

Greene Farms Drilling Ltd.

Ph: (403) 580-3006 Fax: (403) 580-3049

Box 328 1006 2nd Ave. Dunmore, Alberta T0J 1A0

www.greenefarmsdrilling.com

Landowner: Robert Fraiser	Client:	
Phone #:	Phone #:	
Address: 120 17B R.R. 60	Address:	
Well ID:	P.O. #	
Pre-Test: 6.06" Post-Test:	Project Name:	
Date: June 11 2024	Location:	1/4 SEC TWP RGE Wof M
Tester: Donavan Regner	Measurements:	Metric Imperial <input checked="" type="checkbox"/>

Pump Test:

MIN	Draw Down	Recovery
1	6.08	4.07
2	6.085	8.065
3	6.09	8.06
4	6.095	8.06
5	6.10	8.06
6	6.105	8.06
7	6.11	8.06
8	6.115	8.06
9	7.00	8.06
10	7.005	8.055
12	7.015	8.05
14	7.025	8.05
16	7.035	8.05
20	7.045	8.05
25	7.05	8.046
30	7.07	8.04
35	7.09	8.035
40	7.11	8.03
50	8.01	8.02
60	8.05	8.01
75	8.095	
90		
105		
120		

Water Supply Assessment Report

Water Well Location	House Barn Corrals Other
Pit Type:	
Pit Condition:	
Pump Size & Type:	
Depth of Pump:	13ft
Casing Type:	Black Corrugated 28"
Casing Size & Condition:	
Well Type:	Dug in
Well Depth:	13.06 ft
Water Level:	6.06 ft
Water Appearance:	Clear
Sample Taken:	
Odor:	Yes

Pumping Information

Open Discharge:	<input checked="" type="radio"/> YES <input type="radio"/> NO	12gpm
Pressure Tank:	YES <input checked="" type="radio"/> NO	
Pressure Reading:		PSI
Special Fittings:	YES <input type="radio"/> NO	
If yes, Explain:		

REPORT TO:

AHS - South Zone (1)
Medicine Hat Public & Community Health Services
Suite 200
88 Valleyview Drive SW
Medicine Hat AB T1A 8N6

PRIVATE DRINKING WATER FROM:

Robert Fraser
7 Schuler Place SE
Medicine Hat AB T1B 4A7 (403) 581-6489
robando@shaw.ca

REQN: T263353

LCTN: NW-06-012-05-W4, BLOCK/UNIT 1 PLAN 8010978
49.96885, 110.6844

SOURCE: Well (Age: 25 yrs, Depth: 21 ft)

COLL. BY: Westley Franks

NOTES: New Owner.

SITE: Well Head

ROUTINE CHEMICAL ANALYSIS	Units	Result	Guideline	Comment	LOQ	Method
Bicarbonate	mg/L	554			NA	Titration
Calcium	mg/L	281			0.10	ICP/MS
Carbonate	mg/L	0			NA	Titration
Chloride	mg/L	61.8	≤ 250 AO		1.00	IC
Fluoride	mg/L	0.26	1.5 MAC		0.1	IC
Hydroxide	mg/L	0			NA	Titration
Iron	mg/L	0.46	≤ 0.3 AO	Above AO	0.01	ICP/MS
Magnesium	mg/L	194			0.10	ICP/MS
Nitrate (N)	mg/L	ND	10 MAC		0.23	IC
Nitrite (N)	mg/L	ND	1 MAC		0.03	IC
Potassium	mg/L	17.1			0.10	ICP/MS
Sodium	mg/L	130	≤ 200 AO		1.00	ICP/MS
Sulfate	mg/L	1275	≤ 500 AO	Above AO	1.00	IC
Total Alkalinity (CaCO ₃)	mg/L	454			NA	Titration
Total Dissolved Solids (Calc)	mg/L	2232	≤ 500 AO	Above AO	NA	Calculated
Total Hardness (CaCO ₃) (Calc)	mg/L	1502			NA	Calculated
pH		8.0	7.0 - 10.5		NA	pH Meter
Conductivity	µS/cm	2690			NA	Conductivity
Anion Sum	mEq/L	37.4			NA	Calculated
Cation Sum	mEq/L	36.1			NA	Calculated
Ion Balance (Cation/Anion)	%	96.5			NA	Calculated
Ion Balance (% Difference)	%	-1.81			NA	Calculated

Results reported relate only to the sample as received and tested by the laboratory. Values less than LOQ are reported as ND.

Test results are from CALA accredited methods.

Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the Canadian Drinking Water Guidelines.

pH holding time (15 min) was not met.

Nitrite/Nitrate holding time (72 hours) and/or storage conditions (≤ 6°C) were not met. If recollection is required, Public Health Inspector should contact ACFT for instructions.

