i>	6.8-14.0	7.8-8.9.0	2-350	283-492	<2-1564	<2-228

Hydrometric Graphs (Water Survey of Canada, 1911-2021)



Hydrometric Data Website

https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=01&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Graph&stn=05AJ001&dataType=Daily¶meterType=Flow&year=2021

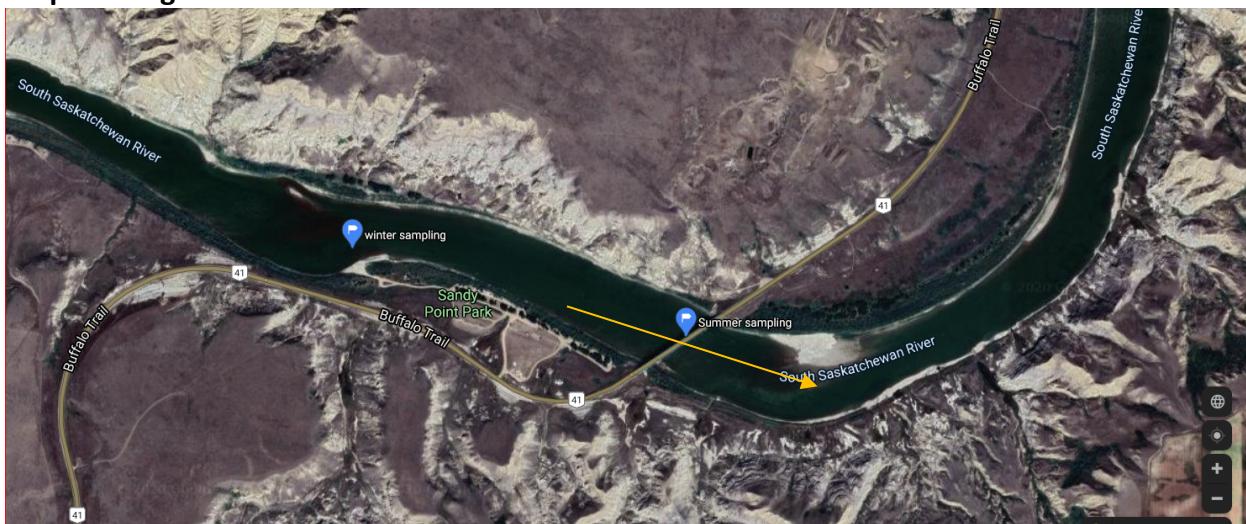
Maps & Diagrams

Figure 1. Satellite imagery of the sampling locations for the South Saskatchewan River. North is at the top of the image. Direction of flow in this image from northwest to southeast and is depicted using the arrow.



Figure 2. South Saskatchewan R., upstream view downstream from the approach to the bridge



Figure 3. South Saskatchewan R., looking downstream

Parameters Monitored

Note, spelling of parameter names purposely match the spelling in the database.

Field

Parameter	Years monitored
SPECIFIC CONDUCTANCE (FIELD)	1972-2019 ongoing
TEMPERATURE WATER (FIELD)	1968-2019 ongoing
TURBIDITY (FIELD)	1977, 1979-2019 ongoing
OXYGEN DISSOLVED	1974-2019 ongoing
PH (FIELD)	1972-2019 ongoing
COLIFORMS FECAL	1974-2019 ongoing
COLIFORMS TOTAL	1974-2006
E. COLI	1998-2019 ongoing
FECAL STREPTOCOCCI	1974

Physicals

Parameter	Years monitored
ALKALINITY GRAN CACO3	2006-2015
ALKALINITY PHENOLPHTHALEIN CACO3	1970-2015
ALKALINITY TOTAL CACO3	1968-2019 ongoing
COLOUR APPARENT	1968-1981
COLOUR TRUE	1981-2005
ODOUR THRESHOLD NUMBER	1974-1978
PH (LAB)	1968-2019 ongoing
RESIDUE FILTERABLE	1979
RESIDUE FIXED FILTERABLE	1979
RESIDUE FIXED NONFILTRABLE	1970-1972, 1974-2019 ongoing
RESIDUE NONFILTRABLE	1970-1972, 1974-2019 ongoing
SPECIFIC CONDUCTANCE (LAB)	1968-2019 ongoing
TEMPERATURE WATER (LAB)	1968-2006
TURBIDITY (LAB)	1968-2019 ongoing

Nutrients (Carbon, Nitrogen, Phosphorus)

Parameter	Years monitored
AMMONIA DISSOLVED	1970, 1987-2019 ongoing
AMMONIA TOTAL	1974, 1981-1987
AMMONIA UN-IONIZED (CALCD.)	1986-2019 ongoing
CARBON DISSOLVED INORGANIC	1978-1980
CARBON DISSOLVED ORGANIC	1978-2019 ongoing
CARBON PARTICULATE ORGANIC	1977-2019 ongoing
CARBON TOTAL INORGANIC	1970-1978
CARBON TOTAL ORGANIC	1970-1978
CARBON TOTAL ORGANIC (CALCD.)	1980-1982, 1984-2019 ongoing
NITROGEN DISSOLVED NO ₃ & NO ₂	1968-2019 ongoing
NITROGEN PARTICULATE	1977-2019 ongoing
NITROGEN TOTAL (CALCD.)	1977-2019 ongoing
NITROGEN TOTAL DISSOLVED	1975-2019 ongoing
NITROGEN TOTAL KJELDAHL	1973-1978
PHOSPHATE DISSOLVED INORGANIC	1970-1972
PHOSPHATE DISSOLVED ORTHO	1970-1972, 1981-1990
PHOSPHATE TOTAL INORGANIC	1970
PHOSPHOROUS DISSOLVED ORTHO	1990-2019 ongoing
PHOSPHOROUS PARTICULATE (CALCD.)	1975-2019 ongoing
PHOSPHOROUS TOTAL	1968-2019 ongoing
PHOSPHOROUS TOTAL DISSOLVED	1975-2019 ongoing
PHOSPHOROUS TOTAL INORGANIC	1977

Major Ions

Parameter	Years monitored
BICARBONATE (CALCD.)	1980-1982, 1985-2019 ongoing
BROMIDE	2016-2017
CALCIUM DISSOLVED/FILTERED	1968-2019 ongoing
CARBONATE (CALCD.)	1980-1982, 1985-2019 ongoing
CHLORIDE DISSOLVED	1968-2019 ongoing
FLUORIDE DISSOLVED	1968-2019 ongoing
FREE CO ₂ (CALCD.)	1985-2019 ongoing
HARDNESS NON-CARB. (CALCD.)	1985-2019 ongoing
HARDNESS TOTAL (CALCD.) CACO ₃	1980-1982, 1985-2019 ongoing
HARDNESS TOTAL CACO ₃	1968-1975
HARDNESS TOTAL LAB (CALCD.) CACO ₃	1975-1978
HYDROXIDE (CALCD.)	1985-2019 ongoing
MAGNESIUM DISSOLVED/FILTERED	1975-2019 ongoing
POTASSIUM DISSOLVED/FILTERED	1968-2019 ongoing

SATURATION INDEX (CALCD.)	1985-2019 ongoing
SILICA REACTIVE	1968-1990
SIO2	1990-2019 ongoing
SODIUM ADSORPTION RATIO (CALCD.)	2000-2019 ongoing
SODIUM DISSOLVED/FILTERED	1968-2019 ongoing
SODIUM PERCENTAGE (CALCD.)	1985-2019 ongoing
STABILITY INDEX (CALCD.)	1985-2019 ongoing
SULPHATE DISSOLVED	1968-2019 ongoing
SULPHIDE DISSOLVED	1986
TOTAL DISSOLVED SOLIDS (CALCD.)	1980-1982, 1985-2019 ongoing

Metals

Parameter	Years monitored
ALUMINUM DISSOLVED	1984-2019 ongoing
ALUMINUM EXTRACTABLE	1971-1993
ANTIMONY DISSOLVED	2003-2019 ongoing
ANTIMONY EXTRACTABLE	1971-1973
ANTIMONY TOTAL	2003-2019 ongoing
ARSENIC DISSOLVED	1971-1990, 2003-2019 ongoing
ARSENIC TOTAL	2000-2019 ongoing
BARIUM DISSOLVED	1999-2019 ongoing
BARIUM EXTRACTABLE	1971-1980, 1984
BARIUM TOTAL	1983-2019 ongoing
BARIUM TOTAL RECOVERABLE	1980-1983
BERYLLIUM DISSOLVED	1999-2019 ongoing
BERYLLIUM TOTAL	1997-2019 ongoing
BISMUTH DISSOLVED	2003-2019 ongoing
BISMUTH TOTAL	2003-2019 ongoing
BORON DISSOLVED	1973-1990, 1992-2019 ongoing
BORON TOTAL	1997-1978, 2003-2019 ongoing
CADMİUM DISSOLVED	1999-2019 ongoing
CADMİUM EXTRACTABLE	1971-1980
CADMİUM TOTAL	1983-2019 ongoing
CADMİUM TOTAL RECOVERABLE	1980-1983
CERIUM DISSOLVED	2014-2019 ongoing
CERIUM TOTAL	2014-2019 ongoing
CESIUM DISSOLVED	2014-2019 ongoing
CESIUM TOTAL	2014-2019 ongoing
CHROMIUM DISSOLVED	1999-2019 ongoing
CHROMIUM EXTRACTABLE	1971-1984
CHROMIUM TOTAL	1983-2019 ongoing
COBALT DISSOLVED	1999-2019 ongoing

COBALT EXTRACTABLE	1971-1975, 1978-1980
COBALT TOTAL	1983-2019 ongoing
COBALT TOTAL RECOVERABLE	1980-1983
COPPER DISSOLVED	1970-1972, 1999-2019 ongoing
COPPER EXTRACTABLE	1970-1980
COPPER TOTAL	1983-2019 ongoing
COPPER TOTAL RECOVERABLE	1980-1983
EUROPIUM DISSOLVED	2019 ongoing
EUROPIUM TOTAL	2019 ongoing
GADOLINIUM DISSOLVED	2019 ongoing
GADOLINIUM TOTAL	2019 ongoing
GALLIUM DISSOLVED	2003-2019 ongoing
GALLIUM TOTAL	2003-2019 ongoing
GERMANIUM DISSOLVED	2019 ongoing
GERMANIUM TOTAL	2019 ongoing
HAFNIUM DISSOLVED	2019 ongoing
HAFNIUM TOTAL	2019 ongoing
HOLMIUM DISSOLVED	2019 ongoing
HOLMIUM TOTAL	2019 ongoing
INDIUM DISSOLVED	2019 ongoing
INDIUM TOTAL	2019 ongoing
IRIDIUM DISSOLVED	2019 ongoing
IRIDIUM TOTAL	2019 ongoing
IRON DISSOLVED	1970-1972, 1980-2019 ongoing
IRON EXTRACTABLE	1971-1980
IRON TOTAL	1997-2019 ongoing
LANTHANUM DISSOLVED	2003-2019 ongoing
LANTHANUM TOTAL	2003-2019 ongoing
LEAD DISSOLVED	1970-1972, 1999-2019 ongoing
LEAD EXTRACTABLE	1970-1980
LEAD TOTAL	1983-2019 ongoing
LEAD TOTAL RECOVERABLE	1980-1983
LITHIUM DISSOLVED	1999-2019 ongoing
LITHIUM EXTRACTABLE	1971-1973
LITHIUM TOTAL	1997-2019 ongoing
LUTETIUM DISSOLVED	2019 ongoing
LUTETIUM TOTAL	2019 ongoing
MANGANESE DISSOLVED	1970-1972, 1980-2019 ongoing
MANGANESE EXTRACTABLE	1970-1980
MANGANESE TOTAL	1997-2019 ongoing
MERCURY EXTRACTABLE	1973-1979
MERCURY TOTAL	1979-1999
MOLYBDENUM DISSOLVED	1999-2019 ongoing

MOLYBDENUM EXTRACTABLE	1971-1974
MOLYBDENUM TOTAL	1997-2019 ongoing
NEODYMIUM DISSOLVED	2019 ongoing
NEODYMIUM TOTAL	2019 ongoing
NICKEL DISSOLVED	1999-2019 ongoing
NICKEL EXTRACTABLE	1971-1975, 1979-1980
NICKEL TOTAL	1983-2019 ongoing
NICKEL TOTAL RECOVERABLE	1980-1983
NIOBIUM DISSOLVED	2014-2019 ongoing
NIOBIUM TOTAL	2014-2019 ongoing
PLATINUM DISSOLVED	2014-2019 ongoing
PLATINUM TOTAL	2014-2019 ongoing
PRASEODYMIUM DISSOLVED	2019 ongoing
PRASEODYMIUM TOTAL	2019 ongoing
RUBIDIUM DISSOLVED	2003-2019 ongoing
RUBIDIUM TOTAL	2003-2019 ongoing
RUTHENIUM DISSOLVED	2019 ongoing
RUTHENIUM TOTAL	2019 ongoing
SAMARIUM DISSOLVED	2019 ongoing
SAMARIUM TOTAL	2019 ongoing
SCANDIUM DISSOLVED	2019 ongoing
SCANDIUM TOTAL	2019 ongoing
SELENIUM DISSOLVED	1974-1990, 2003-2019 ongoing
SELENIUM TOTAL	2000-2019 ongoing
SILVER DISSOLVED	2003-2019 ongoing
SILVER EXTRACTABLE	1971-1979
SILVER TOTAL	1999-2019 ongoing
STRONTIUM DISSOLVED	1999-2019 ongoing
STRONTIUM EXTRACTABLE	1971-1974
STRONTIUM TOTAL	1997-2019 ongoing
TELLURIUM DISSOLVED	2019 ongoing
TELLURIUM TOTAL	2019 ongoing
TERBIUM DISSOLVED	2019 ongoing
TERBIUM TOTAL	2019 ongoing
THALLIUM DISSOLVED	2003-2019 ongoing
THALLIUM EXTRACTABLE	1971-1973
THALLIUM TOTAL	2003-2019 ongoing
TIN DISSOLVED	2014-2019 ongoing
TIN TOTAL	2014-2019 ongoing
TITANIUM DISSOLVED	2016-2019 ongoing
TITANIUM TOTAL	2016-2019 ongoing
TUNGSTEN DISSOLVED	2014-2019 ongoing
TUNGSTEN TOTAL	2014-2019 ongoing

URANIUM DISSOLVED	2003-2019 ongoing
URANIUM TOTAL	2003-2019 ongoing
VANADIUM DISSOLVED	1999-2019 ongoing
VANADIUM EXTRACTABLE	1971-1973, 1975-1980
VANADIUM TOTAL	1983-2019 ongoing
VANADIUM TOTAL RECOVERABLE	1980-1983
YTTERBIUM DISSOLVED	2019 ongoing
YTTERBIUM TOTAL	2019 ongoing
YTTRIUM- DISSOLVED	2014-2019 ongoing
YTTRIUM TOTAL	2014-2019 ongoing
ZINC DISSOLVED	1970-1972, 1999-2019 ongoing
ZINC EXTRACTABLE	1970-1980
ZINC TOTAL	1983-2019 ongoing
ZINC TOTAL RECOVERABLE	1980-1983
ZIRCONIUM DISSOLVED	2019 ongoing
ZIRCONIUM TOTAL	2019 ongoing

Acid Herbicides

Parameter	Years monitored
2-(2,4-DICHLOROPHOXY)-PROPIONIC ACID	2006, 2010-2011, 2013-2019 ongoing
2,3,6-TBA	1985-1992, 2006, 2010-2011, 2013-2017
2,4,5-T	1972-1992, 2006, 2010-2011, 2013-2019 ongoing
2,4-D	1972-1992, 2006, 2010-2011, 2013-2019 ongoing
2,4-DB	1972-1992, 2006, 2010-2011, 2013-2017
ACIFLUORFEN	2014, 2019 ongoing
BROMOXYNIL	1988-1992, 2006, 2010-2011, 2013-2019 ongoing
CLOPYRALID	2006, 2010-2011, 2013-2019 ongoing
DICAMBA	1985-1992, 2006, 2010-2011, 2013-2019 ongoing
DICHLORPROP	1972-1992
DINOSEB	2018-2019 ongoing
FENOPROP (SILVEX)	1978-1992
FOMESAFEN	2014, 2019 ongoing
IMAZAMETHABENZ-METHYL (A)	2006, 2010-2011, 2013-2019 ongoing
IMAZAMETHABENZ-METHYL (B)	2006, 2010-2011, 2013-2015
IMAZAMOX	2016-2019 ongoing
IMAZAPYR	2016-2019 ongoing
IMAZETHAPYR	2006, 2010-2011, 2013-2019 ongoing
MCPA	1973-1992, 2006, 2010-2011, 2013-2019 ongoing
MCPB	1985-1992, 2006, 2010-2011, 2013-2017
MECOPROP (MCPP)	2006, 2010-2011, 2013-2019 ongoing
PICLORAM	1974-1992, 2006, 2010-2011, 2013-2019 ongoing
SILVEX	2006, 2010-2011, 2013-2019 ongoing

TRICLOPYR	2015-2019 ongoing
-----------	-------------------

Neutral Herbicides

Parameter	Years monitored
ATRAZINE	2006, 2010-2011, 2014, 2018 ongoing
ATRAZINE TOTAL	1985-1992
BENZOYLPROP-ETHYL	1985-1992, 2006, 2010-2011, 2014, 2018 ongoing
BUTYRATE	2006, 2010-2011, 2014, 2018 ongoing
DESETHYL ATRAZINE	2006, 2010-2011, 2014, 2018 ongoing
D-ETHYL SIMAZINE	2006, 2010-2011, 2014, 2018 ongoing
DIALLATE	1985-1992
DIALLATE I	2006, 2010-2011, 2014, 2018 ongoing
DIALLATE II	2006, 2010-2011, 2014, 2018 ongoing
DICLOFOP-METHYL	1985-1992, 2006, 2010, 2014, 2018 ongoing
ETHALFLURALIN	2006, 2010-2011, 2014, 2018 ongoing
FENOXAPROP-P-ETHYL	2010, 2014, 2018 ongoing
METOLACHLOR	2006, 2010-2011, 2014, 2018 ongoing
METRIBUZIN	2006, 2010-2011, 2014, 2018 ongoing
SIMAZINE	2006, 2010-2011, 2014, 2018 ongoing
TRIALLATE	1985-1992, 2006, 2010-2011, 2014, 2018 ongoing
TRIFLURALIN	1974-1977, 1979, 1985-1992, 2006, 2010-2011, 2014, 2018 ongoing

Organochlorine

Parameter	Years monitored
ALDRIN	1971-1992, 2006, 2010-2011, 2014
ALPHA-BENZENEHEXACHLORIDE	1975-1992, 2006, 2010-2011, 2014, 2018 ongoing
ALPHA-CHLORDANE	1975-1992, 2006, 2010-2011, 2014, 2018 ongoing
ALPHA-ENDOSULFAN	1971-1992, 2006, 2010-2011, 2014, 2018 ongoing
BETA-ENDOSULFAN	1971-1992, 2006, 2010-2011, 2014, 2018 ongoing
BETA-HCH	2006, 2010-2011, 2014
CIS-NONACHLOR	2006, 2010-2011, 2014
DIELDRIN	1971-1992, 2006, 2010-2011, 2014, 2018 ongoing
ENDOSULFAN SULPHATE TOTAL	2018 ongoing
ENDRIN	1975-1992, 2006, 2010-2011, 2014
GAMMA-BHC (LINDANE)	1971-1992, 2006, 2010-2011, 2014, 2018 ongoing
GAMMA-CHLORDANE	1975-1992, 2006, 2010-2011, 2014, 2018 ongoing
HEPTACHLOR	1971-1992, 2006, 2010-2011, 2014
HEPTACHLOR EPOXIDE	1971-1992, 2006, 2010-2011, 2014
HEXACHLOROBENZENE	1978-1992, 2006, 2010-2011, 2014, 2018 ongoing
HEXACHLOROBUTADIENE	2006, 2010-2011, 2014, 2018 ongoing

METHOXYCHLOR (P,P'-METHOXYCHLOR).	1971-1992, 2006, 2010-2011, 2014
MIREX	1978-1992, 2006, 2010-2011, 2014, 2018 ongoing
O,P'-DDD	2006, 2010-2011, 2014
O,P'-DDE	2006, 2010-2011, 2014
O,P'-DDT	1978-1992, 2006, 2010-2011, 2014, 2018 ongoing
OXYCHLORDANE	2006, 2010-2011, 2014
P,P'-DDD (TDP)	1971-1992, 2006, 2010-2011, 2014
P,P'-DDE	1971-1992, 2006, 2010-2011, 2014, 2018 ongoing
P,P'-DDT	1971-1992, 2006, 2010-2011, 2014, 2018 ongoing
PENTACHLOROANISOLE	2006, 2010-2011, 2014
PENTACHLOROBENZENE	2006, 2010-2011, 2014, 2018 ongoing
TRANS-NONACHLOR	2006, 2010-2011, 2014, 2018 ongoing

Glyphosate

Parameter	Years monitored
AMPA	2014, 2018-2019 ongoing
GLUFOSINATE	2014, 2018-2019 ongoing
GLYPHOSATE	2014, 2018-2019 ongoing

Sulfonyl Ureas

Parameter	Years monitored
BENSULFURON	2014
CHLORIMURON-ETHYL	2014
CHLORSULFURON	2014
CLOMAZONE	2014
DIURON	2014
FLUMETSULAM	2014
FORAMSULFURON	2014
LINURON	2014
METSULFURON-METHYL	2014
NICOSULFURON	2014
PRIMISULFURON-METHYL	2014
PROSULFURON	2014
RIMSULFURON	2014
THIFENSULFURON	2014
TRIBENURON METHYL	2014

Neonicotinoids

Parameter	Years monitored
ACETAMIPRID	2014, 2017

CLOTHIANIDIN	2014, 2017
DINOTEFURAM	2014, 2017
FLONICAMID	2017
FLUPYRADIFURONE	2017
IMIDACLOPRID	2014, 2017
THIACLOPRID	2014, 2017
THIAMETHOXAM	2014, 2017

Carbamates

Parameter	Years monitored
ALDICARB	2014
BARBAN	1974-1977, 1985-1992
CARBARYL	2014
CARBOFURAN	2014
METALAXYL	2014
METHOMYL	2014
OXAMYL	2014
PIRIMICARB	2014

Organophosphates

Parameter	Years monitored
AZINPHOS ETHYL	1986
AZINPHOS METHYL (GUTHION)	1986
CARBOPHENOTHION	1986
CRUFOMATE	1986
DIAZINON	1986
DIMETHOATE	1985-1987
DISULFOTON	1986
ETHION	1986
FENCHLORPHOS	1986
MALATHION	1985-1987
PARATHION	1986
PARATHION METHYL	1986
PHOSMET (IMIDAN)	1986
PHORATE	1986

Phenols

Parameter	Years monitored
2,3,4,5-TETRACHLOROPHENOL	1989-1995
2,3,4,6-TETRACHLOROPHENOL	1989-1995

2,3,4-TRICHLOROPHENOL	1989-1995
2,3,5,6-TETRACHLOROPHENOL	1989-1995
2,3,5-TRICHLOROPHENOL	1989-1995
2,3,6-TRICHLOROPHENOL	1989-1995
2,3-DICHLOROPHENOL	1989-1995
2,4,5-TRICHLOROPHENOL	1989-1995
2,4,6-TRICHLOROPHENOL	1989-1995
2,4-DICHLOROPHENOL	1989-1995
2,6-DICHLOROPHENOL	1989-1995
2-CHLORO-5-METHYLPHENOL	1989-1995
2-CHLOROPHENOL	1989-1995
3,4,5-TRICHLOROPHENOL	1989-1995
3,4-DICHLOROPHENOL	1989-1995
3,5-DICHLOROPHENOL	1989-1995
3-CHLOROPHENOL	1989-1995
4-CHLORO-3-METHYLPHENOL	1989-1995
4-CHLOROPHENOL	1989-1995
PENTACHLOROPHENOL	1989-1995
PHENOLIC MATERIAL	1973-1990

Polyaromatic Hydrocarbons

Parameter	Years monitored
1,2,3,4-TETRAHYDRONAPHTHALENE	1989
1-METHYLNAPHTHALENE	1989
2-CHLORONAPHTHALENE	1989
2-METHYLNAPHTHALENE	1989
ACENAPHTHENE	1989
ACENAPHTHYLENE	1989
BENZO(A)PYRENE	1989
BENZO(B)FLUORANTHENE	1989
BENZO(G,H,I)PERYLENE	1989
BENZO(K)FLUORANTHENE	1989
FLUORANTHENE	1989
FLUORENE	1989
INDENE	1989
INDENO(1,2,3-C,D)PYRENE	1989
PHENANTHRENE	1989
PYRENE	1989

Aroclors

Parameter	Years monitored
AROCLOR	1980-1992
AROCLOR 1242	1981-1983
AROCLOR 1248	1973-1981
AROCLOR 1254	1973-1983
AROCLOR 1260	1973-1983

Other Parameters

Parameter	Years monitored
AROMATIC HYDROCARBONS	1974-1982
BETA RADIATION TOTAL	1975-1976
CHLOROPHYLL A	1973-1990, 2017-2019 ongoing
CHLOROPHYLL A (CORRECTED)	2017-2019 ongoing
CYANIDE TOTAL	1974-1990
DISCHARGE DAILY MEAN	1968-1978
DISCHARGE MONTHLY MEAN	1968-1978
N-ALKANES C10 – C26	1974-1982
N-ALKYL SULPHONATES (LAS)	1974-1981
NITRILOTRIACETIC ACID – NTA	1975-1978
OIL AND GREASE	1974-1981
OXYGEN BIOCHEMICAL DEMAND	1974-1979
RADIUM RADIATION TOTAL RA-226	1975-1976
STD. PLATE COUNT 35DEG.C BACT. DENS.	1974
STRONTIUM RADIATION TOTAL 90	1975

Assiniboine River below Kamsack

Station Name:	Assiniboine River below Kamsack			
Station Number:	SA05MD0002			
Naqudat¹ Number:	00SA05MD0002			
WSC² Reference Number:	05MD004			
WSC Period of Record:	<i>1944-1955 (open water)</i> <i>1956 – current</i> <i>(continuous)</i>	Active		
Project Number:	115 (historically 315)			
Sampling Site Open Water:	Latitude: 51°31'57.69"N	Longitude: 101°52'38.34"W		
Sampling Site Ice Cover:	Latitude: 51°31'57.54"N	Longitude: 101°52'40.04"W		
Drainage Area:	13000 km ²			
Effective Drainage Area:	4320 km ²			
Ecozone³:	Boreal Plains			
Ecoregion³:	Boreal Transition			
Water Body:	Assiniboine River			
Water Body Type:	River			
Watershed:	Assiniboine			
Stakeholder:	PPWB			
Site Overview:	<p>The Assiniboine River originates in the southeastern region of Porcupine Provincial Forest, some 54 km northwest from the Town of Preeceville in northeast central Saskatchewan. The river flows in a southeasterly direction for about 147 km before being joined by its major tributary, the Whitesand River, near Kamsack, Saskatchewan. The river then continues in a southeasterly direction for some 45 km before crossing into Manitoba. The river flows into Lake of the Prairies, a reservoir formed behind Shellmouth Dam. While Shellmouth Dam is in Manitoba, the reservoir extends into Saskatchewan.</p> <p>Trends are increasing for nitrogen constituents. The dissolved ions all show an increasing trend.</p>			
Sampling location:	<p>Sampling location is at bridge on Highway 8, approximately 2km south of Kamsack, Saskatchewan. During open water, samples are collected on downstream side of bridge. During winter, samples are collected approximately 20 m upstream.</p>			
Station Established:	January 1957			
Period of Record:	1957 -	present		
Period of Record in ACBIS:	1968 – present	826 Samples (January 2024)		
Station Type:	Network PPWB			
Frequency of Observations:	Monthly			

¹Data listing of water quality monitoring stations

²Water Survey of Canada

³<http://www.ecozones.ca/english/zone/index.html>

Site Status

Nutrients	2013	2018	Major Ions	2013	2018	Physicals	2013	2018
Ammonia Dissolved	↑	↑	Chloride Dissolved	↑	↑	Oxygen Dissolved	↓	↓
Nitrate as N	↔	↔	Fluoride Dissolved	↑	↔	pH – Field	↑	↑
Nitrogen Total	↑	↑	Sodium Dissolved/Filtered	↑	↑	Sodium Adsorption Ratio (SAR)	↑	↑
Phosphorous Total	↔	↔	Sulphate Dissolved	↑	↑	Total Suspended Solids (TSS)	↑	↑
Phosphorous Total Dissolved	↔	↓	Total Dissolved Solids (TDS)	↑	↑			

Metals	2013	2018	Metals	2013	2018	Metals	2013	2018
Aluminum Dissolved	↓	↓	Cobalt Dissolved	↔	↔	Nickel Dissolved	↔	↑
Aluminum Total	↔	↔	Cobalt Total	↔	↑	Nickel Total	↔	↑
Arsenic Dissolved	↔	↔	Copper Dissolved	↑	↑	Selenium Dissolved	↑	↑
Arsenic Total	↔	↓	Copper Total	↔	↑	Selenium Total	↑	↑
Barium Dissolved	↑	↑	Iron Dissolved	↔	↔	Silver Dissolved	NA	NA
Barium Total	↔	↑	Iron Total	↔	↔	Silver Total	↔	↔
Beryllium Dissolved	↑	↔	Lead Dissolved	↓	↓	Thallium Dissolved	↑	↑
Beryllium Total	↑	↑	Lead Total	↔	↔	Thallium Total	↑	↑
Boron Dissolved	↔	↔	Lithium Dissolved	↑	↑	Uranium Dissolved	↑	↑
Boron Total	↔	↔	Lithium Total	↑	↔	Uranium Total	↑	↑
Cadmium Dissolved	↓	↓	Manganese Dissolved	↑	↔	Vanadium Dissolved	↔	↔
Cadmium Total	↔	↔	Manganese Total	↑	↔	Vanadium Total	↔	↔
Chromium Dissolved	↔	↓	Molybdenum Dissolved	↔	↔	Zinc Dissolved	↓	↓
Chromium Total	↔	↑	Molybdenum Total	↓	↔	Zinc Total	↔	↑

Typical range (minimum-maximum) in field observations and bacterial values:

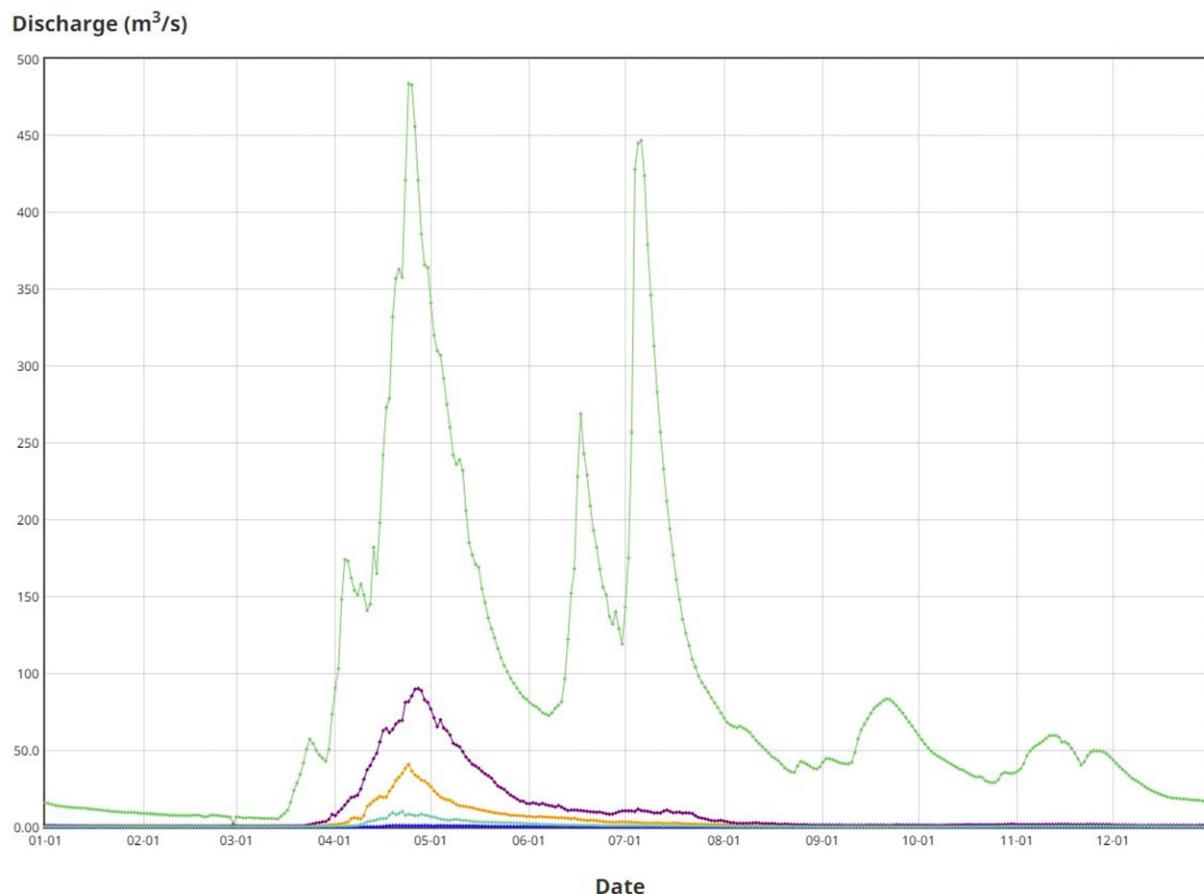
Current (2009-2019)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance (µS/cm)	E.Coli (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	1.3-11.4	6.6-8.0	6 -21	331-1782	<2-269	<2-82
Spring (Mar-May)	2.0-13.6	7.2-8.7	6-235	420-1560	<2-1200	<2-381
Summer (Jun-Aug)	5.2-10.6	7.7-8.6	12-90	704-1384	<10-1800	<2-230
Fall (Sep-Oct)	6.7-14.3	7.8-8.7	5-55	592-1536	<2-1850	<2-970

Past (1989-2009)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance ($\mu\text{S}/\text{cm}$)	<i>E.Coli</i> (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	1.9-13.9	7.0-9.0	4-17	953-1548	8-4277	2-5200
Spring (Mar-May)	0.1-16.1	7.0-8.6	4-58	330-1384	<2-3862	<2-667
Summer (Jun-Aug)	2.8-13.0	7.3-8.7	9-80	547-1684	3-25000	<2-273
Fall (Sep-Oct)	5.9-17.9	7.2-8.8	4-38	337-2141	2-7500	<2-354

Hydrometric Graphs (Water Survey of Canada, 1944-2021)

▼ Legend

- | | | |
|----------------|----------------|--------|
| Maximum | Minimum | Median |
| Upper quartile | Lower quartile | |



Hydrometric Data Website

[https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=1&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Grap h&stn=05MD004&dataType=Daily¶meterType=Flow&year=2021](https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=1&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Graph&stn=05MD004&dataType=Daily¶meterType=Flow&year=2021)

Maps & Diagrams

Figure 1. Satellite imagery of the sampling locations for the Assiniboine R. North is at the top of the image. Direction of flow in this image from west to east and is depicted using the arrow.



Figure 2. Assiniboine R., upstream view



Figure 3. Assiniboine R., downstream view

Parameters Monitored

Note, spelling of parameter names purposely match the spelling in the database.

Sediment Data: 1969-1977, 1978-1979 (not shown but available upon request)

Field

Parameter	Years monitored
COLIFORMS FECAL	1974-2019 ongoing
COLIFORMS TOTAL	1974-2005, 2010-2011
E. COLI	1998-2019 ongoing
FECAL STREPTOCOCCI	1999, 2010-2011, 2015
OXYGEN DISSOLVED	1973-2019 ongoing
PH (FIELD)	1972-2019 ongoing
SPECIFIC CONDUCTANCE (FIELD)	1972-2019 ongoing
TEMPERATURE WATER (FIELD)	1968-1970, 1972-2019 ongoing
TURBIDITY (FIELD)	1979-2019 ongoing

Physicals

Parameter	Years monitored
ALKALINITY GRAN CACO3	2001-2002, 2005-2014
ALKALINITY PHENOLPHTHALEIN CACO3	1968-2014
ALKALINITY TOTAL CACO3	1968-2019 ongoing
COLOUR APPARENT	1968-1981
COLOUR TRUE	1981-2005
ODOUR THRESHOLD NUMBER	1974-1976, 1978
RESIDUE FILTERABLE	1968-1969, 1979
RESIDUE FIXED FILTERABLE	1968-1969, 1979
RESIDUE FIXED NONFILTRABLE	1968-1969, 1971-2019 ongoing
RESIDUE NONFILTRABLE	1968-1969, 1971-2019 ongoing
PH (LAB)	1968-2019 ongoing
SPECIFIC CONDUCTANCE (LAB)	1968-2019 ongoing
TEMPERATURE WATER (LAB)	1968-2001
TURBIDITY (LAB)	1968-2019 ongoing

Nutrients (Carbon, Nitrogen, Phosphorus)

Parameter	Years monitored
AMMONIA DISSOLVED	1968-1971, 1987-2019 ongoing
AMMONIA TOTAL	1970, 1974, 1981-1987
AMMONIA UN-IONIZED (CALCD.)	1986-2019 ongoing
CARBON DISSOLVED INORGANIC	1978-1980

CARBON DISSOLVED ORGANIC	1970, 1978-2019 ongoing
CARBON PARTICULATE ORGANIC	1977-2019 ongoing
CARBON TOTAL INORGANIC	1971-1978
CARBON TOTAL ORGANIC	1968-1978
CARBON TOTAL ORGANIC (CALCD.)	1980-1983, 1985-2019 ongoing
CARBONACEOUS OXYGEN DEMAND BOD10	2016-2019 ongoing
NITROGEN DISSOLVED NO ₃ & NO ₂	1968-2019 ongoing
NITROGEN PARTICULATE	1977-2019 ongoing
NITROGEN TOTAL (CALCD.)	1977-2019 ongoing
NITROGEN TOTAL DISSOLVED	1975-2019 ongoing
NITROGEN TOTAL KJELDAHL	1968-1978
PHOSPHATE DISSOLVED INORGANIC	1969-1970, 1972-1973
PHOSPHATE DISSOLVED ORTHO	1972-1973, 1981-1990
PHOSPHATE TOTAL INORGANIC	1968-1970
PHOSPHOROUS DISSOLVED ORTHO	1990-2019 ongoing
PHOSPHOROUS PARTICULATE (CALCD.)	1975-2019 ongoing
PHOSPHOROUS TOTAL	1968-2019 ongoing
PHOSPHOROUS TOTAL DISSOLVED	1975-2019 ongoing

Major Ions

Parameter	Years monitored
BICARBONATE (CALCD.)	1980-1983, 1985-2019 ongoing
BROMIDE	2015-2017
CALCIUM DISSOLVED/FILTERED	1968-2019 ongoing
CARBONATE (CALCD.)	1980-1983, 1985-2019 ongoing
CHLORIDE DISSOLVED	1968-2019 ongoing
FLUORIDE DISSOLVED	1968-2019 ongoing
FREE CO ₂ (CALCD.)	1985-2019 ongoing
HARDNESS NON-CARB. (CALCD.)	1985-2019 ongoing
HARDNESS TOTAL (CALCD.) CACO ₃	1980-1983, 1985-2019 ongoing
HARDNESS TOTAL CACO ₃	1968-1975
HARDNESS TOTAL LAB (CALCD.) CACO ₃	1975-1978
HYDROXIDE (CALCD.)	1985-2019 ongoing
MAGNESIUM DISSOLVED/FILTERED	1975-2019 ongoing
POTASSIUM DISSOLVED/FILTERED	1968-2019 ongoing
SATURATION INDEX (CALCD.)	1985-2019 ongoing
SILICA REACTIVE	1968-1990
SIO ₂	1990-2019 ongoing
SODIUM ADSORPTION RATIO (CALCD.)	2001-2019 ongoing
SODIUM DISSOLVED/FILTERED	1968-2019 ongoing
SODIUM PERCENTAGE (CALCD.)	1985-2019 ongoing

STABILITY INDEX (CALCD.)	1985-2019 ongoing
SULPHATE DISSOLVED	1968-2019 ongoing
TOTAL DISSOLVED SOLIDS (CALCD.)	1980-1983, 1985-2019 ongoing

Metals

Parameter	Years monitored
ALUMINUM DISSOLVED	1968-1969, 1984-1990, 1992-2019 ongoing
ALUMINUM EXTRACTABLE	1971-1990, 1992-1993
ALUMINUM TOTAL	1993-2019 ongoing
ANTIMONY DISSOLVED	2003-2019 ongoing
ANTIMONY TOTAL	2003-2019 ongoing
ARSENIC DISSOLVED	1971-1990, 2003-2019 ongoing
ARSENIC TOTAL	2000-2019 ongoing
BARIUM DISSOLVED	1971, 1999-2019 ongoing
BARIUM EXTRACTABLE	1972-1980
BARIUM TOTAL	1983-1990, 1992-2019 ongoing
BARIUM TOTAL RECOVERABLE	1980-1983
BERYLLIUM DISSOLVED	1999-2019 ongoing
BERYLLIUM TOTAL	1997-2019 ongoing
BISMUTH DISSOLVED	2003-2019 ongoing
BISMUTH TOTAL	2003-2019 ongoing
BORON DISSOLVED	1972-2019 ongoing
BORON TOTAL	1997-1998, 2003-2019 ongoing
CADMUM DISSOLVED	1971, 1999-2019 ongoing
CADMUM EXTRACTABLE	1971-1980
CADMUM TOTAL	1983-1990, 1992-2019 ongoing
CADMUM TOTAL RECOVERABLE	1980-1983
CERIUM DISSOLVED	2014-2019 ongoing
CERIUM TOTAL	2014-2019 ongoing
CESIUM DISSOLVED	2014-2019 ongoing
CESIUM TOTAL	2014-2019 ongoing
CHROMIUM DISSOLVED	1999-2019 ongoing
CHROMIUM EXTRACTABLE	1971-1983
CHROMIUM TOTAL	1983-1990, 1992-2019 ongoing
COBALT DISSOLVED	1999-2019 ongoing
COBALT EXTRACTABLE	1971-1974, 1978-1980
COBALT TOTAL	1983-1990, 1992-2019 ongoing
COBALT TOTAL RECOVERABLE	1980-1983
COPPER DISSOLVED	1971-1973, 1979, 1999-2019 ongoing
COPPER EXTRACTABLE	1969, 1971-1980
COPPER TOTAL	1983-1990, 1992-2019 ongoing

COPPER TOTAL RECOVERABLE	1980-1983
EUROPIUM DISSOLVED	2019 ongoing
EUROPIUM TOTAL	2019 ongoing
GADOLINIUM DISSOLVED	2019 ongoing
GADOLINIUM TOTAL	2019 ongoing
GALLIUM DISSOLVED	2003-2019 ongoing
GALLIUM TOTAL	2003-2019 ongoing
GERMANIUM DISSOLVED	2019 ongoing
GERMANIUM TOTAL	2019 ongoing
HAFNIUM DISSOLVED	2019 ongoing
HAFNIUM TOTAL	2019 ongoing
HOLMIUM DISSOLVED	2019 ongoing
HOLMIUM TOTAL	2019 ongoing
INDIUM DISSOLVED	2019 ongoing
INDIUM TOTAL	2019 ongoing
IRIDIUM DISSOLVED	2019 ongoing
IRIDIUM TOTAL	2019 ongoing
IRON DISSOLVED	1968-1973, 1979-2019 ongoing
IRON EXTRACTABLE	1968, 1971-1980
IRON TOTAL	1993, 1997-2019 ongoing
LANTHANUM DISSOLVED	2003-2019 ongoing
LANTHANUM TOTAL	2003-2019 ongoing
LEAD DISSOLVED	1971-1972, 1979, 1999-2019 ongoing
LEAD EXTRACTABLE	1971-1980
LEAD TOTAL	1983-1990, 1992-2019 ongoing
LEAD TOTAL RECOVERABLE	1980-1983
LITHIUM DISSOLVED	1999-2019 ongoing
LITHIUM EXTRACTABLE	1972
LITHIUM TOTAL	1997-2019 ongoing
LUTETIUM DISSOLVED	2019 ongoing
LUTETIUM TOTAL	2019 ongoing
MANGANESE DISSOLVED	1968-1972, 1979-2019 ongoing
MANGANESE EXTRACTABLE	1968-1969, 1971-1980
MANGANESE TOTAL	1993, 1997-2019 ongoing
MERCURY EXTRACTABLE	1971-1979
MERCURY TOTAL	1979-1990, 1992-1999
MOLYBDENUM DISSOLVED	1999-2019 ongoing
MOLYBDENUM EXTRACTABLE	1973-1974
MOLYBDENUM TOTAL	1997-2019 ongoing
NEODYMIUM DISSOLVED	2019 ongoing
NEODYMIUM TOTAL	2019 ongoing
NICKEL DISSOLVED	1999-2019 ongoing
NICKEL EXTRACTABLE	1971-1974, 1979-1980

NICKEL TOTAL	1983-1990, 1992-2019 ongoing
NICKEL TOTAL RECOVERABLE	1980-1983
NIOBIUM DISSOLVED	2014-2019 ongoing
NIOBIUM TOTAL	2014-2019 ongoing
PLATINUM DISSOLVED	2014-2019 ongoing
PLATINUM TOTAL	2014-2019 ongoing
PRASEODYMIUM DISSOLVED	2019 ongoing
PRASEODYMIUM TOTAL	2019 ongoing
RUBIDIUM DISSOLVED	2003-2019 ongoing
RUBIDIUM TOTAL	2003-2019 ongoing
RUTHENIUM DISSOLVED	2019 ongoing
RUTHENIUM TOTAL	2019 ongoing
SAMARIUM DISSOLVED	2019 ongoing
SAMARIUM TOTAL	2019 ongoing
SCANDIUM DISSOLVED	2019 ongoing
SCANDIUM TOTAL	2019 ongoing
SELENIUM DISSOLVED	1974-1990, 2003-2019 ongoing
SELENIUM TOTAL	2000-2019 ongoing
SILVER DISSOLVED	2003-2019 ongoing
SILVER EXTRACTABLE	1972-1979
SILVER TOTAL	1971, 1999-2019 ongoing
STRONTIUM DISSOLVED	1971, 1999-2019 ongoing
STRONTIUM EXTRACTABLE	1971-1974
STRONTIUM TOTAL	1997-2019 ongoing
TELLURIUM DISSOLVED	2019 ongoing
TELLURIUM TOTAL	2019 ongoing
TERBIUM DISSOLVED	2019 ongoing
TERBIUM TOTAL	2019 ongoing
THALLIUM DISSOLVED	2003-2019 ongoing
THALLIUM EXTRACTABLE	1972
THALLIUM TOTAL	2003-2019 ongoing
TIN DISSOLVED	2014-2019 ongoing
TIN TOTAL	2014-2019 ongoing
TITANIUM DISSOLVED	2016-2019 ongoing
TITANIUM TOTAL	2016-2019 ongoing
TUNGSTEN DISSOLVED	2014-2019 ongoing
TUNGSTEN TOTAL	2014-2019 ongoing
URANIUM DISSOLVED	2003-2019 ongoing
URANIUM TOTAL	2003-2019 ongoing
VANADIUM DISSOLVED	1999-2019 ongoing
VANADIUM EXTRACTABLE	1975-1980
VANADIUM TOTAL	1983-1990, 1992-2019 ongoing
VANADIUM TOTAL RECOVERABLE	1980-1983

YTTERBIUM DISSOLVED	2019 ongoing
YTTERBIUM TOTAL	2019 ongoing
YTTRIUM- DISSOLVED	2014-2019 ongoing
YTTRIUM TOTAL	2014-2019 ongoing
ZINC DISSOLVED	1971-1973, 1979, 1999-2019 ongoing
ZINC EXTRACTABLE	1969, 1971-1980
ZINC TOTAL	1983-1990, 1992-2019 ongoing
ZINC TOTAL RECOVERABLE	1980-1983
ZIRCONIUM DISSOLVED	2019 ongoing
ZIRCONIUM TOTAL	2019 ongoing

Acid Herbicides

Parameter	Years monitored
2-(2,4-DICHLOROPHOXY)-PROPIONIC ACID	1999-2019 ongoing
2,3,6-TBA	1985-1992, 1999-2017
2,4,5-T	1972-1992, 1999-2019 ongoing
2,4-D	1972-1992, 1999-2019 ongoing
2,4-DB	1972-1992, 1999-2017
ACIFLUORFEN	2014, 2019 ongoing
BROMOXYNIL	1988-1992, 1999-2019 ongoing
CLOPYRALID	2001-2019 ongoing
DICAMBA	1985-1992, 1999-2019 ongoing
DICHLORPROP	1972-1992
DINOSEB	2018-2019 ongoing
FENOPROP (SILVEX)	1978-1992, 1999-2001
FOMESAFEN	2014, 2019 ongoing
IMAZAMETHABENZ-METHYL (A)	2001-2019 ongoing
IMAZAMETHABENZ-METHYL (B)	2001-2015
IMAZAMOX	2016-2019 ongoing
IMAZAPYR	2016-2019 ongoing
IMAZETHAPYR	2001-2019 ongoing
MCPA	1972-1992, 1999-2019 ongoing
MCPB	1985-1992, 1999-2017
MCPP	2015-2019 ongoing
MECOPROP	2004-2015
PICLORAM	1974-1982, 1985-1992, 1999-2019 ongoing
SILVEX	2001-2019 ongoing
TRICLOPYR	2015-2019 ongoing

Neutral Herbicides

Parameter	Years monitored
ATRAZINE	1999-2019 ongoing
ATRAZINE TOTAL	1985-1992
BENZOYLPROP-ETHYL	1985-1992, 1999-2019 ongoing
BUTYLATE	1999-2019 ongoing
DESETHYL ATRAZINE	1999-2019 ongoing
D-ETHYL SIMAZINE	1999-2019 ongoing
DIALLATE	1985-1992
DIALLATE I	1999-2019 ongoing
DIALLATE II	1999-2019 ongoing
DICLOFOP-METHYL	1985-1992, 1999-2019 ongoing
ETHALFLURALIN	2006-2019 ongoing
FENOXAPROP-P-ETHYL	2008-2019 ongoing
METOLACHLOR	1999-2019 ongoing
METRIBUZIN	1999-2019 ongoing
SIMAZINE	1999-2019 ongoing
TRIALLATE	1985-1992, 1999-2019 ongoing
TRIFLURALIN	1974-1977, 1979, 1985-1992, 1999-2019 ongoing

Organochlorine

Parameter	Years monitored
ALDRIN	1971-1990, 1999-2015
ALPHA-BENZENEHEXACHLORIDE	1975-1990, 1999-2019 ongoing
ALPHA-CHLORDANE	1975-1990, 1999-2019 ongoing
ALPHA-ENDOSULFAN	1971-1990, 1999-2019 ongoing
BETA-ENDOSULFAN	1971-1990, 1999-2019 ongoing
BETA-HCH	2005-2015
CIS-NONACHLOR	2005-2015
DIELDRIN	1971-1990, 1999-2019 ongoing
ENDOSULFAN SULPHATE TOTAL	2015-2019 ongoing
ENDRIN	1971, 1975-1990, 1999-2015
GAMMA-BHC (LINDANE)	1971-1990, 1999-2019 ongoing
GAMMA-CHLORDANE	1975-1990, 1999-2019 ongoing
HEPTACHLOR	1971-1990, 1999-2015
HEPTACHLOR EPOXIDE	1971-1990, 1999-2015
HEXACHLOROBENZENE	1978-1990, 1999-2019 ongoing
HEXACHLOROBUTADIENE	2005-2019 ongoing
METHOXYCHLOR (P,P'-METHOXYCHLOR).	1971-1990, 1999-2015
MIREX	1978-1990, 1999-2019 ongoing
O,P'-DDD	2005-2015

O,P'-DDE	2005-2015
O,P'-DDT	1978-1990, 1999-2019 ongoing
OXYCHLORDANE	2005-2015
P,P'-DDD (TDP)	1971-1990, 1999-2015
P,P'-DDE	1971-1990, 1999-2019 ongoing
P,P'-DDT	1971-1990, 1999-2019 ongoing
PCB-TOTAL	1999-2000
PENTACHLOROANISOLE	2005-2015
PENTACHLOROBENZENE	2004-2019 ongoing
TRANS-NONACHLOR	2005-2019 ongoing

Glyphosate

Parameter	Years monitored
AMPA	2013-2019 ongoing
GLUFOSINATE	2013-2019 ongoing
GLYPHOSATE	2013-2019 ongoing

Sulfonyl Ureas

Parameter	Years monitored
BENSULFURON	2014
CHLORIMURON-ETHYL	2014
CHLORSULFURON	2014
CLOMAZONE	2014
DIURON	2014
FLUMETSULAM	2014
FORAMSULFURON	2014
LINURON	2014
METSULFURON-METHYL	2014
NICOSULFURON	2014
PRIMISULFURON-METHYL	2014
PROSULFURON	2014
RIMSULFURON	2014
THIFENSULFURON	2014
TRIBENURON METHYL	2014

Neonicotinoids

Parameter	Years monitored
ACETAMIPRID	2014-2017
CLOTHIANIDIN	2014-2017

DINOTEFURAM	2014-2017
FLONICAMID	2016-2017
FLUPYRADIFURONE	2016-2017
IMIDACLOPRID	2014-2017
THIACLOPRID	2014-2017
THIAMETHOXAM	2014-2017

Carbamates

Parameter	Years monitored
ALDICARB	2014
BARBAN	1974-1977, 1985-1992
CARBARYL	2014
CARBOFURAN	2014
METALAXYL	2014
METHOMYL	2014
OXAMYL	2014
PIRIMICARB	2014

Organophosphates

Parameter	Years monitored
AZINPHOS METHYL (GUTHION)	2003-2004
DAZINON	2003-2004
DIMETHOATE	1985-1988, 2003-2004
DISULFOTON	2003-2004
DURSBAN	2003-2004
ETHION	2003-2004
FONOFOSS	2003-2004
MALATHION	1985-1988, 2003-2004
NALED	2003-2004
PARATHION	2003-2004
PHORATE	2003-2004
PHOSMET (IMIDAN)	2003-2004
TERBUFOS	2003-2004

Phenols

Parameter	Years monitored
2,3,4,5-TETRACHLOROPHENOL	1990
2,3,4,6-TETRACHLOROPHENOL	1990
2,3,4-TRICHLOROPHENOL	1990

2,3,5,6-TETRACHLOROPHENOL	1990
2,3,5-TRICHLOROPHENOL	1990
2,3,6-TRICHLOROPHENOL	1990
2,3-DICHLOROPHENOL	1990
2,4,5-TRICHLOROPHENOL	1990
2,4,6-TRICHLOROPHENOL	1990
2,4-DICHLOROPHENOL	1990
2,6-DICHLOROPHENOL	1990
2-CHLORO-5-METHYLPHENOL	1990
2-CHLOROPHENOL	1990
3,4,5-TRICHLOROPHENOL	1990
3,4-DICHLOROPHENOL	1990
3,5-DICHLOROPHENOL	1990
3-CHLOROPHENOL	1990
4-CHLORO-3-METHYLPHENOL	1990
4-CHLOROPHENOL	1990
PENTACHLOROPHENOL	1990
PHENOLIC MATERIAL	1973-1990

Aroclors

Parameter	Years monitored
AROCLOR	1980-1990
AROCLOR 1242	1981-1983
AROCLOR 1248	1972-1981
AROCLOR 1254	1972-1983
AROCLOR 1260	1973-1983

Other Parameters

Parameter	Years monitored
AROMATIC HYDROCARBONS	1974-1982
BETA RADIATION TOTAL	1975
CHLOROPHYLL A	1973-1990, 2018-2019 ongoing
CHLOROPHYLL A (CORRECTED)	2018-2019 ongoing
CYANIDE	1971
CYANIDE TOTAL	1974-1990
N-ALKANES C10 – C26	1974-1982
N-ALKYL SULPHONATES (LAS)	1974-1981
NITRILOTRIACETIC ACID – NTA	1975-1978
OIL AND GREASE	1974-1981
OXYGEN BIOCHEMICAL DEMAND	1974-1979

OXYGEN CONSUMED	1968-1971
OXYGEN DISSOLVED COD	1968-1970
OXYGEN TOTAL COD	1970, 1972
PHOSPHATE TOTAL ORTHO	1975
RADIUM RADIATION TOTAL RA-226	1975
STRONTIUM RADIATION TOTAL 90	1975

Carrot River Near Turnberry

Station Name:	Carrot River Near Turnberry		
Station Number:	SA05KH0002		
Naquadat¹ Number:	00SA05KH0002		
WSC² Reference Number:	05KH007		
WSC Period of Record:	1966 – present		
Project Number:	115 (historically 315)		
Sampling Site:	Latitude 53°36'49.81"N	Longitude 102°06'16.49"W	
Drainage Area:	12600 km²		
Effective Drainage Area:	N/A		
Ecozone³:	Boreal Plains		
Ecoregion³:	Mid-Boreal Lowland		
Water Body:	Carrot River		
Water Body Type:	River		
Watershed:	Carrot River/Saskatchewan River		
Stakeholders:	PPWB		
Site Overview:	<p>The Carrot River originates near Wakaw Lake in central Saskatchewan. It is located to the south of the Saskatchewan River system in east-central Saskatchewan. It flows eastward until its confluence with the Saskatchewan River near The Pas, Manitoba. The Carrot River has a gross drainage of 132,591 km², and while unregulated, drainage projects and overflow from the Saskatchewan River during high water events adds to the flow of the Carrot River. The PPWB Water Quality Monitoring site on the Carrot River is located ~76 river km upstream of its confluence with the Saskatchewan River and 4 km upstream of the Saskatchewan-Manitoba border.</p>		
Sampling location:	<p>Water quality samples are collected west of WSC stations (winter and summer). Open water samples, prior to 2016, were collected by wading, casting from bank or from cable car. 2016-2017 samples were collected with a sampling reach pole. From 2018 to present, samples are collected with a stream bank operated cable way during the open water season.</p> <p>Trends are increasing in this river for phosphorus and nitrogen constituents. Dissolved sulphate also shows an increasing trend.</p>		
Station Established:	May 1974		
Period of Record:	1974 – present		
Data Located:	ACBIS	664 Samples (January 2024)	
Station Type:	Monthly, Major Ions, nutrients, heavy metals, biocides and bacteria (BW 1989)		
Frequency of Observations:	Monthly, Bacteria are monitored in each of six ice-free months (NG)		

¹ Data listing of water quality monitoring stations

²Water Survey of Canada³<http://www.ecozones.ca/english/zone/index.html>

Site Status

Nutrients	2013	2018	Major Ions	2013	2018	Physicals	2013	2018
Ammonia Dissolved	↑	↑	Chloride Dissolved	↓	↓	Oxygen Dissolved	↓	↓
Nitrate as N	↔	↔	Fluoride Dissolved	↑	↔	pH – Field	↑	↔
Nitrogen Total	↑	↑	Sodium Dissolved/Filtered	↓	↓	Sodium Adsorption Ratio (SAR)	↓	↓
Phosphorous Total	↑	↑	Sulphate Dissolved	↑	↑	Total Suspended Solids (TSS)	↑	↑
Phosphorous Total Dissolved	↑	↑	Total Dissolved Solids (TDS)	↔	↔			

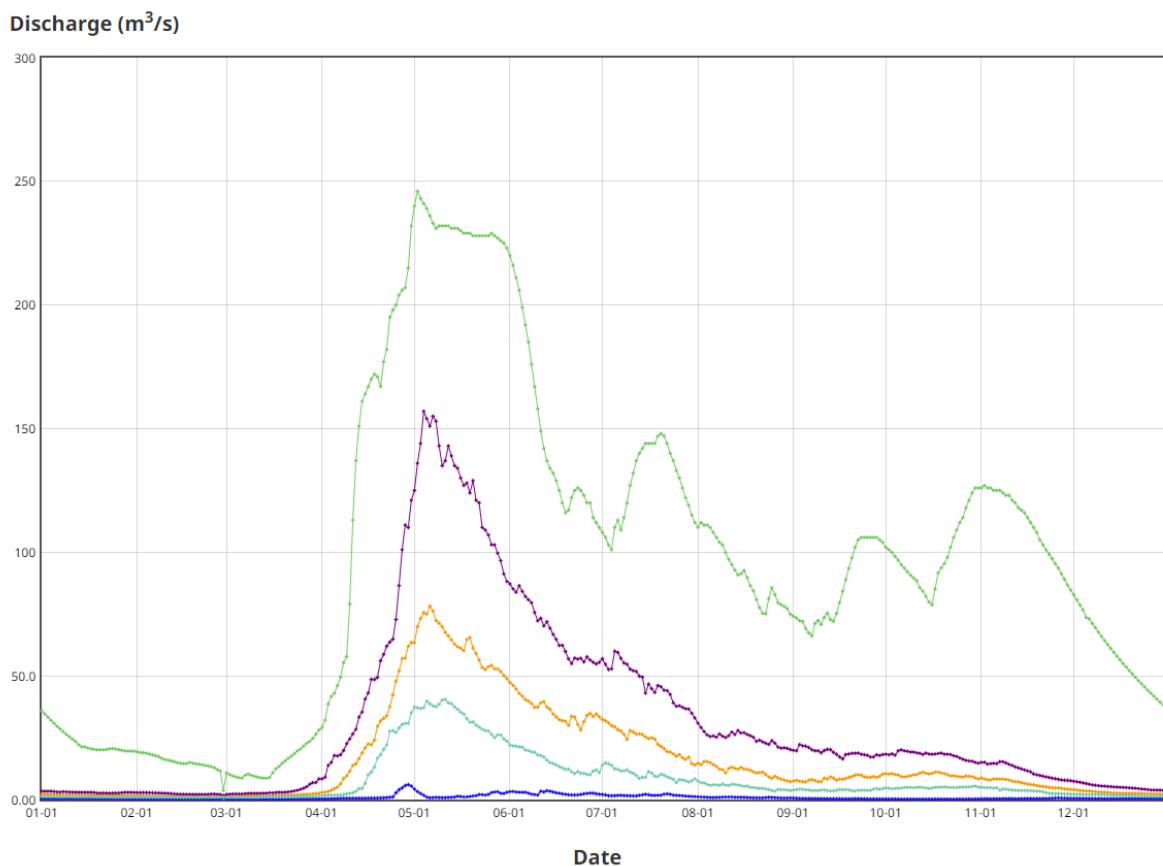
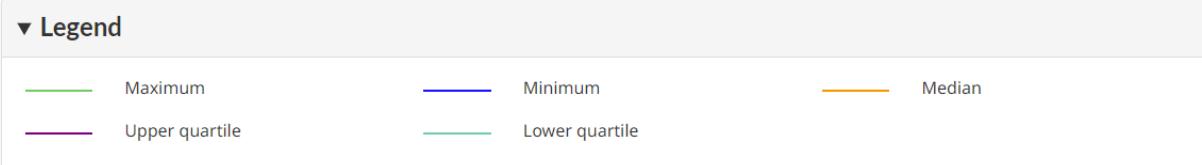
Metals	2013	2018	Metals	2013	2018	Metals	2013	2018
Aluminum Dissolved	↔	↔	Cobalt Dissolved	↔	↑	Nickel Dissolved	↔	↔
Aluminum Total	↔	↔	Cobalt Total	↔	↑	Nickel Total	↔	↔
Arsenic Dissolved	↔	↔	Copper Dissolved	↔	↔	Selenium Dissolved	↔	↓
Arsenic Total	↔	↔	Copper Total	↔	↔	Selenium Total	↔	↔
Barium Dissolved	↑	↑	Iron Dissolved	↓	↓	Silver Dissolved	>20%	>20%
Barium Total	↑	↑	Iron Total	↔	↔	Silver Total	↔	↔
Beryllium Dissolved	↑	↔	Lead Dissolved	↓	↓	Thallium Dissolved	↑	↔
Beryllium Total	↔	↔	Lead Total	↔	↔	Thallium Total	↔	↔
Boron Dissolved	↑	↔	Lithium Dissolved	↑	↔	Uranium Dissolved	↑	↑
Boron Total	↔	↔	Lithium Total	↑	↔	Uranium Total	↑	↑
Cadmium Dissolved	↓	↓	Manganese Dissolved	↔	↔	Vanadium Dissolved	↔	↔
Cadmium Total	↓	↔	Manganese Total	↔	↔	Vanadium Total	↔	↔
Chromium Dissolved	↔	↓	Molybdenum Dissolved	↔	↑	Zinc Dissolved	↔	↔
Chromium Total	↓	↔	Molybdenum Total	↔	↔	Zinc Total	↔	↑

Typical range (minimum-maximum) in field observations and bacterial values:

Current (2009-2019)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance ($\mu\text{S}/\text{cm}$)	E.Coli (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	0.0-14.5	6.3-7.9	8-25	457-2545	<2-11	<2-19
Spring (Mar-May)	0.0-10.6	6.9-8.3	9-510	379-2687	<2-1700	<2-69
Summer	2.0-9.7	7.2-8.3	8-419	502-860	6-6500	<2-94

(Jun-Aug)						
Fall (Sep-Nov)	5.1-15.8	5.5-8.3	11-150	493-1121	6-1817	<2-75
Past (1989-2008)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance (μS/cm)	E.Coli (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	0.0-7.7	6.9-8.0	6-110	936-3520	4-1847	<2-31
Spring (Mar-May)	0.1-11.5	7.0-8.2	6-589	314- 4240	<2-277	<2-25
Summer (Jun-Aug)	3.5-12.5	6.9-8.6	3-141	504-1660	4-8617	<2-120
Fall (Sep-Nov)	4.7-17.7	6.7-8.9	8-383	531-2480	2-3167	<2-400

Hydrometric Graphs (Water Survey of Canada, 1966-2021)



Hydrometric Data Website

[https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=1&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Grap h&stn=05KH007&dataType=Daily¶meterType=Flow&year=2021](https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=1&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Graph&stn=05KH007&dataType=Daily¶meterType=Flow&year=2021)

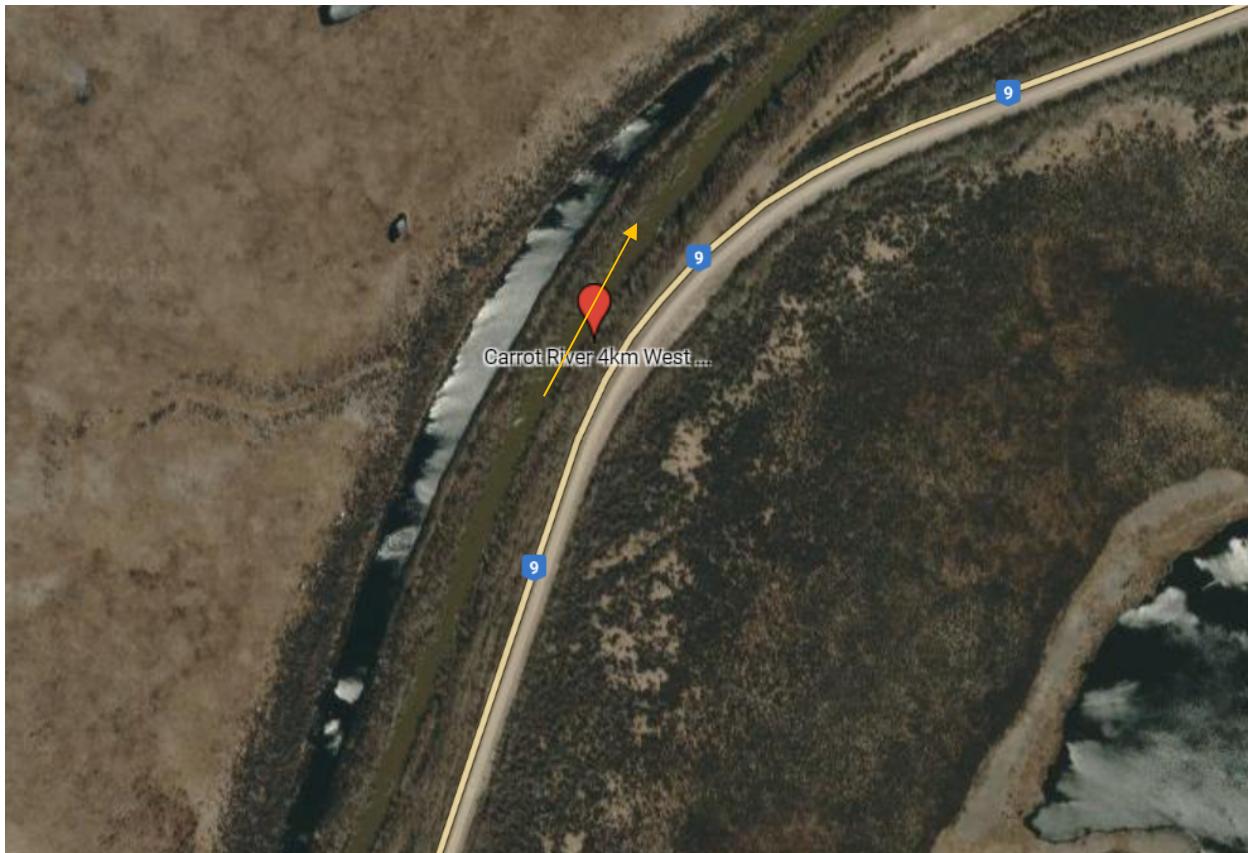
Maps & Diagrams

Figure 1. Satellite imagery of the sampling locations for the Carrot R. North is at the top of the image. Direction of flow in this image from southwest to northeast and is depicted using the arrow.



Figure 2. Carrot R., looking Upstream from a river-right (southwest shore) location near the hydrometric station **Figure 3. Carrot R., looking Downstream from a river-right location near the hydrometric station.**

Parameters Monitored

Note, spelling of parameter names purposely match the spelling in the database.

