Water quality in Canadian rivers

Canadian Environmental Sustainability Indicators

Environment and Climate Change Canada
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Canada

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April 2026

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Water quality in Canadian rivers

Clean freshwater is essential for healthy river ecosystems to support aquatic plant and animal biodiversity. By global standards, Canada has abundant freshwater resources which naturally vary in quality across the country, based on the local geology and climate. However, human activities on the land around the lakes and rivers have a major impact on the water quality at each site.

The water quality indicators provide information on the status of surface water quality. These indicators classify the water quality of Canadian rivers into 5 categories, ranging from poor to excellent,[1] to give an indication of their ability to support the plants and animals that live in or use the water.

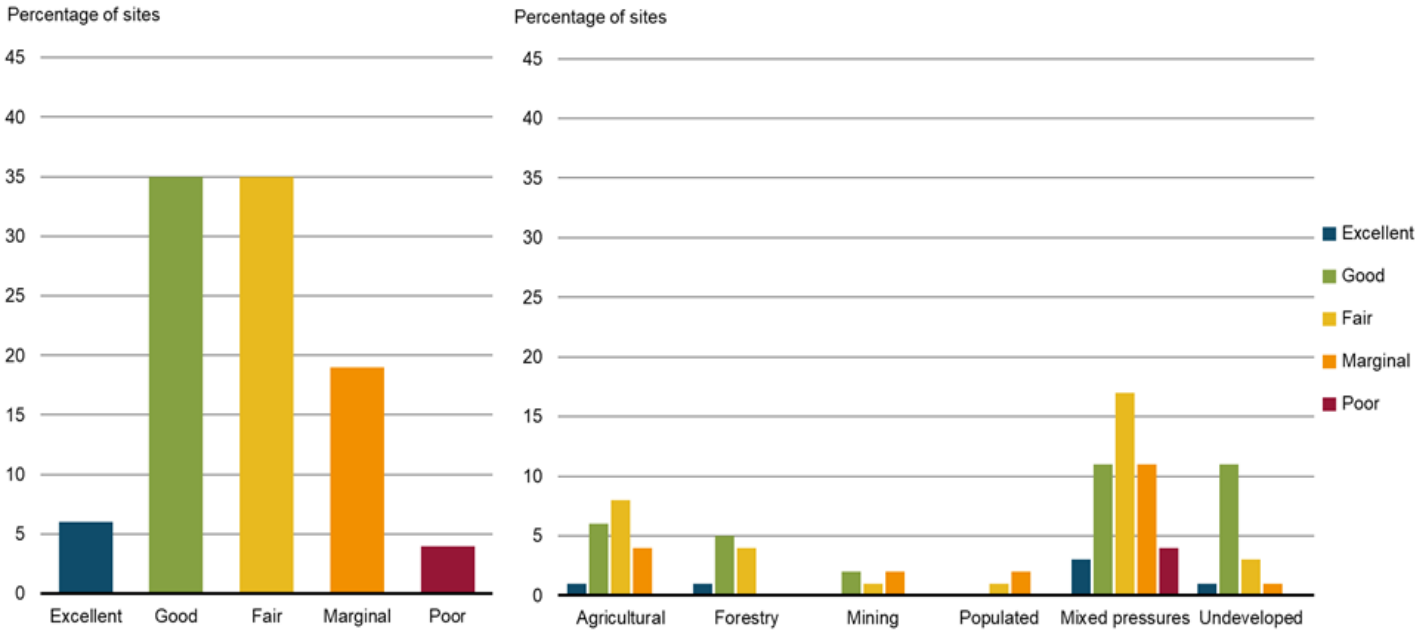
National water quality in Canadian rivers

Key results

For the 2022 to 2024 period:

- water quality in Canadian rivers was rated fair to excellent at 77% of the monitored sites
- the proportion of sites rated as marginal or poor was 23%, the highest in the last 10 years

Figure 1. National water quality in Canadian rivers by land-use category, 2022 to 2024 period



Data for Figure 1

Note: Water quality was evaluated at 157 sites across southern Canada using the Canadian Council of Ministers of the Environment's water quality index. Percentages may not add up to 100 due to rounding. For more information on water quality categories, land-use classification and monitoring sites selection, consult the Data sources and methods section.
Source: Data assembled by Environment and Climate Change Canada from federal, provincial and joint water quality monitoring programs. Population, forestry, mining and land cover statistics for each site's drainage area were provided by Statistics Canada, Natural Resources Canada, Environment and Climate Change Canada, Agriculture and Agri-Food Canada, the Government of Alberta and the University of Maryland.

[1] The category results are only based on data for a subset of pollutants where guidelines exist. They do not cover all potential water quality issues in Canada. For more information, consult the Data sources and methods section.

For the 2022 to 2024 period, water quality at 157 monitoring sites in southern Canadian rivers[2] was rated:

- excellent or good at 42% of sites
- fair at 35% of sites
- marginal at 19% of sites
- poor at 4% of sites

Water quality is generally good or excellent in undeveloped areas where native plants, trees and soils filter the water before it reaches the river. Changes in land cover due to development such as manufacturing, resource extraction and urbanization put pressure on the landscape and can increase the amount of chemicals being released into rivers. As well, many contaminants can be deposited in rivers after being released into the air. Fertilizers, pesticides and manure from livestock can wash into nearby rivers or seep into groundwater, impacting water quality in those areas. Some forestry activities, such as the removal of the trees and other vegetation as well as urban development that creates impervious surfaces, affect the normal flow of surface water and increase the run-off of nutrients and contaminants into rivers.

Over time, these pressures have increased and contributed to the deterioration in the water quality. In the 2022-2024 period, 7% fewer sites were rated as excellent or good, and 6% more sites were rated as marginal than in the previous period. The proportion of sites rated as fair and those rated as poor has recorded a slight increase, at 1.1% and 0.2% respectively.

[2] The indicators focus on the regions in Canada where human activity is more prevalent, as this is usually the main factor for water quality deterioration. Northern Canada is underrepresented; this is due partly to the challenges related to sampling in these remote locations. For more information on site selection, consult the Data sources and methods section.

Regional water quality in Canadian rivers

The regional water quality indicators are presented for 5 main hydrographic watersheds. Each watershed is formed by an interconnected network of streams, rivers and lakes whose water flows into a common outlet. These watersheds are: the Atlantic Ocean region, Great Lakes and St. Lawrence River region, Hudson Bay region, Mackenzie River region and Pacific Ocean region. The pressure exerted on water quality by land-use around the water bodies (lakes and rivers) in each watershed is specific to the region and depends on human activities.

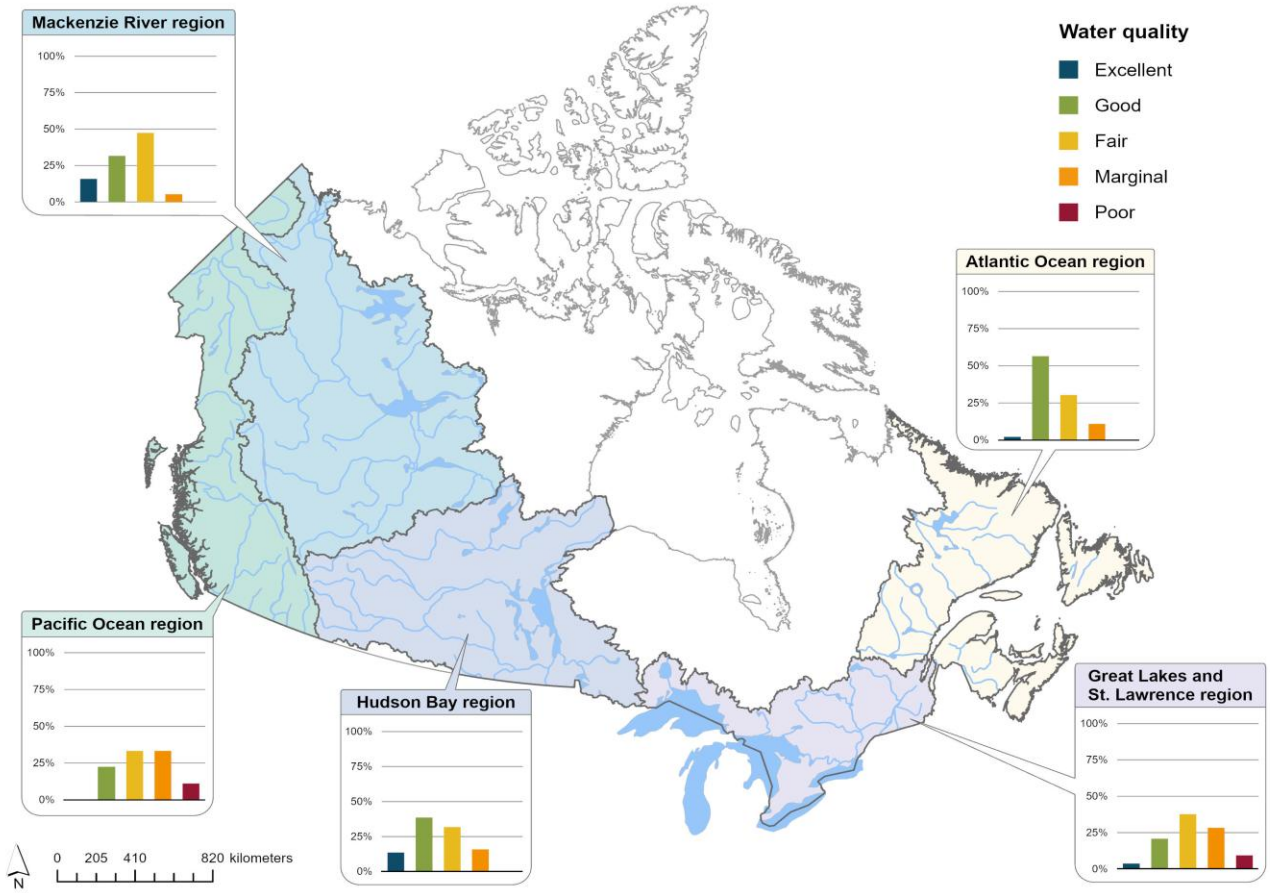
The regional indicators were assessed at 171 sites across these 5 regions, including 14 additional monitoring sites in the northern portions of the Mackenzie River.

Key results

For the 2022 to 2024 period:

- the Atlantic Ocean region had the highest proportion of sites rated excellent or good
- most sites were rated good in the Mackenzie River region and Hudson Bay region
- a small proportion of sites were rated as poor and were only found in the Pacific Ocean region and Great Lakes and St. Lawrence River region

Figure 2. Regional water quality category by watershed, Canada, 2022 to 2024 period



Data for Figure 2

Note: For the Regional water quality in Canadian rivers indicator, water quality was assessed at 171 sites across Canada using the Canadian Council of Ministers of the Environment's water quality index. Compared to the national indicator, the Regional water quality in Canadian rivers indicator uses 14 additional monitoring sites and includes more sites in the northern portions of the Mackenzie River and Pacific Ocean regions. Percentages may not add up to 100 due to rounding. For more information, consult the Data sources and methods section.
Source: Data assembled by Environment and Climate Change Canada from federal, provincial and joint water quality monitoring programs. Population, forestry, mining and land cover statistics for each site's drainage area were provided by Statistics Canada, Natural Resources

Canada, Environment and Climate Change Canada, Agriculture and Agri-Food Canada, the Government of Alberta and the University of Maryland.

Atlantic Ocean region

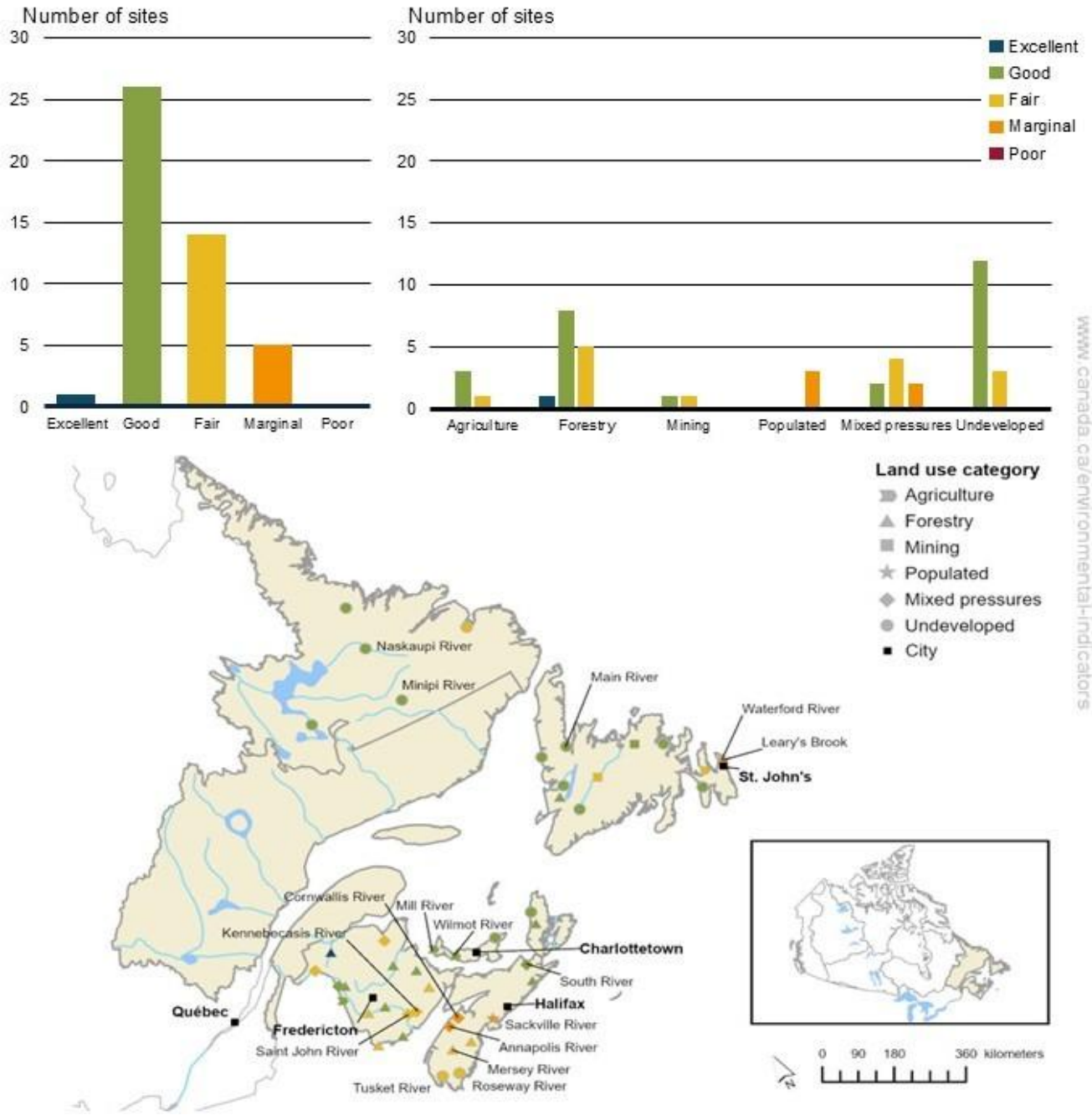
Along the east coast of Canada, all rivers drain into the Atlantic Ocean. This region includes Nova Scotia, New Brunswick, Prince Edward Island, Newfoundland and Labrador, along with part of eastern Quebec. It is home to approximately 2.7 million people, or nearly 7% of Canada's population. The main pressure on water quality in this region comes from agriculture which is largely found in Prince Edward Island, Nova Scotia's Annapolis Valley and New Brunswick, as well as from forestry, the largest industry in New Brunswick. In Newfoundland and Labrador, mining and forestry are 2 of the region's largest pressures of water pollution.