Collected: May 27, 2024 11:00 AM
Received: May 30, 2024
Batch: B006197
Certified: Jun 05, 2024 01:26:09 PM
Reported: Jun 06, 2024 12:51:42 PM

LOQ = Limit of Quantitation
NA = Not Applicable
ND = Not Detected
AO = Aesthetic Objective
MAC = Maximum Acceptable Concentration
Guideline = Canadian Drinking Water

Certified By: Lorinda Butlin
For: David W. Kinniburgh, PhD, FCACB
Director, Alberta Centre For Toxicology





ACFT
Alberta Centre For Toxicology
Advancing Public Health through Excellence in Toxicology

UNIVERSITY OF CALGARY

HM-B 19, 3330 HOSPITAL DRIVE NW
CALGARY, ALBERTA T2N 4N1

REPORT TO:

AHS - South Zone (1)
Medicine Hat Public & Community Health Services
Suite 200
88 Valleyview Drive SW
Medicine Hat AB T1A 8N6

PRIVATE DRINKING WATER FROM:

Robert Fraser
7 Schuler Place SE
Medicine Hat AB T1B 4A7 (403) 581-6489
robando@shaw.ca

REQN: T263353

LCTN: NW-06-012-05-W4, BLOCK/UNIT 1 PLAN 8010978
49.96885, 110.6844

SOURCE: Well (Age: 25 yrs, Depth: 21 ft)

COLL. BY: Westley Franks

NOTES: New Owner.

SITE: Well Head

TOTAL TRACE METALS ANALYSIS	Units	Result	Guideline	Comment	LOQ	Method
Aluminum	mg/L	0.023	2.9 MAC		0.005	ICP/MS
Antimony	mg/L	ND	0.006 MAC		0.001	ICP/MS
Arsenic	mg/L	ND	0.010 MAC		0.001	ICP/MS
Barium	mg/L	0.026	2.0 MAC		0.001	ICP/MS
Beryllium	mg/L	ND			0.001	ICP/MS
Boron	mg/L	0.346	5 MAC		0.05	ICP/MS
Cadmium	mg/L	ND	0.007 MAC		0.001	ICP/MS
Chromium	mg/L	ND	0.05 MAC		0.001	ICP/MS
Cobalt	mg/L	0.002			0.001	ICP/MS
Copper	mg/L	0.002	2 MAC, 1 AO		0.001	ICP/MS
Lead	mg/L	ND	0.005 MAC		0.0001	ICP/MS
Manganese	mg/L	3.3	0.12 MAC, ≤ 0.02 AO	Above MAC, AO	0.001	ICP/MS
Mercury	mg/L	ND	0.001 MAC		0.00005	ICP/MS
Molybdenum	mg/L	0.003			0.001	ICP/MS
Nickel	mg/L	0.007			0.001	ICP/MS
Selenium	mg/L	ND	0.05 MAC		0.001	ICP/MS
Silver	mg/L	ND			0.001	ICP/MS
Strontium	mg/L	1.1	7.0 MAC		0.001	ICP/MS
Thallium	mg/L	ND			0.001	ICP/MS
Titanium	mg/L	0.002			0.001	ICP/MS
Uranium	mg/L	0.028	0.02 MAC	Above MAC	0.001	ICP/MS
Vanadium	mg/L	ND			0.001	ICP/MS
Zinc	mg/L	0.013	≤ 5.0 AO		0.001	ICP/MS

Results reported relate only to the sample as received and tested by the laboratory. Values less than LOQ are reported as ND.

Test results are from CALA accredited methods, except for mercury screening.

Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the Canadian Drinking Water Guidelines.

Mercury result is for screening only. Public Health Inspector should contact ACFT if confirmation is required.

Preservation: Sample was acidified within 7 days of collection time.

Collected: May 27, 2024 11:00 AM

Received: May 30, 2024

Batch: B006198

Certified: Jun 05, 2024 01:26:02 PM

Reported: Jun 06, 2024 12:51:42 PM

LOQ = Limit of Quantitation

NA = Not Applicable

ND = Not Detected

AO = Aesthetic Objective

MAC = Maximum Acceptable Concentration

Guideline = Canadian Drinking Water

Certified By: Lorinda Butlin

For: David W. Kinniburgh, PhD, FCACB
Director, Alberta Centre For Toxicology

Guide to Interpreting Your Drinking Water Trace Metals Analysis Test Results

The laboratory report on the trace metal test results of your drinking water sample is attached.

The Alberta Centre for Toxicology tests drinking water to make sure it's safe to drink. They use the [Guidelines for Canadian Drinking Water Quality](#) set by Health Canada to report safe levels of substances in drinking water, including those that can be harmful to your health. To understand your drinking water test results, use the information below. Some of the results are reported using maximum acceptable concentrations, aesthetic objectives, and operational guidelines.

Maximum Acceptable Concentrations (MAC) are health-based guidelines established based on the review of known health effects associated with each contaminant, the exposure levels, and treatment technologies available to remove the contaminant.

Aesthetic Objectives (AO) are based on aesthetic considerations such as taste, odour and appearance. Aesthetic effects are taken into account when determining if consumers will consider the water drinkable or usable.

Operational Guidelines (OG) are taken into consideration when the presence of a substance may interfere with a treatment process or technology. These are not applicable to private well water supplies.

Additional information about these trace metals may be obtained from Health Canada, [Guidelines for Canadian Drinking Water Quality](#). Some trace metals may not have a MAC, AO or OG limit listed in the Canadian Drinking Water Guidelines. They have been tested for general reference and to provide a more comprehensive trace metals profile.

If your water is found to have exceedances of any of the following parameters, a local public health inspector may be [contacted](#) to discuss what certified residential treatment devices are available.

For more information, please contact your nearest Environmental Public Health office.

