Lake Manitoba Outlet Channel
Domestic Well Monitoring Report

FINAL REPORT

June 16, 2021

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Executive Summary

The Lake Manitoba Lake St. Martin Outlet Channels Project is proposed to be developed by Manitoba Infrastructure as a permanent flood control management system for Lake Manitoba and Lake St. Martin to alleviate flooding in the Lake St. Martin region. This will be accomplished through construction of a new outlet channel from Lake Manitoba to Lake St. Martin and a new outlet channel from Lake St. Martin to Lake Winnipeg in the Manitoba Interlake region. These new channels will facilitate better management and control of floodwater on these lakes by providing additional capacity to move floodwater from Lake Manitoba through Lake St. Martin into Lake Winnipeg. The Project will reduce or completely avoid overland inundation flooding during high water events in Manitoba such as the 2011 flood.

The Lake Manitoba Outlet Channel (LMOC) will join Watchorn Bay on Lake Manitoba to Lake St. Martin near the outlet of Birch Creek. Associated components of the LMOC include a water control structure, three road bridges, and the realignment and/or new construction of PR 239 and affected municipal roads. The LMOC will work in parallel with the existing Fairford River Water Control Structure and will carry water directly into Lake St. Martin during periods when the water level on Lake Manitoba is above the top of its target operating range (812.5 ftasl).

Stantec Consulting Ltd. (Stantec), as part of the Hatch Team, was retained by Manitoba Infrastructure to complete a domestic well monitoring program in the summer of 2020 that would complement other LMOC monitoring programs.

Domestic wells in the LMOC area were identified by MI through landowner communications and select wells were sampled for laboratory analysis to provide a summary of existing pre-LMOC domestic well water quality. The laboratory results provided baseline water quality conditions and the Guidelines for Canadian Drinking Water Quality were referenced to identify guideline exceedances.

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Abbreviations

CDWQ	Canadian Drinking Water Quality
DWMP	Domestic Well Monitoring Program
DQO	Data Quality Objective
ftasl	Feet above sea level
LMOC	Lake Manitoba Outlet Channel
masl	Meters above sea level
MI	Manitoba Infrastructure
QA/QC	Quality Assurance/Quality Control

1.0 INTRODUCTION

1.1 BACKGROUND AND PURPOSE

The Lake Manitoba and Lake St. Martin Outlet Channels Project (the Project) is proposed to be developed by Manitoba Infrastructure (MI) as a permanent flood control management system for Lake Manitoba and Lake St. Martin to alleviate flooding in the Lake St. Martin region. This will be accomplished through construction of a new outlet channel from Lake Manitoba to Lake St. Martin and a new outlet channel from Lake St. Martin to Lake Winnipeg in the Interlake region of Manitoba. These new channels will facilitate management and control of floodwater on these lakes by providing additional capacity to move floodwater from Lake Manitoba through Lake St. Martin into Lake Winnipeg. The Project will reduce or completely avoid overland inundation flooding during high water events in Manitoba such as the 2011 flood.

The Lake Manitoba Outlet Channel (LMOC) is approximately 24.1 km long and will join Watchorn Bay on Lake Manitoba to Lake St. Martin near the outlet of Birch Creek. The LMOC is situated on privately held and leased Crown lands adjacent to numerous marshes and small lakes (Appendix A, Map 1-1). Associated components of the LMOC include a water control structure, three road bridges, and the realignment and/or new construction of PR 239 and affected municipal roads. The LMOC channel will work in parallel with the existing Fairford River Water Control Structure to regulate water levels on Lake Manitoba within the desired range (812.5 to 810.5 ftasl) as established by MI's Operating Guidelines (Manitoba Infrastructure, 2019). The LMOC will carry water directly into Lake St. Martin during periods when the water level on Lake Manitoba is above the top of its target operating range (812.5 ftasl).

MI selected the design team lead by Hatch Ltd. (Hatch) to undertake the Preliminary design of the LMOC. The team is supported by Stantec Consulting Ltd. (Stantec), Trek Geotechnical Inc. (Trek), Dillon Consulting Ltd. (Dillon) and J.D. Mollard and Associates (2010) Ltd. (Mollard), and is collectivity referred to as the Hatch Team.

Hatch provided landowners in the LMOC area with a questionnaire during the winter of 2019/2020 to help identify active groundwater wells in the area and to collect information on concerns related to groundwater and/or surface water drainage. The questionnaire responses received were utilized by Stantec in the summer of 2020 to develop a domestic well monitoring program (DWMP) that would complement other LMOC monitoring programs. This report provides an overview of previous work in the LMOC area regarding domestic wells and drinking water quality monitoring, describes the methods used to plan and implement the 2020 DWMP, provides results from the DWMP, and outlines recommendations for future DWMP work.

2.0 EXISTING DATA

In 2016, an assessment of existing well use and drinking water suitability was conducted in the LMOC area (KGS 2017). The study included a review of provincial well records, regional water use, piezometric levels, well capacities, and a residential sampling program. A residential sampling program was conducted in the fall of 2016 using groundwater samples collected from 19 residences in the LMOC area (KGS 2017). Sites were selected based on criteria that included proximity to the LMOC, well access, and landowner interest (KGS 2017). Water quality results from this program were compared with the applicable Federal Guidelines for Canadian Drinking Water Quality.

The Provincial well digital data base (GWDrill) contains geological, hydrogeological, geochemical and well construction information for test holes and water wells from well driller's reports in Manitoba (GWDrill 2018). GWDrill is administered by the Groundwater Management Section of Water Stewardship and Biodiversity, Manitoba Conservation and Climate and data is available upon request.

3.0 METHODS

Stantec, as part of the Hatch Team, developed a DWMP in the summer of 2020 for the LMOC area. Wells were identified via questionnaire responses from LMOC-area landowners and were cross referenced and matched to those in previous work (KGS 2017) and the GWDrill database. One semi-public water system (SPWS #4243.00) at Watchorn Provincial Park was also identified by MI for inclusion in the DWMP. Details on methods employed during each phase of the DWMP are outlined in the sections below. Appendix B, Table B-1 lists the DWMP sites along with correlating information collected through the LMOC landowner questionnaire, sites that were previously sampled during the 2016 residential well inventory (KGS 2017), and wells matched from the GWDrill database (GWDrill 2018).

3.1 LMOC LANDOWNER QUESTIONNAIRE

In the winter of 2019/2020, Hatch provided landowners in the LMOC area with a questionnaire (the questionnaire) to identify all of their active local groundwater wells and to collect information on any project-related concerns regarding groundwater and/or surface water drainage. The questionnaire was distributed to landowners through the RM of Grahamdale office and website or directly from Hatch.

Ten landowners in the LMOC area returned responses to the questionnaire, providing contact information and feedback on their groundwater and drainage concerns with, and without, construction of the LMOC. Respondents also identified residential and livestock wells on their properties and provided details of well type, location, and age. Hand drawn well locations were also provided by some landowners indicating the approximate locations of wells described in the questionnaire. Questionnaire responses were considered in the development of the DWMP.

3.2 RESIDENTIAL WELL INVENTORY REVIEW

A review and comparison of the 2016 residential well inventory (KGS 2017) with the 2019 questionnaire-identified wells was completed in order to compile previous work done on domestic wells in the LMOC area and assist in the selection of wells for the 2020 DWMP. Wells listed in the questionnaire were matched to the information from the 2016 well inventory using detailed well descriptions and UTM coordinates (Appendix B, Table B-1). Previous sampling events were confirmed with landowners during over-the-phone discussions, described in Section 3.4.

3.3 GWDRILL DATABASE REVIEW

Wells from GWDrill in the LMOC area were incorporated into geological and groundwater model databases developed for the LMOC project (GWDrill 2018; Stantec, 2020a; Stantec 2020b). To confirm information provided by landowners, data provided by landowners were compared to wells in the LMOC groundwater model database. Wells from the model domain (GWDrill records) were plotted spatially and landowner wells and questionnaire information were compared and matched to database well records to fill in gaps in respondent well information (Appendix B, Table B-1).

3.4 LANDOWNER DISCUSSIONS

Following review of the questionnaire responses, the 2016 well inventory data, and the LMOC groundwater model database, Stantec conducted over-the-phone discussions with each responding landowner to confirm information on wells they identified in their questionnaires. Feedback and additional information (such as access protocols, identification of sampling fixtures and notification methods) was obtained during these calls to aid in the prioritization and selection of a subset of wells for the DWMP. In some cases, landowners did not have any further information on their wells (information not known, missing records, information lost in land transfers, wells no longer used, etc.). Landowner discussions were held during the week of June 22, 2020, responses are summarized in Appendix B, Table B-1.

3.5 SAMPLE SITE SELECTION

Sample sites for the 2020 DWMP were selected based on proximity to the LMOC ROW, areal representation of the identified wells, and use as identified/confirmed in the landowner discussions. When possible, domestic wells sampled in 2016 (KGS 2017) were prioritized for 2020 sampling to maintain drinking water quality data continuity prior to LMOC construction. Following the desktop selection of candidate wells, ground-truthing was conducted on July 8 and 9, 2020. Ground-truthing included landowner discussions (if required), recording well locations (GPS waypoints), and establishing access protocols applicable to each sample site ahead of the sample collection work. The selected sites included 19 wells comprising residential, livestock, and semi-public water system wells (Table 3-1, Appendix A, Map 3-1).

Table 3-1 2020 Domestic Well Sample Site List

Site ID	UTM Easting	UTM Northing	Land Location	Well Type	Sample Date
RW-04	533362	5683511	NE33-26-8W	Residential	20-Jul-20
RW-05	532539	5683548	NW33-26-8W	Livestock	20-Jul-20
RW-08	533123	5683148	NW33-26-8W	Residential	21-Jul-20
RW-11	528659	5706401	SE25-29-9W	Residential	21-Jul-20
RW-12	528179	5705920	NW24-29-9W	Residential	21-Jul-20
RW-13	528841	5706189	NW19-29-8W	Livestock & Residential	21-Jul-20
RW-20	533772	5702367	NW10-29-8W	Residential	21-Jul-20
RW-21	533830	5702267	SW10-29-8W	Residential	21-Jul-20
RW-24	529958	5693491	SE18-28-8W	Residential	20-Jul-20
RW-26	533019	5703278	SE16-29-8W	Residential	21-Jul-20
RW-27	529502	5684053	SW18-27-8W	Residential	20-Jul-20
RW-32	529146	5683938	SW18-27-8W.	Residential & Livestock	20-Jul-20
RW-33	530377	5684383	SE18-27-8W	Residential	20-Jul-20
RW-41	527276	5682399	SE35-26-9W	Residential	20-Jul-20
RW-42	532835	5702377	NW 9-29-8W	Residential	21-Jul-20
RW-44	530138	5688484	NE30-27-8W	Residential	20-Jul-20

Table 3-1 2020 Domestic Well Sample Site List

Site ID	UTM Easting	UTM Northing	Land Location	Well Type	Sample Date
RW-45	530036	5688454	NE30-27-8W	Residential	20-Jul-20
RW-51	530316	5683498	NE31-26-8W	Residential	20-Jul-20
RW-57	530560	5681036	SE30-26-8W	Semi-Public Water System	21-Jul-20

3.6 FIELD SAMPLING AND LABORATORY ANALYSES

Well sites in the LMOC area were sampled between July 20-21, 2020, by two Stantec field technicians. All sites were accessible by truck.

Prior to sample collection, untreated taps were run for 5 minutes and field measurements of water quality parameters (temperature, dissolved oxygen, conductivity, pH, oxidation reduction potential, and turbidity) were recorded from the water flowing into a graduated pail at each site using a calibrated YSI multi-parameter meter and La Motte turbidimeter.

Drinking water quality grab samples were collected with gloved hands from untreated fixtures (identified by landowners prior to sampling) into laboratory-provided containers at each location (Table 3-1). Samples for dissolved metals were filtered at the time of collection. Samples for non-filtered parameters were field preserved in accordance with laboratory sampling protocols. Samples were kept cool and in the dark for transport to the laboratory (in a cooler on ice). Water samples were delivered from the field to ALS Labs in Winnipeg within 30 hours of collection in accordance with analytical hold time requirements.

Samples were delivered to ALS Environmental Laboratory, Winnipeg, Manitoba (ALS), for analysis of routine drinking water quality analytes, fecal and total coliforms, E. coli, BTEX and F1-F4.

Water quality data were compared with the Federal Guidelines for Canadian Drinking Water Quality (Health Canada 2019). Full analytical results are provided in Table B-2 in Appendix B.

3.7 QUALITY ASSURANCE/QUALITY CONTROL

ALS is certified under the Canadian Association for Laboratory Accreditation. A quality assurance/ quality control (QA/QC) program was incorporated into the field and laboratory program. Laboratory results were screened immediately upon their receipt to identify outliers, erroneous data, or violations of lab QA/QC procedures. The QA/QC data (Appendix B, Table B-3 and Table B-4) include data from duplicate field samples, to verify the reproducibility of the samples, and field blank samples, to assess the potential for contaminants to be introduced during sampling. Duplicates, field blanks, and trip blanks comprised 17% of the surface water quality dataset. ALS also followed internal QA/QC procedures for laboratory duplicates, method blanks, and reference materials.

Field duplicates were collected at randomly selected sampling sites along with the parent sample and submitted to the laboratory for analysis. Duplicates were submitted blind, without the location, name, or

time indicated on the label, to test heterogeneity of the water being sampled and precision of the laboratory analysis. Duplicate samples comprised 10% of the surface water quality dataset. Duplicate results were compared using relative percent difference (RPD), with a data quality objective (DQO) of 20% for values more than five times the DL (BC MOE 2013). The RPD was calculated as shown in Equation 3-1:

Equation 3-1 Relative Percent Difference

$$RPD = \frac{|result\ 1\ -\ result\ 2|}{(result\ 1 + result\ 2) \div 2}$$

4.0 RESULTS

Residential well drinking water quality in the LMOC area was monitored in 2020 by measuring field parameters and analyzing water samples collected from 19 wells. Both physical and chemical parameters were analyzed, and results were compared to CDWQ guidelines. Appendix B contains all field and analytical results, presented in Table B-2.

4.1 FIELD PARAMETERS

A summary of field chemistry and particulate results are listed in Table 4-1. Dissolved oxygen (DO) concentrations ranged from 0.15 to 7.04 mg/L, but most wells exhibited DO concentrations below 1 mg/L. Electrical conductivity ranged from 698.7 to 1269.0 µS/cm, but most wells were below 900 µS/cm. Temperature and pH measured in the field ranged from 6.4 to 13.9 ºC and 6.8 to 7.5 respectively. Oxidation reduction potential (ORP) ranged from -139.4 to 95.4 mV. Field turbidity ranged from 0.16 to 12.35 NTU, exceeding the CDWQ guidelines at all of the monitored wells (Table 4-1). Full field parameter results are listed in Appendix B, Table B-2.

Table 4-1 2020 Domestic Well Summary of Field Parameters

Parameter	Units	CDWQ	Minimum	Maximum
Dissolved oxygen, Field	mg/L	n/v	0.15	7.04
Electrical Conductivity, Field	µS/cm	n/v	698.7	1269.0
pH, Field	S.U.	6.5-8.5[A]	6.8	7.5
Oxidation Reduction Potential, Field	mV	n/v	-139.4	95.4
Temperature, Field	deg C	≤15[A]	6.4	13.9
Turbidity, Field	NTU	≤0.3/1.0/0.1[C]	0.16	12.35

CDWQ - Health Canada (2014). Guidelines for Canadian Drinking Water Quality - Summary Table. Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario

A: Guidelines for Canadian Drinking Water Quality - Aesthetic Objectives/ Operational Guidelines

C: Guidelines for Canadian Drinking Water Quality - Microbial Parameters (treatment limits for individual filters or units (conventional and direct filtration: ≤ 0.3 NTU, slow sand and diatomaceous earth filtration: ≤ 1.0 NTU, membrane filtration: ≤ 0.1 NTU)

n/v: No standard/guideline value

4.2 LABORATORY PARAMETERS

Water samples collected from residential wells in the study area in 2020 yielded results that exceeded referenced CDWQ guidelines for five parameters: total dissolved solids, turbidity (lab), *E. coli*, total coliforms, and dissolved iron. Guideline exceedances are summarized in Table 4-2.

Table 4-2 2020 Domestic Well Water Quality Data Guideline Exceedances

Parameter	CDWQ Guideline	Sites Where Exceedances are Present	No. of Exceedances	Percent Exceedances	Max. Value	Site of Max. Value	Date of Max. Value
Total Dissolved Solids	≤500[A]	RW-04, RW-05, RW-08, RW-12, RW-26, RW-57	6	32%	697	RW-12	21-July-2020
Turbidity, Lab (NTU)	≤0.3/1.0/0.1[C]	RW-04, RW-05, RW-08, RW-11, RW-13, RW-20, RW-21, RW-24, RW-26, RW-27, RW-32, RW-33, RW-41, RW-42, RW-44, RW-45, RW-51, RW-57	18	95%	28.6	RW-08	21-July-2020
E. coli (mpn/100mL)	0[C]	RW-27, RW-42	2	11%	2	RW-27	20-July-2020
Total Coliforms (mpn/100mL)	0[C]	RW-05, RW-08, RW-12, RW-26, RW-27, RW-42	6	32%	12	RW-05	20-July-2020
Dissolved iron	≤0.3[A]	RW-20, RW-21, RW-27	3	16%	0.752	RW-20	21-July-2020

Notes:
Results are in mg/L unless otherwise specified in the parameter column.
Percent Exceedances: percent of total collected samples with guideline exceedances.
[A] CDWQ Aesthetic Objectives/ Operational Guidelines
[B] CDWQ Maximum Acceptable Concentration
[C] CDWQ Microbial Parameters

Parameters with the largest number of exceedances at the most sites included lab-measured turbidity (exceedances at 18 wells), total dissolved solids (exceedances at 6 wells), total coliforms (exceedances at 6 wells), dissolved iron (exceedances at 3 wells), and E. coli (exceedances at 2 wells).

Full analytical results are listed in Appendix B, Table B-2.

4.2.1 Post-sampling Landowner Follow-up

Since the wells tested were predominantly sources of drinking water, CDWQ guideline exceedances of microbiological parameters (E. coli, total coliforms, or fecal coliforms) were communicated to Stantec from ALS immediately as preliminary results. Stantec communicated these preliminary results to applicable landowners within 24 hours of receiving results from ALS.

Full analytical results applicable to each landowner were communicated to the respective landowners through individual letter packages that were sent by registered mail during the first week of October 2020. Letter packages included a list of wells sampled, a map of sampled well locations, and the certificate of analysis (COA) provided by ALS Laboratory specific to each landowner. The COAs included the analytical results and comparison to the Canadian Drinking Water Quality (CDWQ) Guidelines (Health Canada (2019)).

4.3 QUALITY ASSURANCE / QUALITY CONTROL

Detection limits (DL) were less than 10% of the water quality guidelines and were suitable for comparison with the guidelines. DLs for turbidity, fluoride and toluene were greater than 10% of the guidelines for all samples analyzed but were below the guidelines.

There were two field duplicates collected and analyzed for the full suite of laboratory parameters (Table B-3). Of these two field duplicates, one duplicate pair exceeded the DQO for two parameters (turbidity and total coliforms) and one duplicate pair exceeded the DQO for three parameters (hardness, total coliforms, dissolved calcium). These samples were collected on July 21, 2020.

There was one field blank collected and analyzed to assess the potential for cross-contamination in the field (Appendix B, Table B-4). The field blanks consisted of reverse osmosis de-ionized water provided by ALS, which was exposed to the same field conditions as the water samples collected (opening the bottle in the field and filtering and preserving as required). The DQO (values below or within five times the method DL) was met for all parameters in the field blank except conductivity, hardness, pH, alkalinity, bicarbonate, carbonate, chloride, nitrate, nitrite, sulphate, dissolved calcium, dissolved manganese, dissolved potassium, and dissolved sodium. Because there were a high number of parameters that exceeded the DQO, a sample result recheck from the laboratory was requested. Results were rechecked and confirmed by the laboratory.

There was one trip blank collected and analyzed to assess the potential for cross-contamination in the field (Table B-4). Trip blanks were used to assess the potential for sample contamination during transit. Sealed trip blanks were provided by ALS and accompanied water samples to and from the field and were

opened only when they arrived at the laboratory for analysis. The DQO (values below or within five times the method DL) was met for all parameters in the trip blank except pH.

Field duplicate, and QA/QC results are provided in Table B-3 and Table B-4 in Appendix B.