Field

Parameter	Years monitored
COLIFORMS FECAL	1974-2019 ongoing
COLIFORMS TOTAL	1974-2004, 2011
E. COLI	1998-2019 ongoing
FECAL STREPTOCOCCI	2001, 2005
OXYGEN DISSOLVED	1973-2019 ongoing
PH (FIELD)	1973-2019 ongoing
SPECIFIC CONDUCTANCE (FIELD)	1974-2019 ongoing
TEMPERATURE WATER (FIELD)	1973-2019 ongoing
TURBIDITY (FIELD)	1979-2019 ongoing

Physicals

Parameter	Years monitored
ALKALINITY GRAN CACO3	2001-2002, 2005-2014
ALKALINITY PHENOLPHTHALEIN CACO3	1974-2001, 2003-2014
ALKALINITY TOTAL CACO3	1973-2019 ongoing
COLOUR APPARENT	1973-1981
COLOUR TRUE	1981-2005
ODOUR THRESHOLD NUMBER	1974-1976, 1978
RESIDUE FILTERABLE	1979
RESIDUE FIXED FILTERABLE	1979
RESIDUE FIXED NONFILTRABLE	1974-2019 ongoing
RESIDUE NONFILTRABLE	1974-2019 ongoing
TEMPERATURE WATER (LAB)	1973-1999, 2001
SPECIFIC CONDUCTANCE (LAB)	1973-2019 ongoing
PH (LAB)	1973-2019 ongoing
TURBIDITY (LAB)	1973-2019 ongoing

Nutrients (Carbon, Nitrogen, Phosphorus)

Parameter	Years monitored
AMMONIA DISSOLVED	1987-2019 ongoing
AMMONIA TOTAL	1974, 1981-1987

AMMONIA UN-IONIZED (CALCD.)	1986-2019 ongoing
CARBON DISSOLVED INORGANIC	1978-1980
CARBON DISSOLVED ORGANIC	1978-2019 ongoing
CARBON PARTICULATE ORGANIC	1977-2019 ongoing
CARBON TOTAL INORGANIC	1973-1978
CARBON TOTAL ORGANIC	1973-1978
CARBON TOTAL ORGANIC (CALCD.)	1980-1983, 1985-2019 ongoing
CARBONACEOUS OXYGEN DEMAND BOD10	2015-2019
NITROGEN DISSOLVED NO3 & NO2	1973-2019 ongoing
NITROGEN PARTICULATE	1977-2019 ongoing
NITROGEN TOTAL (CALCD.)	1977-2019 ongoing
NITROGEN TOTAL DISSOLVED	1976-2019 ongoing
NITROGEN TOTAL KJELDAHL	1973-1978
PHOSPHATE DISSOLVED INORGANIC	1976
PHOSPHATE DISSOLVED ORTHO	1981-1990
PHOSPHOROUS DISSOLVED ORTHO	1990-2019 ongoing
PHOSPHOROUS PARTICULATE (CALCD.)	1975-2019 ongoing
PHOSPHOROUS TOTAL	1973-2019 ongoing
PHOSPHOROUS TOTAL DISSOLVED	1975-2019 ongoing

Major Ions

Parameter	Years monitored
BICARBONATE (CALCD.)	1980-1983, 1985-2019 ongoing
BROMIDE	2015-2017
CALCIUM DISSOLVED/FILTERED	1973-2019 ongoing
CARBONATE (CALCD.)	1980-1983, 1985-2019 ongoing
CHLORIDE DISSOLVED	1973-2019 ongoing
FLUORIDE DISSOLVED	1973-2019 ongoing
FREE CO2 (CALCD.)	1985-2019 ongoing
HARDNESS NON-CARB. (CALCD.)	1985-2019 ongoing
HARDNESS TOTAL (CALCD.) CACO3	1980-1983, 1985-2019 ongoing
HARDNESS TOTAL CACO3	1973-1975
HARDNESS TOTAL LAB (CALCD.) CACO3	1975-1978
HYDROXIDE (CALCD.)	1985-2019 ongoing
MAGNESIUM DISSOLVED/FILTERED	1975-2019 ongoing
POTASSIUM DISSOLVED/FILTERED	1973-2019 ongoing
SATURATION INDEX (CALCD.)	1985-2019 ongoing
SILICA REACTIVE	1973-1990
SIO2	1990-2019 ongoing
SODIUM ADSORPTION RATIO (CALCD.)	2001-2019 ongoing
SODIUM DISSOLVED/FILTERED	1973-2019 ongoing

SODIUM PERCENTAGE (CALCD.)	1985-2019 ongoing
STABILITY INDEX (CALCD.)	1985-2019 ongoing
SULPHATE DISSOLVED	1973-2019 ongoing
SULPHIDE DISSOLVED	1981-1989
TOTAL DISSOLVED SOLIDS (CALCD.)	1980-1983, 1985-2019 ongoing

Metals

Parameter	Years monitored
ALUMINUM DISSOLVED	1984-1990, 1992-2019 ongoing
ALUMINUM EXTRACTABLE	1973-1990, 1992-1993
ALUMINUM TOTAL	1993-2019 ongoing
ANTIMONY DISSOLVED	2003-2019 ongoing
ANTIMONY TOTAL	2003-2019 ongoing
ARSENIC DISSOLVED	1974-1990, 2003-2019 ongoing
ARSENIC TOTAL	2000-2019 ongoing
BARIUM DISSOLVED	1999-2019 ongoing
BARIUM EXTRACTABLE	1973-1980
BARIUM TOTAL	1983-1990, 1992-2019 ongoing
BARIUM TOTAL RECOVERABLE	1980-1983
BERYLLIUM DISSOLVED	1999-2019 ongoing
BERYLLIUM TOTAL	1997, 1999-2019 ongoing
BISMUTH DISSOLVED	2003-2019 ongoing
BISMUTH TOTAL	2003-2019 ongoing
BORON DISSOLVED	1973-1990, 1992-2019 ongoing
BORON TOTAL	1997, 2003-2019 ongoing
CADMIUM DISSOLVED	1999-2019 ongoing
CADMIUM EXTRACTABLE	1973-1980
CADMIUM TOTAL	1983-1990, 1992-2019 ongoing
CADMIUM TOTAL RECOVERABLE	1980-1983
CERIUM DISSOLVED	2014-2019 ongoing
CERIUM TOTAL	2014-2019 ongoing
CESIUM DISSOLVED	2014-2019 ongoing
CESIUM TOTAL	2014-2019 ongoing
CHROMIUM DISSOLVED	1999-2019 ongoing
CHROMIUM EXTRACTABLE	1973-1983
CHROMIUM TOTAL	1983-1990, 1992-2019 ongoing
COBALT DISSOLVED	1999-2019 ongoing
COBALT EXTRACTABLE	1973, 1978-1980
COBALT TOTAL	1983-1990, 1992-2019 ongoing
COBALT TOTAL RECOVERABLE	1980-1983
COPPER DISSOLVED	1999-2019 ongoing

COPPER EXTRACTABLE	1973-1980
COPPER TOTAL	1983-1990, 1992-2019 ongoing
COPPER TOTAL RECOVERABLE	1980-1983
EUROPIUM DISSOLVED	2019 ongoing
EUROPIUM TOTAL	2019 ongoing
GADOLINIUM DISSOLVED	2019 ongoing
GADOLINIUM TOTAL	2019 ongoing
GALLIUM DISSOLVED	2003-2019 ongoing
GALLIUM TOTAL	2003-2019 ongoing
GERMANIUM DISSOLVED	2019 ongoing
GERMANIUM TOTAL	2019 ongoing
HAFNIUM DISSOLVED	2019 ongoing
HAFNIUM TOTAL	2019 ongoing
HOLMIUM DISSOLVED	2019 ongoing
HOLMIUM TOTAL	2019 ongoing
INDIUM DISSOLVED	2019 ongoing
INDIUM TOTAL	2019 ongoing
IRIDIUM DISSOLVED	2019 ongoing
IRIDIUM TOTAL	2019 ongoing
IRON DISSOLVED	1980-1990, 1992-2019 ongoing
IRON EXTRACTABLE	1973-1980, 1986
IRON TOTAL	1997, 1999-2019 ongoing
LANTHANUM DISSOLVED	2003-2019 ongoing
LANTHANUM TOTAL	2003-2019 ongoing
LEAD DISSOLVED	1999-2019 ongoing
LEAD EXTRACTABLE	1973-1980
LEAD TOTAL	1983-1990, 1992-2019 ongoing
LEAD TOTAL RECOVERABLE	1980-1983
LITHIUM DISSOLVED	1999-2019 ongoing
LITHIUM TOTAL	1997, 1999-2019 ongoing
LUTETIUM DISSOLVED	2019 ongoing
LUTETIUM TOTAL	2019 ongoing
MANGANESE DISSOLVED	1980-1990, 1992-2019 ongoing
MANGANESE EXTRACTABLE	1973-1980, 1986
MANGANESE TOTAL	1997, 1999-2019 ongoing
MERCURY EXTRACTABLE	1973-1979
MERCURY TOTAL	1979-1990, 1992-1999
MOLYBDENUM DISSOLVED	1999-2019 ongoing
MOLYBDENUM EXTRACTABLE	1973
MOLYBDENUM TOTAL	1997, 1999-2019 ongoing
NEODYMIUM DISSOLVED	2019 ongoing
NEODYMIUM TOTAL	2019 ongoing
NICKEL DISSOLVED	1999-2019 ongoing

NICKEL EXTRACTABLE	1973, 1979-1980
NICKEL TOTAL	1983-1990, 1992-2019 ongoing
NICKEL TOTAL RECOVERABLE	1980-1983
NIOBIUM DISSOLVED	2014-2019 ongoing
NIOBIUM TOTAL	2014-2019 ongoing
PLATINUM DISSOLVED	2014-2019 ongoing
PLATINUM TOTAL	2014-2019 ongoing
PRASEODYMIUM DISSOLVED	2019 ongoing
PRASEODYMIUM TOTAL	2019 ongoing
RUBIDIUM DISSOLVED	2003-2019 ongoing
RUBIDIUM TOTAL	2003-2019 ongoing
RUTHENIUM DISSOLVED	2019 ongoing
RUTHENIUM TOTAL	2019 ongoing
SAMARIUM DISSOLVED	2019 ongoing
SAMARIUM TOTAL	2019 ongoing
SCANDIUM DISSOLVED	2019 ongoing
SCANDIUM TOTAL	2019 ongoing
SELENIUM DISSOLVED	1974-1990, 2003-2019 ongoing
SELENIUM TOTAL	2000-2019 ongoing
SILVER DISSOLVED	2003-2019 ongoing
SILVER EXTRACTABLE	1973-1979
SILVER TOTAL	1999-2019 ongoing
STRONTIUM DISSOLVED	1999-2019 ongoing
STRONTIUM EXTRACTABLE	1973
STRONTIUM TOTAL	1994, 1997, 1999-2019 ongoing
TELLURIUM DISSOLVED	2019 ongoing
TELLURIUM TOTAL	2019 ongoing
TERBIUM DISSOLVED	2019 ongoing
TERBIUM TOTAL	2019 ongoing
THALLIUM DISSOLVED	2003-2019 ongoing
THALLIUM TOTAL	2003-2019 ongoing
TIN DISSOLVED	2014-2019 ongoing
TIN TOTAL	2014-2019 ongoing
TITANIUM DISSOLVED	2016-2019 ongoing
TITANIUM TOTAL	2016-2019 ongoing
TUNGSTEN DISSOLVED	2014-2019 ongoing
TUNGSTEN TOTAL	2014-2019 ongoing
URANIUM DISSOLVED	2003-2019 ongoing
URANIUM TOTAL	2003-2019 ongoing
VANADIUM DISSOLVED	1999-2019 ongoing
VANADIUM EXTRACTABLE	1975-1980
VANADIUM TOTAL	1983-1990, 1992-2019 ongoing
VANADIUM TOTAL RECOVERABLE	1980-1983

YTTERBIUM DISSOLVED	2019 ongoing
YTTERBIUM TOTAL	2019 ongoing
YTTRIUM- DISSOLVED	2014-2019 ongoing
YTTRIUM TOTAL	2014-2019 ongoing
ZINC DISSOLVED	1999-2019 ongoing
ZINC EXTRACTABLE	1973-1980
ZINC TOTAL	1983-1990, 1992-2019 ongoing
ZINC TOTAL RECOVERABLE	1980-1983
ZIRCONIUM DISSOLVED	2019 ongoing
ZIRCONIUM TOTAL	2019 ongoing

Acid Herbicides

Parameter	Years monitored
2-(2,4-DICHLOROPHOXY)-PROPIONIC ACID	1999-2019 ongoing
2,3,6-TBA	1985-1992, 1999-2017
2,4,5-T	1973-1992, 1999-2019 ongoing
2,4-D	1973-1992, 1999-2019 ongoing
2,4-DB	1973-1992, 1999-2017
ACIFLUORFEN	2019 ongoing
BROMOXYNIL	1988-1992, 1999-2019 ongoing
CLOPYRALID	2001-2019 ongoing
DICAMBA	1985-1992, 1999-2019 ongoing
DICHLORPROP	1973-1992
DINOSEB	2018-2019 ongoing
FENOPROP (SILVEX)	1978-1992, 1999-2001
FOMESAFEN	2019 ongoing
IMAZAMETHABENZ-METHYL (A)	2001-2019 ongoing
IMAZAMETHABENZ-METHYL (B)	2001-2015
IMAZAMOX	2016-2019 ongoing
IMAZAPYR	2016-2019 ongoing
IMAZETHAPYR	2001-2019 ongoing
MCPA	1973-1992, 1999-2019 ongoing
MCPB	1985-1992, 1999-2017
MCPP	2015-2019 ongoing
MECOPROP	2004-2015
PICLORAM	1974-1992, 1999-2019 ongoing
SILVEX	2001-2019 ongoing
TRICLOPYR	2015-2019 ongoing

Neutral Herbicides

Parameter	Years monitored
ATRAZINE	1999-2019 ongoing
ATRAZINE TOTAL	1985-1992
BENZOYLPROP-ETHYL	1985-1992, 1999-2019 ongoing
BUTYLATE	1999-2019 ongoing
DESETHYL ATRAZINE	1999-2019 ongoing
D-ETHYL SIMAZINE	1999-2019 ongoing
DIALLATE	1985-1992
DIALLATE I	1999-2019 ongoing
DIALLATE II	1999-2019 ongoing
DICLOFOP-METHYL	1985-1992, 1999-2019 ongoing
ETHALFLURALIN	2006-2019 ongoing
FENOXAPROP-P-ETHYL	2008-2019 ongoing
METOLACHLOR	1999-2019 ongoing
METRIBUZIN	1999-2019 ongoing
SIMAZINE	1999-2019 ongoing
TRIALLATE	1985-1992, 1999-2019 ongoing
TRIFLURALIN	1974-1977, 1979, 1985-1992, 1999-2019 ongoing

Organochlorine

Parameter	Years monitored
ALDRIN	1974-1990, 1999-2015
ALPHA-BENZENEHEXACHLORIDE	1975-1990, 1999-2019 ongoing
ALPHA-CHLORDANE	1975-1990, 1999-2019 ongoing
ALPHA-ENDOSULFAN	1974-1990, 1999-2019 ongoing
BETA-ENDOSULFAN	1974-1990, 1999-2019 ongoing
BETA-HCH	2005-2015
CIS-NONACHLOR	2005-2015
DIELDRIN	1974-1990, 1999-2019 ongoing
ENDOSULFAN SULPHATE TOTAL	2015-2019 ongoing
ENDRIN	1975-1990, 1999-2015
GAMMA-BHC (LINDANE)	1974-1990, 1999-2019 ongoing
GAMMA-CHLORDANE	1975-1990, 1999-2019 ongoing
HEPTACHLOR	1974-1990, 1999-2015
HEPTACHLOR EPOXIDE	1974-1990, 1999-2015
HEXACHLOROBENZENE	1978-1990, 1999-2019 ongoing
HEXACHLOROBUTADIENE	2005-2019 ongoing
METHOXYCHLOR (P,P'-METHOXYCHLOR).	1974-1990, 1999-2015
MIREX	1978-1990, 1999-2019 ongoing
O,P'-DDD	2005-2015

O,P'-DDE	2005-2015
O,P'-DDT	1978-1990, 1999-2019 ongoing
OXYCHLORDANE	2005-2015
P,P'-DDD (TDP)	1974-1990, 1999-2015
P,P'-DDE	1974-1990, 1999-2019 ongoing
P,P'-DDT	1974-1990, 1999-2019 ongoing
PCB-TOTAL	1999
PENTACHLOROANISOLE	2005-2015
PENTACHLOROBENZENE	2004-2019 ongoing
TRANS-NONACHLOR	2005-2019 ongoing

Glyphosate

Parameter	Years monitored
AMPA	2013-2019 ongoing
GLUFOSINATE	2013-2019 ongoing
GLYPHOSATE	2013-2019 ongoing

Neonicotinoids

Parameter	Years monitored
ACETAMIPRID	2016-2017
CLOTHIANIDIN	2016-2017
DINOTEFURAM	2016-2017
FLONICAMID	2016-2017
FLUPYRADIFURONE	2016-2017
IMIDACLOPRID	2016-2017
THIACLOPRID	2016-2017
THIAMETHOXAM	2016-2017

Carbamates

Parameter	Years monitored
BARBAN	1974-1977, 1985-1992

Organophosphates

Parameter	Years monitored
DIMETHOATE	1985-1988
MALATHION	1985-1988

Phenols

Parameter	Years monitored
2,3,4,5-TETRACHLOROPHENOL	1990
2,3,4,6-TETRACHLOROPHENOL	1990
2,3,4-TRICHLOROPHENOL	1990
2,3,5,6-TETRACHLOROPHENOL	1990
2,3,5-TRICHLOROPHENOL	1990
2,3,6-TRICHLOROPHENOL	1990
2,3-DICHLOROPHENOL	1990
2,4,5-TRICHLOROPHENOL	1990
2,4,6-TRICHLOROPHENOL	1990
2,4-DICHLOROPHENOL	1990
2,6-DICHLOROPHENOL	1990
2-CHLORO-5-METHYLPHENOL	1990
2-CHLOROPHENOL	1990
3,4,5-TRICHLOROPHENOL	1990
3,4-DICHLOROPHENOL	1990
3,5-DICHLOROPHENOL	1990
3-CHLOROPHENOL	1990
4-CHLORO-3-METHYLPHENOL	1990
4-CHLOROPHENOL	1990
PENTACHLOROPHENOL	1990
PHENOLIC MATERIAL	1973-1990

Aroclors

Parameter	Years monitored
AROCLOR	1980-1990
AROCLOR 1242	1981-1983
AROCLOR 1248	1973-1981

AROCLOR 1254	1973-1983
AROCLOR 1260	1973-1983

Other Parameters

Parameter	Years monitored
AROMATIC HYDROCARBONS	1974-1982
BETA RADIATION TOTAL	1975
CHLOROPHYLL A	1973-1990, 2018-2019 ongoing
CHLOROPHYLL A (CORRECTED)	2018-2019 ongoing
CYANIDE TOTAL	1974-1990
DISCHARGE DAILY MEAN	1973-1978
DISCHARGE MONTHLY MEAN	1973-1978
N-ALKANES C10 – C26	1974-1982
N-ALKYL SULPHONATES (LAS)	1974-1981
NITRILOTRIACETIC ACID – NTA	1974-1978
OIL AND GREASE	1974-1981
OXYGEN BIOCHEMICAL DEMAND	1974-1979
RADIUM RADIATION TOTAL RA-226	1975
STRONTIUM RADIATION TOTAL 90	1975

Churchill River

Station Name:	CHURCHILL RIVER BELOW WASAWAKASIK		
Station Number:	SA06EA0003		
Naquedad¹ Number:	00SA06EA0003		
WSC² Reference Number:	06EA002		
WSC Period of Record:	1928 – current		
Project Number:	115 (historically 315)		
Sampling Site:	Latitude 55°33'40.17"N	Longitude: 102°15'38.44"W	
Drainage Area:	283,350 km²		
Effective Drainage Area:	206,000 km²		
Ecozone³:	Boreal Shield		
Ecoregion³:	Churchill River Upland		
Water Body:	Churchill River		
Water Body Type:	River		
Watershed:	Central Churchill (SK/MA)_Lower		
Stakeholders:	PPWB		
Site Overview:	<p>The Churchill River originates at Peter Pond and Churchill lakes in northwest Saskatchewan. Major tributaries include the Beaver River and Reindeer River. It flows eastward for over 1600 km before entering Hudson's Bay, draining a total area of 283,350 km². In Saskatchewan the Churchill River is actually formed by a series of interconnected lakes. Control structures on the Churchill River that alter flows crossing the Saskatchewan/Manitoba border are limited to near the eastern border. The most significant control structure is the Island Falls Dam and Hydroelectric Station at the outlet of Sokatisewin Lake, located about 45 km upstream of the Saskatchewan/Manitoba boundary. This dam was created in 1929 and the depth of flooding at the dam is around 17m. Impacts of the control structures to the natural flow hydrograph at the provincial border are generally balanced on an annual basis, with observed impacts being minor seasonal flow redistribution. It should be noted that the ECCC flow station (06EA002) used to calculate the natural flow at the Saskatchewan/Manitoba border is located 45 km upstream from the provincial boundary. Flow entering the Churchill River between the ECCC station and the provincial boundary must be estimated and added to recorded flow monitored at the station in the determination of estimated natural flow at the boundary. The PPWB Water Quality Monitoring site on the South Churchill River is located near the outlet of Wasawakasik Lake, just downstream of the community of Sandy Bay.</p>		

	Trends are stable in this river for phosphorus and nitrogen constituents. The sampling frequency at this site is limited to quarterly.	
Sampling Location:	Sampling is done at same location year round and is accessed by airplane or helicopter.	
Station Established:	June 1974 – sampled at Island Falls until Dec 1974	
Period of Record:	1974 – current	
Data Located:	ACBIS	268 samples (January 2024)
Station Type:	PPWB	
Frequency of Observations:	Quarterly	

¹Data listing of water quality monitoring stations

²Water Survey of Canada

³<http://www.ecozones.ca/english/zone/index.html>

Site Status

Nutrients	2013	2018	Major Ions	2013	2018	Physicals	2013	2018
Ammonia Dissolved	↓	↔	Chloride Dissolved	↔	↔	Oxygen Dissolved	↔	↔
Nitrate as N	↓	↓	Fluoride Dissolved	↑	↔	pH – Field	↑	↑
Nitrogen Total	↔	↔	Sodium Dissolved/Filtered	↔	↑	Sodium Adsorption Ratio (SAR)	↑	↔
Phosphorous Total	↔	↔	Sulphate Dissolved	↔	↔	Total Suspended Solids (TSS)	↔	↔
Phosphorous Total Dissolved	↔	↔	Total Dissolved Solids (TDS)	↔	↑			

Metals	2013	2018	Metals	2013	2018	Metals	2013	2018
Aluminum Dissolved	↔	↔	Cobalt Dissolved	↔	↑	Nickel Dissolved	↔	↔
Aluminum Total	↓	↓	Cobalt Total	↓	↔	Nickel Total	↓	↓
Arsenic Dissolved	↔	↔	Copper Dissolved	↔	↔	Selenium Dissolved	NA	NA
Arsenic Total	↔	↔	Copper Total	↔	↓	Selenium Total	NA	NA
Barium Dissolved	↔	↑	Iron Dissolved	↔	↔	Silver Dissolved	NA	NA
Barium Total	↔	↔	Iron Total	↓	↓	Silver Total	NA	NA
Beryllium Dissolved	↑	↔	Lead Dissolved	↔	↓	Thallium Dissolved	↔	↔
Beryllium Total	↓	↓	Lead Total	↓	↓	Thallium Total	↔	↔
Boron Dissolved	↔	↑	Lithium Dissolved	↔	↔	Uranium Dissolved	↔	↑
Boron Total	↔	↔	Lithium Total	↔	↔	Uranium Total	↔	↔
Cadmium Dissolved	↔	↓	Manganese Dissolved	↓	↓	Vanadium Dissolved	↔	↔
Cadmium Total	↔	↓	Manganese Total	↓	↔	Vanadium Total	↓	↔
Chromium Dissolved	↔	↔	Molybdenum Dissolved	↔	↑	Zinc Dissolved	↔	↔
Chromium Total	↓	↓	Molybdenum Total	↔	↑	Zinc Total	↓	↔

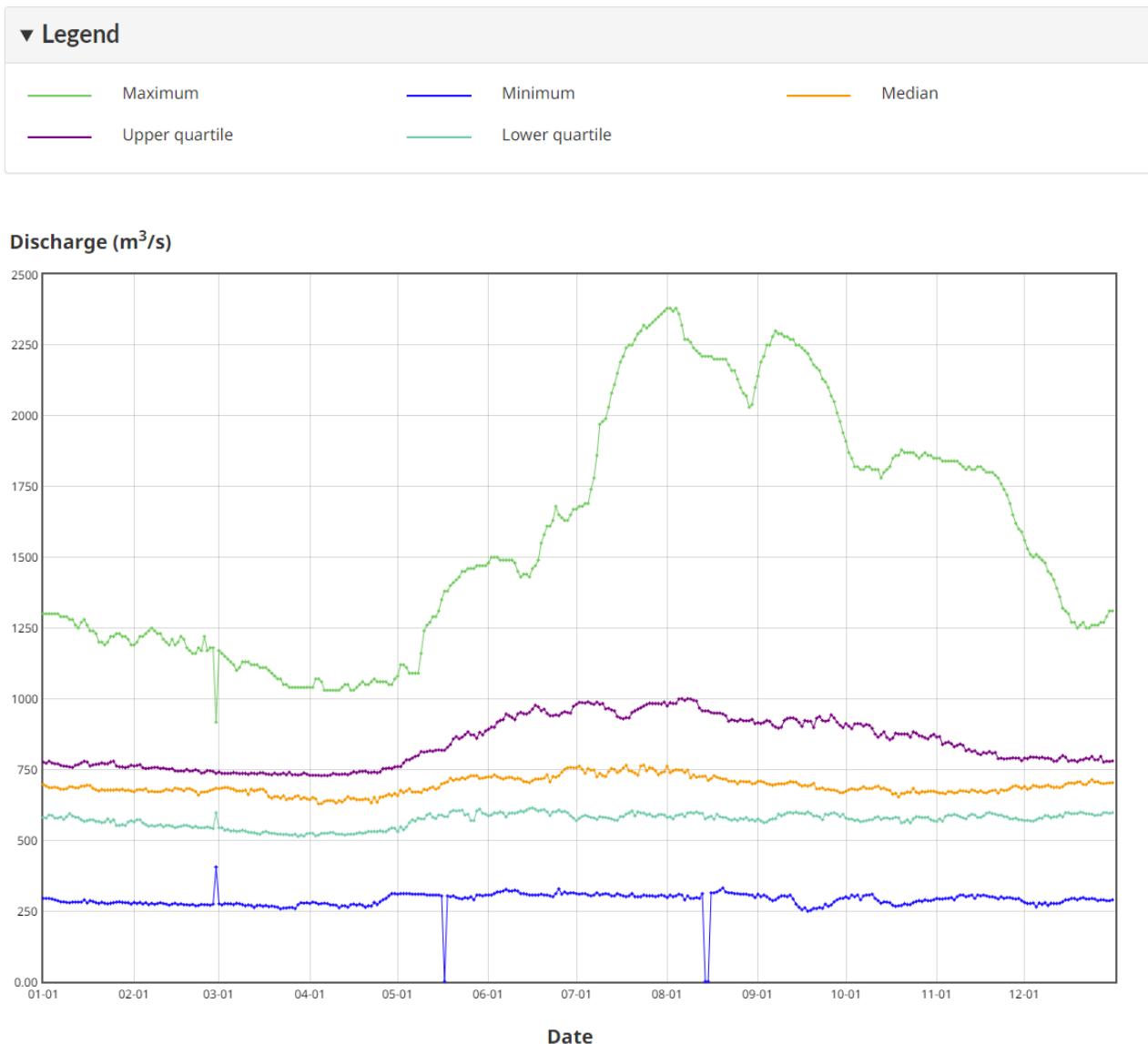
Typical range (minimum-maximum) in field observations and bacterial values:

Current (2009-2019)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance ($\mu\text{S}/\text{cm}$)	<i>E.Coli</i> (cfu/dL)	Fecal Coliform (cfu/dL)
<i>Winter (Dec-Feb)¹</i>	12.4-17.7	6.8-8.1	1-2	72-136	<1-2	<1-<2
<i>Spring (Mar-May)²</i>	11.6-12.8	7.5-8.1	3-33	70-109	<2-2	<2
<i>Summer (Jun-Aug)³</i>	8.3-10.5	7.0-8.3	3-20	89-140	<2-12	<2-15
<i>Fall (Sep-Nov)⁴</i>	10.8-12.7	6.8-8.2	2-6	65-142	<2-2	<2-9

¹Based on 10 samples²Based on 3 samples³Based on 20 samples⁴Based on 10 samples

Past (1989-2008)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance ($\mu\text{S}/\text{cm}$)	<i>E.Coli</i> (cfu/dL)	Fecal Coliform (cfu/dL)
<i>Winter (Dec-Feb)</i>	8.2-14.8	6.4-8.3	1-5	54-133	<2-2	<2-7
<i>Spring (Mar-May)</i>	6.6-16.2	6.9-8.2	1-6	52-111	<2	<2-3
<i>Summer (Jun-Aug)</i>	6.2-12.0	6.9-8.2	4-8	49-139	<2-2	<2-12
<i>Fall (Sep-Nov)</i>	6.4-18.0	6.8-8.5	0-6	52-160	<2	<2-2

Hydrometric Graphs (Water Survey of Canada, 1928-2021)



Hydrometric Data Website

https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=01&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Graph&stn=06EA002&dataType=Daily¶meterType=Flow&year=2021

Maps and diagrams

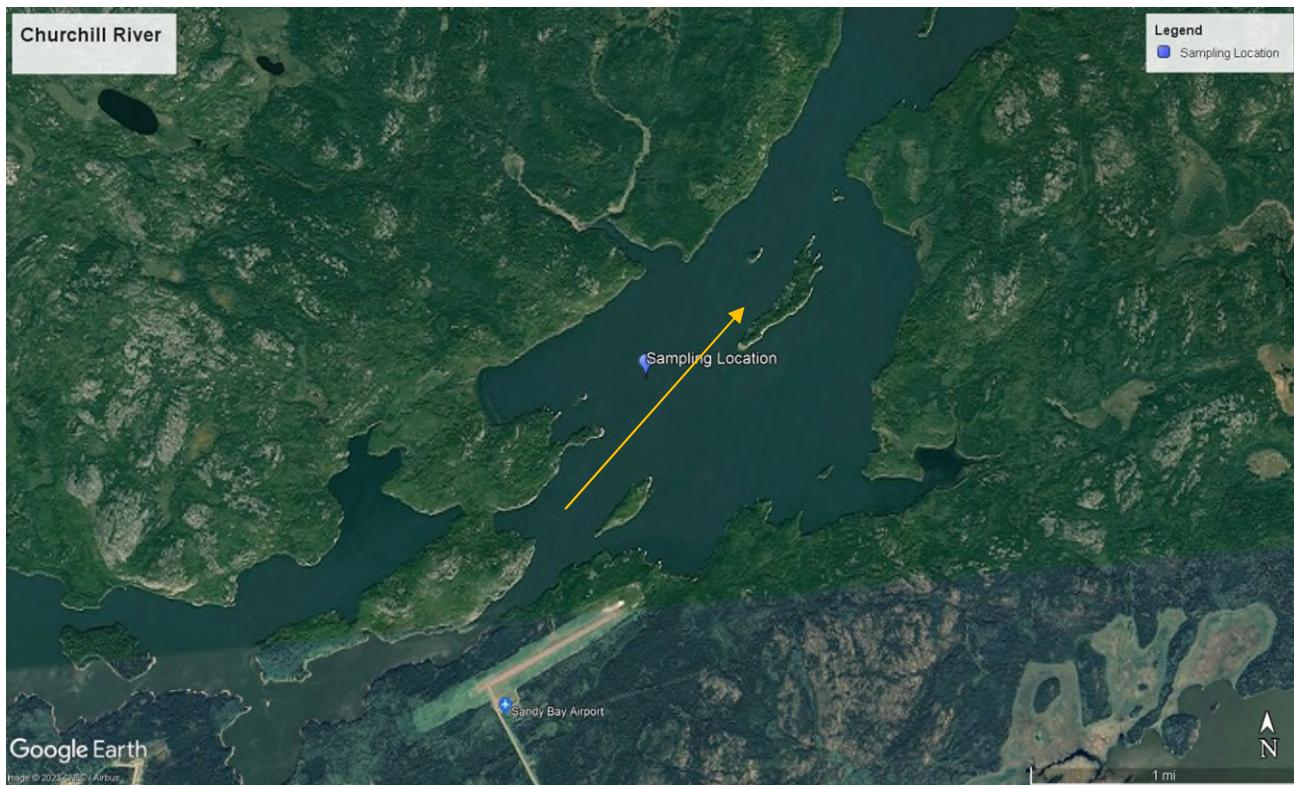


Figure 1. Satellite imagery of the sampling locations for Churchill River. North is at the top of the image. Direction of flow in this image from southwest to northeast and is depicted using the arrow.

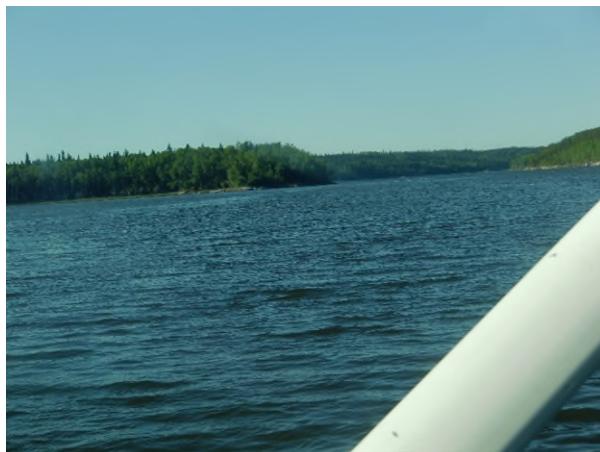


Figure 2. Churchill R., Upstream

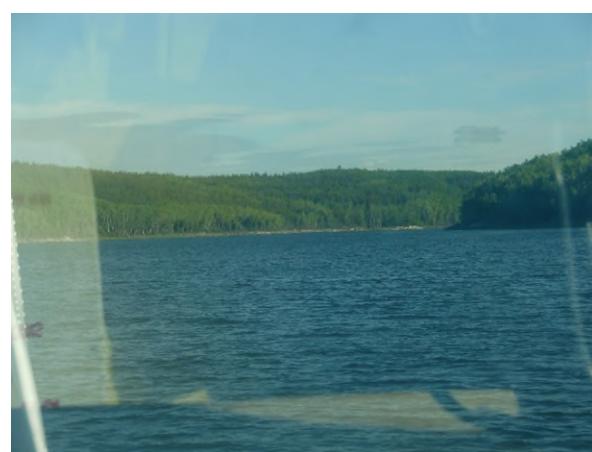


Figure 3. Churchill R., Downstream

Parameters Monitored

Note, spelling of parameter names purposely match the spelling in the database.

Field

Parameter	Years monitored
COLIFORMS FECAL	1974-1990, 1992, 2012-2019 ongoing
COLIFORMS TOTAL	1974-1990, 1992
E. COLI	2012-2019 ongoing
OXYGEN DISSOLVED	1974-2019 ongoing
PH (FIELD)	1974-2019 ongoing
SPECIFIC CONDUCTANCE (FIELD)	1974-2019 ongoing
TEMPERATURE WATER (FIELD)	1974-2019 ongoing
TURBIDITY (FIELD)	1979-2019 ongoing

Physicals

Parameter	Years monitored
ALKALINITY GRAN CACO3	2001-2002, 2004-2014
ALKALINITY PHENOLPHTHALEIN CACO3	1974-2014
ALKALINITY TOTAL CACO3	1974-2019 ongoing
COLOUR APPARENT	1974-1980
COLOUR TRUE	1981-2004
ODOUR THRESHOLD NUMBER	1974-1976, 1978
RESIDUE FILTERABLE	1979
RESIDUE FIXED FILTERABLE	1979
RESIDUE FIXED NONFILTRABLE	1974-2019 ongoing
RESIDUE NONFILTRABLE	1974-2019 ongoing
PH (LAB)	1974-2019 ongoing
SPECIFIC CONDUCTANCE (LAB)	1974-2019 ongoing
TEMPERATURE WATER (LAB)	1974-2000
TURBIDITY (LAB)	1974-2019 ongoing

Nutrients (Carbon, Nitrogen, Phosphorus)

Parameter	Years monitored
AMMONIA DISSOLVED	1987-2019 ongoing
AMMONIA TOTAL	1981-1987
AMMONIA UN-IONIZED (CALCD.)	1986-2019 ongoing
CARBON DISSOLVED INORGANIC	1978-1980
CARBON DISSOLVED ORGANIC	1978-2019 ongoing
CARBON PARTICULATE ORGANIC	1977-2019 ongoing
CARBON TOTAL INORGANIC	1974-1978

CARBON TOTAL ORGANIC	1974-1978
CARBON TOTAL ORGANIC (CALCD.)	1980-2019 ongoing
NITROGEN DISSOLVED NO ₃ & NO ₂	1974-2019 ongoing
NITROGEN PARTICULATE	1977-2019 ongoing
NITROGEN TOTAL (CALCD.)	1977-2019 ongoing
NITROGEN TOTAL DISSOLVED	1976-2019 ongoing
NITROGEN TOTAL KJELDAHL	1974-1978
PHOSPHATE DISSOLVED ORTHO	1981-1990
PHOSPHOROUS DISSOLVED ORTHO	1990-2019 ongoing
PHOSPHOROUS PARTICULATE (CALCD.)	1975-2019 ongoing
PHOSPHOROUS TOTAL	1974-2019 ongoing
PHOSPHOROUS TOTAL DISSOLVED	1975-2019 ongoing

Major Ions

Parameter	Years monitored
BICARBONATE (CALCD.)	1980-2019 ongoing
BROMIDE	2015-2016
CALCIUM DISSOLVED/FILTERED	1974-2019 ongoing
CARBONATE (CALCD.)	1980-2019 ongoing
CHLORIDE DISSOLVED	1974-2019 ongoing
FLUORIDE DISSOLVED	1974-2019 ongoing
FREE CO ₂ (CALCD.)	1984-2019 ongoing
HARDNESS NON-CARB. (CALCD.)	1984-2019 ongoing
HARDNESS TOTAL (CALCD.) CACO ₃	1980-2019 ongoing
HARDNESS TOTAL CACO ₃	1974-1975
HARDNESS TOTAL LAB (CALCD.) CACO ₃	1975-1978
HYDROXIDE (CALCD.)	1984-2019 ongoing
MAGNESIUM DISSOLVED/FILTERED	1974-2019 ongoing
POTASSIUM DISSOLVED/FILTERED	1974-2019 ongoing
SATURATION INDEX (CALCD.)	1985-2019 ongoing
SILICA REACTIVE	1974-1990
SIO ₂	1990-2019 ongoing
SODIUM ADSORPTION RATIO (CALCD.)	2001-2019 ongoing
SODIUM DISSOLVED/FILTERED	1974-2019 ongoing
SODIUM PERCENTAGE (CALCD.)	1984-2019 ongoing
STABILITY INDEX (CALCD.)	1985-2019 ongoing
SULPHATE DISSOLVED	1974-2019 ongoing
TOTAL DISSOLVED SOLIDS (CALCD.)	1980-1983, 1985-2019 ongoing

Metals

Parameter	Years monitored
ALUMINUM DISSOLVED	1984-2019 ongoing
ALUMINUM EXTRACTABLE	1974-1993
ALUMINUM TOTAL	1993-2019 ongoing
ANTIMONY DISSOLVED	2003-2019 ongoing
ANTIMONY TOTAL	2003-2019 ongoing
ARSENIC DISSOLVED	1974-1990, 2003-2019 ongoing
ARSENIC TOTAL	2000-2019 ongoing
BARIUM DISSOLVED	1999-2019 ongoing
BARIUM EXTRACTABLE	1974-1980
BARIUM TOTAL	1983-2019 ongoing
BARIUM TOTAL RECOVERABLE	1980-1983
BERYLLIUM DISSOLVED	1999-2019 ongoing
BERYLLIUM TOTAL	1999-2019 ongoing
BISMUTH DISSOLVED	2003-2019 ongoing
BISMUTH TOTAL	2003-2019 ongoing
BORON DISSOLVED	1974-1990, 1992-2019 ongoing
BORON TOTAL	2003-2019 ongoing
CADMIUM DISSOLVED	1999-2019 ongoing
CADMIUM EXTRACTABLE	1974-1980
CADMIUM TOTAL	1983-2019 ongoing
CADMIUM TOTAL RECOVERABLE	1980-1983
CERIUM DISSOLVED	2015-2019 ongoing
CERIUM TOTAL	2015-2019 ongoing
CESIUM DISSOLVED	2015-2019 ongoing
CESIUM TOTAL	2015-2019 ongoing
CHROMIUM DISSOLVED	1999-2019 ongoing
CHROMIUM EXTRACTABLE	1974-1983
CHROMIUM TOTAL	1983-2019 ongoing
COBALT DISSOLVED	1999-2019 ongoing
COBALT EXTRACTABLE	1978-1980
COBALT TOTAL	1983-2019 ongoing
COBALT TOTAL RECOVERABLE	1980-1983
COPPER DISSOLVED	1979, 1999-2019 ongoing
COPPER EXTRACTABLE	1974-1980
COPPER TOTAL	1983-2019 ongoing
COPPER TOTAL RECOVERABLE	1980-1983
EUROPIUM DISSOLVED	2019 ongoing
EUROPIUM TOTAL	2019 ongoing
GADOLINIUM DISSOLVED	2019 ongoing
GADOLINIUM TOTAL	2019 ongoing

GALLIUM DISSOLVED	2003-2019 ongoing
GALLIUM TOTAL	2003-2019 ongoing
GERMANIUM DISSOLVED	2019 ongoing
GERMANIUM TOTAL	2019 ongoing
HAFNIUM DISSOLVED	2019 ongoing
HAFNIUM TOTAL	2019 ongoing
HOLMIUM DISSOLVED	2019 ongoing
HOLMIUM TOTAL	2019 ongoing
INDIUM DISSOLVED	2019 ongoing
INDIUM TOTAL	2019 ongoing
IRIDIUM DISSOLVED	2019 ongoing
IRIDIUM TOTAL	2019 ongoing
IRON DISSOLVED	1979-2019 ongoing
IRON EXTRACTABLE	1974-1980, 1987
IRON TOTAL	1999-2019 ongoing
LANTHANUM DISSOLVED	2003-2019 ongoing
LANTHANUM TOTAL	2003-2019 ongoing
LEAD DISSOLVED	1979, 1999-2019 ongoing
LEAD EXTRACTABLE	1974-1980
LEAD TOTAL	1983-2019 ongoing
LEAD TOTAL RECOVERABLE	1980-1983
LITHIUM DISSOLVED	1999-2019 ongoing
LITHIUM TOTAL	1999-2019 ongoing
LUTETIUM DISSOLVED	2019 ongoing
LUTETIUM TOTAL	2019 ongoing
MANGANESE DISSOLVED	1979-2019 ongoing
MANGANESE EXTRACTABLE	1974-1980, 1987
MANGANESE TOTAL	1999-2019 ongoing
MERCURY EXTRACTABLE	1974-1979
MERCURY TOTAL	1979-1999
MOLYBDENUM DISSOLVED	1999-2019 ongoing
MOLYBDENUM TOTAL	1999-2019 ongoing
NEODYMIUM DISSOLVED	2019 ongoing
NEODYMIUM TOTAL	2019 ongoing
NICKEL DISSOLVED	1979, 1999-2019 ongoing
NICKEL EXTRACTABLE	1979-1980
NICKEL TOTAL	1983-2019 ongoing
NICKEL TOTAL RECOVERABLE	1980-1983
NIOBIUM DISSOLVED	2015-2019 ongoing
NIOBIUM TOTAL	2015-2019 ongoing
PLATINUM DISSOLVED	2015-2019 ongoing
PLATINUM TOTAL	2015-2019 ongoing
PRASEODYMIUM DISSOLVED	2019 ongoing

PRASEODYMIUM TOTAL	2019 ongoing
RUBIDIUM DISSOLVED	2003-2019 ongoing
RUBIDIUM TOTAL	2003-2019 ongoing
RUTHENIUM DISSOLVED	2019 ongoing
RUTHENIUM TOTAL	2019 ongoing
SAMARIUM DISSOLVED	2019 ongoing
SAMARIUM TOTAL	2019 ongoing
SCANDIUM DISSOLVED	2019 ongoing
SCANDIUM TOTAL	2019 ongoing
SELENIUM DISSOLVED	1974-1990, 2003-2019 ongoing
SELENIUM TOTAL	2000-2019 ongoing
SILVER DISSOLVED	2003-2019 ongoing
SILVER EXTRACTABLE	1974-1979
SILVER TOTAL	1999-2019 ongoing
STRONTIUM DISSOLVED	1999-2019 ongoing
STRONTIUM TOTAL	1999-2019 ongoing
TELLURIUM DISSOLVED	2019 ongoing
TELLURIUM TOTAL	2019 ongoing
TERBIUM DISSOLVED	2019 ongoing
TERBIUM TOTAL	2019 ongoing
THALLIUM DISSOLVED	2003-2019 ongoing
THALLIUM TOTAL	2003-2019 ongoing
TIN DISSOLVED	2015-2019 ongoing
TIN TOTAL	2015-2019 ongoing
TITANIUM DISSOLVED	2016-2019 ongoing
TITANIUM TOTAL	2016-2019 ongoing
TUNGSTEN DISSOLVED	2015-2019 ongoing
TUNGSTEN TOTAL	2015-2019 ongoing
URANIUM DISSOLVED	2003-2019 ongoing
URANIUM TOTAL	2003-2019 ongoing
VANADIUM DISSOLVED	1999-2019 ongoing
VANADIUM EXTRACTABLE	1975-1980
VANADIUM TOTAL	1983-2019 ongoing
VANADIUM TOTAL RECOVERABLE	1980-1983
YTTERBIUM DISSOLVED	2019 ongoing
YTTERBIUM TOTAL	2019 ongoing
YTTRIUM- DISSOLVED	2015-2019 ongoing
YTTRIUM TOTAL	2015-2019 ongoing
ZINC DISSOLVED	1979, 1999-2019 ongoing
ZINC EXTRACTABLE	1974-1980
ZINC TOTAL	1983-2019 ongoing
ZINC TOTAL RECOVERABLE	1980-1983
ZIRCONIUM DISSOLVED	2019 ongoing

ZIRCONIUM TOTAL	2019 ongoing
-----------------	--------------

Acid Herbicides

Parameter	Years monitored
2-(2,4-DICHLOROPHOXY)-PROPIONIC ACID	2009, 2013, 2017 ongoing*
2,3,6-TBA	1985-1990, 2009, 2013, 2017
2,4,5-T	1974-1990, 2009, 2013, 2017 ongoing*
2,4-D	1974-1990, 2009, 2013, 2017 ongoing*
2,4-DB	1974-1990, 2009, 2013, 2017
BROMOXYNIL	1988-1990, 2009, 2013, 2017 ongoing*
CLOPYRALID	2009, 2013, 2017 ongoing*
DICAMBA	1985-1990, 2009, 2013, 2017 ongoing*
DICHLORPROP	1974-1990
FENOPROP (SILVEX)	1978-1990
IMAZAMETHABENZ-METHYL (A)	2009, 2013, 2017 ongoing*
IMAZAMETHABENZ-METHYL (B)	2009, 2013
IMAZAMOX	2017 ongoing*
IMAZAPYR	2017 ongoing*
IMAZETHAPYR	2009, 2013, 2017 ongoing*
MCPA	1974-1990, 2009, 2013, 2017 ongoing*
MCPB	1985-1990, 2009, 2013, 2017
CPPP	2017 ongoing*
MECOPROP	2009, 2013
PICLORAM	1974-1982, 1985-1990, 2009, 2013, 2017 ongoing*
SILVEX	2009, 2013, 2017 ongoing*
TRICLOPYR	2017 ongoing*

*sampled on 4-year rotational basis

Neutral Herbicides

Parameter	Years monitored
ATRAZINE	2009, 2013, 2017 ongoing*
ATRAZINE TOTAL	1985-1990
BENZOYLPROP-ETHYL	1985-1990, 2009, 2013, 2017 ongoing*
BUTYLATE	2009, 2013, 2017 ongoing*
DESETHYL ATRAZINE	2009, 2013, 2017 ongoing*
D-ETHYL SIMAZINE	2009, 2013, 2017 ongoing*
DIALLATE	1985-1990
DIALLATE I	2009, 2013, 2017 ongoing*
DIALLATE II	2009, 2013, 2017 ongoing*
DICLOFOP-METHYL	1985-1990, 2009, 2013, 2017 ongoing*
ETHALFLURALIN	2009, 2013, 2017 ongoing*

FENOXAPROP-P-ETHYL	2009, 2013, 2017 ongoing*
METOLACHLOR	2009, 2013, 2017 ongoing*
METRIBUZIN	2009, 2013, 2017 ongoing*
SIMAZINE	2009, 2013, 2017 ongoing*
TRIALLATE	1985-1990, 2009, 2013, 2017 ongoing*
TRIFLURALIN	1974-1977, 1979, 1985-1990, 2009, 2013, 2017 ongoing*

*sampled on 4-year rotational basis

Organochlorine

Parameter	Years monitored
ALDRIN	1974-1990, 2009, 2013
ALPHA-BENZENEHEXACHLORIDE	1975-1990, 2009, 2013, 2017 ongoing*
ALPHA-CHLORDANE	1975-1990, 2009, 2013, 2017 ongoing*
ALPHA-ENDOSULFAN	1974-1990, 2009, 2013, 2017 ongoing*
BETA-ENDOSULFAN	1974-1990, 2009, 2013, 2017 ongoing*
BETA-HCH	2009, 2013
CIS-NONACHLOR	2009, 2013
DIELDRIN	1974-1990, 2009, 2013, 2017 ongoing*
ENDOSULFAN SULPHATE TOTAL	2017 ongoing*
ENDRIN	1975-1990, 2009, 2013
GAMMA-BHC (LINDANE)	1974-1990, 2009, 2013, 2017 ongoing*
GAMMA-CHLORDANE	1975-1990, 2009, 2013, 2017 ongoing*
HEPTACHLOR	1974-1990, 2009, 2013
HEPTACHLOR EPOXIDE	1974-1990, 2009, 2013
HEXACHLOROBENZENE	1978-1990, 2009, 2013, 2017 ongoing*
HEXACHLOROBUTADIENE	2009, 2013, 2017 ongoing*
METHOXYCHLOR (P,P'-METHOXYCHLOR).	1974-1990, 2009, 2013
MIREX	1978-1990, 2009, 2013, 2017 ongoing*
O,P'-DDD	2009, 2013
O,P'-DDE	2009, 2013
O,P'-DDT	1978-1990, 2009, 2013, 2017 ongoing*
OXYCHLORDANE	2009, 2013
P,P'-DDD (TDP)	1974-1990, 2009, 2013
P,P'-DDE	1974-1990, 2009, 2013, 2017 ongoing*
P,P'-DDT	1974-1990, 2009, 2013, 2017 ongoing*
PENTACHLOROANISOLE	2009, 2013
PENTACHLOROBENZENE	2009, 2013, 2017 ongoing*
TRANS-NONACHLOR	2009, 2013, 2017 ongoing*

*sampled on 4-year rotational basis

Glyphosate

Parameter	Years monitored
AMPA	2013, 2017 ongoing*
GLUFOSINATE	2013, 2017 ongoing*
GLYPHOSATE	2013, 2017 ongoing*

*sampled on 4-year rotational basis

Carbamates

Parameter	Years monitored
BARBAN	1974-1977, 1985-1990

Phenols

Parameter	Years monitored
PHENOLIC MATERIAL	1974-1990

Aroclors

Parameter	Years monitored
AROCLOR	1980-1990
AROCLOR 1242	1981-1983
AROCLOR 1248	1974-1980
AROCLOR 1254	1974-1983
AROCLOR 1260	1974-1983

Other Parameters

Parameter	Years monitored
AROMATIC HYDROCARBONS	1974-1982
BETA RADIATION TOTAL	1975
CHLOROPHYLL A	1974-1990, 2018-2019 ongoing
CHLOROPHYLL A (CORRECTED)	2018-2019 ongoing
CYANIDE TOTAL	1974-1990
N-ALKANES C10 - C26	1974-1982
N-ALKYL SULPHONATES (LAS)	1974-1981
NITRILOTRIACETIC ACID - NTA	1975-1978
OIL AND GREASE	1974-1981
OXYGEN BIOCHEMICAL DEMAND	1974-1979
STRONTIUM RADIATION TOTAL 90	1975

Qu'Appelle River

Station Name:	Qu'Appelle River Near Welby			
Station Number:	SA05JM0014			
Naquadat¹ Number:	00SA05JM0014			
WSC² Reference Number:	05JM001			
WSC Period of Record:	1942-1955, 1974 – current			
Project Number:	115 (historically 315)			
Sampling Site Open Water:	Latitude 50°29'28.15"N	Longitude: 101°33'31.91"W		
Sampling Site Ice Cover:	Latitude 50°29'27.75"N	Longitude: 101°33'30.48"W		
Drainage Area:	50900 km ²			
Effective Drainage Area:	17100 km ²			
Ecozone³:	Prairies			
Ecoregion³:	Aspen Parkland			
Water Body:	Qu'Appelle River			
Water Body Type:	River			
Watershed:	Qu'Appelle/Assiniboine River			
Stakeholders:	PPWB			
Site Overview:	<p>The Qu'Appelle River flows approximately 290 km from its headwaters near Lake Diefenbaker to its confluence with the Assiniboine River. The Qu'Appelle River Basin drains a gross area of 52,000 km²; however, less than 30% is effective drainage contributing flow in median runoff years. Most of the watershed has been developed for agriculture with a small proportion for towns, cities and industries. Major urban centres in the watershed include Regina and Moose Jaw. Multiple lakes occur along the length of the river. Significant upgrades in Regina's wastewater treatment plant occurred in 1977 and 2017 resulting in large reductions of nutrient loading to the river.</p> <p>Long-term increasing trends on this river include those for nitrogen constituents. The dissolved ion (SO₄) is also increasing.</p>			
Sampling Location:	<p>The PPWB water quality monitoring site on the Qu'Appelle River is located at Welby, Saskatchewan. Samples are collected from bridge on grid road(SK 600). Under Ice Cover conditions, samples are collected just downstream of bridge.</p>			
Station Established:	March, 1974			
Period of Record:	1974 current			
Station Type:	Network PPWB			
Data Located:	ACBIS (1975-present)	671 Samples (January 2024)		
Frequency of Observations:	Monthly			

¹Data listing of water quality monitoring stations

²Water Survey of Canada

³<http://www.ecozones.ca/english/zone/index.html>

Site Status

Nutrients	2013	2018	Major Ions	2013	2018	Physicals	2013	2018
Ammonia Dissolved	↔	↑	Chloride Dissolved	↔	↓	Oxygen Dissolved	↔	↔
Nitrate as N	↔	↔	Fluoride Dissolved	↓	↓	pH – Field	↔	↑
Nitrogen Total	↑	↑	Sodium Dissolved/Filtered	↓	↓	Sodium Adsorption Ratio (SAR)	↓	↓
Phosphorous Total	↓	↔	Sulphate Dissolved	↑	↑	Total Suspended Solids (TSS)	↔	↑
Phosphorous Total Dissolved	↔	↔	Total Dissolved Solids (TDS)	↔	↔			

Metals	2013	2018	Metals	2013	2018	Metals	2013	2018
Aluminum Dissolved	↔	↓	Cobalt Dissolved	↑	↑	Nickel Dissolved	↑	↑
Aluminum Total	↓	↔	Cobalt Total	↔	↑	Nickel Total	↔	↑
Arsenic Dissolved	↑	↔	Copper Dissolved	↑	↔	Selenium Dissolved	↑	↑
Arsenic Total	↑	↔	Copper Total	↔	↔	Selenium Total	↑	↑
Barium Dissolved	↑	↑	Iron Dissolved	↔	↔	Silver Dissolved	>20%	>20%
Barium Total	↓	↑	Iron Total	↓	↔	Silver Total	↔	↑
Beryllium Dissolved	↑	↓	Lead Dissolved	↔	↔	Thallium Dissolved	↑	↔
Beryllium Total	↔	↔	Lead Total	↓	↑	Thallium Total	↔	↑
Boron Dissolved	↔	↓	Lithium Dissolved	↔	↔	Uranium Dissolved	↑	↑
Boron Total	↓	↓	Lithium Total	↔	↔	Uranium Total	↑	↑
Cadmium Dissolved	↓	↓	Manganese Dissolved	↑	↑	Vanadium Dissolved	↑	↑
Cadmium Total	↓	↔	Manganese Total	↔	↑	Vanadium Total	↔	↑
Chromium Dissolved	↔	↔	Molybdenum Dissolved	↔	↓	Zinc Dissolved	↓	↔
Chromium Total	↓	↔	Molybdenum Total	↓	↓	Zinc Total	↓	↑

Typical range (minimum-maximum) in field observations and bacterial values:

Current (2009-2019)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance ($\mu\text{S}/\text{cm}$)	E.Coli (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	0.7-13.4	6.5-9.5	4-82	671-1860	<2-19	<2-14
Spring (Mar-May)	5.4-13.0	7.2-8.7	5-873	489-1868	<2-1700	<2-56
Summer (Jun-Aug)	5.3-11.0	7.9-8.8	4-198	1004-1623	<10-382	<10-357
Fall (Sep-Nov)	8.7-14.0	7.5-8.8	7-106	1225-1715	<2-210	<2-210

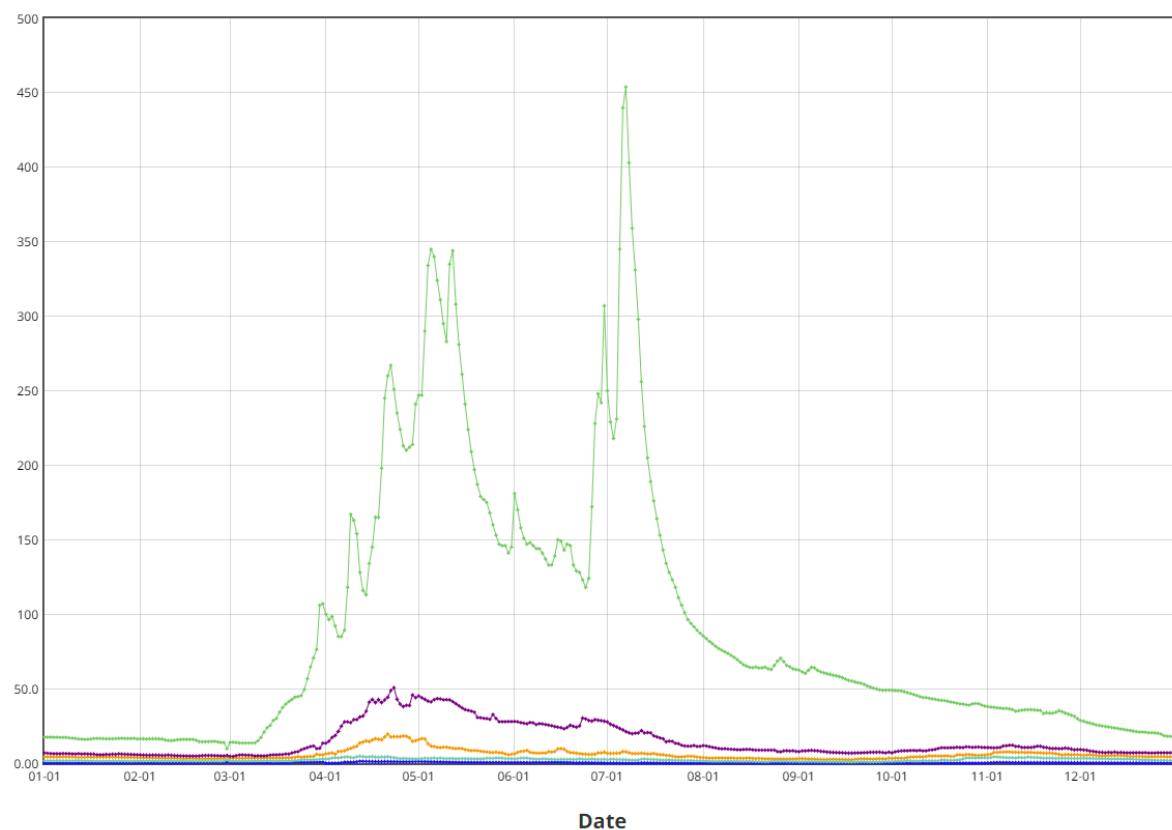
Past (1989-2008)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance ($\mu\text{S}/\text{cm}$)	<i>E.Coli</i> (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	1.4-15.7	7.4-8.5	4-21	528-1962	4-3339	<2-16
Spring (Mar-May)	4.5-12.9	7.3-8.5	6-253	374-1771	2-2293	2-50
Summer (Jun-Aug)	4.6-11.7	7.7-9.0	12-289	698-2301	1-8200	2-300
Fall (Sep-Nov)	6.4-14.9	7.2-9.3	8-86	1076-1809	2-9100	<2-100

Hydrometric Graphs (Water Survey of Canada, 1915-2021)

▼ Legend

- | | | |
|------------------|------------------|----------|
| — Maximum | — Minimum | — Median |
| — Upper quartile | — Lower quartile | |

Discharge (m^3/s)



Hydrometric Data Website

[https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=01&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Grap h&stn=05JM001&dataType=Daily¶meterType=Flow&year=2021](https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=01&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Graph&stn=05JM001&dataType=Daily¶meterType=Flow&year=2021)

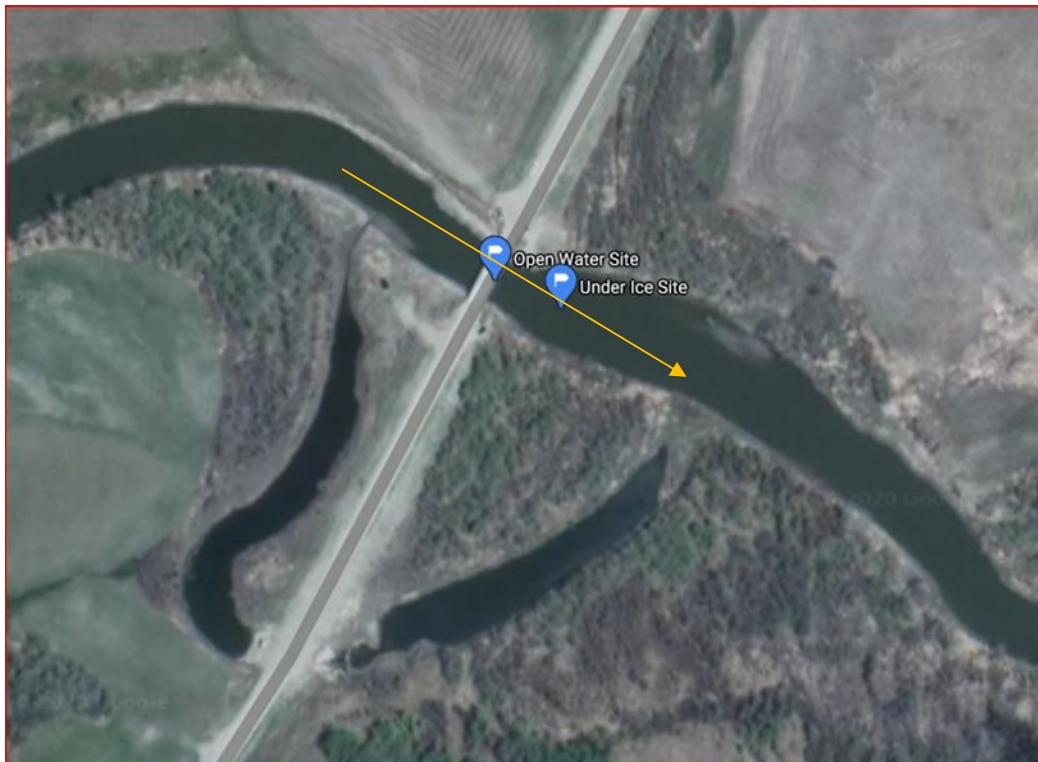
Maps & Diagrams

Figure 1. Satellite imagery of the sampling locations for the Qu'Appelle R. North is at the top of the image. Direction of flow in this image from northwest to southeast and is depicted using the arrow.



Figure 2. Qu'Appelle R., upstream view



Figure 3. Qu'Appelle R., downstream view

Parameters Monitored

Note, spelling of parameter names purposely match the spelling in the database.

Field

Parameter	Years monitored
COLIFORMS FECAL	1975-2019 ongoing
COLIFORMS TOTAL	1975-2004, 2011
E. COLI	1998-2019 ongoing
FECAL STREPTOCOCCI	2003
OXYGEN DISSOLVED	1975-2019 ongoing
PH (FIELD)	1975-2019 ongoing
SPECIFIC CONDUCTANCE (FIELD)	1975-2019 ongoing
TEMPERATURE WATER (FIELD)	1975-2019 ongoing
TURBIDITY (FIELD)	1979-2019 ongoing

Physicals

Parameter	Years monitored
ALKALINITY GRAN CACO3	2005-2014
ALKALINITY PHENOLPHTHALEIN CACO3	1975-2000, 2002-2014
ALKALINITY TOTAL CACO3	1975-2019 ongoing
COLOUR APPARENT	1975-1981
COLOUR TRUE	1981-2005
ODOUR THRESHOLD NUMBER	1976, 1978
RESIDUE FILTERABLE	1979
RESIDUE FIXED FILTERABLE	1979
RESIDUE FIXED NONFILTRABLE	1976-2019 ongoing
RESIDUE NONFILTRABLE	1975-2019 ongoing
TURBIDITY (LAB)	1975-2019 ongoing
PH (LAB)	1975-2019 ongoing
SPECIFIC CONDUCTANCE (LAB)	1975-2019 ongoing
TEMPERATURE WATER (LAB)	1975-2001

Nutrients (Carbon, Nitrogen, Phosphorus)

Parameter	Years monitored
AMMONIA DISSOLVED	1987-2019
AMMONIA TOTAL	1981-1987
AMMONIA UN-IONIZED (CALCD.)	1986-2019
CARBON DISSOLVED INORGANIC	1978-1980
CARBON DISSOLVED ORGANIC	1978-2019
CARBON PARTICULATE ORGANIC	1977-2019

CARBON TOTAL INORGANIC	1975-1978
CARBON TOTAL ORGANIC	1975-1978
CARBON TOTAL ORGANIC (CALCD.)	1980-1983, 1985-2019
CARBONACEOUS OXYGEN DEMAND BOD10	2016-2019
NITROGEN DISSOLVED NO ₃ & NO ₂	1975-2019
NITROGEN PARTICULATE	1977-2019
NITROGEN TOTAL (CALCD.)	1977-2019
NITROGEN TOTAL DISSOLVED	1975-2019
NITROGEN TOTAL KJELDAHL	1975-1978
PHOSPHATE DISSOLVED ORTHO	1981-1990
PHOSPHOROUS DISSOLVED ORTHO	1990-2019
PHOSPHOROUS PARTICULATE (CALCD.)	1975-2019
PHOSPHOROUS TOTAL	1975-2019
PHOSPHOROUS TOTAL DISSOLVED	1975-2019

Major Ions

Parameter	Years monitored
BICARBONATE (CALCD.)	1980-1983, 1985-2019 ongoing
BROMIDE	2015-2017
CALCIUM DISSOLVED/FILTERED	1975-2019 ongoing
CARBONATE (CALCD.)	1980-1983, 1985-2019 ongoing
CHLORIDE DISSOLVED	1975-2019 ongoing
FLUORIDE DISSOLVED	1975-2019 ongoing
FREE CO ₂ (CALCD.)	1985-2019 ongoing
HARDNESS NON-CARB. (CALCD.)	1985-2019 ongoing
HARDNESS TOTAL (CALCD.) CACO ₃	1980-1983, 1985-2019 ongoing
HARDNESS TOTAL LAB (CALCD.) CACO ₃	1975-1978
HYDROXIDE (CALCD.)	1985-2019 ongoing
MAGNESIUM DISSOLVED/FILTERED	1975-2019 ongoing
POTASSIUM DISSOLVED/FILTERED	1975-2019 ongoing
SATURATION INDEX (CALCD.)	1985-2019 ongoing
SILICA REACTIVE	1975-1990
SIO ₂	1990-2019 ongoing
SODIUM ADSORPTION RATIO (CALCD.)	2001-2019 ongoing
SODIUM DISSOLVED/FILTERED	1975-2019 ongoing
SODIUM PERCENTAGE (CALCD.)	1985-2019 ongoing
STABILITY INDEX (CALCD.)	1985-2019 ongoing
SULPHATE DISSOLVED	1975-2019 ongoing
TOTAL DISSOLVED SOLIDS (CALCD.)	1980-1983, 1985-2019 ongoing

Metals

Parameter	Years monitored
ALUMINUM DISSOLVED	1984-1990, 1992-2019 ongoing
ALUMINUM EXTRACTABLE	1975-1990, 1992-1993
ALUMINUM TOTAL	1993-2019 ongoing
ANTIMONY DISSOLVED	2003-2019 ongoing
ANTIMONY TOTAL	2003-2019 ongoing
ARSENIC DISSOLVED	1975-1990, 2003-2019 ongoing
ARSENIC TOTAL	2000-2019 ongoing
BARIUM DISSOLVED	1999-2019 ongoing
BARIUM EXTRACTABLE	1975-1980
BARIUM TOTAL	1983-1990, 1992-2019 ongoing
BARIUM TOTAL RECOVERABLE	1980-1983
BERYLLIUM DISSOLVED	1999-2019 ongoing
BERYLLIUM TOTAL	1997-2019 ongoing
BISMUTH DISSOLVED	2003-2019 ongoing
BISMUTH TOTAL	2003-2019 ongoing
BORON DISSOLVED	1976-2019 ongoing
BORON TOTAL	1997-1998, 2003-2019 ongoing
CADMIUM DISSOLVED	1999-2019 ongoing
CADMIUM EXTRACTABLE	1975-1980
CADMIUM TOTAL	1983-1990, 1992-2019 ongoing
CADMIUM TOTAL RECOVERABLE	1980-1983
CERIUM DISSOLVED	2014-2019 ongoing
CERIUM TOTAL	2014-2019 ongoing
CESIUM DISSOLVED	2014-2019 ongoing
CESIUM TOTAL	2014-2019 ongoing
CHROMIUM DISSOLVED	1999-2019 ongoing
CHROMIUM EXTRACTABLE	1975-1983
CHROMIUM TOTAL	1983-1990, 1992-2019 ongoing
COBALT DISSOLVED	1999-2019 ongoing
COBALT EXTRACTABLE	1978-1980
COBALT TOTAL	1983-1990, 1992-2019 ongoing
COBALT TOTAL RECOVERABLE	1980-1983
COPPER DISSOLVED	1979, 1999-2019 ongoing
COPPER EXTRACTABLE	1975-1980
COPPER TOTAL	1983-1990, 1992-2019 ongoing
COPPER TOTAL RECOVERABLE	1980-1983
EUROPIUM DISSOLVED	2019 ongoing
EUROPIUM TOTAL	2019 ongoing
GADOLINIUM DISSOLVED	2019 ongoing
GADOLINIUM TOTAL	2019 ongoing

GALLIUM DISSOLVED	2003-2019 ongoing
GALLIUM TOTAL	2003-2019 ongoing
GERMANIUM DISSOLVED	2019 ongoing
GERMANIUM TOTAL	2019 ongoing
HAFNIUM DISSOLVED	2019 ongoing
HAFNIUM TOTAL	2019 ongoing
HOLMIUM DISSOLVED	2019 ongoing
HOLMIUM TOTAL	2019 ongoing
INDIUM DISSOLVED	2019 ongoing
INDIUM TOTAL	2019 ongoing
IRIDIUM DISSOLVED	2019 ongoing
IRIDIUM TOTAL	2019 ongoing
IRON DISSOLVED	1979-1990, 1992-2019 ongoing
IRON EXTRACTABLE	1975-1980
IRON TOTAL	1997-2019 ongoing
LANTHANUM DISSOLVED	2003-2019 ongoing
LANTHANUM TOTAL	2003-2019 ongoing
LEAD DISSOLVED	1979, 1999-2019 ongoing
LEAD EXTRACTABLE	1975-1980
LEAD TOTAL	1983-1990, 1992-2019 ongoing
LEAD TOTAL RECOVERABLE	1980-1983
LITHIUM DISSOLVED	1999-2019 ongoing
LITHIUM TOTAL	1997-2019 ongoing
LUTETIUM DISSOLVED	2019 ongoing
LUTETIUM TOTAL	2019 ongoing
MANGANESE DISSOLVED	1979-1990, 1992-2019 ongoing
MANGANESE EXTRACTABLE	1975-1980
MANGANESE TOTAL	1997-2019 ongoing
MERCURY EXTRACTABLE	1975-1979
MERCURY TOTAL	1979-1990, 1992-1998
MOLYBDENUM DISSOLVED	1999-2019 ongoing
MOLYBDENUM TOTAL	1997-2019 ongoing
NEODYMIUM DISSOLVED	2019 ongoing
NEODYMIUM TOTAL	2019 ongoing
NICKEL DISSOLVED	1979, 1999-2019 ongoing
NICKEL EXTRACTABLE	1979-1980
NICKEL TOTAL	1983-1990, 1992-2019 ongoing
NICKEL TOTAL RECOVERABLE	1980-1983
NIOBIUM DISSOLVED	2014-2019 ongoing
NIOBIUM TOTAL	2014-2019 ongoing
PLATINUM DISSOLVED	2014-2019 ongoing
PLATINUM TOTAL	2014-2019 ongoing
PRASEODYMIUM DISSOLVED	2019 ongoing

PRASEODYMIUM TOTAL	2019 ongoing
RUBIDIUM DISSOLVED	2003-2019 ongoing
RUBIDIUM TOTAL	2003-2019 ongoing
RUTHENIUM DISSOLVED	2019 ongoing
RUTHENIUM TOTAL	2019 ongoing
SAMARIUM DISSOLVED	2019 ongoing
SAMARIUM TOTAL	2019 ongoing
SCANDIUM DISSOLVED	2019 ongoing
SCANDIUM TOTAL	2019 ongoing
SELENIUM DISSOLVED	1975-1990, 2003-2019 ongoing
SELENIUM TOTAL	2000-2019 ongoing
SILVER DISSOLVED	2003-2019 ongoing
SILVER EXTRACTABLE	1976-1979
SILVER TOTAL	1999-2019 ongoing
STRONTIUM DISSOLVED	1999-2019 ongoing
STRONTIUM TOTAL	1997-2019 ongoing
TELLURIUM DISSOLVED	2019 ongoing
TELLURIUM TOTAL	2019 ongoing
TERBIUM DISSOLVED	2019 ongoing
TERBIUM TOTAL	2019 ongoing
THALLIUM DISSOLVED	2003-2019 ongoing
THALLIUM TOTAL	2003-2019 ongoing
TIN DISSOLVED	2014-2019 ongoing
TIN TOTAL	2014-2019 ongoing
TITANIUM DISSOLVED	2016-2019 ongoing
TITANIUM TOTAL	2016-2019 ongoing
TUNGSTEN DISSOLVED	2014-2019 ongoing
TUNGSTEN TOTAL	2014-2019 ongoing
URANIUM DISSOLVED	2003-2019 ongoing
URANIUM TOTAL	2003-2019 ongoing
VANADIUM DISSOLVED	1999-2019 ongoing
VANADIUM EXTRACTABLE	1975-1980
VANADIUM TOTAL	1983-1990, 1992-2019 ongoing
VANADIUM TOTAL RECOVERABLE	1980-1983
YTTERBIUM DISSOLVED	2019 ongoing
YTTERBIUM TOTAL	2019 ongoing
YTTRIUM- DISSOLVED	2014-2019 ongoing
YTTRIUM TOTAL	2014-2019 ongoing
ZINC DISSOLVED	1979, 1999-2019 ongoing
ZINC EXTRACTABLE	1975-1980
ZINC TOTAL	1983-1990, 1992-2019 ongoing
ZINC TOTAL RECOVERABLE	1980-1983
ZIRCONIUM DISSOLVED	2019 ongoing

ZIRCONIUM TOTAL	2019 ongoing
-----------------	--------------

Acid Herbicides

Parameter	Years monitored
2-(2,4-DICHLOROPHOXY)-PROPIONIC ACID	2008, 2012, 2015-2019 ongoing
2,3,6-TBA	1985-1992, 2008, 2012, 2016-2017
2,4,5-T	1976-1992, 2008, 2012, 2015-2019 ongoing
2,4-D	1976-1992, 2008, 2012, 2015-2019 ongoing
2,4-DB	1976-1992, 2008, 2012, 2016-2017
ACIFLUORFEN	2019 ongoing
BROMOXYNIL	1988-1992, 2008, 2012, 2015-2019 ongoing
CLOPYRALID	2008, 2012, 2015-2019 ongoing
DICAMBA	1985-1992, 2008, 2012, 2015-2019 ongoing
DICHLORPROP	1976-1992
DINOSEB	2018-2019 ongoing
FENOPROP (SILVEX)	1978-1992
FOMESAFEN	2019 ongoing
IMAZAMETHABENZ-METHYL (A)	2008, 2012, 2015-2019 ongoing
IMAZAMETHABENZ-METHYL (B)	2008, 2012
IMAZAMOX	2016-2019 ongoing
IMAZAPYR	2016-2019 ongoing
IMAZETHAPYR	2008, 2012, 2015-2019 ongoing
MCPA	1976-1992, 2008, 2012, 2015-2019 ongoing
MCPB	1985-1992, 2008, 2012, 2015-2017
MCPP	2015-2019 ongoing
MECOPROP	2008, 2012
PICLORAM	1976-1992, 2008, 2012, 2015-2019 ongoing
SILVEX	2008, 2012, 2015-2019 ongoing
TRICLOPYR	2015-2019 ongoing

Neutral Herbicides

Parameter	Years monitored
ATRAZINE	2008, 2012, 2016 ongoing*
ATRAZINE TOTAL	1985-1992
BENZOYLPROP-ETHYL	1985-1992, 2008, 2012, 2016 ongoing*
BUTYLATE	2008, 2012, 2016 ongoing*
DESETHYL ATRAZINE	2008, 2012, 2016 ongoing*
D-ETHYL SIMAZINE	2008, 2012, 2016 ongoing*
DIALLATE	1985-1992
DIALLATE I	2008, 2012, 2016 ongoing*

DIALLATE II	2008, 2012, 2016 ongoing*
DICLOFOP-METHYL	1985-1992, 2008, 2012, 2016 ongoing*
ETHALFLURALIN	2008, 2012, 2016 ongoing*
FENOXAPROP-P-ETHYL	2008, 2012, 2016 ongoing*
METOLACHLOR	2008, 2012, 2016 ongoing*
METRIBUZIN	2008, 2012, 2016 ongoing*
SIMAZINE	2008, 2012, 2016 ongoing*
TRIALLATE	1985-1992, 2008, 2012, 2016 ongoing*
TRIFLURALIN	1976-1977, 1979, 1985-1992, 2008, 2012, 2016 ongoing*

*sampled on 4-year rotational basis

Organochlorine

Parameter	Years monitored
ALDRIN	1976-1990, 2008, 2012
ALPHA-BENZENEHEXACHLORIDE	1976-1990, 2008, 2012, 2016 ongoing*
ALPHA-CHLORDANE	1976-1990, 2008, 2012, 2016 ongoing*
ALPHA-ENDOSULFAN	1976-1990, 2008, 2012, 2016 ongoing*
BETA-ENDOSULFAN	1976-1990, 2008, 2012, 2016 ongoing*
BETA-HCH	2008, 2012
CIS-NONACHLOR	2008, 2012
DIELDRIN	1976-1990, 2008, 2012, 2016 ongoing*
ENDOSULFAN SULPHATE TOTAL	2016
ENDRIN	1976-1990, 2008, 2012
GAMMA-BHC (LINDANE)	1976-1990, 2008, 2012, 2016 ongoing*
GAMMA-CHLORDANE	1976-1990, 2008, 2012, 2016 ongoing*
HEPTACHLOR	1976-1990, 2008, 2012
HEPTACHLOR EPOXIDE	1976-1990, 2008, 2012
HEXACHLOROBENZENE	1978-1990, 2008, 2012, 2016 ongoing*
HEXACHLOROBUTADIENE	2008, 2012, 2016
METHOXYCHLOR (P,P'-METHOXYCHLOR).	1976-1990, 2008, 2012
MIREX	1978-1990, 2008, 2012, 2016 ongoing*
O,P'-DDD	2008, 2012
O,P'-DDE	2008, 2012
O,P'-DDT	1978-1990, 2008, 2012, 2016 ongoing*
OXYCHLORDANE	2008, 2012
P,P'-DDD (TDP)	1976-1990, 2008, 2012
P,P'-DDE	1976-1990, 2008, 2012, 2016 ongoing*
P,P'-DDT	1976-1990, 2008, 2012, 2016 ongoing*
PENTACHLOROANISOLE	2008, 2012
PENTACHLOROBENZENE	2008, 2012, 2016 ongoing*
TRANS-NONACHLOR	2008, 2012, 2016 ongoing*

*sampled on 4-year rotational basis

Glyphosate

Parameter	Years monitored
AMPA	2016, 2019 ongoing
GLUFOSINATE	2016, 2019 ongoing
GLYPHOSATE	2016, 2019 ongoing

Carbamates

Parameter	Years monitored
BARBAN	1976-1977, 1985-1992

Organophosphates

Parameter	Years monitored
DIMETHOATE	1985-1988
MALATHION	1985-1987

Phenols

Parameter	Years monitored
2,3,4,5-TETRACHLOROPHENOL	1990
2,3,4,6-TETRACHLOROPHENOL	1990
2,3,4-TRICHLOROPHENOL	1990
2,3,5,6-TETRACHLOROPHENOL	1990
2,3,5-TRICHLOROPHENOL	1990
2,3,6-TRICHLOROPHENOL	1990
2,3-DICHLOROPHENOL	1990
2,4,5-TRICHLOROPHENOL	1990
2,4,6-TRICHLOROPHENOL	1990
2,4-DICHLOROPHENOL	1990
2,6-DICHLOROPHENOL	1990
2-CHLORO-5-METHYLPHENOL	1990
2-CHLOROPHENOL	1990
3,4,5-TRICHLOROPHENOL	1990
3,4-DICHLOROPHENOL	1990
3,5-DICHLOROPHENOL	1990
3-CHLOROPHENOL	1990
4-CHLORO-3-METHYLPHENOL	1990
4-CHLOROPHENOL	1990
PENTACHLOROPHENOL	1990
PHENOLIC MATERIAL	1975-1990

Aroclors

Parameter	Years monitored
AROCLOR	1980-1990
AROCLOR 1242	1981-1983
AROCLOR 1248	1976-1981
AROCLOR 1254	1976-1983
AROCLOR 1260	1976-1983