Edmonton Main Office
Calgary Main Office
Lethbridge Main Office

780-735-1800
403-943-2288
403-388-6689

Grande Prairie Main Office
Red Deer Main Office
www.ahs.ca/eph

780-513-7517
403-356-6366

PUB-78-201803

© 2018 Safe Healthy Environments, Alberta Health Services



This copyright work is licensed under the [Creative Commons Attribution-NonCommercial-NoDerivative 4.0 International](#). You are free to copy and distribute the work including in other media and formats for non-commercial purposes, as long as you attribute the work to Alberta Health Services, do not adapt the work and abide by the other license terms. To view a copy of this license, see: <https://creativecommons.org/licenses/by-nc-nd/4.0/>. The license does not apply to content for which the Alberta Health Services is not the copyright owner.

This material is intended for general information only and is provided on an "as is", "where is" basis. Although reasonable efforts were made to confirm the accuracy of the information, Alberta Health Services does not make any representation or warranty, express, implied or statutory, as to the accuracy, reliability, completeness, applicability or fitness for a particular purpose of such information. This material is not a substitute for the advice of a qualified health professional. Alberta Health Services expressly disclaims all liability for the use of these materials, and for any claims, actions, demands or suits arising from such use.

Parameter	Guideline	Information
Aluminum	OG - 0.1 or 0.2 mg/L dependant on treatment type	<ul style="list-style-type: none"> Aluminum is found naturally in ground and surface water. It is less common in ground water than in surface water. Acidic environments can increase the concentration of dissolved aluminum in water. The OG for Aluminum is recommended for conventional treatment plants using aluminum-based coagulants. There is no consistent, convincing evidence that aluminum in drinking water causes adverse health effects in humans.
Antimony	MAC - 0.006 mg/L	<ul style="list-style-type: none"> Antimony can enter raw water through natural weathering of rocks, run-off from soil, wastewater effluent discharged from domestic mining and manufacturing sources. It can also leach into drinking water from plumbing fixtures containing antimony. Antimony levels above the MAC may increase the risk of microscopic changes within various body tissues and organs including the thymus, kidney, liver, spleen, and thyroid.
Arsenic	MAC - 0.010 mg/L	<ul style="list-style-type: none"> Arsenic can enter raw water through natural weathering of rocks and run-off from soil entering groundwater. Other sources of arsenic include industrial effluents, mining wastes, atmospheric deposition and run-off from glass and electronic production waste. The MAC is based on treatment achievability. Levels should be kept as low as reasonably achievable. Long term exposure to Arsenic levels above the MAC may increase the risk of cancers in the lung, bladder, liver or skin. Short term exposure to Arsenic levels above the MAC may lead to arsenic poisoning, which can cause symptoms such as pain, vomiting, diarrhea, and impaired nerve function.
Barium	MAC - 1.0 mg/L	<ul style="list-style-type: none"> Barium can enter raw groundwater supplies naturally when the water has a low pH (acidic). Elevated levels of

For more information, please contact your nearest Environmental Public Health office.

Edmonton Main Office
Calgary Main Office
Lethbridge Main Office

780-735-1800
403-943-2288
403-388-6689

Grande Prairie Main Office
Red Deer Main Office
www.ahs.ca/eph

780-513-7517
403-356-6366

PUB-78-201803

© 2018 Safe Healthy Environments, Alberta Health Services



This copyright work is licensed under the [Creative Commons Attribution-NonCommercial-NoDerivatives 4.0](https://creativecommons.org/licenses/by-nc-nd/4.0/) International. You are free to copy and distribute the work including in other media and formats for non-commercial purposes, as long as you attribute the work to Alberta Health Services, do not adapt the work and abide by the other license terms. To view a copy of this license, see: <https://creativecommons.org/licenses/by-nc-nd/4.0/>. The license does not apply to content for which the Alberta Health Services is not the copyright owner.

This material is intended for general information only and is provided on an "as is", "where is" basis. Although reasonable efforts were made to confirm the accuracy of the information, Alberta Health Services does not make any representation or warranty, express, implied or statutory, as to the accuracy, reliability, completeness, applicability or fitness for a particular purpose of such information. This material is not a substitute for the advice of a qualified health professional. Alberta Health Services expressly disclaims all liability for the use of these materials, and for any claims, actions, demands or suits arising from such use.

		<p>barium can be naturally present in groundwater in Alberta. Barium can also be released into groundwater from industrial activity.</p> <ul style="list-style-type: none"> Barium levels above the MAC may increase the risk of developing high blood pressure and cardiovascular disease.
Beryllium	Beryllium is not included in the Guidelines for Canadian Drinking Water Quality. No MAC, AO or OG is available.	<ul style="list-style-type: none"> Currently, no health concerns from exposure to Beryllium in drinking water have been identified by Health Canada. Alberta Health Services is collecting information about Beryllium levels to better understand whether the levels measured are natural or caused by industrial activity.
Boron	MAC - 5.0 mg/L	<ul style="list-style-type: none"> Boron is very common and enters groundwater through rock and soil erosion, industrial effluent and wastewater discharges. Food is the main source of human exposure. Boron levels above the MAC may lead to increased risk of reproductive effects in men, such as testicular atrophy and spermatogenesis. There is also limited evidence of reduced sexual function in men as a result to exposure to elevated levels of Boron.
Cadmium	MAC - 0.005 mg/L	<ul style="list-style-type: none"> Cadmium is a naturally-occurring metal widely used in smelting and manufacturing of many products. Drinking water contamination occurs through the plumbing distribution system if cadmium is a component in solder or an impurity in galvanized distribution pipes. Cadmium above the MAC may increase the risk of kidney damage and softening of bones.
Chromium (VI)	MAC - 0.05 mg/L	<ul style="list-style-type: none"> The main source of Chromium contamination comes from industrial wastewater discharge or water from water cooler systems where chromium is used as an anti-rust agent. Weathering of soil, oxidation, and bacterial action also contribute to chromium concentrations in natural waters.