5.0 FUTURE MONITORING CONSIDERATIONS

If required, domestic well monitoring in the LMOC area could continue annually prior to LMOC construction, during the construction of the LMOC, and one year following LMOC construction completion. Additions to the DWMP in future years may include those from landowners who come forward as a result of the Project engagement work or those that express concerns regarding water quality. Priority should be given to sites that exhibited guideline exceedances for microbiological parameters (RW-05, RW-08, RW-11, RW-12, RW-26, RW-27, and RW-42), as well as wells used explicitly for residential drinking water consumption.

6.0 REFERENCES

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APPENDICES

Appendix A MAPS

Stantec

Project Infrastructure

- Proposed Lake Manitoba Outlet
- Proposed PR 239
- Proposed Bridge
- Proposed Water Control

Landbase

- Community
- Highway
- Major Road
- Watercourse
- Provincial Waterway/Drain
- Waterbody

0 2.5 5 Kilometres

1:125,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 14N
2. Base features provided by the Government of Manitoba and the Government of Canada.

Project Location
Lake Manitoba and Lake St. Martin Outlets

111475107

Prepared by JHiebert on 2020-09-02
Technical Review by DMorgan on 2020-09-02

Client/Project
MANITOBA INFRASTRUCTURE
Lake Manitoba Outlet Channel

Map No.
1-1

Title
Project Area

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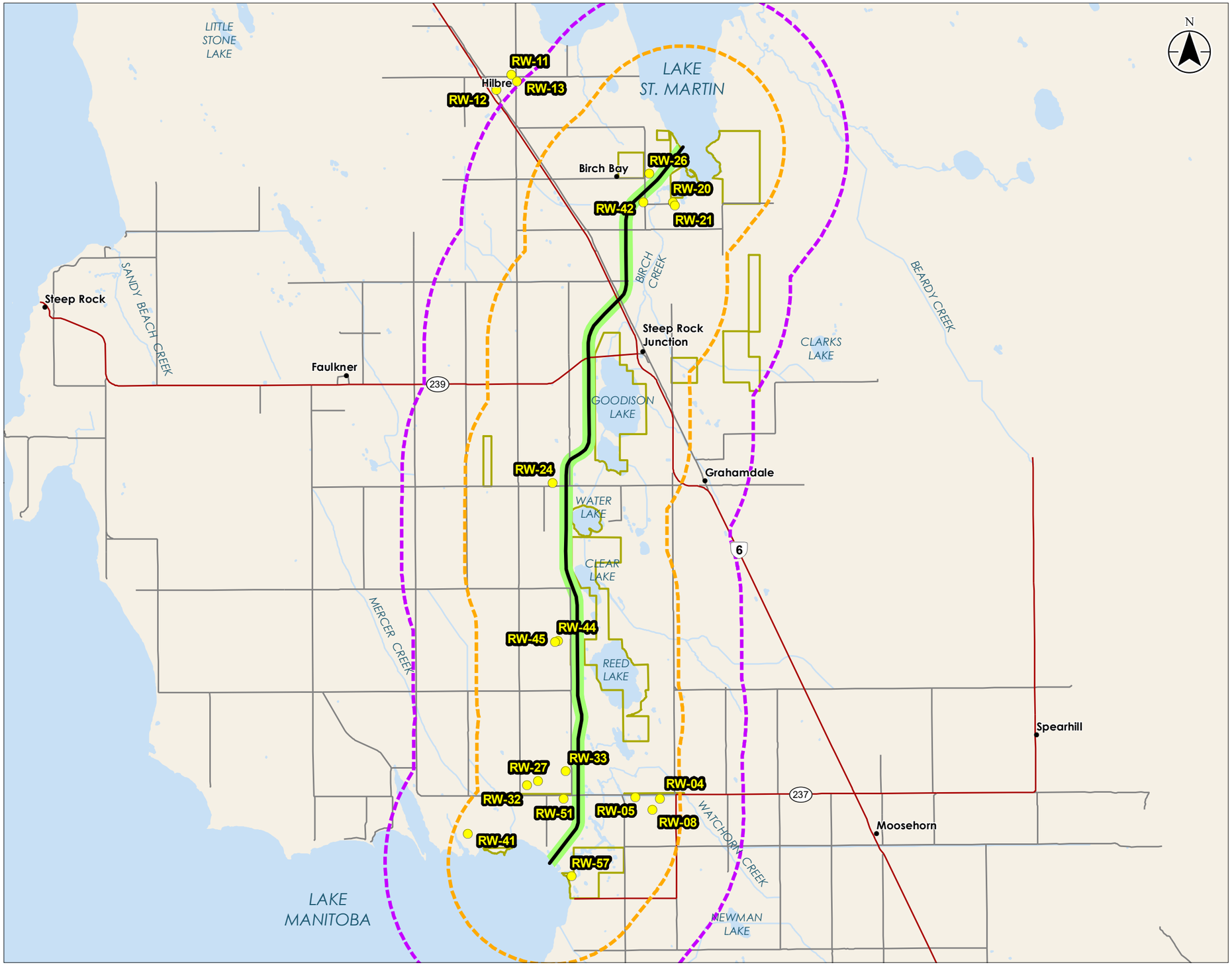

Stantec

Project Infrastructure

- Proposed Lake Manitoba Outlet Channel
- Channel RoW

Survey Locations

- Domestic Well Locations
- 3200 m Channel Buffer
- 5200 m Channel Buffer

Landbase

- Community
- Highway
- Major Road
- Crown Land
- Watercourse
- Waterbody

0 2.5 5 Kilometres

1:125,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 14N
2. Base features provided by the Government of Manitoba and the Government of Canada.

Project Location
Lake Manitoba and Lake St. Martin Outlets

111475107

Prepared by ACampigotto on 2020-07-13
Technical Review by TStainton on 2020-07-13

Client/Project
MANITOBA INFRASTRUCTURE
Lake Manitoba Outlet Channel

Map No.
3-1

Title
2020 DWMP Sample Sites

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Appendix B TABLES

Table B-1 Summary of Stantec Domestic Well Database

2020 Site ID	2019 Well ID	UTM Zone 14 U		2016 Well ID	GWDrill Database Summary			Questionnaire Response Summary							
		Easting	Northing		GWDrill ID	GWDrill Well Depth (m)	GWDrill Elevation (masl)	Water Use	Well Install Year	Well Depth (m)	Pump Type	Depth to Pump (m)	Flowing Artesian Well	Water Treatment	Well Concerns[†]
-	1	530797*	5683975*	8D	-	-	-	Drinking water	1980	-	-	-	-	Reverse osmosis	-
-	2	530827*	5683886*	-	-	-	-	Livestock	1990	-	-	-	-	Water softener	-
-	3	530877*	5683720*	-	-	-	-	Livestock	2000	-	-	-	-	Iron filter	-
RW-04	4	533362	5683511	-	-	-	-	Drinking water	1990	76.2	Pressure pump	-	yes	None	No
RW-05	5	532539	5683548	-	-	-	-	Livestock	2013	30.48	Submersible pump	9.1	yes	None	No
-	6	534251*	5683761*	-	158528	30.48	253	Livestock	2010	30.48	Pressure pump	-	yes	None	-
-	7	5701734	532655	72D	-	-	-	Livestock	1980	18	-	-	-	None	-
RW-08	8	533123	5683148	-	-	-	-	Drinking water	2020	36.57	Submersible pump	9.1	yes	Water softener	No
-	9	-	-	-	-	-	-	Livestock	2020	-	-	-	-	-	-
-	10	-	-	-	-	-	-	Livestock	2020	-	-	-	-	-	-
RW-11	11	528659	5706401	-	-	-	-	Drinking water	1975	33.5	Pressure pump	-	no	Water softener	No
RW-12	12	528179	5705920	-	-	-	-	Drinking water	1990	30.5	Submersible pump	-	no	Water softener	No
RW-13	13	528841	5706189	-	-	-	-	Livestock; drinking water	1975	45	Pressure pump	-	no	None	No
-	14	528894*	5705698*	-	-	-	-	Livestock	1975	30.48	Submersible pump	-	no	None	No
-	15	529176*	5705556*	-	194551	36.58	252	Livestock	2017	36.58	Submersible pump	-	no	None	No
-	16	530572*	5704392*	-	-	-	-	Livestock	-	13.7	Submersible pump	-	no	None	No
-	17	535572*	5706556*	-	122811	48.77	-	Livestock	1990	48.77	Submersible pump	-	no	None	No
-	18	530031*	5705067*	-	107587	30.48	-	Livestock	1985	30.48	Submersible pump	-	no	None	No
-	19	529660*	5690801*	-	127275	27.43	-	Drinking water	2003	-	-	-	-	-	-
RW-20	20	533772	5702367	-	31883	19.81	-	Drinking water	1980	20	Pressure pump	-	yes	Reverse osmosis; Water softener	Swampy taste and smell, supply is adequate but not abundant
RW-21	21	533830	5702267	77D	-	-	-	Drinking water	1965	40	Pressure pump	-	yes	Water softener	No
-	22	-	-	-	-	-	-	Livestock	-	-	-	-	-	-	No
-	23	-	-	-	-	-	-	Livestock	-	-	-	-	-	-	No
RW-24	24	529958	5693491	-	38544	30.45	253	Drinking water	1980	30.45	Submersible pump	9	yes	Sand filter	Seasonal changes to flow, lime taste
-	25	-	-	-	-	-	-	Livestock	-	-	-	-	-	-	-
RW-26	26	533019	5703278	-	-	-	-	Drinking water	1980	-	Submersible pump	-	no	Reverse osmosis; Water softener	Minor clarity concerns, small issue with pressure
RW-27	27	529502	5684053	-	-	-	-	Drinking water	1964	36	Pressure pump	-	no	None	Seasonal changes in winter
-	28	529479*	5684185*	-	-	-	-	Livestock	1971	36.5	Submersible pump	-	no	None	No
-	29	529488*	5684095*	-	-	-	-	Livestock	1971	30.48	Submersible pump	-	no	None	No
-	30	529423*	5684175*	-	-	-	-	Livestock	2019	45.72	No pump	-	-	None	No
-	31	528986*	5684311*	-	-	-	-	Livestock	1981	90.83	Submersible pump	-	no	None	No
RW-32	32	529146	5683938	-	187874	54.25	253	Drinking water; livestock	2015	54.25	Pressure pump	-	no	Water softener	No

Table B-1 Summary of Stantec Domestic Well Database

2020 Site ID	2019 Well ID	UTM Zone 14 U		2016 Well ID	GWDrill Database Summary			Questionnaire Response Summary							
		Easting	Northing		GWDrill ID	GWDrill Well Depth (m)	GWDrill Elevation (masl)	Water Use	Well Install Year	Well Depth (m)	Pump Type	Depth to Pump (m)	Flowing Artesian Well	Water Treatment	Well Concerns[†]
RW-33	33	530377	5684383	-	-	-	-	Drinking water	1977	-	Pressure pump	-	no	None	No
-	34	530006*	5683748*	-	-	-	-	Livestock	-	-	-	-	-	None	No
-	35	528955*	5684731*	-	-	-	-	Livestock	1962	-	-	-	-	None	No
-	36	528936*	5684643*	-	-	-	-	Livestock	-	-	-	-	-	None	No
-	37	528629*	5684862*	-	-	-	-	Livestock	1995	<30.48	Submersible pump	-	no	None	No
-	38	529837*	5691661*	-	-	-	-	Livestock	-	-	-	-	-	None	No
-	39	533047*	5684534*	-	-	-	-	Livestock	2019	24.38	No pump	-	yes	None	No
-	40	533980*	5682041*	-	-	-	-	Drinking water; livestock	2019	36	Submersible pump	-	no	None	No
RW-41	41	527276	5682399	-	-	-	-	Drinking water; livestock	1980	38	Submersible pump	0	yes	Water softener	No
RW-42	42	532835	5702377	-	-	-	-	Drinking water	1978	35.5	Pressure pump	0	yes	Water softener; iron filter	Swampy taste and odor
-	43	-	-	-	-	-	-	Livestock	1990	-	-	-	-	-	-
RW-44	44	530138	5688484	-	107586	73.152	-	Drinking water; livestock	1998	-	Submersible pump	12	yes	None	No
RW-45	45	530036	5688454	13D	130999	28.6512	-	Drinking water; livestock	2001	-	Submersible pump	12	yes	None	No
-	46	530312*	5688822*	-	-	-	-	Livestock	1949	-	No pump	-	yes	None	No
-	47	530392*	5687388*	-	127274	28.956	-	Livestock	2003	-	No pump	-	yes	None	No
-	48	529426*	5687048*	-	-	-	-	Livestock	2006	-	No pump	-	yes	None	No
-	49	529403*	5687897*	-	-	-	-	Livestock	1950	-	No pump	-	yes	None	No
RW-51	51	530316	5683498	7D	38542	22.86	-	Drinking water; livestock	1980	18	Pressure pump	-	yes	None	Seasonal changes in spring, swampy smell, and swampy taste in spring
-	52	530614*	5686194*	-	-	-	-	Livestock	-	-	-	-	-	-	-
-	53	529941*	5692120*	-	-	-	-	Livestock	-	-	-	-	-	-	-
-	54	529962*	5692079*	-	-	-	-	Livestock	-	-	-	-	-	-	-
-	55	526853*	5685010*	-	-	-	-	Livestock	-	-	-	-	-	-	-
-	56	526903*	5684866*	-	-	-	-	Livestock	-	-	-	-	-	-	-
RW-57	57	530560	5681036	-	158363	79.3	166.7	Drinking water	2009	79.25	-	-	-	Treatment plant	-

RW-xx : sample site
* : approximate UTM Coordinate
2020 Site ID: Stantec; DWMP
2019 Well ID: Hatch Questionnaire
2016 Well ID: KGS 2017
- : no value or information not known by landowner
[†] : concerns discussed with landowner include: water supply adequacy, seasonal changes, taste or odor concerns, clarity concerns, bacteriological concerns, and chemical concerns.

Table B-2 Summary of Domestic Well Analytical Results

Sample Location			**RW-04**	**RW-05**	**RW-08**	**RW-11**	**RW-12**	**RW-13**	**RW-20**	**RW-21**	**RW-24**	**RW-26**	**RW-27**	**RW-32**	**RW-33**	**RW-41**	**RW-42**	**RW-44**	**RW-45**	**RW-51**	**RW-57**
Sample Date			20-Jul-2020	20-Jul-2020	21-Jul-2020	21-Jul-2020	21-Jul-2020	21-Jul-2020	21-Jul-2020	21-Jul-2020	20-Jul-2020	21-Jul-2020	20-Jul-2020	20-Jul-2020	20-Jul-2020	20-Jul-2020	21-Jul-2020	20-Jul-2020	20-Jul-2020	20-Jul-2020	21-Jul-2020
Sample ID			**RW-04**	**RW-05**	**RW-08**	**RW-11**	**RW-12**	**RW-13**	**RW-20**	**RW-21**	**RW-24**	**RW-26**	**RW-27**	**RW-32**	**RW-33**	**RW-41**	**RW-42**	**RW-44**	**RW-45**	**RW-51**	**RW-57**
Lab			ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS
Lab Work Order			L2477642	L2477642	L2477642	L2477629	L2477629	L2477629	L2477639	L2477639	L2477634	L2477628	L2477636	L2477636	L2477636	L2477637	L2477626	L2477632	L2477632	L2477635	L2477630
Lab Sample ID			L2477642-1	L2477642-2	L2477642-3	L2477629-1	L2477629-2	L2477629-3	L2477639-1	L2477639-2	L2477634-1	L2477628-1	L2477636-3	L2477636-1	L2477636-2	L2477637-1	L2477626-1	L2477632-1	L2477632-2	L2477635-1	L2477630-5
Sample Type	**Units**	**CDWQ**																			
Field Parameters																					
Dissolved oxygen, Field	mg/L	n/v	0.56	4.23	-	0.18	2.2	0.2	0.3	0.16	0.21	0.35	0.34	0.29	3.8	2.54	0.77	0.15	0.28	0.19	7.04
Electrical Conductivity, Field	µS/cm	n/v	836.0	871.0	-	767.8	1269.0	712.7	793.7	782.2	764.7	855.1	736.1	724.3	738.0	737.9	812.7	698.7	820.6	783.1	933.0
pH, Field	S.U.	6.5-8.5[A]	6.91	6.92	-	6.98	6.82	6.96	7.00	6.97	7.11	7.00	7.37	7.33	7.25	7.40	6.96	7.11	7.24	7.10	7.50
Oxidation Reduction Potential, Field	mV	n/v	82.0	77.1	-	64.3	95.4	85.8	-70.9	-42.7	-20.9	51.0	-92.1	-7.1	-139.4	30.1	14.7	-60.4	7.9	-21.4	45.6
Temperature, Field	deg C	≤15[A]	10.4	6.4	-	9.8	10.1	7.1	7.9	7.6	6.7	8.3	8.0	9.6	11.6	12.1	7.3	9.7	7.1	7.2	13.9
Turbidity, Field	NTU	≤0.3/1.0/0.1[C]	**0.59[C]**	**2.02[C]**	-	**1.66[C]**	**0.16[C]**	**1.11[C]**	**1.36[C]**	**0.95[C]**	**12.35[C]**	**1.65[C]**	**0.45[C]**	**0.71[C]**	**1.05[C]**	**0.99[C]**	**1.45[C]**	**0.59[C]**	**0.38[C]**	**0.64[C]**	**2.59[C]**
Physical Tests																					
Conductivity	umhos/cm	n/v	790	814	800	723	1230	660	732	712	696	799	686	674	696	683	755	633	656	733	876
Hardness (as CaCO3)	mg/L	n/v	325	356	307	0.43	532	365	322	350	281	353	237	227	249	217	347	222	230	295	186
pH	pH units	6.5-8.5[A]	8.31	8.25	8.23	8.23	7.88	7.94	8.34	8.28	8.37	7.97	8.39	8.35	8.35	8.34	7.88	8.29	8.33	8.31	8.29
TDS (Calculated)	mg/L	≤500[A]	**506[A]**	**520[A]**	**513[A]**	441	**697[A]**	363	451	440	451	**509[A]**	428	419	434	428	469	392	406	463	**531[A]**
Turbidity	NTU	≤0.3/1.0/0.1[C]	**2.13[C]**	**1.50[C]**	**28.6[C]**	**0.66[C]**	<0.10	**0.31[C]**	**9.75[C]**	**7.51[C]**	**10.5[C]**	**3.98[C]**	**2.79[C]**	**0.22[C]**	**2.31[C]**	**0.14[C]**	**2.35[C]**	**0.39[C]**	**0.18[C]**	**1.35[C]**	**0.46[C]**
Anions and Nutrients																					
Alkalinity, Total (as CaCO3)	mg/L	n/v	263	285	244	401	443	390	324	329	237	321	210	199	229	184	338	206	212	247	176
Bicarbonate (HCO3)	mg/L	n/v	314	347	298	489	540	475	383	402	277	391	243	234	269	215	412	251	249	294	214
Carbonate (CO3)	mg/L	n/v	3.36	<0.60	<0.60	<0.60	<0.60	<0.60	6	<0.60	6.12	<0.60	6.36	4.68	5.4	4.8	<0.60	<0.60	4.68	3.6	<0.60
Chloride (Cl)	mg/L	≤250[A]	14.8	13.7	24.5	7.82	**171**	5.60	5.49	4.62	13.7	11.5	24.4	26.9	22.6	33.3	7.85	22.9	23.6	17.4	**113**
Fluoride (F)	mg/L	1.5[B]	0.689	0.817	0.803	0.413	**0.092**	0.312	0.969	1.17	0.877	0.282	0.445	0.411	0.509	0.362	1.16	0.869	0.793	0.535	**0.965**
Hydroxide (OH)	mg/L	n/v	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34
Nitrate and Nitrite as N	mg/L	n/v	<0.0051	<0.0051	<0.0051	<0.0051	**2.84**	0.289	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	**<0.010**
Nitrate (as N)	mg/L	10[B]	<0.0050	<0.0050	<0.0050	<0.0050	**2.84**	0.285	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	**<0.010**
Nitrite (as N)	mg/L	1[B]	<0.0010	0.0012	<0.0010	<0.0010	**<0.0020**	0.0040	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	**<0.0020**
Sulfate (SO4)	mg/L	≤500[A]	175	173	179	6.67	**19.0**	3.07	108	93.8	153	146	142	142	139	146	107	119	126	153	**135**
Bacteriological Tests																					
Escherichia Coli	MPN/100mL	0[C]	0 ZH	0 ZH	0	0	0	0	0	0	0 ZH	0	**2 ZH[C]**	0 ZH	0 ZH	0 ZH	**1[C]**	0 ZH	0 ZH	0 ZH	0
Fecal Coliforms	CFU/100mL	0[C]	<1 ZH	<1 ZH	<1	<1	<1	<1	<1	<1	<1 ZH	<1	<1 ZH	<1 ZH	<1 ZH	<1 ZH	<1	<1 ZH	<1 ZH	<1 ZH	<1
Total Coliforms	MPN/100mL	0[C]	0 ZH	**12 ZH[C]**	**4[C]**	0	**3[C]**	0	0	0	0 ZH	**6[C]**	**4 ZH[C]**	0 ZH	0 ZH	0 ZH	**2[C]**	0 ZH	0 ZH	0 ZH	0
Dissolved Metals																					
Dissolved Metals Filtration Location	-	-	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	FIELD	LAB	FIELD	FIELD	FIELD	FIELD	FIELD
Calcium (Ca)-Dissolved	mg/L	n/v	67.9	72.2	63.6	0.132	84.6	60.7	65.2	56.8	64.1	41.0	37.9	44.5	37.9	65.7	44.4	43.3	55.2	37.7	60.7
Iron (Fe)-Dissolved	mg/L	≤0.3[A]	0.137	0.076	0.092	<0.010	<0.010	<0.010	**0.752[A]**	0.686[A]	0.165	0.188	**0.349[A]**	0.014	0.060	<0.010	0.109	0.068	0.030	0.105	0.085
Magnesium (Mg)-Dissolved	mg/L	n/v	37.7	42.7	36.1	0.0241	78.0	41.5	45.6	33.9	46.8	32.8	32.3	33.4	29.7	44.4	27.0	29.5	38.2	22.3	41.5

