

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: WP2512901		
Client	: Manitoba Conservation & Climate	Laboratory	: ALS Environmental - Winnipeg
Contact	: Amrith Kumar	Account Manager	: Sheriza Rajack-Ahamed
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Project	: Headingley Regional - PWS 89.40	Date Samples Received	: 06-Aug-2025 13:20
PO	: ----	Date Analysis Commenced	: 06-Aug-2025
C-O-C number	: ----	Issue Date	: 14-Aug-2025 17:22
Sampler	: ----		
Site	: Headingley Regional - PWS 89.40		
Quote number	: 2025 WTP Chemistry		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Guideline Comparison

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Kevin Baxter		Metals, Winnipeg, Manitoba
Kevin Baxter		Inorganics, Winnipeg, Manitoba
William Lake		Microbiology, Winnipeg, Manitoba



Summary of Guideline Breaches by Sample

SampleID/Client ID	Matrix	Analyte	Analyte Summary	Guideline	Category	Result	Limit
Headingley Regional 1 - Raw Raw	Water	Colour, true	May interfere with disinfection; removal is important to ensure effective treatment.	CDWG	AO	15.3 CU	15 CU
	Water	Solids, total dissolved [TDS]	Based on taste; TDS above 500 mg/L results in excessive scaling in water pipes, water heaters, boilers and appliances; TDS is composed of calcium, magnesium, sodium, potassium, carbonate, bicarbonate, chloride, sulphate and nitrate.	CDWG	AO	615 mg/L	500 mg/L
	Water	Turbidity	For systems that use groundwater, turbidity should generally be below 1.0 NTU. Filtration systems should be designed and operated to reduce turbidity levels as low as reasonably achievable and strive to achieve a treated water turbidity target from individual filters of less than 0.1 NTU.	CDWG	AO	30.7 NTU	1 NTU
	Water	Iron, total	Based on taste and staining of laundry and plumbing fixtures; no evidence exists of dietary iron toxicity in the general population.	CDWG	AO	912 µg/L	100 µg/L
	Water	Manganese, total	Based on taste and staining of laundry and plumbing fixtures.	CDWG	AO	179 µg/L	20 µg/L
	Water	Manganese, total	Health Basis of MAC: Effects on neurological development and behaviour; deficits in memory, attention, and motor skills. Other: Formula-fed infants (where water containing manganese at levels above the MAC is used to prepare formula) may be especially at risk.	CDWG	MAC	179 µg/L	120 µg/L
	Water	Aluminum, total	The OG value is established to minimize the potential for the distribution system and to avoid other operational and aesthetic issues. It takes treatment achievability into consideration.	CDWG	OG	557 µg/L	100 µg/L



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key: LOR: Limit of Reporting (detection limit).

Unit	Description
-	no units
%	percent
% T/cm	% transmittance per centimetre
AU/cm	absorbance units per centimetre
CU	colour units (1 cu = 1 mg/l pt)
meq/L	milliequivalents per litre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units
µg/L	micrograms per litre
µS/cm	microsiemens per centimetre

>: greater than.

<: less than.

Red shading is applied where the result or the LOR is greater than the Guideline Upper Limit (or lower than the Guideline Lower Limit, if applicable).
For drinking water samples, Red shading is applied where the result for E.coli, fecal or total coliforms is greater than or equal to the Guideline Upper Limit.

Qualifiers

Qualifier	Description
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).



Analytical Results Evaluation

Matrix: Water

Matrix: Water				Client sample ID	Headingley Regional 1 - Raw Raw	Headingley Regional 1 - Raw Raw	Headingley Regional 2 - Treated Treated	Headingley Regional 3 - Distribution @ Rosser Incoming Distribution	----	----	----
Client sampling date / time					06-Aug-2025 09:30	06-Aug-2025 09:30	06-Aug-2025 08:20	06-Aug-2025 11:15	----	----	----
Sub-Matrix					Water	Water	Water	Water	----	----	----
Analyte	CAS Number	Method/Lab	Unit	WP2512901-001	WP2512901-002	WP2512901-003	WP2512901-004	----	----	----	
					Result	Result	Result	Result	----	----	----
Sample Preparation											
Dissolved carbon filtration location		----	EP358/WP	-	lab	----	lab	----	----	----	----
Physical Tests											
Absorbance, UV (@ 254nm)	----	E404/WP	AU/cm	0.180	----	0.0130	----	----	----	----	----
Alkalinity, bicarbonate (as CaCO3)	----	E290/WP	mg/L	227	----	52.8	----	----	----	----	----
Alkalinity, carbonate (as CaCO3)	----	E290/WP	mg/L	15.6	----	<1.0	----	----	----	----	----
Alkalinity, hydroxide (as CaCO3)	----	E290/WP	mg/L	<1.0	----	<1.0	----	----	----	----	----
Alkalinity, total (as CaCO3)	----	E290/WP	mg/L	242	----	52.8	----	----	----	----	----
Colour, true	----	E329/WP	CU	15.3	----	<5.0	----	----	----	----	----
Conductivity	----	E100/WP	µS/cm	1040	----	208	----	----	----	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/WP	mg/L	388	----	43.3	----	----	----	----	----
Langelier index (@ 4°C)	----	EC105A/WP	-	0.937	----	-1.24	----	----	----	----	----
Langelier index (@ 60°C)	----	EC105A/WP	-	1.68	----	-0.468	----	----	----	----	----
pH	----	E108/WP	pH units	8.48	----	7.75	----	----	----	----	----
Solids, total dissolved [TDS]	----	E162-L/WP	mg/L	615	----	113	----	----	----	----	----
Turbidity	----	E121/WP	NTU	30.7	----	0.14	----	----	----	----	----
Transmittance, UV (@ 254nm)	----	E404/WP	% T/cm	66.1	----	97.0	----	----	----	----	----
Anions and Nutrients											
Ammonia, total (as N)	7664-41-7	E298/WP	mg/L	0.178	----	0.0774	----	----	----	----	----