For more information, please contact your nearest Environmental Public Health office.

Edmonton Main Office
Calgary Main Office
Lethbridge Main Office

780-735-1800
403-943-2288
403-388-6689

Grande Prairie Main Office
Red Deer Main Office
www.ahs.ca/eph

780-513-7517
403-356-6366

PUB-78-201803

© 2018 Safe Healthy Environments, Alberta Health Services



This copyright work is licensed under the [Creative Commons Attribution-NonCommercial-NoDerivative 4.0 International](https://creativecommons.org/licenses/by-nc-nd/4.0/). You are free to copy and distribute the work including in other media and formats for non-commercial purposes, as long as you attribute the work to Alberta Health Services, do not adapt the work and abide by the other license terms. To view a copy of this license, see: <https://creativecommons.org/licenses/by-nc-nd/4.0/>. The license does not apply to content for which the Alberta Health Services is not the copyright owner.

This material is intended for general information only and is provided on an "as is", "where is" basis. Although reasonable efforts were made to confirm the accuracy of the information, Alberta Health Services does not make any representation or warranty, express, implied or statutory, as to the accuracy, reliability, completeness, applicability or fitness for a particular purpose of such information. This material is not a substitute for the advice of a qualified health professional. Alberta Health Services expressly disclaims all liability for the use of these materials, and for any claims, actions, demands or suits arising from such use.

		<ul style="list-style-type: none"> The MAC for Chromium is for Chromium (VI) only, which can be absorbed into the body through the lungs or digestive system and could cause lung cancer or damage to other organs. Chromium III is an essential nutrient.
Cobalt	Cobalt is not included in the Guidelines for Canadian Drinking Water Quality. No MAC, AO or OG is available.	<ul style="list-style-type: none"> Cobalt is a naturally occurring element found in rocks, soil, water, plants, and animals. Currently, no health concerns from exposure to Cadmium in drinking water have been identified by Health Canada. Alberta Health Services is collecting information about Cadmium levels to better understand whether the levels measured are natural or caused by industrial activity.
Copper	AO <1.0 mg/L	<ul style="list-style-type: none"> Copper is used for plumbing, electric wire, electroplating, photography, petroleum refining, roofing, as a catalyst in the chemical industry and in fungicide production. Industrial activities could introduce copper into a water supply. Copper can also enter drinking water when it dissolves from copper piping. Copper is an essential element in human metabolism. Adverse health effects, such as nausea, pain, vomiting, and diarrhea may occur at levels much higher than the AO.
Lead	MAC - 0.005 mg/L	<ul style="list-style-type: none"> Natural sources are not a significant source of lead in drinking water. Corrosion of lead pipes, plumbing and solder as well as lead leaching from UPVC (un-plasticized PVC) pipes containing lead components are possible sources of lead in drinking water. Before 1945, many water pipes were made of lead. Most of these pipes have been replaced in community drinking water systems. Lead can also enter water supplies through landfill leaching and when industrial and municipal wastewater and storm water is discharged. When lead is found at elevated levels in Alberta, it is usually attributed to lead plumbing solder or lead service pipes.

For more information, please contact your nearest Environmental Public Health office.

Edmonton Main Office
Calgary Main Office
Lethbridge Main Office

780-735-1800
403-943-2288
403-388-6689

Grande Prairie Main Office
Red Deer Main Office
www.ahs.ca/eph

780-513-7517
403-356-6366

PUB-78-201803

© 2018 Safe Healthy Environments, Alberta Health Services



This copyright work is licensed under the [Creative Commons Attribution-NonCommercial-NoDerivative 4.0](https://creativecommons.org/licenses/by-nc-nd/4.0/) International. You are free to copy and distribute the work including in other media and formats for non-commercial purposes, as long as you attribute the work to Alberta Health Services, do not adapt the work and abide by the other license terms. To view a copy of this license, see: <https://creativecommons.org/licenses/by-nc-nd/4.0/>. The license does not apply to content for which the Alberta Health Services is not the copyright owner.

This material is intended for general information only and is provided on an "as is", "where is" basis. Although reasonable efforts were made to confirm the accuracy of the information, Alberta Health Services does not make any representation or warranty, express, implied or statutory, as to the accuracy, reliability, completeness, applicability or fitness for a particular purpose of such information. This material is not a substitute for the advice of a qualified health professional. Alberta Health Services expressly disclaims all liability for the use of these materials, and for any claims, actions, demands or suits arising from such use.

		<ul style="list-style-type: none"> The MAC for Lead is based on prevention of developmental effects in infants and children less than 6 years of age. The MAC is also protective of negative effects on learning and memory and effects of kidney function in the general population, and effects on the fetus in pregnant women. Total exposure to lead (from all sources) over many years may cause cancer in the stomach and lungs of humans.
Manganese	MAC 0.12mg/LAO<0.02 mg/L	<ul style="list-style-type: none"> Manganese is an abundant metal commonly found in soil and rocks. Manganese occurs naturally in both surface water and groundwater, and is commonly found at elevated levels in Alberta. Manganese can stain plumbing fixtures and laundry, and have an undesirable taste. Similar to iron, manganese in water may cause of bacterial growth in the distribution system (pipes). Manganese can form coatings on piping, which may come off as black precipitate or specks in the water. The AO for Manganese is based on taste and staining of laundry & plumbing. Although humans need small amounts of manganese in their diet to be healthy, long term consumption of water with Manganese above the MAC could lead to the development of learning and behavioral problems, and potentially deficits in memory, attention, and motor skills. The most sensitive group of individuals are the very young, pregnant women, the elderly, and those with liver disease. Infants consuming formula made with water that has high levels of manganese are particularly at risk.