Table B-2 Summary of Domestic Well Analytical Results

Sample Location			**RW-04**	**RW-05**	**RW-08**	**RW-11**	**RW-12**	**RW-13**	**RW-20**	**RW-21**	**RW-24**	**RW-26**	**RW-27**	**RW-32**	**RW-33**	**RW-41**	**RW-42**	**RW-44**	**RW-45**	**RW-51**	**RW-57**
Sample Date			20-Jul-2020	20-Jul-2020	21-Jul-2020	21-Jul-2020	21-Jul-2020	21-Jul-2020	21-Jul-2020	21-Jul-2020	20-Jul-2020	21-Jul-2020	20-Jul-2020	20-Jul-2020	20-Jul-2020	20-Jul-2020	21-Jul-2020	20-Jul-2020	20-Jul-2020	20-Jul-2020	21-Jul-2020
Sample ID			**RW-04**	**RW-05**	**RW-08**	**RW-11**	**RW-12**	**RW-13**	**RW-20**	**RW-21**	**RW-24**	**RW-26**	**RW-27**	**RW-32**	**RW-33**	**RW-41**	**RW-42**	**RW-44**	**RW-45**	**RW-51**	**RW-57**
Lab			ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS
Lab Work Order			L2477642	L2477642	L2477642	L2477629	L2477629	L2477629	L2477639	L2477639	L2477634	L2477628	L2477636	L2477636	L2477636	L2477637	L2477626	L2477632	L2477632	L2477635	L2477630
Lab Sample ID			L2477642-1	L2477642-2	L2477642-3	L2477629-1	L2477629-2	L2477629-3	L2477639-1	L2477639-2	L2477634-1	L2477628-1	L2477636-3	L2477636-1	L2477636-2	L2477637-1	L2477626-1	L2477632-1	L2477632-2	L2477635-1	L2477630-5
Sample Type	**Units**	**CDWQ**																			
Manganese (Mn)-Dissolved	mg/L	≤0.05[A]	0.00246	0.00995	0.00229	<0.00010	0.00018	0.0158	0.0202	0.0155	0.0105	0.0108	0.00549	0.00552	0.00287	0.0103	0.00345	0.00641	0.00813	0.00088	0.0158
Potassium (K)-Dissolved	mg/L	n/v	12.7	12.0	13.1	0.465	1.84	8.75	8.59	8.48	6.13	6.08	5.31	6.84	5.16	9.26	8.70	7.19	9.77	9.96	8.75
Sodium (Na)-Dissolved	mg/L	≤200[A]	39.9	36.5	50.4	185	64.7	31.5	24.8	43.1	42.2	56.0	55.1	50.1	64.7	32.2	47.0	50.0	40.9	108	31.5
Volatile Organic Compounds																					
Benzene	mg/L	0.005[B]	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Ethyl benzene	mg/L	0.0016[A] 0.14[B]	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Toluene	mg/L	0.024[A] 0.06[B]	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
o-Xylene	mg/L	n/v	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
m+p-Xylenes	mg/L	n/v	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylenes (Total)	mg/L	0.02[A] 0.09[B]	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064	<0.00064
F1 (C6-C10)	mg/L	n/v	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F1-BTEX	mg/L	n/v	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Hydrocarbons (C6-C50)	mg/L	n/v	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38
4-Bromofluorobenzene (SS)	%	n/v	87.3	84.6	91	86.3	86.3	85.9	86.9	86.5	84.5	85.1	88	89.4	86.6	88.2	92	88.4	87.1	90.4	83.6
Hydrocarbons																					
F2 (C10-C16)	mg/L	n/v	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F3 (C16-C34)	mg/L	n/v	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
F4 (C34-C50)	mg/L	n/v	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
2-Bromobenzotrifluoride	%	n/v	102.4	100.5	90.7	104	92.4	95.9	96	96.5	92.7	104.7	90.8	91	94.5	94.7	94.4	93.2	119.7	96.3	91.1

CDWQ - Health Canada (2014). Guidelines for Canadian Drinking Water Quality - Summary Table. Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.
A: Guidelines for Canadian Drinking Water Quality - Aesthetic Objectives/ Operational Guidelines
B: Guidelines for Canadian Drinking Water Quality - Maximum Acceptable Concentration
C: Guidelines for Canadian Drinking Water Quality - Microbial Parameters
6.5[A]: Concentration exceeds the indicated standard.
15.2: Measured concentration did not exceed the indicated standard.
<0.50: Laboratory reporting limit was greater than the applicable standard.
<0.03: Analyte was not detected at a concentration greater than the laboratory reporting limit.
n/v: No standard/guideline value.
ZH: Sample analyzed past recommended hold time.

Table B-3 Summary of Domestic Well RPDs – Field Duplicates

Sample Location	**Units**	**CDWQ**	**RW-08**		**RPD (%)**	**RW-11**		**RPD (%)**
Sample Date			21-Jul-2020	21-Jul-2020		21-Jul-2020	21-Jul-2020	
Sample ID			**RW-08**	**QC-01**		**RW-11**	**QC-02**	
Lab			ALS	ALS		ALS	ALS	
Lab Work Order			L2477642	L2477630		L2477629	L2477630	
Lab Sample ID			L2477642-3	L2477630-3		L2477629-1	L2477630-4	
Sample Type				**Field duplicate**			**Field duplicate**	
Physical Tests								
Conductivity	umhos/cm	n/v	800	809	1%	723	723	0%
Hardness (as CaCO3)	mg/L	n/v	307	306	0%	0.43	0.35	**23%**
pH	pH units	6.5-8.5[A]	8.23	8.27	0%	8.23	**8.54**[A]	4%
TDS (Calculated)	mg/L	≤500[A]	**513**[A]	**514**[A]	0%	441	443	0%
Turbidity	NTU	≤0.3/1.0/0.1[C]	**28.6**[C]	**7.09**[C]	**303%**	**0.66**[C]	**0.75**[C]	12%
Anions and Nutrients								
Alkalinity, Total (as CaCO3)	mg/L	n/v	244	250	2%	401	402	0%
Bicarbonate (HCO3)	mg/L	n/v	298	305	2%	489	466	5%
Carbonate (CO3)	mg/L	n/v	<0.60	<0.60	nc	<0.60	12.1	nc
Chloride (Cl)	mg/L	≤250[A]	24.5	24.5	0%	7.82	7.82	0%
Fluoride (F)	mg/L	1.5[B]	0.803	0.787	2%	0.413	0.411	0%
Hydroxide (OH)	mg/L	n/v	<0.34	<0.34	nc	<0.34	<0.34	nc
Nitrate and Nitrite as N	mg/L	n/v	<0.0051	<0.0051	nc	<0.0051	<0.0051	nc
Nitrate (as N)	mg/L	10[B]	<0.0050	<0.0050	nc	<0.0050	<0.0050	nc
Nitrite (as N)	mg/L	1[B]	<0.0010	<0.0010	nc	<0.0010	<0.0010	nc
Sulfate (SO4)	mg/L	≤500[A]	179	179	0%	6.67	6.62	1%
Bacteriological Tests								
Escherichia Coli	MPN/100mL	0[C]	0	0	0%	0	0	0%
Fecal Coliforms	CFU/100mL	0[C]	<1	<1	nc	<1	<1	nc
Total Coliforms	MPN/100mL	0[C]	**4**[C]	**10**[C]	**60%**	0	1	**100%**

Table B-3 Summary of Domestic Well RPDs – Field Duplicates

Sample Location	**Units**	**CDWQ**	**RW-08**		**RPD (%)**	**RW-11**		**RPD (%)**
Sample Date			21-Jul-2020	21-Jul-2020		21-Jul-2020	21-Jul-2020	
Sample ID			**RW-08**	**QC-01**		**RW-11**	**QC-02**	
Lab			ALS	ALS		ALS	ALS	
Lab Work Order			L2477642	L2477630		L2477629	L2477630	
Lab Sample ID			L2477642-3	L2477630-3		L2477629-1	L2477630-4	
Sample Type				**Field duplicate**			**Field duplicate**	
Dissolved Metals								
Dissolved Metals Filtration Location	-	-	FIELD	FIELD		FIELD	FIELD	
Calcium (Ca)-Dissolved	mg/L	n/v	63.6	62.8	1%	0.132	0.093	**42%**
Iron (Fe)-Dissolved	mg/L	≤0.3[A]	0.092	0.097	5%	<0.010	0.013	nc
Magnesium (Mg)-Dissolved	mg/L	n/v	36.1	36.2	0%	0.0241	0.0276	13%
Manganese (Mn)-Dissolved	mg/L	≤0.05[A]	0.00229	0.00226	1%	<0.00010	0.00019	nc
Potassium (K)-Dissolved	mg/L	n/v	13.1	12.9	2%	0.465	0.475	2%
Sodium (Na)-Dissolved	mg/L	≤200[A]	50.4	49.0	3%	185	186	1%
Volatile Organic Compounds								
Benzene	mg/L	0.005[B]	<0.00050	<0.00050	nc	<0.00050	<0.00050	nc
Ethyl benzene	mg/L	0.0016[A] 0.14[B]	<0.00050	<0.00050	nc	<0.00050	<0.00050	nc
Toluene	mg/L	0.024[A] 0.06[B]	<0.0010	<0.0010	nc	<0.0010	<0.0010	nc
o-Xylene	mg/L	n/v	<0.00050	<0.00050	nc	<0.00050	<0.00050	nc
m+p-Xylenes	mg/L	n/v	<0.00040	<0.00040	nc	<0.00040	<0.00040	nc
Xylenes (Total)	mg/L	0.02[A] 0.09[B]	<0.00064	<0.00064	nc	<0.00064	<0.00064	nc
F1 (C6-C10)	mg/L	n/v	<0.10	<0.10	nc	<0.10	<0.10	nc
F1-BTEX	mg/L	n/v	<0.10	<0.10	nc	<0.10	<0.10	nc
Total Hydrocarbons (C6-C50)	mg/L	n/v	<0.38	<0.38	nc	<0.38	<0.38	nc
4-Bromofluorobenzene (SS)	%	n/v	91	87.1	4%	86.3	85.2	1%
Hydrocarbons								
F2 (C10-C16)	mg/L	n/v	<0.10	<0.10	nc	<0.10	<0.10	nc
F3 (C16-C34)	mg/L	n/v	<0.25	<0.25	nc	<0.25	<0.25	nc

Table B-3 Summary of Domestic Well RPDs – Field Duplicates

Sample Location	Units	CDWQ	RW-08		RPD (%)	RW-11		RPD (%)
Sample Date			21-Jul-2020	21-Jul-2020		21-Jul-2020	21-Jul-2020	
Sample ID			RW-08	QC-01		RW-11	QC-02	
Lab			ALS	ALS		ALS	ALS	
Lab Work Order			L2477642	L2477630		L2477629	L2477630	
Lab Sample ID			L2477642-3	L2477630-3		L2477629-1	L2477630-4	
Sample Type				Field duplicate			Field duplicate	
F4 (C34-C50)	mg/L	n/v	<0.25	<0.25	nc	<0.25	<0.25	nc
2-Bromobenzotrifluoride	%	n/v	90.7	91.4	1%	104	97.7	6%

CDWQ - Health Canada (2014). Guidelines for Canadian Drinking Water Quality - Summary Table. Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.

A: Guidelines for Canadian Drinking Water Quality - Aesthetic Objectives/ Operational Guidelines

B: Guidelines for Canadian Drinking Water Quality - Maximum Acceptable Concentration

C: Guidelines for Canadian Drinking Water Quality - Microbial Parameters

6.5[A]: Concentration exceeds the indicated standard.

15.2: Measured concentration did not exceed the indicated standard.

<0.50: Laboratory reporting limit was greater than the applicable standard.

<0.03: Analyte was not detected at a concentration greater than the laboratory reporting limit.

n/v: No standard/guideline value.

RPD: Relative Percent Difference.

61%: RPD exceeds data quality objective of 25%.

nc: RPD is not calculated if one or more values is non-detect or if one or more values is less than five times the reportable detection limit.

Table B-4 Summary of Domestic Well QA/QC Blanks

Sample Location			**TRIP BLANK**	**FIELD BLANK**
Sample Date				
Sample ID			**TRIP BLANK**	**FIELD BLANK**
Lab	**Units**	**CDWQ**	ALS	ALS
Lab Work Order			L2477630	L2477630
Lab Sample ID			L2477630-1	L2477630-2
Sample Type				
Physical Tests				
Conductivity	umhos/cm	n/v	<1.0	324
Hardness (as CaCO3)	mg/L	n/v	<0.20	167
pH	pH units	6.5-8.5[A]	6.10	8.36
TDS (Calculated)	mg/L	≤500[A]	<5.0	182
Turbidity	NTU	≤0.3/1.0/0.1[C]	<0.10	<0.10
Anions and Nutrients				
Alkalinity, Total (as CaCO3)	mg/L	n/v	1.6	180
Bicarbonate (HCO3)	mg/L	n/v	2	212
Carbonate (CO3)	mg/L	n/v	<0.60	4.2
Chloride (Cl)	mg/L	≤250[A]	<0.10	3.03
Fluoride (F)	mg/L	1.5[B]	<0.020	0.065
Hydroxide (OH)	mg/L	n/v	<0.34	<0.34
Nitrate and Nitrite as N	mg/L	n/v	<0.0051	0.794
Nitrate (as N)	mg/L	10[B]	<0.0050	0.794
Nitrite (as N)	mg/L	1[B]	<0.0010	<0.0010
Sulfate (SO4)	mg/L	≤500[A]	<0.30	6.05
Bacteriological Tests				
Escherichia Coli	MPN/100mL	0[C]	0	-
Fecal Coliforms	CFU/100mL	0[C]	<1	-
Total Coliforms	MPN/100mL	0[C]	0	-
Dissolved Metals				
Dissolved Metals Filtration Location	-	-	FIELD	LAB
Calcium (Ca)-Dissolved	mg/L	n/v	<0.050	43.3
Iron (Fe)-Dissolved	mg/L	≤0.3[A]	<0.010	<0.010
Magnesium (Mg)-Dissolved	mg/L	n/v	<0.0050	14.2
Manganese (Mn)-Dissolved	mg/L	≤0.05[A]	<0.00010	0.00100
Potassium (K)-Dissolved	mg/L	n/v	<0.050	1.33
Sodium (Na)-Dissolved	mg/L	≤200[A]	<0.050	2.60
Volatile Organic Compounds				
Benzene	mg/L	0.005[B]	<0.00050	<0.00050
Ethyl benzene	mg/L	0.0016[A] 0.14[B]	<0.00050	<0.00050
Toluene	mg/L	0.024[A] 0.06[B]	<0.0010	<0.0010
o-Xylene	mg/L	n/v	<0.00050	<0.00050
m+p-Xylenes	mg/L	n/v	<0.00040	<0.00040
Xylenes (Total)	mg/L	0.02[A] 0.09[B]	<0.00064	<0.00064

Table B-4 Summary of Domestic Well QA/QC Blanks

Sample Location			**TRIP BLANK**	**FIELD BLANK**
Sample Date				
Sample ID			**TRIP BLANK**	**FIELD BLANK**
Lab	**Units**	**CDWQ**	ALS	ALS
Lab Work Order			L2477630	L2477630
Lab Sample ID			L2477630-1	L2477630-2
Sample Type				
F1 (C6-C10)	mg/L	n/v	<0.10	<0.10
F1-BTEX	mg/L	n/v	<0.10	<0.10
Total Hydrocarbons (C6-C50)	mg/L	n/v	<0.38	<0.38
4-Bromofluorobenzene (SS)	%	n/v	88.8	85.3
Hydrocarbons				
F2 (C10-C16)	mg/L	n/v	<0.10	<0.10
F3 (C16-C34)	mg/L	n/v	<0.25	<0.25
F4 (C34-C50)	mg/L	n/v	<0.25	<0.25
2-Bromobenzotrifluoride	%	n/v	94	91.4

CDWQ - Health Canada (2014). Guidelines for Canadian Drinking Water Quality - Summary Table. Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.

A: Guidelines for Canadian Drinking Water Quality - Aesthetic Objectives/ Operational Guidelines

B: Guidelines for Canadian Drinking Water Quality - Maximum Acceptable Concentration

C: Guidelines for Canadian Drinking Water Quality - Microbial Parameters

6.5^: Concentration exceeds the indicated standard.

15.2: Measured concentration did not exceed the indicated standard.

<0.50: Laboratory reporting limit was greater than the applicable standard.

<0.03: Analyte was not detected at a concentration greater than the laboratory reporting limit.

n/v: No standard/guideline value.

ZH: Sample analyzed past recommended hold time.

Appendix C LABORATORY RESULTS

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477642
Project Ref: 111475107
Sample ID: RW-04
Sampled By:
Date Collected: 20-JUL-20
Lab Sample ID: L2477642-1
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F4						
Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total Hydrocarbons						
F1-BTEX	<0.10		mg/L			25-JUL-20
Total Hydrocarbons (C6-C50)	<0.38		mg/L			25-JUL-20
CCME PHC F2-F4 in Water						
F2 (C10-C16)	<0.10		mg/L			24-JUL-20
F3 (C16-C34)	<0.25		mg/L			24-JUL-20
F4 (C34-C50)	<0.25		mg/L			24-JUL-20
Surr: 2-Bromobenzotrifluoride	102.4		%			24-JUL-20
BTX plus F1 by GCMS						
Benzene	<0.00050		mg/L	0.005		24-JUL-20
Toluene	<0.0010		mg/L	0.06	0.024	24-JUL-20
Ethyl benzene	<0.00050		mg/L	0.14	0.0016	24-JUL-20
o-Xylene	<0.00050		mg/L			24-JUL-20
m+p-Xylenes	<0.00040		mg/L			24-JUL-20
F1 (C6-C10)	<0.10		mg/L			24-JUL-20
Surr: 4-Bromofluorobenzene (SS)	87.3		%			24-JUL-20
ROU4W Dissolved - Low Range						
Bicarbonate (HCO3)	314		mg/L			24-JUL-20
Carbonate (CO3)	3.36		mg/L			24-JUL-20
Hydroxide (OH)	<0.34		mg/L			24-JUL-20
*Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20
pH						
pH	8.31		pH units			22-JUL-20
Turbidity						
*Turbidity	2.13		NTU			23-JUL-20
TDS calculated						
TDS (Calculated)	506		mg/L		500	27-JUL-20
Sulfate in Water by IC						
Sulfate (SO4)	175		mg/L		500	22-JUL-20
Nitrite in Water by IC (Low Level)						
*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Water by IC (Low Level)						
*Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance Calculation						
Hardness Calculated						
Hardness (as CaCO3)	325		mg/L		500	27-JUL-20

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477642
Project Ref: 111475107
Sample ID: RW-04
Sampled By:
Date Collected: 20-JUL-20
Lab Sample ID: L2477642-1
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.689		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals Filtration Location	FIELD					23-JUL-20
Calcium (Ca)-Dissolved	67.9		mg/L			23-JUL-20
Iron (Fe)-Dissolved	0.137		mg/L		0.3	23-JUL-20
Magnesium (Mg)-Dissolved	37.7		mg/L			23-JUL-20
Manganese (Mn)-Dissolved	0.00246		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	12.7		mg/L			23-JUL-20
Sodium (Na)-Dissolved	39.9		mg/L		200	23-JUL-20
Conductivity						
Conductivity	790		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (Cl)	14.8		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	263		mg/L			22-JUL-20
Fecal Coliforms	<1	PEHT	CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	0	MBHT	MPN/100mL	0		22-JUL-20
Escherichia Coli	0	MBHT	MPN/100mL	0		22-JUL-20

CDWQG = Health Canada Guideline Limits updated **JUNE 2019**

* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only. If present as Nitrate then the limit is 10mg/L < or N.D. = less than detection limit.
* Turbidity guideline based on membrane filtration. For guidelines on conventional treatment and slow sand or diatomaceous earth filtration please see Summary Table of Guidelines for Canadian Drinking Water Quality
- A blank entry designates no known limit.
- A shaded value in the Results column exceeds CDWQG MAC and/ or Aesthetic Objective.