Matrix: Water

Client sample ID				Headingley Regional 1 - Raw Raw	Headingley Regional 1 - Raw Raw	Headingley Regional 2 - Treated Treated	Headingley Regional 3 - Distribution @ Rosser Incoming Distribution	----	----	----
Client sampling date / time				06-Aug-2025 09:30	06-Aug-2025 09:30	06-Aug-2025 08:20	06-Aug-2025 11:15	----	----	----
Sub-Matrix				Water	Water	Water	Water	----	----	----
Analyte	CAS Number	Method/Lab	Unit	WP2512901-001	WP2512901-002	WP2512901-003	WP2512901-004	----	----	----
				Result	Result	Result	Result	----	----	----
Anions and Nutrients										
Bromide	24959-67-9	E235.Br-T/WP	mg/L	0.023	----	<0.010	----	----	----	----
Chloride	16887-00-6	E235.Cl-L/WP	mg/L	46.0	----	12.6	----	----	----	----
Fluoride	16984-48-8	E235.F/WP	mg/L	0.152	----	0.030	----	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3-L/WP	mg/L	<0.0100 ^{DLM}	----	0.0456	----	----	----	----
Nitrite (as N)	14797-65-0	E235.NO2-L/WP	mg/L	<0.0020 ^{DLM}	----	<0.0010	----	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/W P	mg/L	249	----	25.8	----	----	----	----
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/WP	mg/L	8.97	----	1.54	----	----	----	----
Carbon, total organic [TOC]	----	E355-L/WP	mg/L	9.94	----	1.23	----	----	----	----
Ion Balance										
Anion sum	----	EC101A/WP	meq/L	11.3	----	1.95	----	----	----	----
Cation sum (total)	----	EC101A/WP	meq/L	12.3	----	2.06	----	----	----	----
Ion balance (cations/anions)	----	EC101A/WP	%	109	----	106	----	----	----	----
Ion balance (APHA)	----	EC101A/WP	%	4.24	----	2.74	----	----	----	----
Total Metals										
Aluminum, total	7429-90-5	E420/WP	µg/L	557	----	3.0	2.3	----	----	----
Antimony, total	7440-36-0	E420/WP	µg/L	0.58	----	0.072	0.066	----	----	----
Arsenic, total	7440-38-2	E420/WP	µg/L	8.93	----	0.74	0.82	----	----	----
Barium, total	7440-39-3	E420/WP	µg/L	79.4	----	7.64	8.29	----	----	----



Matrix: Water

Client sample ID				Headingley Regional 1 - Raw Raw	Headingley Regional 1 - Raw Raw	Headingley Regional 2 - Treated Treated	Headingley Regional 3 - Distribution @ Rosser Incoming Distribution	----	----	----
Client sampling date / time				06-Aug-2025 09:30	06-Aug-2025 09:30	06-Aug-2025 08:20	06-Aug-2025 11:15	----	----	----
Sub-Matrix				Water	Water	Water	Water	----	----	----
Analyte	CAS Number	Method/Lab	Unit	WP2512901-001	WP2512901-002	WP2512901-003	WP2512901-004	----	----	----
				Result	Result	Result	Result	----	----	----
Total Metals										
Beryllium, total	7440-41-7	E420/WP	µg/L	0.037	----	0.0018	0.0024	----	----	----
Bismuth, total	7440-69-9	E420/WP	µg/L	0.019	----	0.0062	0.00056	----	----	----
Boron, total	7440-42-8	E420/WP	µg/L	160	----	143	142	----	----	----
Cadmium, total	7440-43-9	E420/WP	µg/L	0.0985	----	Not Detected	Not Detected	----	----	----
Calcium, total	7440-70-2	E420/WP	µg/L	66500	----	7740	8440	----	----	----
Cesium, total	7440-46-2	E420/WP	µg/L	0.087	----	0.0029	0.0023	----	----	----
Chromium, total	7440-47-3	E420/WP	µg/L	1.12	----	0.056	Not Detected	----	----	----
Cobalt, total	7440-48-4	E420/WP	µg/L	0.79	----	0.018	0.017	----	----	----
Copper, total	7440-50-8	E420/WP	µg/L	71.7	----	19.3	3.44	----	----	----
Iron, total	7439-89-6	E420/WP	µg/L	912	----	4.7	Not Detected	----	----	----
Lead, total	7439-92-1	E420/WP	µg/L	0.767	----	0.026	Not Detected	----	----	----
Lithium, total	7439-93-2	E420/WP	µg/L	70.4	----	16.7	18.4	----	----	----
Magnesium, total	7439-95-4	E420/WP	µg/L	54000	----	5830	6490	----	----	----
Manganese, total	7439-96-5	E420/WP	µg/L	179	----	5.85	5.66	----	----	----
Molybdenum, total	7439-98-7	E420/WP	µg/L	4.56	----	0.435	0.451	----	----	----
Nickel, total	7440-02-0	E420/WP	µg/L	5.13	----	0.29	0.25	----	----	----
Phosphorus, total	7723-14-0	E420/WP	µg/L	149	----	22	28	----	----	----
Potassium, total	7440-09-7	E420/WP	µg/L	16500	----	3430	3760	----	----	----



Matrix: Water

Matrix: Water				Client sample ID	Headingley Regional 1 - Raw Raw	Headingley Regional 1 - Raw Raw	Headingley Regional 2 - Treated Treated	Headingley Regional 3 - Distribution @ Rosser Incoming Distribution	----	----	----
Client sampling date / time					06-Aug-2025 09:30	06-Aug-2025 09:30	06-Aug-2025 08:20	06-Aug-2025 11:15	----	----	----
Sub-Matrix					Water	Water	Water	Water	----	----	----
Analyte	CAS Number	Method/Lab	Unit	WP2512901-001	WP2512901-002	WP2512901-003	WP2512901-004	----	----	----	
				Result	Result	Result	Result	----	----	----	
Total Metals											
Rubidium, total	7440-17-7	E420/WP	µg/L	4.63	----	0.65	0.83	----	----	----	
Selenium, total	7782-49-2	E420/WP	µg/L	0.822	----	Not Detected	0.083	----	----	----	
Silicon, total	7440-21-3	E420/WP	µg/L	8930	----	1880	2060	----	----	----	
Silver, total	7440-22-4	E420/WP	µg/L	0.011	----	0.0014	Not Detected	----	----	----	
Sodium, total	7440-23-5	E420/WP	µg/L	92200	----	25200	25700	----	----	----	
Strontium, total	7440-24-6	E420/WP	µg/L	358	----	37.7	41.9	----	----	----	
Sulfur, total	7704-34-9	E420/WP	µg/L	93400	----	9500	10700	----	----	----	
Tellurium, total	13494-80-9	E420/WP	µg/L	0.037	----	Not Detected	Not Detected	----	----	----	
Thallium, total	7440-28-0	E420/WP	µg/L	0.022	----	0.0056	0.0011	----	----	----	
Thorium, total	7440-29-1	E420/WP	µg/L	0.11	----	Not Detected	Not Detected	----	----	----	
Tin, total	7440-31-5	E420/WP	µg/L	0.22	----	0.16	0.075	----	----	----	
Titanium, total	7440-32-6	E420/WP	µg/L	16.9	----	Not Detected	0.034	----	----	----	
Tungsten, total	7440-33-7	E420/WP	µg/L	0.011	----	Not Detected	Not Detected	----	----	----	
Uranium, total	7440-61-1	E420/WP	µg/L	3.26	----	0.299	0.339	----	----	----	
Vanadium, total	7440-62-2	E420/WP	µg/L	6.32	----	0.71	0.72	----	----	----	
Zinc, total	7440-66-6	E420/WP	µg/L	16.2	----	3.2	Not Detected	----	----	----	
Zirconium, total	7440-67-7	E420/WP	µg/L	0.64	----	Not Detected	Not Detected	----	----	----	



Matrix: Water

<i>Client sample ID</i>				Headingley Regional 1 - Raw Raw	Headingley Regional 1 - Raw Raw	Headingley Regional 2 - Treated Treated	Headingley Regional 3 - Distribution @ Rosser Incoming Distribution	----	----	----
<i>Client sampling date / time</i>				06-Aug-2025 09:30	06-Aug-2025 09:30	06-Aug-2025 08:20	06-Aug-2025 11:15	----	----	----
<i>Sub-Matrix</i>				Water	Water	Water	Water	----	----	----
<i>Analyte</i>	<i>CAS Number</i>	<i>Method/Lab</i>	<i>Unit</i>	WP2512901-001	WP2512901-002	WP2512901-003	WP2512901-004	----	----	----
				Result	Result	Result	Result	----	----	----
Organic Parameters										
Microcystin	101043-37-2	E576/WP	µg/L	----	<0.15	----	----	----	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.