For more information, please contact your nearest Environmental Public Health office.

Edmonton Main Office
Calgary Main Office
Lethbridge Main Office

780-735-1800
403-943-2288
403-388-6689

Grande Prairie Main Office
Red Deer Main Office
www.ahs.ca/eph

780-513-7517
403-356-6366

PUB-78-201803

© 2018 Safe Healthy Environments, Alberta Health Services



This copyright work is licensed under the [Creative Commons Attribution-NonCommercial-NoDerivative 4.0](https://creativecommons.org/licenses/by-nc-nd/4.0/) International. You are free to copy and distribute the work including in other media and formats for non-commercial purposes, as long as you attribute the work to Alberta Health Services, do not adapt the work and abide by the other license terms. To view a copy of this license, see: <https://creativecommons.org/licenses/by-nc-nd/4.0/>. The license does not apply to content for which the Alberta Health Services is not the copyright owner.

This material is intended for general information only and is provided on an "as is", "where is" basis. Although reasonable efforts were made to confirm the accuracy of the information, Alberta Health Services does not make any representation or warranty, express, implied or statutory, as to the accuracy, reliability, completeness, applicability or fitness for a particular purpose of such information. This material is not a substitute for the advice of a qualified health professional. Alberta Health Services expressly disclaims all liability for the use of these materials, and for any claims, actions, demands or suits arising from such use.

Molybdenum	Molybdenum is not included in the Guidelines for Canadian Drinking Water Quality. No MAC, AO or OG is available	<ul style="list-style-type: none"> • Molybdenum is a naturally occurring metal found in small amounts in soil and rock. It can also be found in groundwater, either naturally occurring or as the result of industrial activities. • Currently, no health concerns from exposure to Molybdenum in drinking water have been identified by Health Canada. • Alberta Health Services is collecting information about Molybdenum levels to better understand whether the levels measured are natural or caused by industrial activity.
Nickel	Nickel is not included in the Guidelines for Canadian Drinking Water Quality. No MAC, AO or OG is available	<ul style="list-style-type: none"> • Nickel released in industrial wastewater ends up in soil or sediment where it strongly attaches to particles containing iron or manganese. Nickel is released into the atmosphere by industries that make or use nickel, nickel alloys, or nickel compounds. It is also released into the atmosphere by oil-burning power plants, coal-burning power plants, and trash incinerators. • Currently, no health concerns from exposure to Nickel in drinking water have been identified by Health Canada. • Alberta Health Services is collecting information about Nickel levels to better understand whether the levels measured are natural or caused by industrial activity.
Selenium	MAC 0.05 mg/L	<ul style="list-style-type: none"> • Selenium enters the raw water supply from petroleum refineries, mines and industrial waste, as well as through the erosion of natural deposits where it is very common. Elevated levels of selenium can be naturally present in groundwater in Alberta. Selenium can be found in non-leaded brass alloy where it has been added to replace lead. Selenium is a metal widely distributed on the earth's crust. • Selenium is an essential nutrient and the greatest exposure is from food. It is found in trace quantities in plants and animal tissues.

For more information, please contact your nearest Environmental Public Health office.

Edmonton Main Office
Calgary Main Office
Lethbridge Main Office

780-735-1800
403-943-2288
403-388-6689

Grande Prairie Main Office
Red Deer Main Office
www.ahs.ca/eph

780-513-7517
403-356-6366

PUB-78-201803

© 2018 Safe Healthy Environments, Alberta Health Services



This copyright work is licensed under the [Creative Commons Attribution-NonCommercial-NoDerivative 4.0](https://creativecommons.org/licenses/by-nc-nd/4.0/) International. You are free to copy and distribute the work including in other media and formats for non-commercial purposes, as long as you attribute the work to Alberta Health Services, do not adapt the work and abide by the other license terms. To view a copy of this license, see: <https://creativecommons.org/licenses/by-nc-nd/4.0/>. The license does not apply to content for which the Alberta Health Services is not the copyright owner.

This material is intended for general information only and is provided on an "as is", "where is" basis. Although reasonable efforts were made to confirm the accuracy of the information, Alberta Health Services does not make any representation or warranty, express, implied or statutory, as to the accuracy, reliability, completeness, applicability or fitness for a particular purpose of such information. This material is not a substitute for the advice of a qualified health professional. Alberta Health Services expressly disclaims all liability for the use of these materials, and for any claims, actions, demands or suits arising from such use.