Approved by

Hua Wo
Account Manager

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477642
Project Ref: 111475107
Sample ID: RW-05
Sampled By:
Date Collected: 20-JUL-20
Lab Sample ID: L2477642-2
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F4						
Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total Hydrocarbons						
F1-BTEX	<0.10		mg/L			25-JUL-20
Total Hydrocarbons (C6-C50)	<0.38		mg/L			25-JUL-20
CCME PHC F2-F4 in Water						
F2 (C10-C16)	<0.10		mg/L			24-JUL-20
F3 (C16-C34)	<0.25		mg/L			24-JUL-20
F4 (C34-C50)	<0.25		mg/L			24-JUL-20
Surr: 2-Bromobenzotrifluoride	100.5		%			24-JUL-20
BTX plus F1 by GCMS						
Benzene	<0.00050		mg/L	0.005		24-JUL-20
Toluene	<0.0010		mg/L	0.06	0.024	24-JUL-20
Ethyl benzene	<0.00050		mg/L	0.14	0.0016	24-JUL-20
o-Xylene	<0.00050		mg/L			24-JUL-20
m+p-Xylenes	<0.00040		mg/L			24-JUL-20
F1 (C6-C10)	<0.10		mg/L			24-JUL-20
Surr: 4-Bromofluorobenzene (SS)	84.6		%			24-JUL-20
ROU4W Dissolved - Low Range						
Bicarbonate (HCO3)	347		mg/L			24-JUL-20
Carbonate (CO3)	<0.60		mg/L			24-JUL-20
Hydroxide (OH)	<0.34		mg/L			24-JUL-20
*Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20
pH						
pH	8.25		pH units			22-JUL-20
Turbidity						
*Turbidity	1.50		NTU			23-JUL-20
TDS calculated						
TDS (Calculated)	520		mg/L		500	27-JUL-20
Sulfate in Water by IC						
Sulfate (SO4)	173		mg/L		500	22-JUL-20
Nitrite in Water by IC (Low Level)						
*Nitrite (as N)	0.0012		mg/L	1		22-JUL-20
Nitrate in Water by IC (Low Level)						
*Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance Calculation						
Hardness Calculated						
Hardness (as CaCO3)	356		mg/L		500	27-JUL-20

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477642
Project Ref: 111475107
Sample ID: RW-05
Sampled By:
Date Collected: 20-JUL-20
Lab Sample ID: L2477642-2
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.817		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals Filtration Location	FIELD					23-JUL-20
Calcium (Ca)-Dissolved	72.2		mg/L			23-JUL-20
Iron (Fe)-Dissolved	0.076		mg/L		0.3	23-JUL-20
Magnesium (Mg)-Dissolved	42.7		mg/L			23-JUL-20
Manganese (Mn)-Dissolved	0.00995		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	12.0		mg/L			23-JUL-20
Sodium (Na)-Dissolved	36.5		mg/L		200	23-JUL-20
Conductivity						
Conductivity	814		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (Cl)	13.7		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	285		mg/L			22-JUL-20
Fecal Coliforms	<1	PEHT	CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	12	MBHT	MPN/100mL	0		22-JUL-20
Escherichia Coli	0	MBHT	MPN/100mL	0		22-JUL-20

CDWQG = Health Canada Guideline Limits updated **JUNE 2019**

* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only. If present as Nitrate then the limit is 10mg/L < or N.D. = less than detection limit.
* Turbidity guideline based on membrane filtration. For guidelines on conventional treatment and slow sand or diatomaceous earth filtration please see Summary Table of Guidelines for Canadian Drinking Water Quality
- A blank entry designates no known limit.
- A shaded value in the Results column exceeds CDWQG MAC and/ or Aesthetic Objective.

Approved by

Hua Wo
Account Manager

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477642
Project Ref: 111475107
Sample ID: RW-08
Sampled By:
Date Collected: 21-JUL-20
Lab Sample ID: L2477642-3
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F4						
Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total Hydrocarbons						
F1-BTEX	<0.10		mg/L			25-JUL-20
Total Hydrocarbons (C6-C50)	<0.38		mg/L			25-JUL-20
CCME PHC F2-F4 in Water						
F2 (C10-C16)	<0.10		mg/L			24-JUL-20
F3 (C16-C34)	<0.25		mg/L			24-JUL-20
F4 (C34-C50)	<0.25		mg/L			24-JUL-20
Surr: 2-Bromobenzotrifluoride	90.7		%			24-JUL-20
BTX plus F1 by GCMS						
Benzene	<0.00050		mg/L	0.005		24-JUL-20
Toluene	<0.0010		mg/L	0.06	0.024	24-JUL-20
Ethyl benzene	<0.00050		mg/L	0.14	0.0016	24-JUL-20
o-Xylene	<0.00050		mg/L			24-JUL-20
m+p-Xylenes	<0.00040		mg/L			24-JUL-20
F1 (C6-C10)	<0.10		mg/L			24-JUL-20
Surr: 4-Bromofluorobenzene (SS)	91.0		%			24-JUL-20
ROU4W Dissolved - Low Range						
Bicarbonate (HCO3)	298		mg/L			24-JUL-20
Carbonate (CO3)	<0.60		mg/L			24-JUL-20
Hydroxide (OH)	<0.34		mg/L			24-JUL-20
*Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20
pH						
pH	8.23		pH units			22-JUL-20
Turbidity						
*Turbidity	28.6		NTU			23-JUL-20
TDS calculated						
TDS (Calculated)	513		mg/L		500	27-JUL-20
Sulfate in Water by IC						
Sulfate (SO4)	179		mg/L		500	22-JUL-20
Nitrite in Water by IC (Low Level)						
*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Water by IC (Low Level)						
*Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance Calculation						
Hardness Calculated						
Hardness (as CaCO3)	307		mg/L		500	27-JUL-20

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477642
Project Ref: 111475107
Sample ID: RW-08
Sampled By:
Date Collected: 21-JUL-20
Lab Sample ID: L2477642-3
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.803		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals Filtration Location	FIELD					23-JUL-20
Calcium (Ca)-Dissolved	63.6		mg/L			23-JUL-20
Iron (Fe)-Dissolved	0.092		mg/L		0.3	23-JUL-20
Magnesium (Mg)-Dissolved	36.1		mg/L			23-JUL-20
Manganese (Mn)-Dissolved	0.00229		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	13.1		mg/L			23-JUL-20
Sodium (Na)-Dissolved	50.4		mg/L		200	23-JUL-20
Conductivity						
Conductivity	800		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (Cl)	24.5		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	244		mg/L			22-JUL-20
Fecal Coliforms	<1		CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	4		MPN/100mL	0		22-JUL-20
Escherichia Coli	0		MPN/100mL	0		22-JUL-20

CDWQG = Health Canada Guideline Limits updated **JUNE 2019**

* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only. If present as Nitrate then the limit is 10mg/L < or N.D. = less than detection limit.
* Turbidity guideline based on membrane filtration. For guidelines on conventional treatment and slow sand or diatomaceous earth filtration please see Summary Table of Guidelines for Canadian Drinking Water Quality
- A blank entry designates no known limit.
- A shaded value in the Results column exceeds CDWQG MAC and/ or Aesthetic Objective.

Approved by

Hua Wo
Account Manager

Guidelines & Objectives

Sample Parameter Qualifier key listed:

Qualifier	Description
MBHT	The APHA 30 hour hold time was exceeded for microbiological testing. Samples processed within 48 hours from time of sampling may

	be valid in some cases (refer to Health Canada guidance).
PEHT	Parameter Exceeded Recommended Holding Time Prior to Analysis

Health Canada MAC Health Related Criteria Limits

Nitrate/Nitrite-N*	Criteria limit is 10 mg/L (1.0 mg/L if present as all Nitrite-N). High concentrations may contribute to blue baby syndrome in infants.
Lead*	A cumulative body poison, uncommon in naturally occurring hard waters.
Fluoride*	Present in fluoridated water supplies at 0.8 mg/L to reduce dental caries. Elevated levels causes fluorosis (mottling of teeth).
Total Coliforms*	Criteria is 0 CFU/100mL. Adverse health effects.
E. Coli*	Criteria is 0 CFU/100 mL. Certain E. Coli bacteria can be life threatening.
Manganese*	Criteria limit is 0.12 mg/L. Possible neurological effects in infants.

*Health Canada Canadian Drinking Water Quality Guidelines (MAC limit)

Aesthetic Objective Concentration Levels

Alkalinity	Acid neutralizing capacity. Usually a measure of carbonate and bicarbonates and calculated and reported as calcium carbonate.
Balance	Quality control parameter ratioing cations to anions
Bicarbonate	See Alkalinity. Report as the anion HCO3-1
Carbonate	See Alkalinity. Reported at the anion CO3-2
Calcium	See Hardness. Common major cation of water chemistry.
Chloride	Common major anion of water chemistry.
Conductance	Physical test measuring water salinity (dissolved ions or solids)
Hardness	Classical measure or capacity of water to precipitate soap (chiefly calcium and magnesium ions). Causes scaling tendency in water if carbonates/bicarbonates are present (if >200 mg/L). For drinking water purposes waters with results <200 mg/L are considered acceptable, results >200 mg/L are considered poor but can be tolerated. Results >500 mg/L are unacceptable.
Hydroxide	See alkalinity
Magnesium	See hardness. Common major cation of water chemistry. Elevated levels (>125 mg/L) may exert a cathartic or diuretic action.
pH	Measure of water acidity/alkalinity. Normal range is 7.0-8.5.
Potassium	Common major cation of water chemistry.
Sodium	Common major cation of water chemistry. Measure of salinity (saltiness).The aesthetic objective (not related to health) for sodium in drinking water is 200 mg/L. However, where sodium concentration of the drinking water exceeds 20 mg/L, it is recommended that any person on a sodium restricted diet consult with his/her physician or Medical Officer of Health concerning the use of that water.
Sulphate	Common major anion of water chemistry. Elevated levels may exert a cathartic or diuretic action.
Total Dissolved Solids	A measure of water salinity.
Iron	Causes staining to laundry and porcelain and astringent taste. Oxidizes to red-brown precipitate on exposure to air.
Heterotrophic Plate Count	Criteria is 500 cfu/mL Measure of heterotrophic bacteria present.

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
Contact: Tassia Stainton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	**Water**							
Batch R5166298								
WG3369055-30 DUP		**L2477642-1**						
Alkalinity, Total (as CaCO3)		263	259		mg/L	1.6	20	22-JUL-20
WG3369055-24 LCS								
Alkalinity, Total (as CaCO3)			105.5		%		85-115	22-JUL-20
WG3369055-29 LCS								
Alkalinity, Total (as CaCO3)			100.4		%		85-115	22-JUL-20
WG3369055-21 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	22-JUL-20
WG3369055-26 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	22-JUL-20
BTEXS+F1-HSMS-WP	**Water**							
Batch R5166645								
WG3368156-8 LCS								
Benzene			75.0		%		70-130	23-JUL-20
Toluene			77.1		%		70-130	23-JUL-20
Ethyl benzene			77.4		%		70-130	23-JUL-20
o-Xylene			92.1		%		70-130	23-JUL-20
m+p-Xylenes			88.7		%		70-130	23-JUL-20
WG3368156-9 LCS								
F1 (C6-C10)			99.1		%		70-130	23-JUL-20
WG3368156-7 MB								
Benzene			<0.00050		mg/L		0.0005	23-JUL-20
Toluene			<0.0010		mg/L		0.001	23-JUL-20
Ethyl benzene			<0.00050		mg/L		0.0005	23-JUL-20
o-Xylene			<0.00050		mg/L		0.0005	23-JUL-20
m+p-Xylenes			<0.00040		mg/L		0.0004	23-JUL-20
F1 (C6-C10)			<0.10		mg/L		0.1	23-JUL-20
Surrogate: 4-Bromofluorobenzene (SS)			86.3		%		70-130	23-JUL-20
CL-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Chloride (Cl)			100.1		%		90-110	22-JUL-20
WG3367901-9 MB								
Chloride (Cl)			<0.10		mg/L		0.1	22-JUL-20
EC-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-WP	**Water**							
Batch R5166298								
WG3369055-30 DUP		**L2477642-1**						
Conductivity		790	783		umhos/cm	0.9	10	22-JUL-20
WG3369055-23 LCS								
Conductivity			98.0		%		90-110	22-JUL-20
WG3369055-28 LCS								
Conductivity			99.6		%		90-110	22-JUL-20
WG3369055-21 MB								
Conductivity			<1.0		umhos/cm		1	22-JUL-20
WG3369055-26 MB								
Conductivity			<1.0		umhos/cm		1	22-JUL-20
F-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Fluoride (F)			101.4		%		90-110	22-JUL-20
WG3367901-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	22-JUL-20
F2-F4-FID-WP	**Water**							
Batch R5167079								
WG3369781-4 LCS								
F2 (C10-C16)			96.6		%		70-130	24-JUL-20
F3 (C16-C34)			92.5		%		70-130	24-JUL-20
F4 (C34-C50)			106.5		%		70-130	24-JUL-20
WG3369781-3 MB								
F2 (C10-C16)			<0.10		mg/L		0.1	24-JUL-20
F3 (C16-C34)			<0.25		mg/L		0.25	24-JUL-20
F4 (C34-C50)			<0.25		mg/L		0.25	24-JUL-20
Surrogate: 2-Bromobenzotrifluoride			89.2		%		60-140	24-JUL-20
FC-MF-WP	**Water**							
Batch R5164763								
WG3368074-3 DUP		**L2477642-2**						
Fecal Coliforms		<1	<1	RPD-NA	CFU/100mL	N/A	65	22-JUL-20
WG3368074-1 MB								
Fecal Coliforms			<1		CFU/100mL		1	22-JUL-20
WG3368074-2 MB								
Fecal Coliforms			<1		CFU/100mL		1	22-JUL-20
MET-D-CCMS-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5166699								
WG3368718-4 DUP		**L2477642-1**						
Calcium (Ca)-Dissolved		67.9	67.7		mg/L	0.3	20	23-JUL-20
Iron (Fe)-Dissolved		0.137	0.139		mg/L	1.3	20	23-JUL-20
Magnesium (Mg)-Dissolved		37.7	37.2		mg/L	1.1	20	23-JUL-20
Manganese (Mn)-Dissolved		0.00246	0.00247		mg/L	0.4	20	23-JUL-20
Potassium (K)-Dissolved		12.7	12.6		mg/L	1.2	20	23-JUL-20
Sodium (Na)-Dissolved		39.9	39.1		mg/L	2.2	20	23-JUL-20
WG3368718-2 LCS								
Calcium (Ca)-Dissolved			100.5		%		80-120	23-JUL-20
Iron (Fe)-Dissolved			93.5		%		80-120	23-JUL-20
Magnesium (Mg)-Dissolved			102.7		%		80-120	23-JUL-20
Manganese (Mn)-Dissolved			102.1		%		80-120	23-JUL-20
Potassium (K)-Dissolved			103.7		%		80-120	23-JUL-20
Sodium (Na)-Dissolved			98.6		%		80-120	23-JUL-20
WG3368718-1 MB								
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-JUL-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-JUL-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-JUL-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
WG3368718-5 MS		**L2477642-1**						
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	23-JUL-20
Iron (Fe)-Dissolved			91.2		%		70-130	23-JUL-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	23-JUL-20
Manganese (Mn)-Dissolved			92.4		%		70-130	23-JUL-20
Potassium (K)-Dissolved			N/A	MS-B	%		-	23-JUL-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	23-JUL-20
NO2-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Nitrite (as N)			101.6		%		90-110	22-JUL-20
WG3367901-9 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	22-JUL-20
NO3-L-IC-N-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Nitrate (as N)			103.0		%		90-110	22-JUL-20
WG3367901-9 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	22-JUL-20
PH-WP	**Water**							
Batch R5166298								
WG3369055-30 DUP		**L2477642-1**						
pH		8.31	8.31	J	pH units	0.00	0.2	22-JUL-20
WG3369055-22 LCS								
pH			7.33		pH units		7.3-7.5	22-JUL-20
WG3369055-27 LCS								
pH			7.34		pH units		7.3-7.5	22-JUL-20
SO4-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Sulfate (SO4)			102.5		%		90-110	22-JUL-20
WG3367901-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	22-JUL-20
TC,EC-QT51-WP	**Water**							
Batch R5165685								
WG3367867-11 DUP		**L2477642-2**						
Total Coliforms		12	10		MPN/100mL	21	65	22-JUL-20
Escherichia Coli		0	0		MPN/100mL	0.0	65	22-JUL-20
WG3367867-12 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
WG3367867-13 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
WG3367867-14 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
TURBIDITY-WP	**Water**							
Batch R5166411								
WG3369614-5 LCS								
Turbidity			96.5		%		85-115	23-JUL-20
WG3369614-4 MB								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-WP	**Water**							
Batch R5166411								
WG3369614-4 MB								
Turbidity			<0.10		NTU		0.1	23-JUL-20

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH							
	1	20-JUL-20 13:57	22-JUL-20 12:00	0.25	46	hours	EHTR-FM
	2	20-JUL-20 13:27	22-JUL-20 12:00	0.25	47	hours	EHTR-FM
	3	21-JUL-20 08:05	22-JUL-20 12:00	0.25	28	hours	EHTR-FM
Bacteriological Tests							
Fecal Coliform							
	1	20-JUL-20 13:57	22-JUL-20 14:10	30	48	hours	EHTR
	2	20-JUL-20 13:27	22-JUL-20 14:10	30	49	hours	EHTR
Total Coliform and E.coli							
	1	20-JUL-20 13:57	22-JUL-20 12:50	30	47	hours	EHTR
	2	20-JUL-20 13:27	22-JUL-20 12:50	30	47	hours	EHTR

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2477642 were received on 22-JUL-20 08:00.