Other Parameters

Parameter	Years monitored
AROMATIC HYDROCARBONS	1976-1982
CHLOROPHYLL A	1975-1990, 2018-2019 ongoing
CHLOROPHYLL A (CORRECTED)	2018-2019 ongoing
CYANIDE TOTAL	1975-1990
DISCHARGE DAILY MEAN	1975-1978
DISCHARGE MONTHLY MEAN	1975-1978
N-ALKANES C10 - C26	1976-1982
N-ALKYL SULPHONATES (LAS)	1975-1981
NITRILOTRIACETIC ACID - NTA	1976-1978
OIL AND GREASE	1975-1981
OXYGEN BIOCHEMICAL DEMAND	1975-1979
SALINITY	1996

Red Deer River near Erwood

Station Name:	Red Deer River near Erwood			
Station Number:	SA05LC0001			
Naquadat¹ Number:	00SA05LC0001			
WSC² Reference Number:	05LC001			
WSC Period of Record:	1953-1973 (seasonal) 1974 – current (continuous)	Active		
Project Number:	115 (historically 315)			
Sampling Site Open Water:	Latitude: 52°51'34.87"N	Longitude: 102°11'44.70"W		
Sampling Site Ice Cover:	Latitude: 52°51'33.73"N	Longitude: 102°11'44.88"W		
Drainage Area:	11000 km²			
Effective Drainage Area:	8550 km²			
Ecozone³:	Boreal Plains			
Ecoregion³:	Mid Boreal Lowland			
Water Body:	Red Deer River			
Water Body Type:	River			
Watershed:	Red Deer River			
Stakeholders:	PPWB			
Site Overview:	<p>The Red Deer River is a small, almost completely unregulated, eastward flowing system. The gross drainage area to the station is 10970 km² and effective drainage is 8778 km². Water quantity and quality monitoring is conducted at the PPWB Red Deer River near Erwood site.</p> <p>Trends are increasing in this river for phosphorus and nitrogen constituents. The dissolved ions (Cl, F, Na, SO₄) all show an increasing trend.</p>			
Sampling Location:	<p>Sampling location is at bridge on Highway 3, approximately 16 km east of Hudson Bay. During open water, samples collected from bridge. During winter, samples are collected upstream, approximately 30 m from bridge.</p>			
Station Established:	September 1966			
Period of Record:	1966 - present			
Data Located:	ACBIS	648 Samples (January 2024)		
Station Type:	Network, PPWB			
Frequency of Observations:	Monthly			

¹Data listing of water quality monitoring stations

²Water Survey of Canada

³<http://www.ecozones.ca/english/zone/index.html>

Site Status

Nutrients	2013	2018	Major Ions	2013	2018	Physicals	2013	2018
Ammonia Dissolved	↓	↑	Chloride Dissolved	↑	↑	Oxygen Dissolved	↔	↔
Nitrate as N	↓	↑	Fluoride Dissolved	↑	↑	pH – Field	↑	↑
Nitrogen Total	↑	↑	Sodium Dissolved/Filtered	↑	↑	Sodium Adsorption Ratio (SAR)	↑	↑
Phosphorous Total	↑	↑	Sulphate Dissolved	↔	↑	Total Suspended Solids (TSS)	↔	↔
Phosphorous Total Dissolved	↑	↑	Total Dissolved Solids (TDS)	↑	↑			

Metals	2013	2018	Metals	2013	2018	Metals	2013	2018
Aluminum Dissolved	↔	↔	Cobalt Dissolved	↔	↔	Nickel Dissolved	↔	↔
Aluminum Total	↔	↓	Cobalt Total	↔	↓	Nickel Total	↔	↔
Arsenic Dissolved	↔	↔	Copper Dissolved	↔	↔	Selenium Dissolved	↑	↔
Arsenic Total	↔	↓	Copper Total	↔	↓	Selenium Total	↑	↔
Barium Dissolved	↔	↔	Iron Dissolved	↓	↔	Silver Dissolved	>20%	>20%
Barium Total	↔	↔	Iron Total	↔	↓	Silver Total	↔	↓
Beryllium Dissolved	↑	↓	Lead Dissolved	↓	↓	Thallium Dissolved	↔	↔
Beryllium Total	↔	↓	Lead Total	↔	↓	Thallium Total	↔	↔
Boron Dissolved	↑	↔	Lithium Dissolved	↔	↔	Uranium Dissolved	↑	↑
Boron Total	↔	↔	Lithium Total	↔	↔	Uranium Total	↑	↑
Cadmium Dissolved	↔	↓	Manganese Dissolved	↔	↔	Vanadium Dissolved	↔	↔
Cadmium Total	↔	↓	Manganese Total	↔	↓	Vanadium Total	↔	↓
Chromium Dissolved	↔	↔	Molybdenum Dissolved	↔	↔	Zinc Dissolved	↔	↔
Chromium Total	↔	↓	Molybdenum Total	↔	↔	Zinc Total	↔	↔

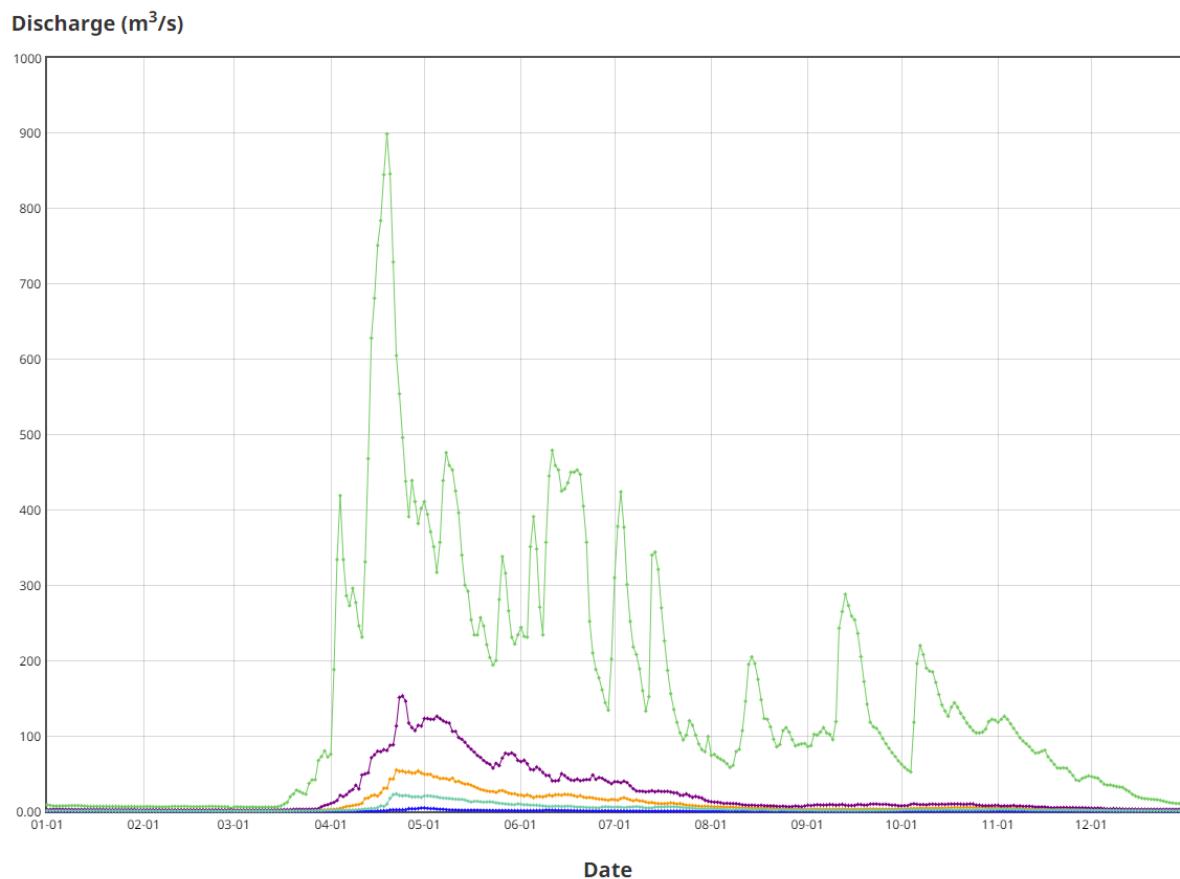
Typical range (minimum-maximum) in field observations and bacterial values:

Current (2009-2019)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance (µS/cm)	E.Coli (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	4.3-14.5	6.7-8.0	2-65	662-1223	<1-8	<1-9
Spring (Mar-May)	6.8-15.7	7.2-8.8	2-283	226-995	<2-150	<2-120
Summer (Jun-Aug)	6.8-14.5	8.0-8.7	1-89	372-798	<10-500	<10-1500
Fall (Sep-Nov)	7.3-16.6	7.5-8.8	1-23	380-722	<2-282	<2-330

Past (1989-2008)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance ($\mu\text{S}/\text{cm}$)	<i>E.Coli</i> (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	1.5-14.6	7.2-9.2	3-106	551-1255	<2-12	<2-4017
Spring (Mar-May)	7.1-13.9	7.0-8.7	3-99	259-1005	<2-45	<2-39
Summer (Jun-Aug)	5.5-14.8	7.2-8.8	2-29	242-960	16-55	11-119
Fall (Sep-Nov)	9.0-15.2	7.5-9.0	2-10	210-674	9-31	2-20

¹Two years of monitoring

Hydrometric Graphs (Water Survey of Canada, 1914-2021)



Hydrometric Data Website

[https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=01&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Grap h&stn=05LC001&dataType=Daily¶meterType=Flow&year=2021](https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=01&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Graph&stn=05LC001&dataType=Daily¶meterType=Flow&year=2021)

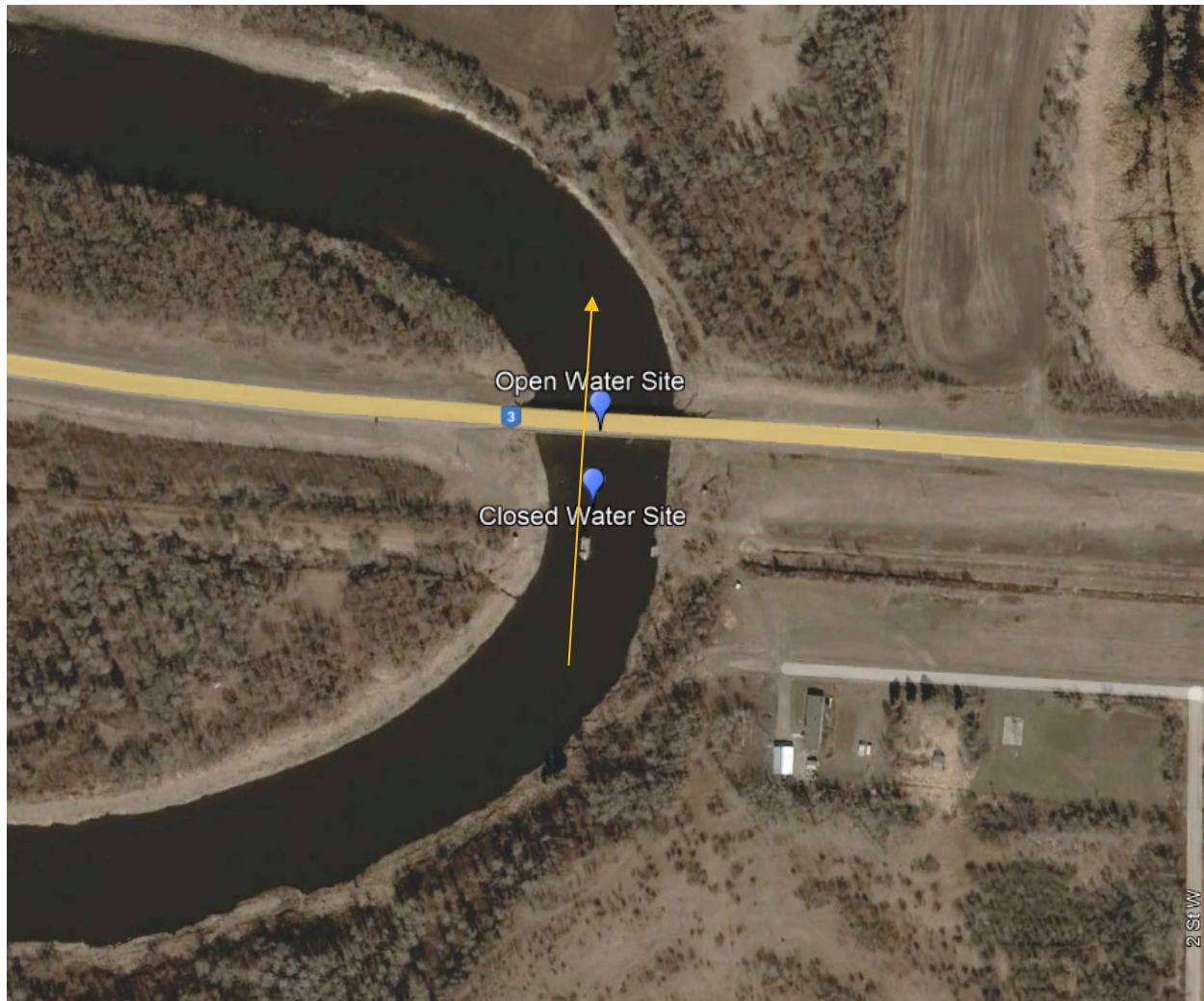
Maps & Diagrams

Figure 1. Image of the sampling locations for the Red Deer R. (Erwood). North is at the top of the image. Direction of flow in this image is from south to north and is depicted using the arrow.

**Figure 2. Red Deer R., upstream view****Figure 3. Red Deer R., downstream view**

Parameters Monitored

Note, spelling of parameter names purposely match the spelling in the database.

Field

Parameter	Years monitored
COLIFORMS FECAL	1974-1990, 2005-2019 ongoing
COLIFORMS TOTAL	1974-1990, 2011
E. COLI	2005-2019 ongoing
OXYGEN DISSOLVED (FIELD)	1973-2019 ongoing
PH (FIELD)	1972-2019 ongoing
SPECIFIC CONDUCTANCE (FIELD)	1972-2019 ongoing
TEMPERATURE WATER (FIELD)	1966-2019 ongoing
TURBIDITY (FIELD)	1979-2019 ongoing

Physicals

Parameter	Years monitored
ALKALINITY GRAN CACO3	2001-2002, 2005-2014
ALKALINITY PHENOLPHTHALEIN CACO3	1966-2014
ALKALINITY TOTAL CACO3	1966-2019 ongoing
COLOUR APPARENT	1966-1981
COLOUR TRUE	1981-2005
ODOUR THRESHOLD NUMBER	1974-1976, 1978
RESIDUE FILTERABLE	1967-1970, 1979
RESIDUE FIXED FILTERABLE	1967-1970, 1979
RESIDUE FIXED NONFILTRABLE	1967-2019 ongoing
RESIDUE NONFILTRABLE	1967-2019 ongoing
PH (LAB)	1966-2019 ongoing
SPECIFIC CONDUCTANCE (LAB)	1966-2019 ongoing

TEMPERATURE WATER (LAB)	1966-2000
TURBIDITY (LAB)	1966-2019 ongoing

Nutrients (Carbon, Nitrogen, Phosphorus)

Parameter	Years monitored
AMMONIA DISSOLVED	1966-1971, 1987-2019 ongoing
AMMONIA TOTAL	1970, 1974, 1981-1987
AMMONIA UN-IONIZED (CALCD.)	1986-2019 ongoing
CARBON DISSOLVED INORGANIC	1978-1980
CARBON DISSOLVED ORGANIC	1970, 1978-2019 ongoing
CARBON PARTICULATE ORGANIC	1977-2019 ongoing
CARBON TOTAL INORGANIC	1972-1978
CARBON TOTAL ORGANIC	1969-1978
CARBON TOTAL ORGANIC (CALCD.)	1980-1983, 1985-2019 ongoing
NITROGEN DISSOLVED NO ₃ & NO ₂	1966-2019 ongoing
NITROGEN PARTICULATE	1977-2019 ongoing
NITROGEN TOTAL (CALCD.)	1977-2019 ongoing
NITROGEN TOTAL DISSOLVED	1975-2019 ongoing
NITROGEN TOTAL KJELDAHL	1971-1978
PHOSPHATE DISSOLVED INORGANIC	1966-1973
PHOSPHATE DISSOLVED ORTHO	1972-1973, 1979, 1981-1990
PHOSPHATE TOTAL INORGANIC	1969
PHOSPHOROUS DISSOLVED ORTHO	1990-2019 ongoing
PHOSPHOROUS PARTICULATE (CALCD.)	1975-2019 ongoing
PHOSPHOROUS TOTAL	1971-2019 ongoing
PHOSPHOROUS TOTAL DISSOLVED	1975-2019 ongoing

Major Ions

Parameter	Years monitored
BICARBONATE (CALCD.)	1980-1983, 1985-2019 ongoing
BROMIDE	2015-2017
CALCIUM DISSOLVED/FILTERED	1966-2019 ongoing
CARBONATE (CALCD.)	1980-1983, 1985-2019 ongoing
CHLORIDE DISSOLVED	1966-2019 ongoing
FLUORIDE DISSOLVED	1966-2019 ongoing
FREE CO ₂ (CALCD.)	1985-2019 ongoing
HARDNESS NON-CARB. (CALCD.)	1985-2019 ongoing
HARDNESS TOTAL (CALCD.) CACO ₃	1980-1983, 1985-2019 ongoing
HARDNESS TOTAL CACO ₃	1967-1975
HARDNESS TOTAL LAB (CALCD.) CACO ₃	1975-1978

HYDROXIDE (CALCD.)	1985-2019 ongoing
MAGNESIUM DISSOLVED/FILTERED	1966, 1975-2019 ongoing
POTASSIUM DISSOLVED/FILTERED	1966-2019 ongoing
SATURATION INDEX (CALCD.)	1985-2019 ongoing
SILICA REACTIVE	1966-1990
SIO2	1990-2019 ongoing
SODIUM ADSORPTION RATIO (CALCD.)	2001-2019 ongoing
SODIUM DISSOLVED/FILTERED	1966-2019 ongoing
SODIUM PERCENTAGE (CALCD.)	1985-2019 ongoing
STABILITY INDEX (CALCD.)	1985-2019 ongoing
SULPHATE DISSOLVED	1966-2019 ongoing
SULPHIDE DISSOLVED	1986
TOTAL DISSOLVED SOLIDS (CALCD.)	1980-1983, 1985-2019 ongoing

Metals

Parameter	Years monitored
ALUMINUM DISSOLVED	1966-1968, 1984-1990, 1992-2019 ongoing
ALUMINUM EXTRACTABLE	1971-1990, 1992-1993
ALUMINUM TOTAL	1993-2019 ongoing
ANTIMONY DISSOLVED	2003-2019 ongoing
ANTIMONY TOTAL	2003-2019 ongoing
ARSENIC DISSOLVED	1971-1990, 2003-2019 ongoing
ARSENIC TOTAL	2000-2019 ongoing
BARIUM DISSOLVED	1971, 1999-2019 ongoing
BARIUM EXTRACTABLE	1972-1980
BARIUM TOTAL	1983-1990, 1992-2019 ongoing
BARIUM TOTAL RECOVERABLE	1980-1983
BERYLLIUM DISSOLVED	1999-2019 ongoing
BERYLLIUM TOTAL	1997, 1999-2019 ongoing
BISMUTH DISSOLVED	2003-2019 ongoing
BISMUTH TOTAL	2003-2019 ongoing
BORON DISSOLVED	1971-1990, 1992-2019 ongoing
BORON TOTAL	1992, 1997, 2003-2019 ongoing
CADMIUM DISSOLVED	1999-2019 ongoing
CADMIUM EXTRACTABLE	1971-1980
CADMIUM TOTAL	1983-1990, 1992-2019 ongoing
CADMIUM TOTAL RECOVERABLE	1980-1983
CERIUM DISSOLVED	2014-2019 ongoing
CERIUM TOTAL	2014-2019 ongoing
CESIUM DISSOLVED	2014-2019 ongoing
CESIUM TOTAL	2014-2019 ongoing

CHROMIUM DISSOLVED	1999-2019 ongoing
CHROMIUM EXTRACTABLE	1971-1983
CHROMIUM TOTAL	1983-1990, 1992-2019 ongoing
COBALT DISSOLVED	1999-2019 ongoing
COBALT EXTRACTABLE	1971-1974, 1978-1980
COBALT TOTAL	1983-1990, 1992-2019 ongoing
COBALT TOTAL RECOVERABLE	1980-1983
COPPER DISSOLVED	1972-1973, 1999-2019 ongoing
COPPER EXTRACTABLE	1971-1980
COPPER TOTAL	1983-1990, 1992-2019 ongoing
COPPER TOTAL RECOVERABLE	1980-1983
EUROPIUM DISSOLVED	2019 ongoing
EUROPIUM TOTAL	2019 ongoing
GADOLINIUM DISSOLVED	2019 ongoing
GADOLINIUM TOTAL	2019 ongoing
GALLIUM DISSOLVED	2003-2019 ongoing
GALLIUM TOTAL	2003-2019 ongoing
GERMANIUM DISSOLVED	2019 ongoing
GERMANIUM TOTAL	2019 ongoing
HAFNIUM DISSOLVED	2019 ongoing
HAFNIUM TOTAL	2019 ongoing
HOLMIUM DISSOLVED	2019 ongoing
HOLMIUM TOTAL	2019 ongoing
INDIUM DISSOLVED	2019 ongoing
INDIUM TOTAL	2019 ongoing
IRIDIUM DISSOLVED	2019 ongoing
IRIDIUM TOTAL	2019 ongoing
IRON DISSOLVED	1966-1973, 1980-1990, 1992-2019 ongoing
IRON EXTRACTABLE	1971-1980
IRON TOTAL	1997, 1999-2019 ongoing
LANTHANUM DISSOLVED	2003-2019 ongoing
LANTHANUM TOTAL	2003-2019 ongoing
LEAD DISSOLVED	1972-1973, 1999-2019 ongoing
LEAD EXTRACTABLE	1971-1980
LEAD TOTAL	1983-1990, 1992-2019 ongoing
LEAD TOTAL RECOVERABLE	1980-1983
LITHIUM DISSOLVED	1999-2019 ongoing
LITHIUM EXTRACTABLE	1972
LITHIUM TOTAL	1997, 1999-2019 ongoing
LUTETIUM DISSOLVED	2019 ongoing
LUTETIUM TOTAL	2019 ongoing
MANGANESE DISSOLVED	1966-1973, 1980-1990, 1992-2019 ongoing
MANGANESE EXTRACTABLE	1971-1980

MANGANESE TOTAL	1997, 1999-2019 ongoing
MERCURY EXTRACTABLE	1971-1979
MERCURY TOTAL	1979-1990, 1992-1999
MOLYBDENUM DISSOLVED	1999-2019 ongoing
MOLYBDENUM EXTRACTABLE	1973-1974
MOLYBDENUM TOTAL	1997, 1999-2019 ongoing
NEODYMIUM DISSOLVED	2019 ongoing
NEODYMIUM TOTAL	2019 ongoing
NICKEL DISSOLVED	1999-2019 ongoing
NICKEL EXTRACTABLE	1971-1974, 1979-1980
NICKEL TOTAL	1983-1990, 1992-2019 ongoing
NICKEL TOTAL RECOVERABLE	1980-1983
NIOBIUM DISSOLVED	2014-2019 ongoing
NIOBIUM TOTAL	2014-2019 ongoing
PLATINUM DISSOLVED	2014-2019 ongoing
PLATINUM TOTAL	2014-2019 ongoing
PRASEODYMIUM DISSOLVED	2019 ongoing
PRASEODYMIUM TOTAL	2019 ongoing
RUBIDIUM DISSOLVED	2003-2019 ongoing
RUBIDIUM TOTAL	2003-2019 ongoing
RUTHENIUM DISSOLVED	2019 ongoing
RUTHENIUM TOTAL	2019 ongoing
SAMARIUM DISSOLVED	2019 ongoing
SAMARIUM TOTAL	2019 ongoing
SCANDIUM DISSOLVED	2019 ongoing
SCANDIUM TOTAL	2019 ongoing
SELENIUM DISSOLVED	1974-1990, 2003-2019 ongoing
SELENIUM TOTAL	2000-2019 ongoing
SILVER DISSOLVED	2003-2019 ongoing
SILVER EXTRACTABLE	1972-1979
SILVER TOTAL	1971, 1999-2019 ongoing
STRONTIUM DISSOLVED	1999-2019 ongoing
STRONTIUM EXTRACTABLE	1971-1974
STRONTIUM TOTAL	1997, 1999-2019 ongoing
TELLURIUM DISSOLVED	2019 ongoing
TELLURIUM TOTAL	2019 ongoing
TERBIUM DISSOLVED	2019 ongoing
TERBIUM TOTAL	2019 ongoing
THALLIUM DISSOLVED	2003-2019 ongoing
THALLIUM EXTRACTABLE	1972
THALLIUM TOTAL	2003-2019 ongoing
TIN DISSOLVED	2014-2019 ongoing
TIN TOTAL	2014-2019 ongoing

TITANIUM DISSOLVED	2016-2019 ongoing
TITANIUM TOTAL	2016-2019 ongoing
TUNGSTEN DISSOLVED	2014-2019 ongoing
TUNGSTEN TOTAL	2014-2019 ongoing
URANIUM DISSOLVED	2003-2019 ongoing
URANIUM TOTAL	2003-2019 ongoing
VANADIUM DISSOLVED	1999-2019 ongoing
VANADIUM EXTRACTABLE	1975-1980
VANADIUM TOTAL	1983-1990, 1992-2019 ongoing
VANADIUM TOTAL RECOVERABLE	1980-1983
YTTERBIUM DISSOLVED	2019 ongoing
YTTERBIUM TOTAL	2019 ongoing
YTTRIUM- DISSOLVED	2014-2019 ongoing
YTTRIUM TOTAL	2014-2019 ongoing
ZINC DISSOLVED	1972-1973, 1999-2019 ongoing
ZINC EXTRACTABLE	1971-1980
ZINC TOTAL	1983-1990, 1992-2019 ongoing
ZINC TOTAL RECOVERABLE	1980-1983
ZIRCONIUM DISSOLVED	2019 ongoing
ZIRCONIUM TOTAL	2019 ongoing

Acid Herbicides

Parameter	Years monitored
2-(2,4-DICHLOROPHOXY)-PROPIONIC ACID	2009, 2013, 2017 ongoing*
2,3,6-TBA	1985-1992, 2009, 2013, 2017 ongoing*
2,4,5-T	1974-1992, 2009, 2013, 2017 ongoing*
2,4-D	1974-1992, 2009, 2013, 2017 ongoing*
2,4-DB	1974-1992, 2009, 2013, 2017 ongoing*
BROMOXYNIL	1988-1992, 2009, 2013, 2017 ongoing*
CLOPYRALID	2009, 2013, 2017 ongoing*
DICAMBA	1985-1992, 2009, 2013, 2017 ongoing*
DICHLORPROP	1974-1992
FENOPROP (SILVEX)	1978-1992
IMAZAMETHABENZ-METHYL (A)	2009, 2013, 2017 ongoing*
IMAZAMETHABENZ-METHYL (B)	2009, 2013
IMAZAMOX	2017 ongoing*
IMAZAPYR	2017 ongoing*
IMAZETHAPYR	2009, 2013, 2017 ongoing*
MCPA	1974-1992, 2009, 2013, 2017 ongoing*
MCPB	1985-1992, 2009, 2013, 2017 ongoing*
MCPP	2017 ongoing*

MECOPROP	2009, 2013
PICLORAM	1974-1982, 1985-1992, 2009, 2013, 2017 ongoing*
SILVEX	2009, 2013, 2017 ongoing*
TRICLOPYR	2017 ongoing*

*sampled on 4-year rotational basis

Neutral Herbicides

Parameter	Years monitored
ATRAZINE	2009, 2013, 2017 ongoing*
ATRAZINE TOTAL	1985-1992
BENZOYLPROP-ETHYL	1985-1992, 2009, 2013, 2017 ongoing*
BUTYRATE	2009, 2013, 2017 ongoing*
DESETHYL ATRAZINE	2009, 2013, 2017 ongoing*
D-ETHYL SIMAZINE	2009, 2013, 2017 ongoing*
DIALLATE	1985-1992
DIALLATE I	2009, 2013, 2017 ongoing*
DIALLATE II	2009, 2013, 2017 ongoing*
DICLOFOP-METHYL	1985-1992, 2009, 2013, 2017 ongoing*
ETHALFLURALIN	2009, 2013, 2017 ongoing*
FENOXAPROP-P-ETHYL	2009, 2013, 2017 ongoing*
METOLACHLOR	2009, 2013, 2017 ongoing*
METRIBUZIN	2009, 2013, 2017 ongoing*
SIMAZINE	2009, 2013, 2017 ongoing*
TRIALLATE	1985-1992, 2009, 2013, 2017 ongoing*
TRIFLURALIN	1974-1977, 1979, 1985-1992, 2009, 2013, 2017 ongoing*

*sampled on 4-year rotational basis

Organochlorine

Parameter	Years monitored
ALDRIN	1971, 1974-1990, 2009, 2013
ALPHA-BENZENEHEXACHLORIDE	1975-1990, 2009, 2013, 2017 ongoing*
ALPHA-CHLORDANE	1975-1990, 2009, 2013, 2017 ongoing*
ALPHA-ENDOSULFAN	1971, 1974-1990, 2009, 2013, 2017 ongoing*
BETA-ENDOSULFAN	1971, 1974-1990, 2009, 2013, 2017 ongoing*
BETA-HCH	2009, 2013
CIS-NONACHLOR	2009, 2013
DIELDRIN	1971, 1974-1990, 2009, 2013, 2017 ongoing*
ENDOSULFAN SULPHATE TOTAL	2017 ongoing*
ENDRIN	1971, 1975-1990, 2009, 2013
GAMMA-BHC (LINDANE)	1971, 1974-1990, 2009, 2013, 2017 ongoing*
GAMMA-CHLORDANE	1975-1990, 2009, 2013, 2017 ongoing*

HEPTACHLOR	1971, 1974-1990, 2009, 2013
HEPTACHLOR EPOXIDE	1971, 1974-1990, 2009, 2013
HEXACHLOROBENZENE	1978-1990, 2009, 2013, 2017 ongoing*
HEXACHLOROBUTADIENE	2009, 2013, 2017 ongoing*
METHOXYCHLOR (P,P'-METHOXYCHLOR).	1971, 1974-1990, 2009, 2013
MIREX	1978-1990, 2009, 2013, 2017 ongoing*
O,P'-DDD	2009, 2013
O,P'-DDE	2009, 2013
O,P'-DDT	1978-1990, 2009, 2013, 2017 ongoing*
OXYCHLORDANE	2009, 2013
P,P'-DDD (TDP)	1971, 1974-1990, 2009, 2013
P,P'-DDE	1971, 1974-1990, 2009, 2013, 2017 ongoing*
P,P'-DDT	1971, 1974-1990, 2009, 2013, 2017 ongoing*
PENTACHLOROANISOLE	2009, 2013
PENTACHLOROBENZENE	2009, 2013, 2017 ongoing*
TRANS-NONACHLOR	2009, 2013, 2017 ongoing*

*sampled on 4-year rotational basis

Glyphosate

Parameter	Years monitored
AMPA	2013, 2017 ongoing*
GLUFOSINATE	2013, 2017 ongoing*
GLYPHOSATE	2013, 2017 ongoing*

*sampled on 4-year rotational basis

Carbamates

Parameter	Years monitored
BARBAN	1974-1977, 1985-1992

Phenols

Parameter	Years monitored
2,3,4,5-TETRACHLOROPHENOL	1990
2,3,4,6-TETRACHLOROPHENOL	1990
2,3,4-TRICHLOROPHENOL	1990
2,3,5,6-TETRACHLOROPHENOL	1990
2,3,5-TRICHLOROPHENOL	1990
2,3,6-TRICHLOROPHENOL	1990
2,3-DICHLOROPHENOL	1990
2,4,5-TRICHLOROPHENOL	1990
2,4,6-TRICHLOROPHENOL	1990
2,4-DICHLOROPHENOL	1990

2,6-DICHLOROPHENOL	1990
2-CHLORO-5-METHYLPHENOL	1990
2-CHLOROPHENOL	1990
3,4,5-TRICHLOROPHENOL	1990
3,4-DICHLOROPHENOL	1990
3,5-DICHLOROPHENOL	1990
3-CHLOROPHENOL	1990
4-CHLORO-3-METHYLPHENOL	1990
4-CHLOROPHENOL	1990
PENTACHLOROPHENOL	1990
PHENOLIC MATERIAL	1971, 1973-1990

Aroclors

Parameter	Years monitored
AROCLOR	1980-1990
AROCLOR 1242	1981-1983
AROCLOR 1248	1973-1981
AROCLOR 1254	1973-1983
AROCLOR 1260	1973-1983

Other Parameters

Parameter	Years monitored
AROMATIC HYDROCARBONS	1974-1982
BETA RADIATION TOTAL	1975
CHLOROPHYLL A	1973-1990, 2018-2019 ongoing
CHLOROPHYLL A (CORRECTED)	2018-2019 ongoing
CYANIDE	1971
CYANIDE TOTAL	1974-1990
DISCHARGE DAILY MEAN	1966-1978
DISCHARGE INSTANTANEOUS	1967-1969
DISCHARGE MONTHLY MEAN	1966-1978
DISCHARGE MONTHLY MEAN PROVISION	1967-1969
N-ALKANES C10 - C26	1974-1982
N-ALKYL SULPHONATES (LAS)	1974-1981
NITRILOTRIACETIC ACID - NTA	1975-1978
OIL AND GREASE	1974-1981
OXYGEN BIOCHEMICAL DEMAND	1974-1979
OXYGEN CONSUMED	1966-1971
OXYGEN TOTAL COD	1970
STRONTIUM RADIATION TOTAL 90	1975

Saskatchewan River

Station Name:	SASKATCHEWAN RIVER ABOVE CARROT RIVER			
Station Number:	MA05KH0001			
Naquidat¹ Number:	00MA05KH0001			
WSC² Reference Number:	05KJ001			
WSC Period of Record:	1913 – current	Active		
Project Number:	115 (historically 315)			
Sampling Site Open Water:	Latitude 53°50'30.01"N	Longitude: 101°20'03.98"W		
Sampling Site Ice Cover:	Latitude 53°51'06.39"N	Longitude 101°20'36.68"W		
Drainage Area:	347627 km²			
Effective Drainage Area:				
Ecozone³:	Mixed Grassland, Moist Mixed Grassland, Aspen Parkland and the Boreal Transition			
Ecoregion³:	Mid Boreal Lowland			
Water Body:	North Saskatchewan River and Carrot River			
Water Body Type:	River			
Watershed:	Saskatchewan River			
Stakeholders:	PPWB			
Site Overview:	<p>The Saskatchewan River originates at the confluence of the North and South Saskatchewan River, east of Prince Albert, Saskatchewan. The station location is downstream of Cumberland Delta at The Pas, Manitoba, where the river has a gross drainage area of 347,627 km². Flow in the Saskatchewan River is controlled by the existence of reservoirs located along the North Saskatchewan R. in Alberta and the South Saskatchewan R. (Lake Diefenbaker) and the Saskatchewan River (Tobin Lake). The PPWB water quality monitoring site on the Saskatchewan River is located upstream of its confluence with the Carrot River.</p> <p>Trends are decreasing in this river for phosphorus and nitrogen constituents. Dissolved ions (Na, Cl, SO₄) all show increasing trends.</p>			
Ice Cover sampling location	Sampling is done near Moose Park 20 metres offshore			
Open water sampling location	Sampling is taken from a boat just upstream of the confluence of the Saskatchewan and Carrot River.			
Station Established:	1974			
Period of Record:	1974 – current			
Data Located:	ACBIS	781 samples (January 2024)		
Station Type:	PPWB			
Frequency of Observations:	Monthly			

¹ Data listing of water quality monitoring stations

² Water Survey of Canada

³ <http://www.ecozones.ca/english/zone/index.html> Site Status

Site Status

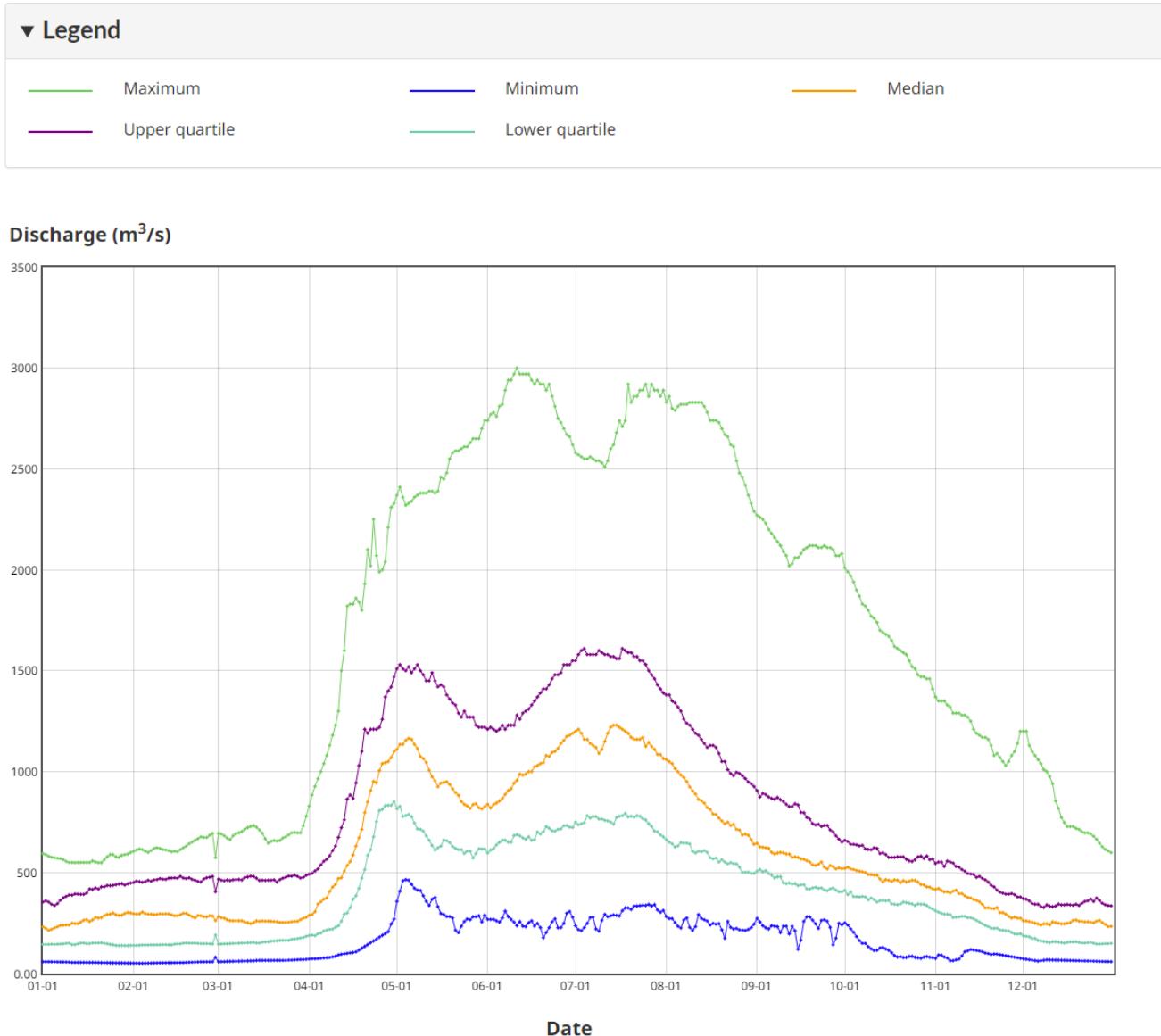
Nutrients	2013	2018	Major Ions	2013	2018	Physicals	2013	2018
Ammonia Dissolved	↓	↔	Chloride Dissolved	↑	↑	Oxygen Dissolved	↔	↔
Nitrate as N	↓	↓	Fluoride Dissolved	↑	↓	pH – Field	↑	↑
Nitrogen Total	↔	↔	Sodium Dissolved/Filtered	↑	↑	Sodium Adsorption Ratio (SAR)	↑	↑
Phosphorous Total	↓	↓	Sulphate Dissolved	↑	↑	Total Suspended Solids (TSS)	↔	↓
Phosphorous Total Dissolved	↓	↓	Total Dissolved Solids (TDS)	↑	↑			
Metals	2013	2018	Metals	2013	2018	Metals	2013	2018
Aluminum Dissolved	↔	↔	Cobalt Dissolved	↔	↑	Nickel Dissolved	↔	↔
Aluminum Total	↓	↓	Cobalt Total	↓	↔	Nickel Total	↓	↓
Arsenic Dissolved	↔	↔	Copper Dissolved	↑	↔	Selenium Dissolved	↑	↔
Arsenic Total	↓	↔	Copper Total	↓	↔	Selenium Total	↑	↔
Barium Dissolved	↔	↔	Iron Dissolved	↔	↑	Silver Dissolved	>20%	>20%
Barium Total	↓	↓	Iron Total	↓	↔	Silver Total	↓	↔
Beryllium Dissolved	↑	↔	Lead Dissolved	↔	↓	Thallium Dissolved	↑	↔
Beryllium Total	↓	↔	Lead Total	↓	↔	Thallium Total	↓	↔
Boron Dissolved	↑	↑	Lithium Dissolved	↑	↑	Uranium Dissolved	↑	↑
Boron Total	↑	↑	Lithium Total	↑	↑	Uranium Total	↑	↑
Cadmium Dissolved	↔	↓	Manganese Dissolved	↑	↔	Vanadium Dissolved	↔	↔
Cadmium Total	↓	↓	Manganese Total	↓	↔	Vanadium Total	↓	↔
Chromium Dissolved	↔	↓	Molybdenum Dissolved	↔	↓	Zinc Dissolved	↔	↔
Chromium Total	↓	↓	Molybdenum Total	↔	↓	Zinc Total	↓	↔

Typical range (minimum-maximum) in field observations and bacterial values:

Current (2009-2019)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance (µS/cm)	E.Coli (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	9.9-13.9	7.1-8.7	3-12	388-572	<2-25	<2-<10
Spring (Mar-May)	8.9-13.4	7.5-8.7	3-77	312-764	<2-63	<2-<10
Summer (Jun-Aug)	4.2-11.0	7.7-8.6	4-126	286-488	6-38	6-50
Fall (Sep-Nov)	8.6-15.4	7.0-8.8	9-157	256-448	<2-88	<2-150
Past (1989-2008)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance (µS/cm)	E.Coli (cfu/dL)	Fecal Coliform (cfu/dL)

<i>Winter (Dec-Feb)</i>	3.5-16.9	7.2-8.8	4-31	278-942	<1-332	<1-10
<i>Spring (Mar-May)</i>	4.8-15.9	7.2-8.5	4-86	255-481	<2-1554	<2-7
<i>Summer (Jun-Aug)</i>	4.2-10.8	7.1-8.7	14-100	283-992	<2-4200	<2-100
<i>Fall (Sep-Nov)</i>	7.0-15.0	7.0-9.0	7-137	294-853	2-3000	<2-84

Hydrometric Graphs (Water Survey of Canada, 1913-2021)



Hydrometric Data Website

[https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=01&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Grap h&stn=05KJ001&dataType=Daily¶meterType=Flow&year=2021](https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=01&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Graph&stn=05KJ001&dataType=Daily¶meterType=Flow&year=2021)

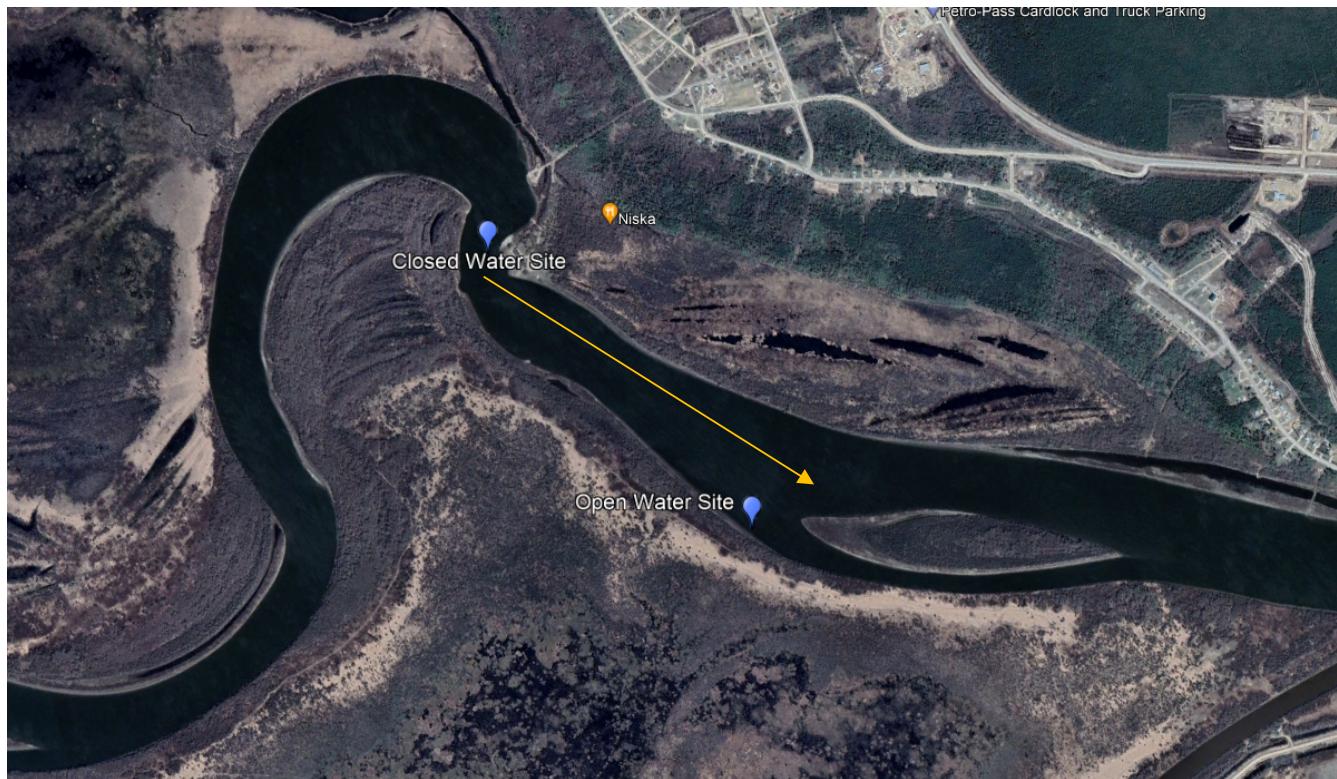
Maps and diagrams

Figure 1. Satellite imagery of the sampling locations for the Saskatchewan River above Carrot River. North is at the top of the image. Direction of flow in this image from northwest to southeast and is depicted using the arrow.



Figure 2. Saskatchewan R., upstream view



Figure 3. Saskatchewan R., downstream view

Parameters Monitored

Note, spelling of parameter names purposely match the spelling in the database.

Field

Parameter	Years monitored
COLIFORMS FECAL	1974-2019 ongoing
COLIFORMS TOTAL	1974-2005, 2010-2012
E. COLI	1998-2019 ongoing
FECAL STREPTOCOCCI	1990-2015
OXYGEN DISSOLVED	1974-2019 ongoing
PH (FIELD)	1974-2019 ongoing
SPECIFIC CONDUCTANCE (FIELD)	1974-2019 ongoing
TEMPERATURE WATER (FIELD)	1974-2019 ongoing
TURBIDITY (FIELD)	1979-2019 ongoing

Physicals

Parameter	Years monitored
ALKALINITY GRAN CACO3	2001-2002, 2004-2014
ALKALINITY PHENOLPHTHALEIN CACO3	1974-2014
ALKALINITY TOTAL CACO3	1974-2019 ongoing
COLOUR APPARENT	1974-1981
COLOUR TRUE	1974, 1981-2005
ODOUR THRESHOLD NUMBER	1974-1976, 1978
RESIDUE FILTERABLE	1979
RESIDUE FIXED FILTERABLE	1979
RESIDUE FIXED NONFILTRABLE	1974-2019 ongoing
RESIDUE NONFILTRABLE	1974-2019 ongoing

PH (LAB)	1974-2019 ongoing
SPECIFIC CONDUCTANCE (LAB)	1974-2019 ongoing
TEMPERATURE WATER (LAB)	1974-2001
TURBIDITY (LAB)	1974-2019 ongoing

Nutrients (Carbon, Nitrogen, Phosphorus)

Parameter	Years monitored
AMMONIA DISSOLVED	1987-2019 ongoing
AMMONIA TOTAL	1974, 1981-1987
AMMONIA UN-IONIZED (CALCD.)	1986-2019 ongoing
CARBON DISSOLVED INORGANIC	1978-1980
CARBON DISSOLVED ORGANIC	1978-2019 ongoing
CARBON PARTICULATE ORGANIC	1977-2019 ongoing
CARBON TOTAL INORGANIC	1974-1978
CARBON TOTAL ORGANIC	1974-1978
CARBON TOTAL ORGANIC (CALCD.)	1980-1983, 1985-2019 ongoing
NITROGEN DISSOLVED NO ₃ & NO ₂	1974-2019 ongoing
NITROGEN PARTICULATE	1977-2019 ongoing
NITROGEN TOTAL (CALCD.)	1977-2019 ongoing
NITROGEN TOTAL DISSOLVED	1976-2019 ongoing
NITROGEN TOTAL KJELDAHL	1974-1978
PHOSPHATE DISSOLVED ORTHO	1981-1990
PHOSPHOROUS DISSOLVED ORTHO	1990-2019 ongoing
PHOSPHOROUS PARTICULATE (CALCD.)	1976-2019 ongoing
PHOSPHOROUS TOTAL	1974-2019 ongoing
PHOSPHOROUS TOTAL DISSOLVED	1975-2019 ongoing

Major Ions

Parameter	Years monitored
BICARBONATE (CALCD.)	1980-1983, 1985-2019 ongoing
BROMIDE	2015-2017
CALCIUM DISSOLVED/FILTERED	1974-2019 ongoing
CARBONATE (CALCD.)	1980-1982, 1985-2019 ongoing
CHLORIDE DISSOLVED	1974-2019 ongoing
FLUORIDE DISSOLVED	1974-2019 ongoing
FREE CO ₂ (CALCD.)	1985-2019 ongoing
HARDNESS NON-CARB. (CALCD.)	1985-2019 ongoing
HARDNESS TOTAL (CALCD.) CACO ₃	1980-1983, 1985-2019 ongoing
HARDNESS TOTAL CACO ₃	1974-1975
HARDNESS TOTAL LAB (CALCD.) CACO ₃	1975-1978

HYDROXIDE (CALCD.)	1985-2019 ongoing
MAGNESIUM DISSOLVED/FILTERED	1975-2019 ongoing
POTASSIUM DISSOLVED/FILTERED	1974-2019 ongoing
SATURATION INDEX (CALCD.)	1985-2019 ongoing
SILICA REACTIVE	1974-1990
SIO2	1990-2019 ongoing
SODIUM ADSORPTION RATIO (CALCD.)	2001-2019 ongoing
SODIUM DISSOLVED/FILTERED	1974-2019 ongoing
SODIUM PERCENTAGE (CALCD.)	1985-2019 ongoing
STABILITY INDEX (CALCD.)	1985-2019 ongoing
SULPHATE DISSOLVED	1974-2019 ongoing
TOTAL DISSOLVED SOLIDS (CALCD.)	1980-1983, 1985-2019 ongoing

Metals

Parameter	Years monitored
ALUMINUM DISSOLVED	1984-2019 ongoing
ALUMINUM EXTRACTABLE	1974-1993
ALUMINUM TOTAL	1993-2019 ongoing
ANTIMONY DISSOLVED	2003-2019 ongoing
ANTIMONY TOTAL	2003-2019 ongoing
ARSENIC DISSOLVED	1974-1996, 2003-2019 ongoing
ARSENIC TOTAL	1996-2019 ongoing
BARIUM DISSOLVED	1999-2019 ongoing
BARIUM EXTRACTABLE	1974-1980, 1984
BARIUM TOTAL	1983-2019 ongoing
BARIUM TOTAL RECOVERABLE	1980-1983
BERYLLIUM DISSOLVED	1999-2019 ongoing
BERYLLIUM TOTAL	1997-2019 ongoing
BISMUTH DISSOLVED	2003-2019 ongoing
BISMUTH TOTAL	2003-2019 ongoing
BORON DISSOLVED	1974-2019 ongoing
BORON TOTAL	1997-1998, 2003-2019 ongoing
CADMUM DISSOLVED	1999-2019 ongoing
CADMUM EXTRACTABLE	1974-1980
CADMUM TOTAL	1983-2019 ongoing
CADMUM TOTAL RECOVERABLE	1980-1983
CERIUM DISSOLVED	2014-2019 ongoing
CERIUM TOTAL	2014-2019 ongoing
CESIUM DISSOLVED	2014-2019 ongoing
CESIUM TOTAL	2014-2019 ongoing
CHROMIUM DISSOLVED	1999-2019 ongoing

CHROMIUM EXTRACTABLE	1974-1983
CHROMIUM TOTAL	1983-2019 ongoing
COBALT DISSOLVED	1999-2019 ongoing
COBALT EXTRACTABLE	1978-1980
COBALT TOTAL	1983-2019 ongoing
COBALT TOTAL RECOVERABLE	1980-1983
COPPER DISSOLVED	1979, 1999-2019 ongoing
COPPER EXTRACTABLE	1974-1980
COPPER TOTAL	1983-2019 ongoing
COPPER TOTAL RECOVERABLE	1980-1983
EUROPIUM DISSOLVED	2019 ongoing
EUROPIUM TOTAL	2019 ongoing
GADOLINIUM DISSOLVED	2019 ongoing
GADOLINIUM TOTAL	2019 ongoing
GALLIUM DISSOLVED	2003-2019 ongoing
GALLIUM TOTAL	2003-2019 ongoing
GERMANIUM DISSOLVED	2019 ongoing
GERMANIUM TOTAL	2019 ongoing
HAFNIUM DISSOLVED	2019 ongoing
HAFNIUM TOTAL	2019 ongoing
HOLMIUM DISSOLVED	2019 ongoing
HOLMIUM TOTAL	2019 ongoing
INDIUM DISSOLVED	2019 ongoing
INDIUM TOTAL	2019 ongoing
IRIDIUM DISSOLVED	2019 ongoing
IRIDIUM TOTAL	2019 ongoing
IRON DISSOLVED	1979-2019 ongoing
IRON EXTRACTABLE	1974-1980
IRON TOTAL	1997-2019 ongoing
LANTHANUM DISSOLVED	2003-2019 ongoing
LANTHANUM TOTAL	2003-2019 ongoing
LEAD DISSOLVED	1979, 1999-2019 ongoing
LEAD EXTRACTABLE	1974-1980
LEAD TOTAL	1983-2019 ongoing
LEAD TOTAL RECOVERABLE	1980-1983
LITHIUM DISSOLVED	1999-2019 ongoing
LITHIUM TOTAL	1997-2019 ongoing
LUTETIUM DISSOLVED	2019 ongoing
LUTETIUM TOTAL	2019 ongoing
MANGANESE DISSOLVED	1979-2019 ongoing
MANGANESE EXTRACTABLE	1974-1980
MANGANESE TOTAL	1997-2019 ongoing
MERCURY EXTRACTABLE	1974-1979

MERCURY TOTAL	1979-1999
MOLYBDENUM DISSOLVED	1999-2019 ongoing
MOLYBDENUM TOTAL	1997-2019 ongoing
NEODYMIUM DISSOLVED	2019 ongoing
NEODYMIUM TOTAL	2019 ongoing
NICKEL DISSOLVED	1999-2019 ongoing
NICKEL EXTRACTABLE	1979-1980
NICKEL TOTAL	1983-2019 ongoing
NICKEL TOTAL RECOVERABLE	1980-1983
NIOBIUM DISSOLVED	2014-2019 ongoing
NIOBIUM TOTAL	2014-2019 ongoing
PLATINUM DISSOLVED	2014-2019 ongoing
PLATINUM TOTAL	2014-2019 ongoing
PRASEODYMIUM DISSOLVED	2019 ongoing
PRASEODYMIUM TOTAL	2019 ongoing
RUBIDIUM DISSOLVED	2003-2019 ongoing
RUBIDIUM TOTAL	2003-2019 ongoing
RUTHENIUM DISSOLVED	2019 ongoing
RUTHENIUM TOTAL	2019 ongoing
SAMARIUM DISSOLVED	2019 ongoing
SAMARIUM TOTAL	2019 ongoing
SCANDIUM DISSOLVED	2019 ongoing
SCANDIUM TOTAL	2019 ongoing
SELENIUM DISSOLVED	1974-1996, 2003-2019 ongoing
SELENIUM TOTAL	1996-2019 ongoing
SILVER DISSOLVED	2003-2019 ongoing
SILVER EXTRACTABLE	1974-1979
SILVER TOTAL	1999-2019 ongoing
STRONTIUM DISSOLVED	1999-2019 ongoing
STRONTIUM TOTAL	1997-2019 ongoing
TELLURIUM DISSOLVED	2019 ongoing
TELLURIUM TOTAL	2019 ongoing
TERBIUM DISSOLVED	2019 ongoing
TERBIUM TOTAL	2019 ongoing
THALLIUM DISSOLVED	2003-2019 ongoing
THALLIUM TOTAL	2003-2019 ongoing
TIN DISSOLVED	2014-2019 ongoing
TIN TOTAL	2014-2019 ongoing
TITANIUM DISSOLVED	2016-2019 ongoing
TITANIUM TOTAL	2016-2019 ongoing
TUNGSTEN DISSOLVED	2014-2019 ongoing
TUNGSTEN TOTAL	2014-2019 ongoing
URANIUM DISSOLVED	1981-1982, 1984, 2003-2019 ongoing

URANIUM TOTAL	2003-2019 ongoing
VANADIUM DISSOLVED	1999-2019 ongoing
VANADIUM EXTRACTABLE	1975-1980
VANADIUM TOTAL	1983-2019 ongoing
VANADIUM TOTAL RECOVERABLE	1980-1983
YTTERBIUM DISSOLVED	2019 ongoing
YTTERBIUM TOTAL	2019 ongoing
YTTRIUM- DISSOLVED	2014-2019 ongoing
YTTRIUM TOTAL	2014-2019 ongoing
ZINC DISSOLVED	1979, 1999-2019 ongoing
ZINC EXTRACTABLE	1974-1980
ZINC TOTAL	1983-2019 ongoing
ZINC TOTAL RECOVERABLE	1980-1983
ZIRCONIUM DISSOLVED	2019 ongoing
ZIRCONIUM TOTAL	2019 ongoing

Acid Herbicides

Parameter	Years monitored
2-(2,4-DICHLOROPHOXY)-PROPIONIC ACID	1997-2004, 2008, 2010, 2012, 2015-2019 ongoing
2,3,6-TBA	1985-2004, 2008, 2010, 2012, 2016-2017
2,4,5-T	1974-2004, 2008, 2010, 2012, 2015-2019 ongoing
2,4-D	1974-2004, 2008, 2010, 2012, 2015-2019 ongoing
2,4-DB	1974-2004, 2008, 2010, 2012, 2016-2017
ACIFLUORFEN	2019 ongoing
BROMOXYNIL	1988-2004, 2008, 2010, 2012, 2015-2019 ongoing
CLOPYRALID	2001-2004, 2008, 2010, 2012, 2015-2019 ongoing
DICAMBA	1985-2004, 2008, 2010, 2012, 2015-2019 ongoing
DICHLORPROP	1974-1997
DINOSEB	2018-2019 ongoing
FENOPROP (SILVEX)	1978-2001
FOMESAFEN	2019 ongoing
IMAZAMETHABENZ-METHYL (A)	2001-2004, 2008, 2010, 2012, 2015-2019 ongoing
IMAZAMETHABENZ-METHYL (B)	2001-2004, 2008, 2010, 2012
IMAZAMOX	2016-2019 ongoing
IMAZAPYR	2016-2019 ongoing
IMAZETHAPYR	2001-2004, 2008, 2010, 2012, 2015-2019 ongoing
MCPA	1974-2004, 2008, 2010, 2012, 2015-2019 ongoing
MCPB	1985-2004, 2008, 2010, 2012, 2015-2017
MCPP	2015-2019 ongoing
MECOPROP	2008, 2010, 2012
PICLORAM	1974-2004, 2008, 2010, 2012, 2015-2019 ongoing

SILVEX	2001-2004, 2008, 2010, 2012, 2015-2019 ongoing
TRICLOPYR	2015-2019 ongoing

Neutral Herbicides

Parameter	Years monitored
ATRAZINE	1989, 1997-2004, 2008, 2010, 2012, 2016-2017 ongoing*
ATRAZINE TOTAL	1985-1997
BENZOYLPROP-ETHYL	1985-2004, 2008, 2010, 2012, 2016-2017 ongoing*
BUTYLATE	1997-2004, 2008, 2010, 2012, 2016-2017 ongoing*
DESETHYL ATRAZINE	1997-2004, 2008, 2010, 2012, 2016-2017 ongoing*
D-ETHYL SIMAZINE	1997-2004, 2008, 2010, 2012, 2016-2017 ongoing*
DIALLATE	1985-1998
DIALLATE I	1998-2004, 2008, 2010, 2012, 2016-2017 ongoing*
DIALLATE II	1998-2004, 2008, 2010, 2012, 2016-2017 ongoing*
DICLOFOP-METHYL	1985-2004, 2008, 2010, 2012, 2016-2017 ongoing*
ETHALFLURALIN	2008, 2010, 2012, 2016-2017 ongoing*
FENOXAPROP-P-ETHYL	2008, 2010, 2012, 2016-2017 ongoing*
METOLACHLOR	1993-2004, 2008, 2010, 2012, 2016-2017 ongoing*
METRIBUZIN	1997-2004, 2008, 2010, 2012, 2016-2017 ongoing*
SIMAZINE	1997-2004, 2008, 2010, 2012, 2016-2017 ongoing*
TRIALLATE	1985-2004, 2008, 2010, 2012, 2016-2017 ongoing*
TRIFLURALIN	1974-1977, 1979, 1985-2004, 2008, 2010, 2012, 2016-2017 ongoing*

*sampled on 4-year rotational basis

Organochlorine

Parameter	Years monitored
ALDRIN	1974-1994, 2008, 2010, 2012
ALPHA-BENZENEHEXACHLORIDE	1975-1994, 2008, 2010, 2012, 2016-2017 ongoing*
ALPHA-CHLORDANE	1975-1994, 2008, 2010, 2012, 2016-2017 ongoing*
ALPHA-ENDOSULFAN	1974-1994, 2008, 2010, 2012, 2016-2017 ongoing*
BETA-ENDOSULFAN	1974-1994, 2008, 2010, 2012, 2016-2017 ongoing*
BETA-HCH	2008, 2010, 2012
CIS-NONACHLOR	2008, 2010, 2012
DIELDRIN	1974-1994, 2008, 2010, 2012, 2016-2017 ongoing*
ENDOSULFAN SULPHATE TOTAL	2016-2017 ongoing*
ENDRIN	1975-1994, 2008, 2010, 2012
GAMMA-BHC (LINDANE)	1974-1994, 2008, 2010, 2012, 2016-2017 ongoing*
GAMMA-CHLORDANE	1975-1976, 1978-1994, 2008, 2010, 2012, 2016-2017 ongoing*

HEPTACHLOR	1974-1994, 2008, 2010, 2012
HEPTACHLOR EPOXIDE	1974-1994, 2008, 2010, 2012
HEXACHLOROBENZENE	1978-1994, 2008, 2010, 2012, 2016-2017 ongoing*
HEXACHLOROBUTADIENE	2008, 2010, 2012, 2016-2017 ongoing*
METHOXYCHLOR (P,P'-METHOXYCHLOR).	1974-1994, 2008, 2010, 2012
MIREX	1978-1994, 2008, 2010, 2012, 2016-2017 ongoing*
O,P'-DDD	2008, 2010, 2012
O,P'-DDE	2008, 2010, 2012
O,P'-DDT	1978-1994, 2008, 2010, 2012, 2016-2017 ongoing*
OXYCHLORDANE	2008, 2010, 2012
P,P'-DDD (TDP)	1974-1994, 2008, 2010, 2012
P,P'-DDE	1974-1994, 2008, 2010, 2012, 2016-2017 ongoing*
P,P'-DDT	1974-1994, 2008, 2010, 2012, 2016-2017 ongoing*
PENTACHLOROANISOLE	2008, 2010, 2012
PENTACHLOROBENZENE	2008, 2010, 2012, 2016-2017 ongoing*
TRANS-NONACHLOR	2008, 2010, 2012, 2016-2017 ongoing*

*sampled on 4-year rotational basis

Glyphosate

Parameter	Years monitored
AMPA	2016-2017, 2019 ongoing
GLUFOSINATE	2016-2017, 2019 ongoing
GLYPHOSATE	2016-2017, 2019 ongoing

Neonicotinoids

Parameter	Years monitored
ACETAMIPRID	2016
CLOTHIANIDIN	2016
DINOTEFURAM	2016
FLONICAMID	2016
FLUPYRADIFURONE	2016
IMIDACLOPRID	2016
THIACLOPRID	2016
THIAMETHOXAM	2016

Carbamates

Parameter	Years monitored
BARBAN	1974-1977, 1985-1997

Organophosphates

Parameter	Years monitored
DIMETHOATE	1985-1988
MALATHION	1985-1987

Phenols

Parameter	Years monitored
2,3,4,5-TETRACHLOROPHENOL	1990-1995
2,3,4,6-TETRACHLOROPHENOL	1990-1995
2,3,4-TRICHLOROPHENOL	1990-1995
2,3,5,6-TETRACHLOROPHENOL	1990-1995
2,3,5-TRICHLOROPHENOL	1990-1995
2,3,6-TRICHLOROPHENOL	1990-1995
2,3-DICHLOROPHENOL	1990-1995
2,4,5-TRICHLOROPHENOL	1990-1995
2,4,6-TRICHLOROPHENOL	1990-1995
2,4-DICHLOROPHENOL	1990-1995
2,6-DICHLOROPHENOL	1990-1995
2-CHLORO-5-METHYLPHENOL	1990-1995
2-CHLOROPHENOL	1990-1995
3,4,5-TRICHLOROPHENOL	1990-1995
3,4-DICHLOROPHENOL	1990-1995
3,5-DICHLOROPHENOL	1990-1995
3-CHLOROPHENOL	1990-1995
4-CHLORO-3-METHYLPHENOL	1990-1995
4-CHLOROPHENOL	1990-1995
PENTACHLOROPHENOL	1990-1995
PHENOLIC MATERIAL	1974-1990

Polyaromatic Hydrocarbons

Parameter	Years monitored
1,2,3,4-TETRAHYDRONAPHTHALENE	1990
1-METHYLNAPHTHALENE	1990
2-CHLORONAPHTHALENE	1990
2-METHYLNAPHTHALENE	1990
ACENAPHTHENE	1990
ACENAPHTHYLENE	1990
BENZO(A)PYRENE	1990
BENZO(B)FLUORANTHENE	1990

BENZO(G,H,I)PERYLENE	1990
BENZO(K)FLUORANTHENE	1990
FLUORANTHENE	1990
FLUORENE	1990
INDENE	1990
INDENO(1,2,3-C,D)PYRENE	1990
PHENANTHRENE	1990
PYRENE	1990

Hydrocarbons

Parameter	Years monitored
C10-C16	2016
C16-C34	2016
C34-C50	2016

Aroclors

Parameter	Years monitored
AROCLOR	1980-1994
AROCLOR 1242	1981-1983
AROCLOR 1248	1974-1981
AROCLOR 1254	1974-1983
AROCLOR 1260	1974-1983

Dioxins and Furans

Parameter	Years monitored
2,3,7,8_TCDF	1990
2,3,7,8-TCDD	1990
OCTA_CDD	1990
OCTA_CDF	1990
TOTAL_HEPTA_CDD	1990
TOTAL_HEPTA_CDF	1990
TOTAL_HEXA_CDD	1990
TOTAL_HEXA_CDF	1990
TOTAL_PENTA_CDD	1990
TOTAL_PENTA_CDF	1990
TOTAL_TETRA_CDD	1990
TOTAL_TETRA_CDF	1990

Other Parameters

Parameter	Years monitored
ANTIMONY RADIATION SB-125	1982, 1984
AROMATIC HYDROCARBONS	1974-1982
BETA RADIATION TOTAL	1975
CESIUM RADIATION CS-137	1982, 1984
CHLOROPHYLL A	1974-1994, 2018-2019 ongoing
CHLOROPHYLL A (CORRECTED)	2018-2019 ongoing
CYANIDE TOTAL	1974-1992
N-ALKANES C10 - C26	1974-1982
N-ALKYL SULPHONATES (LAS)	1974-1981
NITRILOTRIACETIC ACID - NTA	1974-1978
OIL AND GREASE	1974-1981
OXYGEN BIOCHEMICAL DEMAND	1974-1979
POLYCHLORINATED BIPHENYLS	1989
RADIUM RADIATION RA-226	1981-1982, 1984
STRONTIUM RADIATION TOTAL 90	1975
TRITIUM RADIATION H-3	1981, 1984



PRAIRIE PROVINCES WATER BOARD

INTERPROVINCIAL WATER QUALITY MONITORING SITE DESCRIPTIONS

Prepared for the Prairie Provinces Water Board
by the Committee on Water Quality

April 2024

Table of Contents

Alberta-Saskatchewan Boundary

Battle River.....	1
Site Status	2
Typical range (minimum-maximum) in field observations and bacterial values:.....	2
Hydrometric Graphs (Water Survey of Canada, 1944-1979).....	3
Hydrometric Data Website	4
Maps & Diagrams.....	4
Parameters Monitored	5
Beaver River	15
Site Status	16
Typical range (minimum-maximum) in field observations and bacterial values.....	16
Hydrometric Graphs (Water Survey of Canada, 1955-2021).....	17
Hydrometric Data Website	18
Maps & Diagrams.....	18
Parameters Monitored	19
Cold River at Outlet of Cold Lake	29
Site Status	30
Typical range (minimum-maximum) in field observations and bacterial values.....	30
Hydrometric Graphs (Water Survey of Canada, 1952-2021).....	31
Hydrometric Data Website	32
Maps & Diagrams.....	32
Parameters Monitored	33
North Saskatchewan River	41
Site Status	42
Typical range (minimum-maximum) in field observations and bacterial values.....	42
Hydrometric Graphs (Water Survey of Canada, 1958-1971).....	43
Hydrometric Data Website	44
Maps & Diagrams.....	44
Parameters Monitored	45
Red Deer River Near Bindloss	53
Site Status	54

Typical range (minimum-maximum) in field observations and bacterial values.....	54
Hydrometric Graphs (Water Survey of Canada, 1960-2021).....	55
Hydrometric Data Website	56
Maps & Diagrams.....	56
Parameters Monitored	57
South Saskatchewan River	67
Site Status	68
Typical range (minimum-maximum) in field observations and bacterial values.....	69
Hydrometric Graphs (Water Survey of Canada, 1911-2021).....	70
Hydrometric Data Website	70
Maps & Diagrams.....	71
Parameters Monitored	72

Saskatchewan-Manitoba Boundary

Assiniboine River below Kamsack	83
Site Status	84
Typical range (minimum-maximum) in field observations and bacterial values:.....	84
Hydrometric Graphs (Water Survey of Canada, 1944-2021).....	85
Hydrometric Data Website	86
Maps & Diagrams.....	86
Parameters Monitored	87

Carrot River Near Turnberry	99
Site Status	100
Typical range (minimum-maximum) in field observations and bacterial values:.....	100
Hydrometric Graphs (Water Survey of Canada, 1966-2021).....	101
Hydrometric Data Website	102
Maps & Diagrams.....	102
Parameters Monitored	103

Churchill River	113
Site Status	114
Typical range (minimum-maximum) in field observations and bacterial values.....	115
Hydrometric Graphs (Water Survey of Canada, 1928-2021).....	116
Hydrometric Data Website	116

Maps and diagrams.....	117
Parameters Monitored	118
Qu'Appelle River.....	127
Site Status	128
Typical range (minimum-maximum) in field observations and bacterial values:.....	128
Hydrometric Graphs (Water Survey of Canada, 1915-2021).....	129
Hydrometric Data Website	130
Maps & Diagrams.....	130
Parameters Monitored	131
Red Deer River near Erwood.....	141
Site Status	142
Typical range (minimum-maximum) in field observations and bacterial values:.....	142
Hydrometric Graphs (Water Survey of Canada, 1914-2021).....	143
Hydrometric Data Website.....	144
Maps & Diagrams.....	144
Parameters Monitored	145
Saskatchewan River.....	155
Site Status	156
Typical range (minimum-maximum) in field observations and bacterial values:.....	156
Hydrometric Graphs (Water Survey of Canada, 1913-2021).....	157
Hydrometric Data Website.....	158
Maps and diagrams.....	158
Parameters Monitored	159

Battle River

Station Name:	Battle River near Unwin		
Station Number:	SA05FE0001		
Naquedad¹ Number:	00SA05FE0001		
WSC² Reference Number:	05FE001		05FE004
WSC Period of Record:	1944 1948 (seasonal) 1949-1979 (continuous)	Discontinued	1978 – current Active
Project Number:	115 (historically 315)		
Sampling Site Open Water	Latitude 52°56'23.27"N	Longitude 109°52'33.59"W	
Sampling Site Ice Cover	Latitude 52°56'23.72"N	Longitude 109°52'32.74"W	
Drainage Area:	25600 km²		
Effective Drainage Area:	11200 km²		
Ecozone³:	Prairies		
Ecoregion³:	Aspen Parkland		
Water Body:	Battle River		
Water Body Type:	River		
Watershed:	Battle/North Saskatchewan		
Stakeholders:	PPWB		
Site Overview:	<p>The Battle River is situated in east central Alberta and west central Saskatchewan. Battle River water quality samples are collected approximately one mile north of Unwin, near the Alberta/Saskatchewan boundary.</p> <p>Trends are decreasing for nitrogen constituents but increasing for phosphorus. The dissolved ions (Na, Cl, SO₄) all show increasing trends.</p>		
Sampling location:	<p>The sample location is at bridge on secondary road connecting Highway 17 to the town of Unwin. Sampled at centre stream from north side (downstream) of bridge during both ice covered and open water periods. Open water sampling location is at bridge on Township Road 462 connecting Highway 17 to the town of Unwin. Sampled at centre of stream from north side of bridge during open water periods. Under ice sampling location is located 20 metres downstream of bridge on the frozen surface.</p>		
Station Established:	September 1966		
Period of Record:	September 1966 - present		
Data Located:	ACBIS	807 Samples (January 2024)	
Station Type:	Network, PPWB		
Frequency of Observations:	Monthly		

¹Data listing of water quality monitoring stations

²Water Survey of Canada

³<http://www.ecozones.ca/english/zone/index.html>

Site Status

Nutrients	2013	2018	Major Ions	2013	2018	Physicals	2013	2018
Ammonia Dissolved	↓	↔	Chloride Dissolved	↑	↑	Oxygen Dissolved	↔	↔
Nitrate as N	↓	↓	Fluoride Dissolved	↑	↔	pH – Field	↑	↑
Nitrogen Total	↔	↔	Sodium Dissolved/Filtered	↑	↑	Sodium Adsorption Ratio (SAR)	↑	↔
Phosphorous Total	↑	↑	Sulphate Dissolved	↑	↑	Total Suspended Solids (TSS)	↑	↑
Phosphorous Total Dissolved	↑	↑	Total Dissolved Solids (TDS)	↑	↑			

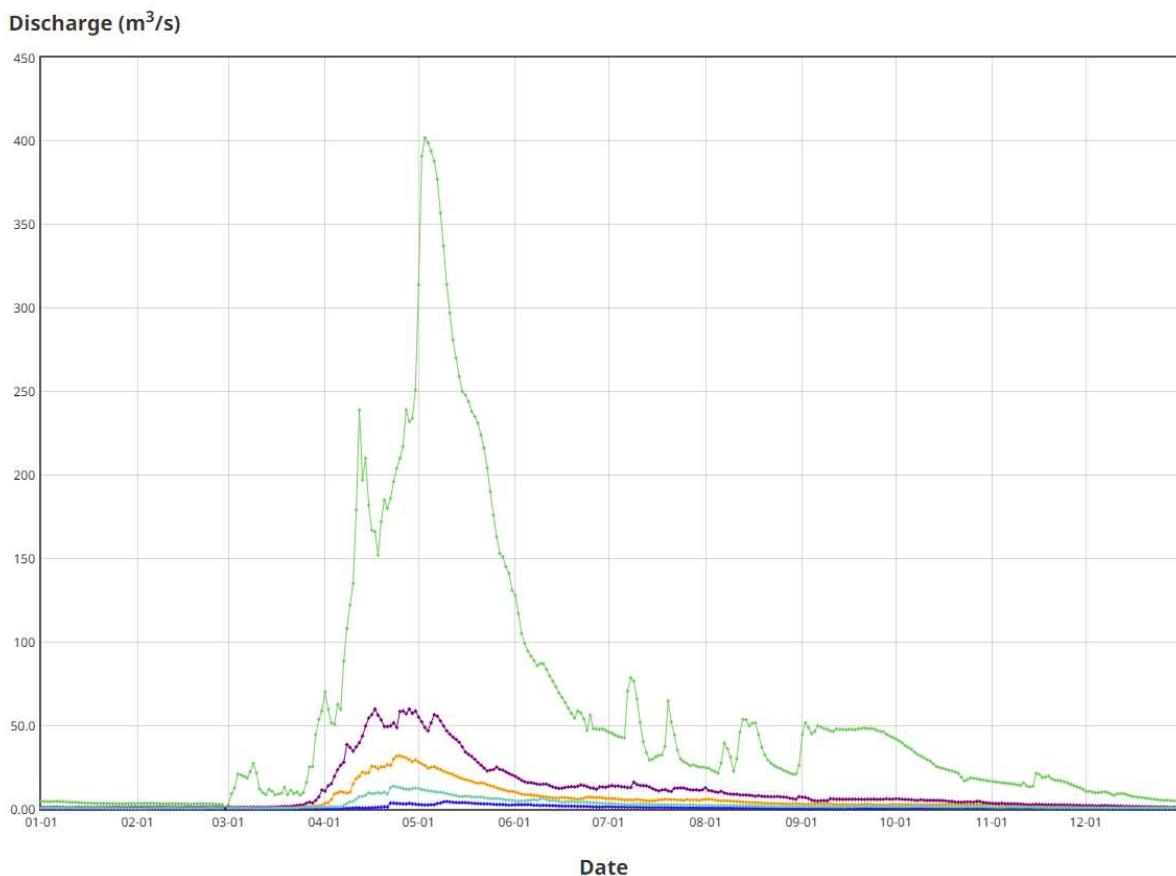
Metals	2013	2018	Metals	2013	2018	Metals	2013	2018
Aluminum Dissolved	↔	↓	Cobalt Dissolved	↔	↔	Nickel Dissolved	↔	↔
Aluminum Total	↔	↓	Cobalt Total	↔	↔	Nickel Total	↔	↔
Arsenic Dissolved	↔	↔	Copper Dissolved	↔	↔	Selenium Dissolved	↔	↔
Arsenic Total	↔	↔	Copper Total	↔	↓	Selenium Total	↔	↔
Barium Dissolved	↔	↔	Iron Dissolved	↔	↔	Silver Dissolved	↔	↓
Barium Total	↔	↔	Iron Total	↔	↔	Silver Total	↔	↓
Beryllium Dissolved	↔	↔	Lead Dissolved	↔	↓	Thallium Dissolved	↔	↑
Beryllium Total	↔	↓	Lead Total	↔	↓	Thallium Total	↔	↔
Boron Dissolved	↔	↔	Lithium Dissolved	↔	↔	Uranium Dissolved	↔	↑
Boron Total	↔	↔	Lithium Total	↔	↔	Uranium Total	↔	↑
Cadmium Dissolved	↔	↑	Manganese Dissolved	↔	↑	Vanadium Dissolved	↔	↔
Cadmium Total	↔	↔	Manganese Total	↔	↔	Vanadium Total	↔	↓
Chromium Dissolved	↔	↔	Molybdenum Dissolved	↔	↔	Zinc Dissolved	↔	↔
Chromium Total	↔	↔	Molybdenum Total	↔	↔	Zinc Total	↔	↔

Typical range (minimum-maximum) in field observations and bacterial values:

Current (2009-2019)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance ($\mu\text{S}/\text{cm}$)	E.Coli (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	0.0-12.0	6.9-7.9	3-16	1030-2463	<2-650	<2-82
Spring (Mar-May)	0.0-15.0	7.0-8.9	4-748	418-1682	<2-150	<2-325
Summer (Jun-Aug)	5.7-10.2	8.0-8.8	6-1114	481-1316	7-1154	<10-1139
Fall (Sep-Nov)	8.1-14.4	7.4-9.1	7-28	660-1383	<2-250	<2-275

Past (1989-2008)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance ($\mu\text{S}/\text{cm}$)	<i>E.Coli</i> (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	0.0-14.2	7.1-8.5	1-64	1030-2680	<2-1236	<2-94
Spring (Mar-May)	0.2-14.5	7.4-8.9	2-795	418-2300	<2-7200	<2-167
Summer (Jun-Aug)	6.2-11.4	8.0-9.2	2-277	481-1316	30-13200	10-1945
Fall (Sep-Nov)	7.7-15.3	8.3-9.2	3-138	660-1522	3-2200	2-2200

Hydrometric Graphs (Water Survey of Canada, 1944-1979)



Hydrometric Data Website

[https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=01&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Grap h&stn=05FE001&dataType=Daily¶meterType=Flow&year=1979](https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=01&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Graph&stn=05FE001&dataType=Daily¶meterType=Flow&year=1979)

Maps & Diagrams

Figure 1. Satellite imagery of the sampling locations for the Battle R. North is at the top of the image. Direction of flow in this image from southwest to northeast and is depicted using the arrow.