		<ul style="list-style-type: none"> Chronic exposure to Selenium above the MAC can cause, hair loss, tooth decay, weakened nails and more severely, disturbances of the nervous system such as numbness and tingling of the extremities and muscle weakness.
Silver	Silver is not included in the Guidelines for Canadian Drinking Water Quality. No MAC, AO or OG is available.	<ul style="list-style-type: none"> Silver concentrations in natural water are very low because many silver salts are barely soluble. In Canadian surface waters, concentrations of silver are typically below detection limits. Aside from direct contamination by silver-laden wastewater, silver does not easily enter water supplies. Drinking water contributes negligibly to an individual's daily intake of silver. Currently, no health concerns from exposure to silver in drinking water have been identified by Health Canada. Alberta Health Services is collecting information about silver levels to better understand whether the levels measured are natural or caused by industrial activity.
Thallium	Thallium is not included in the Guidelines for Canadian Drinking Water Quality. No MAC, AO or OG is available.	<ul style="list-style-type: none"> Pure thallium is a bluish-white metal that is found in trace amounts in the earth's crust. Thallium enters the environment primarily from coal-burning and smelting, where it is a trace contaminant of the raw materials. In its pure form, thallium is odorless and tasteless. Currently, no health concerns from exposure to thallium in drinking water have been identified by Health Canada. Alberta Health Services is collecting information about thallium levels to better understand whether the levels measured are natural or caused by industrial activity.
Titanium	Titanium is not included in the Guidelines for Canadian Drinking Water Quality. No MAC, AO or OG is available	<ul style="list-style-type: none"> Titanium contamination enters the environment primarily through airborne industrial emissions, or as a result of spills. Currently, no health concerns from exposure to titanium in drinking water have been identified by Health Canada. Alberta Health Services is collecting information about titanium levels to better understand whether the levels measured are natural or caused by industrial activity.

For more information, please contact your nearest Environmental Public Health office.

Edmonton Main Office
Calgary Main Office
Lethbridge Main Office

780-735-1800
403-943-2288
403-388-6689

Grande Prairie Main Office
Red Deer Main Office
www.ahs.ca/eph

780-513-7517
403-356-6366

PUB-78-201803

© 2018 Safe Healthy Environments, Alberta Health Services



This copyright work is licensed under the [Creative Commons Attribution-NonCommercial-NoDerivative 4.0 International](https://creativecommons.org/licenses/by-nc-nd/4.0/). You are free to copy and distribute the work including in other media and formats for non-commercial purposes, as long as you attribute the work to Alberta Health Services, do not adapt the work and abide by the other license terms. To view a copy of this license, see: <https://creativecommons.org/licenses/by-nc-nd/4.0/>. The license does not apply to content for which the Alberta Health Services is not the copyright owner.

This material is intended for general information only and is provided on an "as is", "where is" basis. Although reasonable efforts were made to confirm the accuracy of the information, Alberta Health Services does not make any representation or warranty, express, implied or statutory, as to the accuracy, reliability, completeness, applicability or fitness for a particular purpose of such information. This material is not a substitute for the advice of a qualified health professional. Alberta Health Services expressly disclaims all liability for the use of these materials, and for any claims, actions, demands or suits arising from such use.

Uranium	MAC 0.02 mg/L	<ul style="list-style-type: none"> Uranium is a common radioactive element that is naturally present in certain types of soil and rocks, especially granite bedrock, as well as sandstone and shale bedrock. It can also be found in low concentrations in food, water and air. Uranium in well water comes from dissolving or eroding soils and rocks that contain uranium. Elevated levels are more likely to be found in drilled wells where the water flows from cracks or fractures in bedrock, rather than shallow dug or bored wells or surface water supplies. Long term exposure to Uranium above the MAC may affect kidney function.
Vanadium	Vanadium is not included in the Guidelines for Canadian Drinking Water Quality. No MAC, AO or OG is available.	<ul style="list-style-type: none"> Vanadium can be found in the earth's crust and in rocks, some iron ores, and crude petroleum deposits. It mainly enters the environment from natural sources through erosion and burning of fuel oils. Vanadium is mostly combined with other metals to make special metal mixtures called alloys. Vanadium mainly enters the environment from natural sources and from the burning of fuel oils. Currently, no health concerns from exposure to vanadium in drinking water have been identified by Health Canada. Alberta Health Services is collecting information about vanadium levels to better understand whether the levels measured are natural or caused by industrial activity.
Zinc	AO<5.0 mg/L	<ul style="list-style-type: none"> Zinc can enter the raw water supply from natural sources, domestic sources, or from industrial emissions of iron, steel, copper and nickel production. Zinc can also enter the water supply if it leaches from galvanized pipes, hot water tanks and brass fittings used in the water distribution system. The AO for Zinc is based on taste. Water with zinc levels above the AO tend to be opalescent (cloudy or milky) and develop a greasy film when boiled. Currently, no health concerns from exposure to Zinc in drinking water have been identified by Health Canada

For more information, please contact your nearest Environmental Public Health office.

Edmonton Main Office
Calgary Main Office
Lethbridge Main Office

780-735-1800
403-943-2288
403-388-6689

Grande Prairie Main Office
Red Deer Main Office
www.ahs.ca/eph

780-513-7517
403-356-6366

PUB-78-201803

© 2018 Safe Healthy Environments, Alberta Health Services



This copyright work is licensed under the [Creative Commons Attribution-NonCommercial-NoDerivative 4.0](https://creativecommons.org/licenses/by-nc-nd/4.0/) International. You are free to copy and distribute the work including in other media and formats for non-commercial purposes, as long as you attribute the work to Alberta Health Services, do not adapt the work and abide by the other license terms. To view a copy of this license, see: <https://creativecommons.org/licenses/by-nc-nd/4.0/>. The license does not apply to content for which the Alberta Health Services is not the copyright owner.