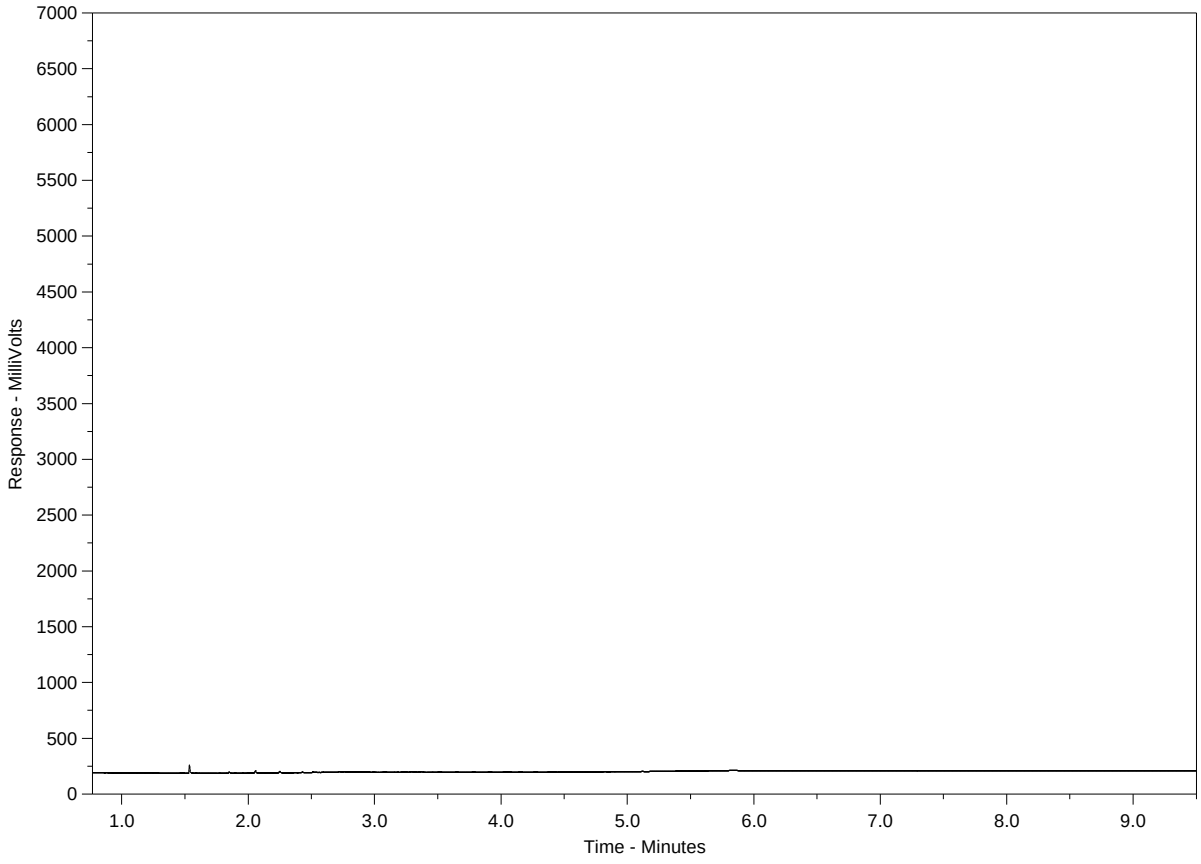
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

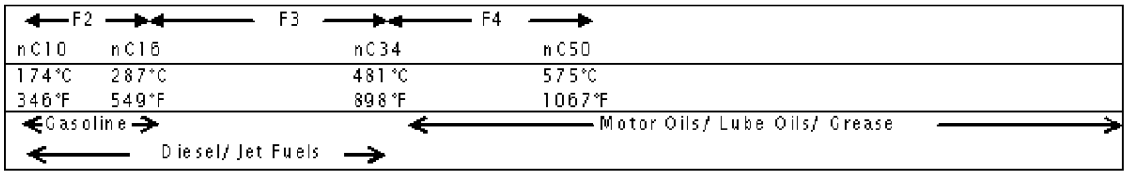
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2477642-1
Client Sample ID: RW-04





The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

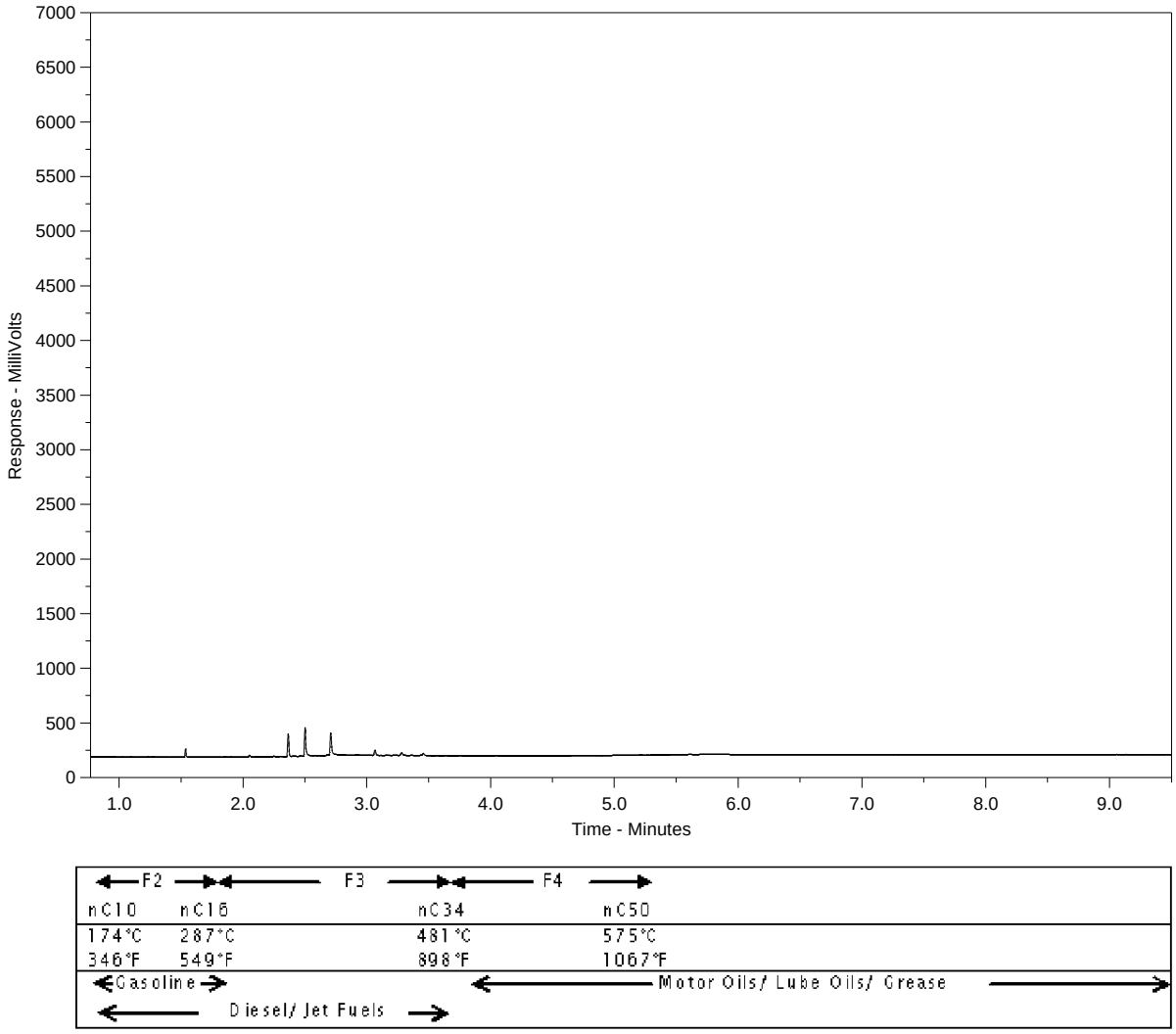
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2477642-2
Client Sample ID: RW-05



The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

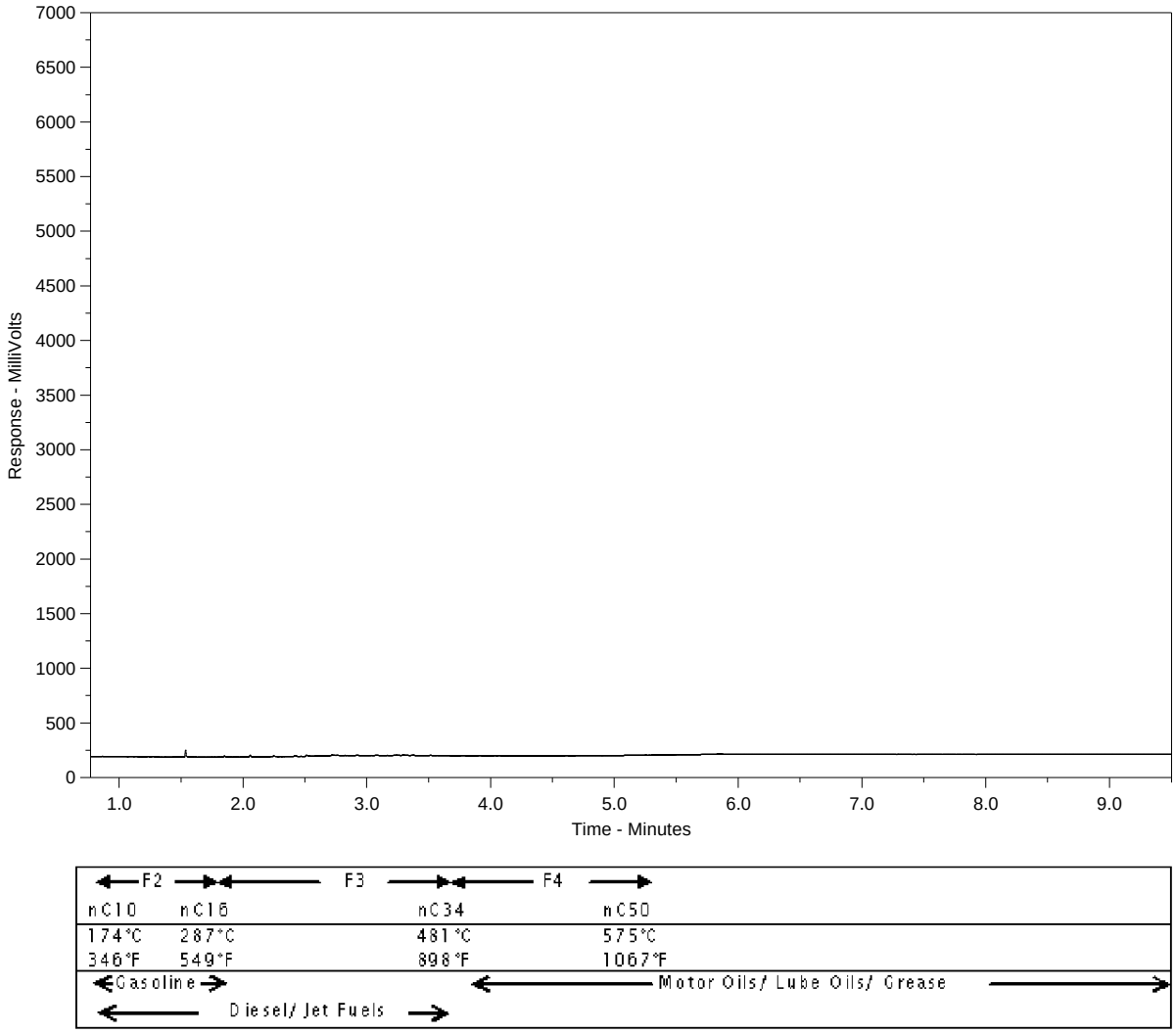
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2477642-3
Client Sample ID: RW-08



The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

ALS Environmental

L2477642-COFC

Customer Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC #

Page 1 of 1

Report To			Distribution				Service Requested (Rush for routine analysis subject to availability)
Company:	Stantec - W2077		☑ Standard	☐ Other			◉ Regular (Standard Turnaround Times - Business Days)
Contact:	TASSIA STAINTON		☑ PDF	☑ Excel	☑ Digital	☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	500 - 311 Portage Ave		Email 1:	tassia.stainton@stantec.com			○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Winnipeg, MB R3B 2B9		Email 2:	karen.mathers@stantec.com			○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	204-982-7615	Fax:	Email 3:				**Analysis Request**
Invoice To	Same as Report ?	☑ Yes ☐ No	**Client / Project Information**				Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?		☐ Yes ☐ No	Job #:				
Company:			PO / AFE:				
Contact:			LSD:				
Address:							
Phone:		Fax:	Quote #:	Q74061			
[redacted] Lab Work Order # (lab use only)			ALS Contact:		Sampler: BB, ZW		

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	FC-WP-LVP	[redacted]-WP-LVP	BTX,F1-F4-WP	TC,EC-QT51-WP	HARDNESS-CALC-WP	MET-D-CCMS-WP	MET-T-CCMS-WP	NH3-COL-WP + N-TOTKJ-W	P-T-COL-WP + P-TD-COL-W	P-TPART-CALC-WP	TSS + TDS	TC,EC-QT97-WP	Number of Containers
					F/P	F/P	P	P		F/P	P	P	P	P		P	
[redacted]	RW-04	20.07.30	1357	W ~~Tissue~~	✓	✓	✓	✓									9
[redacted]	RW-05	20.07.30	~~1350~~ 1357	"	"	"	"	"									4
[redacted]	RW-08	21.07.20 ~~20.07.30~~	0805	"	"	"	"	"									
[redacted]																	
[redacted]																	
[redacted]																	
[redacted]																	
[redacted]																	
[redacted]																	
[redacted]																	
[redacted]																	
[redacted]																	

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

[redacted] SHIPMENT RELEASE (client use)			[redacted] SHIPMENT RECEPTION (lab use only)				[redacted] SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
B. Zyd	21.07.30	1645		JUL 22 2020		°C				

GENF 18.01 Front

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477629
Project Ref: 111475107
Sample ID: RW-11
Sampled By:
Date Collected: 21-JUL-20
Lab Sample ID: L2477629-1
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F4						
Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total Hydrocarbons						
F1-BTEX	<0.10		mg/L			25-JUL-20
Total Hydrocarbons (C6-C50)	<0.38		mg/L			25-JUL-20
CCME PHC F2-F4 in Water						
F2 (C10-C16)	<0.10		mg/L			24-JUL-20
F3 (C16-C34)	<0.25		mg/L			24-JUL-20
F4 (C34-C50)	<0.25		mg/L			24-JUL-20
Surr: 2-Bromobenzotrifluoride	104.0		%			24-JUL-20
BTX plus F1 by GCMS						
Benzene	<0.00050		mg/L	0.005		24-JUL-20
Toluene	<0.0010		mg/L	0.06	0.024	24-JUL-20
Ethyl benzene	<0.00050		mg/L	0.14	0.0016	24-JUL-20
o-Xylene	<0.00050		mg/L			24-JUL-20
m+p-Xylenes	<0.00040		mg/L			24-JUL-20
F1 (C6-C10)	<0.10		mg/L			24-JUL-20
Surr: 4-Bromofluorobenzene (SS)	86.3		%			24-JUL-20
ROU4W Dissolved - Low Range						
Bicarbonate (HCO3)	489		mg/L			24-JUL-20
Carbonate (CO3)	<0.60		mg/L			24-JUL-20
Hydroxide (OH)	<0.34		mg/L			24-JUL-20
*Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20
pH						
pH	8.23		pH units			22-JUL-20
Turbidity						
*Turbidity	0.66		NTU			23-JUL-20
TDS calculated						
TDS (Calculated)	441		mg/L		500	27-JUL-20
Sulfate in Water by IC						
Sulfate (SO4)	6.67		mg/L		500	22-JUL-20
Nitrite in Water by IC (Low Level)						
*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Water by IC (Low Level)						
*Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance Calculation						
Hardness Calculated						
Hardness (as CaCO3)	0.43		mg/L		500	27-JUL-20

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477629
Project Ref: 111475107
Sample ID: RW-11
Sampled By:
Date Collected: 21-JUL-20
Lab Sample ID: L2477629-1
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.413		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals Filtration Location	FIELD					23-JUL-20
Calcium (Ca)-Dissolved	0.132		mg/L			23-JUL-20
Iron (Fe)-Dissolved	<0.010		mg/L		0.3	23-JUL-20
Magnesium (Mg)-Dissolved	0.0241		mg/L			24-JUL-20
Manganese (Mn)-Dissolved	<0.00010		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	0.465		mg/L			23-JUL-20
Sodium (Na)-Dissolved	185		mg/L		200	23-JUL-20
Conductivity						
Conductivity	723		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (Cl)	7.82		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	401		mg/L			22-JUL-20
Fecal Coliforms	<1		CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	0		MPN/100mL	0		22-JUL-20
Escherichia Coli	0		MPN/100mL	0		22-JUL-20

CDWQG = Health Canada Guideline Limits updated **JUNE 2019**

* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only. If present as Nitrate then the limit is 10mg/L < or N.D. = less than detection limit.
* Turbidity guideline based on membrane filtration. For guidelines on conventional treatment and slow sand or diatomaceous earth filtration please see Summary Table of Guidelines for Canadian Drinking Water Quality
- A blank entry designates no known limit.
- A shaded value in the Results column exceeds CDWQG MAC and/ or Aesthetic Objective.

Approved by

Hua Wo
Account Manager

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477629
Project Ref: 111475107
Sample ID: RW-12
Sampled By:
Date Collected: 21-JUL-20
Lab Sample ID: L2477629-2
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F4						
Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total Hydrocarbons						
F1-BTEX	<0.10		mg/L			25-JUL-20
Total Hydrocarbons (C6-C50)	<0.38		mg/L			25-JUL-20
CCME PHC F2-F4 in Water						
F2 (C10-C16)	<0.10		mg/L			24-JUL-20
F3 (C16-C34)	<0.25		mg/L			24-JUL-20
F4 (C34-C50)	<0.25		mg/L			24-JUL-20
Surr: 2-Bromobenzotrifluoride	92.4		%			24-JUL-20
BTX plus F1 by GCMS						
Benzene	<0.00050		mg/L	0.005		24-JUL-20
Toluene	<0.0010		mg/L	0.06	0.024	24-JUL-20
Ethyl benzene	<0.00050		mg/L	0.14	0.0016	24-JUL-20
o-Xylene	<0.00050		mg/L			24-JUL-20
m+p-Xylenes	<0.00040		mg/L			24-JUL-20
F1 (C6-C10)	<0.10		mg/L			24-JUL-20
Surr: 4-Bromofluorobenzene (SS)	86.3		%			24-JUL-20
ROU4W Dissolved - Low Range						
Bicarbonate (HCO3)	540		mg/L			24-JUL-20
Carbonate (CO3)	<0.60		mg/L			24-JUL-20
Hydroxide (OH)	<0.34		mg/L			24-JUL-20
*Nitrate and Nitrite as N	2.84		mg/L	10		24-JUL-20
pH						
pH	7.88		pH units			22-JUL-20
Turbidity						
*Turbidity	<0.10		NTU			23-JUL-20
TDS calculated						
TDS (Calculated)	697		mg/L		500	27-JUL-20
Sulfate in Water by IC						
Sulfate (SO4)	19.0		mg/L		500	22-JUL-20
Nitrite in Water by IC (Low Level)						
*Nitrite (as N)	<0.0020	DLM	mg/L	1		22-JUL-20
Nitrate in Water by IC (Low Level)						
*Nitrate (as N)	2.84		mg/L	10		22-JUL-20
Ion Balance Calculation						
Hardness Calculated						
Hardness (as CaCO3)	532		mg/L		500	27-JUL-20

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477629
Project Ref: 111475107
Sample ID: RW-12
Sampled By:
Date Collected: 21-JUL-20
Lab Sample ID: L2477629-2
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.092		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals Filtration Location	FIELD					23-JUL-20
Calcium (Ca)-Dissolved	84.6		mg/L			23-JUL-20
Iron (Fe)-Dissolved	<0.010		mg/L		0.3	23-JUL-20
Magnesium (Mg)-Dissolved	78.0		mg/L			23-JUL-20
Manganese (Mn)-Dissolved	0.00018		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	1.84		mg/L			23-JUL-20
Sodium (Na)-Dissolved	64.7		mg/L		200	23-JUL-20
Conductivity						
Conductivity	1230		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (Cl)	171		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	443		mg/L			22-JUL-20
Fecal Coliforms	<1		CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	3		MPN/100mL	0		22-JUL-20
Escherichia Coli	0		MPN/100mL	0		22-JUL-20

CDWQG = Health Canada Guideline Limits updated **JUNE 2019**

* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only. If present as Nitrate then the limit is 10mg/L < or N.D. = less than detection limit.
* Turbidity guideline based on membrane filtration. For guidelines on conventional treatment and slow sand or diatomaceous earth filtration please see Summary Table of Guidelines for Canadian Drinking Water Quality
- A blank entry designates no known limit.
- A shaded value in the Results column exceeds CDWQG MAC and/ or Aesthetic Objective.