Figure 2. Battle R., upstream view



Figure 3. Battle R., downstream view

Parameters Monitored

Note, spelling of parameter names purposely match the spelling in the database.

Field

Parameter	Years monitored
COLIFORMS FECAL	1974-2019 ongoing
COLIFORMS TOTAL	1974-2006
E. COLI	1998-2019 ongoing
FECAL STREPTOCOCCI	1974
PH (FIELD)	1972-2019 ongoing
SPECIFIC CONDUCTANCE (FIELD)	1972-2019 ongoing
TEMPERATURE WATER (FIELD)	1966-2019 ongoing
TURBIDITY (FIELD)	1977, 1979-2019 ongoing

Physicals

Parameter	Years monitored
ALKALINITY GRAN CACO3	2006-2014
ALKALINITY PHENOLPHTHALEIN CACO3	1966-2014
ALKALINITY TOTAL CACO3	1966-2019 ongoing
COLOUR APPARENT	1966-1981
COLOUR TRUE	1981-2005
ODOUR THRESHOLD NUMBER	1974-1978
RESIDUE FILTERABLE	1967-1971
RESIDUE FIXED FILTERABLE	1967-1971
RESIDUE FIXED NONFILTRABLE	1967-2019 ongoing
RESIDUE NONFILTRABLE	1967-2019 ongoing
TEMPERATURE WATER (LAB)	1966-2006
PH (LAB)	1966-2019 ongoing
SPECIFIC CONDUCTANCE (LAB)	1966-2019 ongoing
TURBIDITY (LAB)	1966-2019 ongoing

Nutrients (Carbon, Nitrogen, Phosphorus)

Parameter	Years monitored
AMMONIA DISSOLVED	1966-1971, 1987-2019 ongoing
AMMONIA TOTAL	1970, 1974, 1981-1987
AMMONIA UN-IONIZED (CALCD.)	1986-2019 ongoing
CARBON DISSOLVED INORGANIC	1978-1980
CARBON DISSOLVED ORGANIC	1970, 1978-2019 ongoing
CARBON PARTICULATE ORGANIC	1977-2019 ongoing
CARBON TOTAL INORGANIC	1972-1978
CARBON TOTAL ORGANIC	1969-1978
CARBON TOTAL ORGANIC (CALCD.)	1980-1983, 1985-2019 ongoing

CARBONACEOUS OXYGEN DEMAND BOD10	2015-2019
NITROGEN DISSOLVED NO3 & NO2	1966-2019 ongoing
NITROGEN PARTICULATE	1977-2019 ongoing
NITROGEN TOTAL (CALCD.)	1977-2019 ongoing
NITROGEN TOTAL DISSOLVED	1975-2019 ongoing
NITROGEN TOTAL KJELDAHL	1971-1978
PHOSPHATE DISSOLVED INORGANIC	1966-1973
PHOSPHATE DISSOLVED ORTHO	1972-1973, 1981-1990
PHOSPHOROUS DISSOLVED ORTHO	1990-2019 ongoing
PHOSPHOROUS PARTICULATE (CALCD.)	1975-2019 ongoing
PHOSPHOROUS TOTAL	1972-2019 ongoing
PHOSPHOROUS TOTAL DISSOLVED	1975-2019 ongoing

Major Ions

Parameter	Years monitored
BICARBONATE (CALCD.)	1980-1983, 1985-2019 ongoing
BROMIDE	2016-2017
CALCIUM DISSOLVED/FILTERED	1966-2019 ongoing
CARBONATE (CALCD.)	1980-1983, 1985-2019 ongoing
CHLORIDE DISSOLVED	1966-2019 ongoing
FLUORIDE DISSOLVED	1966-2019 ongoing
FREE CO2 (CALCD.)	1985-2019 ongoing
HARDNESS NON-CARB. (CALCD.)	1985-2019 ongoing
HARDNESS TOTAL (CALCD.) CACO3	1980-1983, 1985-2019 ongoing
HARDNESS TOTAL CACO3	1966-1975
HARDNESS TOTAL LAB (CALCD.) CACO3	1975-1978
HYDROXIDE (CALCD.)	1985-2019 ongoing
MAGNESIUM DISSOLVED/FILTERED	1966, 1975-2019 ongoing
POTASSIUM DISSOLVED/FILTERED	1966-2019 ongoing
SATURATION INDEX (CALCD.)	1985-2019 ongoing
SILICA REACTIVE	1966-1990
SIO2	1990-2019 ongoing
SODIUM ADSORPTION RATIO (CALCD.)	2000-2019 ongoing
SODIUM DISSOLVED/FILTERED	1966-2019 ongoing
SODIUM PERCENTAGE (CALCD.)	1985-2019 ongoing
STABILITY INDEX (CALCD.)	1985-2019 ongoing
SULPHATE DISSOLVED	1966-2019 ongoing
SULPHIDE DISSOLVED	1981-1989
TOTAL DISSOLVED SOLIDS (CALCD.)	1980-1983, 1985-2019 ongoing

Metals

Parameter	Years monitored
ALUMINUM DISSOLVED	1966-1969, 1984-2019 ongoing
ALUMINUM EXTRACTABLE	1971-1993
ALUMINUM TOTAL	1993-2019 ongoing
ANTIMONY DISSOLVED	2003-2019 ongoing
ANTIMONY TOTAL	2003-2019 ongoing
ARSENIC DISSOLVED	1971-1990, 2003-2019 ongoing
ARSENIC TOTAL	2000-2019 ongoing
BARIUM DISSOLVED	1971, 1999-2019 ongoing
BARIUM EXTRACTABLE	1972-1980, 1984
BARIUM TOTAL	1983-2019 ongoing
BARIUM TOTAL RECOVERABLE	1980-1983
BERYLLIUM DISSOLVED	1999-2019 ongoing
BERYLLIUM TOTAL	1997-2019 ongoing
BISMUTH DISSOLVED	2003-2019 ongoing
BISMUTH TOTAL	2003-2019 ongoing
BORON DISSOLVED	1971-1990, 1992-2019 ongoing
BORON TOTAL	1997-1998, 2003-2019 ongoing
CADMIUM DISSOLVED	1999-2019 ongoing
CADMIUM EXTRACTABLE	1971-1980
CADMIUM TOTAL	1983-2019 ongoing
CADMIUM TOTAL RECOVERABLE	1980-1983
CERIUM DISSOLVED	2014-2019 ongoing
CERIUM TOTAL	2014-2019 ongoing
CESIUM DISSOLVED	2014-2019 ongoing
CESIUM TOTAL	2014-2019 ongoing
CHROMIUM DISSOLVED	1999-2019 ongoing
CHROMIUM EXTRACTABLE	1971-1984
CHROMIUM TOTAL	1983-2019 ongoing
COBALT DISSOLVED	1999-2019 ongoing
COBALT EXTRACTABLE	1971-1974, 1978-1980
COBALT TOTAL	1983-2019 ongoing
COBALT TOTAL RECOVERABLE	1980-1983
COPPER DISSOLVED	1972-1973, 1999-2019 ongoing
COPPER EXTRACTABLE	1969, 1971-1980
COPPER TOTAL	1983-2019 ongoing
COPPER TOTAL RECOVERABLE	1980-1983
EUROPIUM DISSOLVED	2019 ongoing
EUROPIUM TOTAL	2019 ongoing
GADOLINIUM DISSOLVED	2019 ongoing
GADOLINIUM TOTAL	2019 ongoing
GALLIUM DISSOLVED	2003-2019 ongoing
GALLIUM TOTAL	2003-2019 ongoing

GERMANIUM DISSOLVED	2019 ongoing
GERMANIUM TOTAL	2019 ongoing
HAFNIUM DISSOLVED	2019 ongoing
HAFNIUM TOTAL	2019 ongoing
HOLMIUM DISSOLVED	2019 ongoing
HOLMIUM TOTAL	2019 ongoing
INDIUM DISSOLVED	2019 ongoing
INDIUM TOTAL	2019 ongoing
IRIDIUM DISSOLVED	2019 ongoing
IRIDIUM TOTAL	2019 ongoing
IRON DISSOLVED	1966-1973, 1980-2019 ongoing
IRON EXTRACTABLE	1971-1980
IRON TOTAL	1997-2019 ongoing
LANTHANUM DISSOLVED	2003-2019 ongoing
LANTHANUM TOTAL	2003-2019 ongoing
LEAD DISSOLVED	1972-1973, 1999-2019 ongoing
LEAD EXTRACTABLE	1972-1980
LEAD TOTAL	1983-2019 ongoing
LEAD TOTAL RECOVERABLE	1980-1983
LITHIUM DISSOLVED	1999-2019 ongoing
LITHIUM TOTAL	1997-2019 ongoing
LUTETIUM DISSOLVED	2019 ongoing
LUTETIUM TOTAL	2019 ongoing
MANGANESE DISSOLVED	1966-1973, 1980-2019 ongoing
MANGANESE EXTRACTABLE	1969, 1971-1980
MANGANESE TOTAL	1997-2019 ongoing
MERCURY EXTRACTABLE	1972-1979
MERCURY TOTAL	1979-1999
MOLYBDENUM DISSOLVED	1999-2019 ongoing
MOLYBDENUM EXTRACTABLE	1973-1974
MOLYBDENUM TOTAL	1997-2019 ongoing
NEODYMIUM DISSOLVED	2019 ongoing
NEODYMIUM TOTAL	2019 ongoing
NICKEL DISSOLVED	1999-2019 ongoing
NICKEL EXTRACTABLE	1971-1974, 1979-1980
NICKEL TOTAL	1983-2019 ongoing
NICKEL TOTAL RECOVERABLE	1980-1983
NIOBIUM DISSOLVED	2014-2019 ongoing
NIOBIUM TOTAL	2014-2019 ongoing
PLATINUM DISSOLVED	2014-2019 ongoing
PLATINUM TOTAL	2014-2019 ongoing
PRASEODYMIUM DISSOLVED	2019 ongoing
PRASEODYMIUM TOTAL	2019 ongoing

RUBIDIUM DISSOLVED	2003-2019 ongoing
RUBIDIUM TOTAL	2003-2019 ongoing
RUTHENIUM DISSOLVED	2019 ongoing
RUTHENIUM TOTAL	2019 ongoing
SAMARIUM DISSOLVED	2019 ongoing
SAMARIUM TOTAL	2019 ongoing
SCANDIUM DISSOLVED	2019 ongoing
SCANDIUM TOTAL	2019 ongoing
SELENIUM DISSOLVED	1974-1990, 2003-2019 ongoing
SELENIUM TOTAL	2000-2019 ongoing
SILVER DISSOLVED	2003-2019 ongoing
SILVER EXTRACTABLE	1972-1979
SILVER TOTAL	1971, 1999-2019 ongoing
STRONTIUM DISSOLVED	1999-2019 ongoing
STRONTIUM EXTRACTABLE	1971-1974
STRONTIUM TOTAL	1997-2019 ongoing
TELLURIUM DISSOLVED	2019 ongoing
TELLURIUM TOTAL	2019 ongoing
TERBIUM DISSOLVED	2019 ongoing
TERBIUM TOTAL	2019 ongoing
THALLIUM DISSOLVED	2003-2019 ongoing
THALLIUM TOTAL	2003-2019 ongoing
TIN DISSOLVED	2014-2019 ongoing
TIN TOTAL	2014-2019 ongoing
TITANIUM DISSOLVED	2016-2019 ongoing
TITANIUM TOTAL	2016-2019 ongoing
TUNGSTEN DISSOLVED	2014-2019 ongoing
TUNGSTEN TOTAL	2014-2019 ongoing
URANIUM DISSOLVED	2003-2019 ongoing
URANIUM TOTAL	2003-2019 ongoing
VANADIUM DISSOLVED	1999-2019 ongoing
VANADIUM EXTRACTABLE	1975-1980
VANADIUM TOTAL	1983-2019 ongoing
VANADIUM TOTAL RECOVERABLE	1980-1983
YTTERBIUM DISSOLVED	2019 ongoing
YTTERBIUM TOTAL	2019 ongoing
YTTRIUM- DISSOLVED	2014-2019 ongoing
YTTRIUM TOTAL	2014-2019 ongoing
ZINC DISSOLVED	1972-1973, 1999-2019 ongoing
ZINC EXTRACTABLE	1969, 1971-1980
ZINC TOTAL	1983-2019 ongoing
ZINC TOTAL RECOVERABLE	1980-1983
ZIRCONIUM DISSOLVED	2019 ongoing

ZIRCONIUM TOTAL	2019 ongoing
-----------------	--------------

Acid Herbicides

Parameter	Years monitored
2-(2,4-DICHLOROPHOXY)-PROPIONIC ACID	2007, 2011, 2013-2019 ongoing
2,3,6-TBA	1985-1992, 2007, 2011, 2013-2017
2,4,5-T	1972-1992, 2007, 2011, 2013-2019 ongoing
2,4-D	1972-1992, 2007, 2011, 2013-2019 ongoing
2,4-DB	1972-1992, 2007, 2011, 2013-2017
ACIFLUORFEN	2019 ongoing
BROMOXYNIL	1988-1992, 2007, 2011, 2013-2019 ongoing
CLOPYRALID	2007, 2011, 2013-2019 ongoing
DICAMBA	1985-1992, 2007, 2011, 2013-2019 ongoing
DICHLORPROP	1972-1992
DINOSEB	2018-2019 ongoing
FENOPROP (SILVEX)	1978-1992
FOMESAFEN	2019 ongoing
IMAZAMETHABENZ-METHYL (A)	2007, 2011, 2013-2019 ongoing
IMAZAMETHABENZ-METHYL (B)	2007, 2011, 2013-2015
IMAZAMOX	2016-2019 ongoing
IMAZAPYR	2016-2019 ongoing
IMAZETHAPYR	2007, 2011, 2013-2019 ongoing
MCPA	1972-1992, 2007, 2011, 2013-2019 ongoing
MCPB	1985-1992, 2007, 2011, 2013-2017
MCPP	2015-2019 ongoing
MECOPROP	2007, 2011, 2013-2015
PICLORAM	1974-1982, 1985-1992, 2007, 2011, 2013-2019 ongoing
SILVEX	2007, 2011, 2013-2019 ongoing
TRICLOPYR	2015-2019 ongoing

Neutral Herbicides

Parameter	Years monitored
ATRAZINE	1989-1990, 2007, 2011, 2015, 2019 ongoing*
ATRAZINE TOTAL	1985-1992
BENZOYLPROP-ETHYL	1985-1992, 2007, 2011, 2015, 2019 ongoing*
BUTYLATE	2007, 2011, 2015, 2019 ongoing*
DESETHYL ATRAZINE	2007, 2011, 2015, 2019 ongoing*
D-ETHYL SIMAZINE	2007, 2011, 2015, 2019 ongoing*
DIALLATE	1985-1992
DIALLATE I	2007, 2011, 2015, 2019 ongoing*

DIALLATE II	2007, 2011, 2015, 2019 ongoing*
DICLOFOP-METHYL	1985-1992, 2007, 2011, 2015, 2019 ongoing*
ETHALFLURALIN	2007, 2011, 2015, 2019 ongoing*
FENOXAPROP-P-ETHYL	2011, 2015, 2019 ongoing*
METOLACHLOR	2007, 2011, 2015, 2019 ongoing*
METRIBUZIN	2007, 2011, 2015, 2019 ongoing*
SIMAZINE	2007, 2011, 2015, 2019 ongoing*
TRIALLATE	1985-1992, 2007, 2011, 2015, 2019 ongoing*
TRIFLURALIN	1974-1977, 1979, 1985-1992, 2007, 2011, 2015, 2019 ongoing*

*sampled on 4-year rotational basis

Organochlorine

Parameter	Years monitored
ALDRIN	1971-1992, 2007, 2011, 2015
ALPHA-BENZENEHEXACHLORIDE	1975-1992, 2007, 2011, 2015, 2019 ongoing*
ALPHA-CHLORDANE	1975-1992, 2007, 2011, 2015, 2019 ongoing*
ALPHA-ENDOSULFAN	1971-1992, 2007, 2011, 2015, 2019 ongoing*
BETA-ENDOSULFAN	1971-1992, 2007, 2011, 2015, 2019 ongoing*
BETA-HCH	2007, 2011, 2015
CIS-NONACHLOR	2007, 2011, 2015
DIELDRIN	1971-1992, 2007, 2011, 2015, 2019 ongoing*
ENDOSULFAN SULPHATE TOTAL	2015, 2019 ongoing*
ENDRIN	1971, 1975-1992, 2007, 2011, 2015
GAMMA-BHC (LINDANE)	1971-1992, 2007, 2011, 2015, 2019 ongoing*
GAMMA-CHLORDANE	1975-1992, 2007, 2011, 2015, 2019 ongoing*
HEPTACHLOR	1971-1992, 2007, 2011, 2015
HEPTACHLOR EPOXIDE	1971-1992, 2007, 2011, 2015
HEXACHLOROBENZENE	1978-1992, 2007, 2011, 2015, 2019 ongoing*
HEXACHLOROBUTADIENE	2007, 2011, 2015, 2019 ongoing*
METHOXYCHLOR (P,P'-METHOXYCHLOR).	1971-1992, 2007, 2011, 2015
MIREX	1978-1992, 2007, 2011, 2015, 2019 ongoing*
O,P'-DDD	2007, 2011, 2015
O,P'-DDE	2007, 2011, 2015
O,P'-DDT	1978-1992, 2007, 2011, 2015, 2019 ongoing*
OXYCHLORDANE	2007, 2011, 2015
P,P'-DDD (TDP)	1971-1992, 2007, 2011, 2015
P,P'-DDE	1971-1992, 2007, 2011, 2015, 2019 ongoing*
P,P'-DDT	1971-1992, 2007, 2011, 2015, 2019 ongoing*
PENTACHLOROANISOLE	2007, 2011, 2015
PENTACHLOROBENZENE	2007, 2011, 2015, 2019 ongoing*
TRANS-NONACHLOR	2007, 2011, 2015, 2019 ongoing*

*sampled on 4-year rotational basis

Glyphosate

Parameter	Years monitored
AMPA	2015, 2019 ongoing*
GLUFOSINATE	2015, 2019 ongoing*
GLYPHOSATE	2015, 2019 ongoing*

*sampled on 4-year rotational basis

Neonicotinoids

Parameter	Years monitored
ACETAMIPRID	2015-2016
CLOTHIANIDIN	2015-2016
DINOTEFURAM	2015-2016
FLONICAMID	2016
FLUPYRADIFURONE	2016
IMIDACLOPRID	2015-2016
THIACLOPRID	2015-2016
THIAMETHOXAM	2015-2016

Carbamates

Parameter	Years monitored
BARBAN	1974-1977, 1985-1992

Organophosphates

Parameter	Years monitored
AZINPHOS ETHYL	1984
AZINPHOS METHYL (GUTHION)	1984
CARBOPHENOTHION	1984
CRUFOMATE	1984
DIAZINON	1984
DIMETHOATE	1985-1987
DISULFOTON	1984
ETHION	1984
FENCHLORPHOS	1984
MALATHION	1984-1987
PARATHION	1984
PARATHION METHYL	1984
PHORATE	1984
PHOSMET (IMIDAN)	1984

Phenols

Parameter	Years monitored
2,3,4,5-TETRACHLOROPHENOL	1990
2,3,4,6-TETRACHLOROPHENOL	1990
2,3,4-TRICHLOROPHENOL	1990
2,3,5,6-TETRACHLOROPHENOL	1990
2,3,5-TRICHLOROPHENOL	1990
2,3,6-TRICHLOROPHENOL	1990
2,3-DICHLOROPHENOL	1990
2,4,5-TRICHLOROPHENOL	1990
2,4,6-TRICHLOROPHENOL	1990
2,4-DICHLOROPHENOL	1990
2,6-DICHLOROPHENOL	1990
2-CHLORO-5-METHYLPHENOL	1990
2-CHLOROPHENOL	1990
3,4,5-TRICHLOROPHENOL	1990
3,4-DICHLOROPHENOL	1990
3,5-DICHLOROPHENOL	1990
3-CHLOROPHENOL	1990
4-CHLORO-3-METHYLPHENOL	1990
4-CHLOROPHENOL	1990
PENTACHLOROPHENOL	1990
PHENOLIC MATERIAL	1971, 1973-1990

Aroclors

Parameter	Years monitored
AROCLOR	1980-1992
AROCLOR 1242	1981-1983
AROCLOR 1248	1972-1981
AROCLOR 1254	1972-1983
AROCLOR 1260	1973-1983

Other Parameters

Parameter	Years monitored
AROMATIC HYDROCARBONS	1974-1982
BETA RADIATION TOTAL	1975-1976
CHLOROPHYLL A	1973-1990, 2017-2019 ongoing
CHLOROPHYLL A (CORRECTED)	2017-2019 ongoing
CYANIDE	1971
CYANIDE TOTAL	1974-1990
DISCHARGE DAILY MEAN	1966-1978
DISCHARGE INSTANTANEOUS	1966-1970
DISCHARGE MONTHLY MEAN	1966-1978
DISCHARGE MONTHLY MEAN PROVISION	1966-1970
N-ALKANES C10 - C26	1974-1982
N-ALKYL SULPHONATES (LAS)	1974-1981
NITRILOTRIACETIC ACID - NTA	1974-1978
OIL AND GREASE	1974-1981
OXYGEN BIOCHEMICAL DEMAND	1974-1979
OXYGEN CONSUMED	1966-1971
OXYGEN DISSOLVED COD	1969
POLYCHLORINATED BIPHENYLS	1989-1990
RADIUM RADIATION TOTAL RA-226	1975-1976
STD. PLATE COUNT 35DEG.C BACT. DENS.	1974
STRONTIUM RADIATION TOTAL 90	1975-1976

Beaver River

Station Name:	Beaver River at Beaver Crossing			
Station Number:	AL06AD0001			
Naquadat¹ Number:	00AL06AD0001			
WSC² Reference Number:	06AD006			
WSC Period of Record:	1955 – current	Active		
Project Number:	115 (historically 315)			
Sampling Site Open Water:	Latitude 54°21'19.08"N	Longitude 110°12'57.12"W		
Sampling Site Ice Cover:	Latitude 54°21'20.00"N	Longitude 110°13'1.03"W		
Drainage Area:	14500 km ²			
Effective Drainage Area:	11800 km ²			
Ecozone³:	Boreal Plains			
Ecoregion³:	Boreal Transition			
Water Body:	Beaver River			
Water Body Type:	River			
Watershed:	Beaver/Churchill River			
Stakeholders:	PPWB			
Site Overview:	<p>The PPWB monitoring site on the Beaver River is located immediately upstream of Alberta-Saskatchewan boundary. The watershed upstream of the site is approximately 14,500 km² in area, which accounts for about 25 % of the total drainage area of the Beaver River watershed. The flow of the Beaver River is unregulated, and flows are considered to be largely natural. Within Saskatchewan the Beaver River is tributary to the Churchill River and joins the Churchill system at Lac Île-à-la-Crosse. The Beaver River at Beaver Crossing site was established in 1966 by Environment Canada to collect water quality data at the interprovincial boundary.</p> <p>Water quality in the Beaver River is generally good due to favourable natural conditions and limited human activities impacting water quality in the headwaters. Trends are decreasing in this river for phosphorus and nitrogen constituents.</p>			
Ice Cover sampling location	Ice-cover site samples are taken 100 m upstream of the bridge.			
Open water sampling location	Sampling location is near the bridge on highway 28 approximately 2 km southwest of Beaver Crossing.			
Station Established:	September 1966			
Period of Record:	1966 – present			
Data Located:	ACBIS	687 Samples (January 2024)		
Station Type:	Network, PPWB			
Frequency of Observations:	Monthly			

¹Data listing of water quality monitoring stations

²Water Survey of Canada

³<http://www.ecozones.ca/english/zone/index.html>

Site Status

Nutrients	2013	2018	Major Ions	2013	2018	Physicals	2013	2018
Ammonia Dissolved	↓	↑	Chloride Dissolved	↓	↔	Oxygen Dissolved	↔	↔
Nitrate as N	↓	↓	Fluoride Dissolved	↓	↓	pH – Field	↑	↑
Nitrogen Total	↔	↔	Sodium Dissolved/Filtered	↓	↓	Sodium Adsorption Ratio (SAR)	↓	↓
Phosphorous Total	↔	↓	Sulphate Dissolved	↓	↓	Total Suspended Solids (TSS)	↑	↑
Phosphorous Total Dissolved	↓	↓	Total Dissolved Solids (TDS)	↓	↔			

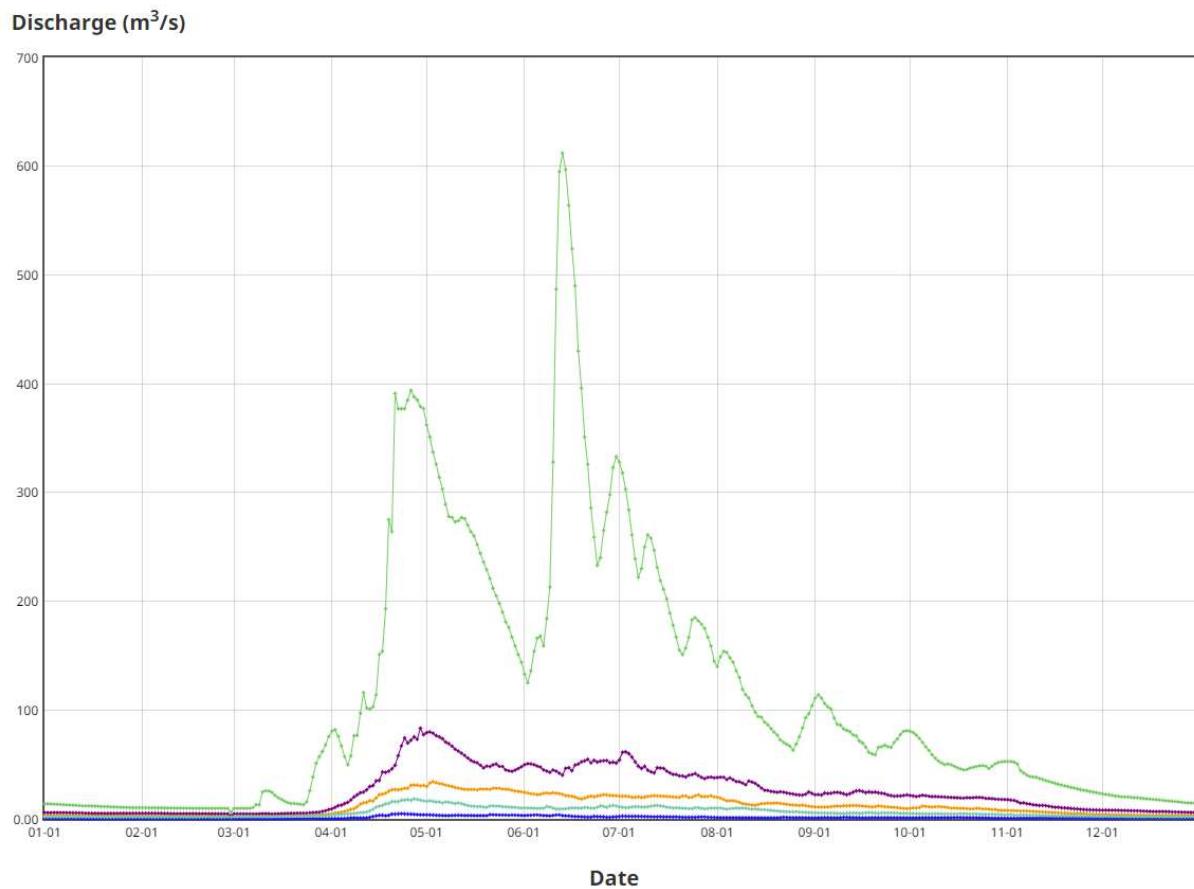
Metals	2013	2018	Metals	2013	2018	Metals	2013	2018
Aluminum Dissolved	↔	↓	Cobalt Dissolved	↔	↔	Nickel Dissolved	↔	↔
Aluminum Total	↔	↓	Cobalt Total	↔	↔	Nickel Total	↔	↔
Arsenic Dissolved	↔	↔	Copper Dissolved	↑	↔	Selenium Dissolved	↔	↔
Arsenic Total	↔	↔	Copper Total	↔	↔	Selenium Total	↔	↓
Barium Dissolved	↔	↔	Iron Dissolved	↔	↔	Silver Dissolved	NA	NA
Barium Total	↔	↔	Iron Total	↔	↔	Silver Total	↓	↔
Beryllium Dissolved	↑	↔	Lead Dissolved	↔	↓	Thallium Dissolved	↑	↔
Beryllium Total	↑	↔	Lead Total	↔	↔	Thallium Total	↑	↔
Boron Dissolved	↔	↑	Lithium Dissolved	↔	↑	Uranium Dissolved	↔	↔
Boron Total	↔	↑	Lithium Total	↔	↑	Uranium Total	↔	↑
Cadmium Dissolved	↑	↑	Manganese Dissolved	↔	↔	Vanadium Dissolved	↔	↔
Cadmium Total	↑	↑	Manganese Total	↔	↔	Vanadium Total	↔	↔
Chromium Dissolved	↑	↔	Molybdenum Dissolved	↔	↓	Zinc Dissolved	↑	↔
Chromium Total	↔	↔	Molybdenum Total	↔	↔	Zinc Total	↔	↔

Typical range (minimum-maximum) in field observations and bacterial values:

Current 2009-2019	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance (µS/cm)	E.Coli (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	0.0-9.0	6.7-8.3	4-11	352-847	<2-22	<2-17
Spring (Mar-May)	0.2-12.4	6.6-8.3	6-139	192-614	<2-1267	<2-20
Summer (Jun-Aug)	7.2-9.7	7.5-9.0	8-43	146-487	5-120	5-120
Fall (Sep-Nov)	4.3-14.2	7.3-8.9	4-96	235-601	5-234	<2-314

Past (1989-2018)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance ($\mu\text{S}/\text{cm}$)	<i>E.Coli</i> (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	0.1-7.2	7.1-7.9	3-24	364-906	8-110	<2-50
Spring (Mar-May)	0.4-13.2	7.2-8.6	3-83	167-1130	<2-5200	<2-100
Summer (Jun-Aug)	5.9-11.1	7.3-8.9	4-77	193-513	36-9000	6-227
Fall (Sep-Nov)	6.4-14.0	7.5-8.7	4-42	181-623	49-1672	<2-167

Hydrometric Graphs (Water Survey of Canada, 1955-2021)



Hydrometric Data Website

[https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=01&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Grap h&stn=06AD006&dataType=Daily¶meterType=Flow&year=2021](https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=01&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Graph&stn=06AD006&dataType=Daily¶meterType=Flow&year=2021)

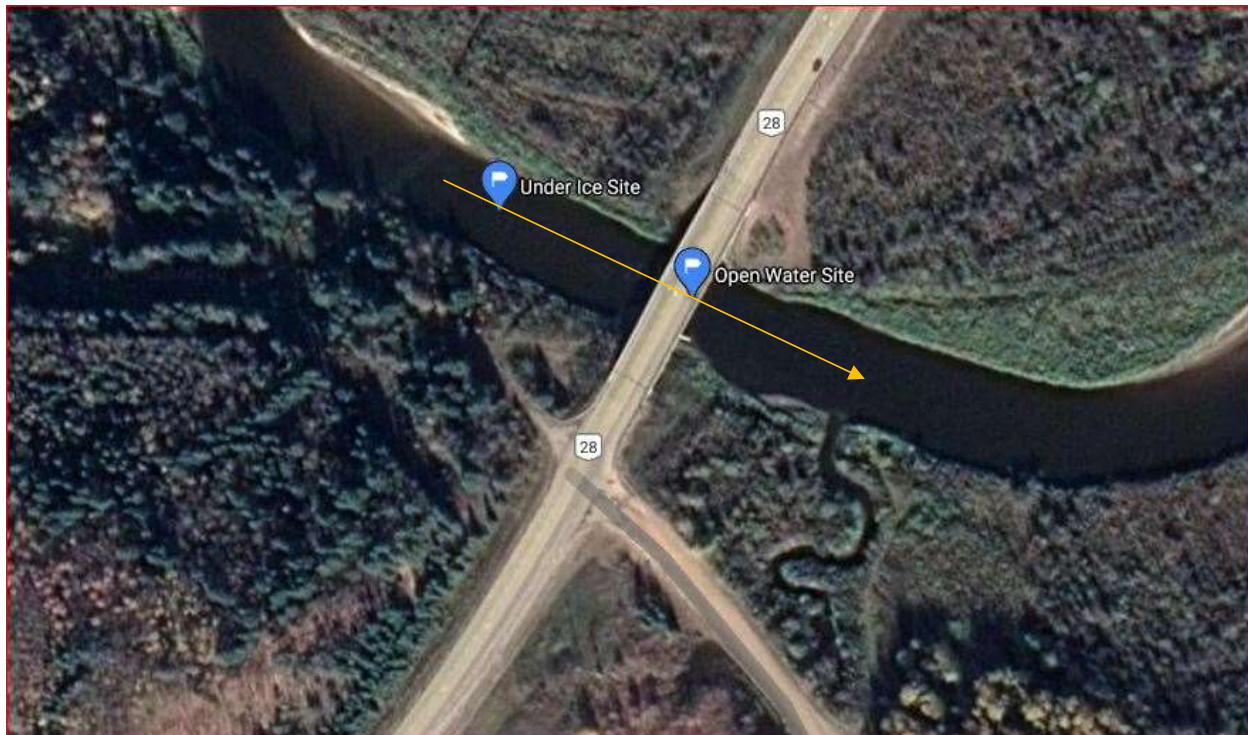
Maps & Diagrams

Figure 1. Satellite imagery of the sampling locations for the Beaver River. North is at the top of the image. Direction of flow in this image from northwest to southeast and is depicted using the arrow.



Figure 2. Beaver R., from bridge upstream view



Figure 3. Beaver R., from bridge downstream view

Parameters Monitored

Note, spelling of parameter names purposely match the spelling in the database.

Field

Parameter	Years monitored
COLIFORMS FECAL	1974-1990, 1999-2019 ongoing
COLIFORMS TOTAL	1974-1990, 1999-2006
E. COLI	1999-2019 ongoing
FECAL STREPTOCOCCI	1974
OXYGEN DISSOLVED	1973-2019 ongoing
PH (FIELD)	1972-2019 ongoing
SPECIFIC CONDUCTANCE (FIELD)	1972-2019 ongoing
TEMPERATURE WATER (FIELD)	1967-2019 ongoing
TURBIDITY (FIELD)	1977, 1979-2019 ongoing

Physicals

Parameter	Years monitored
ALKALINITY GRAN CACO3	2005-2014
ALKALINITY PHENOLPHTHALEIN CACO3	1967-1970, 1972-2014
ALKALINITY TOTAL CACO3	1967-1970, 1972-2019 ongoing
COLOUR APPARENT	1967-1970, 1972-1981
COLOUR TRUE	1974, 1981-2005
ODOUR THRESHOLD NUMBER	1974-1978
RESIDUE FILTERABLE	1967, 1970, 1979
RESIDUE FIXED FILTERABLE	1967, 1970, 1979
RESIDUE FIXED NONFILTRABLE	1967, 1969-1970, 1972-2019 ongoing
RESIDUE NONFILTRABLE	1967, 1969-1970, 1972-2019 ongoing
TEMPERATURE WATER (LAB)	1967-1970, 1972-2006
SPECIFIC CONDUCTANCE (LAB)	1967-1970, 1972-2019 ongoing
PH (LAB)	1967-1970, 1972-2019 ongoing
TURBIDITY (LAB)	1967-1970, 1972-2019 ongoing

Nutrients (Carbon, Nitrogen, Phosphorus)

Parameter	Years monitored
AMMONIA DISSOLVED	1967-1970, 1987-2019 ongoing
AMMONIA TOTAL	1974, 1981-1987
AMMONIA UN-IONIZED (CALCD.)	1986-2019 ongoing
CARBON DISSOLVED INORGANIC	1978-1980
CARBON DISSOLVED ORGANIC	1978-2019 ongoing
CARBON PARTICULATE ORGANIC	1977-2019 ongoing
CARBON TOTAL INORGANIC	1972-1978

CARBON TOTAL ORGANIC	1972-1978
CARBON TOTAL ORGANIC (CALCD.)	1980-1982, 1985-2019 ongoing
CARBONACEOUS OXYGEN DEMAND BOD10	2015-2019
NITROGEN DISSOLVED NO3 & NO2	1967-1970, 1972-2019 ongoing
NITROGEN PARTICULATE	1977-2019 ongoing
NITROGEN TOTAL (CALCD.)	1977-1983, 1985-2019 ongoing
NITROGEN TOTAL DISSOLVED	1975-2019 ongoing
NITROGEN TOTAL KJELDAHL	1973-1978
PHOSPHATE DISSOLVED INORGANIC	1967, 1970, 1972-1974
PHOSPHATE DISSOLVED ORTHO	1967, 1969-1970, 1972-1974, 1981-1990
PHOSPHATE TOTAL INORGANIC	1969-1970
PHOSPHOROUS DISSOLVED ORTHO	1990-2019 ongoing
PHOSPHOROUS PARTICULATE (CALCD.)	1975-2019 ongoing
PHOSPHOROUS TOTAL	1967-1968, 1973-2019 ongoing
PHOSPHOROUS TOTAL DISSOLVED	1975-2019 ongoing
NITROGEN DISSOLVED NITRITE	1968

Major Ions

Parameter	Years monitored
BICARBONATE (CALCD.)	1980-1982, 1985-2019 ongoing
BROMIDE	2016-2017
CALCIUM DISSOLVED/FILTERED	1967-1970, 1972-2019 ongoing
CARBONATE (CALCD.)	1980-1982, 1985-2019 ongoing
CHLORIDE DISSOLVED	1967-1970, 1972-2019 ongoing
FLUORIDE DISSOLVED	1967-1970, 1972-2019 ongoing
FREE CO2 (CALCD.)	1985-2019 ongoing
HARDNESS NON-CARB. (CALCD.)	1985-2019 ongoing
HARDNESS TOTAL (CALCD.) CACO3	1980-1982, 1985-2019 ongoing
HARDNESS TOTAL CACO3	1967-1970, 1972-1975
HARDNESS TOTAL LAB (CALCD.) CACO3	1975-1978
HYDROXIDE (CALCD.)	1985-2019 ongoing
MAGNESIUM DISSOLVED/FILTERED	1975-2019 ongoing
POTASSIUM DISSOLVED/FILTERED	1967-1970, 1972-2019 ongoing
SATURATION INDEX (CALCD.)	1985-2019 ongoing
SILICA REACTIVE	1967-1970, 1972-1990
SIO2	1990-2019 ongoing
SODIUM ADSORPTION RATIO (CALCD.)	2000-2019 ongoing
SODIUM DISSOLVED/FILTERED	1967-1970, 1972-2019 ongoing
SODIUM PERCENTAGE (CALCD.)	1985-2019 ongoing
STABILITY INDEX (CALCD.)	1985-2019 ongoing
SULPHATE DISSOLVED	1967-1970, 1972-2019 ongoing
SULPHIDE DISSOLVED	1981-1989

TOTAL DISSOLVED SOLIDS (CALCD.)	1980-1982, 1985-2019 ongoing
---------------------------------	------------------------------

Metals

Parameter	Years monitored
ALUMINUM DISSOLVED	1967, 1979, 1984-1990, 1992-2019 ongoing
ALUMINUM EXTRACTABLE	1971-1990, 1992-1993
ALUMINUM TOTAL	1993-2019 ongoing
ANTIMONY DISSOLVED	2003-2019 ongoing
ANTIMONY EXTRACTABLE	1971-1973
ANTIMONY TOTAL	2003-2019 ongoing
ARSENIC DISSOLVED	1971-1990, 2003-2019 ongoing
ARSENIC TOTAL	2000-2019 ongoing
BARIUM DISSOLVED	1999-2019 ongoing
BARIUM EXTRACTABLE	1971-1980, 1984
BARIUM TOTAL	1983-1990, 1992-2019 ongoing
BARIUM TOTAL RECOVERABLE	1980-1983
BERYLLIUM DISSOLVED	1999-2019 ongoing
BERYLLIUM TOTAL	1997-2019 ongoing
BISMUTH DISSOLVED	2003-2019 ongoing
BISMUTH TOTAL	2003-2019 ongoing
BORON DISSOLVED	1973-1990, 1992-2019 ongoing
BORON TOTAL	1997-1998, 2003-2019 ongoing
CADMIUM DISSOLVED	1999-2019 ongoing
CADMIUM EXTRACTABLE	1971-1980
CADMIUM TOTAL	1983-1990, 1992-2019 ongoing
CADMIUM TOTAL RECOVERABLE	1980-1983
CERIUM DISSOLVED	2014-2019 ongoing
CERIUM TOTAL	2014-2019 ongoing
CESIUM DISSOLVED	2014-2019 ongoing
CESIUM TOTAL	2014-2019 ongoing
CHROMIUM DISSOLVED	1999-2019 ongoing
CHROMIUM EXTRACTABLE	1971-1984
CHROMIUM TOTAL	1983-1990, 1992-2019 ongoing
COBALT DISSOLVED	1999-2019 ongoing
COBALT EXTRACTABLE	1971-1974, 1978-1980
COBALT TOTAL	1983-1990, 1992-2019 ongoing
COBALT TOTAL RECOVERABLE	1980-1983
COPPER DISSOLVED	1967, 1972-1974, 1979, 1999-2019 ongoing
COPPER EXTRACTABLE	1967, 1969-1980
COPPER TOTAL	1983-1990, 1992-2019 ongoing
COPPER TOTAL RECOVERABLE	1980-1983
EUROPIUM DISSOLVED	2019 ongoing

EUROPIUM TOTAL	2019 ongoing
GADOLINIUM DISSOLVED	2019 ongoing
GADOLINIUM TOTAL	2019 ongoing
GALLIUM DISSOLVED	2003-2019 ongoing
GALLIUM TOTAL	2003-2019 ongoing
GERMANIUM DISSOLVED	2019 ongoing
GERMANIUM TOTAL	2019 ongoing
HAFNIUM DISSOLVED	2019 ongoing
HAFNIUM TOTAL	2019 ongoing
HOLMIUM DISSOLVED	2019 ongoing
HOLMIUM TOTAL	2019 ongoing
INDIUM DISSOLVED	2019 ongoing
INDIUM TOTAL	2019 ongoing
IRIDIUM DISSOLVED	2019 ongoing
IRIDIUM TOTAL	2019 ongoing
IRON DISSOLVED	1967-1970, 1972-1974, 1979-1990, 1992-2019 ongoing
IRON EXTRACTABLE	1967, 1971-1980
IRON TOTAL	1997-2019 ongoing
LANTHANUM DISSOLVED	2003-2019 ongoing
LANTHANUM TOTAL	2003-2019 ongoing
LEAD DISSOLVED	1967, 1972-1974, 1979, 1999-2019 ongoing
LEAD EXTRACTABLE	1969-1980
LEAD TOTAL	1983-1990, 1992-2019 ongoing
LEAD TOTAL RECOVERABLE	1980-1983
LITHIUM DISSOLVED	1999-2019 ongoing
LITHIUM EXTRACTABLE	1971-1973
LITHIUM TOTAL	1997-2019 ongoing
LUTETIUM DISSOLVED	2019 ongoing
LUTETIUM TOTAL	2019 ongoing
MANGANESE DISSOLVED	1967, 1970, 1972-1974, 1979-1990, 1992-2019 ongoing
MANGANESE EXTRACTABLE	1967, 1971-1980
MANGANESE TOTAL	1997-2019 ongoing
MERCURY EXTRACTABLE	1973-1979
MERCURY TOTAL	1979-1990, 1992-1999
MOLYBDENUM DISSOLVED	1999-2019 ongoing
MOLYBDENUM EXTRACTABLE	1971-1974
MOLYBDENUM TOTAL	1997-2019 ongoing
NEODYMIUM DISSOLVED	2019 ongoing
NEODYMIUM TOTAL	2019 ongoing
NICKEL DISSOLVED	1979, 1999-2019 ongoing
NICKEL EXTRACTABLE	1971-1974, 1979-1980

NICKEL TOTAL	1983-1990, 1992-2019 ongoing
NICKEL TOTAL RECOVERABLE	1980-1983
NIOBIUM DISSOLVED	2014-2019 ongoing
NIOBIUM TOTAL	2014-2019 ongoing
PLATINUM DISSOLVED	2014-2019 ongoing
PLATINUM TOTAL	2014-2019 ongoing
PRASEODYMIUM DISSOLVED	2019 ongoing
PRASEODYMIUM TOTAL	2019 ongoing
RUBIDIUM DISSOLVED	2003-2019 ongoing
RUBIDIUM TOTAL	2003-2019 ongoing
RUTHENIUM DISSOLVED	2019 ongoing
RUTHENIUM TOTAL	2019 ongoing
SAMARIUM DISSOLVED	2019 ongoing
SAMARIUM TOTAL	2019 ongoing
SCANDIUM DISSOLVED	2019 ongoing
SCANDIUM TOTAL	2019 ongoing
SELENIUM DISSOLVED	1974-1990, 2003-2019 ongoing
SELENIUM TOTAL	2000-2019 ongoing
SILVER DISSOLVED	2003-2019 ongoing
SILVER EXTRACTABLE	1971-1979
SILVER TOTAL	1999-2019 ongoing
STRONTIUM DISSOLVED	1999-2019 ongoing
STRONTIUM EXTRACTABLE	1971-1974
STRONTIUM TOTAL	1997-2019 ongoing
TELLURIUM DISSOLVED	2019 ongoing
TELLURIUM TOTAL	2019 ongoing
TERBIUM DISSOLVED	2019 ongoing
TERBIUM TOTAL	2019 ongoing
THALLIUM DISSOLVED	2003-2019 ongoing
THALLIUM EXTRACTABLE	1971-1973
THALLIUM TOTAL	2003-2019 ongoing
TIN DISSOLVED	2014-2019 ongoing
TIN TOTAL	2014-2019 ongoing
TITANIUM DISSOLVED	2016-2019 ongoing
TITANIUM TOTAL	2016-2019 ongoing
TUNGSTEN DISSOLVED	2014-2019 ongoing
TUNGSTEN TOTAL	2014-2019 ongoing
URANIUM DISSOLVED	2003-2019 ongoing
URANIUM TOTAL	2003-2019 ongoing
VANADIUM DISSOLVED	1999-2019 ongoing
VANADIUM EXTRACTABLE	1971-1973, 1975-1980
VANADIUM TOTAL	1983-1990, 1992-2019 ongoing
VANADIUM TOTAL RECOVERABLE	1980-1983

YTTERBIUM DISSOLVED	2019 ongoing
YTTERBIUM TOTAL	2019 ongoing
YTTRIUM- DISSOLVED	2014-2019 ongoing
YTTRIUM TOTAL	2014-2019 ongoing
ZINC DISSOLVED	1967, 1972-1974, 1979, 1999-2019 ongoing
ZINC EXTRACTABLE	1967, 1969-1980
ZINC TOTAL	1983-1990, 1992-2019 ongoing
ZINC TOTAL RECOVERABLE	1980-1983
ZIRCONIUM DISSOLVED	2019 ongoing
ZIRCONIUM TOTAL	2019 ongoing

Acid Herbicides

Parameter	Years monitored
2-(2,4-DICHLOROPHOENOXY)-PROPIONIC ACID	2009, 2011, 2013-2014, 2017 ongoing*
2,3,6-TBA	1985-1990, 2009, 2011, 2013-2014, 2017
2,4,5-T	1974-1990, 2009, 2011, 2013-2014, 2017 ongoing*
2,4-D	1974-1990, 2009, 2011, 2013-2014, 2017 ongoing*
2,4-DB	1974-1990, 2009, 2011, 2013-2014, 2017
BROMOXYNIL	1988-1990, 2009, 2011, 2013-2014, 2017 ongoing*
CLOPYRALID	2009, 2011, 2013-2014, 2017 ongoing*
DICAMBA	1985-1990, 2009, 2011, 2013-2014, 2017 ongoing*
DICHLORPROP	1974-1990
FENOPROP (SILVEX)	1978-1990
IMAZAMETHABENZ-METHYL (A)	2009, 2011, 2013-2014, 2017 ongoing*
IMAZAMETHABENZ-METHYL (B)	2009, 2011, 2013-2014
IMAZAMOX	2017 ongoing*
IMAZAPYR	2017 ongoing*
IMAZETHAPYR	2009, 2011, 2013-2014, 2017 ongoing*
MCPA	1974-1990, 2009, 2011, 2013-2014, 2017 ongoing*
MCPB	1985-1990, 2009, 2011, 2013-2014, 2017
MCPP	2017 ongoing*
MECOPROP	2009, 2011, 2013-2014
PICLORAM	1974-1990, 2009, 2011, 2013-2014, 2017 ongoing*
SILVEX	2009, 2011, 2013-2014, 2017 ongoing*
TRICLOPYR	2017 ongoing*

*sampled on 4-year rotational basis

Neutral Herbicides

Parameter	Years monitored
ATRAZINE	2009, 2011, 2013-2014, 2017 ongoing*
ATRAZINE TOTAL	1985-1990
BENZOYLPROP-ETHYL	1985-1990, 2009, 2011, 2013-2014, 2017 ongoing*

BUTYRATE	2009, 2011, 2013-2014, 2017 ongoing*
DESETHYL ATRAZINE	2009, 2011, 2013-2014, 2017 ongoing*
D-ETHYL SIMAZINE	2009, 2011, 2013-2014, 2017 ongoing*
DIALLATE	1985-1990
DIALLATE I	2009, 2011, 2013-2014, 2017 ongoing*
DIALLATE II	2009, 2011, 2013-2014, 2017 ongoing*
DICLOFOP-METHYL	1985-1990, 2009, 2011, 2013-2014, 2017 ongoing*
ETHALFLURALIN	2009, 2011, 2013-2014, 2017 ongoing*
FENOXPAPROP-P-ETHYL	2009, 2011, 2013-2014, 2017 ongoing*
METOLACHLOR	2009, 2011, 2013-2014, 2017 ongoing*
METRIBUZIN	2009, 2011, 2013-2014, 2017 ongoing*
SIMAZINE	2009, 2011, 2013-2014, 2017 ongoing*
TRIALLATE	1985-1990, 2009, 2011, 2013-2014, 2017 ongoing*
TRIFLURALIN	1974-1977, 1979, 1985-1990, 2009, 2011, 2013-2014, 2017 ongoing*

*sampled on 4-year rotational basis

Organochlorine

Parameter	Years monitored
ALDRIN	1974-1990, 2009, 2011, 2013-2014
ALPHA-BENZENEHEXACHLORIDE	1975-1990, 2009, 2011, 2013-2014, 2017 ongoing*
ALPHA-CHLORDANE	1975-1990, 2009, 2011, 2013-2014, 2017 ongoing*
ALPHA-ENDOSULFAN	1974-1990, 2009, 2011, 2013-2014, 2017 ongoing*
BETA-ENDOSULFAN	1974-1990, 2009, 2011, 2013-2014, 2017 ongoing*
BETA-HCH	2009, 2011, 2013-2014
CIS-NONACHLOR	2009, 2011, 2013-2014
DIELDRIN	1974-1990, 2009, 2011, 2013-2014, 2017 ongoing*
ENDOSULFAN SULPHATE TOTAL	2017 ongoing*
ENDRIN	1975-1990, 2009, 2011, 2013-2014
GAMMA-BHC (LINDANE)	1974-1990, 2009, 2011, 2013-2014, 2017 ongoing*
GAMMA-CHLORDANE	1975-1990, 2009, 2011, 2013-2014, 2017 ongoing*
HEPTACHLOR	1974-1990, 2009, 2011, 2013-2014
HEPTACHLOR EPOXIDE	1974-1990, 2009, 2011, 2013-2014
HEXACHLOROBENZENE	1978-1990, 2009, 2011, 2013-2014, 2017 ongoing*
HEXACHLOROBUTADIENE	2009, 2011, 2013-2014, 2017 ongoing*
METHOXYCHLOR (P,P'-METHOXYCHLOR).	1974-1990, 2009, 2011, 2013-2014
MIREX	1978-1990, 2009, 2011, 2013-2014, 2017 ongoing*
O,P'-DDD	2009, 2011, 2013-2014
O,P'-DDE	2009, 2011, 2013-2014
O,P'-DDT	1978-1990, 2009, 2011, 2013-2014, 2017 ongoing*
OXYCHLORDANE	2009, 2011, 2013-2014
P,P'-DDD (TDP)	1974-1990, 2009, 2011, 2013-2014
P,P'-DDE	1974-1990, 2009, 2011, 2013-2014, 2017 ongoing*

P,P'-DDT	1974-1990, 2009, 2011, 2013-2014, 2017 ongoing*
PENTACHLOROANISOLE	2009, 2011, 2013-2014
PENTACHLOROBENZENE	2009, 2011, 2013-2014, 2017 ongoing*
TRANS-NONACHLOR	2009, 2011, 2013-2014, 2017 ongoing*

*sampled on 4-year rotational basis

Glyphosate

Parameter	Years monitored
AMPA	2013-2014, 2017 ongoing*
GLUFOSINATE	2013-2014, 2017 ongoing*
GLYPHOSATE	2013-2014, 2017 ongoing*

*sampled on 4-year rotational basis

Carbamates

Parameter	Years monitored
BARBAN	1974-1977, 1985-1990

Organophosphates

Parameter	Years monitored
DIMETHOATE	1985
MALATHION	1985, 1987

Phenols

Parameter	Years monitored
2,3,4,5-TETRACHLOROPHENOL	1990
2,3,4,6-TETRACHLOROPHENOL	1990
2,3,4-TRICHLOROPHENOL	1990
2,3,5,6-TETRACHLOROPHENOL	1990
2,3,5-TRICHLOROPHENOL	1990
2,3,6-TRICHLOROPHENOL	1990
2,3-DICHLOROPHENOL	1990
2,4,5-TRICHLOROPHENOL	1990
2,4,6-TRICHLOROPHENOL	1990
2,4-DICHLOROPHENOL	1990
2,6-DICHLOROPHENOL	1990
2-CHLORO-5-METHYLPHENOL	1990
2-CHLOROPHENOL	1990
3,4,5-TRICHLOROPHENOL	1990
3,4-DICHLOROPHENOL	1990
3,5-DICHLOROPHENOL	1990
3-CHLOROPHENOL	1990
4-CHLORO-3-METHYLPHENOL	1990
4-CHLOROPHENOL	1990
PENTACHLOROPHENOL	1990
PHENOLIC MATERIAL	1973-1990

Aroclors

Parameter	Years monitored
AROCLOR	1980-1990
AROCLOR 1242	1981-1983
AROCLOR 1248	1973-1981
AROCLOR 1254	1973-1983
AROCLOR 1260	1973-1983

Other Parameters

Parameter	Years monitored
AROMATIC HYDROCARBONS	1974-1982
BETA RADIATION TOTAL	1975-1976
CHLOROPHYLL A	1973-1990, 2017-2019 ongoing
CHLOROPHYLL A (CORRECTED)	2017-2019 ongoing
CYANIDE TOTAL	1974-1990
DISCHARGE DAILY MEAN	1967-1981

DISCHARGE MONTHLY MEAN	1967-1978
N-ALKANES C10 - C26	1974-1982
N-ALKYL SULPHONATES (LAS)	1974-1981
NITRILOTRIACETIC ACID - NTA	1974-1978
OIL AND GREASE	1974-1981
OXYGEN BIOCHEMICAL DEMAND	1974-1979
OXYGEN CONSUMED	1967-1968, 1970
RADIUM RADIATION TOTAL RA-226	1975-1976
STD. PLATE COUNT 35DEG.C BACT. DENS.	1974
STRONTIUM RADIATION TOTAL 90	1975-1976

Cold River at Outlet of Cold Lake

Station Name:	Cold River at Outlet of Cold Lake		
Station Number:	SA06AF0001		
Naquidat¹ Number:	00SA06AF0001		
WSC² Reference Number:	06AF001		
WSC Period of Record:	1993 – current	Active	
Project Number:	115 (historically 315)		
Sampling Site:	Latitude 54°33'57.19"N	Longitude 109°50'28.76"W	
Drainage Area:	6520 km²		
Effective Drainage Area:	6260 km²		
Ecozone³:	Boreal Plains		
Ecoregion³:	Mid Boreal Uplands		
Water Body:	Cold Lake/Waterhen River		
Water Body Type:	River		
Watershed:	Beaver		
Stakeholders:	PPWB		
Site Overview:	<p>The Cold R. sampling site is at the head of the river. The sampling station is located at the outlet of Cold Lake. The Cold River flows eastward into several small lakes and becomes the Waterhen River, which eventually flows into the Beaver River approximately 40km north of the town of Green Lake. Water quality is typically good at this site. However, the greater Beaver-Cold Lake watershed has come under increasing development pressure for water quantity.</p> <p>Trends are increasing in this river for some nitrogen constituents. The dissolved ions all show decreasing trends.</p>		
Sampling location:	<p>Sampling is done year round off of Hwy 919 N bridge on the east side next to Cold Lake Campground at outlet of Cold Lake.</p>		
Station Established:	May 14, 1993		
Period of Record:	1993 – present		
Data Located:	ACBIS	268 Samples (January 2024)	
Station Type:	Network PPWB		
Frequency of Observations:	Monthly starting 2009 till present	Quarterly 1993 to 2009	

¹Data listing of water quality monitoring stations

²Water Survey of Canada

³<http://www.ecozones.ca/english/zone/index.html>

Site Status

Nutrients	2013	2018	Major Ions	2013	2018	Physicals	2013	2018
Ammonia Dissolved	↔	↔	Chloride Dissolved	↓	↓	Oxygen Dissolved	↑	↑
Nitrate as N	↑	↑	Fluoride Dissolved	↔	↓	pH – Field	↔	↔
Nitrogen Total	↑	↔	Sodium Dissolved/Filtered	↔	↓	Sodium Adsorption Ratio (SAR)	↔	↓
Phosphorous Total	↔	↔	Sulphate Dissolved	↓	↓	Total Suspended Solids (TSS)	↓	↓
Phosphorous Total Dissolved	↔	↔	Total Dissolved Solids (TDS)	↔	↔			

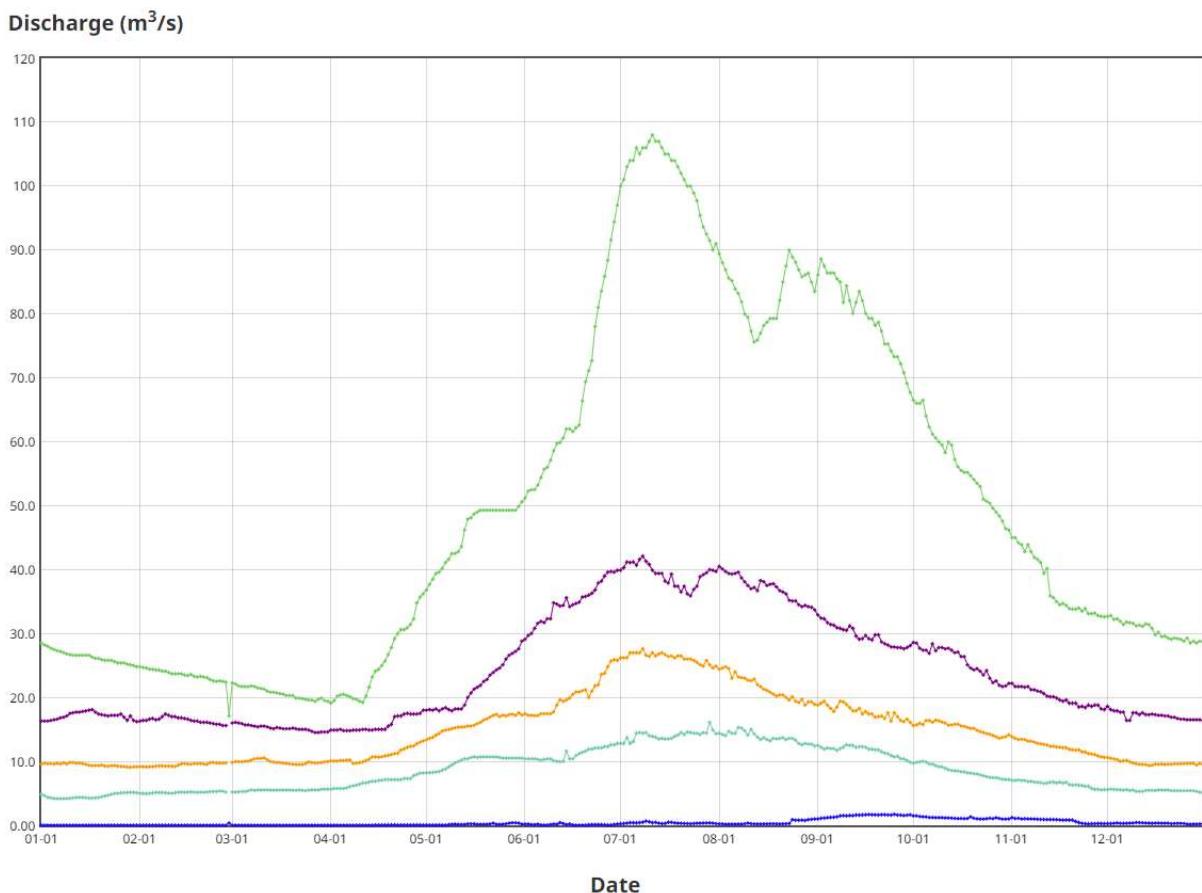
Metals	2013	2018	Metals	2013	2018	Metals	2013	2018
Aluminum Dissolved	↔	↔	Cobalt Dissolved	↑	↑	Nickel Dissolved	↑	↔
Aluminum Total	↔	↔	Cobalt Total	↔	↔	Nickel Total	↔	↔
Arsenic Dissolved	↔	↓	Copper Dissolved	↑	↔	Selenium Dissolved	NA	↑
Arsenic Total	↓	↓	Copper Total	↑	↔	Selenium Total	NA	↑
Barium Dissolved	↔	↔	Iron Dissolved	↑	↔	Silver Dissolved	NA	NA
Barium Total	↔	↔	Iron Total	↓	↔	Silver Total	NA	NA
Beryllium Dissolved	>20%	>20%	Lead Dissolved	>20%	>20%	Thallium Dissolved	NA	NA
Beryllium Total	>20%	>20%	Lead Total	>20%	>20%	Thallium Total	NA	NA
Boron Dissolved	↔	↔	Lithium Dissolved	↓	↓	Uranium Dissolved	↔	↔
Boron Total	↔	↓	Lithium Total	↔	↓	Uranium Total	↓	↓
Cadmium Dissolved	↑	↔	Manganese Dissolved	↑	↔	Vanadium Dissolved	↓	↔
Cadmium Total	↑	↔	Manganese Total	↔	↔	Vanadium Total	↓	↔
Chromium Dissolved	↑	↔	Molybdenum Dissolved	↓	↓	Zinc Dissolved	↔	↓
Chromium Total	↔	↑	Molybdenum Total	↓	↓	Zinc Total	NA	NA

Typical range (minimum-maximum) in field observations and bacterial values:

Current (2009-2019)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance (µS/cm)	E.Coli (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	11.7-14.1	7.4-8.7	1-5	242-314	<2	<2
Spring (Mar-May)	12.1-15.0	7.5-8.5	1-9	225-291	<2-4	<2-<10
Summer (Jun-Aug)	9.3-14.5	8.1-9.7	1-11	209-270	<2-18	<2-20
Fall (Sep-Nov)	9.7-11.9	7.8-9.2	1-9	210-270	<2-2	<2-2

Past (*1993-2008)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance ($\mu\text{S}/\text{cm}$)	<i>E.Coli</i> (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	7.5-13.2	7.5-8.5	0-2	253-303	NA	NA
Spring (Mar-May)	11.7-14.0	7.8-8.6	0-12	240-303	NA	NA
Summer (Jun-Aug)	8.9-12.8	7.8-8.8	0-3	257-274	NA	NA
Fall (Sep-Nov)	7.0-11.5	7.9-8.8	0-5	248-289	NA	NA

Hydrometric Graphs (Water Survey of Canada, 1952-2021)



Hydrometric Data Website

https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=1&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Graph&stn=06AF001&dataType=Daily¶meterType=Flow&year=2021

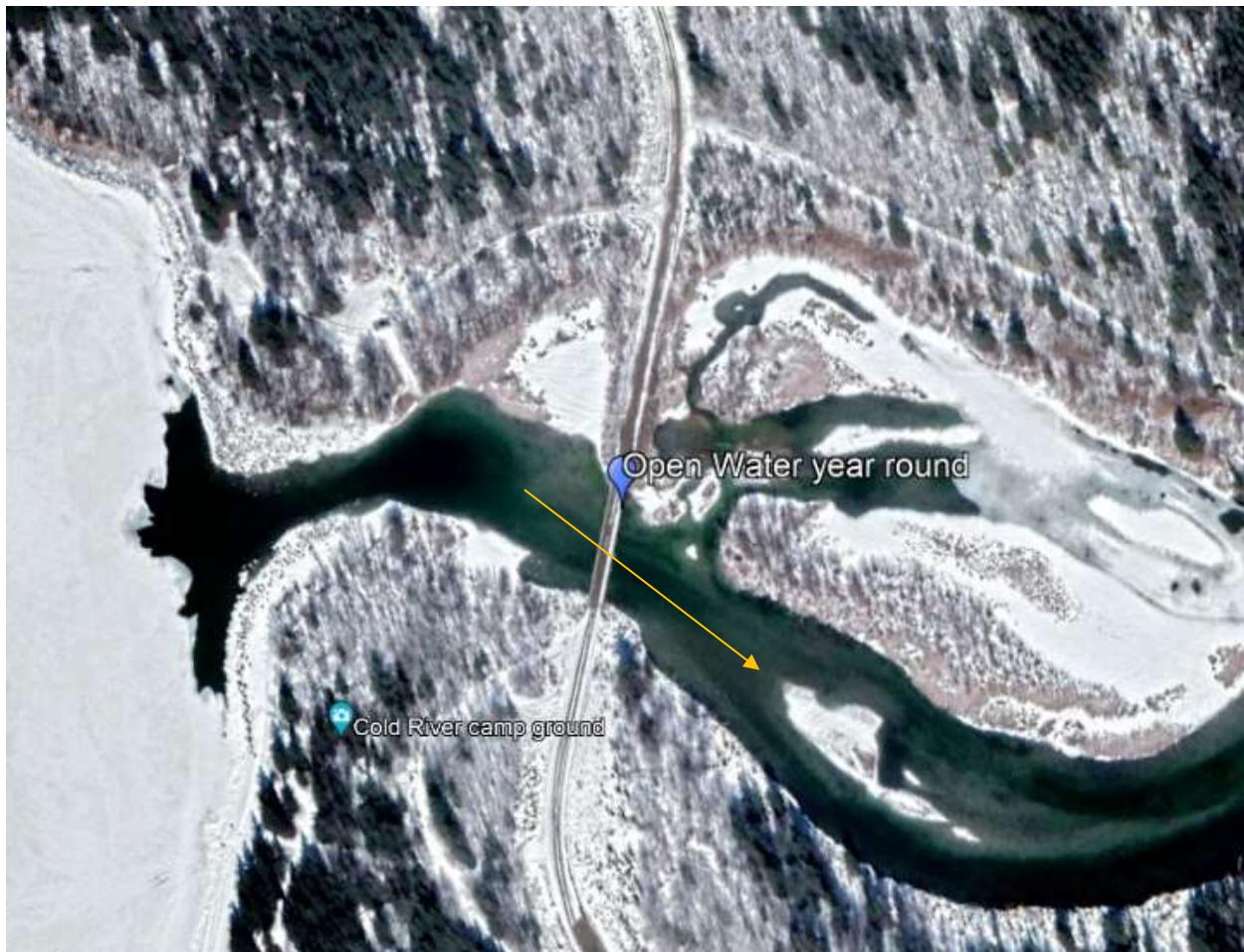
Maps & Diagrams

Figure 1. Imagery of the sampling location for the Cold R. North is at the top of the image. Direction of flow in this image from northwest to southeast and is depicted using the arrow.



Figure 2. Cold R., from the bridge upstream view



Figure 3. Cold R., downstream view of sampling bridge

Parameters Monitored

Note, spelling of parameter names purposely match the spelling in the database.