Key results

For the 2022 to 2024 period:

- More than half of the monitored sites in the Atlantic region had excellent or good water quality
- 47% of monitored sites with fair or marginal water quality were in forestry zones, mostly in New Brunswick

Figure 3. Water quality category by land use, Atlantic Ocean region, 2022 to 2024 period



Data for Figure 3

Note: Water quality was assessed at 46 sites on rivers draining into the Atlantic Ocean using the Canadian Council of Ministers of the Environment's water quality index. For more information, consult the Data sources and methods section.
Source: Water quality data were assembled by Environment and Climate Change Canada from existing federal, provincial and joint water quality monitoring programs. Population, forestry, mining and land cover statistics for each site's drainage area were provided by Statistics Canada, Natural Resources Canada, Environment and Climate Change Canada, Agriculture and Agri-Food Canada, the Government of Alberta and the University of Maryland.

For the 2022 to 2024 period, water quality was monitored in 46 sites on rivers draining into the Atlantic Ocean. 59% of the sites were rated excellent or good, most of which were in undeveloped zones such as sites on Minipi River, Main River and Naskaupi River in Newfoundland and Labrador, or in agricultural zones on the Wilmot River and Mill River in Prince Edward Island, and South River in Nova Scotia.

Thirty percent (30%) of monitored sites were rated as fair. In New Brunswick (7 sites), phosphorus exceedance was the main determinant of this water quality category, especially for sites on the Saint John River and Kennebecasis River (mixed pressures zones). A high water acidity level and, to a lesser extent, iron exceedance, particularly in sites on the Tusket River, Roseway River and Mersey River in Nova Scotia, were the main reasons for the fair water quality category.

The 5 monitored sites (11%) rated as marginal were located predominantly in populated zones and less frequently in agricultural and forestry zones. Water quality for these sites was mostly affected by recurring exceedances of iron and phosphorus for 3 sites located in Nova Scotia (Annapolis River, Sackville River and Cornwallis River), and by recurring exceedances of chloride and zinc for sites in the Waterford River and Leary's Brook River (Newfoundland and Labrador).

No site was rated poor in the Atlantic Ocean region.

Great Lakes and St. Lawrence River region

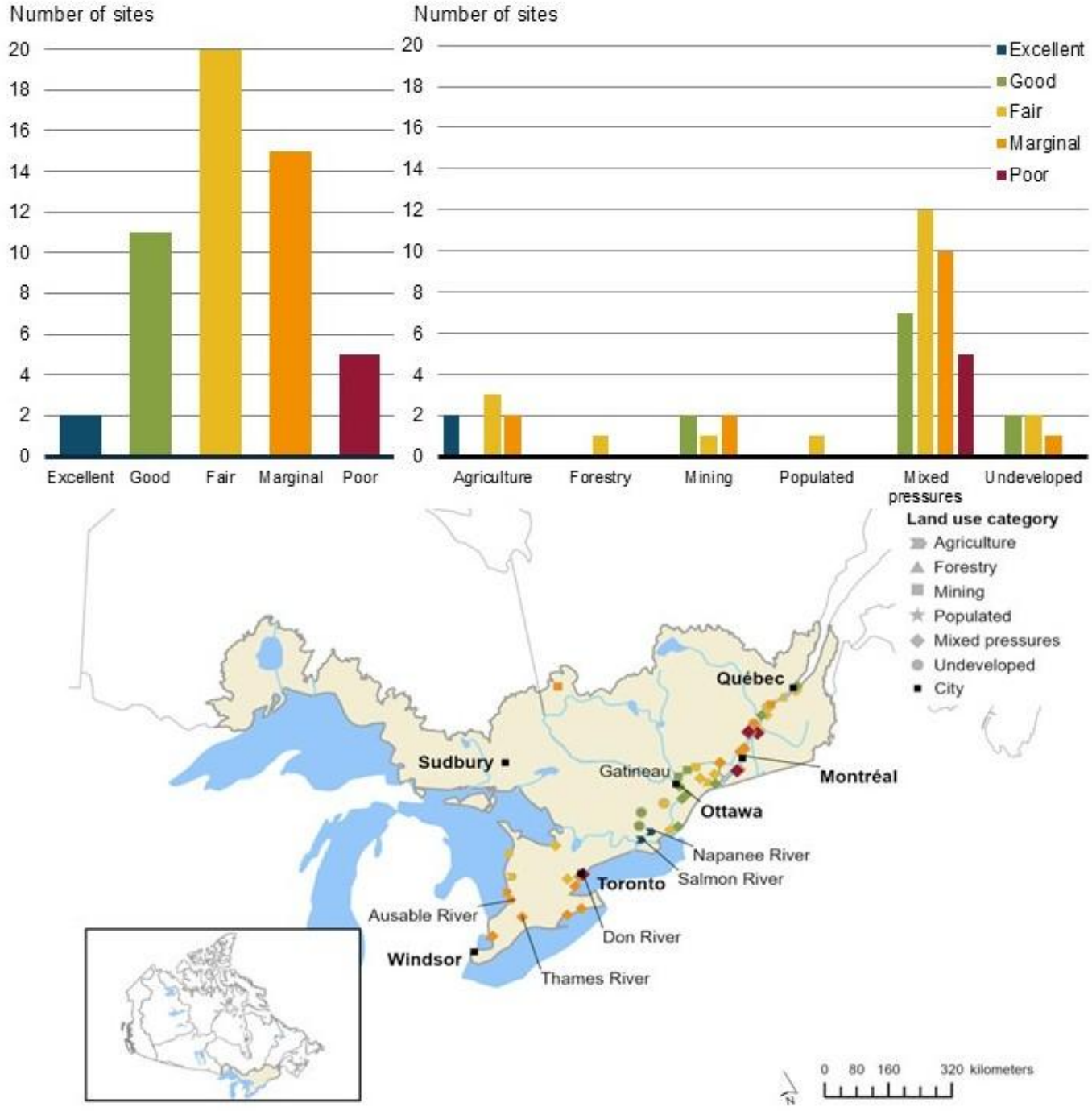
This region includes rivers that drain into the Great Lakes and the St. Lawrence River, all located in western Quebec, southern Ontario and the section of northern Ontario bordering Lake Superior. It is the most populous region, home to more than 25 million people making up 60% of the Canadian population. Most human activity in this region is associated with urbanization and agriculture thanks to the fertile soils and a relatively mild climate. Mining dominated by feldspar and quartz mines as well as pulp and paper mills are also important human activities in this region. These facilities are mainly located on the shores of the Great Lakes and the St. Lawrence River and their tributaries.

Key results

For the 2022 to 2024 period:

- water quality was excellent or good for 25% of the monitored sites
- 9% of the monitored sites were rated as poor, all of which were in populated or agricultural zones

Figure 4. Water quality category by land use, Great Lakes and St. Lawrence River region, 2022 to 2024 period



Data for Figure 4

Note: Water quality was assessed at 53 sites on rivers draining into the Great Lakes or St. Lawrence River using the Canadian Council of Ministers of the Environment's water quality index. For more information, consult the Data sources and methods section.
Source: Water quality data were assembled by Environment and Climate Change Canada from existing federal, provincial and joint water quality monitoring programs. Population, forestry, mining and land cover statistics for each site's drainage area were provided by Statistics Canada, Natural Resources Canada, Environment and Climate Change Canada, Agriculture and Agri-Food Canada, the Government of Alberta and the University of Maryland.

For the 2022 to 2024 period, out of the 53 sites monitored on the Great Lakes and St. Lawrence River region, thirteen (25%) were rated as excellent or good. These sites are located in agricultural, mining or mixed pressure

zones. Of these sites, those on the Saint-Maurice River and the Gatineau River in Quebec are in mining and forestry zones while those on the Salmon River and the Napanee River in Ontario are in agricultural zone.

Most of the monitored sites (35) were rated fair or marginal. The 18 sites along the St. Lawrence River and its tributaries had phosphorus exceedance and high turbidity as the main causes of the deterioration of water quality, located in populated, agriculture and mining zones suffered this deterioration. The 17 sites in the Great Lakes basin, rated fair or marginal, are located predominantly in mixed pressure zones (populated, forestry and agriculture) and, to a lesser extent, in agricultural zones. The deterioration of water quality at these sites was caused by several pollutants, with phosphorus and nitrogen being the main ones, particularly at sites on the Thames River, on the South Nation River and on the Ausable River. Several chloride exceedances were the main cause of water quality deterioration at sites on the Humber River and the Oakville River

Five (5) monitored sites of this region (9%) were rated poor, including site on the Don River which flows through highly populated Toronto and through agricultural zones. The deteriorated water quality on the Don River was primarily due to the high levels and repeated occurrences of phosphorus exceedances, as well as other pollutants like chloride, copper and iron. The other monitored sites with poor water quality were on St. Lawrence River tributaries. They are all surrounded by agricultural land, which explains why excess phosphorus from fertilisation was the pollutant that had the greatest impact on the deterioration of their water quality.

Hudson Bay region

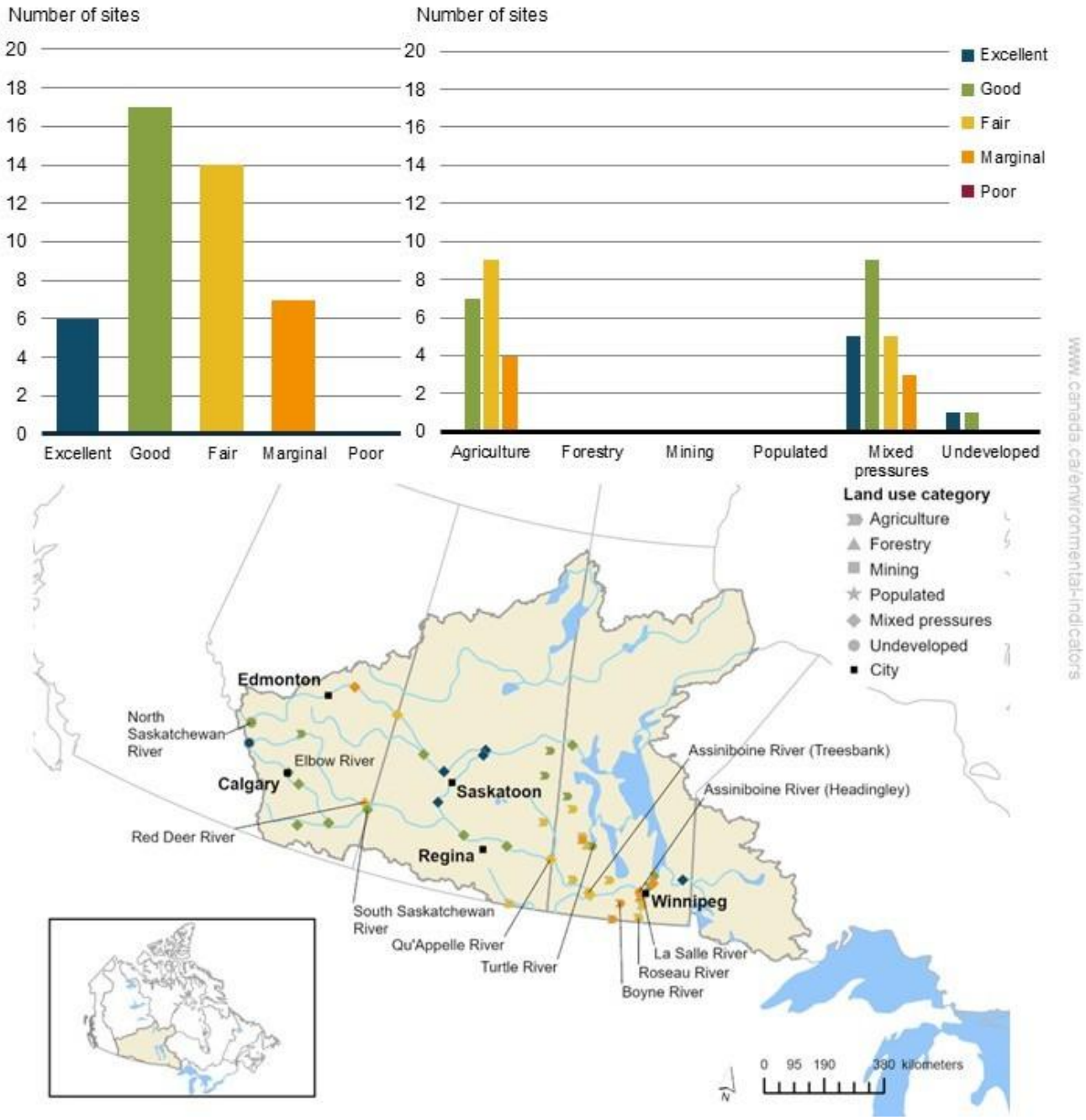
This region covers most of Manitoba, Saskatchewan, the southern half of Alberta and parts of northwestern Ontario. It is home of 13.2% of Canada's population (5.5 million people). The Nelson River, the largest in this region, originates at the northern tip of Lake Winnipeg and flows into the south-western corner of the Hudson Bay. Its tributaries drain over 1 million km^2 of land starting in the Rocky Mountains running through the Prairies and into Lake Winnipeg. Agriculture covers a large part of the land in this region; mining is also an important economic sector. Moreover, many of Manitoba's rivers have extensive hydroelectric power generation infrastructure.