Summary of Guideline Limits

Analyte	CAS Number	Unit	CDWG AO	CDWG MAC	CDWG OG				
Sample Preparation									
Dissolved carbon filtration location	----	-	----	----	----	----	----	----	----
Physical Tests									
Absorbance, UV (@ 254nm)		AU/cm	----	----	----	----	----	----	----
Alkalinity, bicarbonate (as CaCO ₃)	----	mg/L	----	----	----	----	----	----	----
Alkalinity, carbonate (as CaCO ₃)		mg/L	----	----	----	----	----	----	----
Alkalinity, hydroxide (as CaCO ₃)		mg/L	----	----	----	----	----	----	----
Alkalinity, total (as CaCO ₃)		mg/L	----	----	----	----	----	----	----
Colour, true		CU	15 CU	----	----	----	----	----	----
Conductivity	----	µS/cm	----	----	----	----	----	----	----
Hardness (as CaCO ₃), from total Ca/Mg		mg/L	----	----	----	----	----	----	----
Langelier index (@ 4°C)		-	----	----	----	----	----	----	----
Langelier index (@ 60°C)		-	----	----	----	----	----	----	----
pH	----	pH units	----	----	7 - 10.5 pH units	----	----	----	----
Solids, total dissolved [TDS]		mg/L	500 mg/L	----	----	----	----	----	----
Turbidity	----	NTU	1 NTU	----	----	----	----	----	----
Transmittance, UV (@ 254nm)		% T/cm	----	----	----	----	----	----	----
Anions and Nutrients									
Ammonia, total (as N)	7664-41-7	mg/L	----	----	----	----	----	----	----
Bromide	24959-67-9	mg/L	----	----	----	----	----	----	----
Chloride	16887-00-6	mg/L	250 mg/L	----	----	----	----	----	----
Fluoride	16984-48-8	mg/L	----	1.5 mg/L	----	----	----	----	----
Nitrate (as N)	14797-55-8	mg/L	----	10 mg/L	----	----	----	----	----
Nitrite (as N)	14797-65-0	mg/L	----	1 mg/L	----	----	----	----	----



Sulfate (as SO4)	14808-79-8	mg/L	500 mg/L	----	----	----	----	----	----
Organic / Inorganic Carbon									
Carbon, dissolved organic [DOC]		mg/L	----	----	----	----	----	----	----
Carbon, total organic [TOC]		mg/L	----	----	----	----	----	----	----
Ion Balance									
Anion sum		meq/L	----	----	----	----	----	----	----
Cation sum (total)	----	meq/L	----	----	----	----	----	----	----
Ion balance (cations/anions)	----	%	----	----	----	----	----	----	----
Ion balance (APHA)	----	%	----	----	----	----	----	----	----
Total Metals									
Aluminum, total	7429-90-5	µg/L	----	2900 µg/L	100 µg/L	----	----	----	----
Antimony, total	7440-36-0	µg/L	----	6 µg/L	----	----	----	----	----
Arsenic, total	7440-38-2	µg/L	----	10 µg/L	----	----	----	----	----
Barium, total	7440-39-3	µg/L	----	2000 µg/L	----	----	----	----	----
Beryllium, total	7440-41-7	µg/L	----	----	----	----	----	----	----
Bismuth, total	7440-69-9	µg/L	----	----	----	----	----	----	----
Boron, total	7440-42-8	µg/L	----	5000 µg/L	----	----	----	----	----
Cadmium, total	7440-43-9	µg/L	----	7 µg/L	----	----	----	----	----
Calcium, total	7440-70-2	µg/L	----	----	----	----	----	----	----
Cesium, total	7440-46-2	µg/L	----	----	----	----	----	----	----
Chromium, total	7440-47-3	µg/L	----	50 µg/L	----	----	----	----	----
Cobalt, total	7440-48-4	µg/L	----	----	----	----	----	----	----
Copper, total	7440-50-8	µg/L	1000 µg/L	2000 µg/L	----	----	----	----	----
Iron, total	7439-89-6	µg/L	100 µg/L	----	----	----	----	----	----
Lead, total	7439-92-1	µg/L	----	5 µg/L	----	----	----	----	----
Lithium, total	7439-93-2	µg/L	----	----	----	----	----	----	----
Magnesium, total	7439-95-4	µg/L	----	----	----	----	----	----	----
Manganese, total	7439-96-5	µg/L	20 µg/L	120 µg/L	----	----	----	----	----



Molybdenum, total	7439-98-7	µg/L	----	----	----	----	----	----	----
Nickel, total	7440-02-0	µg/L	----	----	----	----	----	----	----
Phosphorus, total	7723-14-0	µg/L	----	----	----	----	----	----	----
Potassium, total	7440-09-7	µg/L	----	----	----	----	----	----	----
Rubidium, total	7440-17-7	µg/L	----	----	----	----	----	----	----
Selenium, total	7782-49-2	µg/L	----	50 µg/L	----	----	----	----	----
Silicon, total	7440-21-3	µg/L	----	----	----	----	----	----	----
Silver, total	7440-22-4	µg/L	----	----	----	----	----	----	----
Sodium, total	7440-23-5	µg/L	200000 µg/L	----	----	----	----	----	----
Strontium, total	7440-24-6	µg/L	----	7000 µg/L	----	----	----	----	----
Sulfur, total	7704-34-9	µg/L	----	----	----	----	----	----	----
Tellurium, total	13494-80-9	µg/L	----	----	----	----	----	----	----
Thallium, total	7440-28-0	µg/L	----	----	----	----	----	----	----
Thorium, total	7440-29-1	µg/L	----	----	----	----	----	----	----
Tin, total	7440-31-5	µg/L	----	----	----	----	----	----	----
Titanium, total	7440-32-6	µg/L	----	----	----	----	----	----	----
Tungsten, total	7440-33-7	µg/L	----	----	----	----	----	----	----
Uranium, total	7440-61-1	µg/L	----	20 µg/L	----	----	----	----	----
Vanadium, total	7440-62-2	µg/L	----	----	----	----	----	----	----
Zinc, total	7440-66-6	µg/L	5000 µg/L	----	----	----	----	----	----
Zirconium, total	7440-67-7	µg/L	----	----	----	----	----	----	----
Organic Parameters									
Microcystin	101043-37-2	µg/L	----	----	----	----	----	----	----



Key:

CDWG		Canada Guidelines for Canadian Drinking Water Quality (JAN, 2023)
	AO	Aesthetic Objective
	MAC	Maximum Acceptable Concentrations
	OG	Operational Guidance