Field

Parameter	Years monitored
COLIFORMS FECAL	2012-2019 ongoing
E. COLI	2012-2019 ongoing
OXYGEN DISSOLVED	1993-2019 ongoing
PH (FIELD)	1993-2019 ongoing
SPECIFIC CONDUCTANCE (FIELD)	1993-2019 ongoing
TEMPERATURE WATER (FIELD)	1993-2019 ongoing
TURBIDITY (FIELD)	1993-2019 ongoing

Physicals

Parameter	Years monitored
ALKALINITY GRAN CACO3	2006-2015
ALKALINITY PHENOLPHTHALEIN CACO3	1993-2015
ALKALINITY TOTAL CACO3	1993-2019 ongoing
COLOUR TRUE	1993-2005
RESIDUE FIXED NONFILTRABLE	1995-2019 ongoing
RESIDUE NONFILTRABLE	1995-2019 ongoing
SPECIFIC CONDUCTANCE (LAB)	1993-2019 ongoing
TEMPERATURE WATER (LAB)	1993-2006
TURBIDITY (LAB)	1993-2019 ongoing
PH (LAB)	1993-2019 ongoing

Nutrients (Carbon, Nitrogen, Phosphorus)

Parameter	Years monitored
AMMONIA DISSOLVED	1995-2019 ongoing
AMMONIA UN-IONIZED (CALCD.)	1993-2019 ongoing
CARBON DISSOLVED ORGANIC	1995-2019 ongoing
CARBON PARTICULATE ORGANIC	1995-2019 ongoing
CARBON TOTAL ORGANIC (CALCD.)	1993-2019 ongoing
NITROGEN DISSOLVED NO ₃ & NO ₂	1995-2019 ongoing
NITROGEN PARTICULATE	1995-2019 ongoing
NITROGEN TOTAL (CALCD.)	1993-2019 ongoing
NITROGEN TOTAL DISSOLVED	1995-2019 ongoing
PHOSPHOROUS DISSOLVED ORTHO	1995-2019 ongoing
PHOSPHOROUS PARTICULATE (CALCD.)	1993-2019 ongoing
PHOSPHOROUS TOTAL	1995-2019 ongoing
PHOSPHOROUS TOTAL DISSOLVED	1995-2019 ongoing

Major Ions

Parameter	Years monitored
BICARBONATE (CALCD.)	1993-2019 ongoing
BROMIDE	2016-2017
CALCIUM DISSOLVED/FILTERED	1993-2019 ongoing
CARBONATE (CALCD.)	1993-2019 ongoing
CHLORIDE DISSOLVED	1993-2019 ongoing
FLUORIDE DISSOLVED	1993-2019 ongoing
FREE CO ₂ (CALCD.)	1993-2019 ongoing
HARDNESS NON-CARB. (CALCD.)	1993-2019 ongoing
HARDNESS TOTAL (CALCD.) CACO ₃	1993-2019 ongoing
HYDROXIDE (CALCD.)	1993-2019 ongoing
MAGNESIUM DISSOLVED/FILTERED	1993-2019 ongoing
POTASSIUM DISSOLVED/FILTERED	1993-2019 ongoing
SATURATION INDEX (CALCD.)	1993-2019 ongoing
SIO ₂	1993-2019 ongoing
SODIUM ADSORPTION RATIO (CALCD.)	2000-2019 ongoing
SODIUM DISSOLVED/FILTERED	1993-2019 ongoing
SODIUM PERCENTAGE (CALCD.)	1993-2019 ongoing
STABILITY INDEX (CALCD.)	1993-2019 ongoing
SULPHATE DISSOLVED	1993-2019 ongoing
TOTAL DISSOLVED SOLIDS (CALCD.)	1993-2019 ongoing

Metals

Parameter	Years monitored
ALUMINUM DISSOLVED	1993-2019 ongoing
ALUMINUM TOTAL	1993-2019 ongoing
ANTIMONY DISSOLVED	2003-2019 ongoing
ANTIMONY TOTAL	2003-2019 ongoing
ARSENIC DISSOLVED	2003-2019 ongoing
ARSENIC TOTAL	2000-2019 ongoing
BARIUM DISSOLVED	1999-2019 ongoing
BARIUM TOTAL	1993-2019 ongoing
BERYLLIUM DISSOLVED	1999-2019 ongoing
BERYLLIUM TOTAL	1994, 1998-2019 ongoing
BISMUTH DISSOLVED	2003-2019 ongoing
BISMUTH TOTAL	2003-2019 ongoing
BORON DISSOLVED	1993-2019 ongoing
BORON TOTAL	1998, 2003-2019 ongoing
CADMUM DISSOLVED	1999-2019 ongoing
CADMUM TOTAL	1993-2019 ongoing
CERIUM DISSOLVED	2014-2019 ongoing
CERIUM TOTAL	2014-2019 ongoing
CESIUM DISSOLVED	2014-2019 ongoing
CESIUM TOTAL	2014-2019 ongoing
CHROMIUM DISSOLVED	1999-2019 ongoing
CHROMIUM TOTAL	1993-2019 ongoing
COBALT DISSOLVED	1999-2019 ongoing
COBALT TOTAL	1993-2019 ongoing
COPPER DISSOLVED	1999-2019 ongoing
COPPER TOTAL	1993-2019 ongoing
EUROPIUM DISSOLVED	2019 ongoing
EUROPIUM TOTAL	2019 ongoing
GADOLINIUM DISSOLVED	2019 ongoing
GADOLINIUM TOTAL	2019 ongoing
GALLIUM DISSOLVED	2003-2019 ongoing
GALLIUM TOTAL	2003-2019 ongoing
GERMANIUM DISSOLVED	2019 ongoing
GERMANIUM TOTAL	2019 ongoing
HAFNIUM DISSOLVED	2019 ongoing
HAFNIUM TOTAL	2019 ongoing
HOLMIUM DISSOLVED	2019 ongoing
HOLMIUM TOTAL	2019 ongoing
INDIUM DISSOLVED	2019 ongoing
INDIUM TOTAL	2019 ongoing

IRIDIUM DISSOLVED	2019 ongoing
IRIDIUM TOTAL	2019 ongoing
IRON DISSOLVED	1993-2019 ongoing
IRON TOTAL	1994, 1998-2019 ongoing
LANTHANUM DISSOLVED	2003-2019 ongoing
LANTHANUM TOTAL	2003-2019 ongoing
LEAD DISSOLVED	1999-2019 ongoing
LEAD TOTAL	1993-2019 ongoing
LITHIUM DISSOLVED	1999-2019 ongoing
LITHIUM TOTAL	1994, 1998-2019 ongoing
LUTETIUM DISSOLVED	2019 ongoing
LUTETIUM TOTAL	2019 ongoing
MANGANESE DISSOLVED	1993-2019 ongoing
MANGANESE TOTAL	1994, 1998-2019 ongoing
MERCURY TOTAL	1993-1999
MOLYBDENUM DISSOLVED	1999-2019 ongoing
MOLYBDENUM TOTAL	1994, 1998-2019 ongoing
NEODYMIUM DISSOLVED	2019 ongoing
NEODYMIUM TOTAL	2019 ongoing
NICKEL DISSOLVED	1999-2019 ongoing
NICKEL TOTAL	1993-2019 ongoing
NIOBIUM DISSOLVED	2014-2019 ongoing
NIOBIUM TOTAL	2014-2019 ongoing
PLATINUM DISSOLVED	2014-2019 ongoing
PLATINUM TOTAL	2014-2019 ongoing
PRASEODYMIUM DISSOLVED	2019 ongoing
PRASEODYMIUM TOTAL	2019 ongoing
RUBIDIUM DISSOLVED	2003-2019 ongoing
RUBIDIUM TOTAL	2003-2019 ongoing
RUTHENIUM DISSOLVED	2019 ongoing
RUTHENIUM TOTAL	2019 ongoing
SAMARIUM DISSOLVED	2019 ongoing
SAMARIUM TOTAL	2019 ongoing
SCANDIUM DISSOLVED	2019 ongoing
SCANDIUM TOTAL	2019 ongoing
SELENIUM DISSOLVED	2003-2019 ongoing
SELENIUM TOTAL	2000-2019 ongoing
SILVER DISSOLVED	2003-2019 ongoing
SILVER TOTAL	1999-2019 ongoing
STRONTIUM DISSOLVED	1999-2019 ongoing
STRONTIUM TOTAL	1994, 1998-2019 ongoing
TELLURIUM DISSOLVED	2019 ongoing
TELLURIUM TOTAL	2019 ongoing

TERBIUM DISSOLVED	2019 ongoing
TERBIUM TOTAL	2019 ongoing
THALLIUM DISSOLVED	2003-2019 ongoing
THALLIUM TOTAL	2003-2019 ongoing
TIN DISSOLVED	2014-2019 ongoing
TIN TOTAL	2014-2019 ongoing
TITANIUM DISSOLVED	2016-2019 ongoing
TITANIUM TOTAL	2016-2019 ongoing
TUNGSTEN DISSOLVED	2014-2019 ongoing
TUNGSTEN TOTAL	2014-2019 ongoing
URANIUM DISSOLVED	2003-2019 ongoing
URANIUM TOTAL	2003-2019 ongoing
VANADIUM DISSOLVED	1999-2019 ongoing
VANADIUM TOTAL	1993-2019 ongoing
YTTERBIUM DISSOLVED	2019 ongoing
YTTERBIUM TOTAL	2019 ongoing
YTTRIUM- DISSOLVED	2014-2019 ongoing
YTTRIUM TOTAL	2014-2019 ongoing
ZINC DISSOLVED	1999-2019 ongoing
ZINC TOTAL	1993-2019 ongoing
ZIRCONIUM DISSOLVED	2019 ongoing
ZIRCONIUM TOTAL	2019 ongoing

Acid Herbicides

Parameter	Years monitored
2-(2,4-DICHLOROPHOXY)-PROPIONIC ACID	2010, 2014, 2018 ongoing*
2,3,6-TBA	2010, 2014
2,4,5-T	2010, 2014, 2018 ongoing*
2,4-D	2010, 2014, 2018 ongoing*
2,4-DB	2010, 2014
BROMOXYNIL	2010, 2014, 2018 ongoing*
CLOPYRALID	2010, 2014, 2018 ongoing*
DICAMBA	2010, 2014, 2018 ongoing*
DINOSEB	2018
IMAZAMETHABENZ-METHYL (A)	2010, 2014, 2018 ongoing*
IMAZAMETHABENZ-METHYL (B)	2010, 2014
IMAZAMOX	2018 ongoing*
IMAZAPYR	2018 ongoing*
IMAZETHAPYR	2010, 2014, 2018 ongoing*
MCPA	2010, 2014, 2018 ongoing*
MCPB	2010, 2014
MCPP	2018 ongoing*

MECOPROP	2010, 2014
PICLORAM	2010, 2014, 2018 ongoing*
SILVEX	2010, 2014, 2018 ongoing*
TRICLOPYR	2018 ongoing*

*sampled on 4-year rotational basis

Neutral Herbicides

Parameter	Years monitored
ATRAZINE	2010, 2014, 2018 ongoing*
BENZOYLPROP-ETHYL	2010, 2014, 2018 ongoing*
BUTYRATE	2010, 2014, 2018 ongoing*
DESETHYL ATRAZINE	2010, 2014, 2018 ongoing*
D-ETHYL SIMAZINE	2010, 2014, 2018 ongoing*
DIALLATE I	2010, 2014, 2018 ongoing*
DIALLATE II	2010, 2014, 2018 ongoing*
DICLOFOP-METHYL	2010, 2014, 2018 ongoing*
ETHALFLURALIN	2010, 2014, 2018 ongoing*
FENOXAPROP-P-ETHYL	2010, 2014, 2018 ongoing*
METOLACHLOR	2010, 2014, 2018 ongoing*
METRIBUZIN	2010, 2014, 2018 ongoing*
SIMAZINE	2010, 2014, 2018 ongoing*
TRIALLATE	2010, 2014, 2018 ongoing*
TRIFLURALIN	2010, 2014, 2018 ongoing*

*sampled on 4-year rotational basis

Organochlorine

Parameter	Years monitored
ALDRIN	2010, 2014
ALPHA-BENZENEHEXACHLORIDE	2010, 2014, 2018 ongoing*
ALPHA-CHLORDANE	2010, 2014, 2018 ongoing*
ALPHA-ENDOSULFAN	2010, 2014, 2018 ongoing*
BETA-ENDOSULFAN	2010, 2014, 2018 ongoing*
BETA-HCH	2010, 2014
CIS-NONACHLOR	2010, 2014
DIELDRIN	2010, 2014, 2018 ongoing*
ENDOSULFAN SULPHATE TOTAL	2018 ongoing*
ENDRIN	2010, 2014
GAMMA-BHC (LINDANE)	2010, 2014, 2018 ongoing*
GAMMA-CHLORDANE	2010, 2014, 2018 ongoing*
HEPTACHLOR	2010, 2014
HEPTACHLOR EPOXIDE	2010, 2014
HEXACHLOROBENZENE	2010, 2014, 2018 ongoing*
HEXACHLOROBUTADIENE	2010, 2014, 2018 ongoing*

METHOXYCHLOR (P,P'-METHOXYCHLOR).	2010, 2014
MIREX	2010, 2014, 2018 ongoing*
O,P'-DDD	2010, 2014
O,P'-DDE	2010, 2014
O,P'-DDT	2010, 2014, 2018 ongoing*
OXYCHLORDANE	2010, 2014
P,P'-DDD (TDP)	2010, 2014
P,P'-DDE	2010, 2014, 2018 ongoing*
P,P'-DDT	2010, 2014, 2018 ongoing*
PENTACHLOROANISOLE	2010, 2014
PENTACHLOROBENZENE	2010, 2014, 2018 ongoing*
TRANS-NONACHLOR	2010, 2014, 2018 ongoing*

*sampled on 4-year rotational basis

Glyphosate

Parameter	Years monitored
AMPA	2014, 2018 ongoing*
GLUFOSINATE	2014, 2018 ongoing*
GLYPHOSATE	2014, 2018 ongoing*

*sampled on 4-year rotational basis

Other Parameters

Parameter	Years monitored
CHLOROPHYLL A	2017-2019 ongoing
CHLOROPHYLL A (CORRECTED)	2017-2019 ongoing

North Saskatchewan River

Station Name:	North Saskatchewan River at Highway 17		
Station Number:	AL05EF0003		
Naqudat¹ Number:	00AL05EF0003		
WSC² Reference Number:	05EF003		05EF001
WSC Period of Record:	1959-1971 Discontinued		1917-1922, 1944-1958, 1969-2020 Active
Project Number:	115 (historically 315)		
Sampling Site Open Water:	Latitude 53°36'11.4"N	Longitude 110°00'41.3"W	
Sampling Site Ice Cover:	Latitude 53°35'50.4"N	Longitude 109°59'31.6"W	
Drainage Area:	47700 km²		
Effective Drainage Area:	38200 km²		
Ecozone³:	Prairies		
Ecoregion³:	Boreal Transition		
Water Body:	North Saskatchewan River		
Water Body Type:	River		
Watershed:	Central North Saskatchewan		
Stakeholders:	PPWB		
Site Overview:	<p>The North Saskatchewan River headwaters are on the eastern slopes of the Rocky Mountains. Upstream from the monitoring site, the major water users are the city of Edmonton and the industry located adjacent to the river at Fort Saskatchewan. There are also a number of hydroelectric dams along the North Saskatchewan River and its tributaries that affect the river flow. The cities of Lloydminster and North Battleford, located downstream of the interprovincial boundary, obtain their drinking water from the river.</p> <p>Historic Interprovincial water quality concerns: In the 1950s and 1960s there was heavy industrial use of the river. There are also concerns regarding eutrophication resulting from phosphorus loads to the river from numerous upstream municipalities. The Edmonton sewage treatment plant was upgraded in 2001 and since then significant declines in nutrients have occurred.</p> <p>Trends are decreasing in this river for phosphorus and nitrogen constituents. The dissolved ions (Cl, SO₄) show an increasing trend.</p>		
Ice Cover sampling location	Located 1.45 km downstream of bridge site. The site is located mid-stream at the old ferry crossing.		
Open water sampling location	Located at bridge centre on east(downstream) side.		
Station Established:	1988; Replaced previous location at Lea Park (AL05EF0001; 110°20'20.004" W, 53°39'29.016" N; years active 1966-1988)		
Period of Record:	1988- present		

Data Located	ACBIS	525 samples (January 2024)	
Station Type:	Network, Heavy metal and Herbicide, PPWB		
Frequency of Observations:	Monthly		

¹Data listing of water quality monitoring stations

²Water Survey of Canada

³<http://www.ecozones.ca/english/zone/index.html>

Site Status

Nutrients	2013	2018	Major Ions	2013	2018	Physicals	2013	2018
Ammonia Dissolved	↔	↓	Chloride Dissolved	↑	↑	Oxygen Dissolved	↑	↑
Nitrate as N	↓	↓	Fluoride Dissolved	↓	↓	pH – Field	↔	↔
Nitrogen Total	↓	↓	Sodium Dissolved/Filtered	↔	↔	Sodium Adsorption Ratio (SAR)	↔	↔
Phosphorous Total	↓	↓	Sulphate Dissolved	↑	↑	Total Suspended Solids (TSS)	↔	↓
Phosphorous Total Dissolved	↓	↓	Total Dissolved Solids (TDS)	↑	↑			

Metals	2013	2018	Metals	2013	2018	Metals	2013	2018
Aluminum Dissolved	↓	↓	Cobalt Dissolved	↓	↓	Nickel Dissolved	↔	↓
Aluminum Total	↔	↓	Cobalt Total	↔	↓	Nickel Total	↔	↓
Arsenic Dissolved	↓	↓	Copper Dissolved	↔	↓	Selenium Dissolved	↓	↓
Arsenic Total	↓	↓	Copper Total	↔	↓	Selenium Total	↓	↓
Barium Dissolved	↔	↔	Iron Dissolved	↔	↓	Silver Dissolved	>20%	>20%
Barium Total	↔	↓	Iron Total	↔	↓	Silver Total	↔	↓
Beryllium Dissolved	↑	↔	Lead Dissolved	↓	↓	Thallium Dissolved	↑	↔
Beryllium Total	↔	↓	Lead Total	↔	↓	Thallium Total	↔	↓
Boron Dissolved	↓	↔	Lithium Dissolved	↓	↔	Uranium Dissolved	↔	↑
Boron Total	↔	↔	Lithium Total	↔	↔	Uranium Total	↔	↑
Cadmium Dissolved	↑	↑	Manganese Dissolved	↓	↓	Vanadium Dissolved	↓	↓
Cadmium Total	↑	↔	Manganese Total	↔	↓	Vanadium Total	↓	↓
Chromium Dissolved	↑	↔	Molybdenum Dissolved	↓	↓	Zinc Dissolved	↑	↔
Chromium Total	↔	↓	Molybdenum Total	↓	↓	Zinc Total	↔	↓

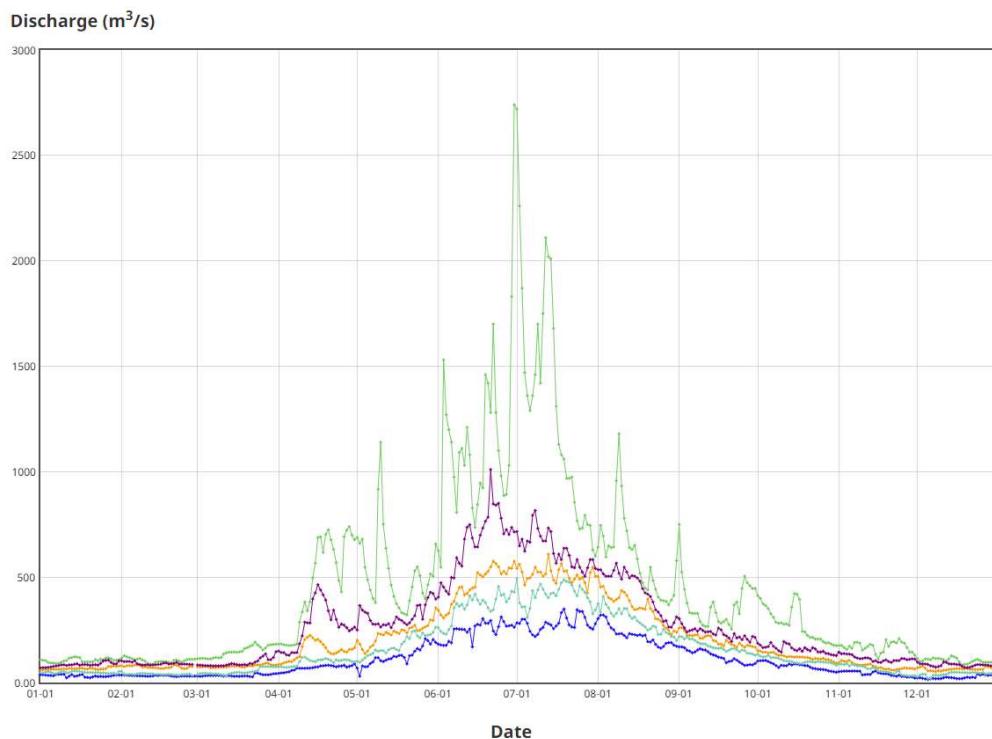
Typical range (minimum-maximum) in field observations and bacterial values:

Current (2009-2019)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance (µS/cm)	E.Coli (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	9.9-15.0	7.3-8.4	3-70	34-479	<2-217	<2-111
Spring	8.3-13.6	7.3-8.7	4-378	240-426	<2-1953	<2-1585

(Mar-May)						
Summer (Jun-Aug)	7.3-10.1	7.8-9.1	4-2888	240-385	3-544	7-1025
Fall (Sep-Nov)	8.8-14.7	6.6-9.0	2-64	230-410	<2-388	<2-319

Past (1989-2008)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance ($\mu\text{S}/\text{cm}$)	E.Coli (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	5.6-13.9	7.3-8.4	2-55	333-489	<2-680	<2-136
Spring (Mar-May)	6.8-14.2	7.3-9.1	3-535	232-440	<2-6100	<2-3000
Summer (Jun-Aug)	5.9-11.7	7.8-9.0	3-830	229-381	23-8450	2-3000
Fall (Sep-Nov)	6.8-15.0	7.6-9.1	2-67	254-420	<2-3600	<2-1100

Hydrometric Graphs (Water Survey of Canada, 1958-1971)



Hydrometric Data Website

[https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=1&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Grap h&stn=05EF003&dataType=Daily¶meterType=Flow&year=1971](https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=1&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Graph&stn=05EF003&dataType=Daily¶meterType=Flow&year=1971)

Maps & Diagrams

Figure 1. Satellite imagery of the sampling locations for the North Saskatchewan R. North is at the top of the image. Direction of flow in this image from northwest to southeast and is depicted using the arrow.

**Figure 2. N. Saskatchewan R., upstream view****Figure 3. N. Saskatchewan R., downstream view**

Parameters Monitored

Note, spelling of parameter names purposely match the spelling in the database.

Field

Parameter	Years monitored
COLIFORMS FECAL	1988-2019 ongoing
COLIFORMS TOTAL	1988-2006
E. COLI	1998-2019 ongoing
OXYGEN DISSOLVED	1988-2019 ongoing
PH (FIELD)	1988-2019 ongoing
SPECIFIC CONDUCTANCE (FIELD)	1988-2019 ongoing
TEMPERATURE WATER (FIELD)	1988-2019 ongoing
TURBIDITY (FIELD)	1988-2019 ongoing

Physicals

Parameter	Years monitored
ALKALINITY GRAN CACO3	2006-2014
ALKALINITY PHENOLPHTHALEIN CACO3	1988-2014
ALKALINITY TOTAL CACO3	1988-2019 ongoing
COLOUR TRUE	1988-2005
RESIDUE FIXED NONFILTRABLE	1988-2019 ongoing
RESIDUE NONFILTRABLE	1988-2019 ongoing
TURBIDITY (LAB)	1988-2019 ongoing
PH (LAB)	1988-2019 ongoing
SPECIFIC CONDUCTANCE (LAB)	1988-2019 ongoing
TEMPERATURE WATER (LAB)	1988-2006

Nutrients (Carbon, Nitrogen, Phosphorus)

Parameter	Years monitored
AMMONIA DISSOLVED	1988-2019 ongoing
AMMONIA UN-IONIZED (CALCD.)	1988-2019 ongoing
CARBON DISSOLVED ORGANIC	1988-2019 ongoing
CARBON PARTICULATE ORGANIC	1988-2019 ongoing
CARBON TOTAL ORGANIC (CALCD.)	1988-2019 ongoing
NITROGEN DISSOLVED NO ₃ & NO ₂	1988-2019 ongoing
NITROGEN PARTICULATE	1988-2019 ongoing
NITROGEN TOTAL (CALCD.)	1988-2019 ongoing
NITROGEN TOTAL DISSOLVED	1988-2019 ongoing
PHOSPHATE DISSOLVED ORTHO	1988-1990
PHOSPHOROUS DISSOLVED ORTHO	1990-2019 ongoing
PHOSPHOROUS PARTICULATE (CALCD.)	1988-2019 ongoing
PHOSPHOROUS TOTAL	1988-2019 ongoing
PHOSPHOROUS TOTAL DISSOLVED	1988-2019 ongoing

Major Ions

Parameter	Years monitored
BICARBONATE (CALCD.)	1988-2019 ongoing
BROMIDE	2016-2017
CALCIUM DISSOLVED/FILTERED	1988-2019 ongoing
CARBONATE (CALCD.)	1988-2019 ongoing
CHLORIDE DISSOLVED	1988-2019 ongoing
FLUORIDE DISSOLVED	1988-2019 ongoing
FREE CO ₂ (CALCD.)	1988-2019 ongoing
HARDNESS NON-CARB. (CALCD.)	1988-2019 ongoing
HARDNESS TOTAL (CALCD.) CACO ₃	1988-2019 ongoing
HYDROXIDE (CALCD.)	1988-2019 ongoing
MAGNESIUM DISSOLVED/FILTERED	1988-2019 ongoing
POTASSIUM DISSOLVED/FILTERED	1988-2019 ongoing
SATURATION INDEX (CALCD.)	1988-2019 ongoing
SILICA REACTIVE	1988-1990
SIO ₂	1990-2019 ongoing
SODIUM ADSORPTION RATIO (CALCD.)	2000-2019 ongoing
SODIUM DISSOLVED/FILTERED	1988-2019 ongoing
SODIUM PERCENTAGE (CALCD.)	1988-2019 ongoing
STABILITY INDEX (CALCD.)	1988-2019 ongoing
SULPHATE DISSOLVED	1988-2019 ongoing
SULPHIDE DISSOLVED	1988-1989
TOTAL DISSOLVED SOLIDS (CALCD.)	1988-2019 ongoing

Metals

Parameter	Years monitored
ALUMINUM DISSOLVED	1988-2019 ongoing
ALUMINUM EXTRACTABLE	1988-1993
ALUMINUM TOTAL	1993-2019 ongoing
ANTIMONY DISSOLVED	2003-2019 ongoing
ANTIMONY TOTAL	2003-2019 ongoing
ARSENIC DISSOLVED	1988-1990, 2003-2019 ongoing
ARSENIC TOTAL	2000-2019 ongoing
BARIUM DISSOLVED	1999-2019 ongoing
BARIUM TOTAL	1988-2019 ongoing
BERYLLIUM DISSOLVED	1999-2019 ongoing
BERYLLIUM TOTAL	1997-2019 ongoing
BISMUTH DISSOLVED	2003-2019 ongoing
BISMUTH TOTAL	2003-2019 ongoing
BORON DISSOLVED	1988-1990, 1992-2019 ongoing
BORON TOTAL	1997-1998, 2003-2019 ongoing
CADMIUM DISSOLVED	1999-2019 ongoing
CADMIUM TOTAL	1988-2019 ongoing
CERIUM DISSOLVED	2014-2019 ongoing
CERIUM TOTAL	2014-2019 ongoing
CESIUM DISSOLVED	2014-2019 ongoing
CESIUM TOTAL	2014-2019 ongoing
CHROMIUM DISSOLVED	1999-2019 ongoing
CHROMIUM TOTAL	1988-2019 ongoing
COBALT DISSOLVED	1999-2019 ongoing
COBALT TOTAL	1988-2019 ongoing
COPPER DISSOLVED	1999-2019 ongoing
COPPER TOTAL	1988-2019 ongoing
EUROPIUM DISSOLVED	2019 ongoing
EUROPIUM TOTAL	2019 ongoing
GADOLINIUM DISSOLVED	2019 ongoing
GADOLINIUM TOTAL	2019 ongoing
GALLIUM DISSOLVED	2003-2019 ongoing
GALLIUM TOTAL	2003-2019 ongoing
GERMANIUM DISSOLVED	2019 ongoing
GERMANIUM TOTAL	2019 ongoing
HAFNIUM DISSOLVED	2019 ongoing
HAFNIUM TOTAL	2019 ongoing
HOLMIUM DISSOLVED	2019 ongoing
HOLMIUM TOTAL	2019 ongoing
INDIUM DISSOLVED	2019 ongoing

INDIUM TOTAL	2019 ongoing
IRIDIUM DISSOLVED	2019 ongoing
IRIDIUM TOTAL	2019 ongoing
IRON DISSOLVED	1988-2019 ongoing
IRON TOTAL	1997-2019 ongoing
LANTHANUM DISSOLVED	2003-2019 ongoing
LANTHANUM TOTAL	2003-2019 ongoing
LEAD DISSOLVED	1999-2019 ongoing
LEAD TOTAL	1988-2019 ongoing
LITHIUM DISSOLVED	1999-2019 ongoing
LITHIUM TOTAL	1997-2019 ongoing
LUTETIUM DISSOLVED	2019 ongoing
LUTETIUM TOTAL	2019 ongoing
MANGANESE DISSOLVED	1988-2019 ongoing
MANGANESE TOTAL	1997-2019 ongoing
MERCURY TOTAL	1988-1998
MOLYBDENUM DISSOLVED	1999-2019 ongoing
MOLYBDENUM TOTAL	1997-2019 ongoing
NEODYMIUM DISSOLVED	2019 ongoing
NEODYMIUM TOTAL	2019 ongoing
NICKEL DISSOLVED	1999-2019 ongoing
NICKEL TOTAL	1988-2019 ongoing
NIOBIUM DISSOLVED	2014-2019 ongoing
NIOBIUM TOTAL	2014-2019 ongoing
PLATINUM DISSOLVED	2014-2019 ongoing
PLATINUM TOTAL	2014-2019 ongoing
PRASEODYMIUM DISSOLVED	2019 ongoing
PRASEODYMIUM TOTAL	2019 ongoing
RUBIDIUM DISSOLVED	2003-2019 ongoing
RUBIDIUM TOTAL	2003-2019 ongoing
RUTHENIUM DISSOLVED	2019 ongoing
RUTHENIUM TOTAL	2019 ongoing
SAMARIUM DISSOLVED	2019 ongoing
SAMARIUM TOTAL	2019 ongoing
SCANDIUM DISSOLVED	2019 ongoing
SCANDIUM TOTAL	2019 ongoing
SELENIUM DISSOLVED	1988-1990, 2003-2019 ongoing
SELENIUM TOTAL	2000-2019 ongoing
SILVER DISSOLVED	2003-2019 ongoing
SILVER TOTAL	1999-2019 ongoing
STRONTIUM DISSOLVED	1999-2019 ongoing
STRONTIUM TOTAL	1997-2019 ongoing
TELLURIUM DISSOLVED	2019 ongoing

TELLURIUM TOTAL	2019 ongoing
TERBIUM DISSOLVED	2019 ongoing
TERBIUM TOTAL	2019 ongoing
THALLIUM DISSOLVED	2003-2019 ongoing
THALLIUM TOTAL	2003-2019 ongoing
TIN DISSOLVED	2014-2019 ongoing
TIN TOTAL	2014-2019 ongoing
TITANIUM DISSOLVED	2016-2019 ongoing
TITANIUM TOTAL	2016-2019 ongoing
TUNGSTEN DISSOLVED	2014-2019 ongoing
TUNGSTEN TOTAL	2014-2019 ongoing
URANIUM DISSOLVED	2003-2019 ongoing
URANIUM TOTAL	2003-2019 ongoing
VANADIUM DISSOLVED	1999-2019 ongoing
VANADIUM TOTAL	1988-2019 ongoing
YTTERBIUM DISSOLVED	2019 ongoing
YTTERBIUM TOTAL	2019 ongoing
YTTRIUM- DISSOLVED	2014-2019 ongoing
YTTRIUM TOTAL	2014-2019 ongoing
ZINC DISSOLVED	1999-2019 ongoing
ZINC TOTAL	1988-2019 ongoing
ZIRCONIUM DISSOLVED	2019 ongoing
ZIRCONIUM TOTAL	2019 ongoing

Acid Herbicides

Parameter	Years monitored
2-(2,4-DICHLOROPHOXY)-PROPIONIC ACID	2006, 2010-2011, 2014, 2017-2019 ongoing
2,3,6-TBA	1988-1992, 2006, 2010-2011, 2014, 2017
2,4,5-T	1988-1992, 2006, 2010-2011, 2014, 2017-2019 ongoing
2,4-D	1988-1992, 2006, 2010-2011, 2014, 2017-2019 ongoing
2,4-DB	1988-1992, 2006, 2010-2011, 2014, 2017
ACIFLUORFEN	2019 ongoing
BROMOXYNIL	1988-1992, 2006, 2010-2011, 2014, 2017-2019 ongoing
CLOPYRALID	2006, 2010-2011, 2014, 2017-2019 ongoing
DICAMBA	1988-1992, 2006, 2010-2011, 2014, 2017-2019 ongoing
DICHLORPROP	1988-1992
DINOSEB	2018-2019 ongoing
FENOPROP (SILVEX)	1988-1992

FOMESAFEN	2019 ongoing
IMAZAMETHABENZ-METHYL (A)	2006, 2010-2011, 2014, 2017-2019 ongoing
IMAZAMETHABENZ-METHYL (B)	2006, 2010-2011, 2014
IMAZAMOX	2017-2019 ongoing
IMAZAPYR	2017-2019 ongoing
IMAZETHAPYR	2006, 2010-2011, 2014, 2017-2019 ongoing
MCPA	1988-1992, 2006, 2010-2011, 2014, 2017-2019 ongoing
MCPB	1988-1992, 2006, 2010-2011, 2014, 2017
MCPP	2017-2019 ongoing
MECOPROP	2006, 2010-2011, 2014
PICLORAM	1988-1992, 2006, 2010-2011, 2014, 2017-2019 ongoing
SILVEX	2006, 2010-2011, 2014, 2017-2019 ongoing
TRICLOPYR	2017-2019 ongoing

Neutral Herbicides

Parameter	Years monitored
ATRAZINE	2006, 2010-2011, 2014, 2018 ongoing*
ATRAZINE TOTAL	1988-1992
BENZOYLPROP-ETHYL	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
BUTYLATE	2006, 2010-2011, 2014, 2018 ongoing*
DESETHYL ATRAZINE	2006, 2010-2011, 2014, 2018 ongoing*
D-ETHYL SIMAZINE	2006, 2010-2011, 2014, 2018 ongoing*
DIALLATE	1988-1992
DIALLATE I	2006, 2010-2011, 2014, 2018 ongoing*
DIALLATE II	2006, 2010-2011, 2014, 2018 ongoing*
DICLOFOP-METHYL	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
ETHALFLURALIN	2006, 2010-2011, 2014, 2018 ongoing*
FENOXAPROP-P-ETHYL	2010-2011, 2014, 2018 ongoing*
METOLACHLOR	2006, 2010-2011, 2014, 2018 ongoing*
METRIBUZIN	2006, 2010-2011, 2014, 2018 ongoing*
SIMAZINE	2006, 2010-2011, 2014, 2018 ongoing*
TRIALLATE	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
TRIFLURALIN	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*

*sampled on 4-year rotational basis

Organochlorine

Parameter	Years monitored
ALDRIN	1988-1992, 2006, 2010-2011, 2014
ALPHA-BENZENEHEXACHLORIDE	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
ALPHA-CHLORDANE	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
ALPHA-ENDOSULFAN	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
BETA-ENDOSULFAN	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
BETA-HCH	2006, 2010-2011, 2014
CIS-NONACHLOR	2006, 2010-2011, 2014
DIELDRIN	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
ENDOSULFAN SULPHATE TOTAL	2018 ongoing*
ENDRIN	1988-1992, 2006, 2010-2011, 2014
GAMMA-BHC (LINDANE)	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
GAMMA-CHLORDANE	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
HEPTACHLOR	1988-1992, 2006, 2010-2011, 2014
HEPTACHLOR EPOXIDE	1988-1992, 2006, 2010-2011, 2014
HEXACHLOROBENZENE	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
HEXACHLOROBUTADIENE	2006, 2010-2011, 2014, 2018 ongoing*
METHOXYCHLOR (P,P'-METHOXYCHLOR).	1988-1992, 2006, 2010-2011, 2014
MIREX	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
O,P'-DDD	2006, 2010-2011, 2014
O,P'-DDE	2006, 2010-2011, 2014
O,P'-DDT	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
OXYCHLORDANE	2006, 2010-2011, 2014
P,P'-DDD (TDP)	1988-1992, 2006, 2010-2011, 2014
P,P'-DDE	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
P,P'-DDT	1988-1992, 2006, 2010-2011, 2014, 2018 ongoing*
PENTACHLOROANISOLE	2006, 2010-2011, 2014
PENTACHLOROBENZENE	2006, 2010-2011, 2014, 2018 ongoing*
TRANS-NONACHLOR	2006, 2010-2011, 2014, 2018 ongoing*

*sampled on 4-year rotational basis

Glyphosate

Parameter	Years monitored
AMPA	2014, 2018-2019 ongoing
GLUFOSINATE	2014, 2018-2019 ongoing
GLYPHOSATE	2014, 2018-2019 ongoing

Carbamates

Parameter	Years monitored
BARBAN	1988-1992

Phenols

Parameter	Years monitored
2,3,4,5-TETRACHLOROPHENOL	1990, 1992-1995
2,3,4,6-TETRACHLOROPHENOL	1990, 1992-1995
2,3,4-TRICHLOROPHENOL	1990, 1992-1995
2,3,5,6-TETRACHLOROPHENOL	1990, 1992-1995
2,3,5-TRICHLOROPHENOL	1990, 1992-1995
2,3,6-TRICHLOROPHENOL	1990, 1992-1995
2,3-DICHLOROPHENOL	1990, 1992-1995
2,4,5-TRICHLOROPHENOL	1990, 1992-1995
2,4,6-TRICHLOROPHENOL	1990, 1992-1995
2,4-DICHLOROPHENOL	1990, 1992-1995
2,6-DICHLOROPHENOL	1990, 1992-1995
2-CHLORO-5-METHYLPHENOL	1990, 1992-1995
2-CHLOROPHENOL	1990, 1992-1995
3,4,5-TRICHLOROPHENOL	1990, 1992-1995
3,4-DICHLOROPHENOL	1990, 1992-1995
3,5-DICHLOROPHENOL	1990, 1992-1995
3-CHLOROPHENOL	1990, 1992-1995
4-CHLORO-3-METHYLPHENOL	1990, 1992-1995
4-CHLOROPHENOL	1990, 1992-1995
PENTACHLOROPHENOL	1990, 1992-1995
PHENOLIC MATERIAL	1988-1990

Aroclors

Parameter	Years monitored
AROCLOR	1988-1992

Other Parameters

Parameter	Years monitored
CHLOROPHYLL A	1988-1990, 2017-2019 ongoing
CHLOROPHYLL A (CORRECTED)	2017-2019 ongoing
CYANIDE TOTAL	1988-1990

Red Deer River Near Bindloss

Station Name:	Red Deer River Near Bindloss		
Station Number:	AL05CK0001		
Naqudat¹ Number:	00AL05CK0001		
WSC² Reference Number:	05CK004		
WSC Period of Record:	1961 – current	Active	
Project Number:	115 (historically 315)		
Sampling Site Open Water:	Latitude 50°54'11.91"N	Longitude 110°17'57.69"W	
Sampling Site Ice Cover:	Latitude 50°54'8.90"N	Longitude 110°17'47.81"W	
Drainage Area:	47800 km ²		
Effective Drainage Area:	28200 km ²		
Ecozone³:	Prairies		
Ecoregion³:	Mixed Grasslands		
Water Body:	Red Deer River		
Water Body Type:	River		
Watershed:	Red Deer/South Saskatchewan		
Stakeholders	PPWB		
Site Overview:	<p>The Red Deer River Basin, upstream of the Red Deer River near Bindloss site, has a gross drainage area of 44,683 km² and an effective drainage area of 31,618 km². The PPWB Water Quality Monitoring site is located near Bindloss. Water quality monitoring has been conducted historically since 1966. With the completion of construction in 1983 of the 165,000 dam³ Gleniffer Reservoir in the western part of the basin, winter flows have been increased. The Red Deer and South Saskatchewan rivers join approximately 8 km east of the Alberta-Saskatchewan border.</p> <p>Trends are generally decreasing in this river for phosphorus although nitrogen constituents have an increasing trend. The dissolved ions (Na, Cl, SO₄) also show an increasing trend.</p>		
Sampling location:	Summer sampling location is a bridge on Range Road 30A, 38 km northwest of the community of Bindloss. Winter sampling location (under ice) is 200 metres downstream of Range Road 30A bridge.		
Station Established:	1966		
Period of Record:	1966 – present		
Data Located:	ACBIS	831 Samples (January 2024)	
Station Type:	Network, PPWB		
Frequency of Observations:	Monthly		

¹Data listing of water quality monitoring stations

²Water Survey of Canada

³<http://www.ecozones.ca/english/zone/index.html>

Site Status

Nutrients	2013	2018	Major Ions	2013	2018	Physicals	2013	2018
Ammonia Dissolved	↓	↑	Chloride Dissolved	↑	↑	Oxygen Dissolved	↔	↔
Nitrate as N	↓	↔	Fluoride Dissolved	↔	↓	pH – Field	↑	↑
Nitrogen Total	↑	↑	Sodium Dissolved/Filtered	↑	↑	Sodium Adsorption Ratio (SAR)	↑	↔
Phosphorous Total	↔	↔	Sulphate Dissolved	↔	↑	Total Suspended Solids (TSS)	↔	↔
Phosphorous Total Dissolved	↓	↓	Total Dissolved Solids (TDS)	↑	↑			

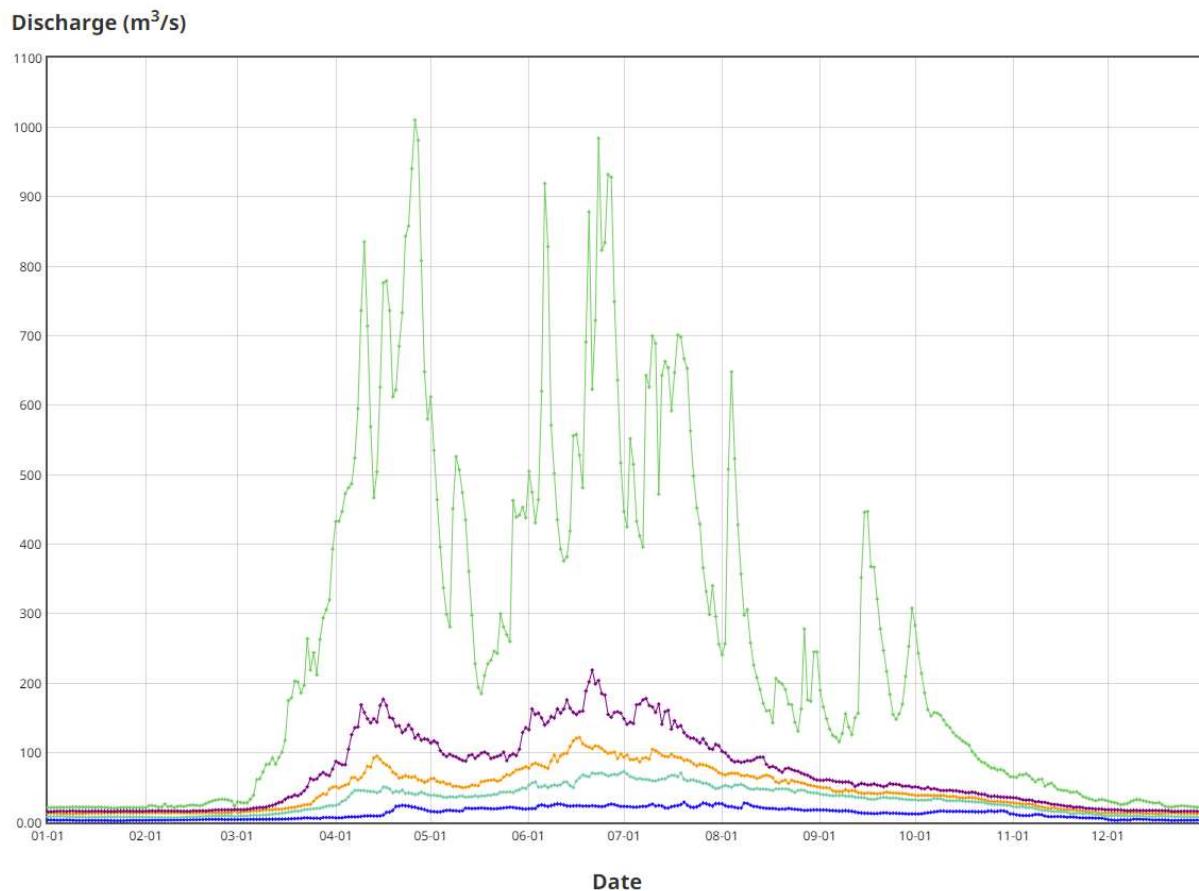
Metals	2013	2018	Metals	2013	2018	Metals	2013	2018
Aluminum Dissolved	↑	↔	Cobalt Dissolved	↔	↔	Nickel Dissolved	↔	↔
Aluminum Total	↔	↔	Cobalt Total	↔	↔	Nickel Total	↔	↔
Arsenic Dissolved	↔	↔	Copper Dissolved	↔	↔	Selenium Dissolved	↔	↔
Arsenic Total	↔	↔	Copper Total	↔	↔	Selenium Total	↑	↑
Barium Dissolved	↔	↔	Iron Dissolved	↑	↔	Silver Dissolved	NA	NA
Barium Total	↔	↔	Iron Total	↔	↔	Silver Total	↔	↔
Beryllium Dissolved	↑	↔	Lead Dissolved	↔	↓	Thallium Dissolved	↔	↔
Beryllium Total	↔	↔	Lead Total	↔	↔	Thallium Total	↔	↔
Boron Dissolved	↑	↔	Lithium Dissolved	↔	↔	Uranium Dissolved	↑	↑
Boron Total	↑	↑	Lithium Total	↔	↔	Uranium Total	↑	↑
Cadmium Dissolved	↑	↑	Manganese Dissolved	↔	↔	Vanadium Dissolved	↔	↔
Cadmium Total	↔	↑	Manganese Total	↔	↔	Vanadium Total	↔	↔
Chromium Dissolved	↑	↔	Molybdenum Dissolved	↓	↓	Zinc Dissolved	↔	↔
Chromium Total	↔	↔	Molybdenum Total	↔	↔	Zinc Total	↔	↔

Typical range (minimum-maximum) in field observations and bacterial values:

Current (2009-2019)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance (µS/cm)	E.Coli (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	0.4-15.2	7.0-8.5	2-227	537-1778	<2-88	<2-69
Spring (Mar-May)	6.5-12.8	7.1-8.9	3-2580	384-734	<2-150	<2-680
Summer (Jun-Aug)	7.2-9.3	8.0-9.2	17-58300	347-631	5-5067	7-4734
Fall (Sep-Nov)	8.5-14.4	8.0-9.0	5-990	270-729	<2-831	<2-750

Past (1989-2008)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance ($\mu\text{S}/\text{cm}$)	<i>E.Coli</i> (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	0.8-16.2	7.5-9.0	1-56	347-919	6-80	<2-30
Spring (Mar-May)	3.3-18.3	7.4-8.8	2-2253	287-632	6-316	<2-1534
Summer (Jun-Aug)	5.8-10.2	7.7-8.6	19-2800	328-666	10-4100	<5-5834
Fall (Sep-Nov)	7.0-14.1	7.8-8.9	6->1000	368-672	<2-3472	<2-615

Hydrometric Graphs (Water Survey of Canada, 1960-2021)



Hydrometric Data Website

[https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=01&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Grap h&stn=05CK004&56atatype=Daily¶meterType=Flow&year=2021](https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=01&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Graph&stn=05CK004&56atatype=Daily¶meterType=Flow&year=2021)

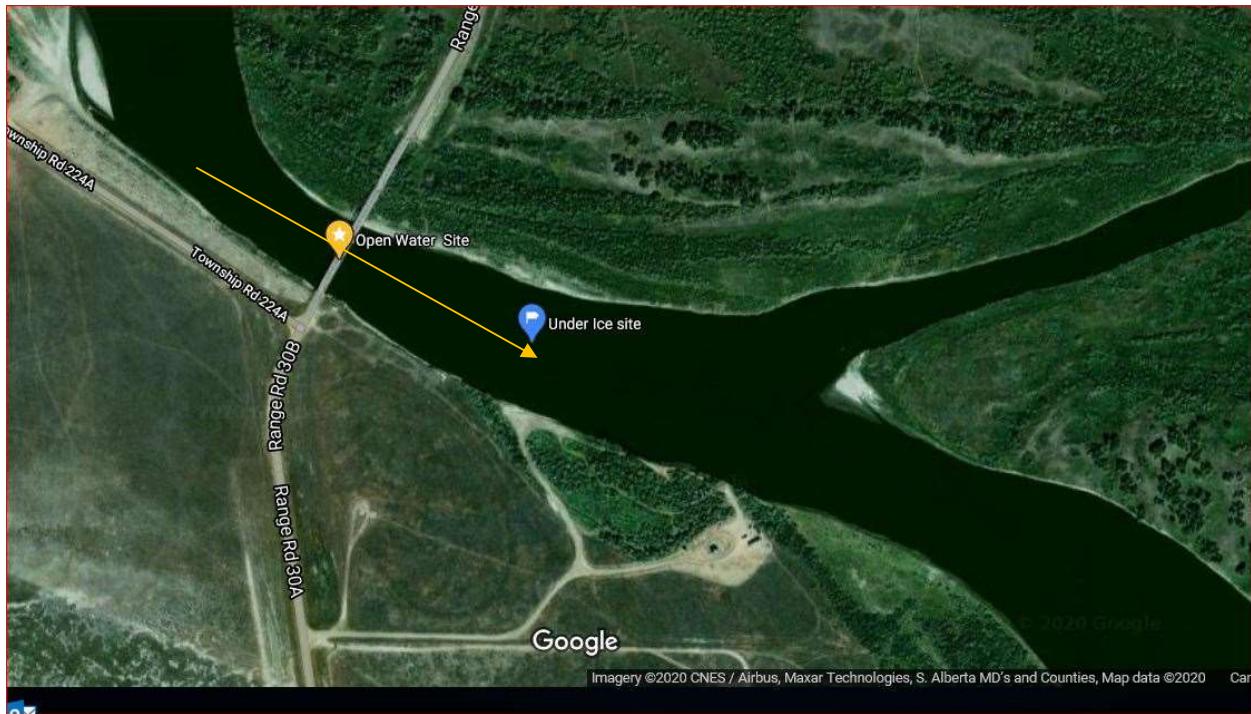
Maps & Diagrams

Figure 1. Satellite imagery of the sampling locations for the Red Deer River at Bindloss. North is at the top of the image. Direction of flow in this image from northwest to southeast and is depicted using the arrow.

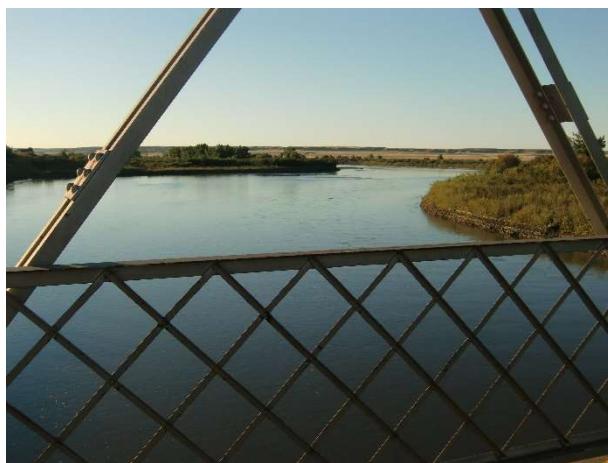


Figure 2. Red Deer R., upstream view



Figure 3. Red Deer R., downstream view

Parameters Monitored

Note, spelling of parameter names purposely match the spelling in the database.

Field

Parameter	Years monitored
SPECIFIC CONDUCTANCE (FIELD)	1972-2019 ongoing
TEMPERATURE WATER (FIELD)	1966-2019 ongoing
TURBIDITY (FIELD)	1977, 1979-2019 ongoing
OXYGEN DISSOLVED	1974-2019 ongoing
PH (FIELD)	1972-2019 ongoing
COLIFORMS FECAL	1974-2019 ongoing
COLIFORMS TOTAL	1974-2004, 2006
E. COLI	1998-2019 ongoing
FECAL STREPTOCOCCI	1974

Physicals

Parameter	Years monitored
COLOUR TRUE	1974, 1981-2005
ALKALINITY GRAN CACO3	2006-2015
ALKALINITY PHENOLPHTHALEIN CACO3	1966-2015
ALKALINITY TOTAL CACO3	1966-2019 ongoing
COLOUR APPARENT	1966-1981
ODOUR THRESHOLD NUMBER	1974-1978
RESIDUE FILTERABLE	1966-1967, 1970, 1979
RESIDUE FIXED FILTERABLE	1966-1967, 1970, 1979
RESIDUE FIXED NONFILTRABLE	1966-2019 ongoing
RESIDUE NONFILTRABLE	1966-2019 ongoing
TURBIDITY (LAB)	1966-2019 ongoing
PH (LAB)	1966-2019 ongoing
TEMPERATURE WATER (LAB)	1966-2006
SPECIFIC CONDUCTANCE (LAB)	1966-2019 ongoing

Nutrients (Carbon, Nitrogen, Phosphorus)

Parameter	Years monitored
AMMONIA DISSOLVED	1967-1970, 1987-2019 ongoing
AMMONIA TOTAL	1974, 1981-1987
AMMONIA UN-IONIZED (CALCD.)	1986-2019 ongoing
CARBON DISSOLVED INORGANIC	1974, 1978-1980
CARBON DISSOLVED ORGANIC	1974, 1978-2019 ongoing
CARBON PARTICULATE ORGANIC	1977-2019
CARBON TOTAL INORGANIC	1971-1978

CARBON TOTAL ORGANIC	1971-1978
CARBON TOTAL ORGANIC (CALCD.)	1980-1982, 1985-2019 ongoing
NITROGEN DISSOLVED NO ₃ & NO ₂	1966-2019 ongoing
NITROGEN PARTICULATE	1977-2019 ongoing
NITROGEN TOTAL (CALCD.)	1977-2019 ongoing
NITROGEN TOTAL DISSOLVED	1975-2019 ongoing
NITROGEN TOTAL KJELDAHL	1973-1978
PHOSPHATE DISSOLVED INORGANIC	1966-1967, 1970-1973
PHOSPHATE DISSOLVED ORTHO	1969-1973, 1981-1990
PHOSPHATE TOTAL INORGANIC	1969-1970
PHOSPHOROUS DISSOLVED ORTHO	1990-2019 ongoing
PHOSPHOROUS PARTICULATE (CALCD.)	1975-2019 ongoing
PHOSPHOROUS TOTAL DISSOLVED	1975-2019 ongoing
PHOSPHOROUS TOTAL INORGANIC	1977
PHOSPHOROUS TOTAL	1967-1969, 1971, 1973-2019 ongoing

Major Ions

Parameter	Years monitored
BICARBONATE (CALCD.)	1980-1982, 1985-2019 ongoing
BROMIDE	2016-2017
CALCIUM DISSOLVED/FILTERED	1966-2019 ongoing
CARBONATE (CALCD.)	1980-1982, 1985-2019 ongoing
CHLORIDE DISSOLVED	1966-2019 ongoing
FLUORIDE DISSOLVED	1966-2019 ongoing
FREE CO ₂ (CALCD.)	1985-2019 ongoing
HARDNESS NON-CARB. (CALCD.)	1985-2019 ongoing
HARDNESS TOTAL (CALCD.) CACO ₃	1980-1982, 1985-2019 ongoing
HARDNESS TOTAL CACO ₃	1967-1975
HARDNESS TOTAL LAB (CALCD.) CACO ₃	1975-1978
HYDROXIDE (CALCD.)	1985-2019 ongoing
MAGNESIUM DISSOLVED/FILTERED	1966, 1975-2019 ongoing
POTASSIUM DISSOLVED/FILTERED	1966-2019 ongoing
SATURATION INDEX (CALCD.)	1985-2019 ongoing
SILICA REACTIVE	1966-1990
SIO ₂	1990-2019 ongoing
SODIUM ADSORPTION RATIO (CALCD.)	2000-2019 ongoing
SODIUM DISSOLVED/FILTERED	1966-2019 ongoing
SODIUM PERCENTAGE (CALCD.)	1985-2019 ongoing
STABILITY INDEX (CALCD.)	1985-2019 ongoing
SULPHATE DISSOLVED	1966-2019 ongoing
TOTAL DISSOLVED SOLIDS (CALCD.)	1980-1982, 1985-2019 ongoing
SULPHIDE DISSOLVED	1981-1989

Metals

Parameter	Years monitored
ALUMINUM DISSOLVED	1966-1967, 1984-1990, 1992-2019 ongoing
ALUMINUM EXTRACTABLE	1971-1990, 1992-1993
ALUMINUM TOTAL	1993-2019 ongoing
ANTIMONY DISSOLVED	2003-2019 ongoing
ANTIMONY EXTRACTABLE	1971-1973
ANTIMONY TOTAL	2003-2019 ongoing
ARSENIC DISSOLVED	1971-1990, 2003-2019 ongoing
ARSENIC TOTAL	2000-2019 ongoing
BARIUM DISSOLVED	1999-2019 ongoing
BARIUM EXTRACTABLE	1971-1980, 1984
BARIUM TOTAL	1983-1990, 1992-2019 ongoing
BARIUM TOTAL RECOVERABLE	1980-1983
BERYLLIUM DISSOLVED	1999-2019 ongoing
BERYLLIUM TOTAL	1997-2019 ongoing
BISMUTH DISSOLVED	2003-2019 ongoing
BISMUTH TOTAL	2003-2019 ongoing
BORON DISSOLVED	1973-1990, 1992-2019 ongoing
BORON TOTAL	1997-1998, 2003-2019 ongoing
CADMUM DISSOLVED	1999-2019 ongoing
CADMUM EXTRACTABLE	1971-1980
CADMUM TOTAL	1983-1990, 1992-2019 ongoing
CADMUM TOTAL RECOVERABLE	1980-1983
CERIUM DISSOLVED	2014-2019 ongoing
CERIUM TOTAL	2014-2019 ongoing
CESIUM DISSOLVED	2014-2019 ongoing
CESIUM TOTAL	2014-2019 ongoing
CHROMIUM DISSOLVED	1999-2019 ongoing
CHROMIUM EXTRACTABLE	1971-1984
CHROMIUM TOTAL	1983-1990, 1992-2019 ongoing
COBALT DISSOLVED	1999-2019 ongoing
COBALT EXTRACTABLE	1971-1975, 1978-1980
COBALT TOTAL	1983-1990, 1992-2019 ongoing
COBALT TOTAL RECOVERABLE	1980-1983
COPPER DISSOLVED	1967-1968, 1971-1973, 1999-2019 ongoing
COPPER EXTRACTABLE	1969-1980
COPPER SUSPENDED	1978
COPPER TOTAL	1983-1990, 1992-2019 ongoing
COPPER TOTAL RECOVERABLE	1980-1983
EUROPIUM DISSOLVED	2019 ongoing
EUROPIUM TOTAL	2019 ongoing

GADOLINIUM DISSOLVED	2019 ongoing
GADOLINIUM TOTAL	2019 ongoing
GALLIUM DISSOLVED	2003-2019 ongoing
GALLIUM TOTAL	2003-2019 ongoing
GERMANIUM DISSOLVED	2019 ongoing
GERMANIUM TOTAL	2019 ongoing
HAFNIUM DISSOLVED	2019 ongoing
HAFNIUM TOTAL	2019 ongoing
HOLMIUM DISSOLVED	2019 ongoing
HOLMIUM TOTAL	2019 ongoing
INDIUM DISSOLVED	2019 ongoing
INDIUM TOTAL	2019 ongoing
IRIDIUM DISSOLVED	2019 ongoing
IRIDIUM TOTAL	2019 ongoing
IRON DISSOLVED	1966-1973, 1980-1990, 1992-2019 ongoing
IRON EXTRACTABLE	1971-1980
IRON TOTAL	1997-2019 ongoing
LANTHANUM DISSOLVED	2003-2019 ongoing
LANTHANUM TOTAL	2003-2019 ongoing
LEAD DISSOLVED	1967-1969, 1971-1973, 1999-2019 ongoing
LEAD EXTRACTABLE	1969-1980
LEAD TOTAL	1983-1990, 1992-2019 ongoing
LEAD TOTAL RECOVERABLE	1980-1983
LITHIUM DISSOLVED	1999-2019 ongoing
LITHIUM EXTRACTABLE	1971-1973
LITHIUM TOTAL	1997-2019 ongoing
LUTETIUM DISSOLVED	2019 ongoing
LUTETIUM TOTAL	2019 ongoing
MANGANESE DISSOLVED	1966-1973, 1980-1990, 1992-2019 ongoing
MANGANESE EXTRACTABLE	1969-1980
MANGANESE TOTAL	1997-2019 ongoing
MERCURY EXTRACTABLE	1973-1979
MERCURY TOTAL	1979-1990, 1992-1999
MOLYBDENUM DISSOLVED	1999-2019 ongoing
MOLYBDENUM EXTRACTABLE	1971-1974
MOLYBDENUM TOTAL	1997-2019 ongoing
NEODYMIUM DISSOLVED	2019 ongoing
NEODYMIUM TOTAL	2019 ongoing
NICKEL DISSOLVED	1999-2019 ongoing
NICKEL EXTRACTABLE	1971-1975, 1979-1980
NICKEL TOTAL	1983-1990, 1992-2019 ongoing
NICKEL TOTAL RECOVERABLE	1980-1983
NIOBIUM DISSOLVED	2014-2019 ongoing

NIOBIUM TOTAL	2014-2019 ongoing
PLATINUM DISSOLVED	2014-2019 ongoing
PLATINUM TOTAL	2014-2019 ongoing
PRASEODYMIUM DISSOLVED	2019 ongoing
PRASEODYMIUM TOTAL	2019 ongoing
RUBIDIUM DISSOLVED	2003-2019 ongoing
RUBIDIUM TOTAL	2003-2019 ongoing
RUTHENIUM DISSOLVED	2019 ongoing
RUTHENIUM TOTAL	2019 ongoing
SAMARIUM DISSOLVED	2019 ongoing
SAMARIUM TOTAL	2019 ongoing
SCANDIUM DISSOLVED	2019 ongoing
SCANDIUM TOTAL	2019 ongoing
SELENIUM DISSOLVED	1974-1990, 2003-2019 ongoing
SELENIUM TOTAL	2000-2019 ongoing
SILVER DISSOLVED	2003-2019 ongoing
SILVER EXTRACTABLE	1971-1979
SILVER TOTAL	1999-2019 ongoing
STRONTIUM DISSOLVED	1999-2019 ongoing
STRONTIUM EXTRACTABLE	1971-1974
STRONTIUM TOTAL	1997-2019 ongoing
TELLURIUM DISSOLVED	2019 ongoing
TELLURIUM TOTAL	2019 ongoing
TERBIUM DISSOLVED	2019 ongoing
TERBIUM TOTAL	2019 ongoing
THALLIUM DISSOLVED	2003-2019 ongoing
THALLIUM EXTRACTABLE	1971-1973
THALLIUM TOTAL	2003-2019 ongoing
TIN DISSOLVED	2014-2019 ongoing
TIN TOTAL	2014-2019 ongoing
TITANIUM DISSOLVED	2016-2019 ongoing
TITANIUM TOTAL	2016-2019 ongoing
TUNGSTEN DISSOLVED	2014-2019 ongoing
TUNGSTEN TOTAL	2014-2019 ongoing
URANIUM DISSOLVED	2003-2019 ongoing
URANIUM TOTAL	2003-2019 ongoing
VANADIUM DISSOLVED	1999-2019 ongoing
VANADIUM EXTRACTABLE	1971-1973, 1975-1980
VANADIUM TOTAL	1983-1990, 1992-2019 ongoing
VANADIUM TOTAL RECOVERABLE	1980-1983
YTTERBIUM DISSOLVED	2019 ongoing
YTTERBIUM TOTAL	2019 ongoing
YTTRIUM- DISSOLVED	2014-2019 ongoing

YTTRIUM TOTAL	2014-2019 ongoing
ZINC DISSOLVED	1967-1968, 1971-1973, 1999-2019 ongoing
ZINC EXTRACTABLE	1969-1980
ZINC TOTAL	1983-1990, 1992-2019 ongoing
ZINC TOTAL RECOVERABLE	1980-1983
ZIRCONIUM DISSOLVED	2019 ongoing
ZIRCONIUM TOTAL	2019 ongoing

Acid Herbicides

Parameter	Years monitored
2-(2,4-DICHLOROPHOXY)-PROPIONIC ACID	2007, 2011, 2015, 2017-2019 ongoing
2,3,6-TBA	1985-1992, 2007, 2011, 2015, 2017
2,4,5-T	1972-1992, 2007, 2011, 2015, 2017-2019 ongoing
2,4-D	1972-1992, 2007, 2011, 2015, 2017-2019 ongoing
2,4-DB	1972-1992, 2007, 2011, 2015, 2017
ACIFLUORFEN	2019 ongoing
BROMOXYNIL	1988-1992, 2007, 2011, 2015, 2017-2019 ongoing
CLOPYRALID	2007, 2011, 2015, 2017-2019 ongoing
DICAMBA	1985-1992, 2007, 2011, 2015, 2017-2019 ongoing
DICHLORPROP	1972-1992
DINOSEB	2018-2019 ongoing
FENOPROP (SILVEX)	1978-1992
FOMESAFEN	2019 ongoing
IMAZAMETHABENZ-METHYL (A)	2007, 2011, 2015, 2017-2019 ongoing
IMAZAMETHABENZ-METHYL (B)	2007, 2011, 2015
IMAZAMOX	2017-2019 ongoing
IMAZAPYR	2017-2019 ongoing
IMAZETHAPYR	2007, 2011, 2015, 2017-2019 ongoing
MCPA	1973-1992, 2007, 2011, 2015, 2017-2019 ongoing
MCPB	1985-1992, 2007, 2011, 2015, 2017
MCPP	2015, 2017-2019
MECOPROP	2007, 2011, 2015
PICLORAM	1974-1982, 1985-1992, 2007, 2011, 2015, 2017-2019 ongoing
SILVEX	2007, 2011, 2015, 2017-2019 ongoing
TRICLOPYR	2015, 2017-2019 ongoing

Neutral Herbicides

Parameter	Years monitored
ATRAZINE	2007, 2011, 2015, 2019 ongoing*
ATRAZINE TOTAL	1985-1992

BENZOYLPROP-ETHYL	1985-1992, 2007, 2011, 2015, 2019 ongoing*
BUTYLATE	2007, 2011, 2015, 2019 ongoing*
DESETHYL ATRAZINE	2007, 2011, 2015, 2019 ongoing*
D-ETHYL SIMAZINE	2007, 2011, 2015, 2019 ongoing*
DIALLATE	1985-1992
DIALLATE I	2007, 2011, 2015, 2019 ongoing*
DIALLATE II	2007, 2011, 2015, 2019 ongoing*
DICLOFOP-METHYL	1985-1992, 2007, 2011, 2015, 2019 ongoing*
ETHALFLURALIN	2007, 2011, 2015, 2019 ongoing*
FENOXAPROP-P-ETHYL	2011, 2015, 2019 ongoing*
METOLACHLOR	2007, 2011, 2015, 2019 ongoing*
METRIBUZIN	2007, 2011, 2015, 2019 ongoing*
SIMAZINE	2007, 2011, 2015, 2019 ongoing*
TRIALLATE	1985-1992, 2007, 2011, 2015, 2019 ongoing*
TRIFLURALIN	1974-1976, 1979, 1985-1992, 2007, 2011, 2015, 2019 ongoing*

*sampled on 4-year rotational basis

Organochlorine

Parameter	Years monitored
ALDRIN	1971-1992, 2007, 2011, 2015
ALPHA-BENZENEHEXACHLORIDE	1975-1992, 2007, 2011, 2015, 2019 ongoing*
ALPHA-CHLORDANE	1976-1992, 2007, 2011, 2015, 2019 ongoing*
ALPHA-ENDOSULFAN	1971-1992, 2007, 2011, 2015, 2019 ongoing*
BETA-ENDOSULFAN	1971-1992, 2007, 2011, 2015, 2019 ongoing*
BETA-HCH	2007, 2011, 2015
CIS-NONACHLOR	2007, 2011, 2015
DIELDRIN	1971-1992, 2007, 2011, 2015, 2019 ongoing*
ENDOSULFAN SULPHATE TOTAL	2015, 2019 ongoing*
ENDRIN	1975-1992, 2007, 2011, 2015
GAMMA-BHC (LINDANE)	1971-1992, 2007, 2011, 2015, 2019 ongoing*
GAMMA-CHLORDANE	1976-1992, 2007, 2011, 2015, 2019 ongoing*
HEPTACHLOR	1971-1992, 2007, 2011, 2015
HEPTACHLOR EPOXIDE	1971-1992, 2007, 2011, 2015
HEXACHLOROBENZENE	1978-1992, 2007, 2011, 2015, 2019 ongoing*
HEXACHLOROBUTADIENE	2007, 2011, 2015, 2019 ongoing*
METHOXYCHLOR (P,P'-METHOXYCHLOR).	1971-1992, 2007, 2011, 2015
MIREX	1978-1992, 2007, 2011, 2015, 2019 ongoing*
O,P'-DDD	2007, 2011, 2015
O,P'-DDE	2007, 2011, 2015
O,P'-DDT	1978-1992, 2007, 2011, 2015, 2019 ongoing*
OXYCHLORDANE	2007, 2011, 2015
P,P'-DDD (TDP)	1971-1992, 2007, 2011, 2015

P,P'-DDE	1971-1992, 2007, 2011, 2015, 2019 ongoing*
P,P'-DDT	1971-1992, 2007, 2011, 2015, 2019 ongoing*
PENTACHLOROANISOLE	2007, 2011, 2015
PENTACHLOROBENZENE	2007, 2011, 2015, 2019 ongoing*
TRANS-NONACHLOR	2007, 2011, 2015, 2019 ongoing*

*sampled on 4-year rotational basis

Glyphosate

Parameter	Years monitored
AMPA	2015, 2019 ongoing
GLUFOSINATE	2015, 2019 ongoing
GLYPHOSATE	2015, 2019 ongoing

Neonicotinoids

Parameter	Years monitored
ACETAMIPRID	2015, 2017
CLOTHIANIDIN	2015, 2017
DINOTEFURAM	2015, 2017
FLONICAMID	2017
FLUPYRADIFURONE	2017
IMIDACLOPRID	2015, 2017
THIACLOPRID	2015, 2017
THIAMETHOXAM	2015, 2017

Carbamates

Parameter	Years monitored
BARBAN	1974-1977, 1985-1992

Organophosphates

Parameter	Years monitored
AZINPHOS ETHYL	1984, 1986
AZINPHOS METHYL (GUTHION)	1984, 1986
CARBOPHENOTHION	1984, 1986
CRUFOMATE	1984, 1986
DIAZINON	1984, 1986
DIMETHOATE	1985-1987
DISULFOTON	1984, 1986
ETHION	1984, 1986
FENCHLORPHOS	1984, 1986
MALATHION	1984-1987

PARATHION	1984, 1986
PARATHION METHYL	1984, 1986
PHORATE	1984, 1986
PHOSMET (IMIDAN)	1984, 1986

Phenols

Parameter	Years monitored
2,3,4,5-TETRACHLOROPHENOL	1990
2,3,4,6-TETRACHLOROPHENOL	1990
2,3,4-TRICHLOROPHENOL	1990
2,3,5,6-TETRACHLOROPHENOL	1990
2,3,5-TRICHLOROPHENOL	1990
2,3,6-TRICHLOROPHENOL	1990
2,3-DICHLOROPHENOL	1990
2,4,5-TRICHLOROPHENOL	1990
2,4,6-TRICHLOROPHENOL	1990
2,4-DICHLOROPHENOL	1990
2,6-DICHLOROPHENOL	1990
2-CHLORO-5-METHYLPHENOL	1990
2-CHLOROPHENOL	1990
3,4,5-TRICHLOROPHENOL	1990
3,4-DICHLOROPHENOL	1990
3,5-DICHLOROPHENOL	1990
3-CHLOROPHENOL	1990
4-CHLORO-3-METHYLPHENOL	1990
4-CHLOROPHENOL	1990
PENTACHLOROPHENOL	1990
PHENOLIC MATERIAL	1973-1990

Aroclors

Parameter	Years monitored
AROCLOL	1980-1992
AROCLOL 1242	1981-1983
AROCLOL 1248	1973-1981
AROCLOL 1254	1973-1983
AROCLOL 1260	1973-1983

Other Parameters

Parameter	Years monitored
AROMATIC HYDROCARBONS	1974-1982

BETA RADIATION TOTAL	1975-1976
CHLOROPHYLL A	1973-1990, 2017-2019 ongoing
CHLOROPHYLL A (CORRECTED)	2017-2019 ongoing
CYANIDE TOTAL	1974-1990
DISCHARGE DAILY MEAN	1966-1978
DISCHARGE MONTHLY MEAN	1966-1978
N-ALKANES C10 – C26	1974-1982
N-ALKYL SULPHONATES (LAS)	1974-1981
NITRILOTRIACETIC ACID – NTA	1975-1978
OIL AND GREASE	1974-1981
OXYGEN BIOCHEMICAL DEMAND	1974-1979
OXYGEN CONSUMED	1966-1968, 1970
RADIUM RADIATION TOTAL RA-226	1975-1976
STD. PLATE COUNT 35DEG.C BACT. DENS.	1974
STRONTIUM RADIATION TOTAL 90	1975-1976

South Saskatchewan River

Station Name:	South Saskatchewan River at Highway 41	
Station Number:	AL05AK0001	
Naqudat¹ Number:	00AL05AK0001	
WSC² Reference Number:	05AK001	
WSC Period of Record:	1966 – 1993	Discontinued. For the water quality station on the South Saskatchewan River at Hwy 41, flow data from the hydrometric station at Medicine Hat (Stn05AJ001) are added to flows from two small tributaries (Seven Person Creek (Stn05AH005) and Ross Creek (Stn05AH052)). Total flows were lagged by two days (Brian Yee, personnel comm.) to estimate mean daily flows on the South Saskatchewan River at Hwy 41."
Project Number:	115 (historically 315)	
Sampling Site Open Water:	Latitude 50°43'51.58"N	Longitude: 110°4'12.19"W
Sampling Site Ice Cover:	Latitude 50°44'1.24"N	Longitude 110°5'2.88"W
Drainage Area:	66,000 km²	
Effective Drainage Area:	46,700 km²	
Ecozone³:	Prairies	
Ecoregion:	Mixed Grassland	
Water Body:	South Saskatchewan River	
Water Body Type:	River	
Watershed:	Upper South Saskatchewan	
Stakeholders:	PPWB	
Site Overview:	<p>The South Saskatchewan River originates at the confluence of Bow and Oldman rivers, approximately 30 km west of Medicine Hat, Alberta. The South Saskatchewan River is regulated downstream of Alberta-Saskatchewan boundary by the Gardiner Dam and upstream of the border by numerous irrigation and reservoirs along the Oldman and Bow rivers. Irrigation is the major consumptive use of water within the basin, and nutrient enrichment from municipal sewage has been an historical problem. In 2011, Calgary completed WWTP upgrades. The PPWB water quality monitoring site on the South Saskatchewan River is located on highway 41 in Alberta. Trends are decreasing in this river for TP and TDP although nitrogen constituents show a stable to increasing trend. The dissolved ions (Na, Cl, SO₄) also show an increasing trend.</p>	
Ice Cover sampling location:	<p>Sampling one kilometre upstream from bridge on secondary road used for campers and picnickers. Sampled 20 metres from the south shore near cobble beach. Sampling carried out at this site when ice-covered</p>	
Open water sampling location:	<p>Sampling is carried out from bridge. The field lab is parked on the north side of the Hwy 41 bridge. Equipment is carried 250m to the</p>	

	sampling site on the bridge. Sampling takes place approximately 150m from the northern edge of the bridge on the downstream side.	
Station Established:	January 28, 1970	
Period of Record:	January 1970 – current (in ACBIS database from 1968)	
Data Located:	ACBIS	964 samples (January 2024)
Station Type:	PPWB	
Frequency of Observations:	Monthly	

¹Data listing of water quality monitoring stations

²Water Survey of Canada

³<http://www.ecozones.ca/english/zone/index.html>

Site Status

Nutrients	2013	2018	Major Ions	2013	2018	Physicals	2013	2018
Ammonia Dissolved	↓	↔	Chloride Dissolved	↑	↑	Oxygen Dissolved	↔	↔
Nitrate as N	↔	↑	Fluoride Dissolved	↑	↔	pH – Field	↑	↑
Nitrogen Total	↑	↔	Sodium Dissolved/Filtered	↑	↑	Sodium Adsorption Ratio (SAR)	↑	↑
Phosphorous Total	↓	↓	Sulphate Dissolved	↑	↑	Total Suspended Solids (TSS)	↓	↔
Phosphorous Total Dissolved	↓	↓	Total Dissolved Solids (TDS)	↑	↑			

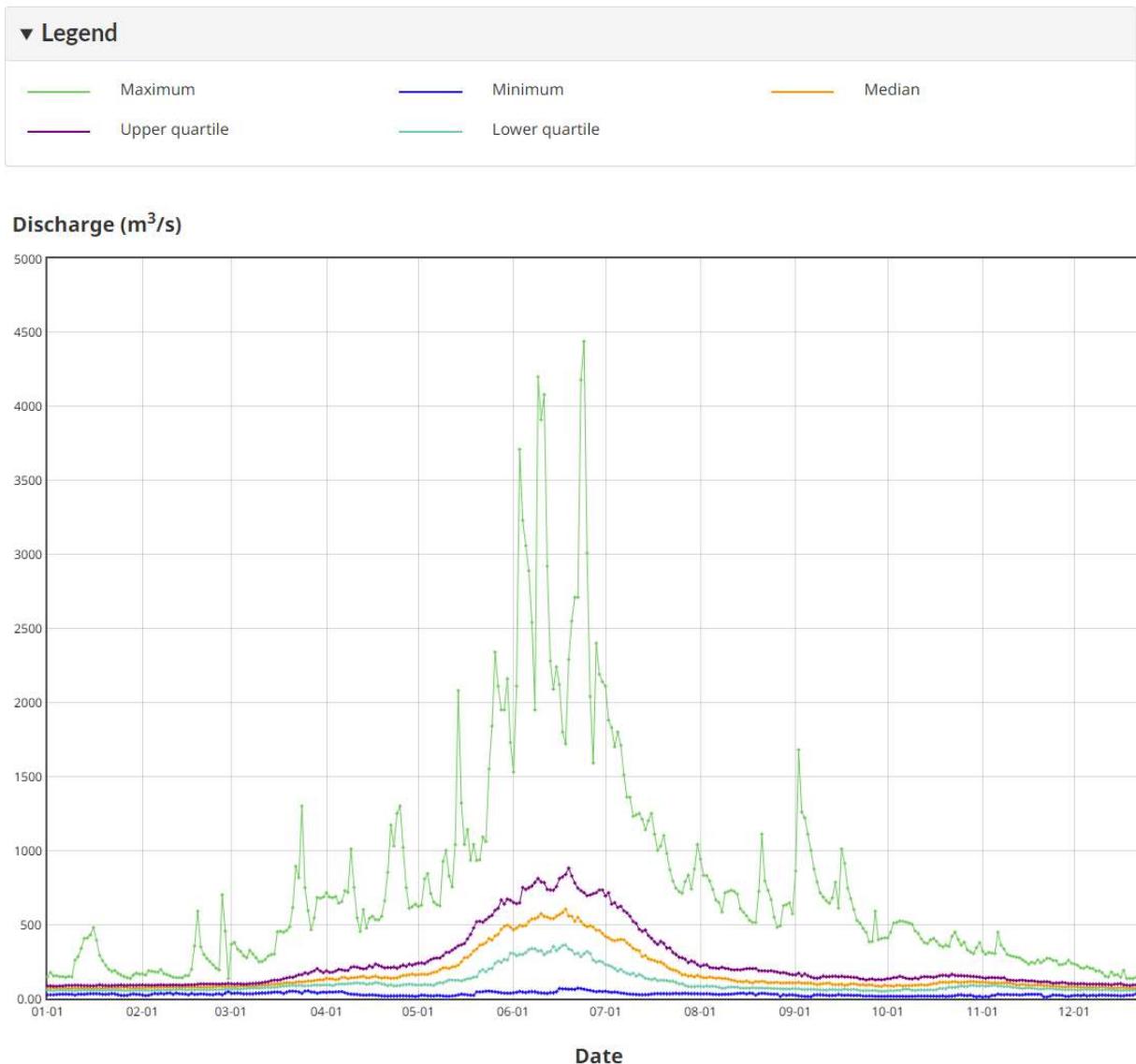
Metals	2013	2018	Metals	2013	2018	Metals	2013	2018
Aluminum Dissolved	↔	↔	Cobalt Dissolved	↔	↔	Nickel Dissolved	↔	↑
Aluminum Total	↓	↔	Cobalt Total	↓	↔	Nickel Total	↓	↔
Arsenic Dissolved	↓	↓	Copper Dissolved	↔	↔	Selenium Dissolved	↑	↔
Arsenic Total	↓	↔	Copper Total	↔	↔	Selenium Total	↑	↔
Barium Dissolved	↔	↑	Iron Dissolved	↑	↔	Silver Dissolved	↔	↔
Barium Total	↔	↑	Iron Total	↓	↔	Silver Total	↔	↔
Beryllium Dissolved	↔	↔	Lead Dissolved	↔	↓	Thallium Dissolved	↑	↔
Beryllium Total	NA	↔	Lead Total	↓	↔	Thallium Total	↔	↑
Boron Dissolved	↔	↓	Lithium Dissolved	↔	↔	Uranium Dissolved	↔	↔
Boron Total	↔	↓	Lithium Total	↔	↔	Uranium Total	↔	↑
Cadmium Dissolved	↑	↑	Manganese Dissolved	↔	↔	Vanadium Dissolved	↓	↓
Cadmium Total	↔	↑	Manganese Total	↓	↔	Vanadium Total	↓	↔
Chromium Dissolved	↑	↑	Molybdenum Dissolved	↓	↓	Zinc Dissolved	↑	↔
Chromium Total	↔	↔	Molybdenum Total	↓	↓	Zinc Total	↔	↔

Typical range (minimum-maximum) in field observations and bacterial values:

Current (2009-2019)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance ($\mu\text{S}/\text{cm}$)	<i>E.Coli</i> (cfu/dL)	Fecal Coliform (cfu/dL)
<i>Winter (Dec-Feb)</i>	10.7-16.4	7.1-8.9	4-23	319-690	<2-14	<2-25
<i>Spring (Mar-May)</i>	8.6-15.0	7.5-9.0	4-424	324-661	<2-119	<2-1600
<i>Summer (Jun-Aug)</i>	7.7-9.8	7.8-9.3	6-1866	303-469	<2-1570	<2-6367
<i>Fall (Sep-Nov)</i>	8.8-14.7	7.9-9.0	3-160	360-558	<2-338	<2-469

Past (1989-2008)	DO	pH	Turbidity	Spec Cond	Total Coliform	Fecal Coliform
<i>Winter (Dec-Feb)</i>	6.2-16.1	7.6-9.0	2-311	357-642	20-600	<2-130
<i>Spring (Mar-May)</i>	6.5-15.9	7.5-9.2	3-281	315-563	<2-1083	<2-50
<i>Summer (Jun-Aug)</i>	5.8-10.5	7.7-9.0	3-1448	274-475	<2-4066	<2-8334
<i>Fall (Sep-Nov)</i>	6.8-14.0	7.8-8.9.0	2-350	283-492	<2-1564	<2-228

Hydrometric Graphs (Water Survey of Canada, 1911-2021)



Hydrometric Data Website

https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=01&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Graph&stn=05AJ001&dataType=Daily¶meterType=Flow&year=2021

Maps & Diagrams

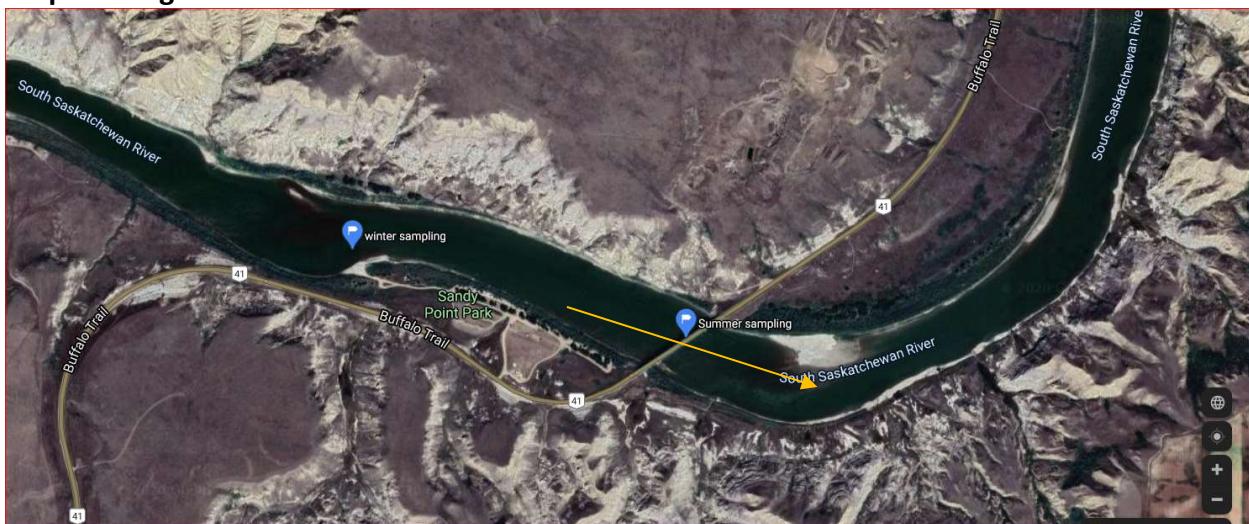


Figure 1. Satellite imagery of the sampling locations for the South Saskatchewan River. North is at the top of the image. Direction of flow in this image from northwest to southeast and is depicted using the arrow.