This material is intended for general information only and is provided on an "as is", "where is" basis. Although reasonable efforts were made to confirm the accuracy of the information, Alberta Health Services does not make any representation or warranty, express, implied or statutory, as to the accuracy, reliability, completeness, applicability or fitness for a particular purpose of such information. This material is not a substitute for the advice of a qualified health professional. Alberta Health Services expressly disclaims all liability for the use of these materials, and for any claims, actions, demands or suits arising from such use.

		<ul style="list-style-type: none"> • If galvanized pipes are installed in your drinking water supply, it is recommended the water system is flushed prior to use.
--	--	--

For more information, please contact your nearest Environmental Public Health office.

<i>Edmonton Main Office</i>	<i>780-735-1800</i>	<i>Grande Prairie Main Office</i>	<i>780-513-7517</i>	<i>PUB-78-201803</i>
<i>Calgary Main Office</i>	<i>403-943-2288</i>	<i>Red Deer Main Office</i>	<i>403-356-6366</i>	
<i>Lethbridge Main Office</i>	<i>403-388-6689</i>	<i>www.ahs.ca/eph</i>		

© 2018 Safe Healthy Environments, Alberta Health Services



This copyright work is licensed under the [Creative Commons Attribution-Noncommercial-NoDerivative 4.0](https://creativecommons.org/licenses/by-nc-nd/4.0/) International. You are free to copy and distribute the work including in other media and formats for non-commercial purposes, as long as you attribute the work to Alberta Health Services, do not adapt the work and abide by the other license terms. To view a copy of this license, see: <https://creativecommons.org/licenses/by-nc-nd/4.0/>. The license does not apply to content for which the Alberta Health Services is not the copyright owner.

This material is intended for general information only and is provided on an "as is", "where is" basis. Although reasonable efforts were made to confirm the accuracy of the information, Alberta Health Services does not make any representation or warranty, express, implied or statutory, as to the accuracy, reliability, completeness, applicability or fitness for a particular purpose of such information. This material is not a substitute for the advice of a qualified health professional. Alberta Health Services expressly disclaims all liability for the use of these materials, and for any claims, actions, demands or suits arising from such use.

Understanding Your Drinking Water Chemical Test Results

To understand what your drinking water chemical testing results mean, check the lab report and use the information below.

The guidelines for Canadian drinking water quality have limits for some substances that can be harmful to your health (e.g., nitrates, nitrites, and fluoride). The guidelines are listed as:

- maximum acceptable concentration (MAC) - this is listed as a number and it means how much of a certain chemical is safe to have in water that won't cause harm. For your protection, the maximum limits are set below levels which can cause health problems. Drinking water that continually contains substances at a level greater than its MAC may be harmful.
- aesthetic objectives (AO) - this means other limits set on water. If there is a problem, the water may look, smell, or taste funny.

You don't need to worry about the results for conductivity, cation/anion sum, ion balance, and percentage difference as these tests are done for lab work purposes only.

When a water sample is sent to the Alberta Centre for Toxicology for routine chemical testing, it's tested for all of the substances listed below. The information below doesn't cover **all** chemical parameters of concern outlined in the Guidelines for Canadian Drinking Quality (GCDWQ). If you have a specific health concern, please contact Environmental Health Officer in your area.

Result	Guideline	Information
pH	6.5 to 8.5 AO	<ul style="list-style-type: none"> • A pH is a measure of how acidic or how basic the water is. A pH of 7 is neutral. • A pH higher than 8.5 can cause scales to form (mineral deposits) on cookware, plumbing, and appliance parts. • A pH lower than 6.5 can cause rusting or eating away (corrosion) of plumbing and appliance parts. Corrosive water may dissolve metals from pipes (lead, cadmium, zinc, copper) into water that could cause health problems.
Sodium	200 mg/L AO	<ul style="list-style-type: none"> • Water with more than 200 mg/L of sodium tastes salty. • Drinking water with high sodium isn't a health concern for most people. However, it can be unsafe for anyone on a sodium-free or low-sodium (500 mg/day) diet. Water treated by a water softener may add more sodium (over 300 mg/L) and may not be safe if your sodium is restricted. Talk to your doctor if you have questions.

Potassium	No guideline	<ul style="list-style-type: none">• Potassium concentrations in drinking water are usually low and aren't a problem for healthy people.• Water softeners using potassium chloride can significantly increase the levels of potassium in drinking water. If you have kidney disease or another health problem (e.g., heart disease, diabetes) ask your doctor if you can drink water treated by a water softener.										
Calcium	No guideline	<ul style="list-style-type: none">• All people need calcium to stay healthy.• Calcium makes water harder (see section on total hardness below).• Calcium levels higher than 200 mg/L may cause scaling.										
Magnesium	No guideline	<ul style="list-style-type: none">• All people need magnesium to stay healthy.• Magnesium makes water harder (see section on total hardness below). Levels higher than 150 mg/L may cause loose bowel movements if people are not used to drinking it. Talk to your doctor if you have questions.										
Total hardness	No guideline	<ul style="list-style-type: none">• Water collects minerals (e.g., calcium, magnesium) which cause water hardness as it moves through the ground. Soft water can make corrosion worse, while hard water increases scaling on pipes, water heaters, and appliances. Keeping the level of hardness between 80 and 100 is a good balance between corrosion and scaling.• You need to use more soap when washing with hard water.• Water softeners will lower hardness to acceptable levels, but will increase sodium or potassium levels (see sodium and potassium). <table><tr><th>Hardness</th><th>Level</th></tr><tr><td>soft</td><td>0 to less than 60 mg/L</td></tr><tr><td>medium hard</td><td>60 to more than 120 mg/L</td></tr><tr><td>hard</td><td>120 to less than 180 mg/L</td></tr><tr><td>very hard</td><td>180 mg/L or more</td></tr></table>	Hardness	Level	soft	0 to less than 60 mg/L	medium hard	60 to more than 120 mg/L	hard	120 to less than 180 mg/L	very hard	180 mg/L or more
Hardness	Level											
soft	0 to less than 60 mg/L											
medium hard	60 to more than 120 mg/L											
hard	120 to less than 180 mg/L											
very hard	180 mg/L or more											
Iron	0.3 mg/L AO	<ul style="list-style-type: none">• If the level of iron is higher than 0.3 mg/L, it can cause a red-brown stain on laundry and plumbing fixtures. It might also make water taste like metal.• High iron levels cause iron bacteria to grow on parts of a well, water system, and plumbing. Shock chlorination can control iron bacteria (you may need to do this every year). In very bad cases, you might need an iron filter.										