Key results

For the 2022 to 2024 period:

- water quality was rated excellent or good for 52% of the sites
- 48% had fair or marginal water quality
- no sites had water quality rated as poor

Figure 5. Water quality category by land-use, Hudson Bay region, 2022 to 2024 period



Data for Figure 5

Note: Water quality was assessed at 44 sites on rivers draining into the Hudson Bay using the Canadian Council of Ministers of the Environment's water quality index. For more information, consult the Data sources and methods section.
Source: Water quality data were assembled by Environment and Climate Change Canada from existing federal, provincial and joint water quality monitoring programs. Population, forestry, mining and land cover statistics for each site's drainage area were provided by Statistics Canada, Natural Resources Canada, Environment and Climate Change Canada, Agriculture and Agri-Food Canada, the Government of Alberta and the University of Maryland.

For the 2022 to 2024 period, water quality was monitored in 44 sites on rivers in the Hudson Bay region. Forty-one (41) of them are predominantly located in agricultural zones. Over this period, 23 sites (52%) were rated excellent or good despite the agriculture and mixed pressure impacts on their water quality (mining, forestry and

agriculture) particularly for sites on the South and North Saskatchewan Rivers, the Elbow River and the Turtle River.

The water quality at 21 sites (48%) was rated fair or marginal. Of these, 15 sites in Manitoba are located in areas with high proportions of agricultural zones. They saw water quality deterioration due to exceedances of phosphorus and iron, as well as repeated exceedances of these pollutant guidelines particularly for sites located on the Boyne River, the La Salle River, the Red River and the Roseau River. For the other 6 sites in Alberta and Saskatchewan, several pollutants contributed to the deterioration of the water quality, but concentrations and frequency were not particularly high. This was the case for sites on the Assiniboine River, the Qu'Appelle River and the Red Deer River.

No site was rated poor in the Hudson Bay region.

Mackenzie River region

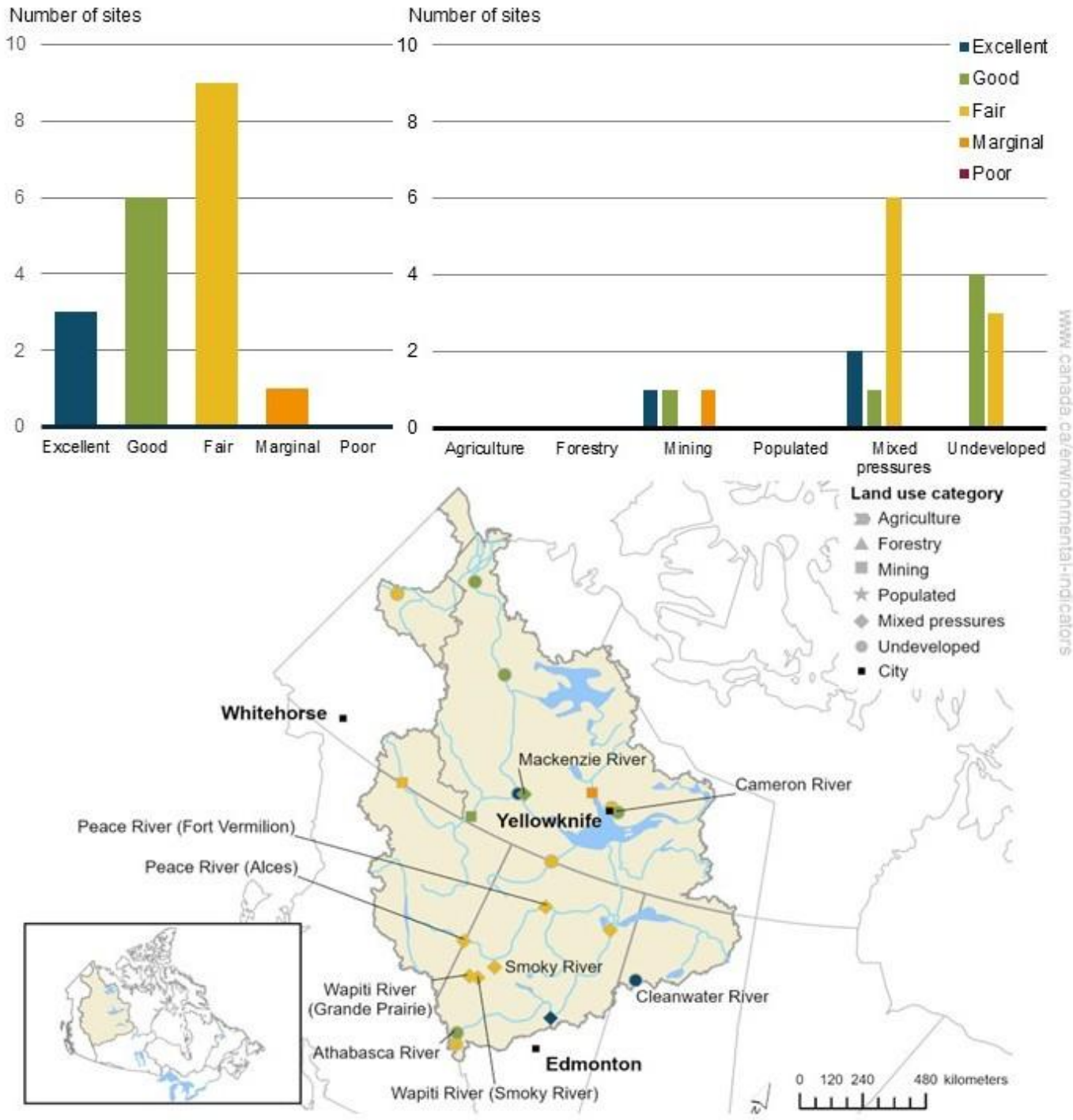
The Mackenzie River watershed is the largest in Canada. Consisting of vast stretches of pristine wilderness, it covers nearly 20% of the country and is the least developed area compared to the other regions. Its 2 largest tributaries, the Peace River and the Athabasca River, drain much of north-central Alberta and the Rocky Mountains in northern British Columbia. The most intensive land-use in the region is oil and gas extraction in central Alberta. The majority of the people (nearly 1% of Canada's population) living in the watershed reside in its southern region.

Key results

For the 2022 to 2024 period:

- water quality was excellent or good in 47% of sites monitored
- 53% had fair or marginal water quality
- no site had water quality rated as poor

Figure 6. Water quality category by land use, Mackenzie River region, 2022 to 2024 period



Data for Figure 6

Note: Water quality was assessed at 19 sites on rivers draining into the Mackenzie River using the Canadian Council of Ministers of the Environment's water quality index. For more information, consult the Data sources and methods section.
Source: Water quality data were assembled by Environment and Climate Change Canada from existing federal, provincial, territorial and joint water quality monitoring programs. Population, forestry, mining and land cover statistics for each site's drainage area were provided by Statistics Canada, Natural Resources Canada, Environment and Climate Change Canada, Agriculture and Agri-Food Canada, the Government of Alberta and the University of Maryland.

For the 2022 to 2024 period, water quality was monitored at 19 sites on rivers draining into the Mackenzie region. At 9 sites, water quality was rated excellent or good. These sites are located in either remote zones with undeveloped areas, like sites on the Athabasca River and Cameron River, or in mining and forestry zones, like sites on the Clearwater River and the Liard River.

Ten (10) sites were rated as fair or marginal. Although several pollutants were present at all sites, their concentrations and the frequency of their exceedances did not present a major issue. Those located in agriculture, forestry and mining zones, such as sites on the Wapiti River, the Peace River and the Smoky River, had phosphorus as the main pollutant causing water quality deterioration, followed by metals such as copper, zinc and lead.

No site was rated as poor in Mckenzie River region.

Pacific Ocean region

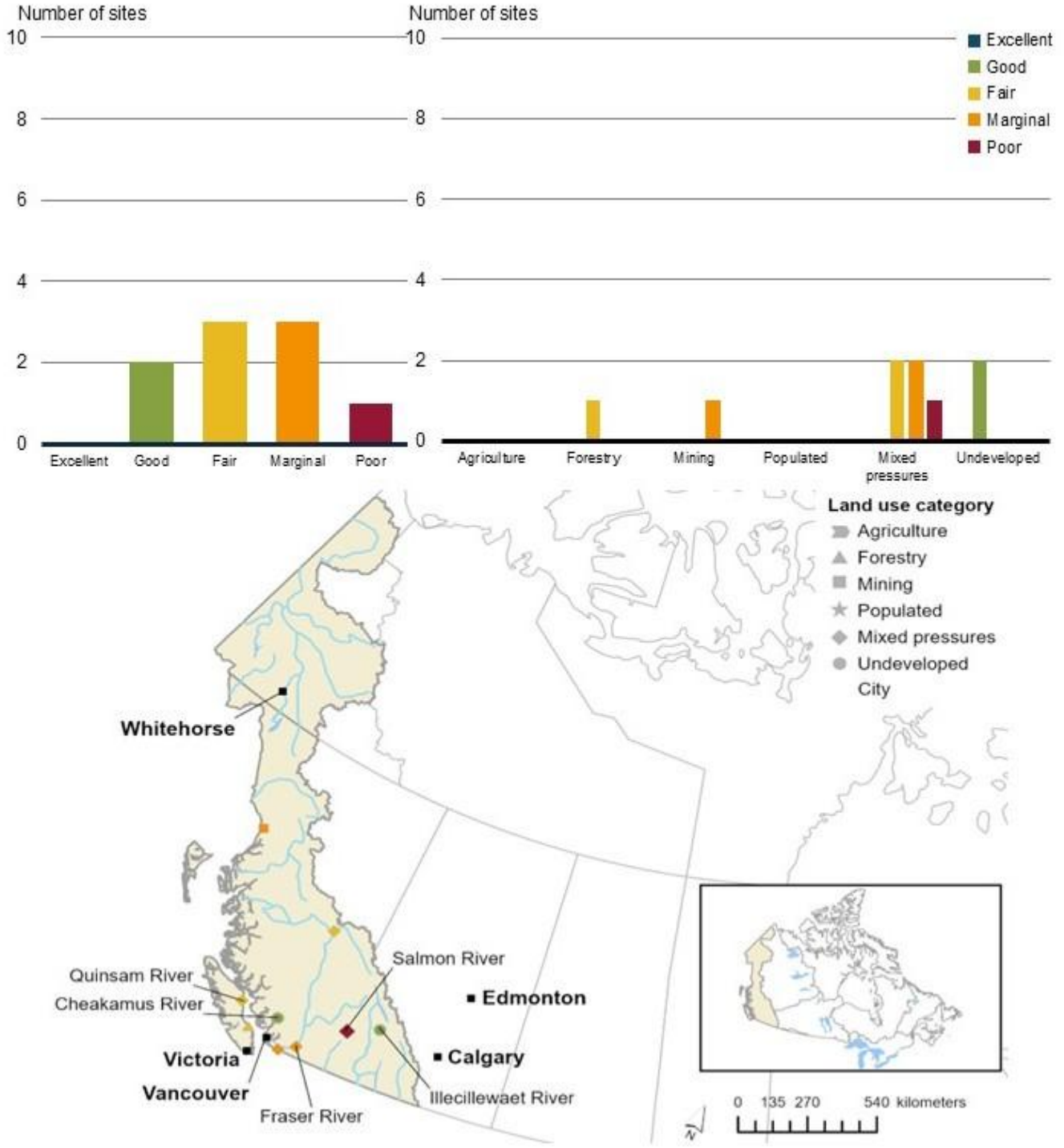
Along the west coast of Canada, rivers draining into the Pacific Ocean flow through varied landscapes, from large areas with little development to highly urbanized areas, accounting for 11% of Canada's population (4.4 million people). Mining, forestry, pulp and paper and wood product manufacturing are the most important industries in this region. In the Okanagan Valley and Fraser Valley, soil conditions and climate are favourable for orchards, vineyards and cash crops. Cattle ranching is dominant throughout much of the other interior plateau and valley lands.