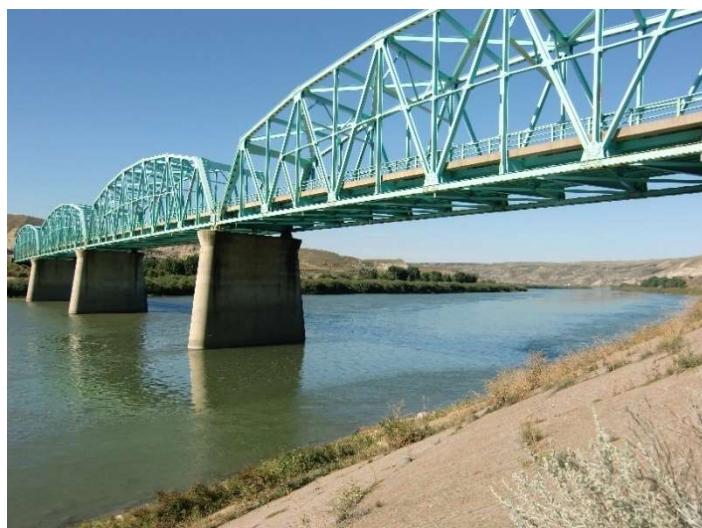


Figure 2. South Saskatchewan R., upstream view downstream from the approach to the bridge



Figure 3. South Saskatchewan R., looking downstream

Parameters Monitored

Note, spelling of parameter names purposely match the spelling in the database.

Field

Parameter	Years monitored
SPECIFIC CONDUCTANCE (FIELD)	1972-2019 ongoing
TEMPERATURE WATER (FIELD)	1968-2019 ongoing
TURBIDITY (FIELD)	1977, 1979-2019 ongoing
OXYGEN DISSOLVED	1974-2019 ongoing
PH (FIELD)	1972-2019 ongoing
COLIFORMS FECAL	1974-2019 ongoing
COLIFORMS TOTAL	1974-2006
E. COLI	1998-2019 ongoing
FECAL STREPTOCOCCI	1974

Physicals

Parameter	Years monitored
ALKALINITY GRAN CACO3	2006-2015
ALKALINITY PHENOLPHTHALEIN CACO3	1970-2015
ALKALINITY TOTAL CACO3	1968-2019 ongoing
COLOUR APPARENT	1968-1981
COLOUR TRUE	1981-2005
ODOUR THRESHOLD NUMBER	1974-1978
PH (LAB)	1968-2019 ongoing
RESIDUE FILTERABLE	1979
RESIDUE FIXED FILTERABLE	1979
RESIDUE FIXED NONFILTRABLE	1970-1972, 1974-2019 ongoing
RESIDUE NONFILTRABLE	1970-1972, 1974-2019 ongoing
SPECIFIC CONDUCTANCE (LAB)	1968-2019 ongoing
TEMPERATURE WATER (LAB)	1968-2006
TURBIDITY (LAB)	1968-2019 ongoing

Nutrients (Carbon, Nitrogen, Phosphorus)

Parameter	Years monitored
AMMONIA DISSOLVED	1970, 1987-2019 ongoing
AMMONIA TOTAL	1974, 1981-1987
AMMONIA UN-IONIZED (CALCD.)	1986-2019 ongoing
CARBON DISSOLVED INORGANIC	1978-1980
CARBON DISSOLVED ORGANIC	1978-2019 ongoing
CARBON PARTICULATE ORGANIC	1977-2019 ongoing
CARBON TOTAL INORGANIC	1970-1978
CARBON TOTAL ORGANIC	1970-1978
CARBON TOTAL ORGANIC (CALCD.)	1980-1982, 1984-2019 ongoing
NITROGEN DISSOLVED NO ₃ & NO ₂	1968-2019 ongoing
NITROGEN PARTICULATE	1977-2019 ongoing
NITROGEN TOTAL (CALCD.)	1977-2019 ongoing
NITROGEN TOTAL DISSOLVED	1975-2019 ongoing
NITROGEN TOTAL KJELDAHL	1973-1978
PHOSPHATE DISSOLVED INORGANIC	1970-1972
PHOSPHATE DISSOLVED ORTHO	1970-1972, 1981-1990
PHOSPHATE TOTAL INORGANIC	1970
PHOSPHOROUS DISSOLVED ORTHO	1990-2019 ongoing
PHOSPHOROUS PARTICULATE (CALCD.)	1975-2019 ongoing
PHOSPHOROUS TOTAL	1968-2019 ongoing
PHOSPHOROUS TOTAL DISSOLVED	1975-2019 ongoing
PHOSPHOROUS TOTAL INORGANIC	1977

Major Ions

Parameter	Years monitored
BICARBONATE (CALCD.)	1980-1982, 1985-2019 ongoing
BROMIDE	2016-2017
CALCIUM DISSOLVED/FILTERED	1968-2019 ongoing
CARBONATE (CALCD.)	1980-1982, 1985-2019 ongoing
CHLORIDE DISSOLVED	1968-2019 ongoing
FLUORIDE DISSOLVED	1968-2019 ongoing
FREE CO ₂ (CALCD.)	1985-2019 ongoing
HARDNESS NON-CARB. (CALCD.)	1985-2019 ongoing
HARDNESS TOTAL (CALCD.) CACO ₃	1980-1982, 1985-2019 ongoing
HARDNESS TOTAL CACO ₃	1968-1975
HARDNESS TOTAL LAB (CALCD.) CACO ₃	1975-1978
HYDROXIDE (CALCD.)	1985-2019 ongoing
MAGNESIUM DISSOLVED/FILTERED	1975-2019 ongoing
POTASSIUM DISSOLVED/FILTERED	1968-2019 ongoing

SATURATION INDEX (CALCD.)	1985-2019 ongoing
SILICA REACTIVE	1968-1990
SIO2	1990-2019 ongoing
SODIUM ADSORPTION RATIO (CALCD.)	2000-2019 ongoing
SODIUM DISSOLVED/FILTERED	1968-2019 ongoing
SODIUM PERCENTAGE (CALCD.)	1985-2019 ongoing
STABILITY INDEX (CALCD.)	1985-2019 ongoing
SULPHATE DISSOLVED	1968-2019 ongoing
SULPHIDE DISSOLVED	1986
TOTAL DISSOLVED SOLIDS (CALCD.)	1980-1982, 1985-2019 ongoing

Metals

Parameter	Years monitored
ALUMINUM DISSOLVED	1984-2019 ongoing
ALUMINUM EXTRACTABLE	1971-1993
ANTIMONY DISSOLVED	2003-2019 ongoing
ANTIMONY EXTRACTABLE	1971-1973
ANTIMONY TOTAL	2003-2019 ongoing
ARSENIC DISSOLVED	1971-1990, 2003-2019 ongoing
ARSENIC TOTAL	2000-2019 ongoing
BARIUM DISSOLVED	1999-2019 ongoing
BARIUM EXTRACTABLE	1971-1980, 1984
BARIUM TOTAL	1983-2019 ongoing
BARIUM TOTAL RECOVERABLE	1980-1983
BERYLLIUM DISSOLVED	1999-2019 ongoing
BERYLLIUM TOTAL	1997-2019 ongoing
BISMUTH DISSOLVED	2003-2019 ongoing
BISMUTH TOTAL	2003-2019 ongoing
BORON DISSOLVED	1973-1990, 1992-2019 ongoing
BORON TOTAL	1997-1978, 2003-2019 ongoing
CADMİUM DISSOLVED	1999-2019 ongoing
CADMİUM EXTRACTABLE	1971-1980
CADMİUM TOTAL	1983-2019 ongoing
CADMİUM TOTAL RECOVERABLE	1980-1983
CERIUM DISSOLVED	2014-2019 ongoing
CERIUM TOTAL	2014-2019 ongoing
CESIUM DISSOLVED	2014-2019 ongoing
CESIUM TOTAL	2014-2019 ongoing
CHROMIUM DISSOLVED	1999-2019 ongoing
CHROMIUM EXTRACTABLE	1971-1984
CHROMIUM TOTAL	1983-2019 ongoing
COBALT DISSOLVED	1999-2019 ongoing

COBALT EXTRACTABLE	1971-1975, 1978-1980
COBALT TOTAL	1983-2019 ongoing
COBALT TOTAL RECOVERABLE	1980-1983
COPPER DISSOLVED	1970-1972, 1999-2019 ongoing
COPPER EXTRACTABLE	1970-1980
COPPER TOTAL	1983-2019 ongoing
COPPER TOTAL RECOVERABLE	1980-1983
EUROPIUM DISSOLVED	2019 ongoing
EUROPIUM TOTAL	2019 ongoing
GADOLINIUM DISSOLVED	2019 ongoing
GADOLINIUM TOTAL	2019 ongoing
GALLIUM DISSOLVED	2003-2019 ongoing
GALLIUM TOTAL	2003-2019 ongoing
GERMANIUM DISSOLVED	2019 ongoing
GERMANIUM TOTAL	2019 ongoing
HAFNIUM DISSOLVED	2019 ongoing
HAFNIUM TOTAL	2019 ongoing
HOLMIUM DISSOLVED	2019 ongoing
HOLMIUM TOTAL	2019 ongoing
INDIUM DISSOLVED	2019 ongoing
INDIUM TOTAL	2019 ongoing
IRIDIUM DISSOLVED	2019 ongoing
IRIDIUM TOTAL	2019 ongoing
IRON DISSOLVED	1970-1972, 1980-2019 ongoing
IRON EXTRACTABLE	1971-1980
IRON TOTAL	1997-2019 ongoing
LANTHANUM DISSOLVED	2003-2019 ongoing
LANTHANUM TOTAL	2003-2019 ongoing
LEAD DISSOLVED	1970-1972, 1999-2019 ongoing
LEAD EXTRACTABLE	1970-1980
LEAD TOTAL	1983-2019 ongoing
LEAD TOTAL RECOVERABLE	1980-1983
LITHIUM DISSOLVED	1999-2019 ongoing
LITHIUM EXTRACTABLE	1971-1973
LITHIUM TOTAL	1997-2019 ongoing
LUTETIUM DISSOLVED	2019 ongoing
LUTETIUM TOTAL	2019 ongoing
MANGANESE DISSOLVED	1970-1972, 1980-2019 ongoing
MANGANESE EXTRACTABLE	1970-1980
MANGANESE TOTAL	1997-2019 ongoing
MERCURY EXTRACTABLE	1973-1979
MERCURY TOTAL	1979-1999
MOLYBDENUM DISSOLVED	1999-2019 ongoing

MOLYBDENUM EXTRACTABLE	1971-1974
MOLYBDENUM TOTAL	1997-2019 ongoing
NEODYMIUM DISSOLVED	2019 ongoing
NEODYMIUM TOTAL	2019 ongoing
NICKEL DISSOLVED	1999-2019 ongoing
NICKEL EXTRACTABLE	1971-1975, 1979-1980
NICKEL TOTAL	1983-2019 ongoing
NICKEL TOTAL RECOVERABLE	1980-1983
NIOBIUM DISSOLVED	2014-2019 ongoing
NIOBIUM TOTAL	2014-2019 ongoing
PLATINUM DISSOLVED	2014-2019 ongoing
PLATINUM TOTAL	2014-2019 ongoing
PRASEODYMIUM DISSOLVED	2019 ongoing
PRASEODYMIUM TOTAL	2019 ongoing
RUBIDIUM DISSOLVED	2003-2019 ongoing
RUBIDIUM TOTAL	2003-2019 ongoing
RUTHENIUM DISSOLVED	2019 ongoing
RUTHENIUM TOTAL	2019 ongoing
SAMARIUM DISSOLVED	2019 ongoing
SAMARIUM TOTAL	2019 ongoing
SCANDIUM DISSOLVED	2019 ongoing
SCANDIUM TOTAL	2019 ongoing
SELENIUM DISSOLVED	1974-1990, 2003-2019 ongoing
SELENIUM TOTAL	2000-2019 ongoing
SILVER DISSOLVED	2003-2019 ongoing
SILVER EXTRACTABLE	1971-1979
SILVER TOTAL	1999-2019 ongoing
STRONTIUM DISSOLVED	1999-2019 ongoing
STRONTIUM EXTRACTABLE	1971-1974
STRONTIUM TOTAL	1997-2019 ongoing
TELLURIUM DISSOLVED	2019 ongoing
TELLURIUM TOTAL	2019 ongoing
TERBIUM DISSOLVED	2019 ongoing
TERBIUM TOTAL	2019 ongoing
THALLIUM DISSOLVED	2003-2019 ongoing
THALLIUM EXTRACTABLE	1971-1973
THALLIUM TOTAL	2003-2019 ongoing
TIN DISSOLVED	2014-2019 ongoing
TIN TOTAL	2014-2019 ongoing
TITANIUM DISSOLVED	2016-2019 ongoing
TITANIUM TOTAL	2016-2019 ongoing
TUNGSTEN DISSOLVED	2014-2019 ongoing
TUNGSTEN TOTAL	2014-2019 ongoing

URANIUM DISSOLVED	2003-2019 ongoing
URANIUM TOTAL	2003-2019 ongoing
VANADIUM DISSOLVED	1999-2019 ongoing
VANADIUM EXTRACTABLE	1971-1973, 1975-1980
VANADIUM TOTAL	1983-2019 ongoing
VANADIUM TOTAL RECOVERABLE	1980-1983
YTTERBIUM DISSOLVED	2019 ongoing
YTTERBIUM TOTAL	2019 ongoing
YTTRIUM- DISSOLVED	2014-2019 ongoing
YTTRIUM TOTAL	2014-2019 ongoing
ZINC DISSOLVED	1970-1972, 1999-2019 ongoing
ZINC EXTRACTABLE	1970-1980
ZINC TOTAL	1983-2019 ongoing
ZINC TOTAL RECOVERABLE	1980-1983
ZIRCONIUM DISSOLVED	2019 ongoing
ZIRCONIUM TOTAL	2019 ongoing

Acid Herbicides

Parameter	Years monitored
2-(2,4-DICHLOROPHOXY)-PROPIONIC ACID	2006, 2010-2011, 2013-2019 ongoing
2,3,6-TBA	1985-1992, 2006, 2010-2011, 2013-2017
2,4,5-T	1972-1992, 2006, 2010-2011, 2013-2019 ongoing
2,4-D	1972-1992, 2006, 2010-2011, 2013-2019 ongoing
2,4-DB	1972-1992, 2006, 2010-2011, 2013-2017
ACIFLUORFEN	2014, 2019 ongoing
BROMOXYNIL	1988-1992, 2006, 2010-2011, 2013-2019 ongoing
CLOPYRALID	2006, 2010-2011, 2013-2019 ongoing
DICAMBA	1985-1992, 2006, 2010-2011, 2013-2019 ongoing
DICHLORPROP	1972-1992
DINOSEB	2018-2019 ongoing
FENOPROP (SILVEX)	1978-1992
FOMESAFEN	2014, 2019 ongoing
IMAZAMETHABENZ-METHYL (A)	2006, 2010-2011, 2013-2019 ongoing
IMAZAMETHABENZ-METHYL (B)	2006, 2010-2011, 2013-2015
IMAZAMOX	2016-2019 ongoing
IMAZAPYR	2016-2019 ongoing
IMAZETHAPYR	2006, 2010-2011, 2013-2019 ongoing
MCPA	1973-1992, 2006, 2010-2011, 2013-2019 ongoing
MCPB	1985-1992, 2006, 2010-2011, 2013-2017
MECOPROP (MCPP)	2006, 2010-2011, 2013-2019 ongoing
PICLORAM	1974-1992, 2006, 2010-2011, 2013-2019 ongoing
SILVEX	2006, 2010-2011, 2013-2019 ongoing

TRICLOPYR	2015-2019 ongoing
-----------	-------------------

Neutral Herbicides

Parameter	Years monitored
ATRAZINE	2006, 2010-2011, 2014, 2018 ongoing
ATRAZINE TOTAL	1985-1992
BENZOYLPROP-ETHYL	1985-1992, 2006, 2010-2011, 2014, 2018 ongoing
BUTYLATE	2006, 2010-2011, 2014, 2018 ongoing
DESETHYL ATRAZINE	2006, 2010-2011, 2014, 2018 ongoing
D-ETHYL SIMAZINE	2006, 2010-2011, 2014, 2018 ongoing
DIALLATE	1985-1992
DIALLATE I	2006, 2010-2011, 2014, 2018 ongoing
DIALLATE II	2006, 2010-2011, 2014, 2018 ongoing
DICLOFOP-METHYL	1985-1992, 2006, 2010, 2014, 2018 ongoing
ETHALFLURALIN	2006, 2010-2011, 2014, 2018 ongoing
FENOXAPROP-P-ETHYL	2010, 2014, 2018 ongoing
METOLACHLOR	2006, 2010-2011, 2014, 2018 ongoing
METRIBUZIN	2006, 2010-2011, 2014, 2018 ongoing
SIMAZINE	2006, 2010-2011, 2014, 2018 ongoing
TRIALLATE	1985-1992, 2006, 2010-2011, 2014, 2018 ongoing
TRIFLURALIN	1974-1977, 1979, 1985-1992, 2006, 2010-2011, 2014, 2018 ongoing

Organochlorine

Parameter	Years monitored
ALDRIN	1971-1992, 2006, 2010-2011, 2014
ALPHA-BENZENEHEXACHLORIDE	1975-1992, 2006, 2010-2011, 2014, 2018 ongoing
ALPHA-CHLORDANE	1975-1992, 2006, 2010-2011, 2014, 2018 ongoing
ALPHA-ENDOSULFAN	1971-1992, 2006, 2010-2011, 2014, 2018 ongoing
BETA-ENDOSULFAN	1971-1992, 2006, 2010-2011, 2014, 2018 ongoing
BETA-HCH	2006, 2010-2011, 2014
CIS-NONACHLOR	2006, 2010-2011, 2014
DIELDRIN	1971-1992, 2006, 2010-2011, 2014, 2018 ongoing
ENDOSULFAN SULPHATE TOTAL	2018 ongoing
ENDRIN	1975-1992, 2006, 2010-2011, 2014
GAMMA-BHC (LINDANE)	1971-1992, 2006, 2010-2011, 2014, 2018 ongoing
GAMMA-CHLORDANE	1975-1992, 2006, 2010-2011, 2014, 2018 ongoing
HEPTACHLOR	1971-1992, 2006, 2010-2011, 2014
HEPTACHLOR EPOXIDE	1971-1992, 2006, 2010-2011, 2014
HEXACHLOROBENZENE	1978-1992, 2006, 2010-2011, 2014, 2018 ongoing
HEXACHLOROBUTADIENE	2006, 2010-2011, 2014, 2018 ongoing

METHOXYCHLOR (P,P'-METHOXYCHLOR).	1971-1992, 2006, 2010-2011, 2014
MIREX	1978-1992, 2006, 2010-2011, 2014, 2018 ongoing
O,P'-DDD	2006, 2010-2011, 2014
O,P'-DDE	2006, 2010-2011, 2014
O,P'-DDT	1978-1992, 2006, 2010-2011, 2014, 2018 ongoing
OXYCHLORDANE	2006, 2010-2011, 2014
P,P'-DDD (TDP)	1971-1992, 2006, 2010-2011, 2014
P,P'-DDE	1971-1992, 2006, 2010-2011, 2014, 2018 ongoing
P,P'-DDT	1971-1992, 2006, 2010-2011, 2014, 2018 ongoing
PENTACHLOROANISOLE	2006, 2010-2011, 2014
PENTACHLOROBENZENE	2006, 2010-2011, 2014, 2018 ongoing
TRANS-NONACHLOR	2006, 2010-2011, 2014, 2018 ongoing

Glyphosate

Parameter	Years monitored
AMPA	2014, 2018-2019 ongoing
GLUFOSINATE	2014, 2018-2019 ongoing
GLYPHOSATE	2014, 2018-2019 ongoing

Sulfonyl Ureas

Parameter	Years monitored
BENSULFURON	2014
CHLORIMURON-ETHYL	2014
CHLORSULFURON	2014
CLOMAZONE	2014
DIURON	2014
FLUMETSULAM	2014
FORAMSULFURON	2014
LINURON	2014
METSULFURON-METHYL	2014
NICOSULFURON	2014
PRIMISULFURON-METHYL	2014
PROSULFURON	2014
RIMSULFURON	2014
THIFENSULFURON	2014
TRIBENURON METHYL	2014

Neonicotinoids

Parameter	Years monitored
ACETAMIPRID	2014, 2017

CLOTHIANIDIN	2014, 2017
DINOTEFURAM	2014, 2017
FLONICAMID	2017
FLUPYRADIFURONE	2017
IMIDACLOPRID	2014, 2017
THIACLOPRID	2014, 2017
THIAMETHOXAM	2014, 2017

Carbamates

Parameter	Years monitored
ALDICARB	2014
BARBAN	1974-1977, 1985-1992
CARBARYL	2014
CARBOFURAN	2014
METALAXYL	2014
METHOMYL	2014
OXAMYL	2014
PIRIMICARB	2014

Organophosphates

Parameter	Years monitored
AZINPHOS ETHYL	1986
AZINPHOS METHYL (GUTHION)	1986
CARBOPHENOTHION	1986
CRUFOMATE	1986
DIAZINON	1986
DIMETHOATE	1985-1987
DISULFOTON	1986
ETHION	1986
FENCHLORPHOS	1986
MALATHION	1985-1987
PARATHION	1986
PARATHION METHYL	1986
PHOSMET (IMIDAN)	1986
PHORATE	1986

Phenols

Parameter	Years monitored
2,3,4,5-TETRACHLOROPHENOL	1989-1995
2,3,4,6-TETRACHLOROPHENOL	1989-1995

2,3,4-TRICHLOROPHENOL	1989-1995
2,3,5,6-TETRACHLOROPHENOL	1989-1995
2,3,5-TRICHLOROPHENOL	1989-1995
2,3,6-TRICHLOROPHENOL	1989-1995
2,3-DICHLOROPHENOL	1989-1995
2,4,5-TRICHLOROPHENOL	1989-1995
2,4,6-TRICHLOROPHENOL	1989-1995
2,4-DICHLOROPHENOL	1989-1995
2,6-DICHLOROPHENOL	1989-1995
2-CHLORO-5-METHYLPHENOL	1989-1995
2-CHLOROPHENOL	1989-1995
3,4,5-TRICHLOROPHENOL	1989-1995
3,4-DICHLOROPHENOL	1989-1995
3,5-DICHLOROPHENOL	1989-1995
3-CHLOROPHENOL	1989-1995
4-CHLORO-3-METHYLPHENOL	1989-1995
4-CHLOROPHENOL	1989-1995
PENTACHLOROPHENOL	1989-1995
PHENOLIC MATERIAL	1973-1990

Polyaromatic Hydrocarbons

Parameter	Years monitored
1,2,3,4-TETRAHYDRONAPHTHALENE	1989
1-METHYLNAPHTHALENE	1989
2-CHLORONAPHTHALENE	1989
2-METHYLNAPHTHALENE	1989
ACENAPHTHENE	1989
ACENAPHTHYLENE	1989
BENZO(A)PYRENE	1989
BENZO(B)FLUORANTHENE	1989
BENZO(G,H,I)PERYLENE	1989
BENZO(K)FLUORANTHENE	1989
FLUORANTHENE	1989
FLUORENE	1989
INDENE	1989
INDENO(1,2,3-C,D)PYRENE	1989
PHENANTHRENE	1989
PYRENE	1989

Aroclors

Parameter	Years monitored
AROCLOR	1980-1992
AROCLOR 1242	1981-1983
AROCLOR 1248	1973-1981
AROCLOR 1254	1973-1983
AROCLOR 1260	1973-1983

Other Parameters

Parameter	Years monitored
AROMATIC HYDROCARBONS	1974-1982
BETA RADIATION TOTAL	1975-1976
CHLOROPHYLL A	1973-1990, 2017-2019 ongoing
CHLOROPHYLL A (CORRECTED)	2017-2019 ongoing
CYANIDE TOTAL	1974-1990
DISCHARGE DAILY MEAN	1968-1978
DISCHARGE MONTHLY MEAN	1968-1978
N-ALKANES C10 – C26	1974-1982
N-ALKYL SULPHONATES (LAS)	1974-1981
NITRILOTRIACETIC ACID – NTA	1975-1978
OIL AND GREASE	1974-1981
OXYGEN BIOCHEMICAL DEMAND	1974-1979
RADIUM RADIATION TOTAL RA-226	1975-1976
STD. PLATE COUNT 35DEG.C BACT. DENS.	1974
STRONTIUM RADIATION TOTAL 90	1975

Assiniboine River below Kamsack

Station Name:	Assiniboine River below Kamsack		
Station Number:	SA05MD0002		
Naqudat¹ Number:	00SA05MD0002		
WSC² Reference Number:	05MD004		
WSC Period of Record:	<i>1944-1955 (open water) 1956 – current (continuous)</i>	Active	
Project Number:	115 (historically 315)		
Sampling Site Open Water:	Latitude: <i>51°31'57.69"N</i>	Longitude: <i>101°52'38.34"W</i>	
Sampling Site Ice Cover:	Latitude: <i>51°31'57.54"N</i>	Longitude: <i>101°52'40.04"W</i>	
Drainage Area:	13000 km²		
Effective Drainage Area:	4320 km²		
Ecozone³:	Boreal Plains		
Ecoregion³:	Boreal Transition		
Water Body:	Assiniboine River		
Water Body Type:	River		
Watershed:	Assiniboine		
Stakeholder:	PPWB		
Site Overview:	<p>The Assiniboine River originates in the southeastern region of Porcupine Provincial Forest, some 54 km northwest from the Town of Preeceville in northeast central Saskatchewan. The river flows in a southeasterly direction for about 147 km before being joined by its major tributary, the Whitesand River, near Kamsack, Saskatchewan. The river then continues in a southeasterly direction for some 45 km before crossing into Manitoba. The river flows into Lake of the Prairies, a reservoir formed behind Shellmouth Dam. While Shellmouth Dam is in Manitoba, the reservoir extends into Saskatchewan.</p> <p>Trends are increasing for nitrogen constituents. The dissolved ions all show an increasing trend.</p>		
Sampling location:	<p>Sampling location is at bridge on Highway 8, approximately 2km south of Kamsack, Saskatchewan. During open water, samples are collected on downstream side of bridge. During winter, samples are collected approximately 20 m upstream.</p>		
Station Established:	January 1957		
Period of Record:	1957 -	present	
Period of Record in ACBIS:	1968 – present	826 Samples (January 2024)	
Station Type:	Network PPWB		
Frequency of Observations:	Monthly		

¹Data listing of water quality monitoring stations

²Water Survey of Canada

³<http://www.ecozones.ca/english/zone/index.html>

Site Status

Nutrients	2013	2018	Major Ions	2013	2018	Physicals	2013	2018
Ammonia Dissolved	↑	↑	Chloride Dissolved	↑	↑	Oxygen Dissolved	↓	↓
Nitrate as N	↔	↔	Fluoride Dissolved	↑	↔	pH – Field	↑	↑
Nitrogen Total	↑	↑	Sodium Dissolved/Filtered	↑	↑	Sodium Adsorption Ratio (SAR)	↑	↑
Phosphorous Total	↔	↔	Sulphate Dissolved	↑	↑	Total Suspended Solids (TSS)	↑	↑
Phosphorous Total Dissolved	↔	↓	Total Dissolved Solids (TDS)	↑	↑			

Metals	2013	2018	Metals	2013	2018	Metals	2013	2018
Aluminum Dissolved	↓	↓	Cobalt Dissolved	↔	↔	Nickel Dissolved	↔	↑
Aluminum Total	↔	↔	Cobalt Total	↔	↑	Nickel Total	↔	↑
Arsenic Dissolved	↔	↔	Copper Dissolved	↑	↑	Selenium Dissolved	↑	↑
Arsenic Total	↔	↓	Copper Total	↔	↑	Selenium Total	↑	↑
Barium Dissolved	↑	↑	Iron Dissolved	↔	↔	Silver Dissolved	NA	NA
Barium Total	↔	↑	Iron Total	↔	↔	Silver Total	↔	↔
Beryllium Dissolved	↑	↔	Lead Dissolved	↓	↓	Thallium Dissolved	↑	↑
Beryllium Total	↑	↑	Lead Total	↔	↔	Thallium Total	↑	↑
Boron Dissolved	↔	↔	Lithium Dissolved	↑	↑	Uranium Dissolved	↑	↑
Boron Total	↔	↔	Lithium Total	↑	↔	Uranium Total	↑	↑
Cadmium Dissolved	↓	↓	Manganese Dissolved	↑	↔	Vanadium Dissolved	↔	↔
Cadmium Total	↔	↔	Manganese Total	↑	↔	Vanadium Total	↔	↔
Chromium Dissolved	↔	↓	Molybdenum Dissolved	↔	↔	Zinc Dissolved	↓	↓
Chromium Total	↔	↑	Molybdenum Total	↓	↔	Zinc Total	↔	↑

Typical range (minimum-maximum) in field observations and bacterial values:

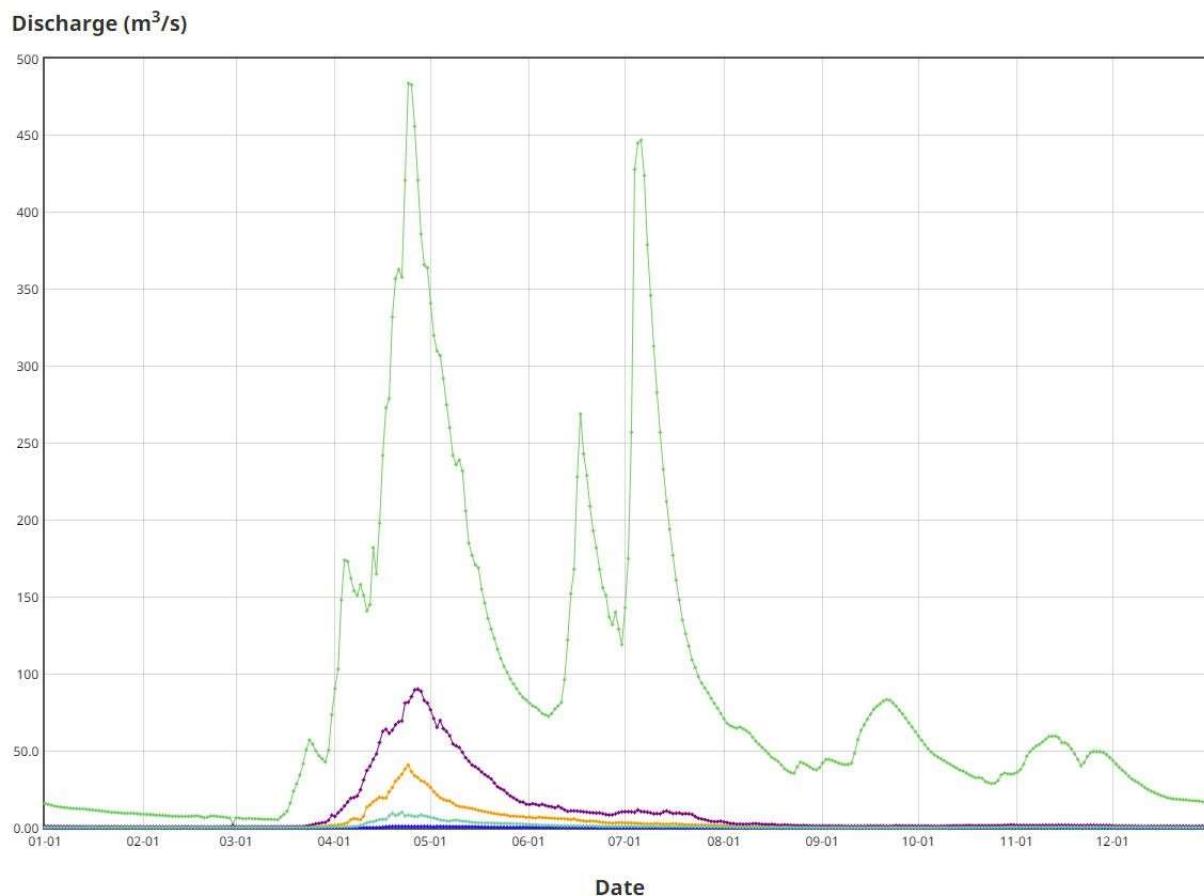
Current (2009-2019)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance (µS/cm)	E.Coli (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	1.3-11.4	6.6-8.0	6 -21	331-1782	<2-269	<2-82
Spring (Mar-May)	2.0-13.6	7.2-8.7	6-235	420-1560	<2-1200	<2-381
Summer (Jun-Aug)	5.2-10.6	7.7-8.6	12-90	704-1384	<10-1800	<2-230
Fall (Sep-Oct)	6.7-14.3	7.8-8.7	5-55	592-1536	<2-1850	<2-970

Past (1989-2009)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance ($\mu\text{S}/\text{cm}$)	<i>E.Coli</i> (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	1.9-13.9	7.0-9.0	4-17	953-1548	8-4277	2-5200
Spring (Mar-May)	0.1-16.1	7.0-8.6	4-58	330-1384	<2-3862	<2-667
Summer (Jun-Aug)	2.8-13.0	7.3-8.7	9-80	547-1684	3-25000	<2-273
Fall (Sep-Oct)	5.9-17.9	7.2-8.8	4-38	337-2141	2-7500	<2-354

Hydrometric Graphs (Water Survey of Canada, 1944-2021)

▼ Legend

- | | | |
|------------------|------------------|----------|
| — Maximum | — Minimum | — Median |
| — Upper quartile | — Lower quartile | |



Hydrometric Data Website

[https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=1&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Grap h&stn=05MD004&dataType=Daily¶meterType=Flow&year=2021](https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=1&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Graph&stn=05MD004&dataType=Daily¶meterType=Flow&year=2021)

Maps & Diagrams

Figure 1. Satellite imagery of the sampling locations for the Assiniboine R. North is at the top of the image. Direction of flow in this image from west to east and is depicted using the arrow.



Figure 2. Assiniboine R., upstream view



Figure 3. Assiniboine R., downstream view

Parameters Monitored

Note, spelling of parameter names purposely match the spelling in the database.

Sediment Data: 1969-1977, 1978-1979 (not shown but available upon request)

Field

Parameter	Years monitored
COLIFORMS FECAL	1974-2019 ongoing
COLIFORMS TOTAL	1974-2005, 2010-2011
E. COLI	1998-2019 ongoing
FECAL STREPTOCOCCI	1999, 2010-2011, 2015
OXYGEN DISSOLVED	1973-2019 ongoing
PH (FIELD)	1972-2019 ongoing
SPECIFIC CONDUCTANCE (FIELD)	1972-2019 ongoing
TEMPERATURE WATER (FIELD)	1968-1970, 1972-2019 ongoing
TURBIDITY (FIELD)	1979-2019 ongoing

Physicals

Parameter	Years monitored
ALKALINITY GRAN CACO3	2001-2002, 2005-2014
ALKALINITY PHENOLPHTHALEIN CACO3	1968-2014
ALKALINITY TOTAL CACO3	1968-2019 ongoing
COLOUR APPARENT	1968-1981
COLOUR TRUE	1981-2005
ODOUR THRESHOLD NUMBER	1974-1976, 1978
RESIDUE FILTERABLE	1968-1969, 1979
RESIDUE FIXED FILTERABLE	1968-1969, 1979
RESIDUE FIXED NONFILTRABLE	1968-1969, 1971-2019 ongoing
RESIDUE NONFILTRABLE	1968-1969, 1971-2019 ongoing
PH (LAB)	1968-2019 ongoing
SPECIFIC CONDUCTANCE (LAB)	1968-2019 ongoing
TEMPERATURE WATER (LAB)	1968-2001
TURBIDITY (LAB)	1968-2019 ongoing

Nutrients (Carbon, Nitrogen, Phosphorus)

Parameter	Years monitored
AMMONIA DISSOLVED	1968-1971, 1987-2019 ongoing
AMMONIA TOTAL	1970, 1974, 1981-1987
AMMONIA UN-IONIZED (CALCD.)	1986-2019 ongoing
CARBON DISSOLVED INORGANIC	1978-1980

CARBON DISSOLVED ORGANIC	1970, 1978-2019 ongoing
CARBON PARTICULATE ORGANIC	1977-2019 ongoing
CARBON TOTAL INORGANIC	1971-1978
CARBON TOTAL ORGANIC	1968-1978
CARBON TOTAL ORGANIC (CALCD.)	1980-1983, 1985-2019 ongoing
CARBONACEOUS OXYGEN DEMAND BOD10	2016-2019 ongoing
NITROGEN DISSOLVED NO3 & NO2	1968-2019 ongoing
NITROGEN PARTICULATE	1977-2019 ongoing
NITROGEN TOTAL (CALCD.)	1977-2019 ongoing
NITROGEN TOTAL DISSOLVED	1975-2019 ongoing
NITROGEN TOTAL KJELDAHL	1968-1978
PHOSPHATE DISSOLVED INORGANIC	1969-1970, 1972-1973
PHOSPHATE DISSOLVED ORTHO	1972-1973, 1981-1990
PHOSPHATE TOTAL INORGANIC	1968-1970
PHOSPHOROUS DISSOLVED ORTHO	1990-2019 ongoing
PHOSPHOROUS PARTICULATE (CALCD.)	1975-2019 ongoing
PHOSPHOROUS TOTAL	1968-2019 ongoing
PHOSPHOROUS TOTAL DISSOLVED	1975-2019 ongoing

Major Ions

Parameter	Years monitored
BICARBONATE (CALCD.)	1980-1983, 1985-2019 ongoing
BROMIDE	2015-2017
CALCIUM DISSOLVED/FILTERED	1968-2019 ongoing
CARBONATE (CALCD.)	1980-1983, 1985-2019 ongoing
CHLORIDE DISSOLVED	1968-2019 ongoing
FLUORIDE DISSOLVED	1968-2019 ongoing
FREE CO2 (CALCD.)	1985-2019 ongoing
HARDNESS NON-CARB. (CALCD.)	1985-2019 ongoing
HARDNESS TOTAL (CALCD.) CACO3	1980-1983, 1985-2019 ongoing
HARDNESS TOTAL CACO3	1968-1975
HARDNESS TOTAL LAB (CALCD.) CACO3	1975-1978
HYDROXIDE (CALCD.)	1985-2019 ongoing
MAGNESIUM DISSOLVED/FILTERED	1975-2019 ongoing
POTASSIUM DISSOLVED/FILTERED	1968-2019 ongoing
SATURATION INDEX (CALCD.)	1985-2019 ongoing
SILICA REACTIVE	1968-1990
SIO2	1990-2019 ongoing
SODIUM ADSORPTION RATIO (CALCD.)	2001-2019 ongoing
SODIUM DISSOLVED/FILTERED	1968-2019 ongoing
SODIUM PERCENTAGE (CALCD.)	1985-2019 ongoing

STABILITY INDEX (CALCD.)	1985-2019 ongoing
SULPHATE DISSOLVED	1968-2019 ongoing
TOTAL DISSOLVED SOLIDS (CALCD.)	1980-1983, 1985-2019 ongoing

Metals

Parameter	Years monitored
ALUMINUM DISSOLVED	1968-1969, 1984-1990, 1992-2019 ongoing
ALUMINUM EXTRACTABLE	1971-1990, 1992-1993
ALUMINUM TOTAL	1993-2019 ongoing
ANTIMONY DISSOLVED	2003-2019 ongoing
ANTIMONY TOTAL	2003-2019 ongoing
ARSENIC DISSOLVED	1971-1990, 2003-2019 ongoing
ARSENIC TOTAL	2000-2019 ongoing
BARIUM DISSOLVED	1971, 1999-2019 ongoing
BARIUM EXTRACTABLE	1972-1980
BARIUM TOTAL	1983-1990, 1992-2019 ongoing
BARIUM TOTAL RECOVERABLE	1980-1983
BERYLLIUM DISSOLVED	1999-2019 ongoing
BERYLLIUM TOTAL	1997-2019 ongoing
BISMUTH DISSOLVED	2003-2019 ongoing
BISMUTH TOTAL	2003-2019 ongoing
BORON DISSOLVED	1972-2019 ongoing
BORON TOTAL	1997-1998, 2003-2019 ongoing
CADMIUM DISSOLVED	1971, 1999-2019 ongoing
CADMIUM EXTRACTABLE	1971-1980
CADMIUM TOTAL	1983-1990, 1992-2019 ongoing
CADMIUM TOTAL RECOVERABLE	1980-1983
CERIUM DISSOLVED	2014-2019 ongoing
CERIUM TOTAL	2014-2019 ongoing
CESIUM DISSOLVED	2014-2019 ongoing
CESIUM TOTAL	2014-2019 ongoing
CHROMIUM DISSOLVED	1999-2019 ongoing
CHROMIUM EXTRACTABLE	1971-1983
CHROMIUM TOTAL	1983-1990, 1992-2019 ongoing
COBALT DISSOLVED	1999-2019 ongoing
COBALT EXTRACTABLE	1971-1974, 1978-1980
COBALT TOTAL	1983-1990, 1992-2019 ongoing
COBALT TOTAL RECOVERABLE	1980-1983
COPPER DISSOLVED	1971-1973, 1979, 1999-2019 ongoing
COPPER EXTRACTABLE	1969, 1971-1980
COPPER TOTAL	1983-1990, 1992-2019 ongoing

COPPER TOTAL RECOVERABLE	1980-1983
EUROPIUM DISSOLVED	2019 ongoing
EUROPIUM TOTAL	2019 ongoing
GADOLINIUM DISSOLVED	2019 ongoing
GADOLINIUM TOTAL	2019 ongoing
GALLIUM DISSOLVED	2003-2019 ongoing
GALLIUM TOTAL	2003-2019 ongoing
GERMANIUM DISSOLVED	2019 ongoing
GERMANIUM TOTAL	2019 ongoing
HAFNIUM DISSOLVED	2019 ongoing
HAFNIUM TOTAL	2019 ongoing
HOLMIUM DISSOLVED	2019 ongoing
HOLMIUM TOTAL	2019 ongoing
INDIUM DISSOLVED	2019 ongoing
INDIUM TOTAL	2019 ongoing
IRIDIUM DISSOLVED	2019 ongoing
IRIDIUM TOTAL	2019 ongoing
IRON DISSOLVED	1968-1973, 1979-2019 ongoing
IRON EXTRACTABLE	1968, 1971-1980
IRON TOTAL	1993, 1997-2019 ongoing
LANTHANUM DISSOLVED	2003-2019 ongoing
LANTHANUM TOTAL	2003-2019 ongoing
LEAD DISSOLVED	1971-1972, 1979, 1999-2019 ongoing
LEAD EXTRACTABLE	1971-1980
LEAD TOTAL	1983-1990, 1992-2019 ongoing
LEAD TOTAL RECOVERABLE	1980-1983
LITHIUM DISSOLVED	1999-2019 ongoing
LITHIUM EXTRACTABLE	1972
LITHIUM TOTAL	1997-2019 ongoing
LUTETIUM DISSOLVED	2019 ongoing
LUTETIUM TOTAL	2019 ongoing
MANGANESE DISSOLVED	1968-1972, 1979-2019 ongoing
MANGANESE EXTRACTABLE	1968-1969, 1971-1980
MANGANESE TOTAL	1993, 1997-2019 ongoing
MERCURY EXTRACTABLE	1971-1979
MERCURY TOTAL	1979-1990, 1992-1999
MOLYBDENUM DISSOLVED	1999-2019 ongoing
MOLYBDENUM EXTRACTABLE	1973-1974
MOLYBDENUM TOTAL	1997-2019 ongoing
NEODYMIUM DISSOLVED	2019 ongoing
NEODYMIUM TOTAL	2019 ongoing
NICKEL DISSOLVED	1999-2019 ongoing
NICKEL EXTRACTABLE	1971-1974, 1979-1980

NICKEL TOTAL	1983-1990, 1992-2019 ongoing
NICKEL TOTAL RECOVERABLE	1980-1983
NIOBIUM DISSOLVED	2014-2019 ongoing
NIOBIUM TOTAL	2014-2019 ongoing
PLATINUM DISSOLVED	2014-2019 ongoing
PLATINUM TOTAL	2014-2019 ongoing
PRASEODYMIUM DISSOLVED	2019 ongoing
PRASEODYMIUM TOTAL	2019 ongoing
RUBIDIUM DISSOLVED	2003-2019 ongoing
RUBIDIUM TOTAL	2003-2019 ongoing
RUTHENIUM DISSOLVED	2019 ongoing
RUTHENIUM TOTAL	2019 ongoing
SAMARIUM DISSOLVED	2019 ongoing
SAMARIUM TOTAL	2019 ongoing
SCANDIUM DISSOLVED	2019 ongoing
SCANDIUM TOTAL	2019 ongoing
SELENIUM DISSOLVED	1974-1990, 2003-2019 ongoing
SELENIUM TOTAL	2000-2019 ongoing
SILVER DISSOLVED	2003-2019 ongoing
SILVER EXTRACTABLE	1972-1979
SILVER TOTAL	1971, 1999-2019 ongoing
STRONTIUM DISSOLVED	1971, 1999-2019 ongoing
STRONTIUM EXTRACTABLE	1971-1974
STRONTIUM TOTAL	1997-2019 ongoing
TELLURIUM DISSOLVED	2019 ongoing
TELLURIUM TOTAL	2019 ongoing
TERBIUM DISSOLVED	2019 ongoing
TERBIUM TOTAL	2019 ongoing
THALLIUM DISSOLVED	2003-2019 ongoing
THALLIUM EXTRACTABLE	1972
THALLIUM TOTAL	2003-2019 ongoing
TIN DISSOLVED	2014-2019 ongoing
TIN TOTAL	2014-2019 ongoing
TITANIUM DISSOLVED	2016-2019 ongoing
TITANIUM TOTAL	2016-2019 ongoing
TUNGSTEN DISSOLVED	2014-2019 ongoing
TUNGSTEN TOTAL	2014-2019 ongoing
URANIUM DISSOLVED	2003-2019 ongoing
URANIUM TOTAL	2003-2019 ongoing
VANADIUM DISSOLVED	1999-2019 ongoing
VANADIUM EXTRACTABLE	1975-1980
VANADIUM TOTAL	1983-1990, 1992-2019 ongoing
VANADIUM TOTAL RECOVERABLE	1980-1983

YTTERBIUM DISSOLVED	2019 ongoing
YTTERBIUM TOTAL	2019 ongoing
YTTRIUM- DISSOLVED	2014-2019 ongoing
YTTRIUM TOTAL	2014-2019 ongoing
ZINC DISSOLVED	1971-1973, 1979, 1999-2019 ongoing
ZINC EXTRACTABLE	1969, 1971-1980
ZINC TOTAL	1983-1990, 1992-2019 ongoing
ZINC TOTAL RECOVERABLE	1980-1983
ZIRCONIUM DISSOLVED	2019 ongoing
ZIRCONIUM TOTAL	2019 ongoing

Acid Herbicides

Parameter	Years monitored
2-(2,4-DICHLOROPHOXY)-PROPIONIC ACID	1999-2019 ongoing
2,3,6-TBA	1985-1992, 1999-2017
2,4,5-T	1972-1992, 1999-2019 ongoing
2,4-D	1972-1992, 1999-2019 ongoing
2,4-DB	1972-1992, 1999-2017
ACIFLUORFEN	2014, 2019 ongoing
BROMOXYNIL	1988-1992, 1999-2019 ongoing
CLOPYRALID	2001-2019 ongoing
DICAMBA	1985-1992, 1999-2019 ongoing
DICHLORPROP	1972-1992
DINOSEB	2018-2019 ongoing
FENOPROP (SILVEX)	1978-1992, 1999-2001
FOMESAFEN	2014, 2019 ongoing
IMAZAMETHABENZ-METHYL (A)	2001-2019 ongoing
IMAZAMETHABENZ-METHYL (B)	2001-2015
IMAZAMOX	2016-2019 ongoing
IMAZAPYR	2016-2019 ongoing
IMAZETHAPYR	2001-2019 ongoing
MCPA	1972-1992, 1999-2019 ongoing
MCPB	1985-1992, 1999-2017
MCPP	2015-2019 ongoing
MECOPROP	2004-2015
PICLORAM	1974-1982, 1985-1992, 1999-2019 ongoing
SILVEX	2001-2019 ongoing
TRICLOPYR	2015-2019 ongoing

Neutral Herbicides

Parameter	Years monitored
ATRAZINE	1999-2019 ongoing
ATRAZINE TOTAL	1985-1992
BENZOYLPROP-ETHYL	1985-1992, 1999-2019 ongoing
BUTYLATE	1999-2019 ongoing
DESETHYL ATRAZINE	1999-2019 ongoing
D-ETHYL SIMAZINE	1999-2019 ongoing
DIALLATE	1985-1992
DIALLATE I	1999-2019 ongoing
DIALLATE II	1999-2019 ongoing
DICLOFOP-METHYL	1985-1992, 1999-2019 ongoing
ETHALFLURALIN	2006-2019 ongoing
FENOXAPROP-P-ETHYL	2008-2019 ongoing
METOLACHLOR	1999-2019 ongoing
METRIBUZIN	1999-2019 ongoing
SIMAZINE	1999-2019 ongoing
TRIALLATE	1985-1992, 1999-2019 ongoing
TRIFLURALIN	1974-1977, 1979, 1985-1992, 1999-2019 ongoing

Organochlorine

Parameter	Years monitored
ALDRIN	1971-1990, 1999-2015
ALPHA-BENZENEHEXACHLORIDE	1975-1990, 1999-2019 ongoing
ALPHA-CHLORDANE	1975-1990, 1999-2019 ongoing
ALPHA-ENDOSULFAN	1971-1990, 1999-2019 ongoing
BETA-ENDOSULFAN	1971-1990, 1999-2019 ongoing
BETA-HCH	2005-2015
CIS-NONACHLOR	2005-2015
DIELDRIN	1971-1990, 1999-2019 ongoing
ENDOSULFAN SULPHATE TOTAL	2015-2019 ongoing
ENDRIN	1971, 1975-1990, 1999-2015
GAMMA-BHC (LINDANE)	1971-1990, 1999-2019 ongoing
GAMMA-CHLORDANE	1975-1990, 1999-2019 ongoing
HEPTACHLOR	1971-1990, 1999-2015
HEPTACHLOR EPOXIDE	1971-1990, 1999-2015
HEXACHLOROBENZENE	1978-1990, 1999-2019 ongoing
HEXACHLOROBUTADIENE	2005-2019 ongoing
METHOXYCHLOR (P,P'-METHOXYCHLOR).	1971-1990, 1999-2015
MIREX	1978-1990, 1999-2019 ongoing
O,P'-DDD	2005-2015

O,P'-DDE	2005-2015
O,P'-DDT	1978-1990, 1999-2019 ongoing
OXYCHLORDANE	2005-2015
P,P'-DDD (TDP)	1971-1990, 1999-2015
P,P'-DDE	1971-1990, 1999-2019 ongoing
P,P'-DDT	1971-1990, 1999-2019 ongoing
PCB-TOTAL	1999-2000
PENTACHLOROANISOLE	2005-2015
PENTACHLOROBENZENE	2004-2019 ongoing
TRANS-NONACHLOR	2005-2019 ongoing

Glyphosate

Parameter	Years monitored
AMPA	2013-2019 ongoing
GLUFOSINATE	2013-2019 ongoing
GLYPHOSATE	2013-2019 ongoing

Sulfonyl Ureas

Parameter	Years monitored
BENSULFURON	2014
CHLORIMURON-ETHYL	2014
CHLORSULFURON	2014
CLOMAZONE	2014
DIURON	2014
FLUMETSULAM	2014
FORAMSULFURON	2014
LINURON	2014
METSULFURON-METHYL	2014
NICOSULFURON	2014
PRIMISULFURON-METHYL	2014
PROSULFURON	2014
RIMSULFURON	2014
THIFENSULFURON	2014
TRIBENURON METHYL	2014

Neonicotinoids

Parameter	Years monitored
ACETAMIPRID	2014-2017
CLOTHIANIDIN	2014-2017

DINOTEFURAM	2014-2017
FLONICAMID	2016-2017
FLUPYRADIFURONE	2016-2017
IMIDACLOPRID	2014-2017
THIACLOPRID	2014-2017
THIAMETHOXAM	2014-2017

Carbamates

Parameter	Years monitored
ALDICARB	2014
BARBAN	1974-1977, 1985-1992
CARBARYL	2014
CARBOFURAN	2014
METALAXYL	2014
METHOMYL	2014
OXAMYL	2014
PIRIMICARB	2014

Organophosphates

Parameter	Years monitored
AZINPHOS METHYL (GUTHION)	2003-2004
DAZINON	2003-2004
DIMETHOATE	1985-1988, 2003-2004
DISULFOTON	2003-2004
DURSBAN	2003-2004
ETHION	2003-2004
FONOFOSS	2003-2004
MALATHION	1985-1988, 2003-2004
NALED	2003-2004
PARATHION	2003-2004
PHORATE	2003-2004
PHOSMET (IMIDAN)	2003-2004
TERBUFOS	2003-2004

Phenols

Parameter	Years monitored
2,3,4,5-TETRACHLOROPHENOL	1990
2,3,4,6-TETRACHLOROPHENOL	1990
2,3,4-TRICHLOROPHENOL	1990

2,3,5,6-TETRACHLOROPHENOL	1990
2,3,5-TRICHLOROPHENOL	1990
2,3,6-TRICHLOROPHENOL	1990
2,3-DICHLOROPHENOL	1990
2,4,5-TRICHLOROPHENOL	1990
2,4,6-TRICHLOROPHENOL	1990
2,4-DICHLOROPHENOL	1990
2,6-DICHLOROPHENOL	1990
2-CHLORO-5-METHYLPHENOL	1990
2-CHLOROPHENOL	1990
3,4,5-TRICHLOROPHENOL	1990
3,4-DICHLOROPHENOL	1990
3,5-DICHLOROPHENOL	1990
3-CHLOROPHENOL	1990
4-CHLORO-3-METHYLPHENOL	1990
4-CHLOROPHENOL	1990
PENTACHLOROPHENOL	1990
PHENOLIC MATERIAL	1973-1990

Aroclors

Parameter	Years monitored
AROCLOR	1980-1990
AROCLOR 1242	1981-1983
AROCLOR 1248	1972-1981
AROCLOR 1254	1972-1983
AROCLOR 1260	1973-1983

Other Parameters

Parameter	Years monitored
AROMATIC HYDROCARBONS	1974-1982
BETA RADIATION TOTAL	1975
CHLOROPHYLL A	1973-1990, 2018-2019 ongoing
CHLOROPHYLL A (CORRECTED)	2018-2019 ongoing
CYANIDE	1971
CYANIDE TOTAL	1974-1990
N-ALKANES C10 – C26	1974-1982
N-ALKYL SULPHONATES (LAS)	1974-1981
NITRILOTRIACETIC ACID – NTA	1975-1978
OIL AND GREASE	1974-1981
OXYGEN BIOCHEMICAL DEMAND	1974-1979

OXYGEN CONSUMED	1968-1971
OXYGEN DISSOLVED COD	1968-1970
OXYGEN TOTAL COD	1970, 1972
PHOSPHATE TOTAL ORTHO	1975
RADIUM RADIATION TOTAL RA-226	1975
STRONTIUM RADIATION TOTAL 90	1975

Carrot River Near Turnberry

Station Name:	Carrot River Near Turnberry		
Station Number:	SA05KH0002		
Naquadat¹ Number:	00SA05KH0002		
WSC² Reference Number:	05KH007		
WSC Period of Record:	1966 – present		
Project Number:	115 (historically 315)		
Sampling Site:	Latitude 53°36'49.81"N	Longitude 102°06'16.49"W	
Drainage Area:	12600 km²		
Effective Drainage Area:	N/A		
Ecozone³:	Boreal Plains		
Ecoregion³:	Mid-Boreal Lowland		
Water Body:	Carrot River		
Water Body Type:	River		
Watershed:	Carrot River/Saskatchewan River		
Stakeholders:	PPWB		
Site Overview:	<p>The Carrot River originates near Wakaw Lake in central Saskatchewan. It is located to the south of the Saskatchewan River system in east-central Saskatchewan. It flows eastward until its confluence with the Saskatchewan River near The Pas, Manitoba. The Carrot River has a gross drainage of 132,591 km², and while unregulated, drainage projects and overflow from the Saskatchewan River during high water events adds to the flow of the Carrot River. The PPWB Water Quality Monitoring site on the Carrot River is located ~76 river km upstream of its confluence with the Saskatchewan River and 4 km upstream of the Saskatchewan-Manitoba border.</p>		
Sampling location:	<p>Water quality samples are collected west of WSC stations (winter and summer). Open water samples, prior to 2016, were collected by wading, casting from bank or from cable car. 2016-2017 samples were collected with a sampling reach pole. From 2018 to present, samples are collected with a stream bank operated cable way during the open water season.</p> <p>Trends are increasing in this river for phosphorus and nitrogen constituents. Dissolved sulphate also shows an increasing trend.</p>		
Station Established:	May 1974		
Period of Record:	1974 – present		
Data Located:	ACBIS	664 Samples (January 2024)	
Station Type:	Monthly, Major Ions, nutrients, heavy metals, biocides and bacteria (BW 1989)		
Frequency of Observations:	Monthly, Bacteria are monitored in each of six ice-free months (NG)		

¹ Data listing of water quality monitoring stations

²Water Survey of Canada³<http://www.ecozones.ca/english/zone/index.html>

Site Status

Nutrients	2013	2018	Major Ions	2013	2018	Physicals	2013	2018
Ammonia Dissolved	↑	↑	Chloride Dissolved	↓	↓	Oxygen Dissolved	↓	↓
Nitrate as N	↔	↔	Fluoride Dissolved	↑	↔	pH – Field	↑	↔
Nitrogen Total	↑	↑	Sodium Dissolved/Filtered	↓	↓	Sodium Adsorption Ratio (SAR)	↓	↓
Phosphorous Total	↑	↑	Sulphate Dissolved	↑	↑	Total Suspended Solids (TSS)	↑	↑
Phosphorous Total Dissolved	↑	↑	Total Dissolved Solids (TDS)	↔	↔			

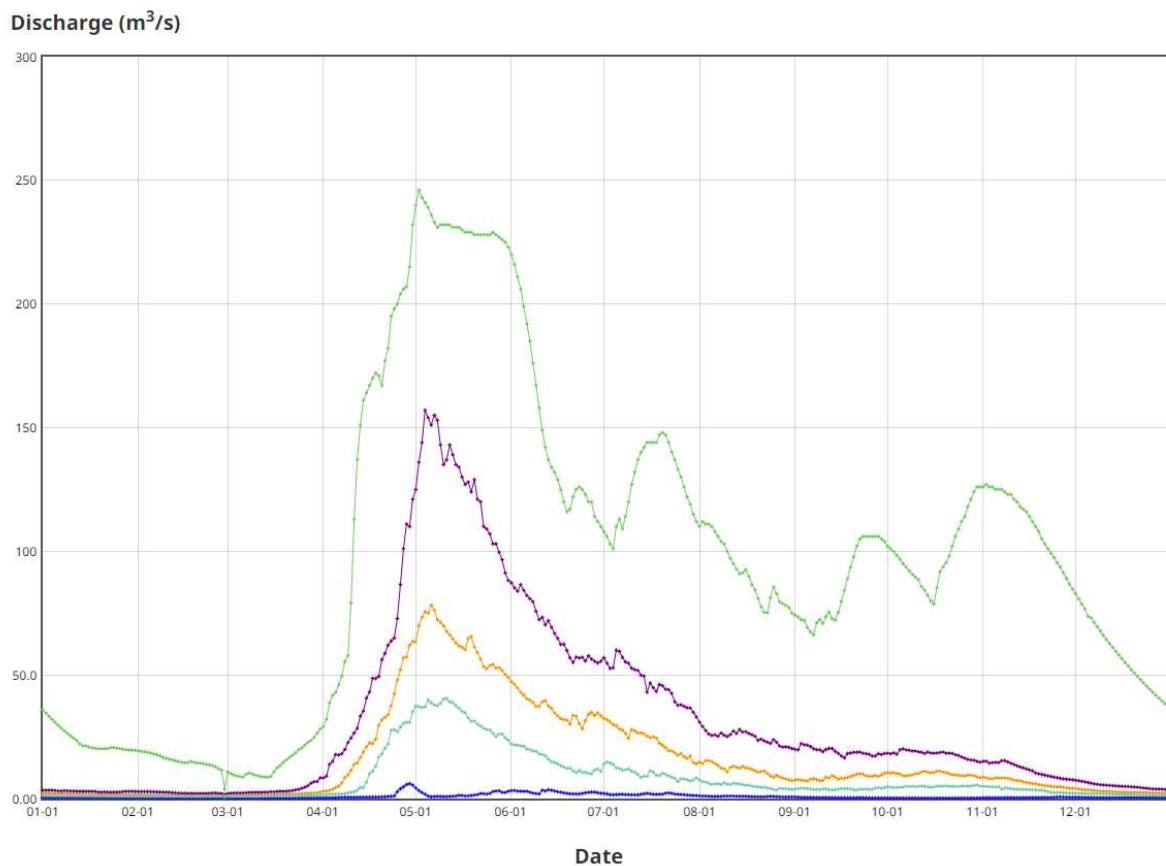
Metals	2013	2018	Metals	2013	2018	Metals	2013	2018
Aluminum Dissolved	↔	↔	Cobalt Dissolved	↔	↑	Nickel Dissolved	↔	↔
Aluminum Total	↔	↔	Cobalt Total	↔	↑	Nickel Total	↔	↔
Arsenic Dissolved	↔	↔	Copper Dissolved	↔	↔	Selenium Dissolved	↔	↓
Arsenic Total	↔	↔	Copper Total	↔	↔	Selenium Total	↔	↔
Barium Dissolved	↑	↑	Iron Dissolved	↓	↓	Silver Dissolved	>20%	>20%
Barium Total	↑	↑	Iron Total	↔	↔	Silver Total	↔	↔
Beryllium Dissolved	↑	↔	Lead Dissolved	↓	↓	Thallium Dissolved	↑	↔
Beryllium Total	↔	↔	Lead Total	↔	↔	Thallium Total	↔	↔
Boron Dissolved	↑	↔	Lithium Dissolved	↑	↔	Uranium Dissolved	↑	↑
Boron Total	↔	↔	Lithium Total	↑	↔	Uranium Total	↑	↑
Cadmium Dissolved	↓	↓	Manganese Dissolved	↔	↔	Vanadium Dissolved	↔	↔
Cadmium Total	↓	↔	Manganese Total	↔	↔	Vanadium Total	↔	↔
Chromium Dissolved	↔	↓	Molybdenum Dissolved	↔	↑	Zinc Dissolved	↔	↔
Chromium Total	↓	↔	Molybdenum Total	↔	↔	Zinc Total	↔	↑

Typical range (minimum-maximum) in field observations and bacterial values:

Current (2009-2019)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance ($\mu\text{S}/\text{cm}$)	E.Coli (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	0.0-14.5	6.3-7.9	8-25	457-2545	<2-11	<2-19
Spring (Mar-May)	0.0-10.6	6.9-8.3	9-510	379-2687	<2-1700	<2-69
Summer	2.0-9.7	7.2-8.3	8-419	502-860	6-6500	<2-94

(Jun-Aug)						
Fall (Sep-Nov)	5.1-15.8	5.5-8.3	11-150	493-1121	6-1817	<2-75
Past (1989-2008)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance (μS/cm)	E.Coli (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	0.0-7.7	6.9-8.0	6-110	936-3520	4-1847	<2-31
Spring (Mar-May)	0.1-11.5	7.0-8.2	6-589	314- 4240	<2-277	<2-25
Summer (Jun-Aug)	3.5-12.5	6.9-8.6	3-141	504-1660	4-8617	<2-120
Fall (Sep-Nov)	4.7-17.7	6.7-8.9	8-383	531-2480	2-3167	<2-400

Hydrometric Graphs (Water Survey of Canada, 1966-2021)



Hydrometric Data Website

[https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=1&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Grap h&stn=05KH007&dataType=Daily¶meterType=Flow&year=2021](https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=1&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Graph&stn=05KH007&dataType=Daily¶meterType=Flow&year=2021)

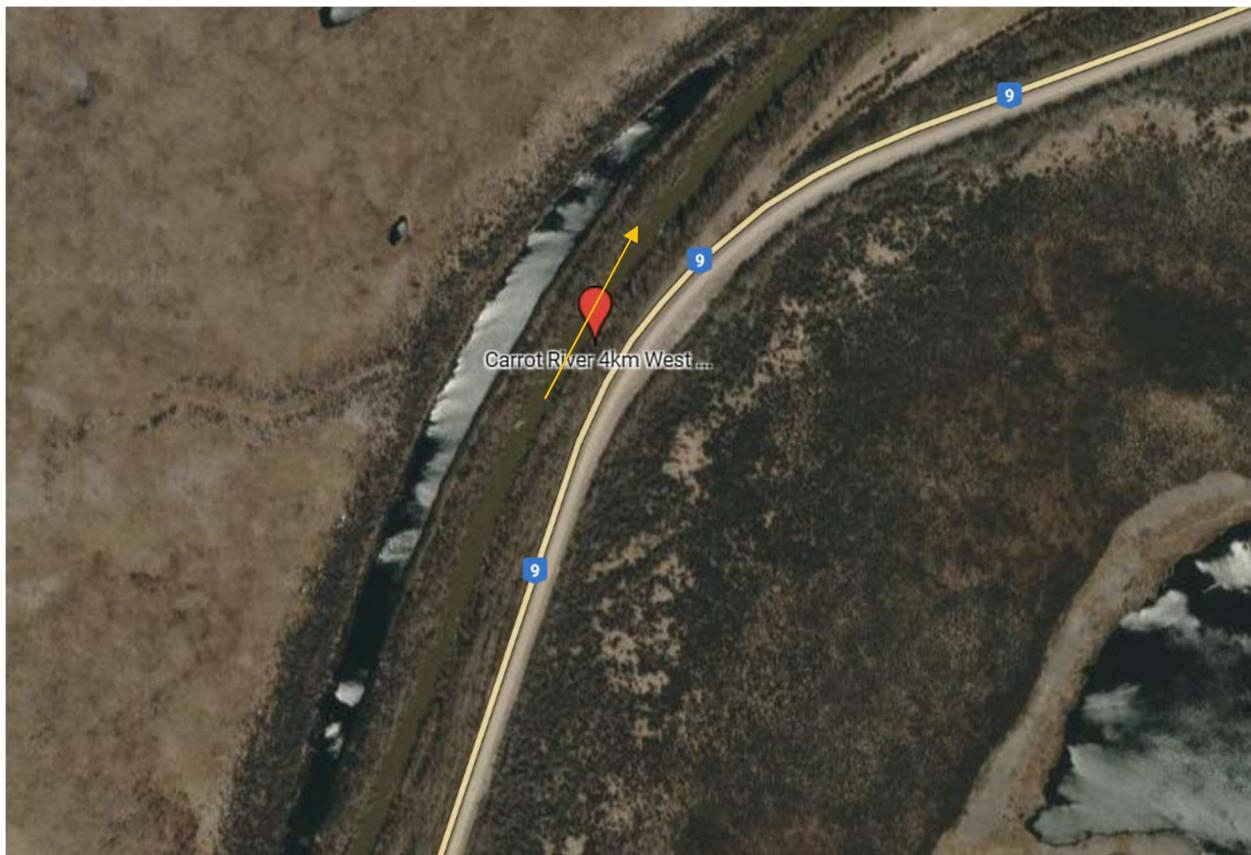
Maps & Diagrams

Figure 1. Satellite imagery of the sampling locations for the Carrot R. North is at the top of the image. Direction of flow in this image from southwest to northeast and is depicted using the arrow.



Figure 2. Carrot R., looking Upstream from a river-right (southwest shore) location near the hydrometric station **Figure 3. Carrot R., looking Downstream from a river-right location near the hydrometric station.**

Parameters Monitored

Note, spelling of parameter names purposely match the spelling in the database.