Approved by

Hua Wo
Account Manager

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477629
Project Ref: 111475107
Sample ID: RW-13
Sampled By:
Date Collected: 21-JUL-20
Lab Sample ID: L2477629-3
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F4						
Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total Hydrocarbons						
F1-BTEX	<0.10		mg/L			25-JUL-20
Total Hydrocarbons (C6-C50)	<0.38		mg/L			25-JUL-20
CCME PHC F2-F4 in Water						
F2 (C10-C16)	<0.10		mg/L			24-JUL-20
F3 (C16-C34)	<0.25		mg/L			24-JUL-20
F4 (C34-C50)	<0.25		mg/L			24-JUL-20
Surr: 2-Bromobenzotrifluoride	95.9		%			24-JUL-20
BTX plus F1 by GCMS						
Benzene	<0.00050		mg/L	0.005		24-JUL-20
Toluene	<0.0010		mg/L	0.06	0.024	24-JUL-20
Ethyl benzene	<0.00050		mg/L	0.14	0.0016	24-JUL-20
o-Xylene	<0.00050		mg/L			24-JUL-20
m+p-Xylenes	<0.00040		mg/L			24-JUL-20
F1 (C6-C10)	<0.10		mg/L			24-JUL-20
Surr: 4-Bromofluorobenzene (SS)	85.9		%			24-JUL-20
ROU4W Dissolved - Low Range						
Bicarbonate (HCO3)	475		mg/L			24-JUL-20
Carbonate (CO3)	<0.60		mg/L			24-JUL-20
Hydroxide (OH)	<0.34		mg/L			24-JUL-20
*Nitrate and Nitrite as N	0.289		mg/L	10		24-JUL-20
pH						
pH	7.94		pH units			22-JUL-20
Turbidity						
*Turbidity	0.31		NTU			23-JUL-20
TDS calculated						
TDS (Calculated)	363		mg/L		500	27-JUL-20
Sulfate in Water by IC						
Sulfate (SO4)	3.07		mg/L		500	22-JUL-20
Nitrite in Water by IC (Low Level)						
*Nitrite (as N)	0.0040		mg/L	1		22-JUL-20
Nitrate in Water by IC (Low Level)						
*Nitrate (as N)	0.285		mg/L	10		22-JUL-20
Ion Balance Calculation						
Hardness Calculated						
Hardness (as CaCO3)	365		mg/L		500	27-JUL-20

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477629
Project Ref: 111475107
Sample ID: RW-13
Sampled By:
Date Collected: 21-JUL-20
Lab Sample ID: L2477629-3
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.312		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals Filtration Location	FIELD					23-JUL-20
Calcium (Ca)-Dissolved	60.9		mg/L			23-JUL-20
Iron (Fe)-Dissolved	<0.010		mg/L		0.3	23-JUL-20
Magnesium (Mg)-Dissolved	51.7		mg/L			23-JUL-20
Manganese (Mn)-Dissolved	0.0117		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	2.07		mg/L			23-JUL-20
Sodium (Na)-Dissolved	4.54		mg/L		200	23-JUL-20
Conductivity						
Conductivity	660		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (Cl)	5.60		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	390		mg/L			22-JUL-20
Fecal Coliforms	<1		CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	0		MPN/100mL	0		22-JUL-20
Escherichia Coli	0		MPN/100mL	0		22-JUL-20

CDWQG = Health Canada Guideline Limits updated **JUNE 2019**

* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only. If present as Nitrate then the limit is 10mg/L < or N.D. = less than detection limit.
* Turbidity guideline based on membrane filtration. For guidelines on conventional treatment and slow sand or diatomaceous earth filtration please see Summary Table of Guidelines for Canadian Drinking Water Quality
- A blank entry designates no known limit.
- A shaded value in the Results column exceeds CDWQG MAC and/ or Aesthetic Objective.

Approved by

Hua Wo
Account Manager

Guidelines & Objectives

Sample Parameter Qualifier key listed:

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

Health Canada MAC Health Related Criteria Limits

Nitrate/Nitrite-N*	Criteria limit is 10 mg/L (1.0 mg/L if present as all Nitrite-N). High concentrations may contribute to blue baby syndrome in infants.
Lead*	A cumulative body poison, uncommon in naturally occurring hard waters.
Fluoride*	Present in fluoridated water supplies at 0.8 mg/L to reduce dental caries. Elevated levels causes fluorosis (mottling of teeth).
Total Coliforms*	Criteria is 0 CFU/100mL. Adverse health effects.
E. Coli*	Criteria is 0 CFU/100 mL. Certain E. Coli bacteria can be life threatening.
Manganese*	Criteria limit is 0.12 mg/L. Possible neurological effects in infants.

*Health Canada Canadian Drinking Water Quality Guidelines (MAC limit)

Aesthetic Objective Concentration Levels

Alkalinity	Acid neutralizing capacity. Usually a measure of carbonate and bicarbonates and calculated and reported as calcium carbonate.
Balance	Quality control parameter ratioing cations to anions
Bicarbonate	See Alkalinity. Report as the anion HCO3-1
Carbonate	See Alkalinity. Reported at the anion CO3-2
Calcium	See Hardness. Common major cation of water chemistry.
Chloride	Common major anion of water chemistry.
Conductance	Physical test measuring water salinity (dissolved ions or solids)
Hardness	Classical measure or capacity of water to precipitate soap (chiefly calcium and magnesium ions). Causes scaling tendency in water if carbonates/bicarbonates are present (if >200 mg/L). For drinking water purposes waters with results <200 mg/L are considered acceptable, results >200 mg/L are considered poor but can be tolerated. Results >500 mg/L are unacceptable.
Hydroxide	See alkalinity
Magnesium	See hardness. Common major cation of water chemistry. Elevated levels (>125 mg/L) may exert a cathartic or diuretic action.
pH	Measure of water acidity/alkalinity. Normal range is 7.0-8.5.
Potassium	Common major cation of water chemistry.
Sodium	Common major cation of water chemistry. Measure of salinity (saltiness).The aesthetic objective (not related to health) for sodium in drinking water is 200 mg/L. However, where sodium concentration of the drinking water exceeds 20 mg/L, it is recommended that any person on a sodium restricted diet consult with his/her physician or Medical Officer of Health concerning the use of that water.
Sulphate	Common major anion of water chemistry. Elevated levels may exert a cathartic or diuretic action.
Total Dissolved Solids	A measure of water salinity.
Iron	Causes staining to laundry and porcelain and astringent taste. Oxidizes to red-brown precipitate on exposure to air.
Heterotrophic Plate Count	Criteria is 500 cfu/mL Measure of heterotrophic bacteria present.

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
Contact: Tassia Stainton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	**Water**							
Batch R5166298								
WG3369055-19 LCS								
Alkalinity, Total (as CaCO3)			104.0		%		85-115	22-JUL-20
WG3369055-24 LCS								
Alkalinity, Total (as CaCO3)			105.5		%		85-115	22-JUL-20
WG3369055-16 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	22-JUL-20
WG3369055-21 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	22-JUL-20
BTEXS+F1-HSMS-WP	**Water**							
Batch R5166645								
WG3368156-2 LCS								
Benzene			116.2		%		70-130	23-JUL-20
Toluene			98.2		%		70-130	23-JUL-20
Ethyl benzene			98.4		%		70-130	23-JUL-20
o-Xylene			113.0		%		70-130	23-JUL-20
m+p-Xylenes			111.4		%		70-130	23-JUL-20
WG3368156-3 LCS								
F1 (C6-C10)			98.7		%		70-130	23-JUL-20
WG3368156-1 MB								
Benzene			<0.00050		mg/L		0.0005	23-JUL-20
Toluene			<0.0010		mg/L		0.001	23-JUL-20
Ethyl benzene			<0.00050		mg/L		0.0005	23-JUL-20
o-Xylene			<0.00050		mg/L		0.0005	23-JUL-20
m+p-Xylenes			<0.00040		mg/L		0.0004	23-JUL-20
F1 (C6-C10)			<0.10		mg/L		0.1	23-JUL-20
Surrogate: 4-Bromofluorobenzene (SS)			85.2		%		70-130	23-JUL-20
CL-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-6 LCS								
Chloride (Cl)			102.6		%		90-110	22-JUL-20
WG3367901-5 MB								
Chloride (Cl)			<0.10		mg/L		0.1	22-JUL-20
EC-WP	**Water**							
Batch R5166298								
WG3369055-18 LCS								
Conductivity			97.8		%		90-110	22-JUL-20
WG3369055-23 LCS								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-WP	**Water**							
Batch R5166298								
WG3369055-23 LCS								
Conductivity			98.0		%		90-110	22-JUL-20
WG3369055-16 MB								
Conductivity			<1.0		umhos/cm		1	22-JUL-20
WG3369055-21 MB								
Conductivity			<1.0		umhos/cm		1	22-JUL-20
F-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-6 LCS								
Fluoride (F)			102.0		%		90-110	22-JUL-20
WG3367901-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	22-JUL-20
F2-F4-FID-WP	**Water**							
Batch R5167079								
WG3369781-2 LCS								
F2 (C10-C16)			99.4		%		70-130	24-JUL-20
F3 (C16-C34)			91.9		%		70-130	24-JUL-20
F4 (C34-C50)			107.6		%		70-130	24-JUL-20
WG3369781-1 MB								
F2 (C10-C16)			<0.10		mg/L		0.1	24-JUL-20
F3 (C16-C34)			<0.25		mg/L		0.25	24-JUL-20
F4 (C34-C50)			<0.25		mg/L		0.25	24-JUL-20
Surrogate: 2-Bromobenzotrifluoride			87.8		%		60-140	24-JUL-20
FC-MF-WP	**Water**							
Batch R5164763								
WG3368074-1 MB								
Fecal Coliforms			<1		CFU/100mL		1	22-JUL-20
WG3368074-2 MB								
Fecal Coliforms			<1		CFU/100mL		1	22-JUL-20
MET-D-CCMS-WP	**Water**							
Batch R5166699								
WG3368715-2 LCS								
Calcium (Ca)-Dissolved			99.3		%		80-120	23-JUL-20
Iron (Fe)-Dissolved			94.4		%		80-120	23-JUL-20
Magnesium (Mg)-Dissolved			102.0		%		80-120	23-JUL-20
Manganese (Mn)-Dissolved			100.7		%		80-120	23-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5166699								
WG3368715-2 LCS								
Potassium (K)-Dissolved			103.3		%		80-120	23-JUL-20
Sodium (Na)-Dissolved			99.0		%		80-120	23-JUL-20
WG3368715-1 MB								
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-JUL-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-JUL-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-JUL-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
NO2-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-6 LCS								
Nitrite (as N)			104.0		%		90-110	22-JUL-20
WG3367901-5 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	22-JUL-20
NO3-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-6 LCS								
Nitrate (as N)			101.6		%		90-110	22-JUL-20
WG3367901-5 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	22-JUL-20
PH-WP	**Water**							
Batch R5166298								
WG3369055-17 LCS								
pH			7.34		pH units		7.3-7.5	22-JUL-20
WG3369055-22 LCS								
pH			7.33		pH units		7.3-7.5	22-JUL-20
SO4-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-6 LCS								
Sulfate (SO4)			104.2		%		90-110	22-JUL-20
WG3367901-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	22-JUL-20
TC,EC-QT51-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TC,EC-QT51-WP	**Water**							
Batch R5165685								
WG3367867-3 DUP		**L2477629-1**						
Total Coliforms		0	0		MPN/100mL	0.0	65	22-JUL-20
Escherichia Coli		0	0		MPN/100mL	0.0	65	22-JUL-20
WG3367867-12 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
WG3367867-13 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
WG3367867-14 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
TURBIDITY-WP	**Water**							
Batch R5166411								
WG3369614-2 LCS								
Turbidity			95.0		%		85-115	23-JUL-20
WG3369614-1 MB								
Turbidity			<0.10		NTU		0.1	23-JUL-20

Quality Control Report

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH							
	1	21-JUL-20 10:12	22-JUL-20 12:00	0.25	26	hours	EHTR-FM
	2	21-JUL-20 10:56	22-JUL-20 12:00	0.25	25	hours	EHTR-FM
	3	21-JUL-20 10:35	22-JUL-20 12:00	0.25	25	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2477629 were received on 22-JUL-20 08:00.

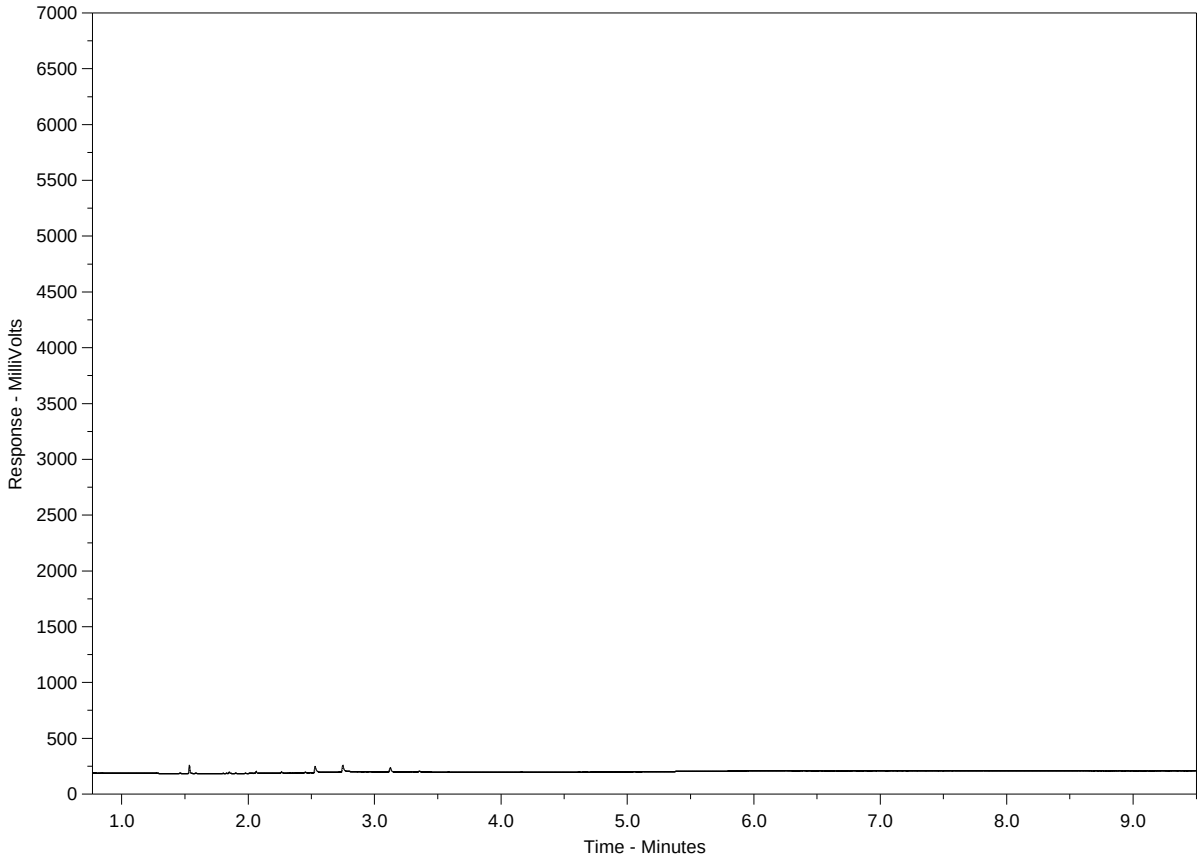
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

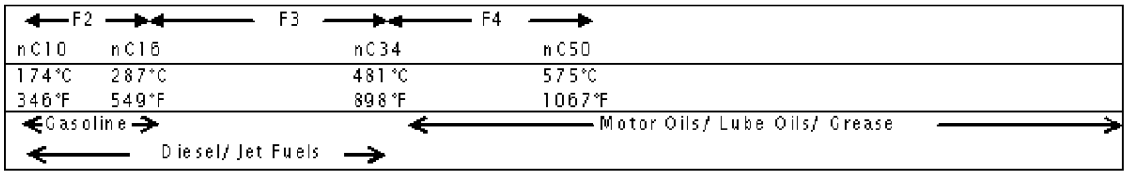
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2477629-1
Client Sample ID: RW-11





The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

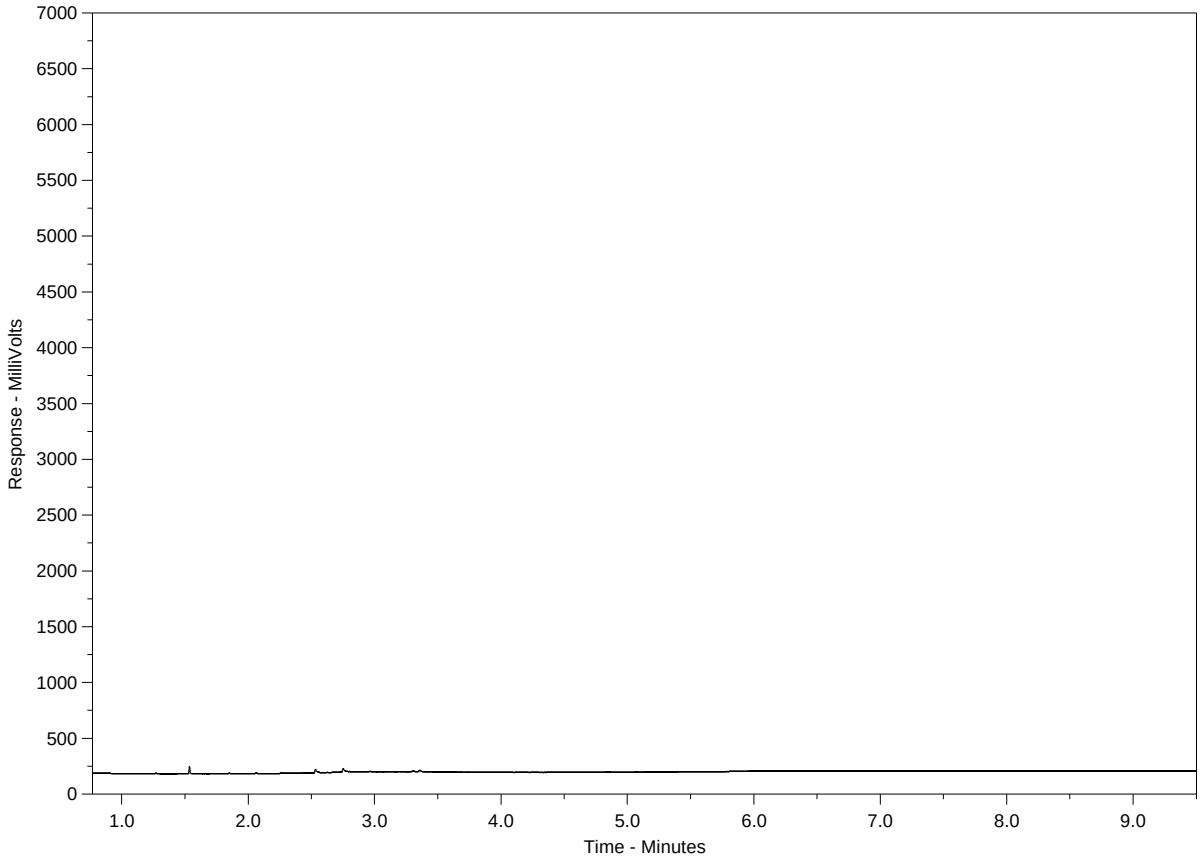
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

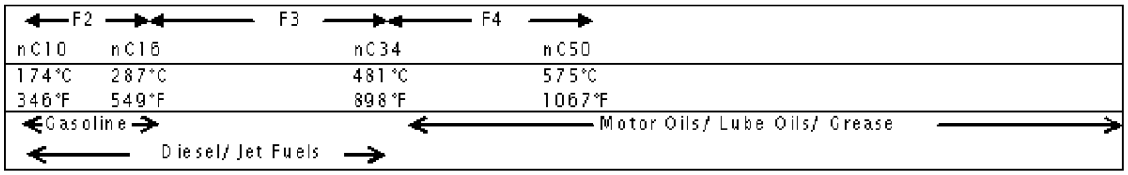
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2477629-2
Client Sample ID: RW-12