Key results

For the 2022 to 2024 period:

- 2 sites (22%) in the Pacific Ocean region were rated good
- 6 sites (66%) were rated fair or marginal
- 1 site (11%) had poor water quality

Figure 7. Water quality category by land use, Pacific Ocean region, 2022 to 2024 period



Data for Figure 7

Note: Water quality was assessed at 9 sites on rivers draining into the Pacific Ocean using the Canadian Council of Ministers of the Environment's water quality index. For more information, consult the Data sources and methods section.
Source: Water quality data were assembled by Environment and Climate Change Canada from existing federal, provincial, territorial and joint water quality monitoring programs. Population, forestry, mining and land cover statistics for each site's drainage area were provided by Statistics Canada, Natural Resources Canada, Environment and Climate Change Canada, Agriculture and Agri-Food Canada, the Government of Alberta and the University of Maryland.

For the 2022 to 2024 period, 9 sites on rivers draining into the Pacific Ocean region were monitored. This is less than the previous reporting periods due to analytical and sampling challenges that occurred in 2024. The 2 sites on the Illecillewaet River and the Cheakamus River were rated as good. These sites are located in remote zones with undeveloped areas where water quality was under very little pressure.

Six (6) sites in mining, forestry or mixed pressures zones were rated as fair or marginal. Their water quality was significantly impacted by high concentrations and/or recurring exceedances of several pollutants. Copper, zinc, lead and phosphorus on sites on the Fraser River, and copper, nitrogen and phosphorus on sites on the Sumas River were the most important pollutants that impacted the water quality for these rivers.

The only site with water quality rated as poor was found on the Salmon River. It had significant exceedance of phosphorus, which occurred repeatedly, in addition to exceedances of other pollutants such as chromium, copper, cadmium and zinc. This site experiences mixed pressures such as mining, forestry and agriculture.

About the indicators

What the indicators measure

These indicators measure the ability of rivers across Canada to sustain healthy aquatic ecosystems. At each monitoring site, specific water quality data are compared to water quality guidelines to create a rating for the site. If measured water quality remains within the guidelines, we assume that it can maintain a healthy ecosystem.

Water quality at a monitoring site is considered excellent when parameters in a river almost always meet their guidelines. Conversely, water quality is rated poor when parameters usually do not meet their guidelines, sometimes by a wide margin.

Why these indicators are important

Clean freshwater is an essential resource. It supports aquatic plant and animal biodiversity. We use it for manufacturing, energy production, irrigation, swimming, boating, fishing and domestic uses (drinking and washing). Degraded water quality damages the health of all freshwater ecosystems, such as rivers, lakes, reservoirs and wetlands. It can also disrupt fisheries, tourism and agriculture as well as making it more expensive to treat water to achieve drinking standards.

These indicators provide information on the state of surface water quality at national and regional scales, to support water resource management. They are used to provide information about the status in water quality for the *Canada Water Act* annual report and Environment and Climate Change Canada's annual departmental performance reports.

Related initiatives

These indicators support the measurement of progress towards the following 2022 to 2026 Federal Sustainable Development Strategy Goal 6: Clean water and sanitation – ensure clean and safe water for all Canadians.

In addition, the indicators contribute to the Sustainable Development Goals of the 2030 Agenda for Sustainable Development. They are linked to Goal 6, Clean water and sanitation and Target 6.3, "By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally".

The indicators also contribute towards reporting on Target 7 of Canada's 2030 Nature Strategy: "Reduce pollution risks and the negative impact of pollution from all sources, by 2030, to levels that are not harmful to biodiversity and ecosystem functions and services."

These indicators align with the efforts to monitor and assess Great Lakes water quality, and aquatic ecosystems under the Great Lakes Water Quality Agreement (GLWQA) signed by the governments of Canada and the United States. The State of the Great Lakes - 2022 Report presents the results of the 2 countries commitment on restoring and protecting Great Lakes water quality and ecosystem health.

Related indicators

The Nutrients in the St. Lawrence River, Phosphorus loading to Lake Erie, Reductions in phosphorus loads to Lake Winnipeg, and Nutrients in Lake Winnipeg indicators report the state of phosphorus and nitrogen levels and loadings in those 3 ecosystems.

The Phosphorus levels in the offshore waters of the Great Lakes indicator reports on the state of and trends in phosphorus levels in the open waters of the Canadian Great Lakes.

Data sources and methods

Data sources

Water quality data are collected by federal, provincial and territorial monitoring programs from across Canada. The complete list of data sources from Federal and Provincial monitoring networks can be found in Annex B.

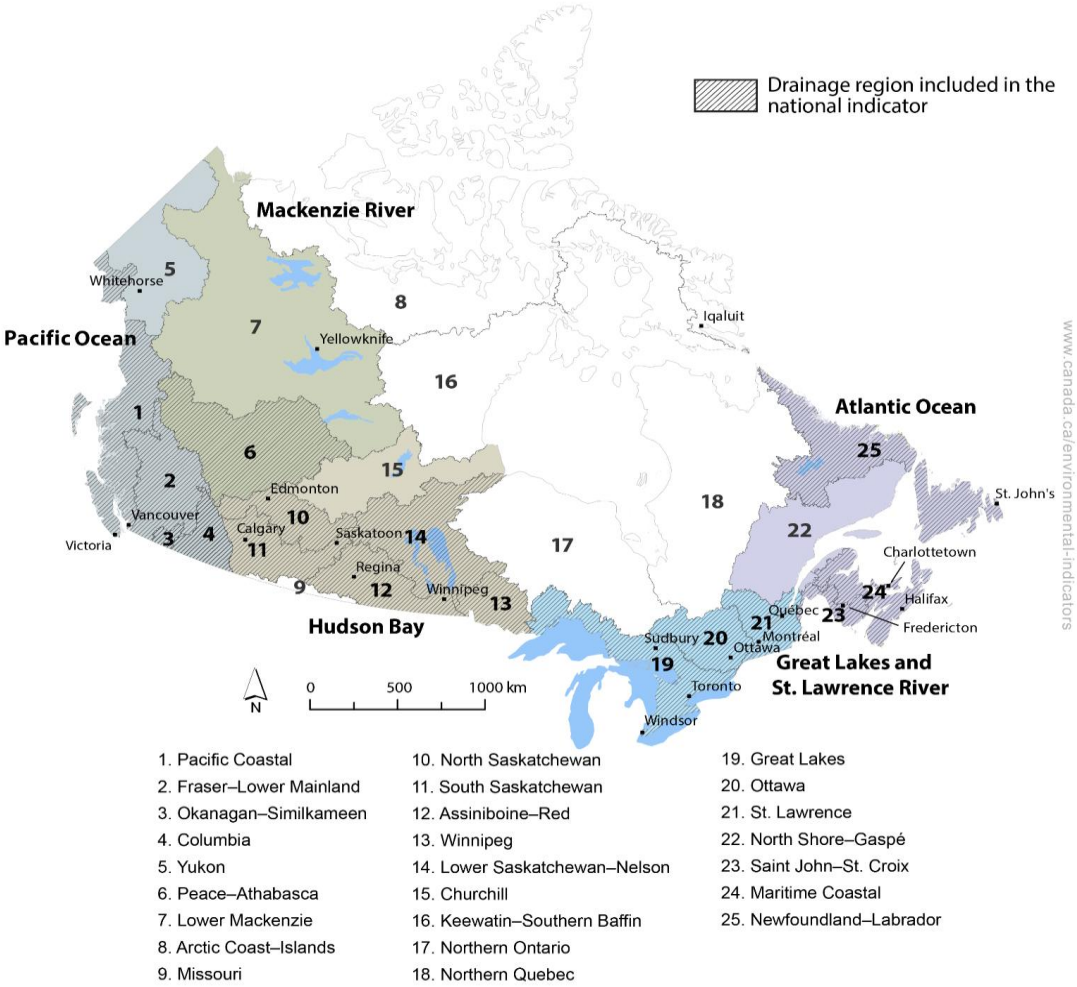
Water quality guidelines for the protection of aquatic life are used to calculate the indicators. They come from the Canadian Council of Ministers of the Environment, the United States Environmental Protection Agency and provincial and territorial government sources. Where these guidelines do not exist, other guidelines, such as irrigation guidelines, are used. A complete list of water quality guidelines used by each jurisdiction can be found in Annex C.

Additional information from Statistics Canada, Natural Resources Canada, Agriculture and Agri-Food Canada and Environment and Climate Change Canada are used to assess land use.

More information

For the 2022 to 2024 period, water quality data from 157 sites were used to compile the national indicator. These data were drawn from monitoring sites in Canada's 16 southern most drainage regions. The 16 regions were selected based on population and land-use to create the water quality indicator core network for national water quality reporting.

Figure 8. Geographic extent of the 16 drainage regions selected for the national network of water quality indicators



The regional indicator groups these 16 drainage regions into 5 larger drainage regions, based on the water body into which these rivers ultimately drain:

- Atlantic Ocean region (22, 23, 24, 25)
- Great Lakes and St. Lawrence River region (19, 20, 21)
- Hudson Bay region (10, 11, 12, 13, 14, 15)
- Mackenzie River region (6, 7)
- Pacific Ocean region (1, 2, 3, 4, 5)

Parts of the Mackenzie River region fall outside of the 16 drainage regions (Figure 9). In order to ensure proper coverage in the regional indicator, 14 sites were added: 4 sites in Alberta, 1 site in Saskatchewan and 9 sites in the Northwest Territories. These additional sites were not included in the national indicator analysis. In the Atlantic Ocean region, the North Shore-Gaspé drainage region is not included in the Freshwater Quality Monitoring and Surveillance program.

Water quality is evaluated at an additional 147 monitoring sites across Canada. Although these additional sites were not used to calculate the indicators, water quality results for all 318 sites can be explored using the interactive water quality map. These additional sites are not included in the calculations because they do not meet the minimum data requirements detailed in the section below, or because including them would over-represent the region.

Data used to calculate the indicator includes a selection from a total of around 40 water quality parameters, such as major ions, physical parameters, trace metals, nutrients and pesticides, as well as pH, temperature and hardness, required to calculate certain guidelines. Sample timing and frequency are set by monitoring programs and vary among sites.

Each data record is tagged with the site name, the date the sample was collected, the name and the chemical form of the parameter. Land-use and ecological information are also collected for each site. Water quality data, along with water quality indicator scores and site information from the monitoring programs, are stored in a central water quality indicator dictionary housed within a larger database at Environment and Climate Change Canada. Land-use characterization for all monitoring sites was updated in 2019. Land-use at each site was determined using:

- population density from Statistics Canada, Population 2016 by dissemination block level
- mine locations using Natural Resources Canada's 2018 Map 900A: Principal Mineral Areas, Producing Mines, and Oil and Gas fields in Canada, Sixty-Eight Edition
- advanced mineral project’s locations using Natural Resources Canada’s Advances mineral projects inventory released in February 2019
- oil sand’s locations using data provided by Alberta Energy, Government of Alberta 2011
- pulp and paper locations using the Environment and Climate Change Canada's National Pollutant Release Inventory (NPRI): Geographic Distribution of NPRI-Reporting Facilities
- forest loss estimated by time-series analysis of 654 178 Landsat 7 ETM+ images in characterizing global forest extent and change from Global Forest Change 2000 to 2012
- agricultural activity locations using Natural Resources Canada's Land Cover 2010, Cropland class
- estimation of livestock using the "Agri-Environmental Indicator (AEI): Livestock Emissions from Agriculture" dataset estimating net emissions produced by livestock from Soil Landscapes of Canada agricultural areas for census years from 1981 to 2011
- land cover using Natural Resources Canada's Land Cover 2010

Data quality assurance and quality control

Data quality assurance/quality control is performed by each monitoring program that provides the data used to calculate the water quality indicators. Each monitoring program follows standardized methods for sample collection in the field. Chemical analyses are performed in Canadian laboratories accredited by the Canadian Association for Laboratory Accreditation or the Standards Council of Canada.

Environment and Climate Change Canada perform further quality assurance/quality control to ensure datasets meet minimum data requirements for the analysis and that calculation standards are respected. This process verifies the number of samples, sample timing, location of monitoring sites and calculations.

It can lead to the removal of water quality data due to low sampling frequencies, erroneous measurements or where analytical detection limits are higher than the guidelines used in the calculation of the scores. Unusually high or low values in the monitoring datasets are double-checked and confirmed through consultation with the data provider

Minimum data requirements

Calculating the water quality status for most sites requires a minimum of 4 samples per year collected over 3 years. A minimum of 3 samples per year is permitted for northern and remote sites, as access during winter months can be difficult, dangerous and costly. A sensitivity analysis found that there was no significant difference in the water quality index score when mid-winter samples were excluded.

Methods

Water quality is reported in these indicators by measuring a number of chemical and physical properties (parameters) of water. The measured value for each parameter is compared to its water quality guideline.[3]

The water quality is assessed by using the Water Quality Index (WQI) as endorsed by the Canadian Council of Ministers of the Environment.[4]

For each site, 5 to 15 water quality parameters are compared to their guideline value. An index score between 1 and 100 is calculated based on these selected parameters. Sites are assigned a water quality category based on the score. The frequency and amplitude by which a parameter does not meet its guideline negatively impacts the water quality score for a given site. The results are grouped into 5 geographical regions for presentation in the Regional water quality in Canadian rivers indicator.

Annex C contains a complete list of parameters and guidelines used in each jurisdiction. Information on water quality parameters used at individual sites can be found in the interactive water quality map.

More information

Parameter selection

Federal, provincial and territorial water quality experts select the parameters to be assessed at each site based on their knowledge of local water quality stressors. Selected parameters typically include at least one form of the following parameter groups: nutrients (for example, phosphorus, nitrate, nitrite, total nitrogen), metals (for example, zinc, copper, lead), and physico-chemical parameters (for example, pH, turbidity), as well as 2 to 4 regionally specific parameters (for example, chloride, ammonia, dissolved oxygen, pesticides). The water quality index score is based on these selected parameters.

Water quality guideline selection

Water quality guidelines for the protection of aquatic life are recommended limits or statements for a variety of chemical substances and physical parameters, which, if exceeded, may impair aquatic life. These guidelines are based on existing knowledge of a substance's environmental fate, behaviour and chronic or, in a few cases, acute toxicity.