Field

Parameter	Years monitored
COLIFORMS FECAL	1974-2019 ongoing
COLIFORMS TOTAL	1974-2004, 2011
E. COLI	1998-2019 ongoing
FECAL STREPTOCOCCI	2001, 2005
OXYGEN DISSOLVED	1973-2019 ongoing
PH (FIELD)	1973-2019 ongoing
SPECIFIC CONDUCTANCE (FIELD)	1974-2019 ongoing
TEMPERATURE WATER (FIELD)	1973-2019 ongoing
TURBIDITY (FIELD)	1979-2019 ongoing

Physicals

Parameter	Years monitored
ALKALINITY GRAN CACO3	2001-2002, 2005-2014
ALKALINITY PHENOLPHTHALEIN CACO3	1974-2001, 2003-2014
ALKALINITY TOTAL CACO3	1973-2019 ongoing
COLOUR APPARENT	1973-1981
COLOUR TRUE	1981-2005
ODOUR THRESHOLD NUMBER	1974-1976, 1978
RESIDUE FILTERABLE	1979
RESIDUE FIXED FILTERABLE	1979
RESIDUE FIXED NONFILTRABLE	1974-2019 ongoing
RESIDUE NONFILTRABLE	1974-2019 ongoing
TEMPERATURE WATER (LAB)	1973-1999, 2001
SPECIFIC CONDUCTANCE (LAB)	1973-2019 ongoing
PH (LAB)	1973-2019 ongoing
TURBIDITY (LAB)	1973-2019 ongoing

Nutrients (Carbon, Nitrogen, Phosphorus)

Parameter	Years monitored
AMMONIA DISSOLVED	1987-2019 ongoing
AMMONIA TOTAL	1974, 1981-1987

AMMONIA UN-IONIZED (CALCD.)	1986-2019 ongoing
CARBON DISSOLVED INORGANIC	1978-1980
CARBON DISSOLVED ORGANIC	1978-2019 ongoing
CARBON PARTICULATE ORGANIC	1977-2019 ongoing
CARBON TOTAL INORGANIC	1973-1978
CARBON TOTAL ORGANIC	1973-1978
CARBON TOTAL ORGANIC (CALCD.)	1980-1983, 1985-2019 ongoing
CARBONACEOUS OXYGEN DEMAND BOD10	2015-2019
NITROGEN DISSOLVED NO3 & NO2	1973-2019 ongoing
NITROGEN PARTICULATE	1977-2019 ongoing
NITROGEN TOTAL (CALCD.)	1977-2019 ongoing
NITROGEN TOTAL DISSOLVED	1976-2019 ongoing
NITROGEN TOTAL KJELDAHL	1973-1978
PHOSPHATE DISSOLVED INORGANIC	1976
PHOSPHATE DISSOLVED ORTHO	1981-1990
PHOSPHOROUS DISSOLVED ORTHO	1990-2019 ongoing
PHOSPHOROUS PARTICULATE (CALCD.)	1975-2019 ongoing
PHOSPHOROUS TOTAL	1973-2019 ongoing
PHOSPHOROUS TOTAL DISSOLVED	1975-2019 ongoing

Major Ions

Parameter	Years monitored
BICARBONATE (CALCD.)	1980-1983, 1985-2019 ongoing
BROMIDE	2015-2017
CALCIUM DISSOLVED/FILTERED	1973-2019 ongoing
CARBONATE (CALCD.)	1980-1983, 1985-2019 ongoing
CHLORIDE DISSOLVED	1973-2019 ongoing
FLUORIDE DISSOLVED	1973-2019 ongoing
FREE CO2 (CALCD.)	1985-2019 ongoing
HARDNESS NON-CARB. (CALCD.)	1985-2019 ongoing
HARDNESS TOTAL (CALCD.) CACO3	1980-1983, 1985-2019 ongoing
HARDNESS TOTAL CACO3	1973-1975
HARDNESS TOTAL LAB (CALCD.) CACO3	1975-1978
HYDROXIDE (CALCD.)	1985-2019 ongoing
MAGNESIUM DISSOLVED/FILTERED	1975-2019 ongoing
POTASSIUM DISSOLVED/FILTERED	1973-2019 ongoing
SATURATION INDEX (CALCD.)	1985-2019 ongoing
SILICA REACTIVE	1973-1990
SIO2	1990-2019 ongoing
SODIUM ADSORPTION RATIO (CALCD.)	2001-2019 ongoing
SODIUM DISSOLVED/FILTERED	1973-2019 ongoing

SODIUM PERCENTAGE (CALCD.)	1985-2019 ongoing
STABILITY INDEX (CALCD.)	1985-2019 ongoing
SULPHATE DISSOLVED	1973-2019 ongoing
SULPHIDE DISSOLVED	1981-1989
TOTAL DISSOLVED SOLIDS (CALCD.)	1980-1983, 1985-2019 ongoing

Metals

Parameter	Years monitored
ALUMINUM DISSOLVED	1984-1990, 1992-2019 ongoing
ALUMINUM EXTRACTABLE	1973-1990, 1992-1993
ALUMINUM TOTAL	1993-2019 ongoing
ANTIMONY DISSOLVED	2003-2019 ongoing
ANTIMONY TOTAL	2003-2019 ongoing
ARSENIC DISSOLVED	1974-1990, 2003-2019 ongoing
ARSENIC TOTAL	2000-2019 ongoing
BARIUM DISSOLVED	1999-2019 ongoing
BARIUM EXTRACTABLE	1973-1980
BARIUM TOTAL	1983-1990, 1992-2019 ongoing
BARIUM TOTAL RECOVERABLE	1980-1983
BERYLLIUM DISSOLVED	1999-2019 ongoing
BERYLLIUM TOTAL	1997, 1999-2019 ongoing
BISMUTH DISSOLVED	2003-2019 ongoing
BISMUTH TOTAL	2003-2019 ongoing
BORON DISSOLVED	1973-1990, 1992-2019 ongoing
BORON TOTAL	1997, 2003-2019 ongoing
CADMIUM DISSOLVED	1999-2019 ongoing
CADMIUM EXTRACTABLE	1973-1980
CADMIUM TOTAL	1983-1990, 1992-2019 ongoing
CADMIUM TOTAL RECOVERABLE	1980-1983
CERIUM DISSOLVED	2014-2019 ongoing
CERIUM TOTAL	2014-2019 ongoing
CESIUM DISSOLVED	2014-2019 ongoing
CESIUM TOTAL	2014-2019 ongoing
CHROMIUM DISSOLVED	1999-2019 ongoing
CHROMIUM EXTRACTABLE	1973-1983
CHROMIUM TOTAL	1983-1990, 1992-2019 ongoing
COBALT DISSOLVED	1999-2019 ongoing
COBALT EXTRACTABLE	1973, 1978-1980
COBALT TOTAL	1983-1990, 1992-2019 ongoing
COBALT TOTAL RECOVERABLE	1980-1983
COPPER DISSOLVED	1999-2019 ongoing

COPPER EXTRACTABLE	1973-1980
COPPER TOTAL	1983-1990, 1992-2019 ongoing
COPPER TOTAL RECOVERABLE	1980-1983
EUROPIUM DISSOLVED	2019 ongoing
EUROPIUM TOTAL	2019 ongoing
GADOLINIUM DISSOLVED	2019 ongoing
GADOLINIUM TOTAL	2019 ongoing
GALLIUM DISSOLVED	2003-2019 ongoing
GALLIUM TOTAL	2003-2019 ongoing
GERMANIUM DISSOLVED	2019 ongoing
GERMANIUM TOTAL	2019 ongoing
HAFNIUM DISSOLVED	2019 ongoing
HAFNIUM TOTAL	2019 ongoing
HOLMIUM DISSOLVED	2019 ongoing
HOLMIUM TOTAL	2019 ongoing
INDIUM DISSOLVED	2019 ongoing
INDIUM TOTAL	2019 ongoing
IRIDIUM DISSOLVED	2019 ongoing
IRIDIUM TOTAL	2019 ongoing
IRON DISSOLVED	1980-1990, 1992-2019 ongoing
IRON EXTRACTABLE	1973-1980, 1986
IRON TOTAL	1997, 1999-2019 ongoing
LANTHANUM DISSOLVED	2003-2019 ongoing
LANTHANUM TOTAL	2003-2019 ongoing
LEAD DISSOLVED	1999-2019 ongoing
LEAD EXTRACTABLE	1973-1980
LEAD TOTAL	1983-1990, 1992-2019 ongoing
LEAD TOTAL RECOVERABLE	1980-1983
LITHIUM DISSOLVED	1999-2019 ongoing
LITHIUM TOTAL	1997, 1999-2019 ongoing
LUTETIUM DISSOLVED	2019 ongoing
LUTETIUM TOTAL	2019 ongoing
MANGANESE DISSOLVED	1980-1990, 1992-2019 ongoing
MANGANESE EXTRACTABLE	1973-1980, 1986
MANGANESE TOTAL	1997, 1999-2019 ongoing
MERCURY EXTRACTABLE	1973-1979
MERCURY TOTAL	1979-1990, 1992-1999
MOLYBDENUM DISSOLVED	1999-2019 ongoing
MOLYBDENUM EXTRACTABLE	1973
MOLYBDENUM TOTAL	1997, 1999-2019 ongoing
NEODYMIUM DISSOLVED	2019 ongoing
NEODYMIUM TOTAL	2019 ongoing
NICKEL DISSOLVED	1999-2019 ongoing

NICKEL EXTRACTABLE	1973, 1979-1980
NICKEL TOTAL	1983-1990, 1992-2019 ongoing
NICKEL TOTAL RECOVERABLE	1980-1983
NIOBIUM DISSOLVED	2014-2019 ongoing
NIOBIUM TOTAL	2014-2019 ongoing
PLATINUM DISSOLVED	2014-2019 ongoing
PLATINUM TOTAL	2014-2019 ongoing
PRASEODYMIUM DISSOLVED	2019 ongoing
PRASEODYMIUM TOTAL	2019 ongoing
RUBIDIUM DISSOLVED	2003-2019 ongoing
RUBIDIUM TOTAL	2003-2019 ongoing
RUTHENIUM DISSOLVED	2019 ongoing
RUTHENIUM TOTAL	2019 ongoing
SAMARIUM DISSOLVED	2019 ongoing
SAMARIUM TOTAL	2019 ongoing
SCANDIUM DISSOLVED	2019 ongoing
SCANDIUM TOTAL	2019 ongoing
SELENIUM DISSOLVED	1974-1990, 2003-2019 ongoing
SELENIUM TOTAL	2000-2019 ongoing
SILVER DISSOLVED	2003-2019 ongoing
SILVER EXTRACTABLE	1973-1979
SILVER TOTAL	1999-2019 ongoing
STRONTIUM DISSOLVED	1999-2019 ongoing
STRONTIUM EXTRACTABLE	1973
STRONTIUM TOTAL	1994, 1997, 1999-2019 ongoing
TELLURIUM DISSOLVED	2019 ongoing
TELLURIUM TOTAL	2019 ongoing
TERBIUM DISSOLVED	2019 ongoing
TERBIUM TOTAL	2019 ongoing
THALLIUM DISSOLVED	2003-2019 ongoing
THALLIUM TOTAL	2003-2019 ongoing
TIN DISSOLVED	2014-2019 ongoing
TIN TOTAL	2014-2019 ongoing
TITANIUM DISSOLVED	2016-2019 ongoing
TITANIUM TOTAL	2016-2019 ongoing
TUNGSTEN DISSOLVED	2014-2019 ongoing
TUNGSTEN TOTAL	2014-2019 ongoing
URANIUM DISSOLVED	2003-2019 ongoing
URANIUM TOTAL	2003-2019 ongoing
VANADIUM DISSOLVED	1999-2019 ongoing
VANADIUM EXTRACTABLE	1975-1980
VANADIUM TOTAL	1983-1990, 1992-2019 ongoing
VANADIUM TOTAL RECOVERABLE	1980-1983

YTTERBIUM DISSOLVED	2019 ongoing
YTTERBIUM TOTAL	2019 ongoing
YTTRIUM- DISSOLVED	2014-2019 ongoing
YTTRIUM TOTAL	2014-2019 ongoing
ZINC DISSOLVED	1999-2019 ongoing
ZINC EXTRACTABLE	1973-1980
ZINC TOTAL	1983-1990, 1992-2019 ongoing
ZINC TOTAL RECOVERABLE	1980-1983
ZIRCONIUM DISSOLVED	2019 ongoing
ZIRCONIUM TOTAL	2019 ongoing

Acid Herbicides

Parameter	Years monitored
2-(2,4-DICHLOROPHOXY)-PROPIONIC ACID	1999-2019 ongoing
2,3,6-TBA	1985-1992, 1999-2017
2,4,5-T	1973-1992, 1999-2019 ongoing
2,4-D	1973-1992, 1999-2019 ongoing
2,4-DB	1973-1992, 1999-2017
ACIFLUORFEN	2019 ongoing
BROMOXYNIL	1988-1992, 1999-2019 ongoing
CLOPYRALID	2001-2019 ongoing
DICAMBA	1985-1992, 1999-2019 ongoing
DICHLORPROP	1973-1992
DINOSEB	2018-2019 ongoing
FENOPROP (SILVEX)	1978-1992, 1999-2001
FOMESAFEN	2019 ongoing
IMAZAMETHABENZ-METHYL (A)	2001-2019 ongoing
IMAZAMETHABENZ-METHYL (B)	2001-2015
IMAZAMOX	2016-2019 ongoing
IMAZAPYR	2016-2019 ongoing
IMAZETHAPYR	2001-2019 ongoing
MCPA	1973-1992, 1999-2019 ongoing
MCPB	1985-1992, 1999-2017
MCPP	2015-2019 ongoing
MECOPROP	2004-2015
PICLORAM	1974-1992, 1999-2019 ongoing
SILVEX	2001-2019 ongoing
TRICLOPYR	2015-2019 ongoing

Neutral Herbicides

Parameter	Years monitored
ATRAZINE	1999-2019 ongoing
ATRAZINE TOTAL	1985-1992
BENZOYLPROP-ETHYL	1985-1992, 1999-2019 ongoing
BUTYLATE	1999-2019 ongoing
DESETHYL ATRAZINE	1999-2019 ongoing
D-ETHYL SIMAZINE	1999-2019 ongoing
DIALLATE	1985-1992
DIALLATE I	1999-2019 ongoing
DIALLATE II	1999-2019 ongoing
DICLOFOP-METHYL	1985-1992, 1999-2019 ongoing
ETHALFLURALIN	2006-2019 ongoing
FENOXAPROP-P-ETHYL	2008-2019 ongoing
METOLACHLOR	1999-2019 ongoing
METRIBUZIN	1999-2019 ongoing
SIMAZINE	1999-2019 ongoing
TRIALLATE	1985-1992, 1999-2019 ongoing
TRIFLURALIN	1974-1977, 1979, 1985-1992, 1999-2019 ongoing

Organochlorine

Parameter	Years monitored
ALDRIN	1974-1990, 1999-2015
ALPHA-BENZENEHEXACHLORIDE	1975-1990, 1999-2019 ongoing
ALPHA-CHLORDANE	1975-1990, 1999-2019 ongoing
ALPHA-ENDOSULFAN	1974-1990, 1999-2019 ongoing
BETA-ENDOSULFAN	1974-1990, 1999-2019 ongoing
BETA-HCH	2005-2015
CIS-NONACHLOR	2005-2015
DIELDRIN	1974-1990, 1999-2019 ongoing
ENDOSULFAN SULPHATE TOTAL	2015-2019 ongoing
ENDRIN	1975-1990, 1999-2015
GAMMA-BHC (LINDANE)	1974-1990, 1999-2019 ongoing
GAMMA-CHLORDANE	1975-1990, 1999-2019 ongoing
HEPTACHLOR	1974-1990, 1999-2015
HEPTACHLOR EPOXIDE	1974-1990, 1999-2015
HEXACHLOROBENZENE	1978-1990, 1999-2019 ongoing
HEXACHLOROBUTADIENE	2005-2019 ongoing
METHOXYCHLOR (P,P'-METHOXYCHLOR).	1974-1990, 1999-2015
MIREX	1978-1990, 1999-2019 ongoing
O,P'-DDD	2005-2015

O,P'-DDE	2005-2015
O,P'-DDT	1978-1990, 1999-2019 ongoing
OXYCHLORDANE	2005-2015
P,P'-DDD (TDP)	1974-1990, 1999-2015
P,P'-DDE	1974-1990, 1999-2019 ongoing
P,P'-DDT	1974-1990, 1999-2019 ongoing
PCB-TOTAL	1999
PENTACHLOROANISOLE	2005-2015
PENTACHLOROBENZENE	2004-2019 ongoing
TRANS-NONACHLOR	2005-2019 ongoing

Glyphosate

Parameter	Years monitored
AMPA	2013-2019 ongoing
GLUFOSINATE	2013-2019 ongoing
GLYPHOSATE	2013-2019 ongoing

Neonicotinoids

Parameter	Years monitored
ACETAMIPRID	2016-2017
CLOTHIANIDIN	2016-2017
DINOTEFURAM	2016-2017
FLONICAMID	2016-2017
FLUPYRADIFURONE	2016-2017
IMIDACLOPRID	2016-2017
THIACLOPRID	2016-2017
THIAMETHOXAM	2016-2017

Carbamates

Parameter	Years monitored
BARBAN	1974-1977, 1985-1992

Organophosphates

Parameter	Years monitored
DIMETHOATE	1985-1988
MALATHION	1985-1988

Phenols

Parameter	Years monitored
2,3,4,5-TETRACHLOROPHENOL	1990
2,3,4,6-TETRACHLOROPHENOL	1990
2,3,4-TRICHLOROPHENOL	1990
2,3,5,6-TETRACHLOROPHENOL	1990
2,3,5-TRICHLOROPHENOL	1990
2,3,6-TRICHLOROPHENOL	1990
2,3-DICHLOROPHENOL	1990
2,4,5-TRICHLOROPHENOL	1990
2,4,6-TRICHLOROPHENOL	1990
2,4-DICHLOROPHENOL	1990
2,6-DICHLOROPHENOL	1990
2-CHLORO-5-METHYLPHENOL	1990
2-CHLOROPHENOL	1990
3,4,5-TRICHLOROPHENOL	1990
3,4-DICHLOROPHENOL	1990
3,5-DICHLOROPHENOL	1990
3-CHLOROPHENOL	1990
4-CHLORO-3-METHYLPHENOL	1990
4-CHLOROPHENOL	1990
PENTACHLOROPHENOL	1990
PHENOLIC MATERIAL	1973-1990

Aroclors

Parameter	Years monitored
AROCLOL	1980-1990
AROCLOL 1242	1981-1983
AROCLOL 1248	1973-1981

AROCLOR 1254	1973-1983
AROCLOR 1260	1973-1983

Other Parameters

Parameter	Years monitored
AROMATIC HYDROCARBONS	1974-1982
BETA RADIATION TOTAL	1975
CHLOROPHYLL A	1973-1990, 2018-2019 ongoing
CHLOROPHYLL A (CORRECTED)	2018-2019 ongoing
CYANIDE TOTAL	1974-1990
DISCHARGE DAILY MEAN	1973-1978
DISCHARGE MONTHLY MEAN	1973-1978
N-ALKANES C10 – C26	1974-1982
N-ALKYL SULPHONATES (LAS)	1974-1981
NITRILOTRIACETIC ACID – NTA	1974-1978
OIL AND GREASE	1974-1981
OXYGEN BIOCHEMICAL DEMAND	1974-1979
RADIUM RADIATION TOTAL RA-226	1975
STRONTIUM RADIATION TOTAL 90	1975

Churchill River

Station Name:	CHURCHILL RIVER BELOW WASAWAKASIK		
Station Number:	SA06EA0003		
Naquadat¹ Number:	00SA06EA0003		
WSC² Reference Number:	06EA002		
WSC Period of Record:	1928 – current		
Project Number:	115 (historically 315)		
Sampling Site:	Latitude 55°33'40.17"N	Longitude: 102°15'38.44"W	
Drainage Area:	283,350 km²		
Effective Drainage Area:	206,000 km²		
Ecozone³:	Boreal Shield		
Ecoregion³:	Churchill River Upland		
Water Body:	Churchill River		
Water Body Type:	River		
Watershed:	Central Churchill (SK/MA)_Lower		
Stakeholders:	PPWB		
Site Overview:	<p>The Churchill River originates at Peter Pond and Churchill lakes in northwest Saskatchewan. Major tributaries include the Beaver River and Reindeer River. It flows eastward for over 1600 km before entering Hudson's Bay, draining a total area of 283,350 km². In Saskatchewan the Churchill River is actually formed by a series of interconnected lakes. Control structures on the Churchill River that alter flows crossing the Saskatchewan/Manitoba border are limited to near the eastern border. The most significant control structure is the Island Falls Dam and Hydroelectric Station at the outlet of Sokatisewin Lake, located about 45 km upstream of the Saskatchewan/Manitoba boundary. This dam was created in 1929 and the depth of flooding at the dam is around 17m. Impacts of the control structures to the natural flow hydrograph at the provincial border are generally balanced on an annual basis, with observed impacts being minor seasonal flow redistribution. It should be noted that the ECCC flow station (06EA002) used to calculate the natural flow at the Saskatchewan/Manitoba border is located 45 km upstream from the provincial boundary. Flow entering the Churchill River between the ECCC station and the provincial boundary must be estimated and added to recorded flow monitored at the station in the determination of estimated natural flow at the boundary. The PPWB Water Quality Monitoring site on the South Churchill River is located near the outlet of Wasawakasik Lake, just downstream of the community of Sandy Bay.</p>		

	Trends are stable in this river for phosphorus and nitrogen constituents. The sampling frequency at this site is limited to quarterly.	
Sampling Location:	Sampling is done at same location year round and is accessed by airplane or helicopter.	
Station Established:	June 1974 – sampled at Island Falls until Dec 1974	
Period of Record:	1974 – current	
Data Located:	ACBIS	268 samples (January 2024)
Station Type:	PPWB	
Frequency of Observations:	Quarterly	

¹Data listing of water quality monitoring stations

²Water Survey of Canada

³<http://www.ecozones.ca/english/zone/index.html>

Site Status

Nutrients	2013	2018	Major Ions	2013	2018	Physicals	2013	2018
Ammonia Dissolved	↓	↔	Chloride Dissolved	↔	↔	Oxygen Dissolved	↔	↔
Nitrate as N	↓	↓	Fluoride Dissolved	↑	↔	pH – Field	↑	↑
Nitrogen Total	↔	↔	Sodium Dissolved/Filtered	↔	↑	Sodium Adsorption Ratio (SAR)	↑	↔
Phosphorous Total	↔	↔	Sulphate Dissolved	↔	↔	Total Suspended Solids (TSS)	↔	↔
Phosphorous Total Dissolved	↔	↔	Total Dissolved Solids (TDS)	↔	↑			

Metals	2013	2018	Metals	2013	2018	Metals	2013	2018
Aluminum Dissolved	↔	↔	Cobalt Dissolved	↔	↑	Nickel Dissolved	↔	↔
Aluminum Total	↓	↓	Cobalt Total	↓	↔	Nickel Total	↓	↓
Arsenic Dissolved	↔	↔	Copper Dissolved	↔	↔	Selenium Dissolved	NA	NA
Arsenic Total	↔	↔	Copper Total	↔	↓	Selenium Total	NA	NA
Barium Dissolved	↔	↑	Iron Dissolved	↔	↔	Silver Dissolved	NA	NA
Barium Total	↔	↔	Iron Total	↓	↓	Silver Total	NA	NA
Beryllium Dissolved	↑	↔	Lead Dissolved	↔	↓	Thallium Dissolved	↔	↔
Beryllium Total	↓	↓	Lead Total	↓	↓	Thallium Total	↔	↔
Boron Dissolved	↔	↑	Lithium Dissolved	↔	↔	Uranium Dissolved	↔	↑
Boron Total	↔	↔	Lithium Total	↔	↔	Uranium Total	↔	↔
Cadmium Dissolved	↔	↓	Manganese Dissolved	↓	↓	Vanadium Dissolved	↔	↔
Cadmium Total	↔	↓	Manganese Total	↓	↔	Vanadium Total	↓	↔
Chromium Dissolved	↔	↔	Molybdenum Dissolved	↔	↑	Zinc Dissolved	↔	↔
Chromium Total	↓	↓	Molybdenum Total	↔	↑	Zinc Total	↓	↔

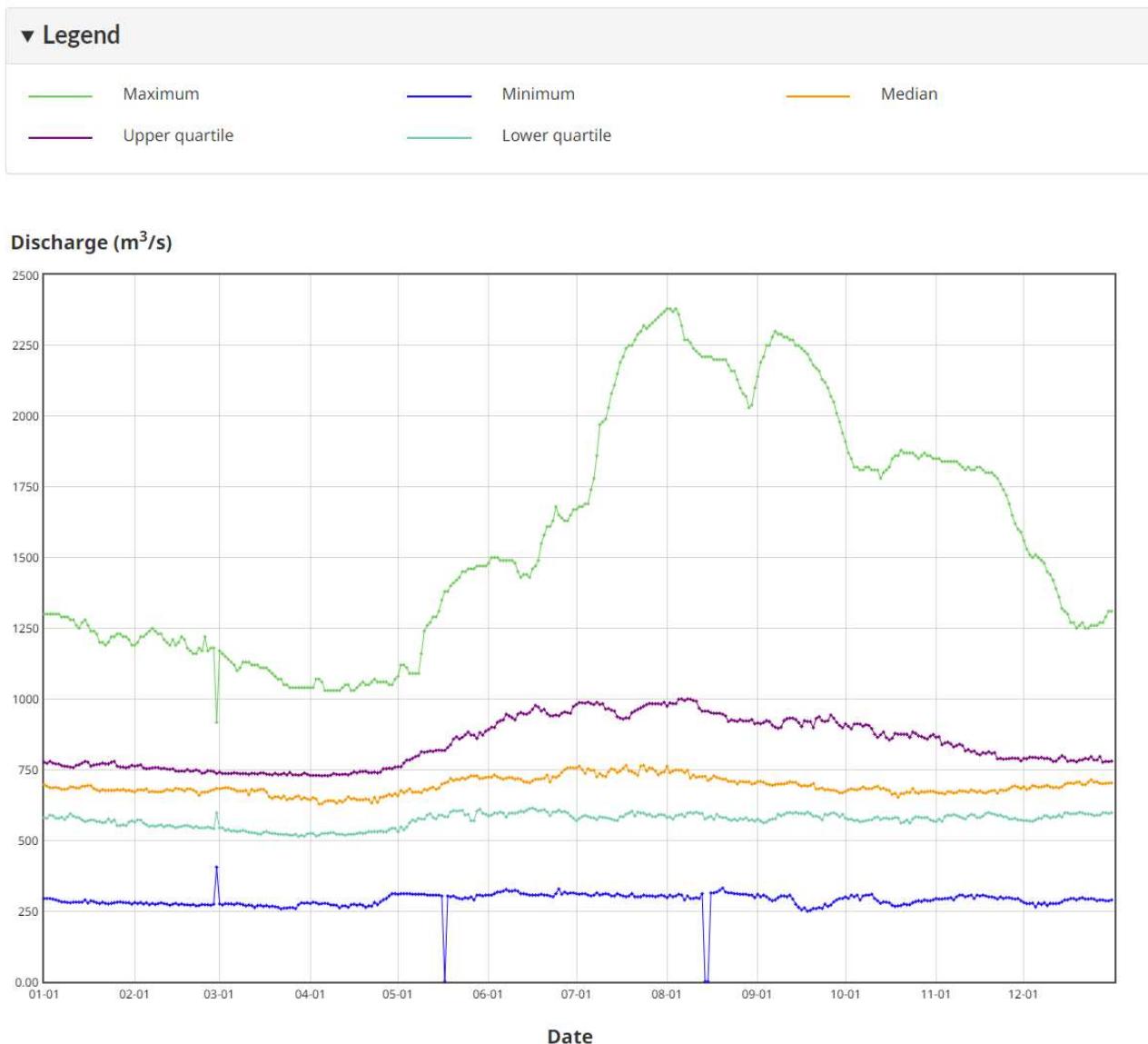
Typical range (minimum-maximum) in field observations and bacterial values:

Current (2009-2019)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance ($\mu\text{S}/\text{cm}$)	<i>E.Coli</i> (cfu/dL)	Fecal Coliform (cfu/dL)
<i>Winter (Dec-Feb)¹</i>	12.4-17.7	6.8-8.1	1-2	72-136	<1-2	<1-<2
<i>Spring (Mar-May)²</i>	11.6-12.8	7.5-8.1	3-33	70-109	<2-2	<2
<i>Summer (Jun-Aug)³</i>	8.3-10.5	7.0-8.3	3-20	89-140	<2-12	<2-15
<i>Fall (Sep-Nov)⁴</i>	10.8-12.7	6.8-8.2	2-6	65-142	<2-2	<2-9

¹Based on 10 samples²Based on 3 samples³Based on 20 samples⁴Based on 10 samples

Past (1989-2008)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance ($\mu\text{S}/\text{cm}$)	<i>E.Coli</i> (cfu/dL)	Fecal Coliform (cfu/dL)
<i>Winter (Dec-Feb)</i>	8.2-14.8	6.4-8.3	1-5	54-133	<2-2	<2-7
<i>Spring (Mar-May)</i>	6.6-16.2	6.9-8.2	1-6	52-111	<2	<2-3
<i>Summer (Jun-Aug)</i>	6.2-12.0	6.9-8.2	4-8	49-139	<2-2	<2-12
<i>Fall (Sep-Nov)</i>	6.4-18.0	6.8-8.5	0-6	52-160	<2	<2-2

Hydrometric Graphs (Water Survey of Canada, 1928-2021)



Hydrometric Data Website

https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=01&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Graph&stn=06EA002&dataType=Daily¶meterType=Flow&year=2021

Maps and diagrams

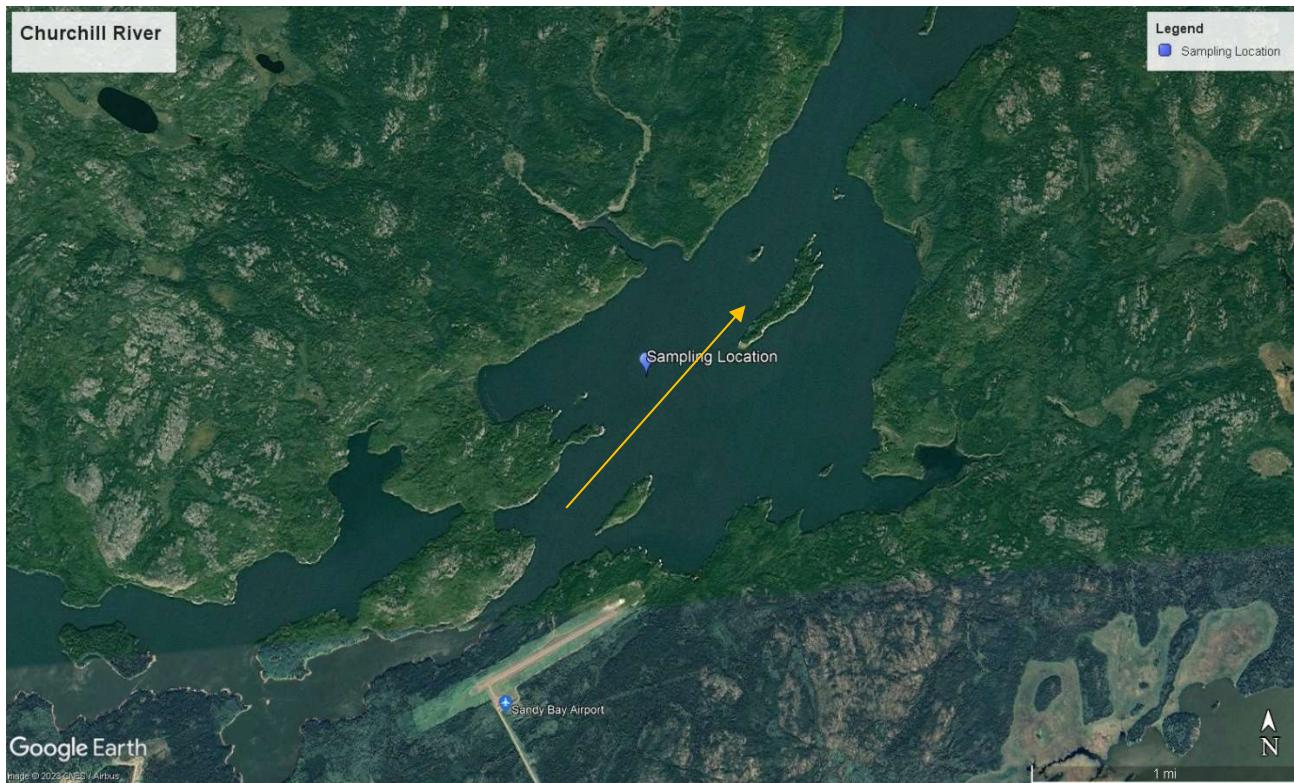


Figure 1. Satellite imagery of the sampling locations for Churchill River. North is at the top of the image. Direction of flow in this image from southwest to northeast and is depicted using the arrow.

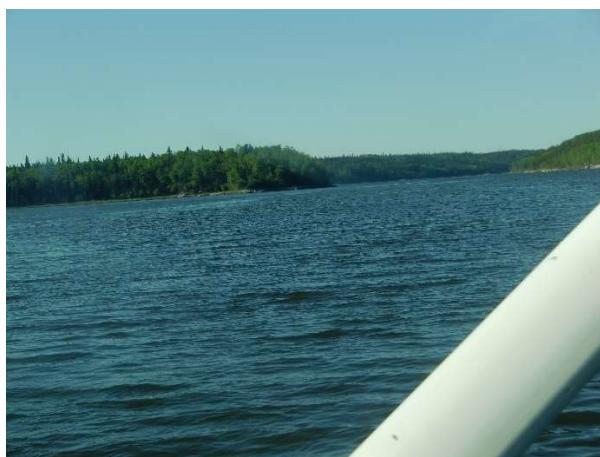


Figure 2. Churchill R., Upstream

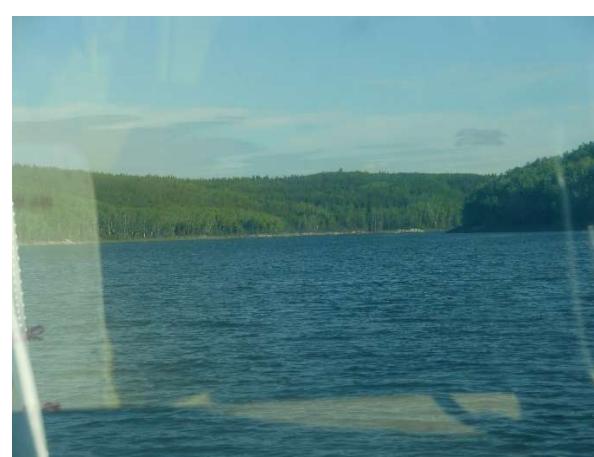


Figure 3. Churchill R., Downstream

Parameters Monitored

Note, spelling of parameter names purposely match the spelling in the database.

Field

Parameter	Years monitored
COLIFORMS FECAL	1974-1990, 1992, 2012-2019 ongoing
COLIFORMS TOTAL	1974-1990, 1992
E. COLI	2012-2019 ongoing
OXYGEN DISSOLVED	1974-2019 ongoing
PH (FIELD)	1974-2019 ongoing
SPECIFIC CONDUCTANCE (FIELD)	1974-2019 ongoing
TEMPERATURE WATER (FIELD)	1974-2019 ongoing
TURBIDITY (FIELD)	1979-2019 ongoing

Physicals

Parameter	Years monitored
ALKALINITY GRAN CACO3	2001-2002, 2004-2014
ALKALINITY PHENOLPHTHALEIN CACO3	1974-2014
ALKALINITY TOTAL CACO3	1974-2019 ongoing
COLOUR APPARENT	1974-1980
COLOUR TRUE	1981-2004
ODOUR THRESHOLD NUMBER	1974-1976, 1978
RESIDUE FILTERABLE	1979
RESIDUE FIXED FILTERABLE	1979
RESIDUE FIXED NONFILTRABLE	1974-2019 ongoing
RESIDUE NONFILTRABLE	1974-2019 ongoing
PH (LAB)	1974-2019 ongoing
SPECIFIC CONDUCTANCE (LAB)	1974-2019 ongoing
TEMPERATURE WATER (LAB)	1974-2000
TURBIDITY (LAB)	1974-2019 ongoing

Nutrients (Carbon, Nitrogen, Phosphorus)

Parameter	Years monitored
AMMONIA DISSOLVED	1987-2019 ongoing
AMMONIA TOTAL	1981-1987
AMMONIA UN-IONIZED (CALCD.)	1986-2019 ongoing
CARBON DISSOLVED INORGANIC	1978-1980
CARBON DISSOLVED ORGANIC	1978-2019 ongoing
CARBON PARTICULATE ORGANIC	1977-2019 ongoing
CARBON TOTAL INORGANIC	1974-1978

CARBON TOTAL ORGANIC	1974-1978
CARBON TOTAL ORGANIC (CALCD.)	1980-2019 ongoing
NITROGEN DISSOLVED NO ₃ & NO ₂	1974-2019 ongoing
NITROGEN PARTICULATE	1977-2019 ongoing
NITROGEN TOTAL (CALCD.)	1977-2019 ongoing
NITROGEN TOTAL DISSOLVED	1976-2019 ongoing
NITROGEN TOTAL KJELDAHL	1974-1978
PHOSPHATE DISSOLVED ORTHO	1981-1990
PHOSPHOROUS DISSOLVED ORTHO	1990-2019 ongoing
PHOSPHOROUS PARTICULATE (CALCD.)	1975-2019 ongoing
PHOSPHOROUS TOTAL	1974-2019 ongoing
PHOSPHOROUS TOTAL DISSOLVED	1975-2019 ongoing

Major Ions

Parameter	Years monitored
BICARBONATE (CALCD.)	1980-2019 ongoing
BROMIDE	2015-2016
CALCIUM DISSOLVED/FILTERED	1974-2019 ongoing
CARBONATE (CALCD.)	1980-2019 ongoing
CHLORIDE DISSOLVED	1974-2019 ongoing
FLUORIDE DISSOLVED	1974-2019 ongoing
FREE CO ₂ (CALCD.)	1984-2019 ongoing
HARDNESS NON-CARB. (CALCD.)	1984-2019 ongoing
HARDNESS TOTAL (CALCD.) CACO ₃	1980-2019 ongoing
HARDNESS TOTAL CACO ₃	1974-1975
HARDNESS TOTAL LAB (CALCD.) CACO ₃	1975-1978
HYDROXIDE (CALCD.)	1984-2019 ongoing
MAGNESIUM DISSOLVED/FILTERED	1974-2019 ongoing
POTASSIUM DISSOLVED/FILTERED	1974-2019 ongoing
SATURATION INDEX (CALCD.)	1985-2019 ongoing
SILICA REACTIVE	1974-1990
SIO ₂	1990-2019 ongoing
SODIUM ADSORPTION RATIO (CALCD.)	2001-2019 ongoing
SODIUM DISSOLVED/FILTERED	1974-2019 ongoing
SODIUM PERCENTAGE (CALCD.)	1984-2019 ongoing
STABILITY INDEX (CALCD.)	1985-2019 ongoing
SULPHATE DISSOLVED	1974-2019 ongoing
TOTAL DISSOLVED SOLIDS (CALCD.)	1980-1983, 1985-2019 ongoing

Metals

Parameter	Years monitored
ALUMINUM DISSOLVED	1984-2019 ongoing
ALUMINUM EXTRACTABLE	1974-1993
ALUMINUM TOTAL	1993-2019 ongoing
ANTIMONY DISSOLVED	2003-2019 ongoing
ANTIMONY TOTAL	2003-2019 ongoing
ARSENIC DISSOLVED	1974-1990, 2003-2019 ongoing
ARSENIC TOTAL	2000-2019 ongoing
BARIUM DISSOLVED	1999-2019 ongoing
BARIUM EXTRACTABLE	1974-1980
BARIUM TOTAL	1983-2019 ongoing
BARIUM TOTAL RECOVERABLE	1980-1983
BERYLLIUM DISSOLVED	1999-2019 ongoing
BERYLLIUM TOTAL	1999-2019 ongoing
BISMUTH DISSOLVED	2003-2019 ongoing
BISMUTH TOTAL	2003-2019 ongoing
BORON DISSOLVED	1974-1990, 1992-2019 ongoing
BORON TOTAL	2003-2019 ongoing
CADMIUM DISSOLVED	1999-2019 ongoing
CADMIUM EXTRACTABLE	1974-1980
CADMIUM TOTAL	1983-2019 ongoing
CADMIUM TOTAL RECOVERABLE	1980-1983
CERIUM DISSOLVED	2015-2019 ongoing
CERIUM TOTAL	2015-2019 ongoing
CESIUM DISSOLVED	2015-2019 ongoing
CESIUM TOTAL	2015-2019 ongoing
CHROMIUM DISSOLVED	1999-2019 ongoing
CHROMIUM EXTRACTABLE	1974-1983
CHROMIUM TOTAL	1983-2019 ongoing
COBALT DISSOLVED	1999-2019 ongoing
COBALT EXTRACTABLE	1978-1980
COBALT TOTAL	1983-2019 ongoing
COBALT TOTAL RECOVERABLE	1980-1983
COPPER DISSOLVED	1979, 1999-2019 ongoing
COPPER EXTRACTABLE	1974-1980
COPPER TOTAL	1983-2019 ongoing
COPPER TOTAL RECOVERABLE	1980-1983
EUROPIUM DISSOLVED	2019 ongoing
EUROPIUM TOTAL	2019 ongoing
GADOLINIUM DISSOLVED	2019 ongoing
GADOLINIUM TOTAL	2019 ongoing

GALLIUM DISSOLVED	2003-2019 ongoing
GALLIUM TOTAL	2003-2019 ongoing
GERMANIUM DISSOLVED	2019 ongoing
GERMANIUM TOTAL	2019 ongoing
HAFNIUM DISSOLVED	2019 ongoing
HAFNIUM TOTAL	2019 ongoing
HOLMIUM DISSOLVED	2019 ongoing
HOLMIUM TOTAL	2019 ongoing
INDIUM DISSOLVED	2019 ongoing
INDIUM TOTAL	2019 ongoing
IRIDIUM DISSOLVED	2019 ongoing
IRIDIUM TOTAL	2019 ongoing
IRON DISSOLVED	1979-2019 ongoing
IRON EXTRACTABLE	1974-1980, 1987
IRON TOTAL	1999-2019 ongoing
LANTHANUM DISSOLVED	2003-2019 ongoing
LANTHANUM TOTAL	2003-2019 ongoing
LEAD DISSOLVED	1979, 1999-2019 ongoing
LEAD EXTRACTABLE	1974-1980
LEAD TOTAL	1983-2019 ongoing
LEAD TOTAL RECOVERABLE	1980-1983
LITHIUM DISSOLVED	1999-2019 ongoing
LITHIUM TOTAL	1999-2019 ongoing
LUTETIUM DISSOLVED	2019 ongoing
LUTETIUM TOTAL	2019 ongoing
MANGANESE DISSOLVED	1979-2019 ongoing
MANGANESE EXTRACTABLE	1974-1980, 1987
MANGANESE TOTAL	1999-2019 ongoing
MERCURY EXTRACTABLE	1974-1979
MERCURY TOTAL	1979-1999
MOLYBDENUM DISSOLVED	1999-2019 ongoing
MOLYBDENUM TOTAL	1999-2019 ongoing
NEODYMIUM DISSOLVED	2019 ongoing
NEODYMIUM TOTAL	2019 ongoing
NICKEL DISSOLVED	1979, 1999-2019 ongoing
NICKEL EXTRACTABLE	1979-1980
NICKEL TOTAL	1983-2019 ongoing
NICKEL TOTAL RECOVERABLE	1980-1983
NIOBIUM DISSOLVED	2015-2019 ongoing
NIOBIUM TOTAL	2015-2019 ongoing
PLATINUM DISSOLVED	2015-2019 ongoing
PLATINUM TOTAL	2015-2019 ongoing
PRASEODYMIUM DISSOLVED	2019 ongoing

PRASEODYMIUM TOTAL	2019 ongoing
RUBIDIUM DISSOLVED	2003-2019 ongoing
RUBIDIUM TOTAL	2003-2019 ongoing
RUTHENIUM DISSOLVED	2019 ongoing
RUTHENIUM TOTAL	2019 ongoing
SAMARIUM DISSOLVED	2019 ongoing
SAMARIUM TOTAL	2019 ongoing
SCANDIUM DISSOLVED	2019 ongoing
SCANDIUM TOTAL	2019 ongoing
SELENIUM DISSOLVED	1974-1990, 2003-2019 ongoing
SELENIUM TOTAL	2000-2019 ongoing
SILVER DISSOLVED	2003-2019 ongoing
SILVER EXTRACTABLE	1974-1979
SILVER TOTAL	1999-2019 ongoing
STRONTIUM DISSOLVED	1999-2019 ongoing
STRONTIUM TOTAL	1999-2019 ongoing
TELLURIUM DISSOLVED	2019 ongoing
TELLURIUM TOTAL	2019 ongoing
TERBIUM DISSOLVED	2019 ongoing
TERBIUM TOTAL	2019 ongoing
THALLIUM DISSOLVED	2003-2019 ongoing
THALLIUM TOTAL	2003-2019 ongoing
TIN DISSOLVED	2015-2019 ongoing
TIN TOTAL	2015-2019 ongoing
TITANIUM DISSOLVED	2016-2019 ongoing
TITANIUM TOTAL	2016-2019 ongoing
TUNGSTEN DISSOLVED	2015-2019 ongoing
TUNGSTEN TOTAL	2015-2019 ongoing
URANIUM DISSOLVED	2003-2019 ongoing
URANIUM TOTAL	2003-2019 ongoing
VANADIUM DISSOLVED	1999-2019 ongoing
VANADIUM EXTRACTABLE	1975-1980
VANADIUM TOTAL	1983-2019 ongoing
VANADIUM TOTAL RECOVERABLE	1980-1983
YTTERBIUM DISSOLVED	2019 ongoing
YTTERBIUM TOTAL	2019 ongoing
YTTRIUM- DISSOLVED	2015-2019 ongoing
YTTRIUM TOTAL	2015-2019 ongoing
ZINC DISSOLVED	1979, 1999-2019 ongoing
ZINC EXTRACTABLE	1974-1980
ZINC TOTAL	1983-2019 ongoing
ZINC TOTAL RECOVERABLE	1980-1983
ZIRCONIUM DISSOLVED	2019 ongoing

ZIRCONIUM TOTAL	2019 ongoing
-----------------	--------------

Acid Herbicides

Parameter	Years monitored
2-(2,4-DICHLOROPHOXY)-PROPIONIC ACID	2009, 2013, 2017 ongoing*
2,3,6-TBA	1985-1990, 2009, 2013, 2017
2,4,5-T	1974-1990, 2009, 2013, 2017 ongoing*
2,4-D	1974-1990, 2009, 2013, 2017 ongoing*
2,4-DB	1974-1990, 2009, 2013, 2017
BROMOXYNIL	1988-1990, 2009, 2013, 2017 ongoing*
CLOPYRALID	2009, 2013, 2017 ongoing*
DICAMBA	1985-1990, 2009, 2013, 2017 ongoing*
DICHLORPROP	1974-1990
FENOPROP (SILVEX)	1978-1990
IMAZAMETHABENZ-METHYL (A)	2009, 2013, 2017 ongoing*
IMAZAMETHABENZ-METHYL (B)	2009, 2013
IMAZAMOX	2017 ongoing*
IMAZAPYR	2017 ongoing*
IMAZETHAPYR	2009, 2013, 2017 ongoing*
MCPA	1974-1990, 2009, 2013, 2017 ongoing*
MCPB	1985-1990, 2009, 2013, 2017
CPPP	2017 ongoing*
MECOPROP	2009, 2013
PICLORAM	1974-1982, 1985-1990, 2009, 2013, 2017 ongoing*
SILVEX	2009, 2013, 2017 ongoing*
TRICLOPYR	2017 ongoing*

*sampled on 4-year rotational basis

Neutral Herbicides

Parameter	Years monitored
ATRAZINE	2009, 2013, 2017 ongoing*
ATRAZINE TOTAL	1985-1990
BENZOYLPROP-ETHYL	1985-1990, 2009, 2013, 2017 ongoing*
BUTYLATE	2009, 2013, 2017 ongoing*
DESETHYL ATRAZINE	2009, 2013, 2017 ongoing*
D-ETHYL SIMAZINE	2009, 2013, 2017 ongoing*
DIALLATE	1985-1990
DIALLATE I	2009, 2013, 2017 ongoing*
DIALLATE II	2009, 2013, 2017 ongoing*
DICLOFOP-METHYL	1985-1990, 2009, 2013, 2017 ongoing*
ETHALFLURALIN	2009, 2013, 2017 ongoing*

FENOXAPROP-P-ETHYL	2009, 2013, 2017 ongoing*
METOLACHLOR	2009, 2013, 2017 ongoing*
METRIBUZIN	2009, 2013, 2017 ongoing*
SIMAZINE	2009, 2013, 2017 ongoing*
TRIALLATE	1985-1990, 2009, 2013, 2017 ongoing*
TRIFLURALIN	1974-1977, 1979, 1985-1990, 2009, 2013, 2017 ongoing*

*sampled on 4-year rotational basis

Organochlorine

Parameter	Years monitored
ALDRIN	1974-1990, 2009, 2013
ALPHA-BENZENEHEXACHLORIDE	1975-1990, 2009, 2013, 2017 ongoing*
ALPHA-CHLORDANE	1975-1990, 2009, 2013, 2017 ongoing*
ALPHA-ENDOSULFAN	1974-1990, 2009, 2013, 2017 ongoing*
BETA-ENDOSULFAN	1974-1990, 2009, 2013, 2017 ongoing*
BETA-HCH	2009, 2013
CIS-NONACHLOR	2009, 2013
DIELDRIN	1974-1990, 2009, 2013, 2017 ongoing*
ENDOSULFAN SULPHATE TOTAL	2017 ongoing*
ENDRIN	1975-1990, 2009, 2013
GAMMA-BHC (LINDANE)	1974-1990, 2009, 2013, 2017 ongoing*
GAMMA-CHLORDANE	1975-1990, 2009, 2013, 2017 ongoing*
HEPTACHLOR	1974-1990, 2009, 2013
HEPTACHLOR EPOXIDE	1974-1990, 2009, 2013
HEXACHLOROBENZENE	1978-1990, 2009, 2013, 2017 ongoing*
HEXACHLOROBUTADIENE	2009, 2013, 2017 ongoing*
METHOXYCHLOR (P,P'-METHOXYCHLOR).	1974-1990, 2009, 2013
MIREX	1978-1990, 2009, 2013, 2017 ongoing*
O,P'-DDD	2009, 2013
O,P'-DDE	2009, 2013
O,P'-DDT	1978-1990, 2009, 2013, 2017 ongoing*
OXYCHLORDANE	2009, 2013
P,P'-DDD (TDP)	1974-1990, 2009, 2013
P,P'-DDE	1974-1990, 2009, 2013, 2017 ongoing*
P,P'-DDT	1974-1990, 2009, 2013, 2017 ongoing*
PENTACHLOROANISOLE	2009, 2013
PENTACHLOROBENZENE	2009, 2013, 2017 ongoing*
TRANS-NONACHLOR	2009, 2013, 2017 ongoing*

*sampled on 4-year rotational basis

Glyphosate

Parameter	Years monitored
AMPA	2013, 2017 ongoing*
GLUFOSINATE	2013, 2017 ongoing*
GLYPHOSATE	2013, 2017 ongoing*

*sampled on 4-year rotational basis

Carbamates

Parameter	Years monitored
BARBAN	1974-1977, 1985-1990

Phenols

Parameter	Years monitored
PHENOLIC MATERIAL	1974-1990

Aroclors

Parameter	Years monitored
AROCLOR	1980-1990
AROCLOR 1242	1981-1983
AROCLOR 1248	1974-1980
AROCLOR 1254	1974-1983
AROCLOR 1260	1974-1983

Other Parameters

Parameter	Years monitored
AROMATIC HYDROCARBONS	1974-1982
BETA RADIATION TOTAL	1975
CHLOROPHYLL A	1974-1990, 2018-2019 ongoing
CHLOROPHYLL A (CORRECTED)	2018-2019 ongoing
CYANIDE TOTAL	1974-1990
N-ALKANES C10 - C26	1974-1982
N-ALKYL SULPHONATES (LAS)	1974-1981
NITRILOTRIACETIC ACID - NTA	1975-1978
OIL AND GREASE	1974-1981
OXYGEN BIOCHEMICAL DEMAND	1974-1979
STRONTIUM RADIATION TOTAL 90	1975

Qu'Appelle River

Station Name:	Qu'Appelle River Near Welby		
Station Number:	SA05JM0014		
Naquadat¹ Number:	00SA05JM0014		
WSC² Reference Number:	05JM001		
WSC Period of Record:	1942-1955, 1974 – current		
Project Number:	115 (historically 315)		
Sampling Site Open Water:	Latitude 50°29'28.15"N	Longitude: 101°33'31.91"W	
Sampling Site Ice Cover:	Latitude 50°29'27.75"N	Longitude: 101°33'30.48"W	
Drainage Area:	50900 km ²		
Effective Drainage Area:	17100 km ²		
Ecozone³:	Prairies		
Ecoregion³:	Aspen Parkland		
Water Body:	Qu'Appelle River		
Water Body Type:	River		
Watershed:	Qu'Appelle/Assiniboine River		
Stakeholders:	PPWB		
Site Overview:	<p>The Qu'Appelle River flows approximately 290 km from its headwaters near Lake Diefenbaker to its confluence with the Assiniboine River. The Qu'Appelle River Basin drains a gross area of 52,000 km²; however, less than 30% is effective drainage contributing flow in median runoff years. Most of the watershed has been developed for agriculture with a small proportion for towns, cities and industries. Major urban centres in the watershed include Regina and Moose Jaw. Multiple lakes occur along the length of the river. Significant upgrades in Regina's wastewater treatment plant occurred in 1977 and 2017 resulting in large reductions of nutrient loading to the river.</p> <p>Long-term increasing trends on this river include those for nitrogen constituents. The dissolved ion (SO₄) is also increasing.</p>		
Sampling Location:	<p>The PPWB water quality monitoring site on the Qu'Appelle River is located at Welby, Saskatchewan. Samples are collected from bridge on grid road(SK 600). Under Ice Cover conditions, samples are collected just downstream of bridge.</p>		
Station Established:	March, 1974		
Period of Record:	1974 current		
Station Type:	Network PPWB		
Data Located:	ACBIS (1975-present)	671 Samples (January 2024)	
Frequency of Observations:	Monthly		

¹ Data listing of water quality monitoring stations

²Water Survey of Canada

³<http://www.ecozones.ca/english/zone/index.html>

Site Status

Nutrients	2013	2018	Major Ions	2013	2018	Physicals	2013	2018
Ammonia Dissolved	↔	↑	Chloride Dissolved	↔	↓	Oxygen Dissolved	↔	↔
Nitrate as N	↔	↔	Fluoride Dissolved	↓	↓	pH – Field	↔	↑
Nitrogen Total	↑	↑	Sodium Dissolved/Filtered	↓	↓	Sodium Adsorption Ratio (SAR)	↓	↓
Phosphorous Total	↓	↔	Sulphate Dissolved	↑	↑	Total Suspended Solids (TSS)	↔	↑
Phosphorous Total Dissolved	↔	↔	Total Dissolved Solids (TDS)	↔	↔			

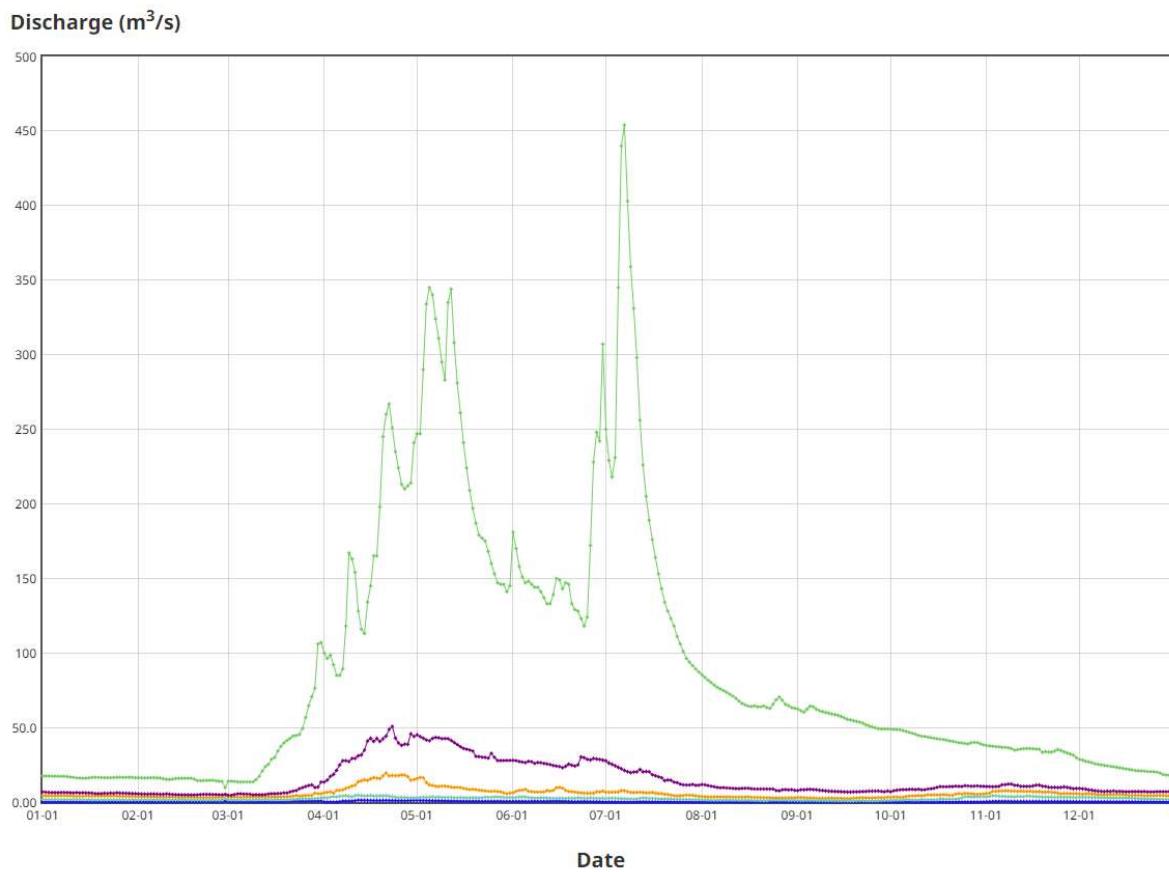
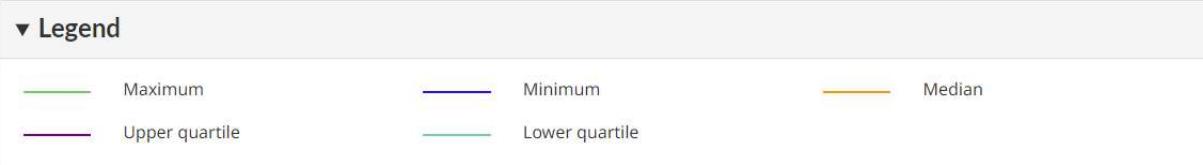
Metals	2013	2018	Metals	2013	2018	Metals	2013	2018
Aluminum Dissolved	↔	↓	Cobalt Dissolved	↑	↑	Nickel Dissolved	↑	↑
Aluminum Total	↓	↔	Cobalt Total	↔	↑	Nickel Total	↔	↑
Arsenic Dissolved	↑	↔	Copper Dissolved	↑	↔	Selenium Dissolved	↑	↑
Arsenic Total	↑	↔	Copper Total	↔	↔	Selenium Total	↑	↑
Barium Dissolved	↑	↑	Iron Dissolved	↔	↔	Silver Dissolved	>20%	>20%
Barium Total	↓	↑	Iron Total	↓	↔	Silver Total	↔	↑
Beryllium Dissolved	↑	↓	Lead Dissolved	↔	↔	Thallium Dissolved	↑	↔
Beryllium Total	↔	↔	Lead Total	↓	↑	Thallium Total	↔	↑
Boron Dissolved	↔	↓	Lithium Dissolved	↔	↔	Uranium Dissolved	↑	↑
Boron Total	↓	↓	Lithium Total	↔	↔	Uranium Total	↑	↑
Cadmium Dissolved	↓	↓	Manganese Dissolved	↑	↑	Vanadium Dissolved	↑	↑
Cadmium Total	↓	↔	Manganese Total	↔	↑	Vanadium Total	↔	↑
Chromium Dissolved	↔	↔	Molybdenum Dissolved	↔	↓	Zinc Dissolved	↓	↔
Chromium Total	↓	↔	Molybdenum Total	↓	↓	Zinc Total	↓	↑

Typical range (minimum-maximum) in field observations and bacterial values:

Current (2009-2019)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance (µS/cm)	E.Coli (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	0.7-13.4	6.5-9.5	4-82	671-1860	<2-19	<2-14
Spring (Mar-May)	5.4-13.0	7.2-8.7	5-873	489-1868	<2-1700	<2-56
Summer (Jun-Aug)	5.3-11.0	7.9-8.8	4-198	1004-1623	<10-382	<10-357
Fall (Sep-Nov)	8.7-14.0	7.5-8.8	7-106	1225-1715	<2-210	<2-210

Past (1989-2008)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance ($\mu\text{S}/\text{cm}$)	<i>E.Coli</i> (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	1.4-15.7	7.4-8.5	4-21	528-1962	4-3339	<2-16
Spring (Mar-May)	4.5-12.9	7.3-8.5	6-253	374-1771	2-2293	2-50
Summer (Jun-Aug)	4.6-11.7	7.7-9.0	12-289	698-2301	1-8200	2-300
Fall (Sep-Nov)	6.4-14.9	7.2-9.3	8-86	1076-1809	2-9100	<2-100

Hydrometric Graphs (Water Survey of Canada, 1915-2021)



Hydrometric Data Website

[https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=01&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Grap h&stn=05JM001&dataType=Daily¶meterType=Flow&year=2021](https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=01&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Graph&stn=05JM001&dataType=Daily¶meterType=Flow&year=2021)

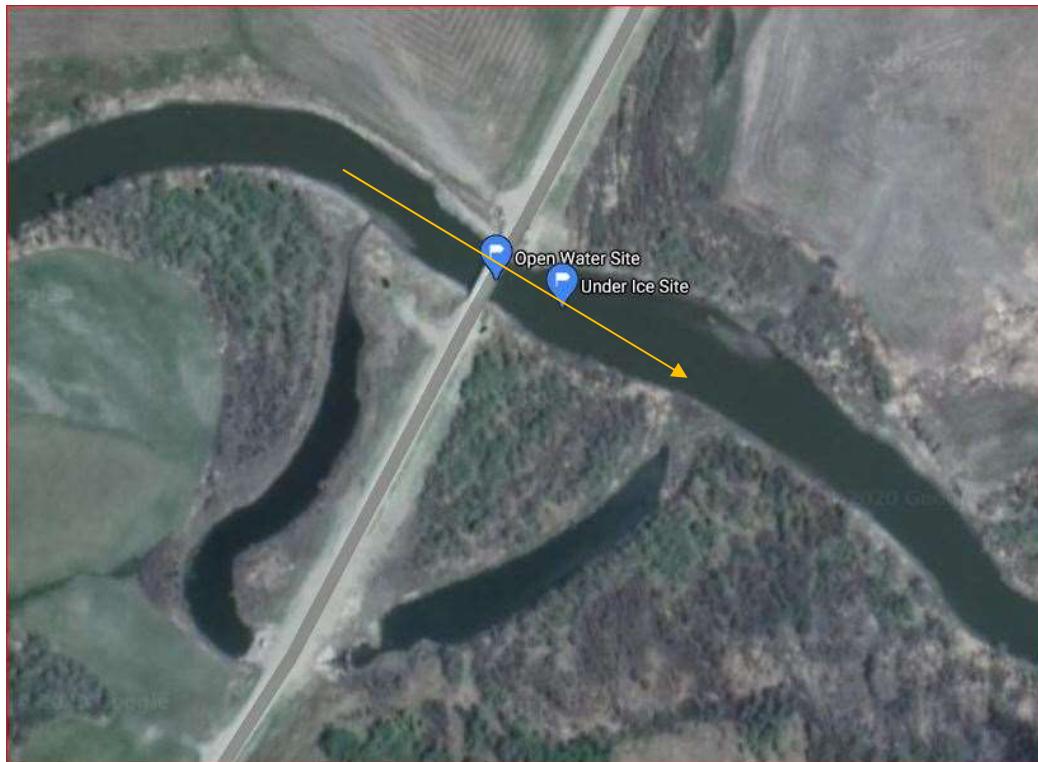
Maps & Diagrams

Figure 1. Satellite imagery of the sampling locations for the Qu'Appelle R. North is at the top of the image. Direction of flow in this image from northwest to southeast and is depicted using the arrow.



Figure 2. Qu'Appelle R., upstream view



Figure 3. Qu'Appelle R., downstream view

Parameters Monitored

Note, spelling of parameter names purposely match the spelling in the database.

Field

Parameter	Years monitored
COLIFORMS FECAL	1975-2019 ongoing
COLIFORMS TOTAL	1975-2004, 2011
E. COLI	1998-2019 ongoing
FECAL STREPTOCOCCI	2003
OXYGEN DISSOLVED	1975-2019 ongoing
PH (FIELD)	1975-2019 ongoing
SPECIFIC CONDUCTANCE (FIELD)	1975-2019 ongoing
TEMPERATURE WATER (FIELD)	1975-2019 ongoing
TURBIDITY (FIELD)	1979-2019 ongoing

Physicals

Parameter	Years monitored
ALKALINITY GRAN CACO3	2005-2014
ALKALINITY PHENOLPHTHALEIN CACO3	1975-2000, 2002-2014
ALKALINITY TOTAL CACO3	1975-2019 ongoing
COLOUR APPARENT	1975-1981
COLOUR TRUE	1981-2005
ODOUR THRESHOLD NUMBER	1976, 1978
RESIDUE FILTERABLE	1979
RESIDUE FIXED FILTERABLE	1979
RESIDUE FIXED NONFILTRABLE	1976-2019 ongoing
RESIDUE NONFILTRABLE	1975-2019 ongoing
TURBIDITY (LAB)	1975-2019 ongoing
PH (LAB)	1975-2019 ongoing
SPECIFIC CONDUCTANCE (LAB)	1975-2019 ongoing
TEMPERATURE WATER (LAB)	1975-2001

Nutrients (Carbon, Nitrogen, Phosphorus)

Parameter	Years monitored
AMMONIA DISSOLVED	1987-2019
AMMONIA TOTAL	1981-1987
AMMONIA UN-IONIZED (CALCD.)	1986-2019
CARBON DISSOLVED INORGANIC	1978-1980
CARBON DISSOLVED ORGANIC	1978-2019
CARBON PARTICULATE ORGANIC	1977-2019

CARBON TOTAL INORGANIC	1975-1978
CARBON TOTAL ORGANIC	1975-1978
CARBON TOTAL ORGANIC (CALCD.)	1980-1983, 1985-2019
CARBONACEOUS OXYGEN DEMAND BOD10	2016-2019
NITROGEN DISSOLVED NO ₃ & NO ₂	1975-2019
NITROGEN PARTICULATE	1977-2019
NITROGEN TOTAL (CALCD.)	1977-2019
NITROGEN TOTAL DISSOLVED	1975-2019
NITROGEN TOTAL KJELDAHL	1975-1978
PHOSPHATE DISSOLVED ORTHO	1981-1990
PHOSPHOROUS DISSOLVED ORTHO	1990-2019
PHOSPHOROUS PARTICULATE (CALCD.)	1975-2019
PHOSPHOROUS TOTAL	1975-2019
PHOSPHOROUS TOTAL DISSOLVED	1975-2019

Major Ions

Parameter	Years monitored
BICARBONATE (CALCD.)	1980-1983, 1985-2019 ongoing
BROMIDE	2015-2017
CALCIUM DISSOLVED/FILTERED	1975-2019 ongoing
CARBONATE (CALCD.)	1980-1983, 1985-2019 ongoing
CHLORIDE DISSOLVED	1975-2019 ongoing
FLUORIDE DISSOLVED	1975-2019 ongoing
FREE CO ₂ (CALCD.)	1985-2019 ongoing
HARDNESS NON-CARB. (CALCD.)	1985-2019 ongoing
HARDNESS TOTAL (CALCD.) CACO ₃	1980-1983, 1985-2019 ongoing
HARDNESS TOTAL LAB (CALCD.) CACO ₃	1975-1978
HYDROXIDE (CALCD.)	1985-2019 ongoing
MAGNESIUM DISSOLVED/FILTERED	1975-2019 ongoing
POTASSIUM DISSOLVED/FILTERED	1975-2019 ongoing
SATURATION INDEX (CALCD.)	1985-2019 ongoing
SILICA REACTIVE	1975-1990
SIO ₂	1990-2019 ongoing
SODIUM ADSORPTION RATIO (CALCD.)	2001-2019 ongoing
SODIUM DISSOLVED/FILTERED	1975-2019 ongoing
SODIUM PERCENTAGE (CALCD.)	1985-2019 ongoing
STABILITY INDEX (CALCD.)	1985-2019 ongoing
SULPHATE DISSOLVED	1975-2019 ongoing
TOTAL DISSOLVED SOLIDS (CALCD.)	1980-1983, 1985-2019 ongoing

Metals

Parameter	Years monitored
ALUMINUM DISSOLVED	1984-1990, 1992-2019 ongoing
ALUMINUM EXTRACTABLE	1975-1990, 1992-1993
ALUMINUM TOTAL	1993-2019 ongoing
ANTIMONY DISSOLVED	2003-2019 ongoing
ANTIMONY TOTAL	2003-2019 ongoing
ARSENIC DISSOLVED	1975-1990, 2003-2019 ongoing
ARSENIC TOTAL	2000-2019 ongoing
BARIUM DISSOLVED	1999-2019 ongoing
BARIUM EXTRACTABLE	1975-1980
BARIUM TOTAL	1983-1990, 1992-2019 ongoing
BARIUM TOTAL RECOVERABLE	1980-1983
BERYLLIUM DISSOLVED	1999-2019 ongoing
BERYLLIUM TOTAL	1997-2019 ongoing
BISMUTH DISSOLVED	2003-2019 ongoing
BISMUTH TOTAL	2003-2019 ongoing
BORON DISSOLVED	1976-2019 ongoing
BORON TOTAL	1997-1998, 2003-2019 ongoing
CADMIUM DISSOLVED	1999-2019 ongoing
CADMIUM EXTRACTABLE	1975-1980
CADMIUM TOTAL	1983-1990, 1992-2019 ongoing
CADMIUM TOTAL RECOVERABLE	1980-1983
CERIUM DISSOLVED	2014-2019 ongoing
CERIUM TOTAL	2014-2019 ongoing
CESIUM DISSOLVED	2014-2019 ongoing
CESIUM TOTAL	2014-2019 ongoing
CHROMIUM DISSOLVED	1999-2019 ongoing
CHROMIUM EXTRACTABLE	1975-1983
CHROMIUM TOTAL	1983-1990, 1992-2019 ongoing
COBALT DISSOLVED	1999-2019 ongoing
COBALT EXTRACTABLE	1978-1980
COBALT TOTAL	1983-1990, 1992-2019 ongoing
COBALT TOTAL RECOVERABLE	1980-1983
COPPER DISSOLVED	1979, 1999-2019 ongoing
COPPER EXTRACTABLE	1975-1980
COPPER TOTAL	1983-1990, 1992-2019 ongoing
COPPER TOTAL RECOVERABLE	1980-1983
EUROPIUM DISSOLVED	2019 ongoing
EUROPIUM TOTAL	2019 ongoing
GADOLINIUM DISSOLVED	2019 ongoing
GADOLINIUM TOTAL	2019 ongoing

GALLIUM DISSOLVED	2003-2019 ongoing
GALLIUM TOTAL	2003-2019 ongoing
GERMANIUM DISSOLVED	2019 ongoing
GERMANIUM TOTAL	2019 ongoing
HAFNIUM DISSOLVED	2019 ongoing
HAFNIUM TOTAL	2019 ongoing
HOLMIUM DISSOLVED	2019 ongoing
HOLMIUM TOTAL	2019 ongoing
INDIUM DISSOLVED	2019 ongoing
INDIUM TOTAL	2019 ongoing
IRIDIUM DISSOLVED	2019 ongoing
IRIDIUM TOTAL	2019 ongoing
IRON DISSOLVED	1979-1990, 1992-2019 ongoing
IRON EXTRACTABLE	1975-1980
IRON TOTAL	1997-2019 ongoing
LANTHANUM DISSOLVED	2003-2019 ongoing
LANTHANUM TOTAL	2003-2019 ongoing
LEAD DISSOLVED	1979, 1999-2019 ongoing
LEAD EXTRACTABLE	1975-1980
LEAD TOTAL	1983-1990, 1992-2019 ongoing
LEAD TOTAL RECOVERABLE	1980-1983
LITHIUM DISSOLVED	1999-2019 ongoing
LITHIUM TOTAL	1997-2019 ongoing
LUTETIUM DISSOLVED	2019 ongoing
LUTETIUM TOTAL	2019 ongoing
MANGANESE DISSOLVED	1979-1990, 1992-2019 ongoing
MANGANESE EXTRACTABLE	1975-1980
MANGANESE TOTAL	1997-2019 ongoing
MERCURY EXTRACTABLE	1975-1979
MERCURY TOTAL	1979-1990, 1992-1998
MOLYBDENUM DISSOLVED	1999-2019 ongoing
MOLYBDENUM TOTAL	1997-2019 ongoing
NEODYMIUM DISSOLVED	2019 ongoing
NEODYMIUM TOTAL	2019 ongoing
NICKEL DISSOLVED	1979, 1999-2019 ongoing
NICKEL EXTRACTABLE	1979-1980
NICKEL TOTAL	1983-1990, 1992-2019 ongoing
NICKEL TOTAL RECOVERABLE	1980-1983
NIOBIUM DISSOLVED	2014-2019 ongoing
NIOBIUM TOTAL	2014-2019 ongoing
PLATINUM DISSOLVED	2014-2019 ongoing
PLATINUM TOTAL	2014-2019 ongoing
PRASEODYMIUM DISSOLVED	2019 ongoing

PRASEODYMIUM TOTAL	2019 ongoing
RUBIDIUM DISSOLVED	2003-2019 ongoing
RUBIDIUM TOTAL	2003-2019 ongoing
RUTHENIUM DISSOLVED	2019 ongoing
RUTHENIUM TOTAL	2019 ongoing
SAMARIUM DISSOLVED	2019 ongoing
SAMARIUM TOTAL	2019 ongoing
SCANDIUM DISSOLVED	2019 ongoing
SCANDIUM TOTAL	2019 ongoing
SELENIUM DISSOLVED	1975-1990, 2003-2019 ongoing
SELENIUM TOTAL	2000-2019 ongoing
SILVER DISSOLVED	2003-2019 ongoing
SILVER EXTRACTABLE	1976-1979
SILVER TOTAL	1999-2019 ongoing
STRONTIUM DISSOLVED	1999-2019 ongoing
STRONTIUM TOTAL	1997-2019 ongoing
TELLURIUM DISSOLVED	2019 ongoing
TELLURIUM TOTAL	2019 ongoing
TERBIUM DISSOLVED	2019 ongoing
TERBIUM TOTAL	2019 ongoing
THALLIUM DISSOLVED	2003-2019 ongoing
THALLIUM TOTAL	2003-2019 ongoing
TIN DISSOLVED	2014-2019 ongoing
TIN TOTAL	2014-2019 ongoing
TITANIUM DISSOLVED	2016-2019 ongoing
TITANIUM TOTAL	2016-2019 ongoing
TUNGSTEN DISSOLVED	2014-2019 ongoing
TUNGSTEN TOTAL	2014-2019 ongoing
URANIUM DISSOLVED	2003-2019 ongoing
URANIUM TOTAL	2003-2019 ongoing
VANADIUM DISSOLVED	1999-2019 ongoing
VANADIUM EXTRACTABLE	1975-1980
VANADIUM TOTAL	1983-1990, 1992-2019 ongoing
VANADIUM TOTAL RECOVERABLE	1980-1983
YTTERBIUM DISSOLVED	2019 ongoing
YTTERBIUM TOTAL	2019 ongoing
YTTRIUM- DISSOLVED	2014-2019 ongoing
YTTRIUM TOTAL	2014-2019 ongoing
ZINC DISSOLVED	1979, 1999-2019 ongoing
ZINC EXTRACTABLE	1975-1980
ZINC TOTAL	1983-1990, 1992-2019 ongoing
ZINC TOTAL RECOVERABLE	1980-1983
ZIRCONIUM DISSOLVED	2019 ongoing