The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

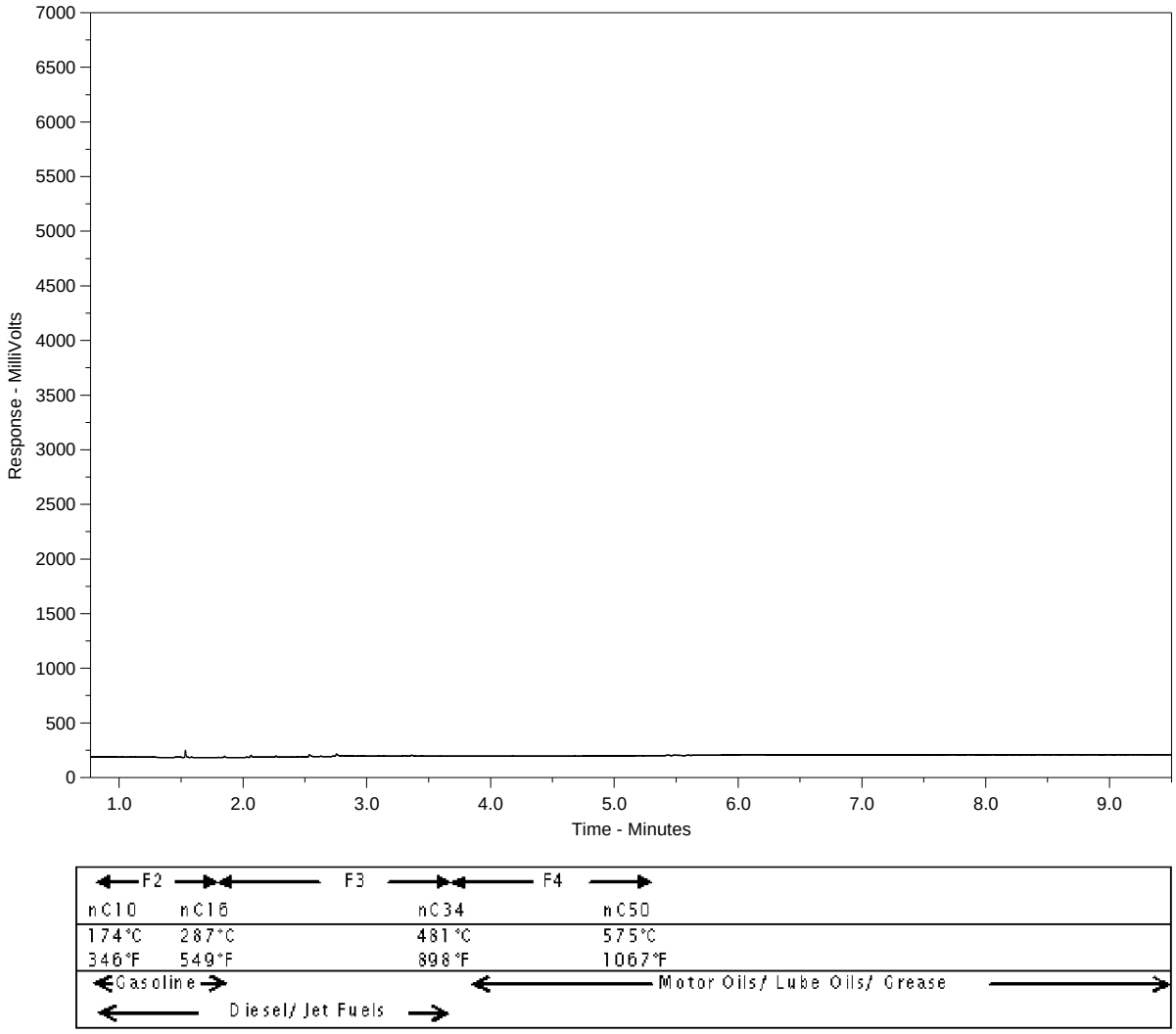
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2477629-3
Client Sample ID: RW-13



The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2477629-COFC

COC Number: 17 - 749269

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	Stantec - W2077
Contact:	Tassia Stainton
Phone:	204-982-7615
	Company address below will appear on the final report
Street:	500-311 Portage Ave
City/Province:	Wpg, MB
Postal Code:	R3B 889
Invoice To	Same as Report To [ ] YES [ ] NO
	Copy of Invoice with Report [ ] YES [ ] NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: [X] PDF [X] EXCEL [X] EDD (DIGITAL)

Quality Control (QC) Report with Report [X] YES [ ] NO

[ ] Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: [ ] EMAIL [ ] MAIL [ ] FAX

Email 1 or Fax: tassia.stainton@stantec.com

Email 2: karen.matters@stantec.com

Email 3:

Invoice Distribution

Select Invoice Distribution: [X] EMAIL [ ] MAIL [ ] FAX

Email 1 or Fax:

Email 2:

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] [X] Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] [ ] 3 day [P3-25%] [ ] 2 day [P2-50%] [ ]

EMERGENCY: 1 Business day [E - 100%] [ ]; Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] [ ]

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information

ALS Account # / Quote #: Q80404

Job #: 111475107

PO / AFE:

LSD:

ALS Lab Work Order # (lab use only):

Oil and Gas Required Fields (client use)

AFE/Cost Center: | PO#

Major/Minor Code: | Routing Code:

Requisitioner:

Location:

ALS Contact:

Sampler: BE, ZW

Analysis Request — Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	BTX,F1-F4-WP (P)	FC-MF-WP	ROUHC-D-L-WP (F/P)	TC,FC-QTS1-WP (P)	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	RW-11	21-07-20	1012	W	9	✓	✓	✓	✓		
	RW-12	21-07-20	1056	⊥	⊥	⊥	⊥	⊥	⊥		
	RW-13	21-07-20	1035	⊥	⊥	⊥	⊥	⊥	⊥		

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? [ ] YES [ ] NO

Are samples for human consumption/ use? [ ] YES [ ] NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen [ ] SIF Observations Yes [ ] No [ ]

Ice Packs [ ] Ice Cubes [ ] Custody seal intact Yes [ ] No [ ]

Cooling Initiated [ ]

INITIAL COOLER TEMPERATURES °C: 1.3

FINAL COOLER TEMPERATURES °C:

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: B. Lynch	Date: July 21, 2020	Time: 1645	Received by: [signature]	Date: JUL 22 2020	Time:	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION — WHITE - LABORATORY COPY — YELLOW - CLIENT COPY

JUNE 2018 FRONT

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477639
Project Ref: 111475107
Sample ID: RW-20
Sampled By:
Date Collected: 21-JUL-20
Lab Sample ID: L2477639-1
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F4						
Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total Hydrocarbons						
F1-BTEX	<0.10		mg/L			25-JUL-20
Total Hydrocarbons (C6-C50)	<0.38		mg/L			25-JUL-20
CCME PHC F2-F4 in Water						
F2 (C10-C16)	<0.10		mg/L			24-JUL-20
F3 (C16-C34)	<0.25		mg/L			24-JUL-20
F4 (C34-C50)	<0.25		mg/L			24-JUL-20
Surr: 2-Bromobenzotrifluoride	96.0		%			24-JUL-20
BTX plus F1 by GCMS						
Benzene	<0.00050		mg/L	0.005		24-JUL-20
Toluene	<0.0010		mg/L	0.06	0.024	24-JUL-20
Ethyl benzene	<0.00050		mg/L	0.14	0.0016	24-JUL-20
o-Xylene	<0.00050		mg/L			24-JUL-20
m+p-Xylenes	<0.00040		mg/L			24-JUL-20
F1 (C6-C10)	<0.10		mg/L			24-JUL-20
Surr: 4-Bromofluorobenzene (SS)	86.9		%			24-JUL-20
ROU4W Dissolved - Low Range						
Bicarbonate (HCO3)	383		mg/L			24-JUL-20
Carbonate (CO3)	6.00		mg/L			24-JUL-20
Hydroxide (OH)	<0.34		mg/L			24-JUL-20
*Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20
pH						
pH	8.34		pH units			22-JUL-20
Turbidity						
*Turbidity	9.75		NTU			23-JUL-20
TDS calculated						
TDS (Calculated)	451		mg/L		500	27-JUL-20
Sulfate in Water by IC						
Sulfate (SO4)	108		mg/L		500	22-JUL-20
Nitrite in Water by IC (Low Level)						
*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Water by IC (Low Level)						
*Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance Calculation						
Hardness Calculated						
Hardness (as CaCO3)	322		mg/L		500	27-JUL-20

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477639
Project Ref: 111475107
Sample ID: RW-20
Sampled By:
Date Collected: 21-JUL-20
Lab Sample ID: L2477639-1
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.969		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals Filtration Location	FIELD					23-JUL-20
Calcium (Ca)-Dissolved	60.7		mg/L			23-JUL-20
Iron (Fe)-Dissolved	0.752		mg/L		0.3	23-JUL-20
Magnesium (Mg)-Dissolved	41.5		mg/L			23-JUL-20
Manganese (Mn)-Dissolved	0.0158		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	8.75		mg/L			23-JUL-20
Sodium (Na)-Dissolved	31.5		mg/L		200	23-JUL-20
Conductivity						
Conductivity	732		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (Cl)	5.49		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	324		mg/L			22-JUL-20
Fecal Coliforms	<1		CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	0		MPN/100mL	0		22-JUL-20
Escherichia Coli	0		MPN/100mL	0		22-JUL-20

CDWQG = Health Canada Guideline Limits updated **JUNE 2019**

* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only. If present as Nitrate then the limit is 10mg/L < or N.D. = less than detection limit.
* Turbidity guideline based on membrane filtration. For guidelines on conventional treatment and slow sand or diatomaceous earth filtration please see Summary Table of Guidelines for Canadian Drinking Water Quality
- A blank entry designates no known limit.
- A shaded value in the Results column exceeds CDWQG MAC and/ or Aesthetic Objective.

Approved by

Hua Wo
Account Manager

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477639
Project Ref: 111475107
Sample ID: RW-21
Sampled By:
Date Collected: 21-JUL-20
Lab Sample ID: L2477639-2
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F4						
Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total Hydrocarbons						
F1-BTEX	<0.10		mg/L			25-JUL-20
Total Hydrocarbons (C6-C50)	<0.38		mg/L			25-JUL-20
CCME PHC F2-F4 in Water						
F2 (C10-C16)	<0.10		mg/L			24-JUL-20
F3 (C16-C34)	<0.25		mg/L			24-JUL-20
F4 (C34-C50)	<0.25		mg/L			24-JUL-20
Surr: 2-Bromobenzotrifluoride	96.5		%			24-JUL-20
BTX plus F1 by GCMS						
Benzene	<0.00050		mg/L	0.005		24-JUL-20
Toluene	<0.0010		mg/L	0.06	0.024	24-JUL-20
Ethyl benzene	<0.00050		mg/L	0.14	0.0016	24-JUL-20
o-Xylene	<0.00050		mg/L			24-JUL-20
m+p-Xylenes	<0.00040		mg/L			24-JUL-20
F1 (C6-C10)	<0.10		mg/L			24-JUL-20
Surr: 4-Bromofluorobenzene (SS)	86.5		%			24-JUL-20
ROU4W Dissolved - Low Range						
Bicarbonate (HCO3)	402		mg/L			24-JUL-20
Carbonate (CO3)	<0.60		mg/L			24-JUL-20
Hydroxide (OH)	<0.34		mg/L			24-JUL-20
*Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20
pH						
pH	8.28		pH units			22-JUL-20
Turbidity						
*Turbidity	7.51		NTU			23-JUL-20
TDS calculated						
TDS (Calculated)	440		mg/L		500	27-JUL-20
Sulfate in Water by IC						
Sulfate (SO4)	93.8		mg/L		500	22-JUL-20
Nitrite in Water by IC (Low Level)						
*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Water by IC (Low Level)						
*Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance Calculation						
Hardness Calculated						
Hardness (as CaCO3)	350		mg/L		500	27-JUL-20

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477639
Project Ref: 111475107
Sample ID: RW-21
Sampled By:
Date Collected: 21-JUL-20
Lab Sample ID: L2477639-2
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	1.17		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals Filtration Location	FIELD					23-JUL-20
Calcium (Ca)-Dissolved	65.2		mg/L			23-JUL-20
Iron (Fe)-Dissolved	0.686		mg/L		0.3	23-JUL-20
Magnesium (Mg)-Dissolved	45.6		mg/L			23-JUL-20
Manganese (Mn)-Dissolved	0.0202		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	8.59		mg/L			23-JUL-20
Sodium (Na)-Dissolved	24.8		mg/L		200	23-JUL-20
Conductivity						
Conductivity	712		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (Cl)	4.62		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	329		mg/L			22-JUL-20
Fecal Coliforms	<1		CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	0		MPN/100mL	0		22-JUL-20
Escherichia Coli	0		MPN/100mL	0		22-JUL-20

CDWQG = Health Canada Guideline Limits updated **JUNE 2019**

* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only. If present as Nitrate then the limit is 10mg/L < or N.D. = less than detection limit.
* Turbidity guideline based on membrane filtration. For guidelines on conventional treatment and slow sand or diatomaceous earth filtration please see Summary Table of Guidelines for Canadian Drinking Water Quality
- A blank entry designates no known limit.
- A shaded value in the Results column exceeds CDWQG MAC and/ or Aesthetic Objective.

Approved by

Hua Wo
Account Manager

Guidelines & Objectives

Health Canada MAC Health Related Criteria Limits

Nitrate/Nitrite-N*	Criteria limit is 10 mg/L (1.0 mg/L if present as all Nitrite-N). High concentrations may contribute to blue baby syndrome in infants.
Lead*	A cumulative body poison, uncommon in naturally occurring hard waters.
Fluoride*	Present in fluoridated water supplies at 0.8 mg/L to reduce dental caries. Elevated levels causes fluorosis (mottling of teeth).
Total Coliforms*	Criteria is 0 CFU/100mL. Adverse health effects.
E. Coli*	Criteria is 0 CFU/100 mL. Certain E. Coli bacteria can be life threatening.
Manganese*	Criteria limit is 0.12 mg/L. Possible neurological effects in infants.

*Health Canada Canadian Drinking Water Quality Guidelines (MAC limit)

Aesthetic Objective Concentration Levels

Alkalinity	Acid neutralizing capacity. Usually a measure of carbonate and bicarbonates and calculated and reported as calcium carbonate.
Balance	Quality control parameter ratioing cations to anions
Bicarbonate	See Alkalinity. Report as the anion HCO3-1
Carbonate	See Alkalinity. Reported at the anion CO3-2
Calcium	See Hardness. Common major cation of water chemistry.
Chloride	Common major anion of water chemistry.
Conductance	Physical test measuring water salinity (dissolved ions or solids)
Hardness	Classical measure or capacity of water to precipitate soap (chiefly calcium and magnesium ions). Causes scaling tendency in water if carbonates/bicarbonates are present (if >200 mg/L). For drinking water purposes waters with results <200 mg/L are considered acceptable, results >200 mg/L are considered poor but can be tolerated. Results >500 mg/L are unacceptable.
Hydroxide	See alkalinity
Magnesium	See hardness. Common major cation of water chemistry. Elevated levels (>125 mg/L) may exert a cathartic or diuretic action.
pH	Measure of water acidity/alkalinity. Normal range is 7.0-8.5.
Potassium	Common major cation of water chemistry.
Sodium	Common major cation of water chemistry. Measure of salinity (saltiness).The aesthetic objective (not related to health) for sodium in drinking water is 200 mg/L. However, where sodium concentration of the drinking water exceeds 20 mg/L, it is recommended that any person on a sodium restricted diet consult with his/her physician or Medical Officer of Health concerning the use of that water.
Sulphate	Common major anion of water chemistry. Elevated levels may exert a cathartic or diuretic action.
Total Dissolved Solids	A measure of water salinity.
Iron	Causes staining to laundry and porcelain and astringent taste. Oxidizes to red-brown precipitate on exposure to air.
Heterotrophic Plate Count	Criteria is 500 cfu/mL Measure of heterotrophic bacteria present.

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
Contact: Tassia Stainton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	**Water**							
Batch R5166298								
WG3369055-24 LCS								
Alkalinity, Total (as CaCO3)			105.5		%		85-115	22-JUL-20
WG3369055-21 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	22-JUL-20
BTEXS+F1-HSMS-WP	**Water**							
Batch R5166645								
WG3368156-8 LCS								
Benzene			75.0		%		70-130	23-JUL-20
Toluene			77.1		%		70-130	23-JUL-20
Ethyl benzene			77.4		%		70-130	23-JUL-20
o-Xylene			92.1		%		70-130	23-JUL-20
m+p-Xylenes			88.7		%		70-130	23-JUL-20
WG3368156-9 LCS								
F1 (C6-C10)			99.1		%		70-130	23-JUL-20
WG3368156-7 MB								
Benzene			<0.00050		mg/L		0.0005	23-JUL-20
Toluene			<0.0010		mg/L		0.001	23-JUL-20
Ethyl benzene			<0.00050		mg/L		0.0005	23-JUL-20
o-Xylene			<0.00050		mg/L		0.0005	23-JUL-20
m+p-Xylenes			<0.00040		mg/L		0.0004	23-JUL-20
F1 (C6-C10)			<0.10		mg/L		0.1	23-JUL-20
Surrogate: 4-Bromofluorobenzene (SS)			86.3		%		70-130	23-JUL-20
WG3368156-12 MS		**L2477639-1**						
F1 (C6-C10)			93.4		%		50-150	23-JUL-20
CL-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Chloride (Cl)			100.1		%		90-110	22-JUL-20
WG3367901-9 MB								
Chloride (Cl)			<0.10		mg/L		0.1	22-JUL-20
EC-WP	**Water**							
Batch R5166298								
WG3369055-23 LCS								
Conductivity			98.0		%		90-110	22-JUL-20
WG3369055-21 MB								
Conductivity			<1.0		umhos/cm		1	22-JUL-20
F-IC-N-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Fluoride (F)			101.4		%		90-110	22-JUL-20
WG3367901-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	22-JUL-20
F2-F4-FID-WP	**Water**							
Batch R5167079								
WG3369781-2 LCS								
F2 (C10-C16)			99.4		%		70-130	24-JUL-20
F3 (C16-C34)			91.9		%		70-130	24-JUL-20
F4 (C34-C50)			107.6		%		70-130	24-JUL-20
WG3369781-1 MB								
F2 (C10-C16)			<0.10		mg/L		0.1	24-JUL-20
F3 (C16-C34)			<0.25		mg/L		0.25	24-JUL-20
F4 (C34-C50)			<0.25		mg/L		0.25	24-JUL-20
Surrogate: 2-Bromobenzotrifluoride			87.8		%		60-140	24-JUL-20
FC-MF-WP	**Water**							
Batch R5164763								
WG3368074-1 MB								
Fecal Coliforms			<1		CFU/100mL		1	22-JUL-20
WG3368074-2 MB								
Fecal Coliforms			<1		CFU/100mL		1	22-JUL-20
MET-D-CCMS-WP	**Water**							
Batch R5166699								
WG3368715-2 LCS								
Calcium (Ca)-Dissolved			99.3		%		80-120	23-JUL-20
Iron (Fe)-Dissolved			94.4		%		80-120	23-JUL-20
Magnesium (Mg)-Dissolved			102.0		%		80-120	23-JUL-20
Manganese (Mn)-Dissolved			100.7		%		80-120	23-JUL-20
Potassium (K)-Dissolved			103.3		%		80-120	23-JUL-20
Sodium (Na)-Dissolved			99.0		%		80-120	23-JUL-20
WG3368715-1 MB								
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-JUL-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-JUL-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-JUL-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5166699								
WG3368715-1 MB								
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
NO2-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Nitrite (as N)			101.6		%		90-110	22-JUL-20
WG3367901-9 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	22-JUL-20
NO3-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Nitrate (as N)			103.0		%		90-110	22-JUL-20
WG3367901-9 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	22-JUL-20
PH-WP	**Water**							
Batch R5166298								
WG3369055-22 LCS								
pH			7.33		pH units		7.3-7.5	22-JUL-20
SO4-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Sulfate (SO4)			102.5		%		90-110	22-JUL-20
WG3367901-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	22-JUL-20
TC,EC-QT51-WP	**Water**							
Batch R5165685								
WG3367867-10 DUP		**L2477639-1**						
Total Coliforms		0	0		MPN/100mL	0.0	65	22-JUL-20
Escherichia Coli		0	0		MPN/100mL	0.0	65	22-JUL-20
WG3367867-12 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
WG3367867-13 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TC,EC-QT51-WP	**Water**							
Batch R5165685								
WG3367867-14 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
TURBIDITY-WP	**Water**							
Batch R5166411								
WG3369614-5 LCS								
Turbidity			96.5		%		85-115	23-JUL-20
WG3369614-4 MB								
Turbidity			<0.10		NTU		0.1	23-JUL-20

Quality Control Report

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH							
	1	21-JUL-20 12:23	22-JUL-20 12:00	0.25	24	hours	EHTR-FM
	2	21-JUL-20 12:11	22-JUL-20 12:00	0.25	24	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2477639 were received on 22-JUL-20 08:00.