Federal, provincial or territorial water quality experts select the guidelines to use in the calculation of the water quality indicator based on their local relevance. The Canadian Freshwater Quality Guidelines for the Protection of Aquatic Life are recommended if locally relevant. Annex C provides a complete list of guidelines used by provinces and territories and their source.

Background concentrations of naturally occurring substances and other local river characteristics can impact the measured concentration and toxicity of some substances. In these cases, site-specific

[3] Water quality guidelines are thresholds designed to indicate when a chemical or physical property may become harmful to plants and animals.

[4] Canadian Council of Ministers of the Environment (2017) CCME Water Quality Index 2.0 User's Manual (PDF; 1.60 MB). Retrieved on January 5, 2026.

guidelines may be developed using procedures based on background concentrations[5] or a rapid assessment approach. The rapid assessment approach uses long-term monitoring data and adjusts for natural events, such as high flows, which may influence results.[6]

Selection of core sites used at national indicators

Among Canada's 25 drainage regions (Figure 9), 16 were selected based on population and land-use to create the water quality indicator core network for national water quality reporting. Within the 16 selected drainage regions, core sites were selected to ensure site drainage areas do not overlap and are independent of one another. The upstream drainage area of each monitoring site was delineated by Statistics Canada using the National Hydro Network.[7] Where the upstream drainage areas of monitoring sites overlapped, the site furthest downstream was retained for the core network, as the downstream site is impacted by the maximum area in the river basin and, to some degree, reflects the cumulative impact of all upstream stresses. For 14 large rivers, core sites were chosen in the upper, mid and lower portions of the main river and at the most downstream sites on each tributary, when available. Additional core sites were included on these rivers, because water travels thousands of kilometres from the source to the mouth of these rivers. Water quality changes along the way and cannot be summarized by a single downstream monitoring site. The final selection of core sites ensures monitoring sites are well distributed among provinces and drainage regions.

The number of core sites changes from year to year due to samples being missed or lost, which can lead to the site not having the minimum data required to be reported.

Classification of sites

Land-use was assessed in the drainage area of core sites and classified according to the criteria presented in Table 1 using the drainage area of each monitoring site.[8] Even if a site's land-use classification is Agriculture, Forestry, Mining or Populated, it does not mean that these are the only activities taking place at that site. These land-use classifications were determined to be the most representative of the environmental pressures on each site's drainage area based on the data available at the time the analysis was done.

[5] Canadian Council of Ministers of the Environment (2003) Guidance on the Site-Specific Application of Water Quality Guidelines in Canada: Procedures for Deriving Numerical Water Quality Objectives (PDF; 1.25 MB). Retrieved on December 15, 2025.

[6] Government of Canada (2013) Technical Guidance Document for Water Quality Indicator Practitioners Reporting Under the Canadian Environmental Sustainability Indicators (CESI) Initiative 2008. Retrieved on December 15, 2025.

[7] Henry M et al. (2009) Canadian Environmental Sustainability Indicators: Water Quality Index Representivity Report, Statistics Canada.

[8] For more information about land cover classes, consult Natural Resources Canada (2024) Land Cover Products.

Table 1. Criteria for the classification of land use at monitoring sites

Classification	Agriculture[A]		Forestry[A]		Mining[A]		Populated
	Cropland (percentage)	Livestock intensity[B]	Forest loss (percentage)	Number of pulps, paper or sawmills	Number of mines[C]	Number of advanced mineral projects	Population density (people/km^2)
Undeveloped	<1	<0.1	<5	0	0	0	<10
Agriculture (low)	>20	>0.1	<10	0	0	0	<25
Agriculture (medium)	>35	>0.5	<10	0	0	0	<25
Agriculture (high)	>50	>1	<10	0	0	0	<25
Forestry	<1	<0.1	>5	>0	0	0	<25
Mining	<10	<0.1	<5	0	>0	>0	<25
Populated	<10	<0.1	<10	0	0	0	>25
Mixed (agriculture, forestry)	>10	>0.1	>5	>0	0	0	<25
Mixed (agriculture, mining)	>10	>0.1	<5	0	>0	>0	<25
Mixed (agriculture, forestry, mining)	>10	>0.1	>5	>0	>0	>0	<25
Mixed (mining, forestry)	<10	<0.1	>5	>0	>0	>0	<25
Mixed (populated, agriculture)	>10	>0.1	<5	0	0	0	>25
Mixed (populated, agriculture, mining)	>10	>0.1	<5	0	>0	>0	>25
Mixed (populated, forestry, mining)	<10	<0.1	>5	>0	>0	>0	>25
Mixed (populated, agriculture, forestry)	>10	>0.1	>5	>0	0	0	>25
Mixed (populated, forestry)	<10	<0.1	>5	>0	0	0	>25
Mixed (populated, mining)	<10	<0.1	<5	0	>0	>0	>25
Mixed (populated, agriculture, forestry, mining)	>10	>0.1	>5	>0	>0	>0	>25

Note: [A] Criteria must be met. [B] Livestock intensity was calculated by proxy by dividing the total estimated emissions of greenhouse gas by the basin area. The lower value was attributed an intensity value of 0 and the highest value, an intensity value of 1. [C] Mines includes metal mines and mills, non-metal mines, quarries, coal mines, oil sands, oil and gas.

Calculating water quality status

The water quality indicators are calculated using the water quality index, as endorsed by the Canadian Council of Ministers of the Environment. The water quality index calculation considers 3 factors to summarize water quality at a site: scope, frequency and amplitude (Equation 1):

- Scope (F_1) is the percentage of parameters for which the water quality guidelines are not met
- Frequency (F_2) is the percentage of samples for which the water quality guidelines are not met
- Amplitude (F_3) refers to the amount by which the water quality guidelines are not met

The score is normalized to yield a score between 1 and 100. The full set of equations for the water quality index is described in the Canadian Council of Ministers of the Environment (2017) CCME Water Quality Index 2.0 User's Manual (PDF; 1.60 MB).

Equation 1.

$$\text{Water quality index} = 100 - \sqrt{\frac{F_1^2 + F_2^2 + F_3^2}{3}}$$

Water quality scores are grouped into 5 categories following the Canadian Council of Ministers of the Environment's water quality index (Table 2).

Table 2. Score rankings for the Canadian Council of Ministers of the Environment's water quality index

Ranking	Interpretation
Excellent (95.0 to 100.0)	Water quality is protected with a virtual absence of threat of impairment; conditions are very close to pristine or natural.
Good (80.0 to 94.9)	Water quality is protected with only a minor degree of threat or impairment; conditions rarely depart from natural or desirable levels.
Fair (65.0 to 79.9)	Water quality is usually protected but occasionally threatened or impaired; conditions sometimes depart from natural or desirable levels.
Marginal (45.0 to 64.9)	Water quality is frequently threatened or impaired; conditions often depart from natural or desirable levels.
Poor (0 to 44.9)	Water quality is almost always threatened or impaired; conditions usually depart from natural or desired levels.

Three (3) years of data are used to calculate the indicator. This is to dampen temporal variability in the results caused by annual fluctuations in weather and hydrology, to make the water quality indicators more representative of how humans are impacting water quality in rivers.[9]

[9] Government of Canada (2013) Technical Guidance Document for Water Quality Indicator Practitioners Reporting Under the Canadian Environmental Sustainability Indicators (CESI) Initiative 2008. Retrieved on December 15, 2025.

Caveats and limitations

These indicators reflect the state of water quality in rivers in southern Canada. Northern Canada is under-represented.

An additional 14 non-core sites were included in the regional indicator to allow for coverage of the Mackenzie River region. These sites are not included in the national water quality indicator.

The indicators only use data for a subset of variables where guidelines exist. They do not cover all potential water quality issues in Canada.

The indicators reflect the impact of parameters analysed at each site. The station locations, sampling protocols and guidelines used are designed to assess chronic or background water quality and do not reflect the transient effects of spills or other short-term events, unless samples were taken immediately after the event or their effects on water quality are long-lasting.

More information

Water quality guidelines are derived from laboratory studies that do not consider, among other things, the impact of flow on sediment loads in a river. Although site-specific guidelines try to consider the impact of elevated flows on parameter concentrations, elevated levels of naturally occurring substances, such as minerals, nutrients, glacier deposits and soils, can lower water quality ratings.

The water quality indicators do not directly measure biological integrity; they measure whether physical and chemical characteristics of freshwater bodies are acceptable for aquatic life. Although physical and chemical measurements provide good proxies for biological integrity, only biological information provides a direct measurement of conditions for aquatic life.

The water quality indicators only assess the quality of surface waters. Groundwater is not considered in these indicators.

It can be difficult to compare water quality index scores among sites due to variations in the selection of parameters and guidelines to reflect local and regional water quality concerns. The water quality categories assigned based on the scores, however, are comparable. A site classified as marginal has water quality guidelines that are being exceeded frequently and/or by a considerable margin, even if the parameters and guidelines used to make that classification are not exactly the same at all sites.

Only parameters for which water quality guidelines exist can be included in the indicators. The absence of a water quality guideline for a parameter does not mean the parameter is unimportant.

The water quality indicator scores are sensitive to the number of parameters and samples used in their calculation. The number of parameters used in the indicators varies from 5 to 15 depending on the monitoring site, and between 9 and 36 samples can be used for a given parameter. In general, as the number of parameters, or samples, used to calculate the index increases, the score decreases because there is a greater chance of a guideline exceedance.[10]

Water quality varies naturally with weather and hydrological cycles. Although the Water quality in Canadian rivers indicators use a 3-year average to dampen the influence of these variations on the data such as rain fall and snow melt events, care must be taken in comparing one period to another.

[10] Painter S. and Waltho J. (2004) Canadian Water Quality Index: A Sensitivity Analysis. Environment and Climate Change Canada.

Resources

References

Canadian Council of Ministers of the Environment (2017) CCME Water Quality Index 2.0 User's Manual (PDF; 1.60 MB). Retrieved on January 5, 2026.

Government of Canada (2013) Technical Guidance Document for Water Quality Indicator Practitioners Reporting Under the Canadian Environmental Sustainability Indicators (CESI) Initiative 2008. Retrieved on January 5, 2026.

Henry M et al. (2009) Canadian Environmental Sustainability Indicators: Water Quality Index Representivity Report, Statistics Canada.

Natural Resources Canada (2022) National Hydro Network. Retrieved on January 5, 2026.

Natural Resources Canada (2024) Land Cover Products Retrieved on January 5, 2026.

Painter S and Waltho J (2004) Canadian Water Quality Index: A Sensitivity Analysis. Environment and Climate Change Canada.

Statistics Canada (2007) Behaviour Study on the Water Quality Index of the Canadian Council of Ministers of the Environment. Retrieved on January 5, 2026.

Statistics Canada (2018) Standard Drainage Area Classification (SDAC) 2003. Retrieved on January 5, 2026.

Related information

Navigate data using the interactive map

Access data files

Annexes

Annex A. Data tables for the figures presented in this document

Table A. 1. Data for Figure 1. National water quality in Canadian rivers by land-use category, 2022 to 2024 period

Land-use category	Excellent (number of sites)	Excellent (percentage of sites)	Good (number of sites)	Good (percentage of sites)	Fair (number of sites)	Fair (percentage of sites)	Marginal (number of sites)	Marginal (percentage of sites)	Poor (number of sites)	Poor (percentage of sites)
Agriculture	2	1	10	6	13	8	6	4	0	0
Forestry	1	1	8	5	7	4	0	0	0	0
Mining	0	0	3	2	2	1	3	2	0	0
Populated	0	0	0	0	1	1	3	2	0	0
Mixed pressures	6	3	18	11	27	17	17	11	6	4
Undeveloped	1	1	17	11	5	3	1	1	0	0
Total	10	6	56	35	55	35	30	19	6	4

Note: Water quality was evaluated at 157 sites across southern Canada using the Canadian Council of Ministers of the Environment's water quality index. For more information on water quality categories, land-use classification and monitoring sites selection, consult the Data sources and methods section.
Source: Data assembled by Environment and Climate Change Canada from federal, provincial and joint water quality monitoring programs. Population, forestry, mining and land cover statistics for each site's drainage area were provided by Statistics Canada, Natural Resources Canada, Environment and Climate Change Canada, Agriculture and Agri-Food Canada, the Government of Alberta and the University of Maryland.

Table A. 2. Data for Figure 2. Regional water quality category by watershed, Canada, 2022 to 2024 period

Water quality category	Atlantic Ocean (percentage of sites)	Great Lakes and St. Lawrence River (percentage of sites)	Hudson Bay (percentage of sites)	Mackenzie River (percentage of sites)	Pacific Ocean (percentage of sites)
Excellent	2	4	14	16	0
Good	57	21	39	32	22
Fair	30	38	32	47	33
Marginal	11	28	16	5	33
Poor	0	9	0	0	11

Note: For the Regional water quality in Canadian rivers indicator, water quality was assessed at 171 sites across Canada using the Canadian Council of Ministers of the Environment's water quality index. Compared to the national indicator, the Regional water quality in Canadian rivers indicator uses 14 additional monitoring sites and includes more sites in the northern portions of the Mackenzie River and Pacific Ocean regions. Percentages may not add up to 100 due to rounding. For more information, consult the Data sources and methods section.
Source: Data assembled by Environment and Climate Change Canada from federal, provincial, territorial and joint water quality monitoring programs.