ZIRCONIUM TOTAL	2019 ongoing
-----------------	--------------

Acid Herbicides

Parameter	Years monitored
2-(2,4-DICHLOROPHOXY)-PROPIONIC ACID	2008, 2012, 2015-2019 ongoing
2,3,6-TBA	1985-1992, 2008, 2012, 2016-2017
2,4,5-T	1976-1992, 2008, 2012, 2015-2019 ongoing
2,4-D	1976-1992, 2008, 2012, 2015-2019 ongoing
2,4-DB	1976-1992, 2008, 2012, 2016-2017
ACIFLUORFEN	2019 ongoing
BROMOXYNIL	1988-1992, 2008, 2012, 2015-2019 ongoing
CLOPYRALID	2008, 2012, 2015-2019 ongoing
DICAMBA	1985-1992, 2008, 2012, 2015-2019 ongoing
DICHLORPROP	1976-1992
DINOSEB	2018-2019 ongoing
FENOPROP (SILVEX)	1978-1992
FOMESAFEN	2019 ongoing
IMAZAMETHABENZ-METHYL (A)	2008, 2012, 2015-2019 ongoing
IMAZAMETHABENZ-METHYL (B)	2008, 2012
IMAZAMOX	2016-2019 ongoing
IMAZAPYR	2016-2019 ongoing
IMAZETHAPYR	2008, 2012, 2015-2019 ongoing
MCPA	1976-1992, 2008, 2012, 2015-2019 ongoing
MCPB	1985-1992, 2008, 2012, 2015-2017
MCPP	2015-2019 ongoing
MECOPROP	2008, 2012
PICLORAM	1976-1992, 2008, 2012, 2015-2019 ongoing
SILVEX	2008, 2012, 2015-2019 ongoing
TRICLOPYR	2015-2019 ongoing

Neutral Herbicides

Parameter	Years monitored
ATRAZINE	2008, 2012, 2016 ongoing*
ATRAZINE TOTAL	1985-1992
BENZOYLPROP-ETHYL	1985-1992, 2008, 2012, 2016 ongoing*
BUTYLATE	2008, 2012, 2016 ongoing*
DESETHYL ATRAZINE	2008, 2012, 2016 ongoing*
D-ETHYL SIMAZINE	2008, 2012, 2016 ongoing*
DIALLATE	1985-1992
DIALLATE I	2008, 2012, 2016 ongoing*

DIALLATE II	2008, 2012, 2016 ongoing*
DICLOFOP-METHYL	1985-1992, 2008, 2012, 2016 ongoing*
ETHALFLURALIN	2008, 2012, 2016 ongoing*
FENOXAPROP-P-ETHYL	2008, 2012, 2016 ongoing*
METOLACHLOR	2008, 2012, 2016 ongoing*
METRIBUZIN	2008, 2012, 2016 ongoing*
SIMAZINE	2008, 2012, 2016 ongoing*
TRIALLATE	1985-1992, 2008, 2012, 2016 ongoing*
TRIFLURALIN	1976-1977, 1979, 1985-1992, 2008, 2012, 2016 ongoing*

*sampled on 4-year rotational basis

Organochlorine

Parameter	Years monitored
ALDRIN	1976-1990, 2008, 2012
ALPHA-BENZENEHEXACHLORIDE	1976-1990, 2008, 2012, 2016 ongoing*
ALPHA-CHLORDANE	1976-1990, 2008, 2012, 2016 ongoing*
ALPHA-ENDOSULFAN	1976-1990, 2008, 2012, 2016 ongoing*
BETA-ENDOSULFAN	1976-1990, 2008, 2012, 2016 ongoing*
BETA-HCH	2008, 2012
CIS-NONACHLOR	2008, 2012
DIELDRIN	1976-1990, 2008, 2012, 2016 ongoing*
ENDOSULFAN SULPHATE TOTAL	2016
ENDRIN	1976-1990, 2008, 2012
GAMMA-BHC (LINDANE)	1976-1990, 2008, 2012, 2016 ongoing*
GAMMA-CHLORDANE	1976-1990, 2008, 2012, 2016 ongoing*
HEPTACHLOR	1976-1990, 2008, 2012
HEPTACHLOR EPOXIDE	1976-1990, 2008, 2012
HEXACHLOROBENZENE	1978-1990, 2008, 2012, 2016 ongoing*
HEXACHLOROBUTADIENE	2008, 2012, 2016
METHOXYCHLOR (P,P'-METHOXYCHLOR).	1976-1990, 2008, 2012
MIREX	1978-1990, 2008, 2012, 2016 ongoing*
O,P'-DDD	2008, 2012
O,P'-DDE	2008, 2012
O,P'-DDT	1978-1990, 2008, 2012, 2016 ongoing*
OXYCHLORDANE	2008, 2012
P,P'-DDD (TDP)	1976-1990, 2008, 2012
P,P'-DDE	1976-1990, 2008, 2012, 2016 ongoing*
P,P'-DDT	1976-1990, 2008, 2012, 2016 ongoing*
PENTACHLOROANISOLE	2008, 2012
PENTACHLOROBENZENE	2008, 2012, 2016 ongoing*
TRANS-NONACHLOR	2008, 2012, 2016 ongoing*

*sampled on 4-year rotational basis

Glyphosate

Parameter	Years monitored
AMPA	2016, 2019 ongoing
GLUFOSINATE	2016, 2019 ongoing
GLYPHOSATE	2016, 2019 ongoing

Carbamates

Parameter	Years monitored
BARBAN	1976-1977, 1985-1992

Organophosphates

Parameter	Years monitored
DIMETHOATE	1985-1988
MALATHION	1985-1987

Phenols

Parameter	Years monitored
2,3,4,5-TETRACHLOROPHENOL	1990
2,3,4,6-TETRACHLOROPHENOL	1990
2,3,4-TRICHLOROPHENOL	1990
2,3,5,6-TETRACHLOROPHENOL	1990
2,3,5-TRICHLOROPHENOL	1990
2,3,6-TRICHLOROPHENOL	1990
2,3-DICHLOROPHENOL	1990
2,4,5-TRICHLOROPHENOL	1990
2,4,6-TRICHLOROPHENOL	1990
2,4-DICHLOROPHENOL	1990
2,6-DICHLOROPHENOL	1990
2-CHLORO-5-METHYLPHENOL	1990
2-CHLOROPHENOL	1990
3,4,5-TRICHLOROPHENOL	1990
3,4-DICHLOROPHENOL	1990
3,5-DICHLOROPHENOL	1990
3-CHLOROPHENOL	1990
4-CHLORO-3-METHYLPHENOL	1990
4-CHLOROPHENOL	1990
PENTACHLOROPHENOL	1990
PHENOLIC MATERIAL	1975-1990

Aroclors

Parameter	Years monitored
AROCLOR	1980-1990
AROCLOR 1242	1981-1983
AROCLOR 1248	1976-1981
AROCLOR 1254	1976-1983
AROCLOR 1260	1976-1983

Other Parameters

Parameter	Years monitored
AROMATIC HYDROCARBONS	1976-1982
CHLOROPHYLL A	1975-1990, 2018-2019 ongoing
CHLOROPHYLL A (CORRECTED)	2018-2019 ongoing
CYANIDE TOTAL	1975-1990
DISCHARGE DAILY MEAN	1975-1978
DISCHARGE MONTHLY MEAN	1975-1978
N-ALKANES C10 - C26	1976-1982
N-ALKYL SULPHONATES (LAS)	1975-1981
NITRILOTRIACETIC ACID - NTA	1976-1978
OIL AND GREASE	1975-1981
OXYGEN BIOCHEMICAL DEMAND	1975-1979
SALINITY	1996

Red Deer River near Erwood

Station Name:	Red Deer River near Erwood			
Station Number:	SA05LC0001			
Naquadat¹ Number:	00SA05LC0001			
WSC² Reference Number:	05LC001			
WSC Period of Record:	1953-1973 (seasonal) 1974 – current (continuous)	Active		
Project Number:	115 (historically 315)			
Sampling Site Open Water:	Latitude: 52°51'34.87"N	Longitude: 102°11'44.70"W		
Sampling Site Ice Cover:	Latitude: 52°51'33.73"N	Longitude: 102°11'44.88"W		
Drainage Area:	11000 km²			
Effective Drainage Area:	8550 km²			
Ecozone³:	Boreal Plains			
Ecoregion³:	Mid Boreal Lowland			
Water Body:	Red Deer River			
Water Body Type:	River			
Watershed:	Red Deer River			
Stakeholders:	PPWB			
Site Overview:	<p>The Red Deer River is a small, almost completely unregulated, eastward flowing system. The gross drainage area to the station is 10970 km² and effective drainage is 8778 km². Water quantity and quality monitoring is conducted at the PPWB Red Deer River near Erwood site.</p> <p>Trends are increasing in this river for phosphorus and nitrogen constituents. The dissolved ions (Cl, F, Na, SO₄) all show an increasing trend.</p>			
Sampling Location:	<p>Sampling location is at bridge on Highway 3, approximately 16 km east of Hudson Bay. During open water, samples collected from bridge. During winter, samples are collected upstream, approximately 30 m from bridge.</p>			
Station Established:	September 1966			
Period of Record:	1966 - present			
Data Located:	ACBIS	648 Samples (January 2024)		
Station Type:	Network, PPWB			
Frequency of Observations:	Monthly			

¹Data listing of water quality monitoring stations

²Water Survey of Canada

³<http://www.ecozones.ca/english/zone/index.html>

Site Status

Nutrients	2013	2018	Major Ions	2013	2018	Physicals	2013	2018
Ammonia Dissolved	↓	↑	Chloride Dissolved	↑	↑	Oxygen Dissolved	↔	↔
Nitrate as N	↓	↑	Fluoride Dissolved	↑	↑	pH – Field	↑	↑
Nitrogen Total	↑	↑	Sodium Dissolved/Filtered	↑	↑	Sodium Adsorption Ratio (SAR)	↑	↑
Phosphorous Total	↑	↑	Sulphate Dissolved	↔	↑	Total Suspended Solids (TSS)	↔	↔
Phosphorous Total Dissolved	↑	↑	Total Dissolved Solids (TDS)	↑	↑			

Metals	2013	2018	Metals	2013	2018	Metals	2013	2018
Aluminum Dissolved	↔	↔	Cobalt Dissolved	↔	↔	Nickel Dissolved	↔	↔
Aluminum Total	↔	↓	Cobalt Total	↔	↓	Nickel Total	↔	↔
Arsenic Dissolved	↔	↔	Copper Dissolved	↔	↔	Selenium Dissolved	↑	↔
Arsenic Total	↔	↓	Copper Total	↔	↓	Selenium Total	↑	↔
Barium Dissolved	↔	↔	Iron Dissolved	↓	↔	Silver Dissolved	>20%	>20%
Barium Total	↔	↔	Iron Total	↔	↓	Silver Total	↔	↓
Beryllium Dissolved	↑	↓	Lead Dissolved	↓	↓	Thallium Dissolved	↔	↔
Beryllium Total	↔	↓	Lead Total	↔	↓	Thallium Total	↔	↔
Boron Dissolved	↑	↔	Lithium Dissolved	↔	↔	Uranium Dissolved	↑	↑
Boron Total	↔	↔	Lithium Total	↔	↔	Uranium Total	↑	↑
Cadmium Dissolved	↔	↓	Manganese Dissolved	↔	↔	Vanadium Dissolved	↔	↔
Cadmium Total	↔	↓	Manganese Total	↔	↓	Vanadium Total	↔	↓
Chromium Dissolved	↔	↔	Molybdenum Dissolved	↔	↔	Zinc Dissolved	↔	↔
Chromium Total	↔	↓	Molybdenum Total	↔	↔	Zinc Total	↔	↔

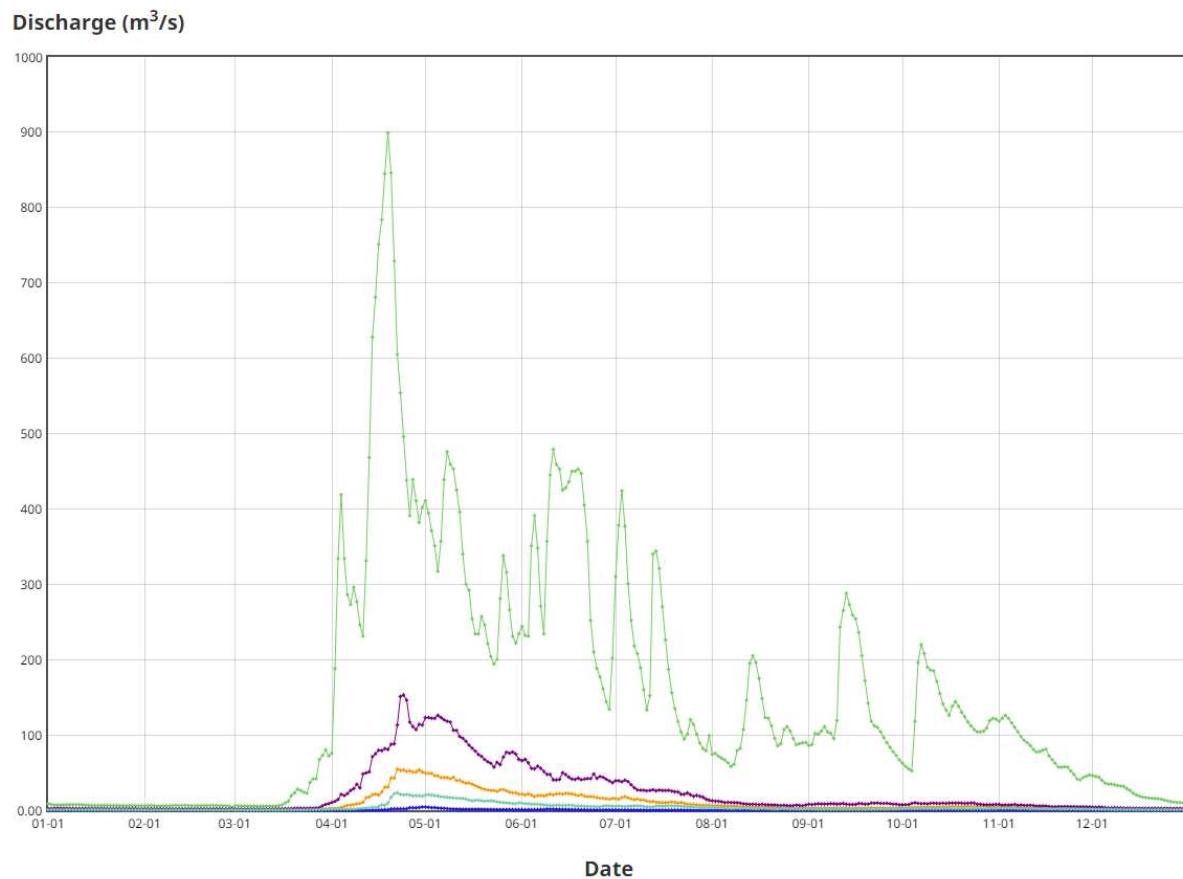
Typical range (minimum-maximum) in field observations and bacterial values:

Current (2009-2019)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance (µS/cm)	E.Coli (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	4.3-14.5	6.7-8.0	2-65	662-1223	<1-8	<1-9
Spring (Mar-May)	6.8-15.7	7.2-8.8	2-283	226-995	<2-150	<2-120
Summer (Jun-Aug)	6.8-14.5	8.0-8.7	1-89	372-798	<10-500	<10-1500
Fall (Sep-Nov)	7.3-16.6	7.5-8.8	1-23	380-722	<2-282	<2-330

Past (1989-2008)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance ($\mu\text{S}/\text{cm}$)	<i>E.Coli</i> (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	1.5-14.6	7.2-9.2	3-106	551-1255	<2-12	<2-4017
Spring (Mar-May)	7.1-13.9	7.0-8.7	3-99	259-1005	<2-45	<2-39
Summer (Jun-Aug)	5.5-14.8	7.2-8.8	2-29	242-960	16-55	11-119
Fall (Sep-Nov)	9.0-15.2	7.5-9.0	2-10	210-674	9-31	2-20

¹Two years of monitoring

Hydrometric Graphs (Water Survey of Canada, 1914-2021)



Hydrometric Data Website

[https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=01&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Grap h&stn=05LC001&dataType=Daily¶meterType=Flow&year=2021](https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=01&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Graph&stn=05LC001&dataType=Daily¶meterType=Flow&year=2021)

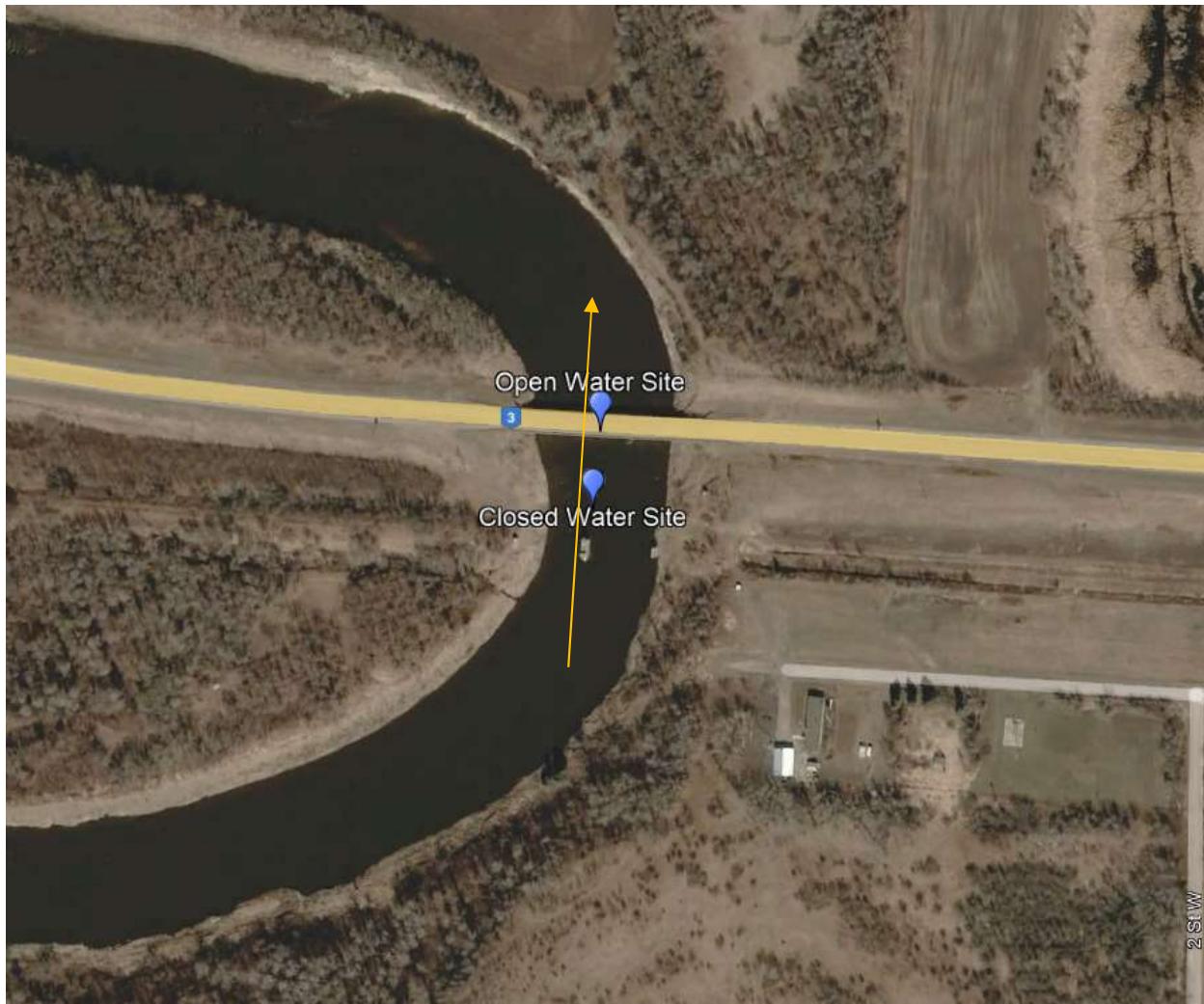
Maps & Diagrams

Figure 1. Image of the sampling locations for the Red Deer R. (Erwood). North is at the top of the image. Direction of flow in this image is from south to north and is depicted using the arrow.

**Figure 2. Red Deer R., upstream view****Figure 3. Red Deer R., downstream view**

Parameters Monitored

Note, spelling of parameter names purposely match the spelling in the database.

Field

Parameter	Years monitored
COLIFORMS FECAL	1974-1990, 2005-2019 ongoing
COLIFORMS TOTAL	1974-1990, 2011
E. COLI	2005-2019 ongoing
OXYGEN DISSOLVED (FIELD)	1973-2019 ongoing
PH (FIELD)	1972-2019 ongoing
SPECIFIC CONDUCTANCE (FIELD)	1972-2019 ongoing
TEMPERATURE WATER (FIELD)	1966-2019 ongoing
TURBIDITY (FIELD)	1979-2019 ongoing

Physicals

Parameter	Years monitored
ALKALINITY GRAN CACO3	2001-2002, 2005-2014
ALKALINITY PHENOLPHTHALEIN CACO3	1966-2014
ALKALINITY TOTAL CACO3	1966-2019 ongoing
COLOUR APPARENT	1966-1981
COLOUR TRUE	1981-2005
ODOUR THRESHOLD NUMBER	1974-1976, 1978
RESIDUE FILTERABLE	1967-1970, 1979
RESIDUE FIXED FILTERABLE	1967-1970, 1979
RESIDUE FIXED NONFILTRABLE	1967-2019 ongoing
RESIDUE NONFILTRABLE	1967-2019 ongoing
PH (LAB)	1966-2019 ongoing
SPECIFIC CONDUCTANCE (LAB)	1966-2019 ongoing

TEMPERATURE WATER (LAB)	1966-2000
TURBIDITY (LAB)	1966-2019 ongoing

Nutrients (Carbon, Nitrogen, Phosphorus)

Parameter	Years monitored
AMMONIA DISSOLVED	1966-1971, 1987-2019 ongoing
AMMONIA TOTAL	1970, 1974, 1981-1987
AMMONIA UN-IONIZED (CALCD.)	1986-2019 ongoing
CARBON DISSOLVED INORGANIC	1978-1980
CARBON DISSOLVED ORGANIC	1970, 1978-2019 ongoing
CARBON PARTICULATE ORGANIC	1977-2019 ongoing
CARBON TOTAL INORGANIC	1972-1978
CARBON TOTAL ORGANIC	1969-1978
CARBON TOTAL ORGANIC (CALCD.)	1980-1983, 1985-2019 ongoing
NITROGEN DISSOLVED NO ₃ & NO ₂	1966-2019 ongoing
NITROGEN PARTICULATE	1977-2019 ongoing
NITROGEN TOTAL (CALCD.)	1977-2019 ongoing
NITROGEN TOTAL DISSOLVED	1975-2019 ongoing
NITROGEN TOTAL KJELDAHL	1971-1978
PHOSPHATE DISSOLVED INORGANIC	1966-1973
PHOSPHATE DISSOLVED ORTHO	1972-1973, 1979, 1981-1990
PHOSPHATE TOTAL INORGANIC	1969
PHOSPHOROUS DISSOLVED ORTHO	1990-2019 ongoing
PHOSPHOROUS PARTICULATE (CALCD.)	1975-2019 ongoing
PHOSPHOROUS TOTAL	1971-2019 ongoing
PHOSPHOROUS TOTAL DISSOLVED	1975-2019 ongoing

Major Ions

Parameter	Years monitored
BICARBONATE (CALCD.)	1980-1983, 1985-2019 ongoing
BROMIDE	2015-2017
CALCIUM DISSOLVED/FILTERED	1966-2019 ongoing
CARBONATE (CALCD.)	1980-1983, 1985-2019 ongoing
CHLORIDE DISSOLVED	1966-2019 ongoing
FLUORIDE DISSOLVED	1966-2019 ongoing
FREE CO ₂ (CALCD.)	1985-2019 ongoing
HARDNESS NON-CARB. (CALCD.)	1985-2019 ongoing
HARDNESS TOTAL (CALCD.) CACO ₃	1980-1983, 1985-2019 ongoing
HARDNESS TOTAL CACO ₃	1967-1975
HARDNESS TOTAL LAB (CALCD.) CACO ₃	1975-1978

HYDROXIDE (CALCD.)	1985-2019 ongoing
MAGNESIUM DISSOLVED/FILTERED	1966, 1975-2019 ongoing
POTASSIUM DISSOLVED/FILTERED	1966-2019 ongoing
SATURATION INDEX (CALCD.)	1985-2019 ongoing
SILICA REACTIVE	1966-1990
SIO2	1990-2019 ongoing
SODIUM ADSORPTION RATIO (CALCD.)	2001-2019 ongoing
SODIUM DISSOLVED/FILTERED	1966-2019 ongoing
SODIUM PERCENTAGE (CALCD.)	1985-2019 ongoing
STABILITY INDEX (CALCD.)	1985-2019 ongoing
SULPHATE DISSOLVED	1966-2019 ongoing
SULPHIDE DISSOLVED	1986
TOTAL DISSOLVED SOLIDS (CALCD.)	1980-1983, 1985-2019 ongoing

Metals

Parameter	Years monitored
ALUMINUM DISSOLVED	1966-1968, 1984-1990, 1992-2019 ongoing
ALUMINUM EXTRACTABLE	1971-1990, 1992-1993
ALUMINUM TOTAL	1993-2019 ongoing
ANTIMONY DISSOLVED	2003-2019 ongoing
ANTIMONY TOTAL	2003-2019 ongoing
ARSENIC DISSOLVED	1971-1990, 2003-2019 ongoing
ARSENIC TOTAL	2000-2019 ongoing
BARIUM DISSOLVED	1971, 1999-2019 ongoing
BARIUM EXTRACTABLE	1972-1980
BARIUM TOTAL	1983-1990, 1992-2019 ongoing
BARIUM TOTAL RECOVERABLE	1980-1983
BERYLLIUM DISSOLVED	1999-2019 ongoing
BERYLLIUM TOTAL	1997, 1999-2019 ongoing
BISMUTH DISSOLVED	2003-2019 ongoing
BISMUTH TOTAL	2003-2019 ongoing
BORON DISSOLVED	1971-1990, 1992-2019 ongoing
BORON TOTAL	1992, 1997, 2003-2019 ongoing
CADMIUM DISSOLVED	1999-2019 ongoing
CADMIUM EXTRACTABLE	1971-1980
CADMIUM TOTAL	1983-1990, 1992-2019 ongoing
CADMIUM TOTAL RECOVERABLE	1980-1983
CERIUM DISSOLVED	2014-2019 ongoing
CERIUM TOTAL	2014-2019 ongoing
CESIUM DISSOLVED	2014-2019 ongoing
CESIUM TOTAL	2014-2019 ongoing

CHROMIUM DISSOLVED	1999-2019 ongoing
CHROMIUM EXTRACTABLE	1971-1983
CHROMIUM TOTAL	1983-1990, 1992-2019 ongoing
COBALT DISSOLVED	1999-2019 ongoing
COBALT EXTRACTABLE	1971-1974, 1978-1980
COBALT TOTAL	1983-1990, 1992-2019 ongoing
COBALT TOTAL RECOVERABLE	1980-1983
COPPER DISSOLVED	1972-1973, 1999-2019 ongoing
COPPER EXTRACTABLE	1971-1980
COPPER TOTAL	1983-1990, 1992-2019 ongoing
COPPER TOTAL RECOVERABLE	1980-1983
EUROPIUM DISSOLVED	2019 ongoing
EUROPIUM TOTAL	2019 ongoing
GADOLINIUM DISSOLVED	2019 ongoing
GADOLINIUM TOTAL	2019 ongoing
GALLIUM DISSOLVED	2003-2019 ongoing
GALLIUM TOTAL	2003-2019 ongoing
GERMANIUM DISSOLVED	2019 ongoing
GERMANIUM TOTAL	2019 ongoing
HAFNIUM DISSOLVED	2019 ongoing
HAFNIUM TOTAL	2019 ongoing
HOLMIUM DISSOLVED	2019 ongoing
HOLMIUM TOTAL	2019 ongoing
INDIUM DISSOLVED	2019 ongoing
INDIUM TOTAL	2019 ongoing
IRIDIUM DISSOLVED	2019 ongoing
IRIDIUM TOTAL	2019 ongoing
IRON DISSOLVED	1966-1973, 1980-1990, 1992-2019 ongoing
IRON EXTRACTABLE	1971-1980
IRON TOTAL	1997, 1999-2019 ongoing
LANTHANUM DISSOLVED	2003-2019 ongoing
LANTHANUM TOTAL	2003-2019 ongoing
LEAD DISSOLVED	1972-1973, 1999-2019 ongoing
LEAD EXTRACTABLE	1971-1980
LEAD TOTAL	1983-1990, 1992-2019 ongoing
LEAD TOTAL RECOVERABLE	1980-1983
LITHIUM DISSOLVED	1999-2019 ongoing
LITHIUM EXTRACTABLE	1972
LITHIUM TOTAL	1997, 1999-2019 ongoing
LUTETIUM DISSOLVED	2019 ongoing
LUTETIUM TOTAL	2019 ongoing
MANGANESE DISSOLVED	1966-1973, 1980-1990, 1992-2019 ongoing
MANGANESE EXTRACTABLE	1971-1980

MANGANESE TOTAL	1997, 1999-2019 ongoing
MERCURY EXTRACTABLE	1971-1979
MERCURY TOTAL	1979-1990, 1992-1999
MOLYBDENUM DISSOLVED	1999-2019 ongoing
MOLYBDENUM EXTRACTABLE	1973-1974
MOLYBDENUM TOTAL	1997, 1999-2019 ongoing
NEODYMIUM DISSOLVED	2019 ongoing
NEODYMIUM TOTAL	2019 ongoing
NICKEL DISSOLVED	1999-2019 ongoing
NICKEL EXTRACTABLE	1971-1974, 1979-1980
NICKEL TOTAL	1983-1990, 1992-2019 ongoing
NICKEL TOTAL RECOVERABLE	1980-1983
NIOBIAUM DISSOLVED	2014-2019 ongoing
NIOBIAUM TOTAL	2014-2019 ongoing
PLATINUM DISSOLVED	2014-2019 ongoing
PLATINUM TOTAL	2014-2019 ongoing
PRASEODYMIUM DISSOLVED	2019 ongoing
PRASEODYMIUM TOTAL	2019 ongoing
RUBIDIUM DISSOLVED	2003-2019 ongoing
RUBIDIUM TOTAL	2003-2019 ongoing
RUTHENIUM DISSOLVED	2019 ongoing
RUTHENIUM TOTAL	2019 ongoing
SAMARIUM DISSOLVED	2019 ongoing
SAMARIUM TOTAL	2019 ongoing
SCANDIUM DISSOLVED	2019 ongoing
SCANDIUM TOTAL	2019 ongoing
SELENIUM DISSOLVED	1974-1990, 2003-2019 ongoing
SELENIUM TOTAL	2000-2019 ongoing
SILVER DISSOLVED	2003-2019 ongoing
SILVER EXTRACTABLE	1972-1979
SILVER TOTAL	1971, 1999-2019 ongoing
STRONTIUM DISSOLVED	1999-2019 ongoing
STRONTIUM EXTRACTABLE	1971-1974
STRONTIUM TOTAL	1997, 1999-2019 ongoing
TELLURIUM DISSOLVED	2019 ongoing
TELLURIUM TOTAL	2019 ongoing
TERBIUM DISSOLVED	2019 ongoing
TERBIUM TOTAL	2019 ongoing
THALLIUM DISSOLVED	2003-2019 ongoing
THALLIUM EXTRACTABLE	1972
THALLIUM TOTAL	2003-2019 ongoing
TIN DISSOLVED	2014-2019 ongoing
TIN TOTAL	2014-2019 ongoing

TITANIUM DISSOLVED	2016-2019 ongoing
TITANIUM TOTAL	2016-2019 ongoing
TUNGSTEN DISSOLVED	2014-2019 ongoing
TUNGSTEN TOTAL	2014-2019 ongoing
URANIUM DISSOLVED	2003-2019 ongoing
URANIUM TOTAL	2003-2019 ongoing
VANADIUM DISSOLVED	1999-2019 ongoing
VANADIUM EXTRACTABLE	1975-1980
VANADIUM TOTAL	1983-1990, 1992-2019 ongoing
VANADIUM TOTAL RECOVERABLE	1980-1983
YTTERBIUM DISSOLVED	2019 ongoing
YTTERBIUM TOTAL	2019 ongoing
YTTRIUM- DISSOLVED	2014-2019 ongoing
YTTRIUM TOTAL	2014-2019 ongoing
ZINC DISSOLVED	1972-1973, 1999-2019 ongoing
ZINC EXTRACTABLE	1971-1980
ZINC TOTAL	1983-1990, 1992-2019 ongoing
ZINC TOTAL RECOVERABLE	1980-1983
ZIRCONIUM DISSOLVED	2019 ongoing
ZIRCONIUM TOTAL	2019 ongoing

Acid Herbicides

Parameter	Years monitored
2-(2,4-DICHLOROPHOXY)-PROPIONIC ACID	2009, 2013, 2017 ongoing*
2,3,6-TBA	1985-1992, 2009, 2013, 2017 ongoing*
2,4,5-T	1974-1992, 2009, 2013, 2017 ongoing*
2,4-D	1974-1992, 2009, 2013, 2017 ongoing*
2,4-DB	1974-1992, 2009, 2013, 2017 ongoing*
BROMOXYNIL	1988-1992, 2009, 2013, 2017 ongoing*
CLOPYRALID	2009, 2013, 2017 ongoing*
DICAMBA	1985-1992, 2009, 2013, 2017 ongoing*
DICHLORPROP	1974-1992
FENOPROP (SILVEX)	1978-1992
IMAZAMETHABENZ-METHYL (A)	2009, 2013, 2017 ongoing*
IMAZAMETHABENZ-METHYL (B)	2009, 2013
IMAZAMOX	2017 ongoing*
IMAZAPYR	2017 ongoing*
IMAZETHAPYR	2009, 2013, 2017 ongoing*
MCPA	1974-1992, 2009, 2013, 2017 ongoing*
MCPB	1985-1992, 2009, 2013, 2017 ongoing*
MCPP	2017 ongoing*

MECOPROP	2009, 2013
PICLORAM	1974-1982, 1985-1992, 2009, 2013, 2017 ongoing*
SILVEX	2009, 2013, 2017 ongoing*
TRICLOPYR	2017 ongoing*

*sampled on 4-year rotational basis

Neutral Herbicides

Parameter	Years monitored
ATRAZINE	2009, 2013, 2017 ongoing*
ATRAZINE TOTAL	1985-1992
BENZOYLPROP-ETHYL	1985-1992, 2009, 2013, 2017 ongoing*
BUTYRATE	2009, 2013, 2017 ongoing*
DESETHYL ATRAZINE	2009, 2013, 2017 ongoing*
D-ETHYL SIMAZINE	2009, 2013, 2017 ongoing*
DIALLATE	1985-1992
DIALLATE I	2009, 2013, 2017 ongoing*
DIALLATE II	2009, 2013, 2017 ongoing*
DICLOFOP-METHYL	1985-1992, 2009, 2013, 2017 ongoing*
ETHALFLURALIN	2009, 2013, 2017 ongoing*
FENOXAPROP-P-ETHYL	2009, 2013, 2017 ongoing*
METOLACHLOR	2009, 2013, 2017 ongoing*
METRIBUZIN	2009, 2013, 2017 ongoing*
SIMAZINE	2009, 2013, 2017 ongoing*
TRIALLATE	1985-1992, 2009, 2013, 2017 ongoing*
TRIFLURALIN	1974-1977, 1979, 1985-1992, 2009, 2013, 2017 ongoing*

*sampled on 4-year rotational basis

Organochlorine

Parameter	Years monitored
ALDRIN	1971, 1974-1990, 2009, 2013
ALPHA-BENZENEHEXACHLORIDE	1975-1990, 2009, 2013, 2017 ongoing*
ALPHA-CHLORDANE	1975-1990, 2009, 2013, 2017 ongoing*
ALPHA-ENDOSULFAN	1971, 1974-1990, 2009, 2013, 2017 ongoing*
BETA-ENDOSULFAN	1971, 1974-1990, 2009, 2013, 2017 ongoing*
BETA-HCH	2009, 2013
CIS-NONACHLOR	2009, 2013
DIELDRIN	1971, 1974-1990, 2009, 2013, 2017 ongoing*
ENDOSULFAN SULPHATE TOTAL	2017 ongoing*
ENDRIN	1971, 1975-1990, 2009, 2013
GAMMA-BHC (LINDANE)	1971, 1974-1990, 2009, 2013, 2017 ongoing*
GAMMA-CHLORDANE	1975-1990, 2009, 2013, 2017 ongoing*

HEPTACHLOR	1971, 1974-1990, 2009, 2013
HEPTACHLOR EPOXIDE	1971, 1974-1990, 2009, 2013
HEXACHLOROBENZENE	1978-1990, 2009, 2013, 2017 ongoing*
HEXACHLOROBUTADIENE	2009, 2013, 2017 ongoing*
METHOXYCHLOR (P,P'-METHOXYCHLOR).	1971, 1974-1990, 2009, 2013
MIREX	1978-1990, 2009, 2013, 2017 ongoing*
O,P'-DDD	2009, 2013
O,P'-DDE	2009, 2013
O,P'-DDT	1978-1990, 2009, 2013, 2017 ongoing*
OXYCHLORDANE	2009, 2013
P,P'-DDD (TDP)	1971, 1974-1990, 2009, 2013
P,P'-DDE	1971, 1974-1990, 2009, 2013, 2017 ongoing*
P,P'-DDT	1971, 1974-1990, 2009, 2013, 2017 ongoing*
PENTACHLOROANISOLE	2009, 2013
PENTACHLOROBENZENE	2009, 2013, 2017 ongoing*
TRANS-NONACHLOR	2009, 2013, 2017 ongoing*

*sampled on 4-year rotational basis

Glyphosate

Parameter	Years monitored
AMPA	2013, 2017 ongoing*
GLUFOSINATE	2013, 2017 ongoing*
GLYPHOSATE	2013, 2017 ongoing*

*sampled on 4-year rotational basis

Carbamates

Parameter	Years monitored
BARBAN	1974-1977, 1985-1992

Phenols

Parameter	Years monitored
2,3,4,5-TETRACHLOROPHENOL	1990
2,3,4,6-TETRACHLOROPHENOL	1990
2,3,4-TRICHLOROPHENOL	1990
2,3,5,6-TETRACHLOROPHENOL	1990
2,3,5-TRICHLOROPHENOL	1990
2,3,6-TRICHLOROPHENOL	1990
2,3-DICHLOROPHENOL	1990
2,4,5-TRICHLOROPHENOL	1990
2,4,6-TRICHLOROPHENOL	1990
2,4-DICHLOROPHENOL	1990

2,6-DICHLOROPHENOL	1990
2-CHLORO-5-METHYLPHENOL	1990
2-CHLOROPHENOL	1990
3,4,5-TRICHLOROPHENOL	1990
3,4-DICHLOROPHENOL	1990
3,5-DICHLOROPHENOL	1990
3-CHLOROPHENOL	1990
4-CHLORO-3-METHYLPHENOL	1990
4-CHLOROPHENOL	1990
PENTACHLOROPHENOL	1990
PHENOLIC MATERIAL	1971, 1973-1990

Aroclors

Parameter	Years monitored
AROCLOR	1980-1990
AROCLOR 1242	1981-1983
AROCLOR 1248	1973-1981
AROCLOR 1254	1973-1983
AROCLOR 1260	1973-1983

Other Parameters

Parameter	Years monitored
AROMATIC HYDROCARBONS	1974-1982
BETA RADIATION TOTAL	1975
CHLOROPHYLL A	1973-1990, 2018-2019 ongoing
CHLOROPHYLL A (CORRECTED)	2018-2019 ongoing
CYANIDE	1971
CYANIDE TOTAL	1974-1990
DISCHARGE DAILY MEAN	1966-1978
DISCHARGE INSTANTANEOUS	1967-1969
DISCHARGE MONTHLY MEAN	1966-1978
DISCHARGE MONTHLY MEAN PROVISION	1967-1969
N-ALKANES C10 - C26	1974-1982
N-ALKYL SULPHONATES (LAS)	1974-1981
NITRILOTRIACETIC ACID - NTA	1975-1978
OIL AND GREASE	1974-1981
OXYGEN BIOCHEMICAL DEMAND	1974-1979
OXYGEN CONSUMED	1966-1971
OXYGEN TOTAL COD	1970
STRONTIUM RADIATION TOTAL 90	1975

Saskatchewan River

Station Name:	SASKATCHEWAN RIVER ABOVE CARROT RIVER		
Station Number:	MA05KH0001		
Naquidat ¹ Number:	00MA05KH0001		
WSC ² Reference Number:	05KJ001		
WSC Period of Record:	1913 – current	Active	
Project Number:	115 (historically 315)		
Sampling Site Open Water:	Latitude 53°50'30.01"N	Longitude: 101°20'03.98"W	
Sampling Site Ice Cover:	Latitude 53°51'06.39"N	Longitude 101°20'36.68"W	
Drainage Area:	347627 km ²		
Effective Drainage Area:			
Ecozone ³ :	Mixed Grassland, Moist Mixed Grassland, Aspen Parkland and the Boreal Transition		
Ecoregion ³ :	Mid Boreal Lowland		
Water Body:	North Saskatchewan River and Carrot River		
Water Body Type:	River		
Watershed:	Saskatchewan River		
Stakeholders:	PPWB		
Site Overview:	<p>The Saskatchewan River originates at the confluence of the North and South Saskatchewan River, east of Price Albert, Saskatchewan. The station location is downstream of Cumberland Delta at The Pas, Manitoba, where the river has a gross drainage area of 347,627 km². Flow in the Saskatchewan River is controlled by the existence of reservoirs located along the North Saskatchewan R. in Alberta and the South Saskatchewan R. (Lake Diefenbaker) and the Saskatchewan River (Tobin Lake). The PPWB water quality monitoring site on the Saskatchewan River is located upstream of its confluence with the Carrot River.</p> <p>Trends are decreasing in this river for phosphorus and nitrogen constituents. Dissolved ions (Na, Cl, SO₄) all show increasing trends.</p>		
Ice Cover sampling location	Sampling is done near Moose Park 20 metres offshore		
Open water sampling location	Sampling is taken from a boat just upstream of the confluence of the Saskatchewan and Carrot River.		
Station Established:	1974		
Period of Record:	1974 – current		
Data Located:	ACBIS	781 samples (January 2024)	
Station Type:	PPWB		
Frequency of Observations:	Monthly		

¹ Data listing of water quality monitoring stations

² Water Survey of Canada

³ <http://www.ecozones.ca/english/zone/index.html> Site Status

Site Status

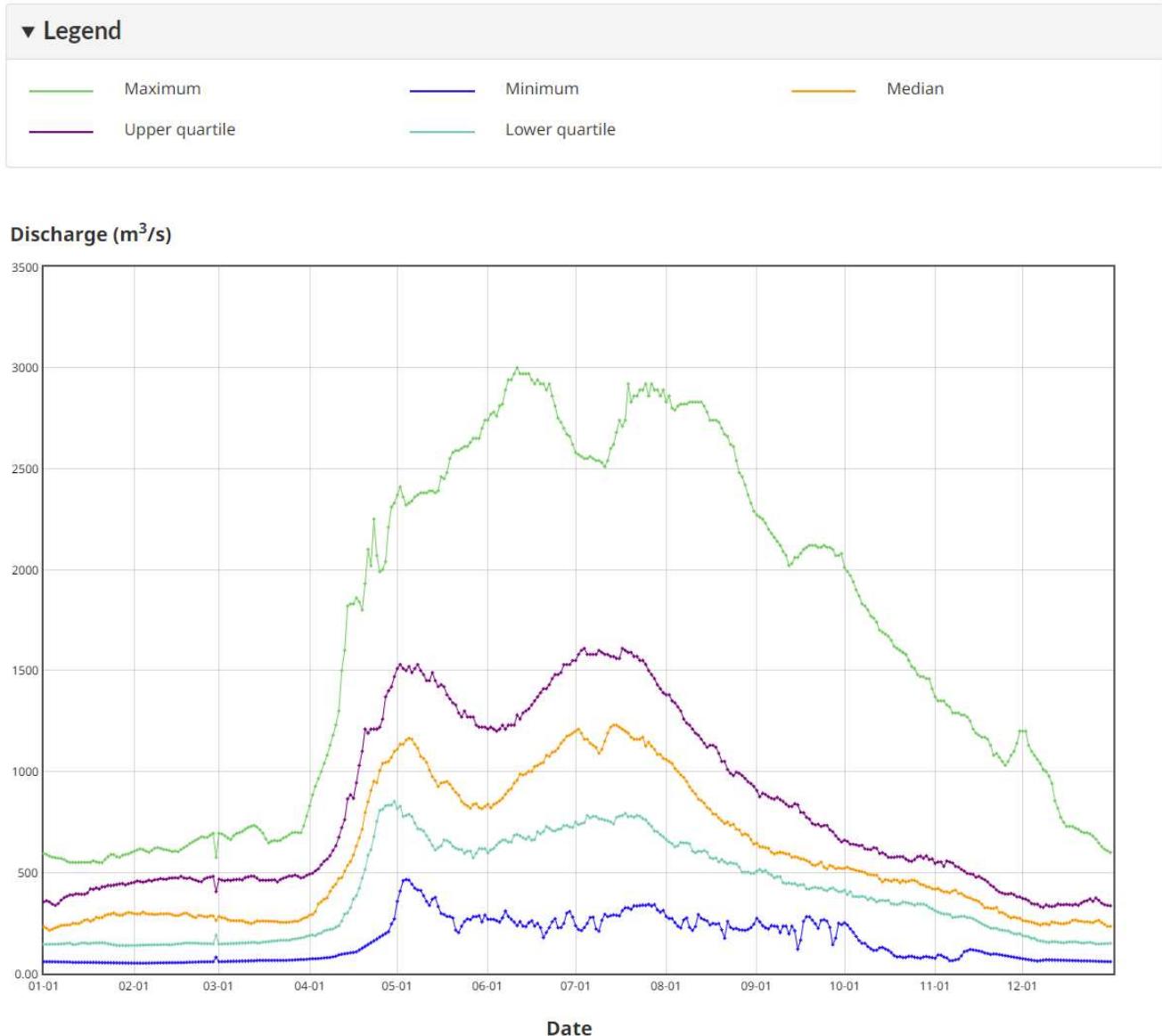
Nutrients	2013	2018	Major Ions	2013	2018	Physicals	2013	2018
Ammonia Dissolved	↓	↔	Chloride Dissolved	↑	↑	Oxygen Dissolved	↔	↔
Nitrate as N	↓	↓	Fluoride Dissolved	↑	↓	pH – Field	↑	↑
Nitrogen Total	↔	↔	Sodium Dissolved/Filtered	↑	↑	Sodium Adsorption Ratio (SAR)	↑	↑
Phosphorous Total	↓	↓	Sulphate Dissolved	↑	↑	Total Suspended Solids (TSS)	↔	↓
Phosphorous Total Dissolved	↓	↓	Total Dissolved Solids (TDS)	↑	↑			
Metals	2013	2018	Metals	2013	2018	Metals	2013	2018
Aluminum Dissolved	↔	↔	Cobalt Dissolved	↔	↑	Nickel Dissolved	↔	↔
Aluminum Total	↓	↓	Cobalt Total	↓	↔	Nickel Total	↓	↓
Arsenic Dissolved	↔	↔	Copper Dissolved	↑	↔	Selenium Dissolved	↑	↔
Arsenic Total	↓	↔	Copper Total	↓	↔	Selenium Total	↑	↔
Barium Dissolved	↔	↔	Iron Dissolved	↔	↑	Silver Dissolved	>20%	>20%
Barium Total	↓	↓	Iron Total	↓	↔	Silver Total	↓	↔
Beryllium Dissolved	↑	↔	Lead Dissolved	↔	↓	Thallium Dissolved	↑	↔
Beryllium Total	↓	↔	Lead Total	↓	↔	Thallium Total	↓	↔
Boron Dissolved	↑	↑	Lithium Dissolved	↑	↑	Uranium Dissolved	↑	↑
Boron Total	↑	↑	Lithium Total	↑	↑	Uranium Total	↑	↑
Cadmium Dissolved	↔	↓	Manganese Dissolved	↑	↔	Vanadium Dissolved	↔	↔
Cadmium Total	↓	↓	Manganese Total	↓	↔	Vanadium Total	↓	↔
Chromium Dissolved	↔	↓	Molybdenum Dissolved	↔	↓	Zinc Dissolved	↔	↔
Chromium Total	↓	↓	Molybdenum Total	↔	↓	Zinc Total	↓	↔

Typical range (minimum-maximum) in field observations and bacterial values:

Current (2009-2019)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance (µS/cm)	E.Coli (cfu/dL)	Fecal Coliform (cfu/dL)
Winter (Dec-Feb)	9.9-13.9	7.1-8.7	3-12	388-572	<2-25	<2-<10
Spring (Mar-May)	8.9-13.4	7.5-8.7	3-77	312-764	<2-63	<2-<10
Summer (Jun-Aug)	4.2-11.0	7.7-8.6	4-126	286-488	6-38	6-50
Fall (Sep-Nov)	8.6-15.4	7.0-8.8	9-157	256-448	<2-88	<2-150
Past (1989-2008)	DO (mg/L)	pH (pH units)	Turbidity (NTU)	Specific Conductance (µS/cm)	E.Coli (cfu/dL)	Fecal Coliform (cfu/dL)

<i>Winter (Dec-Feb)</i>	3.5-16.9	7.2-8.8	4-31	278-942	<1-332	<1-10
<i>Spring (Mar-May)</i>	4.8-15.9	7.2-8.5	4-86	255-481	<2-1554	<2-7
<i>Summer (Jun-Aug)</i>	4.2-10.8	7.1-8.7	14-100	283-992	<2-4200	<2-100
<i>Fall (Sep-Nov)</i>	7.0-15.0	7.0-9.0	7-137	294-853	2-3000	<2-84

Hydrometric Graphs (Water Survey of Canada, 1913-2021)



Hydrometric Data Website

[https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=01&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Grap h&stn=05KJ001&dataType=Daily¶meterType=Flow&year=2021](https://wateroffice.ec.gc.ca/report/statistics_e.html?start_year=1850&end_year=2023&start_month=01&end_month=12&y1Max=1&y1Min=1&median1=1&upper1=1&lower1=1&scale=normal&mode=Graph&stn=05KJ001&dataType=Daily¶meterType=Flow&year=2021)

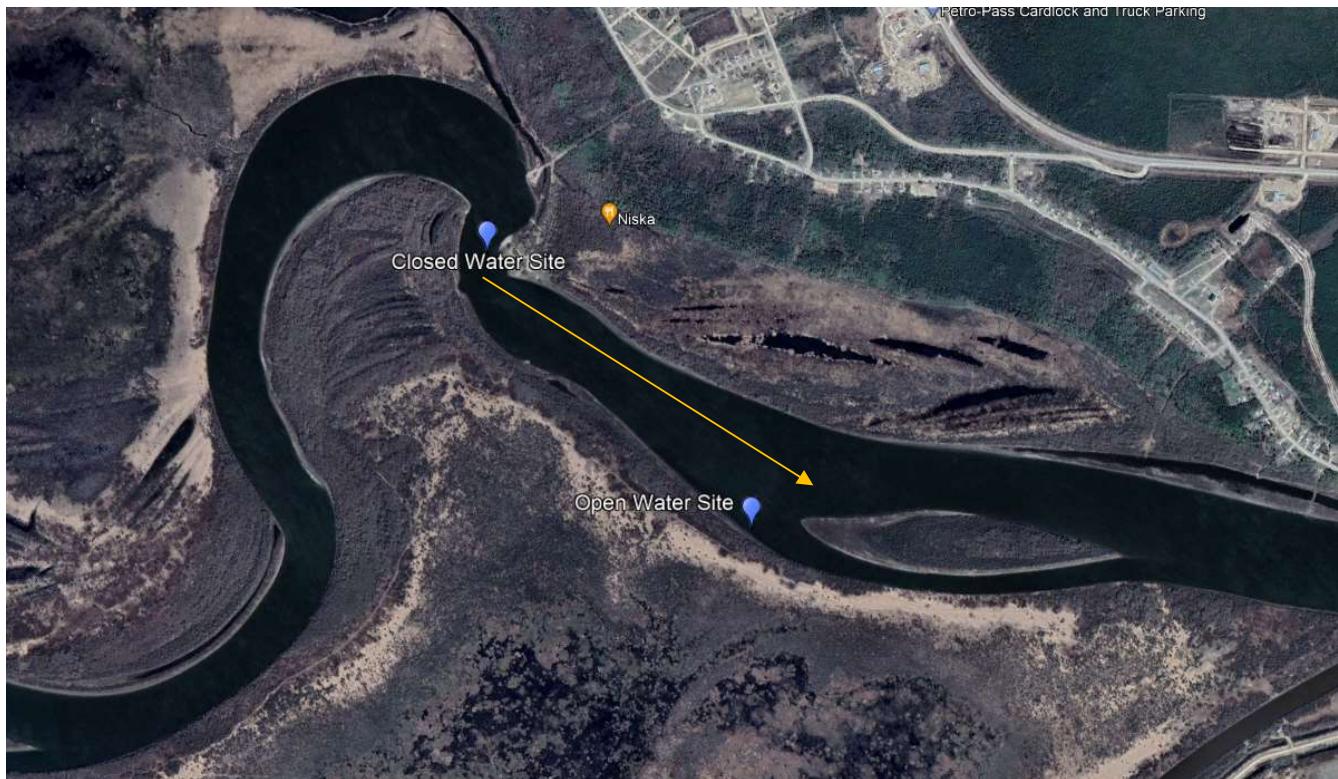
Maps and diagrams

Figure 1. Satellite imagery of the sampling locations for the Saskatchewan River above Carrot River. North is at the top of the image. Direction of flow in this image from northwest to southeast and is depicted using the arrow.

**Figure 2. Saskatchewan R., upstream view****Figure 3. Saskatchewan R., downstream view**

Parameters Monitored

Note, spelling of parameter names purposely match the spelling in the database.

Field

Parameter	Years monitored
COLIFORMS FECAL	1974-2019 ongoing
COLIFORMS TOTAL	1974-2005, 2010-2012
E. COLI	1998-2019 ongoing
FECAL STREPTOCOCCI	1990-2015
OXYGEN DISSOLVED	1974-2019 ongoing
PH (FIELD)	1974-2019 ongoing
SPECIFIC CONDUCTANCE (FIELD)	1974-2019 ongoing
TEMPERATURE WATER (FIELD)	1974-2019 ongoing
TURBIDITY (FIELD)	1979-2019 ongoing

Physicals

Parameter	Years monitored
ALKALINITY GRAN CACO3	2001-2002, 2004-2014
ALKALINITY PHENOLPHTHALEIN CACO3	1974-2014
ALKALINITY TOTAL CACO3	1974-2019 ongoing
COLOUR APPARENT	1974-1981
COLOUR TRUE	1974, 1981-2005
ODOUR THRESHOLD NUMBER	1974-1976, 1978
RESIDUE FILTERABLE	1979
RESIDUE FIXED FILTERABLE	1979
RESIDUE FIXED NONFILTRABLE	1974-2019 ongoing
RESIDUE NONFILTRABLE	1974-2019 ongoing

PH (LAB)	1974-2019 ongoing
SPECIFIC CONDUCTANCE (LAB)	1974-2019 ongoing
TEMPERATURE WATER (LAB)	1974-2001
TURBIDITY (LAB)	1974-2019 ongoing

Nutrients (Carbon, Nitrogen, Phosphorus)

Parameter	Years monitored
AMMONIA DISSOLVED	1987-2019 ongoing
AMMONIA TOTAL	1974, 1981-1987
AMMONIA UN-IONIZED (CALCD.)	1986-2019 ongoing
CARBON DISSOLVED INORGANIC	1978-1980
CARBON DISSOLVED ORGANIC	1978-2019 ongoing
CARBON PARTICULATE ORGANIC	1977-2019 ongoing
CARBON TOTAL INORGANIC	1974-1978
CARBON TOTAL ORGANIC	1974-1978
CARBON TOTAL ORGANIC (CALCD.)	1980-1983, 1985-2019 ongoing
NITROGEN DISSOLVED NO ₃ & NO ₂	1974-2019 ongoing
NITROGEN PARTICULATE	1977-2019 ongoing
NITROGEN TOTAL (CALCD.)	1977-2019 ongoing
NITROGEN TOTAL DISSOLVED	1976-2019 ongoing
NITROGEN TOTAL KJELDAHL	1974-1978
PHOSPHATE DISSOLVED ORTHO	1981-1990
PHOSPHOROUS DISSOLVED ORTHO	1990-2019 ongoing
PHOSPHOROUS PARTICULATE (CALCD.)	1976-2019 ongoing
PHOSPHOROUS TOTAL	1974-2019 ongoing
PHOSPHOROUS TOTAL DISSOLVED	1975-2019 ongoing

Major Ions

Parameter	Years monitored
BICARBONATE (CALCD.)	1980-1983, 1985-2019 ongoing
BROMIDE	2015-2017
CALCIUM DISSOLVED/FILTERED	1974-2019 ongoing
CARBONATE (CALCD.)	1980-1982, 1985-2019 ongoing
CHLORIDE DISSOLVED	1974-2019 ongoing
FLUORIDE DISSOLVED	1974-2019 ongoing
FREE CO ₂ (CALCD.)	1985-2019 ongoing
HARDNESS NON-CARB. (CALCD.)	1985-2019 ongoing
HARDNESS TOTAL (CALCD.) CACO ₃	1980-1983, 1985-2019 ongoing
HARDNESS TOTAL CACO ₃	1974-1975
HARDNESS TOTAL LAB (CALCD.) CACO ₃	1975-1978

HYDROXIDE (CALCD.)	1985-2019 ongoing
MAGNESIUM DISSOLVED/FILTERED	1975-2019 ongoing
POTASSIUM DISSOLVED/FILTERED	1974-2019 ongoing
SATURATION INDEX (CALCD.)	1985-2019 ongoing
SILICA REACTIVE	1974-1990
SIO2	1990-2019 ongoing
SODIUM ADSORPTION RATIO (CALCD.)	2001-2019 ongoing
SODIUM DISSOLVED/FILTERED	1974-2019 ongoing
SODIUM PERCENTAGE (CALCD.)	1985-2019 ongoing
STABILITY INDEX (CALCD.)	1985-2019 ongoing
SULPHATE DISSOLVED	1974-2019 ongoing
TOTAL DISSOLVED SOLIDS (CALCD.)	1980-1983, 1985-2019 ongoing

Metals

Parameter	Years monitored
ALUMINUM DISSOLVED	1984-2019 ongoing
ALUMINUM EXTRACTABLE	1974-1993
ALUMINUM TOTAL	1993-2019 ongoing
ANTIMONY DISSOLVED	2003-2019 ongoing
ANTIMONY TOTAL	2003-2019 ongoing
ARSENIC DISSOLVED	1974-1996, 2003-2019 ongoing
ARSENIC TOTAL	1996-2019 ongoing
BARIUM DISSOLVED	1999-2019 ongoing
BARIUM EXTRACTABLE	1974-1980, 1984
BARIUM TOTAL	1983-2019 ongoing
BARIUM TOTAL RECOVERABLE	1980-1983
BERYLLIUM DISSOLVED	1999-2019 ongoing
BERYLLIUM TOTAL	1997-2019 ongoing
BISMUTH DISSOLVED	2003-2019 ongoing
BISMUTH TOTAL	2003-2019 ongoing
BORON DISSOLVED	1974-2019 ongoing
BORON TOTAL	1997-1998, 2003-2019 ongoing
CADMUM DISSOLVED	1999-2019 ongoing
CADMUM EXTRACTABLE	1974-1980
CADMUM TOTAL	1983-2019 ongoing
CADMUM TOTAL RECOVERABLE	1980-1983
CERIUM DISSOLVED	2014-2019 ongoing
CERIUM TOTAL	2014-2019 ongoing
CESIUM DISSOLVED	2014-2019 ongoing
CESIUM TOTAL	2014-2019 ongoing
CHROMIUM DISSOLVED	1999-2019 ongoing

CHROMIUM EXTRACTABLE	1974-1983
CHROMIUM TOTAL	1983-2019 ongoing
COBALT DISSOLVED	1999-2019 ongoing
COBALT EXTRACTABLE	1978-1980
COBALT TOTAL	1983-2019 ongoing
COBALT TOTAL RECOVERABLE	1980-1983
COPPER DISSOLVED	1979, 1999-2019 ongoing
COPPER EXTRACTABLE	1974-1980
COPPER TOTAL	1983-2019 ongoing
COPPER TOTAL RECOVERABLE	1980-1983
EUROPIUM DISSOLVED	2019 ongoing
EUROPIUM TOTAL	2019 ongoing
GADOLINIUM DISSOLVED	2019 ongoing
GADOLINIUM TOTAL	2019 ongoing
GALLIUM DISSOLVED	2003-2019 ongoing
GALLIUM TOTAL	2003-2019 ongoing
GERMANIUM DISSOLVED	2019 ongoing
GERMANIUM TOTAL	2019 ongoing
HAFNIUM DISSOLVED	2019 ongoing
HAFNIUM TOTAL	2019 ongoing
HOLMIUM DISSOLVED	2019 ongoing
HOLMIUM TOTAL	2019 ongoing
INDIUM DISSOLVED	2019 ongoing
INDIUM TOTAL	2019 ongoing
IRIDIUM DISSOLVED	2019 ongoing
IRIDIUM TOTAL	2019 ongoing
IRON DISSOLVED	1979-2019 ongoing
IRON EXTRACTABLE	1974-1980
IRON TOTAL	1997-2019 ongoing
LANTHANUM DISSOLVED	2003-2019 ongoing
LANTHANUM TOTAL	2003-2019 ongoing
LEAD DISSOLVED	1979, 1999-2019 ongoing
LEAD EXTRACTABLE	1974-1980
LEAD TOTAL	1983-2019 ongoing
LEAD TOTAL RECOVERABLE	1980-1983
LITHIUM DISSOLVED	1999-2019 ongoing
LITHIUM TOTAL	1997-2019 ongoing
LUTETIUM DISSOLVED	2019 ongoing
LUTETIUM TOTAL	2019 ongoing
MANGANESE DISSOLVED	1979-2019 ongoing
MANGANESE EXTRACTABLE	1974-1980
MANGANESE TOTAL	1997-2019 ongoing
MERCURY EXTRACTABLE	1974-1979

MERCURY TOTAL	1979-1999
MOLYBDENUM DISSOLVED	1999-2019 ongoing
MOLYBDENUM TOTAL	1997-2019 ongoing
NEODYMIUM DISSOLVED	2019 ongoing
NEODYMIUM TOTAL	2019 ongoing
NICKEL DISSOLVED	1999-2019 ongoing
NICKEL EXTRACTABLE	1979-1980
NICKEL TOTAL	1983-2019 ongoing
NICKEL TOTAL RECOVERABLE	1980-1983
NIOBIUM DISSOLVED	2014-2019 ongoing
NIOBIUM TOTAL	2014-2019 ongoing
PLATINUM DISSOLVED	2014-2019 ongoing
PLATINUM TOTAL	2014-2019 ongoing
PRASEODYMIUM DISSOLVED	2019 ongoing
PRASEODYMIUM TOTAL	2019 ongoing
RUBIDIUM DISSOLVED	2003-2019 ongoing
RUBIDIUM TOTAL	2003-2019 ongoing
RUTHENIUM DISSOLVED	2019 ongoing
RUTHENIUM TOTAL	2019 ongoing
SAMARIUM DISSOLVED	2019 ongoing
SAMARIUM TOTAL	2019 ongoing
SCANDIUM DISSOLVED	2019 ongoing
SCANDIUM TOTAL	2019 ongoing
SELENIUM DISSOLVED	1974-1996, 2003-2019 ongoing
SELENIUM TOTAL	1996-2019 ongoing
SILVER DISSOLVED	2003-2019 ongoing
SILVER EXTRACTABLE	1974-1979
SILVER TOTAL	1999-2019 ongoing
STRONTIUM DISSOLVED	1999-2019 ongoing
STRONTIUM TOTAL	1997-2019 ongoing
TELLURIUM DISSOLVED	2019 ongoing
TELLURIUM TOTAL	2019 ongoing
TERBIUM DISSOLVED	2019 ongoing
TERBIUM TOTAL	2019 ongoing
THALLIUM DISSOLVED	2003-2019 ongoing
THALLIUM TOTAL	2003-2019 ongoing
TIN DISSOLVED	2014-2019 ongoing
TIN TOTAL	2014-2019 ongoing
TITANIUM DISSOLVED	2016-2019 ongoing
TITANIUM TOTAL	2016-2019 ongoing
TUNGSTEN DISSOLVED	2014-2019 ongoing
TUNGSTEN TOTAL	2014-2019 ongoing
URANIUM DISSOLVED	1981-1982, 1984, 2003-2019 ongoing

URANIUM TOTAL	2003-2019 ongoing
VANADIUM DISSOLVED	1999-2019 ongoing
VANADIUM EXTRACTABLE	1975-1980
VANADIUM TOTAL	1983-2019 ongoing
VANADIUM TOTAL RECOVERABLE	1980-1983
YTTERBIUM DISSOLVED	2019 ongoing
YTTERBIUM TOTAL	2019 ongoing
YTTRIUM- DISSOLVED	2014-2019 ongoing
YTTRIUM TOTAL	2014-2019 ongoing
ZINC DISSOLVED	1979, 1999-2019 ongoing
ZINC EXTRACTABLE	1974-1980
ZINC TOTAL	1983-2019 ongoing
ZINC TOTAL RECOVERABLE	1980-1983
ZIRCONIUM DISSOLVED	2019 ongoing
ZIRCONIUM TOTAL	2019 ongoing

Acid Herbicides

Parameter	Years monitored
2-(2,4-DICHLOROPHOXY)-PROPIONIC ACID	1997-2004, 2008, 2010, 2012, 2015-2019 ongoing
2,3,6-TBA	1985-2004, 2008, 2010, 2012, 2016-2017
2,4,5-T	1974-2004, 2008, 2010, 2012, 2015-2019 ongoing
2,4-D	1974-2004, 2008, 2010, 2012, 2015-2019 ongoing
2,4-DB	1974-2004, 2008, 2010, 2012, 2016-2017
ACIFLUORFEN	2019 ongoing
BROMOXYNIL	1988-2004, 2008, 2010, 2012, 2015-2019 ongoing
CLOPYRALID	2001-2004, 2008, 2010, 2012, 2015-2019 ongoing
DICAMBA	1985-2004, 2008, 2010, 2012, 2015-2019 ongoing
DICHLORPROP	1974-1997
DINOSEB	2018-2019 ongoing
FENOPROP (SILVEX)	1978-2001
FOMESAFEN	2019 ongoing
IMAZAMETHABENZ-METHYL (A)	2001-2004, 2008, 2010, 2012, 2015-2019 ongoing
IMAZAMETHABENZ-METHYL (B)	2001-2004, 2008, 2010, 2012
IMAZAMOX	2016-2019 ongoing
IMAZAPYR	2016-2019 ongoing
IMAZETHAPYR	2001-2004, 2008, 2010, 2012, 2015-2019 ongoing
MCPA	1974-2004, 2008, 2010, 2012, 2015-2019 ongoing
MCPB	1985-2004, 2008, 2010, 2012, 2015-2017
MCPP	2015-2019 ongoing
MECOPROP	2008, 2010, 2012
PICLORAM	1974-2004, 2008, 2010, 2012, 2015-2019 ongoing

SILVEX	2001-2004, 2008, 2010, 2012, 2015-2019 ongoing
TRICLOPYR	2015-2019 ongoing

Neutral Herbicides

Parameter	Years monitored
ATRAZINE	1989, 1997-2004, 2008, 2010, 2012, 2016-2017 ongoing*
ATRAZINE TOTAL	1985-1997
BENZOYLPROP-ETHYL	1985-2004, 2008, 2010, 2012, 2016-2017 ongoing*
BUTYLATE	1997-2004, 2008, 2010, 2012, 2016-2017 ongoing*
DESETHYL ATRAZINE	1997-2004, 2008, 2010, 2012, 2016-2017 ongoing*
D-ETHYL SIMAZINE	1997-2004, 2008, 2010, 2012, 2016-2017 ongoing*
DIALLATE	1985-1998
DIALLATE I	1998-2004, 2008, 2010, 2012, 2016-2017 ongoing*
DIALLATE II	1998-2004, 2008, 2010, 2012, 2016-2017 ongoing*
DICLOFOP-METHYL	1985-2004, 2008, 2010, 2012, 2016-2017 ongoing*
ETHALFLURALIN	2008, 2010, 2012, 2016-2017 ongoing*
FENOXPAPROP-P-ETHYL	2008, 2010, 2012, 2016-2017 ongoing*
METOLACHLOR	1993-2004, 2008, 2010, 2012, 2016-2017 ongoing*
METRIBUZIN	1997-2004, 2008, 2010, 2012, 2016-2017 ongoing*
SIMAZINE	1997-2004, 2008, 2010, 2012, 2016-2017 ongoing*
TRIALLATE	1985-2004, 2008, 2010, 2012, 2016-2017 ongoing*
TRIFLURALIN	1974-1977, 1979, 1985-2004, 2008, 2010, 2012, 2016-2017 ongoing*

*sampled on 4-year rotational basis

Organochlorine

Parameter	Years monitored
ALDRIN	1974-1994, 2008, 2010, 2012
ALPHA-BENZENEHEXACHLORIDE	1975-1994, 2008, 2010, 2012, 2016-2017 ongoing*
ALPHA-CHLORDANE	1975-1994, 2008, 2010, 2012, 2016-2017 ongoing*
ALPHA-ENDOSULFAN	1974-1994, 2008, 2010, 2012, 2016-2017 ongoing*
BETA-ENDOSULFAN	1974-1994, 2008, 2010, 2012, 2016-2017 ongoing*
BETA-HCH	2008, 2010, 2012
CIS-NONACHLOR	2008, 2010, 2012
DIELDRIN	1974-1994, 2008, 2010, 2012, 2016-2017 ongoing*
ENDOSULFAN SULPHATE TOTAL	2016-2017 ongoing*
ENDRIN	1975-1994, 2008, 2010, 2012
GAMMA-BHC (LINDANE)	1974-1994, 2008, 2010, 2012, 2016-2017 ongoing*
GAMMA-CHLORDANE	1975-1976, 1978-1994, 2008, 2010, 2012, 2016-2017 ongoing*

HEPTACHLOR	1974-1994, 2008, 2010, 2012
HEPTACHLOR EPOXIDE	1974-1994, 2008, 2010, 2012
HEXACHLOROBENZENE	1978-1994, 2008, 2010, 2012, 2016-2017 ongoing*
HEXACHLOROBUTADIENE	2008, 2010, 2012, 2016-2017 ongoing*
METHOXYCHLOR (P,P'-METHOXYCHLOR).	1974-1994, 2008, 2010, 2012
MIREX	1978-1994, 2008, 2010, 2012, 2016-2017 ongoing*
O,P'-DDD	2008, 2010, 2012
O,P'-DDE	2008, 2010, 2012
O,P'-DDT	1978-1994, 2008, 2010, 2012, 2016-2017 ongoing*
OXYCHLORDANE	2008, 2010, 2012
P,P'-DDD (TDP)	1974-1994, 2008, 2010, 2012
P,P'-DDE	1974-1994, 2008, 2010, 2012, 2016-2017 ongoing*
P,P'-DDT	1974-1994, 2008, 2010, 2012, 2016-2017 ongoing*
PENTACHLOROANISOLE	2008, 2010, 2012
PENTACHLOROBENZENE	2008, 2010, 2012, 2016-2017 ongoing*
TRANS-NONACHLOR	2008, 2010, 2012, 2016-2017 ongoing*

*sampled on 4-year rotational basis

Glyphosate

Parameter	Years monitored
AMPA	2016-2017, 2019 ongoing
GLUFOSINATE	2016-2017, 2019 ongoing
GLYPHOSATE	2016-2017, 2019 ongoing

Neonicotinoids

Parameter	Years monitored
ACETAMIPRID	2016
CLOTHIANIDIN	2016
DINOTEFURAM	2016
FLONICAMID	2016
FLUPYRADIFURONE	2016
IMIDACLOPRID	2016
THIACLOPRID	2016
THIAMETHOXAM	2016

Carbamates

Parameter	Years monitored
BARBAN	1974-1977, 1985-1997

Organophosphates

Parameter	Years monitored
DIMETHOATE	1985-1988
MALATHION	1985-1987

Phenols

Parameter	Years monitored
2,3,4,5-TETRACHLOROPHENOL	1990-1995
2,3,4,6-TETRACHLOROPHENOL	1990-1995
2,3,4-TRICHLOROPHENOL	1990-1995
2,3,5,6-TETRACHLOROPHENOL	1990-1995
2,3,5-TRICHLOROPHENOL	1990-1995
2,3,6-TRICHLOROPHENOL	1990-1995
2,3-DICHLOROPHENOL	1990-1995
2,4,5-TRICHLOROPHENOL	1990-1995
2,4,6-TRICHLOROPHENOL	1990-1995
2,4-DICHLOROPHENOL	1990-1995
2,6-DICHLOROPHENOL	1990-1995
2-CHLORO-5-METHYLPHENOL	1990-1995
2-CHLOROPHENOL	1990-1995
3,4,5-TRICHLOROPHENOL	1990-1995
3,4-DICHLOROPHENOL	1990-1995
3,5-DICHLOROPHENOL	1990-1995
3-CHLOROPHENOL	1990-1995
4-CHLORO-3-METHYLPHENOL	1990-1995
4-CHLOROPHENOL	1990-1995
PENTACHLOROPHENOL	1990-1995
PHENOLIC MATERIAL	1974-1990

Polyaromatic Hydrocarbons

Parameter	Years monitored
1,2,3,4-TETRAHYDRONAPHTHALENE	1990
1-METHYLNAPHTHALENE	1990
2-CHLORONAPHTHALENE	1990
2-METHYLNAPHTHALENE	1990
ACENAPHTHENE	1990
ACENAPHTHYLENE	1990
BENZO(A)PYRENE	1990
BENZO(B)FLUORANTHENE	1990

BENZO(G,H,I)PERYLENE	1990
BENZO(K)FLUORANTHENE	1990
FLUORANTHENE	1990
FLUORENE	1990
INDENE	1990
INDENO(1,2,3-C,D)PYRENE	1990
PHENANTHRENE	1990
PYRENE	1990

Hydrocarbons

Parameter	Years monitored
C10-C16	2016
C16-C34	2016
C34-C50	2016

Aroclors

Parameter	Years monitored
AROCLOR	1980-1994
AROCLOR 1242	1981-1983
AROCLOR 1248	1974-1981
AROCLOR 1254	1974-1983
AROCLOR 1260	1974-1983

Dioxins and Furans

Parameter	Years monitored
2,3,7,8_TCDF	1990
2,3,7,8-TCDD	1990
OCTA_CDD	1990
OCTA_CDF	1990
TOTAL_HEPTA_CDD	1990
TOTAL_HEPTA_CDF	1990
TOTAL_HEXA_CDD	1990
TOTAL_HEXA_CDF	1990
TOTAL_PENTA_CDD	1990
TOTAL_PENTA_CDF	1990
TOTAL_TETRA_CDD	1990
TOTAL_TETRA_CDF	1990

Other Parameters

Parameter	Years monitored
ANTIMONY RADIATION SB-125	1982, 1984
AROMATIC HYDROCARBONS	1974-1982
BETA RADIATION TOTAL	1975
CESIUM RADIATION CS-137	1982, 1984
CHLOROPHYLL A	1974-1994, 2018-2019 ongoing
CHLOROPHYLL A (CORRECTED)	2018-2019 ongoing
CYANIDE TOTAL	1974-1992
N-ALKANES C10 - C26	1974-1982
N-ALKYL SULPHONATES (LAS)	1974-1981
NITRILOTRIACETIC ACID - NTA	1974-1978
OIL AND GREASE	1974-1981
OXYGEN BIOCHEMICAL DEMAND	1974-1979
POLYCHLORINATED BIPHENYLS	1989
RADIUM RADIATION RA-226	1981-1982, 1984
STRONTIUM RADIATION TOTAL 90	1975
TRITIUM RADIATION H-3	1981, 1984



Prairie Provinces Water Board
Suite 1001 - 10th Floor, Alvin Hamilton Building
1783 Hamilton Street
Regina, SK S4P 2B6
www.ppwbc.ca