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: WP2512901	Page	: 1 of 12
Client	: Manitoba Conservation & Climate	Laboratory	: ALS Environmental - Winnipeg
Contact	: Amrith Kumar	Account Manager	: Sheriza Rajack-Ahamed
Address	: 14 Fultz Boulevard Winnipeg MB Canada R3Y 0L6	Address	: 1329 Niakwa Road East, Unit 12 Winnipeg, Manitoba Canada R2J 3T4
Telephone	: 204 340 3423	Telephone	: +1 204 255 9720
Project	: Headingley Regional - PWS 89.40	Date Samples Received	: 06-Aug-2025 13:20
PO	: ----	Issue Date	: 14-Aug-2025 17:20
C-O-C number	: ----		
Sampler	: ----		
Site	: Headingley Regional - PWS 89.40		
Quote number	: 2025 WTP Chemistry		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Aggregate Organics : Microcystin by ELISA (Extraction by Sonication)										
Amber glass vial Headingley Regional 1 - Raw - Raw	E576	06-Aug-2025	----	----	----		11-Aug-2025	14 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Headingley Regional 1 - Raw - Raw	E298	06-Aug-2025	11-Aug-2025	28 days	5 days	✓	11-Aug-2025	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Headingley Regional 2 - Treated - Treated	E298	06-Aug-2025	11-Aug-2025	28 days	5 days	✓	11-Aug-2025	28 days	5 days	✓
Anions and Nutrients : Bromide in Water by IC (Trace level)										
HDPE Headingley Regional 1 - Raw - Raw	E235.Br-T	06-Aug-2025	08-Aug-2025	28 days	2 days	✓	08-Aug-2025	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Trace level)										
HDPE Headingley Regional 2 - Treated - Treated	E235.Br-T	06-Aug-2025	08-Aug-2025	28 days	2 days	✓	08-Aug-2025	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE Headingley Regional 1 - Raw - Raw	E235.Cl-L	06-Aug-2025	08-Aug-2025	28 days	2 days	✓	08-Aug-2025	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC (Low Level)										
HDPE Headingley Regional 2 - Treated - Treated	E235.Cl-L	06-Aug-2025	08-Aug-2025	28 days	2 days	✓	08-Aug-2025	28 days	2 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Fluoride in Water by IC										
HDPE Headingley Regional 1 - Raw - Raw	E235.F	06-Aug-2025	08-Aug-2025	28 days	2 days	✓	08-Aug-2025	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Headingley Regional 2 - Treated - Treated	E235.F	06-Aug-2025	08-Aug-2025	28 days	2 days	✓	08-Aug-2025	28 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Headingley Regional 1 - Raw - Raw	E235.NO3-L	06-Aug-2025	08-Aug-2025	3 days	2 days	✓	08-Aug-2025	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Headingley Regional 2 - Treated - Treated	E235.NO3-L	06-Aug-2025	08-Aug-2025	3 days	2 days	✓	08-Aug-2025	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Headingley Regional 1 - Raw - Raw	E235.NO2-L	06-Aug-2025	08-Aug-2025	3 days	2 days	✓	08-Aug-2025	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Headingley Regional 2 - Treated - Treated	E235.NO2-L	06-Aug-2025	08-Aug-2025	3 days	2 days	✓	08-Aug-2025	3 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE Headingley Regional 1 - Raw - Raw	E235.SO4	06-Aug-2025	08-Aug-2025	28 days	2 days	✓	08-Aug-2025	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE Headingley Regional 2 - Treated - Treated	E235.SO4	06-Aug-2025	08-Aug-2025	28 days	2 days	✓	08-Aug-2025	28 days	2 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass - dissolved (field filtered/sulfuric acid) Headingley Regional 1 - Raw - Raw	E358-L	06-Aug-2025	06-Aug-2025	28 days	0 days	✓	08-Aug-2025	28 days	0 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass - dissolved (field filtered/sulfuric acid) Headingley Regional 2 - Treated - Treated	E358-L	06-Aug-2025	06-Aug-2025	28 days	0 days	✓	08-Aug-2025	28 days	0 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) Headingley Regional 1 - Raw - Raw	E355-L	06-Aug-2025	06-Aug-2025	28 days	0 days	✓	09-Aug-2025	28 days	0 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) Headingley Regional 2 - Treated - Treated	E355-L	06-Aug-2025	06-Aug-2025	28 days	0 days	✓	09-Aug-2025	28 days	0 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Headingley Regional 1 - Raw - Raw	E290	06-Aug-2025	08-Aug-2025	14 days	2 days	✓	08-Aug-2025	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Headingley Regional 2 - Treated - Treated	E290	06-Aug-2025	08-Aug-2025	14 days	2 days	✓	08-Aug-2025	14 days	2 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE Headingley Regional 1 - Raw - Raw	E329	06-Aug-2025	08-Aug-2025	3 days	2 days	✓	08-Aug-2025	3 days	2 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE Headingley Regional 2 - Treated - Treated	E329	06-Aug-2025	08-Aug-2025	3 days	2 days	✓	08-Aug-2025	3 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE Headingley Regional 1 - Raw - Raw	E100	06-Aug-2025	08-Aug-2025	28 days	2 days	✓	08-Aug-2025	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE Headingley Regional 2 - Treated - Treated	E100	06-Aug-2025	08-Aug-2025	28 days	2 days	✓	08-Aug-2025	28 days	2 days	✓



Matrix: **Water** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method	Method	Sampling Date	Extraction / Preparation				Analysis				
Container / Client Sample ID(s)			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Physical Tests : pH by Meter											
HDPE Headingley Regional 1 - Raw - Raw	E108	06-Aug-2025	08-Aug-2025	0.25 hrs	49 hrs	✖ EHTR-FM	08-Aug-2025	0.25 hrs	49 hrs	✖ EHTR-FM	
Physical Tests : pH by Meter											
HDPE Headingley Regional 2 - Treated - Treated	E108	06-Aug-2025	08-Aug-2025	0.25 hrs	50 hrs	✖ EHTR-FM	08-Aug-2025	0.25 hrs	50 hrs	✖ EHTR-FM	
Physical Tests : TDS by Gravimetry (Low Level)											
HDPE Headingley Regional 1 - Raw - Raw	E162-L	06-Aug-2025	----	----	----		08-Aug-2025	7 days	2 days	✓	
Physical Tests : TDS by Gravimetry (Low Level)											
HDPE Headingley Regional 2 - Treated - Treated	E162-L	06-Aug-2025	----	----	----		08-Aug-2025	7 days	2 days	✓	
Physical Tests : Turbidity by Nephelometry											
HDPE Headingley Regional 1 - Raw - Raw	E121	06-Aug-2025	----	----	----		08-Aug-2025	3 days	2 days	✓	
Physical Tests : Turbidity by Nephelometry											
HDPE Headingley Regional 2 - Treated - Treated	E121	06-Aug-2025	----	----	----		08-Aug-2025	3 days	2 days	✓	
Physical Tests : UV Absorbance and Transmittance by Spectrometry											
HDPE Headingley Regional 1 - Raw - Raw	E404	06-Aug-2025	----	----	----		12-Aug-2025	3 days	6 days	✖ EHT	
Physical Tests : UV Absorbance and Transmittance by Spectrometry											
HDPE Headingley Regional 2 - Treated - Treated	E404	06-Aug-2025	----	----	----		12-Aug-2025	3 days	6 days	✖ EHT	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE total (nitric acid) Headingley Regional 1 - Raw - Raw	E420	06-Aug-2025	13-Aug-2025	180 days	7 days	✓	13-Aug-2025	180 days	7 days	✓	