Table A. 3. Data for Figure 3. Water quality category by land use, Atlantic Ocean region, 2022 to 2024 period

Land use category	Excellent (number of sites)	Good (number of sites)	Fair (number of sites)	Marginal (number of sites)	Poor (number of sites)
Agriculture	0	3	1	0	0
Forestry	1	8	5	0	0
Mining	0	1	1	0	0
Populated	0	0	0	3	0
Mixed pressures	0	2	4	2	0
Undeveloped	0	12	3	0	0
Total	1	26	14	5	0

Note: Water quality was assessed at 46 sites on rivers draining into the Atlantic Ocean using the Canadian Council of Ministers of the Environment's water quality index. For more information, consult the Data sources and methods section.
Source: Water quality data were assembled by Environment and Climate Change Canada from existing federal, provincial and joint water quality monitoring programs. Population, forestry, mining and land cover statistics for each site's drainage area were provided by Statistics Canada, Natural Resources Canada, Environment and Climate Change Canada, Agriculture and Agri-Food Canada, the Government of Alberta and the University of Maryland.

Table A. 4. Data for Figure 4. Water quality category by land use, Great Lakes and St. Lawrence River region, 2022 to 2024 period

Land use category	Excellent (number of sites)	Good (number of sites)	Fair (number of sites)	Marginal (number of sites)	Poor (number of sites)
Agriculture	2	0	3	2	0
Forestry	0	0	1	0	0
Mining	0	2	1	2	0
Populated	0	0	1	0	0
Mixed pressures	0	7	12	10	5
Undeveloped	0	2	2	1	0
Total	2	11	20	15	5

Note: Water quality was assessed at 53 sites on rivers draining into the Great Lakes or St. Lawrence River using the Canadian Council of Ministers of the Environment's water quality index. For more information, consult the Data sources and methods section.
Source: Water quality data were assembled by Environment and Climate Change Canada from existing federal, provincial and joint water quality monitoring programs. Population, forestry, mining and land cover statistics for each site's drainage area were provided by Statistics Canada, Natural Resources Canada, Environment and Climate Change Canada, Agriculture and Agri-Food Canada, the Government of Alberta and the University of Maryland.

Table A. 5. Data for Figure 5. Water quality category by land-use, Hudson Bay region, 2022 to 2024 period

Land use category	Excellent (number of sites)	Good (number of sites)	Fair (number of sites)	Marginal (number of sites)	Poor (number of sites)
Agriculture	0	7	9	4	0
Forestry	0	0	0	0	0
Mining	0	0	0	0	0
Populated	0	0	0	0	0
Mixed pressures	5	9	5	3	0
Undeveloped	1	1	0	0	0
Total	6	17	14	7	0

Note: Water quality was assessed at 44 sites on rivers draining into the Hudson Bay using the Canadian Council of Ministers of the Environment's water quality index. For more information, consult the Data sources and methods section.
Source: Water quality data were assembled by Environment and Climate Change Canada from existing federal, provincial and joint

water quality monitoring programs. Population, forestry, mining and land cover statistics for each site's drainage area were provided by Statistics Canada, Natural Resources Canada, Environment and Climate Change Canada, Agriculture and Agri-Food Canada, the Government of Alberta and the University of Maryland.

Table A. 6. Data for Figure 6. Water quality category by land use, Mackenzie River region, 2022 to 2024 period

Land use category	Excellent (number of sites)	Good (number of sites)	Fair (number of sites)	Marginal (number of sites)	Poor (number of sites)
Agriculture	0	0	0	0	0
Forestry	0	0	0	0	0
Mining	1	1	0	1	0
Populated	0	0	0	0	0
Mixed pressures	2	1	6	0	0
Undeveloped	0	4	3	0	0
Total	3	6	9	1	0

Note: Water quality was assessed at 19 sites on rivers draining into the Mackenzie River using the Canadian Council of Ministers of the Environment's water quality index. For more information, consult the Data sources and methods section.
Source: Water quality data were assembled by Environment and Climate Change Canada from existing federal, provincial, territorial and joint water quality monitoring programs. Population, forestry, mining and land cover statistics for each site's drainage area were provided by Statistics Canada, Natural Resources Canada, Environment and Climate Change Canada, Agriculture and Agri-Food Canada, the Government of Alberta and the University of Maryland.

Table A. 7. Data for Figure 7. Water quality category by land use, Pacific Ocean region, 2022 to 2024 period

Land use category	Excellent (number of sites)	Good (number of sites)	Fair (number of sites)	Marginal (number of sites)	Poor (number of sites)
Agriculture	0	0	0	0	0
Forestry	0	0	1	0	0
Mining	0	0	0	1	0
Populated	0	0	0	0	0
Mixed Pressures	0	0	2	2	1
Undeveloped	0	2	0	0	0
Total	0	2	3	3	1

Note: Water quality was assessed at 9 sites on rivers draining into the Pacific Ocean using the Canadian Council of Ministers of the Environment's water quality index. For more information, consult the Data sources and methods section.
Source: Water quality data were assembled by Environment and Climate Change Canada from existing federal, provincial, territorial and joint water quality monitoring programs. Population, forestry, mining and land cover statistics for each site's drainage area were provided by Statistics Canada, Natural Resources Canada, Environment and Climate Change Canada, Agriculture and Agri-Food Canada, the Government of Alberta and the University of Maryland.

Annex B. Monitoring programs providing data on ambient water quality

Table B.1. Monitoring programs providing data on ambient water quality

Province/Territory	Monitoring program	Organization(s)
All Canada	Environment and Climate Change Canada's water quality monitoring network (NT, YK, BC, AB, SK, MB, ON, QC, NS, transboundary and interprovincial monitoring sites, federal lands)	Environment and Climate Change Canada
Alberta	Long-term river network monitoring program	Alberta Environment
British Columbia	Canada–British Columbia Water Quality Monitoring Agreement	Environment and Climate Change Canada, British Columbia Ministry of Environment
Manitoba	Ambient Water Quality Monitoring Network	Manitoba Environment and Climate Change
New Brunswick	Canada–New Brunswick Water Quality Monitoring Agreement	Environment and Climate Change Canada, New Brunswick Department of Environment and Local Government
New Brunswick	Long-range Transport of Atmospheric Pollutants Program	Environment and Climate Change Canada
New Brunswick	Surface Water Monitoring Network	New Brunswick Department of Environment and Local Government
Newfoundland and Labrador	Canada–Newfoundland and Labrador Water Quality Monitoring Agreement	Environment and Climate Change Canada, Newfoundland and Labrador Department of Environment, Conservation and Climate Change
Nova Scotia	Canadian Wildlife Service, Park Survey, Maritimes Long-range Transport of Atmospheric Pollutants Program	Environment and Climate Change Canada
Nova Scotia	Nova Scotia Surface Water Quality Monitoring Network	Department of Environment and Climate Change, Nova Scotia
Ontario	Ontario Provincial Water Quality Monitoring Network	Ontario Ministry of the Environment, Conservation and Parks
Prince Edward Island	Canada–Prince Edward Island Water Quality Agreement	Environment and Climate Change Canada, Prince Edward Island Department of Environment, Energy and Climate Action Prince Edward Island

Province/Territory	Monitoring program	Organization(s)
Quebec	Canada–Quebec Water Quality Agreement	Environment and Climate Change Canada, ministère de l'Environnement et de la Lutte contre les changements climatiques, de la Faune et des Parcs du Québec
Quebec	Réseau-Rivières	Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs du Québec
Saskatchewan	Surface Water Quality Monitoring Program	Water Security Agency
Northwest Territories and Nunavut	Water Quality Monitoring Network	Environment and Climate Change Canada
Northwest Territories and Nunavut	Local Rivers Water Quality Monitoring Program	Government of the Northwest Territories, Department of Environment and Climate Change.
Yukon	Canada–Yukon Water Quality & Aquatic Ecosystem Monitoring Agreement	Government of Yukon, Environment and Climate Change Canada

Annex C. Water quality parameters and guidelines used by each province and territory

Abbreviations used in the following tables:

- 2,4-dichlorophenoxyacetic acid (2,4-D)
- 2-methyl-4-chlorophenoxyacetic acid (MCPA)
- calcium carbonate ($CaCO_3$)
- hexavalent chromium (Cr (VI))
- litre (L)
- microgram (µg)
- milligram (mg)
- nanogram (ng)
- nephelometric turbidity unit (NTU)
- nitrogen (N)
- site-specific guidelines (SSG)

Table C.1. Water quality parameters and guidelines used to calculate the Alberta WQI

Parameter	Form	Guideline	Source
2,4-D[A]	n/a	4 µg/L	1
Aluminium[A]	dissolved	0.1 mg/L for pH ≥ 6.5	1
Ammonia	unfiltered	0.019 mg/L	1
Arsenic	total	5 µg/L	1
Cadmium[A]	total	$e^{1.0166*\ln[\text{hardness}]-3.924}$ µg/L where hardness is measured as mg [$CaCO_3$]/L	2
Chloride	dissolved	SSG	1, 5
Copper[A]	total	7 µg/L	3
Copper[B]	total	2 µg/L for hardness < 90 mg [$CaCO_3$]/L $0.2*e^{0.8545*\ln[\text{hardness}]-1.465}$ µg/L for hardness > 90 mg [$CaCO_3$]/L	4
Lead	total	1 µg/L for hardness < 50 mg [$CaCO_3$]/L $e^{1.273*\ln[\text{hardness}]-4.705}$ µg/L for hardness ≥ 50 mg [$CaCO_3$]/L	4
MCPA[A]	n/a	2.6 µg/L	1
Mercury[A]	total inorganic	0.013 µg/L	1
Nickel[B]	total	$e^{0.76*\ln[\text{hardness}]+1.06}$ µg/L where hardness is measured as mg [$CaCO_3$]/L	5
Nitrate-Nitrite	dissolved	SSG	5
Nitrogen[A]	total	1 mg /L	4
Nitrogen	total	SSG	4, 5
Oxygen[A]	dissolved	6.5 mg/L	1, 3
Oxygen	dissolved	SSG	5
pH	n/a	lower 6.5 and upper 9	1
Phosphorus[A]	total	0.05 mg/L	5
Phosphorus	total	SSG	5
Selenium[A]	total	1 µg/L	4
Zinc[A]	total	7.5 µg/L for hardness ≤ 90 mg [$CaCO_3$]/L 7.5 µg/L + 0.75*(hardness-90) for hardness > 90 mg [$CaCO_3$]/L	4
Zinc	total	SSG	1, 5

Note: n/a = not applicable. [A] Applies to sites monitored under provincial monitoring programs.[B] Applies to sites monitored under federal monitoring programs, including the Prairie Provinces Water Board. SSG denotes that different site-specific guidelines or formulas were used at sites. Specific site information is available upon request.

Alberta Water Quality Guideline Sources:

1 Canadian Council of Ministers of the Environment (2025) Canadian Water Quality Guidelines for the Protection of Aquatic Life Summary Table. Retrieved on January 5, 2026.

2 United States Environmental Protection Agency (2001) 2001 Update of Ambient Water Quality Criteria for Cadmium. Document EPA 822-R -01-001. Retrieved on January 5, 2026.

3 Alberta Environment (2018) Environmental Quality Guidelines for Alberta Surface Waters (PDF; 703 kB). Retrieved on January 5, 2026.

4 Government of Canada (2008) Technical Guidance Document for Water Quality Index Practitioners Reporting Under the Canadian Environmental Sustainability Indicators (CESI) Initiative 2008. Environment and Climate Change Canada and Statistics Canada. Retrieved on January 5, 2026.

5 Prairie Provinces Water Board (1992) Schedule E: Agreement on Water Quality. Retrieved on January 5, 2026.

Table C.2. Water quality parameters and guidelines used to calculate the British Columbia WQI

Parameter	Form	Guideline	Source
Alkalinity	n/a	20 mg [$CaCO_3$]/L	1
Arsenic	total	5 µg/L	2
Cadmium	total	$10^{(0.83(\log10[\text{hardness}])-2.46)}$ µg/L for hardness > 50 mg [$CaCO_3$]/L 0.09 µg/L for hardness < 50 mg [$CaCO_3$]/L SSG	2, 3
Chloride	dissolved	120 mg/L	2
Chromium	total	SSG	2, 3, 4, 5 6, 7
Copper	total	2 µg/L for hardness < 90 mg [$CaCO_3$]/L $0.2*e^{0.8545*\ln[\text{hardness}]-1.465}$ µg/L for hardness > 90 mg [$CaCO_3$]/L SSG	3, 6, 8, 9, 10
Cyanide	total	5 µg/L	2
Fluoride	total	[-51.73+92.57$\log_{10}$(hardness)] X 0.01 ug/L (BC08NM001) 0.35 mg/L (BC08NN0021)	11
Iron	total	0.3 mg/L	9
Lead	total	1 µg/L for hardness < 50 mg [$CaCO_3$]/L $e^{1.273*\ln[\text{hardness}]-4.705}$ µg/L for hardness > 50 mg [$CaCO_3$]/L SSG	3, 9, 10
Manganese	total dissolved	50 µg/L	12
Molybdenum	total	50 µg/L 73 µg/L (BC08MH0027)	2
Nickel	total	$e^{0.76*\ln[\text{hardness}]+1.06}$ µg/L where hardness is measured as mg [$CaCO_3$]/L	9
Nitrate	total dissolved	2.93 mgN/L	9
Nitrite	total	0.02 mgN/L	9
Nitrogen	total, dissolved	SSG	13, 9
Oxygen	dissolved	SSG	2, 10, 14, 15, 16
pH	n/a	SSG	2, 3, 14
Phosphorus	total, dissolved	SSG	9, 17
Selenium	total dissolved	SSG	11
Silver	total	0.05 µg/L for hardness ≤ 100 mg [$CaCO_3$]/L 1.9 µg/L for hardness > 100 mg [$CaCO_3$]/L SSG	9
Sulphate	dissolved	SSG	9
Temperature	n/a	SSG	18
Thallium	total	0.8 µg/L	2
Uranium	total	10 µg/L	1
Zinc	Total	SSG	3, 4, 6, 12

Note: n/a = not applicable. SSG denotes that different site-specific guidelines or formulas were used at sites. For details on the derivation of site-specific guidelines, consult BCMOE (1997).