Total Alkalinity	No guideline	<ul style="list-style-type: none"> Alkalinity is a measure of the water's ability to neutralize acids and maintain a fairly stable pH. The amount of bicarbonate, carbonate, and hydroxide in water forms the alkalinity. Low levels (less than 80 mg/L) can cause corrosion problems. High levels (more than 120 mg/L) can cause scaling.
Carbonate, Bicarbonate, and Hydroxide	No guideline	<ul style="list-style-type: none"> Carbonates, bicarbonates, and hydroxides are related to alkalinity, salinity, and total dissolved solids.
Chloride	250 mg/L AO	<ul style="list-style-type: none"> Chloride levels higher than 250 mg/L can make water taste salty. High levels of chloride might cause corrosion, depending on the alkalinity of the water. A sudden increase in chloride (e.g., road salt, irrigation drainage, sewage) might mean your water supply is polluted.
Fluoride	1.5 mg/L MAC	<ul style="list-style-type: none"> Fluoride levels higher than 1.5 mg/L may increase the risk of white spots on tooth enamel (dental fluorosis) in children with developing teeth (newborns to 8 year olds). Fluoride levels of 2.5 mg/L or higher may increase the risk of bone fractures or a bone disease called skeletal fluorosis, which causes pain and damage to bones and joints in severe cases. If you're concerned about fluoride levels in your drinking water, talk to your dentist or Alberta Health Services Dental Public Health Office. Fluoride can be removed by point-of-use devices like reverse osmosis or distillation. Make sure your devices are CSA or NSF approved.
Nitrate	10 mg/L MAC	<ul style="list-style-type: none"> Nitrate and nitrite levels above limits can cause problems with how blood carries oxygen. This can be very bad for women who are pregnant or breastfeeding and people with health problems. In children younger than 6 months, it can cause methemoglobinemia, which means the blood can't carry oxygen through the body like it should. These people should not drink water or eat food prepared with water if nitrates or nitrites are above the limit. Agricultural waste (e.g., fertilizer), decaying plant matter, and on-site septic systems that don't work properly (or are poorly designed) can cause nitrate and nitrite contamination. Boiling water doesn't decrease or remove nitrates and nitrite from water. Nitrates and nitrites can be removed by point-of-use devices like reverse osmosis, distillation, or ion exchange. Make sure your devices are CSA or NSF approved.
Nitrite	1.0 mg/L MAC	

Sulphate	500 mg/L AO	<ul style="list-style-type: none"> Water naturally contains sulphates. Sulphates can also get into water when plants, animals, and organic wastes decompose. Water with sulphates might also have bacteria, which can change sulphates into a gas that smells like rotten eggs (hydrogen sulphide). These bacteria can cause corrosion problems. To reduce hydrogen sulphide, aerate or chlorinate and then filter well water. High levels of sulphate can cause loose bowel movements if people are not used to drinking it. Regular users get used to high sulphate levels. Babies are more sensitive to sulphate than adults. Don't use water with a sulphate level over 400 mg/L to prepare formula for babies.
Total Dissolved Solids (TDS)	500 mg/L AO	<ul style="list-style-type: none"> TDS is a measure of dissolved minerals in the water. Low TDS can make water taste flat. High TDS can cause scaling and affect how water tastes and smells. When the concentration of TDS is higher than 500 mg/L, the water may have a bitter, salty, or medicine-like taste (depending on what salts are in the water). Reverse osmosis and electrodialysis will remove TDS from water.

If you have any questions about water, contact an Environmental Public Health Office in your area.

Who should I contact if I have any questions?

If you require more information, please contact a Public Health Inspector at one of the following locations in the South Zone.

Brooks	403-501-3255
Crowsnest Pass	403-562-5030
Fort Macleod	403-553-5363
Lethbridge	403-388-6689
Medicine Hat	403-502-8206
Pincher Creek	403-627-1230
Taber	403-223-7230

For more information, please contact your nearest Environmental Public Health office.

Edmonton Main Office
Calgary Main Office
Lethbridge Main Office

780-735-1800
403-943-2295
403-388-6689

Grande Prairie Main Office
Red Deer Main Office
www.albertahealthservices.ca/eph.asp

780-513-7517
403-356-6366

DW-15-001 SZ
Revised: Feb/15