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 Work Order : WP2512901
 Client : Manitoba Conservation & Climate
 Project : Headingley Regional - PWS 89.40



Matrix: **Water**
Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) Headingley Regional 2 - Treated - Treated	E420	06-Aug-2025	13-Aug-2025	180 days	7 days	✓	13-Aug-2025	180 days	7 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) Headingley Regional 3 - Distribution @ Rosser Incoming - Distribution	E420	06-Aug-2025	13-Aug-2025	180 days	7 days	✓	13-Aug-2025	180 days	7 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Conductivity in Water	E100	2153772	1	19	5.2	5.0	✔
pH by Meter	E108	2153774	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	2149612	1	20	5.0	5.0	✔
TDS by Gravimetry (Low Level)	E162-L	2149848	1	15	6.6	5.0	✔
Bromide in Water by IC (Trace level)	E235.Br-T	2149838	1	4	25.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	2149835	1	5	20.0	5.0	✔
Fluoride in Water by IC	E235.F	2149834	1	6	16.6	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	2149837	1	4	25.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	2149836	1	4	25.0	5.0	✔
Sulfate in Water by IC	E235.SO4	2149833	1	16	6.2	5.0	✔
Alkalinity Species by Titration	E290	2153773	1	19	5.2	5.0	✔
Ammonia by Fluorescence	E298	2153897	1	20	5.0	5.0	✔
Colour (True) by Spectrometer (5 CU)	E329	2149813	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	2151764	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	2150381	1	20	5.0	5.0	✔
UV Absorbance and Transmittance by Spectrometry	E404	2155967	2	36	5.5	5.0	✔
Total Metals in Water by CRC ICPMS	E420	2157214	1	18	5.5	5.0	✔
Microcystin by ELISA (Extraction by Sonication)	E576	2152950	1	15	6.6	5.0	✔
Laboratory Control Samples (LCS)							
Conductivity in Water	E100	2153772	1	19	5.2	5.0	✔
pH by Meter	E108	2153774	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	2149612	1	20	5.0	5.0	✔
TDS by Gravimetry (Low Level)	E162-L	2149848	1	15	6.6	5.0	✔
Bromide in Water by IC (Trace level)	E235.Br-T	2149838	1	4	25.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	2149835	1	5	20.0	5.0	✔
Fluoride in Water by IC	E235.F	2149834	1	6	16.6	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	2149837	1	4	25.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	2149836	1	4	25.0	5.0	✔
Sulfate in Water by IC	E235.SO4	2149833	1	16	6.2	5.0	✔
Alkalinity Species by Titration	E290	2153773	1	19	5.2	5.0	✔
Ammonia by Fluorescence	E298	2153897	1	20	5.0	5.0	✔
Colour (True) by Spectrometer (5 CU)	E329	2149813	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	2151764	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	2150381	1	20	5.0	5.0	✔
UV Absorbance and Transmittance by Spectrometry	E404	2155967	2	36	5.5	5.0	✔
Total Metals in Water by CRC ICPMS	E420	2157214	1	18	5.5	5.0	✔



Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Control Samples (LCS) - Continued							
Microcystin by ELISA (Extraction by Sonication)	E576	2152950	1	15	6.6	5.0	✔
Method Blanks (MB)							
Conductivity in Water	E100	2153772	1	19	5.2	5.0	✔
Turbidity by Nephelometry	E121	2149612	1	20	5.0	5.0	✔
TDS by Gravimetry (Low Level)	E162-L	2149848	1	15	6.6	5.0	✔
Bromide in Water by IC (Trace level)	E235.Br-T	2149838	1	4	25.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	2149835	1	5	20.0	5.0	✔
Fluoride in Water by IC	E235.F	2149834	1	6	16.6	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	2149837	1	4	25.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	2149836	1	4	25.0	5.0	✔
Sulfate in Water by IC	E235.SO4	2149833	1	16	6.2	5.0	✔
Alkalinity Species by Titration	E290	2153773	1	19	5.2	5.0	✔
Ammonia by Fluorescence	E298	2153897	1	20	5.0	5.0	✔
Colour (True) by Spectrometer (5 CU)	E329	2149813	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	2151764	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	2150381	1	20	5.0	5.0	✔
UV Absorbance and Transmittance by Spectrometry	E404	2155967	2	36	5.5	5.0	✔
Total Metals in Water by CRC ICPMS	E420	2157214	1	18	5.5	5.0	✔
Microcystin by ELISA (Extraction by Sonication)	E576	2152950	1	15	6.6	5.0	✔
Matrix Spikes (MS)							
Bromide in Water by IC (Trace level)	E235.Br-T	2149838	1	4	25.0	5.0	✔
Chloride in Water by IC (Low Level)	E235.Cl-L	2149835	1	5	20.0	5.0	✔
Fluoride in Water by IC	E235.F	2149834	1	6	16.6	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	2149837	1	4	25.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	2149836	1	4	25.0	5.0	✔
Sulfate in Water by IC	E235.SO4	2149833	1	16	6.2	5.0	✔
Ammonia by Fluorescence	E298	2153897	1	20	5.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	2151764	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	2150381	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	2157214	1	18	5.5	5.0	✔
Microcystin by ELISA (Extraction by Sonication)	E576	2152950	1	15	6.6	5.0	✔



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 ALS Environmental - Winnipeg	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 ALS Environmental - Winnipeg	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally $20 \pm 5^\circ\text{C}$). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 ALS Environmental - Winnipeg	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
TDS by Gravimetry (Low Level)	E162-L ALS Environmental - Winnipeg	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at $180 \pm 2^\circ\text{C}$ for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Trace level)	E235.Br-T ALS Environmental - Winnipeg	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC (Low Level)	E235.Cl-L ALS Environmental - Winnipeg	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F ALS Environmental - Winnipeg	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L ALS Environmental - Winnipeg	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L ALS Environmental - Winnipeg	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 ALS Environmental - Winnipeg	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 ALS Environmental - Winnipeg	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 ALS Environmental - Winnipeg	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Colour (True) by Spectrometer (5 CU)	E329 ALS Environmental - Winnipeg	Water	APHA 2120 C (mod)	Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L ALS Environmental - Winnipeg	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove carbonate-based Inorganic Carbon (IC). Analysis is by high temperature combustion with infrared detection of CO ₂ . Forms of carbon associated with inorganic or organic molecules (e.g. SCN and CN) are included in NPOC if they are not removed by purging under acidic conditions. Notably, NPOC excludes most volatile organic compounds and free cyanide. For samples where the majority of Total Carbon is inorganic, this method provides greater accuracy and reliability versus the TOC by subtraction method (TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Winnipeg	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO ₂ . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
UV Absorbance and Transmittance by Spectrometry	E404 ALS Environmental - Winnipeg	Water	APHA 5910 B (mod)	UV Absorbance is determined by first filtering a sample through a 0.45 micron filter, followed by UV absorbance measurement in a quartz cell at 254 nm. The analysis is carried out without pH adjustment.
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Winnipeg	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Microcystin by ELISA (Extraction by Sonication)	E576 ALS Environmental - Winnipeg	Water	ENVIROLOGIX QUANTIPLATE KIT CAT. EP022	Total Microcystins (intracellular and extracellular) in aqueous matrices is determined by the Enzyme-Linked ImmunoSorbent Assay (ELISA) method. Extraction is by sonication