British Columbia Water Quality Guideline Sources:

1 British Columbia Ministry of Environment (2025) British Columbia Working Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture (PDF; 667 kB). Retrieved on January 5, 2026.

2 Canadian Council of Ministers of the Environment (2026) Canadian Water Quality Guidelines for the Protection of Aquatic Life Summary Table. Retrieved on January 5, 2026.

3 Butcher GA (1992) Lower Columbia River, Hugh Keeleyside dam to Birchbank, Water Quality Assessment and Objectives (PDF; 9.9 MB). British Columbia Ministry of the Environment, Lands and Parks. Retrieved on January 5, 2026.

4 British Columbia Ministry of Environment and Climate Change Strategy (2000) Ambient Water Quality Assessment and Objectives for the Lower Columbia River Birchbank to the US border (PDF; 230 kB). Retrieved on January 5, 2026.

5 Environment and Climate Change Canada (2005) Site-specific Water Quality Guidelines for the Liard River at Upper Crossing for the Purpose of National Reporting. Tri-Star Environmental Consulting.

6 Environment and Climate Change Canada (2009) Site-specific Water Quality Guidelines for the Skeena River at Usk for the Purpose of National Reporting. Tri-Star Environmental Consulting.

7 Environment and Climate Change Canada (2009) Site-specific Water Quality Guidelines for the Kootenay River at Kootenay Crossing for the Purpose of National Reporting. Tri-Star Environmental Consulting.

8 British Columbia Ministry of Environment (2019) Copper Water Quality Guideline for the Protection of Marine Aquatic Life (PDF; 591 kB). Retrieved on January 5, 2026.

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10 Obee N (2011) Water Quality Assessment and Objectives for the Cowichan and Koksilah Rivers: First Update. British Columbia Ministry of Environment, Environmental Protection Division and Environmental Sustainability and Strategic Policy Division. Victoria, BC. (PDF; 4.52 MB). Retrieved on January 5, 2026.

11 British Columbia Ministry of Environment and Climate Change Strategy (2024) British Columbia Approved Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture (PDF; 1.13 MB). Retrieved on January 5, 2026.

12 Swain LG (1990) Ambient Water Quality Objectives for the Similkameen River Okanagan Area Overview Report. British Columbia Ministry of Environment (PDF; 245 kB). Retrieved on January 5, 2026.

13 Nordin RN and Pommen LW (2009) Water Quality Guidelines for Nitrogen (Nitrate, Nitrite, and Ammonia): Overview Report Update. British Columbia Ministry of Environment (PDF; 565 kB). Retrieved on January 5, 2026.

14 British Columbia Ministry of Water, Land and Air Protection (1998) Water Quality Assessment and Recommended Objectives for the Salmon River. (PDF; 257 kB). Retrieved on January 5, 2026.

15 Swain LG (1987) Takla-Nechako Areas, Nechako River Water Quality Assessment and Objectives. British Columbia Ministry of Environment and Parks (PDF; 1.15 MB) Retrieved on January 5, 2026.

16 Environment and Climate Change Canada (2005) Site-specific Water Quality Guidelines for the Sumas River at the International Boundary for the Purpose of National Reporting. Tri-Star Environmental Consulting.

17 Ontario Ministry of the Environment and Energy (2021) Water management: policies, guidelines, provincial water quality objectives. Retrieved on January 5, 2026.

18 British Columbia Ministry of Environment (2001) Water Quality Guidelines for Temperature: Overview Report (PDF; 221 kB). Retrieved on January 5, 2026.

Table C.3. Water quality parameters and guidelines used to calculate the Manitoba WQI

Parameter	Form	Guideline	Source
2,4-D	n/a	4 µg/L	1
Ammonia[B]	unfiltered	0.019 mg/L	1, 4
Arsenic[A]	total	150 µg/L	4
Arsenic[B]	total	5 µg/L	1
Cadmium[A]	total	$e^{1.0166*\ln[hardness]-3.924}$ µg/L where hardness is measured as mg [$CaCO_3$]/L	5
Chloride	dissolved	SSG	1, 4, 6
Copper[A]	total	[$e^{0.8545*\ln[hardness]-1.702}$]*(0.96) µg/L where hardness is measured as mg [$CaCO_3$]/L	2
Copper[B]	total	2 µg/L for hardness < 90 mg [$CaCO_3$]/L 0.2*[$e^{0.8545*\ln[hardness]-1.465}$] µg/L for hardness > 90 mg[$CaCO_3$]/L	3
Iron[A]	total	0.3 mg /L	3
Lead[A]	total	($e^{1.273*\ln[hardness]-4.705}$)*(1.46203 - (ln[hardness]*0.145712)) µg/L where hardness is measured as mg [$CaCO_3$]/L	2
Lead[B]	total	1 µg/L for hardness < 50 mg [$CaCO_3$]/L $e^{1.273*\ln[hardness]-4.705}$ µg/L for hardness ≥ 50 mg [$CaCO_3$]/L where hardness is measured as mg [$CaCO_3$]/L	3
MCPA	n/a	2.6 µg/L	1
Nickel[A]	total	$e^{0.8460*\ln[hardness]+0.0584}$ µg/L where hardness is measured as mg [$CaCO_3$]/L	4
Nickel[B]	total	$e^{0.76*\ln[hardness]+1.06}$ µg/L where hardness is measured as mg [$CaCO_3$]/L	3
Nitrate[A]	total	2.9 mg N/L	3
Nitrate-Nitrite	dissolved	SSG	4, 6
Nitrogen	total	SSG	6
Oxygen[A]	dissolved	5 mg/L	3
Oxygen	dissolved	SSG	1, 6
pH	n/a	lower 6.5 and upper 9	1
Phosphorus[A]	total	0.05 mg/L	2, 6
Phosphorus	total	SSG	3, 6
Suspended sediments[A]	n/a	Maximum increase of 25 mg/L for high flow and turbid waters above background levels	3
Zinc[A]	total	$e^{(0.8473*\ln[hardness]+0.884)}$*0.986 µg/L where hardness is measured as mg [$CaCO_3$]/L	2, 5
Zinc	total	SSG	4, 6

Note: n/a = not applicable. [A] Applies to sites monitored under provincial monitoring programs.[B] Applies to sites monitored under federal monitoring programs (Prairie Provinces Water Board). SSG denotes that different site-specific guidelines or formulas were used at sites. Specific site information is available upon request.

Manitoba Water Quality Guideline Sources:

1 Canadian Council of Ministers of the Environment (2026) Canadian Water Quality Guidelines for the Protection of Aquatic Life Summary Table. Retrieved on January 5, 2026.

2 Manitoba Water Stewardship (2011) Manitoba Water Quality Standards, Objectives, and Guidelines (PDF; 912 kB). Retrieved on January 5, 2026.

3 Government of Canada (2013) Technical Guidance Document for Water Quality Index Practitioners Reporting Under the Canadian Environmental Sustainability Indicators (CESI) Initiative 2008. Environment and Climate Change Canada and Statistics Canada. Retrieved on January 5, 2026.

4 United States Environmental Protection Agency (2026) National Recommended Water Quality Criteria – Aquatic Life Criteria Table. Retrieved on January 5, 2026.

5 United States Environmental Protection Agency (2001) 2001 Update of Ambient Water Quality Criteria for Cadmium. (PDF; 10.4MB). Retrieved on January 5, 2026.

6 Prairie Provinces Water Board (1992) Schedule E: Agreement on Water Quality. Retrieved on January 5, 2026.

Table C.3. Water quality parameters and guidelines used to calculate the New Brunswick WQI

Parameter	Form	Guideline	Source
Ammonia[A]	unfiltered	15.6 µg/L	2
Arsenic	total	5 µg/L	2
Chloride	total	120 mg/L	2
Copper	total	2 µg/L for hardness < 90 mg [$CaCO_3$]/L $0.2*e^{0.8545*ln[hardness]-1.465}$ µg/L for hardness > 90 mg [$CaCO_3$]/L	1
Iron	total	0.3 mg/L	1
Nitrate	total	3 mg N/L	1
Oxygen	dissolved	6.5 mg/L	2
pH	n/a	Lower 6.5 and upper 9	2
Phosphorus	total	0.03 mg/L	1
Turbidity	n/a	10 NTU	2
Zinc	total	7.5 µg/L for hardness ≤ 90 mg [$CaCO_3$]/L 7.5 µg/L + 0.75*(hardness-90) for hardness > 90 mg [$CaCO_3$]/L	1

Note: n/a = not applicable. [A] In New Brunswick, the CCME guideline recommended by Environment and Climate Change Canada is adjusted to address the ammonia form measured by the provincial laboratories (Ammonia as N).

New Brunswick Water Quality Guideline Sources:

1 Government of Canada (2013) Technical Guidance Document for Water Quality Index Practitioners Reporting Under the Canadian Environmental Sustainability Indicators (CESI) Initiative 2008. Environment and Climate Change Canada and Statistics Canada. Retrieved on January 5, 2026.

2 Canadian Council of Ministers of the Environment (2026) Canadian Water Quality Guidelines for the Protection of Aquatic Life Summary Table. Retrieved on January 5, 2026.

Table C.4. Water quality parameters and guidelines used to calculate the Newfoundland and Labrador WQI

Parameter	Form	Guideline	Source
Chloride	total	120 mg/L	1
Copper	total	2 µg/L for hardness < 90 mg [$CaCO_3$]/L $0.2*e^{0.8545*ln[hardness]-1.465}$ µg/L for hardness >90 mg [$CaCO_3$]/L	2
Iron	total	SSG	2, 3
Lead	total	1 µg/L for hardness < 50 mg [$CaCO_3$]/L $e^{1.273*ln[hardness]-4.705}$ µg/L for hardness ≥ 50 mg [$CaCO_3$]/L	2
Nickel	total	$e^{0.76*ln[hardness]+1.06}$ µg/L where hardness is measured as mg [$CaCO_3$]/L	2
Nitrate	total	3 mg/L	2
Oxygen	dissolved	9.5 mg/L	1
pH	n/a	SSG	1, 3
Phosphorus	total	0.03 mg/L	2
Zinc	total	7.5 µg/L for hardness ≤ 90 mg [$CaCO_3$]/L 7.5 µg/L + 0.75*(hardness-90) for hardness >90 mg [$CaCO_3$]/L	2

Note: n/a = not applicable. SSG denotes that different site-specific guidelines or formulas were used at sites. Specific site information is available upon request.

Newfoundland and Labrador Water Quality Guideline Sources:

1 Canadian Council of Ministers of the Environment (2026) Canadian Water Quality Guidelines for the Protection of Aquatic Life Summary Table. Retrieved on January 5, 2026.

2 Government of Canada (2013) Technical Guidance Document for Water Quality Index Practitioners Reporting Under the Canadian Environmental Sustainability Indicators (CESI) Initiative 2008. Environment and Climate Change Canada and Statistics Canada. Retrieved on January 5, 2026.

3 Khan AA et al. (2005) Application of CCME Procedures for Deriving Site-specific Water Quality Guidelines for the CCME Water Quality Index (PDF; 688 kB). Water Quality Research Journal 40(4):448-456. Retrieved on January 5, 2026.

Table C.5. Water quality parameters and guidelines used to calculate the Northwest Territories WQI

Parameter	Form	Guideline	Source
Ammonia	unfiltered, dissolved	SSG	1
Arsenic	total	SSG	2
Chloride	dissolved	Lentic-lotic sites: 150 mg/L Lotic sites: SSG	1, 2
Chromium	total	SSG	2
Copper	total	Lentic-lotic sites: 2 µg/L for hardness < 90 mg [$CaCO_3$]/L $0.2*e^{0.8545*ln[hardness]-1.465}$ µg/L for hardness > 90 mg [$CaCO_3$]/L Lotic sites: SSG	1, 3
Iron	total	Lentic-lotic sites: 0.3 mg/L Lotic sites: SSG	1, 3
Lead	total	Lentic-lotic sites: 1 µg/L for hardness < 50 mg [$CaCO_3$]/L $e^{1.273*ln[hardness]-4.705}$ µg/L for hardness ≥ 50 mg [$CaCO_3$]/L Lotic sites: SSG	1, 3
Nitrate-Nitrite	dissolved	SSG	1
Nitrogen	total dissolved	SSG	2, 3
Oxygen	dissolved	SSG	2
pH	n/a	Lentic-lotic sites: lower 6.5 and upper 9 Lotic sites: SSG	1, 2
Phosphorus	total	Lentic-lotic sites: 0.03 mg/L Lotic sites: SSG	2, 3
Zinc	total	Lentic-lotic sites: 7.5 µg/L for hardness ≤ 90 mg [$CaCO_3$]/L 7.5 µg/L + 0.75*(hardness-90) for hardness >90 mg [$CaCO_3$]/L Lotic sites: SSG	2, 3

Note: n/a = not applicable. SSG denotes that different site-specific guidelines or formulas were used at sites. Specific site information is available upon request.

Northwest Territories Water Quality Guideline Sources:

1 Lumb. A., and al. (2006) Application of CCME Water Quality Index to Monitor Water Quality: A Case Study of the Mackenzie River Basin, Canada (PDF; 287 kB). Environmental Monitoring and Assessment 113:411-429. Retrieved on January 5, 2026.

2 Canadian Council of Ministers of the Environment (2026) Canadian Water Quality Guidelines for the Protection of Aquatic Life Summary Table. Retrieved on January 5, 2026.

3 Government of Canada (2013) Technical Guidance Document for Water Quality Index Practitioners Reporting Under the Canadian Environmental Sustainability Indicators (CESI) Initiative 2008. Environment and Climate Change Canada and Statistics Canada. Retrieved on January 5, 2026.

Table C.6. Water quality parameters and guidelines used to calculate the Nova Scotia WQI

Parameter	Form	Guideline	Source
Chloride	dissolved	120 mg/L	1
Copper	total	2 µg/L for hardness < 120 mg [$CaCO_3$]/L 3 µg/L for hardness 120 to 180 mg [$CaCO_3$]/L 4 µg/L for hardness > 180 mg [$CaCO_3$]/L	2
Iron	total	0.3 mg/L	2
Lead	total	1 µg/L for hardness < 60 mg [$CaCO_3$]/L 2 µg/L for hardness 60 to 120 mg [$CaCO_3$]/L 4 µg/L for hardness 120 to 180 mg [$CaCO_3$]/L 7 µg/L for hardness > 180 mg [$CaCO_3$]/L	2
Nitrate	dissolved	3 mg N/L	2
Oxygen	dissolved	6.5 mg/L	1
pH	n/a	Lower 6.5 and upper 9	1
Phosphorus	total	0.03 mg/L	2
Zinc	total	7.5 µg/L for hardness ≤ 90 mg [$CaCO_3$]/L 7.5 µg/L+ 0.75*(hardness-90) for hardness > 90 mg [$CaCO_3$]/L	2

Note: n/a = not applicable.

Nova Scotia Water Quality Guideline Sources:

1 Canadian Council of Ministers of the Environment (2026) Canadian Water Quality Guidelines for the Protection of Aquatic Life Summary Table. Retrieved on January 5, 2026.

2 Government of Canada (2013) Technical Guidance Document for Water Quality Index Practitioners Reporting Under the Canadian Environmental Sustainability Indicators (CESI) Initiative 2008. Environment and Climate Change Canada and Statistics Canada. Retrieved on January 5, 2026.

Table C.7. Water quality parameters and guidelines used to calculate the Ontario WQI

Parameter	Form	Guideline	Source
Ammonia	unfiltered	0.019 mg/L	1, 2
Chloride	total	120 mg/L	1
Copper	total	2 µg/L for hardness < 82 mg/L $0.2*e^{\{0.8545[\ln(\text{hardness})]-1.465\}}$ for hardness from 82 to ≤180 mg/L 4 µg/L for hardness >180 mg/L	1
Iron	total	0.3 mg/L	1
Nitrate	total	2.93 mg N/L	2
Phosphorus	total	0.03 mg/L	2, 3
Zinc	total	7.5 µg/L for hardness ≤ 90 mg $[CaCO_3]$/L 7.5 µg/L + 0.75*(hardness-90) for hardness > 90 mg $[CaCO_3]$/L	2

Ontario Water Quality Guideline Sources:

1 Canadian Council of Ministers of the Environment (2026) Canadian Water Quality Guidelines for the Protection of Aquatic Life Summary Table. Retrieved on January 5, 2026.

2 Government of Canada (2013) Technical Guidance Document for Water Quality Index Practitioners Reporting Under the Canadian Environmental Sustainability Indicators (CESI) Initiative 2008. Environment and Climate Change Canada and Statistics Canada. Retrieved on January 5, 2026.

3 Ontario Ministry of the Environment and Energy (2021) Water management: policies, guidelines, provincial water quality objectives. Retrieved on January 5, 2026.

Table C.8. Water quality parameters and guidelines used to calculate the Prince Edward Island WQI

Parameter	Form	Guideline	Source
Chloride	dissolved	120 mg/L	1
Copper	dissolved	2 µg/L for hardness < 90 mg $[CaCO_3]$/L $0.2*e^{0.8545*\ln[\text{hardness}]-1.465}$ µg/L for hardness > 90 mg $[CaCO_3]$/L	1
Nitrate	dissolved	SSG	2
Oxygen	dissolved	6.5 mg/L	1
pH	n/a	lower 6.5 and upper 9	1
Phosphorus	total	SSG	3
Suspended sediments	n/a	29 mg/L	1
Zinc	dissolved	7.5 µg/L for hardness ≤ 90 mg $[CaCO_3]$/L 7.5 µg/L+ 0.75*(hardness-90) for hardness > 90 mg $[CaCO_3]$/L	1

Note: n/a = not applicable. SSG denotes that different site-specific guidelines or formulas were used at sites. Specific site information is available upon request.

Prince Edward Island Water Quality Guideline Sources:

1 Canadian Council of Ministers of the Environment (2026) Canadian Water Quality Guidelines for the Protection of Aquatic Life Summary Table. Retrieved on January 5, 2026.

2 Bugden, G., Jiang, Y., van den Heuvel, MR., Vandermeulen, H., MacQuarrie, KTB., Crane, CJ. and Raymond, BG. (2014) Nitrogen Loading Criteria For Estuaries In Prince Edward Island. Canadian Technical Report of Fisheries and Aquatic Sciences 3066 Fisheries and Oceans Canada (PDF; 1.10 MB). Retrieved on January 5, 2026.

3 Van den Heuvel MR (2009) Site Specific Guidelines for Phosphorus in relation to the Water Quality Index Calculations for Prince Edward Island (PDF; 1.49 MB). Canadian Rivers Institute, University of Prince Edward Island. 35p. Retrieved on January 5, 2026.

Table C.9. Water quality parameters and guidelines used to calculate the Quebec WQI

Parameter	Form	Guideline	Source
Ammonia	dissolved	19 µg/L	1, 3
Atrazine[B]	n/a	1,8 µg/L	1, 2
Bentazone[B]	n/a	0.51 mg/L	2
Chlorophyll a[A]	n/a	4.75 mg/m^3	4
Chlorophyll a[B]	n/a	10 mg/m^3	3
Copper	dissolved	SSG	3
Dicamba[B]	n/a	10 µg/L	1, 2
Mercury[B]	total	0.026 µg/L	1
Metolachlor[B]	n/a	7.8 µg/L	1
Nickel	total	SSG	1
Nitrate-Nitrite[A]	dissolved	2.9 mg/L	2
Nitrate[B]	dissolved	3 mg/L	1, 3
pH	n/a	Lower 6.5 and upper 9	1, 2
Phosphorus[A]	total	0.03 mg/L	2
Phosphorus[B]	total	0.035 mg/L	1
Turbidity[A]	n/a	5.2 NTU	5
Turbidity	n/a	SSG	1
Zinc[B]	total	7.5 µg/L for hardness ≤ 90 mg [$CaCO_3$]/L 7.5 µg/L + 0.75*(hardness-90) for hardness > 90 mg [$CaCO_3$]/L	3

Note: n/a = not applicable. [A] Only applies to sites monitored under provincial monitoring programs. [B] Only applies to sites monitored under federal monitoring programs. SSG denotes that different site-specific guidelines or formulas were used at sites. Specific site information is available upon request

Quebec Water Quality Guideline Sources:

1 Canadian Council of Ministers of the Environment (2026) Canadian Water Quality Guidelines for the Protection of Aquatic Life Summary Table. Retrieved on January 5, 2026.

2 Ministère du Développement durable, Environnement et Lutte contre les changements climatiques (2025) Critères de la qualité de l'eau de surface (in French only). Retrieved on January 5, 2026.

3 Government of Canada (2013) Technical Guidance Document for Water Quality Index Practitioners Reporting Under the Canadian Environmental Sustainability Indicators (CESI) Initiative 2008. Environment and Climate Change Canada and Statistics Canada. Retrieved on January 5, 2026.

4 Ministère de l'Environnement et de la Lutte contre les changements climatiques (2022). Guide d'interprétation de l'indice de la qualité bactériologique et physicochimique de l'eau (IQBP$_5$ et IQBP$_6$), (PDF; 1.02MB) 21p. (in French only). Retrieved on January 5, 2026.

5 Hébert, S., (1997). Développement d'un indice de la qualité bactoriologique et physico-chimique de l'eau pour les rivières du Québec, Québec, Ministère de l'Environnement et de la Faune, Direction des écosystèmes auqatiques, envirodoq n*EN/970102, 20p., 4 annexes. Retrieved on January 5, 2026

Table C.10. Water quality parameters and guidelines used to calculate the Saskatchewan WQI

Parameter	Form	Guideline	Source
2,4-D	n/a	4 µg/L	1
Ammonia[A]	N	15.6 µg/L	3
Ammonia[B]	unfiltered	19 µg/L	1
Arsenic	total	5 µg/L	1
Chloride[A]	dissolved	120 mg/L	1
Chloride	dissolved	SSG	3
Copper	total	2 µg/L for hardness < 82 mg/L $0.2*e^{\{0.8545[\ln(\text{hardness})]-1.465\}}$ for hardness from 82 to ≤180 mg/L 4 µg/L for hardness >180 mg/L,	1
Lead	total	1 µg/L for hardness ≤ 60 mg/L $e^{\{1.273[\ln(\text{hardness})]-4.705\}}$ for hardness from 60 to 180 mg/L 7 µg/L for hardness > 180 mg/L	1
MCPA[A]	n/a	2.6 µg/L	1
MCPA	n/a	SSG	3
Nickel	total	$e^{0.76*\ln[\text{hardness}]+1.06}$ µg/L where hardness is measured as mg [$CaCO_3$]/L	2
Nitrate[A]	N	3 mg/L	3
Nitrogen	total	SSG	3
Oxygen[A]	dissolved	5.5 mg/L	1
Oxygen	dissolved	SSG	3
pH	n/a	Lower 6.5 and upper 9	1
Phosphorus[A]	total	Northern sites: 0.035 mg/L Southern sites: 0.1 mg/L	4
Phosphorus	total	SSG	3
Zinc[A]	total	7.5 µg/L for hardness ≤ 90 mg [$CaCO_3$]/L 7.5 µg/L+ 0.75*(hardness-90) for hardness > 90 mg [$CaCO_3$]/L	2
Zinc[B]	total	30 µg/L	3

Note: n/a = not applicable. [A] Applies to sites monitored under provincial monitoring programs. [B] Applies to sites monitored under federal monitoring programs (Prairie Provinces Water Board). SSG denotes that different site-specific guidelines or formulas were used at sites. Specific site information is available upon request.

Saskatchewan Water Quality Guideline Sources:

1 Canadian Council of Ministers of the Environment (2026) Canadian Water Quality Guidelines for the Protection of Aquatic Life Summary Table. Retrieved on January 5, 2026.

2 Government of Canada (2013) Technical Guidance Document for Water Quality Index Practitioners Reporting Under the Canadian Environmental Sustainability Indicators (CESI) Initiative 2008. Environment and Climate Change Canada and Statistics Canada. Retrieved on January 5, 2026.

3 Prairie Provinces Water Board (2015). Review of the 1992 Interprovincial Water Quality Objectives and Recommendations for Change. Technical Report to the PPWB Committee on Water Quality, Report #174, Regina (PDF; 16.4 MB). Retrieved on January 5, 2026.

4 Canadian Council of Ministers of the Environment (2004). Canadian Water Quality Guidelines for the Protection of Aquatic Life: Phosphorus (PDF; 542 kB). Retrieved on January 5, 2026.

Table C.11. Water quality parameters and guidelines used to calculate the Yukon WQI

Parameter	Form	Guideline	Source
Alkalinity	total	SSG	6
Arsenic	total	5 µg/L	1
Chromium	total	2.3 µg/L	2
Copper	total	2 µg/L for hardness < 90 mg [$CaCO_3$]/L $0.2*e^{0.8545*ln[hardness]-1.465}$ µg/L for hardness > 90 mg [$CaCO_3$]/L	3
Iron	dissolved	0.3 mg/L	3
Lead	total	1 µg/L for hardness < 50 mg [$CaCO_3$]/L $e^{1.273*ln[hardness]-4.705}$ µg/L for hardness > 50 mg [$CaCO_3$]/L	3
Nitrate	dissolved	2.93 mg/L	3
Nitrite	total	0.02 mg/L	4
Nitrogen	total dissolved	0.7 mg/L	3
Oxygen	dissolved	8 mg/L	5
pH	n/a	lower 6.5 and upper 9	1
Phosphorus	total, total dissolved	0.025 mg/L	3
Selenium	total	1 µg/L (YT09EA0001) 2 µg/L (YT08AB0009, YT10MA0011)	3
Silver	total	0.05 µg/L for hardness < 100 mg [$CaCO_3$]/L 1.9 µg/L for hardness > 100 mg [$CaCO_3$]/L	3
Sulfate	dissolved	SSG	4
Temperature	n/a	SSG	3
Zinc	total	7.5 µg/L for hardness ≤ 90 mg [$CaCO_3$]/L 7.5 µg/L + 0.75*(hardness-90) for hardness >90 mg[$CaCO_3$]/L	3

Note: n/a = not applicable. SSG denotes that different site-specific guidelines or formulas were used at sites. Specific site information is available upon request.

Yukon Water Quality Guideline Sources:

1 Canadian Council of Ministers of the Environment (2026) Canadian Water Quality Guidelines for the Protection of Aquatic Life Summary Table. Retrieved on January 5, 2026.

2 Environment and Climate Change Canada (2005) Site-specific Water Quality Guidelines for the Liard River at Upper Crossing for the Purpose of National Reporting. Tri-Star Environmental Consulting.

3 Government of Canada (2013) Technical Guidance Document for Water Quality Index Practitioners Reporting Under the Canadian Environmental Sustainability Indicators (CESI) Initiative 2008. Environment and Climate Change Canada and Statistics Canada. Retrieved on January 5, 2026.

4 Nordin RN and Pommen LW (2009) Water Quality Guidelines for Nitrogen (Nitrate, Nitrite, and Ammonia): Overview Report Update. British Columbia Ministry of Environment (PDF; 565 kB). Retrieved on January 5, 2026.

5 British Columbia Ministry of Environment (1997) Ambient Water Quality Criteria for Dissolved Oxygen (PDF; 126 kB). British Columbia Ministry of Environment, Water Protection and Sustainability Branch. Victoria, BC. Retrieved on January 5, 2026.

6 British Columbia Ministry of Environment (2025) British Columbia Working Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture (PDF; 897 kB). Retrieved on January 5, 2026.