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A ALS Environmental - Winnipeg	Water	APHA 2340B	"Hardness (as CaCO ₃), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed as CaCO ₃ equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because hardness is a property of water due to dissolved divalent cations. In non-turbid waters, Hardness from total Ca/Mg is normally comparable to Dissolved Hardness, but may be biased high if particulate forms of Ca or Mg are present.
Ion Balance using Total Metals	EC101A ALS Environmental - Winnipeg	Water	APHA 1030E	Cation Sum (using total metals), Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Saturation Index using Laboratory pH (Ca-T)	EC105A ALS Environmental - Winnipeg	Water	APHA 2330B	Langelier Index provides an indication of scale formation potential at a given pH and temperature, and is calculated as per APHA 2330B Saturation Index. Positive values indicate oversaturation with respect to CaCO ₃ . Negative values indicate undersaturation of CaCO ₃ . This calculation uses laboratory pH measurements and provides estimates of Langelier Index at temperatures of 4, 15, 20, 25, 66, and 77°C. Ryznar Stability Index is an alternative index used for scale formation and corrosion potential.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Winnipeg	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Preparation for Total Organic Carbon by Combustion	EP355 ALS Environmental - Winnipeg	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 ALS Environmental - Winnipeg	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon

QUALITY CONTROL REPORT

Work Order	: WP2512901	Page	: 1 of 13
Client	: Manitoba Conservation & Climate	Laboratory	: ALS Environmental - Winnipeg
Contact	: Amrith Kumar	Account Manager	: Sheriza Rajack-Ahamed
Address	: 89.40 - Headingley Regional - PWS 6000 Portage Avenue Headingley MB Canada R4H 1E8	Address	: 1329 Niakwa Road East, Unit 12 Winnipeg, Manitoba Canada R2J 3T4
Telephone	: 204 340 3423	Telephone	: +1 204 255 9720
Project	: Headingley Regional - PWS 89.40	Date Samples Received	: 06-Aug-2025 13:20
PO	: ----	Date Analysis Commenced	: 06-Aug-2025
C-O-C number	: ----	Issue Date	: 14-Aug-2025 17:20
Sampler	: ----		
Site	: Headingley Regional - PWS 89.40		
Quote number	: 2025 WTP Chemistry		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Kevin Baxter	Supervisor - Inorganic	Winnipeg Inorganics, Winnipeg, Manitoba
Kevin Baxter	Supervisor - Inorganic	Winnipeg Metals, Winnipeg, Manitoba
William Lake	Laboratory Supervisor	Winnipeg Microbiology, Winnipeg, Manitoba



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.



Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 2149612)											
WP2512836-001	Anonymous	Turbidity	----	E121	0.10	NTU	7.84	7.87	0.458%	15%	----
Physical Tests (QC Lot: 2149813)											
WP2512827-002	Anonymous	Colour, true	----	E329	5.0	CU	<5.0	<5.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 2149848)											
WP2512865-004	Anonymous	Solids, total dissolved [TDS]	----	E162-L	10.0	mg/L	65.3	61.3	4.0	Diff <2x LOR	----
Physical Tests (QC Lot: 2153772)											
WP2512957-006	Anonymous	Conductivity	----	E100	2.0	µS/cm	936	938	0.213%	10%	----
Physical Tests (QC Lot: 2153773)											
WP2512957-006	Anonymous	Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	243	257	5.60%	20%	----
Physical Tests (QC Lot: 2153774)											
WP2512957-006	Anonymous	pH	----	E108	0.10	pH units	8.60	8.61	0.116%	4%	----
Physical Tests (QC Lot: 2155967)											
WP2512636-001	Anonymous	Absorbance, UV (@ 254nm)	----	E404	0.0050	AU/cm	0.140	0.140	0.00%	20%	----
Physical Tests (QC Lot: 2155968)											
WP2512901-003	Headingley Regional 2 - Treated Treated	Absorbance, UV (@ 254nm)	----	E404	0.0050	AU/cm	0.0130	0.0130	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 2149833)											
WP2512916-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 2149834)											
WP2512916-001	Anonymous	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.217	0.206	5.35%	20%	----
Anions and Nutrients (QC Lot: 2149835)											
WP2512916-001	Anonymous	Chloride	16887-00-6	E235.Cl-L	0.10	mg/L	2.90	2.87	1.14%	20%	----
Anions and Nutrients (QC Lot: 2149836)											
WP2512916-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 2149837)											
WP2512916-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 2149838)											
WP2512916-001	Anonymous	Bromide	24959-67-9	E235.Br-T	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 2153897)											
WP2512935-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0236	0.0210	0.0026	Diff <2x LOR	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Organic / Inorganic Carbon (QC Lot: 2150381)											
WP2512834-002	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	4.75	4.58	0.17	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 2151764)											
WP2512900-023	Anonymous	Carbon, total organic [TOC]	----	E355-L	0.50	mg/L	12.2	12.3	0.862%	20%	----
Total Metals (QC Lot: 2157214)											
WP2512899-003	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	<3.0 µg/L	<0.0030	0	Diff <2x LOR	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	1.06 µg/L	0.00109	2.28%	20%	----
		Barium, total	7440-39-3	E420	0.00010	mg/L	9.28 µg/L	0.00900	3.00%	20%	----
		Beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	0.010	mg/L	109 µg/L	0.109	0.0976%	20%	----
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.050	mg/L	14100 µg/L	13.8	2.43%	20%	----
		Cesium, total	7440-46-2	E420	0.000010	mg/L	<0.010 µg/L	<0.000010	0	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00050	mg/L	<0.50 µg/L	<0.00050	0	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00050	mg/L	4.66 µg/L	0.00457	0.00008	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.010	mg/L	<10 µg/L	<0.010	0	Diff <2x LOR	----
		Lead, total	7439-92-1	E420	0.000050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		Lithium, total	7439-93-2	E420	0.0010	mg/L	15.8 µg/L	0.0156	1.61%	20%	----
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	10600 µg/L	10.4	2.38%	20%	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.74 µg/L	0.00072	0.00002	Diff <2x LOR	----
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.402 µg/L	0.000434	0.000033	Diff <2x LOR	----
		Nickel, total	7440-02-0	E420	0.00050	mg/L	<0.50 µg/L	<0.00050	0	Diff <2x LOR	----
		Phosphorus, total	7723-14-0	E420	0.050	mg/L	69 µg/L	0.074	0.005	Diff <2x LOR	----
		Potassium, total	7440-09-7	E420	0.050	mg/L	2110 µg/L	2.09	0.777%	20%	----
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.66 µg/L	0.00060	0.00005	Diff <2x LOR	----
		Selenium, total	7782-49-2	E420	0.000050	mg/L	0.164 µg/L	0.000080	0.000084	Diff <2x LOR	----
		Silicon, total	7440-21-3	E420	0.10	mg/L	1920 µg/L	1.88	2.40%	20%	----
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.010 µg/L	<0.000010	0	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.050	mg/L	19500 µg/L	18.7	4.46%	20%	----
		Strontium, total	7440-24-6	E420	0.00020	mg/L	63.8 µg/L	0.0640	0.405%	20%	----
		Sulfur, total	7704-34-9	E420	0.50	mg/L	17200 µg/L	16.8	2.34%	20%	----
		Tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.20 µg/L	<0.00020	0	Diff <2x LOR	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 2157214) - continued											
WP2512899-003	Anonymous	Thallium, total	7440-28-0	E420	0.000010	mg/L	<0.010 µg/L	<0.000010	0	Diff <2x LOR	----
		Thorium, total	7440-29-1	E420	0.00010	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00010	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.00030	mg/L	<0.30 µg/L	<0.00030	0	Diff <2x LOR	----
		Tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		Uranium, total	7440-61-1	E420	0.000010	mg/L	0.978 µg/L	0.000962	1.61%	20%	----
		Vanadium, total	7440-62-2	E420	0.00050	mg/L	0.82 µg/L	0.00082	0.0000002	Diff <2x LOR	----
		Zinc, total	7440-66-6	E420	0.0030	mg/L	<3.0 µg/L	<0.0030	0	Diff <2x LOR	----
		Zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.20 µg/L	<0.00020	0	Diff <2x LOR	----
Aggregate Organics (QC Lot: 2152950)											
CG2510608-001	Anonymous	Microcystin	101043-37-2	E576	0.15	µg/L	<0.15	<0.15	0	Diff <2x LOR	----



Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 2149612)						
Turbidity	---	E121	0.1	NTU	<0.10	---
Physical Tests (QCLot: 2149813)						
Colour, true	---	E329	5	CU	<5.0	---
Physical Tests (QCLot: 2149848)						
Solids, total dissolved [TDS]	---	E162-L	3	mg/L	<3.0	---
Physical Tests (QCLot: 2153772)						
Conductivity	---	E100	1	µS/cm	<1.0	---
Physical Tests (QCLot: 2153773)						
Alkalinity, total (as CaCO ₃)	---	E290	1	mg/L	<1.0	---
Physical Tests (QCLot: 2155967)						
Absorbance, UV (@ 254nm)	---	E404	0.005	AU/cm	<0.0050	---
Physical Tests (QCLot: 2155968)						
Absorbance, UV (@ 254nm)	---	E404	0.005	AU/cm	<0.0050	---
Anions and Nutrients (QCLot: 2149833)						
Sulfate (as SO ₄)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	---
Anions and Nutrients (QCLot: 2149834)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
Anions and Nutrients (QCLot: 2149835)						
Chloride	16887-00-6	E235.Cl-L	0.1	mg/L	<0.10	---
Anions and Nutrients (QCLot: 2149836)						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	---
Anions and Nutrients (QCLot: 2149837)						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---
Anions and Nutrients (QCLot: 2149838)						
Bromide	24959-67-9	E235.Br-T	0.01	mg/L	<0.010	---
Anions and Nutrients (QCLot: 2153897)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
Organic / Inorganic Carbon (QCLot: 2150381)						
Carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
Organic / Inorganic Carbon (QCLot: 2151764)						
Carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
Total Metals (QCLot: 2157214)						



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 2157214) - continued						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
Boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
Calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
Potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 2157214) - continued						
Uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Aggregate Organics (QCLot: 2152950)						
Microcystin	101043-37-2	E576	0.15	µg/L	<0.15	----



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 2149612)									
Turbidity	----	E121	0.1	NTU	200 NTU	95.0	85.0	115	----
Physical Tests (QCLot: 2149813)									
Colour, true	----	E329	5	CU	250 CU	102	85.0	115	----
Physical Tests (QCLot: 2149848)									
Solids, total dissolved [TDS]	----	E162-L	3	mg/L	1000 mg/L	89.1	85.0	115	----
Physical Tests (QCLot: 2153772)									
Conductivity	----	E100	1	µS/cm	1410 µS/cm	100	90.0	110	----
Physical Tests (QCLot: 2153773)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	100 mg/L	99.4	85.0	115	----
Physical Tests (QCLot: 2153774)									
pH	----	E108	----	pH units	7 pH units	101	98.0	102	----
Physical Tests (QCLot: 2155967)									
Absorbance, UV (@ 254nm)	----	E404	0.005	AU/cm	0.544 AU/cm	96.3	85.0	115	----
Physical Tests (QCLot: 2155968)									
Absorbance, UV (@ 254nm)	----	E404	0.005	AU/cm	0.544 AU/cm	95.8	85.0	115	----
Anions and Nutrients (QCLot: 2149833)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	98.2	90.0	110	----
Anions and Nutrients (QCLot: 2149834)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	95.7	90.0	110	----
Anions and Nutrients (QCLot: 2149835)									
Chloride	16887-00-6	E235.Cl-L	0.1	mg/L	100 mg/L	96.8	90.0	110	----
Anions and Nutrients (QCLot: 2149836)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	96.8	90.0	110	----
Anions and Nutrients (QCLot: 2149837)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.3	90.0	110	----
Anions and Nutrients (QCLot: 2149838)									
Bromide	24959-67-9	E235.Br-T	0.01	mg/L	0.5 mg/L	98.8	85.0	115	----
Anions and Nutrients (QCLot: 2153897)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	98.5	85.0	115	----
Organic / Inorganic Carbon (QCLot: 2150381)									



Sub-Matrix: Water					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Target Concentration	LCS	Low	High	
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Organic / Inorganic Carbon (QCLot: 2150381) - continued									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	98.6	80.0	120	----
Organic / Inorganic Carbon (QCLot: 2151764)									
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	108	80.0	120	----
Total Metals (QCLot: 2157214)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	101	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	99.9	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	99.6	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	101	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	102	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	99.5	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	98.7	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	101	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	98.2	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	99.8	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	99.0	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	100	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.4	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	99.5	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	105	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	96.6	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.0	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	104	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	96.8	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	98.7	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	97.2	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	102	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	89.6	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	99.0	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	97.7	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	93.7	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	101	80.0	120	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	98.7	80.0	120	----



Sub-Matrix: Water					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Target Concentration	LCS	Low	High	Qualifier
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 2157214) - continued									
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	99.4	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	96.5	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	102	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	100.0	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	93.8	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	98.0	80.0	120	----
Aggregate Organics (QCLot: 2152950)									
Microcystin	101043-37-2	E576	0.15	µg/L	0.5 µg/L	75.2	60.0	140	----



Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Water					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 2149833)										
WP2512916-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	97.1 mg/L	100 mg/L	97.1	75.0	125	----
Anions and Nutrients (QCLot: 2149834)										
WP2512916-001	Anonymous	Fluoride	16984-48-8	E235.F	1.00 mg/L	1 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 2149835)										
WP2512916-001	Anonymous	Chloride	16887-00-6	E235.Cl-L	102 mg/L	100 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 2149836)										
WP2512916-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	2.54 mg/L	2.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 2149837)										
WP2512916-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.511 mg/L	0.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 2149838)										
WP2512916-001	Anonymous	Bromide	24959-67-9	E235.Br-T	0.477 mg/L	0.5 mg/L	95.4	75.0	125	----
Anions and Nutrients (QCLot: 2153897)										
WP2512935-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0907 mg/L	0.1 mg/L	90.7	75.0	125	----
Organic / Inorganic Carbon (QCLot: 2150381)										
WP2512900-010	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	----	ND	70.0	130	----
Organic / Inorganic Carbon (QCLot: 2151764)										
WP2512900-024	Anonymous	Carbon, total organic [TOC]	----	E355-L	ND mg/L	----	ND	70.0	130	----
Total Metals (QCLot: 2157214)										
WP2512899-003	Anonymous	Aluminum, total	7429-90-5	E420	0.211 mg/L	0.2 mg/L	105	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0217 mg/L	0.02 mg/L	108	70.0	130	----
		Barium, total	7440-39-3	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.0423 mg/L	0.04 mg/L	106	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.0101 mg/L	0.01 mg/L	101	70.0	130	----
		Boron, total	7440-42-8	E420	ND mg/L	----	ND	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00416 mg/L	0.004 mg/L	104	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	----	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.00993 mg/L	0.01 mg/L	99.3	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0411 mg/L	0.04 mg/L	103	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		Copper, total	7440-50-8	E420	0.0213 mg/L	0.02 mg/L	107	70.0	130	----
		Iron, total	7439-89-6	E420	2.08 mg/L	2 mg/L	104	70.0	130	----
		Lead, total	7439-92-1	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		Lithium, total	7439-93-2	E420	0.104 mg/L	0.1 mg/L	104	70.0	130	----



Sub-Matrix: Water					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 2157214) - continued										
WP2512899-003	Anonymous	Magnesium, total	7439-95-4	E420	ND mg/L	----	ND	70.0	130	----
		Manganese, total	7439-96-5	E420	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		Molybdenum, total	7439-98-7	E420	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0415 mg/L	0.04 mg/L	104	70.0	130	----
		Phosphorus, total	7723-14-0	E420	10.5 mg/L	10 mg/L	105	70.0	130	----
		Potassium, total	7440-09-7	E420	3.93 mg/L	4 mg/L	98.3	70.0	130	----
		Rubidium, total	7440-17-7	E420	0.0196 mg/L	0.02 mg/L	98.1	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0410 mg/L	0.04 mg/L	102	70.0	130	----
		Silicon, total	7440-21-3	E420	9.87 mg/L	10 mg/L	98.7	70.0	130	----
		Silver, total	7440-22-4	E420	0.00403 mg/L	0.004 mg/L	101	70.0	130	----
		Sodium, total	7440-23-5	E420	ND mg/L	----	ND	70.0	130	----
		Strontium, total	7440-24-6	E420	ND mg/L	----	ND	70.0	130	----
		Sulfur, total	7704-34-9	E420	20.6 mg/L	20 mg/L	103	70.0	130	----
		Tellurium, total	13494-80-9	E420	0.0407 mg/L	0.04 mg/L	102	70.0	130	----
		Thallium, total	7440-28-0	E420	0.00393 mg/L	0.004 mg/L	98.2	70.0	130	----
		Thorium, total	7440-29-1	E420	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		Tin, total	7440-31-5	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0422 mg/L	0.04 mg/L	105	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		Uranium, total	7440-61-1	E420	0.00416 mg/L	0.004 mg/L	104	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.108 mg/L	0.1 mg/L	108	70.0	130	----
		Zinc, total	7440-66-6	E420	0.401 mg/L	0.4 mg/L	100	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.0407 mg/L	0.04 mg/L	102	70.0	130	----
Aggregate Organics (QCLot: 2152950)										
CG2510608-001	Anonymous	Microcystin	101043-37-2	E576	0.61 µg/L	1 µg/L	60.7	50.0	150	----

Chain of Custody (COC)
Manitoba Drinking Water Systems

Regular Service (default): (is 5-7 Days):	☐ Regular Service (is 5-7 Days):
Unless otherwise requested	☐ 1 Day, rush / priority ☐ 2 Day, rush / priority ☐ 3 Day, rush / priority

Report to Owner (email PDF):	Email PDF copy to:
Contact: Danielle Vaillant	DWO: Mujibur Rahman
Address: 6000 Portage Avenue, Headingley, MB R4H 1E8	DWO Address: 309-25 Tupper St. N, Portage la Prairie, MB
Phone: (204) 832-2555	DWO Phone: (204) 340-3423
Email: admin@crwc.ca; mwsb3@gov.mb.ca;	COA Email: odw.invoices@gov.mb.ca
dvaillant@crwc.ca	EDD Email: wqemsdata@gov.mb.ca

If an update in Owner or Operator contact information is required, please contact your Drinking Water Officer			
Client / Project Information:	Lab:	Account:	Agency Code: 382
Operation Name: HEADINGLEY REGIONAL - PWS			Report Type: EMS (Lab-MWS)
Operation Code: 89.40			Project: DWQ-C
Operation ID: 57047			
Sampled by:		Expected Sample Time:	August-2025

Please record Free & Total Chlorine residuals for Distribution By-product Sampling

DO NOT COPY or RE-USE this form. Sample Number are unique to the Office of Drinking Water
and provided by Drinking Water Officer.

Sample Number	Station Number	Sample Identification	Free Chlorine (mg/L)	Total Chlorine (mg/L)	Sample Date dd-mm-yy	Sample Time hh:mm	Sample Matrix	Sample Type	MB-CH-PWS-V2013	MB-MET-T-CCMS	MB-Microcystin	# of Containers
2508MR5069	MB05MJD481	Headingley Regional 1 - Raw	1.90	1.99	06-08-2025	9:30AM	6	1	X			4
2508MR5070	MB05MJD481	Headingley Regional 1 - Raw	1.66	1.85	06-08-2025	9:30AM	6	1			X	2
2508MR5071	MB05MJD482	Headingley Regional 2 - Treated			06-08-2025	8:20AM	10	1	X			4
2508MR5072	MB05MJD483	Headingley Regional 2 - Treated			06-08-2025	11:15AM	9	1		X		1

Environmental Division
Winnipeg
Work Order Reference
WP2512901



Failure to complete all portions of this form will result in the sample being discarded.	
By the use of this form the user acknowledges and agrees to the terms and conditions of the Chain of Custody form.	
Relinquished By: <i>[Signature]</i>	Date & Time: <i>25 Aug 2025 1:39 PM</i>
Received By: <i>[Signature]</i>	Date & Time: <i>25 Aug 2025 1:39 PM</i>

Sample Matrix: 6-Raw Water, 9-Distributed Water, 10-Treated Water	
Sample Type: 1-Grab Sample	
ns and Conditions as specified by the Laboratory.	
Validated By (lab use only):	Date & Time:
Sample Condition (lab use only):	
Temperature: 21.1°C	
Samples Received in Good Condition?	Y / N