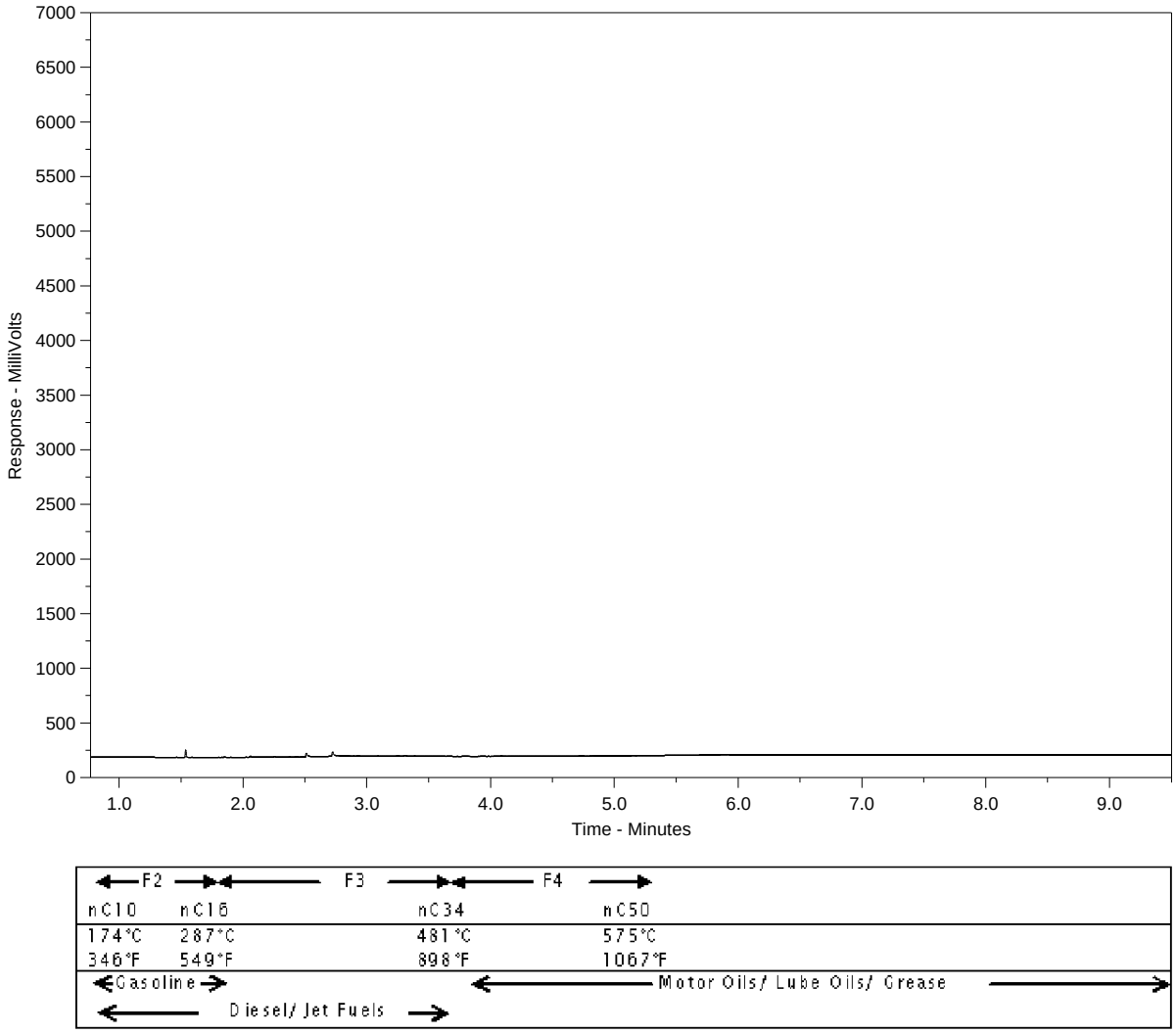
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes 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 pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2477639-1
Client Sample ID: RW-20



The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

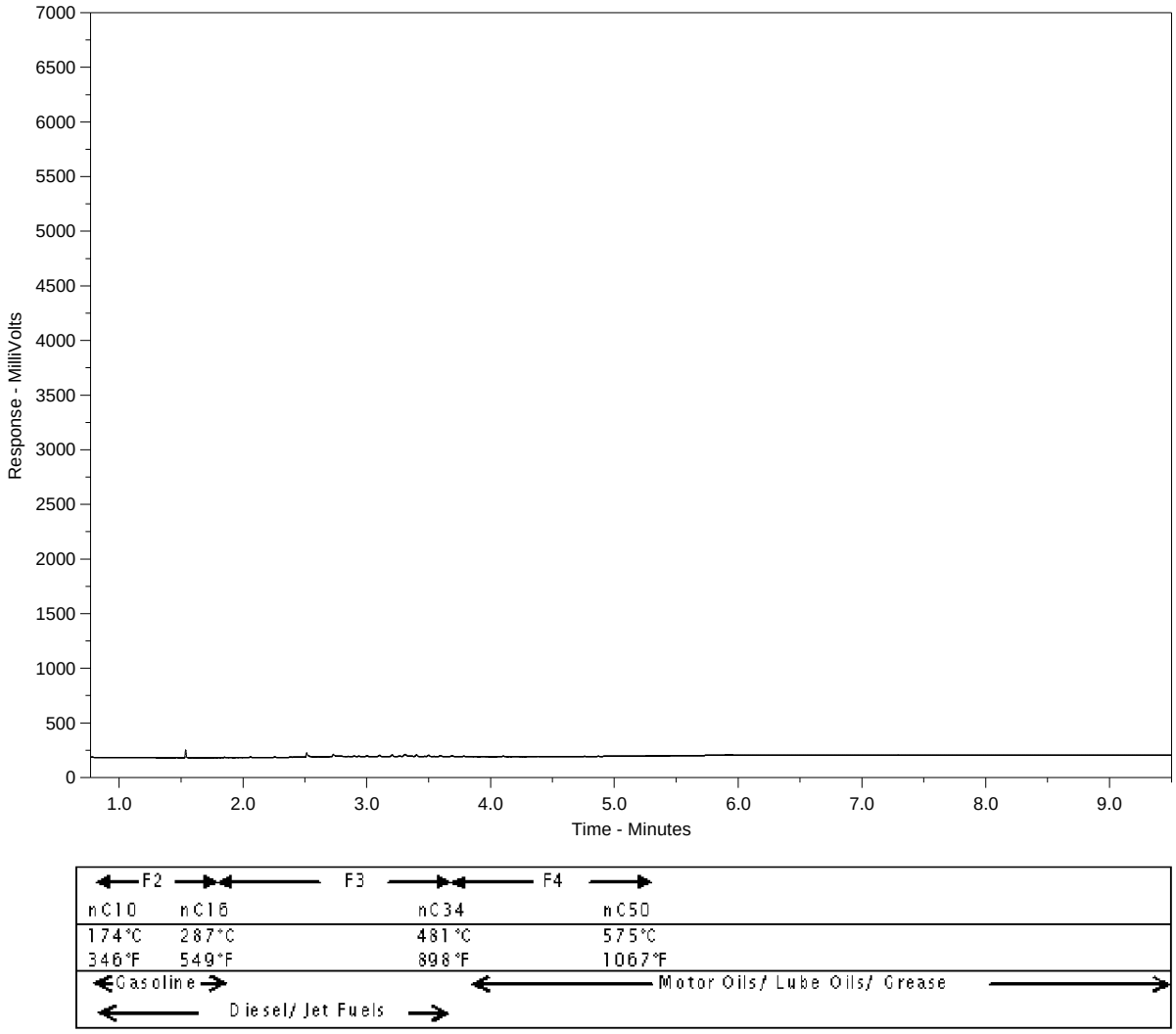
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2477639-2
Client Sample ID: RW-21



The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

ALS Environmental

L2477639-COFC

alytical Request Form
ll Free: 1 800 668 9878
v.alsglobal.com

COC # _____

Page 1 of 1

Report To				Report Distribution				Service Requested (Rush for routine analysis subject to availability)
Company:	Stantec - W2077			☑ Standard	☐ Other			◉ Regular (Standard Turnaround Times - Business Days)
Contact:	TASSIA STAINTON			☑ PDF	☑ Excel	☑ Digital	☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	500 - 311 Portage Ave			Email 1:	tassia.stainton@stantec.com			○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Winnipeg, MB R3B 2B9			Email 2:	karen.mathers@stantec.com			○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	204-982-7615	Fax:		Email 3:				
Invoice To	Same as Report ?	☑ Yes	☐ No	**Client / Project Information**				**Analysis Request**
Hardcopy of Invoice with Report?		☐ Yes	☐ No	Job #:				Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:				PO / AFE:				
Contact:				LSD:				
Address:								
Phone:		Fax:		Quote #:	[redacted] Q80404			
Lab Work Order # (lab use only)				**ALS Contact:**		**Sampler:** BD, ZW		

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	[redacted]	F/P	P	BTX,F1-F4-WP	HARDNESS-CALC-WP	MET-D-CCMS-WP	MET-T-CCMS-WP	NH3-COL-WP + N-TOTKJ-W	P-T-COL-WP + P-TD-COL-W	P-TPART-CALC-WP	TSS + TDS	TC,EC-QT97-WP	Number of Containers
[redacted]	RW-20	21.07.20	1933	W ~~Tissue~~	✓	✓	✓	✓									9
[redacted]	RW-21	1	1911	1	✓	✓	✓	✓									9
[redacted]																	
[redacted]																	
[redacted]																	
[redacted]																	
[redacted]																	
[redacted]																	
[redacted]																	
[redacted]																	
[redacted]																	

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
B. Lynd	21.07.20	1645		JUL 22 2020	8:20	13°C				

GENF 18.01 Front

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477634
Project Ref: 111475107
Sample ID: RW-24
Sampled By:
Date Collected: 20-JUL-20
Lab Sample ID: L2477634-1
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F4						
Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total Hydrocarbons						
F1-BTEX	<0.10		mg/L			25-JUL-20
Total Hydrocarbons (C6-C50)	<0.38		mg/L			25-JUL-20
CCME PHC F2-F4 in Water						
F2 (C10-C16)	<0.10		mg/L			24-JUL-20
F3 (C16-C34)	<0.25		mg/L			24-JUL-20
F4 (C34-C50)	<0.25		mg/L			24-JUL-20
Surr: 2-Bromobenzotrifluoride	92.7		%			24-JUL-20
BTX plus F1 by GCMS						
Benzene	<0.00050		mg/L	0.005		24-JUL-20
Toluene	<0.0010		mg/L	0.06	0.024	24-JUL-20
Ethyl benzene	<0.00050		mg/L	0.14	0.0016	24-JUL-20
o-Xylene	<0.00050		mg/L			24-JUL-20
m+p-Xylenes	<0.00040		mg/L			24-JUL-20
F1 (C6-C10)	<0.10		mg/L			24-JUL-20
Surr: 4-Bromofluorobenzene (SS)	84.5		%			24-JUL-20
ROU4W Dissolved - Low Range						
Bicarbonate (HCO3)	277		mg/L			24-JUL-20
Carbonate (CO3)	6.12		mg/L			24-JUL-20
Hydroxide (OH)	<0.34		mg/L			24-JUL-20
*Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20
pH						
pH	8.37		pH units			22-JUL-20
Turbidity						
*Turbidity	10.5		NTU			23-JUL-20
TDS calculated						
TDS (Calculated)	451		mg/L		500	27-JUL-20
Sulfate in Water by IC						
Sulfate (SO4)	153		mg/L		500	22-JUL-20
Nitrite in Water by IC (Low Level)						
*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Water by IC (Low Level)						
*Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance Calculation						
Hardness Calculated						
Hardness (as CaCO3)	281		mg/L		500	27-JUL-20

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477634
Project Ref: 111475107
Sample ID: RW-24
Sampled By:
Date Collected: 20-JUL-20
Lab Sample ID: L2477634-1
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.877		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals Filtration Location	FIELD					23-JUL-20
Calcium (Ca)-Dissolved	56.8		mg/L			23-JUL-20
Iron (Fe)-Dissolved	0.165		mg/L		0.3	23-JUL-20
Magnesium (Mg)-Dissolved	33.9		mg/L			23-JUL-20
Manganese (Mn)-Dissolved	0.0155		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	8.48		mg/L			23-JUL-20
Sodium (Na)-Dissolved	43.1		mg/L		200	23-JUL-20
Conductivity						
Conductivity	696		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (Cl)	13.7		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	237		mg/L			22-JUL-20
Fecal Coliforms	<1	MBHT	CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	0	MBHT	MPN/100mL	0		22-JUL-20
Escherichia Coli	0	MBHT	MPN/100mL	0		22-JUL-20

CDWQG = Health Canada Guideline Limits updated **JUNE 2019**

* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only. If present as Nitrate then the limit is 10mg/L < or N.D. = less than detection limit.
* Turbidity guideline based on membrane filtration. For guidelines on conventional treatment and slow sand or diatomaceous earth filtration please see Summary Table of Guidelines for Canadian Drinking Water Quality
- A blank entry designates no known limit.
- A shaded value in the Results column exceeds CDWQG MAC and/ or Aesthetic Objective.

Approved by

Hua Wo
Account Manager

Guidelines & Objectives

Sample Parameter Qualifier key listed:

Qualifier	Description
MBHT	The APHA 30 hour hold time was exceeded for microbiological testing. Samples processed within 48 hours from time of sampling may

be valid in some cases (refer to Health Canada guidance).

Health Canada MAC Health Related Criteria Limits

Nitrate/Nitrite-N*	Criteria limit is 10 mg/L (1.0 mg/L if present as all Nitrite-N). High concentrations may contribute to blue baby syndrome in infants.
Lead*	A cumulative body poison, uncommon in naturally occurring hard waters.
Fluoride*	Present in fluoridated water supplies at 0.8 mg/L to reduce dental caries. Elevated levels causes fluorosis (mottling of teeth).
Total Coliforms*	Criteria is 0 CFU/100mL. Adverse health effects.
E. Coli*	Criteria is 0 CFU/100 mL. Certain E. Coli bacteria can be life threatening.
Manganese*	Criteria limit is 0.12 mg/L. Possible neurological effects in infants.

*Health Canada Canadian Drinking Water Quality Guidelines (MAC limit)

Aesthetic Objective Concentration Levels

Alkalinity	Acid neutralizing capacity. Usually a measure of carbonate and bicarbonates and calculated and reported as calcium carbonate.
Balance	Quality control parameter ratioing cations to anions
Bicarbonate	See Alkalinity. Report as the anion HCO3-1
Carbonate	See Alkalinity. Reported at the anion CO3-2
Calcium	See Hardness. Common major cation of water chemistry.
Chloride	Common major anion of water chemistry.
Conductance	Physical test measuring water salinity (dissolved ions or solids)
Hardness	Classical measure or capacity of water to precipitate soap (chiefly calcium and magnesium ions). Causes scaling tendency in water if carbonates/bicarbonates are present (if >200 mg/L). For drinking water purposes waters with results <200 mg/L are considered acceptable, results >200 mg/L are considered poor but can be tolerated. Results >500 mg/L are unacceptable.
Hydroxide	See alkalinity
Magnesium	See hardness. Common major cation of water chemistry. Elevated levels (>125 mg/L) may exert a cathartic or diuretic action.
pH	Measure of water acidity/alkalinity. Normal range is 7.0-8.5.
Potassium	Common major cation of water chemistry.
Sodium	Common major cation of water chemistry. Measure of salinity (saltiness).The aesthetic objective (not related to health) for sodium in drinking water is 200 mg/L. However, where sodium concentration of the drinking water exceeds 20 mg/L, it is recommended that any person on a sodium restricted diet consult with his/her physician or Medical Officer of Health concerning the use of that water.
Sulphate	Common major anion of water chemistry. Elevated levels may exert a cathartic or diuretic action.
Total Dissolved Solids	A measure of water salinity.
Iron	Causes staining to laundry and porcelain and astringent taste. Oxidizes to red-brown precipitate on exposure to air.
Heterotrophic Plate Count	Criteria is 500 cfu/mL Measure of heterotrophic bacteria present.

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2477634 Report Date: 27-JUL-20

Client: Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
Contact: Tassia Stainton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	**Water**							
Batch R5166298								
WG3369055-24 LCS								
Alkalinity, Total (as CaCO3)			105.5		%		85-115	22-JUL-20
WG3369055-21 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	22-JUL-20
BTEXS+F1-HSMS-WP	**Water**							
Batch R5166645								
WG3368156-2 LCS								
Benzene			116.2		%		70-130	23-JUL-20
Toluene			98.2		%		70-130	23-JUL-20
Ethyl benzene			98.4		%		70-130	23-JUL-20
o-Xylene			113.0		%		70-130	23-JUL-20
m+p-Xylenes			111.4		%		70-130	23-JUL-20
WG3368156-3 LCS								
F1 (C6-C10)			98.7		%		70-130	23-JUL-20
WG3368156-1 MB								
Benzene			<0.00050		mg/L		0.0005	23-JUL-20
Toluene			<0.0010		mg/L		0.001	23-JUL-20
Ethyl benzene			<0.00050		mg/L		0.0005	23-JUL-20
o-Xylene			<0.00050		mg/L		0.0005	23-JUL-20
m+p-Xylenes			<0.00040		mg/L		0.0004	23-JUL-20
F1 (C6-C10)			<0.10		mg/L		0.1	23-JUL-20
Surrogate: 4-Bromofluorobenzene (SS)			85.2		%		70-130	23-JUL-20
CL-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Chloride (Cl)			100.1		%		90-110	22-JUL-20
WG3367901-9 MB								
Chloride (Cl)			<0.10		mg/L		0.1	22-JUL-20
EC-WP	**Water**							
Batch R5166298								
WG3369055-23 LCS								
Conductivity			98.0		%		90-110	22-JUL-20
WG3369055-21 MB								
Conductivity			<1.0		umhos/cm		1	22-JUL-20
F-IC-N-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Fluoride (F)			101.4		%		90-110	22-JUL-20
WG3367901-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	22-JUL-20
F2-F4-FID-WP	**Water**							
Batch R5167079								
WG3369781-2 LCS								
F2 (C10-C16)			99.4		%		70-130	24-JUL-20
F3 (C16-C34)			91.9		%		70-130	24-JUL-20
F4 (C34-C50)			107.6		%		70-130	24-JUL-20
WG3369781-1 MB								
F2 (C10-C16)			<0.10		mg/L		0.1	24-JUL-20
F3 (C16-C34)			<0.25		mg/L		0.25	24-JUL-20
F4 (C34-C50)			<0.25		mg/L		0.25	24-JUL-20
Surrogate: 2-Bromobenzotrifluoride			87.8		%		60-140	24-JUL-20
FC-MF-WP	**Water**							
Batch R5164763								
WG3368074-1 MB								
Fecal Coliforms			<1		CFU/100mL		1	22-JUL-20
WG3368074-2 MB								
Fecal Coliforms			<1		CFU/100mL		1	22-JUL-20
MET-D-CCMS-WP	**Water**							
Batch R5166699								
WG3368715-2 LCS								
Calcium (Ca)-Dissolved			99.3		%		80-120	23-JUL-20
Iron (Fe)-Dissolved			94.4		%		80-120	23-JUL-20
Magnesium (Mg)-Dissolved			102.0		%		80-120	23-JUL-20
Manganese (Mn)-Dissolved			100.7		%		80-120	23-JUL-20
Potassium (K)-Dissolved			103.3		%		80-120	23-JUL-20
Sodium (Na)-Dissolved			99.0		%		80-120	23-JUL-20
WG3368715-1 MB								
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-JUL-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-JUL-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-JUL-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5166699								
WG3368715-1 MB								
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
NO2-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Nitrite (as N)			101.6		%		90-110	22-JUL-20
WG3367901-9 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	22-JUL-20
NO3-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Nitrate (as N)			103.0		%		90-110	22-JUL-20
WG3367901-9 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	22-JUL-20
PH-WP	**Water**							
Batch R5166298								
WG3369055-22 LCS								
pH			7.33		pH units		7.3-7.5	22-JUL-20
SO4-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Sulfate (SO4)			102.5		%		90-110	22-JUL-20
WG3367901-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	22-JUL-20
TC,EC-QT51-WP	**Water**							
Batch R5165685								
WG3367867-7 DUP		**L2477634-1**						
Total Coliforms		0	0		MPN/100mL	0.0	65	22-JUL-20
Escherichia Coli		0	0		MPN/100mL	0.0	65	22-JUL-20
WG3367867-12 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
WG3367867-13 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TC,EC-QT51-WP	**Water**							
Batch R5165685								
WG3367867-14 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
TURBIDITY-WP	**Water**							
Batch R5166411								
WG3369614-2 LCS								
Turbidity			95.0		%		85-115	23-JUL-20
WG3369614-1 MB								
Turbidity			<0.10		NTU		0.1	23-JUL-20

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH							
	1	20-JUL-20 17:27	22-JUL-20 12:00	0.25	42	hours	EHTR-FM
Bacteriological Tests							
Fecal Coliform							
	1	20-JUL-20 17:27	22-JUL-20 14:10	30	45	hours	EHTR
Total Coliform and E.coli							
	1	20-JUL-20 17:27	22-JUL-20 12:50	30	43	hours	EHTR

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2477634 were received on 22-JUL-20 08:00.

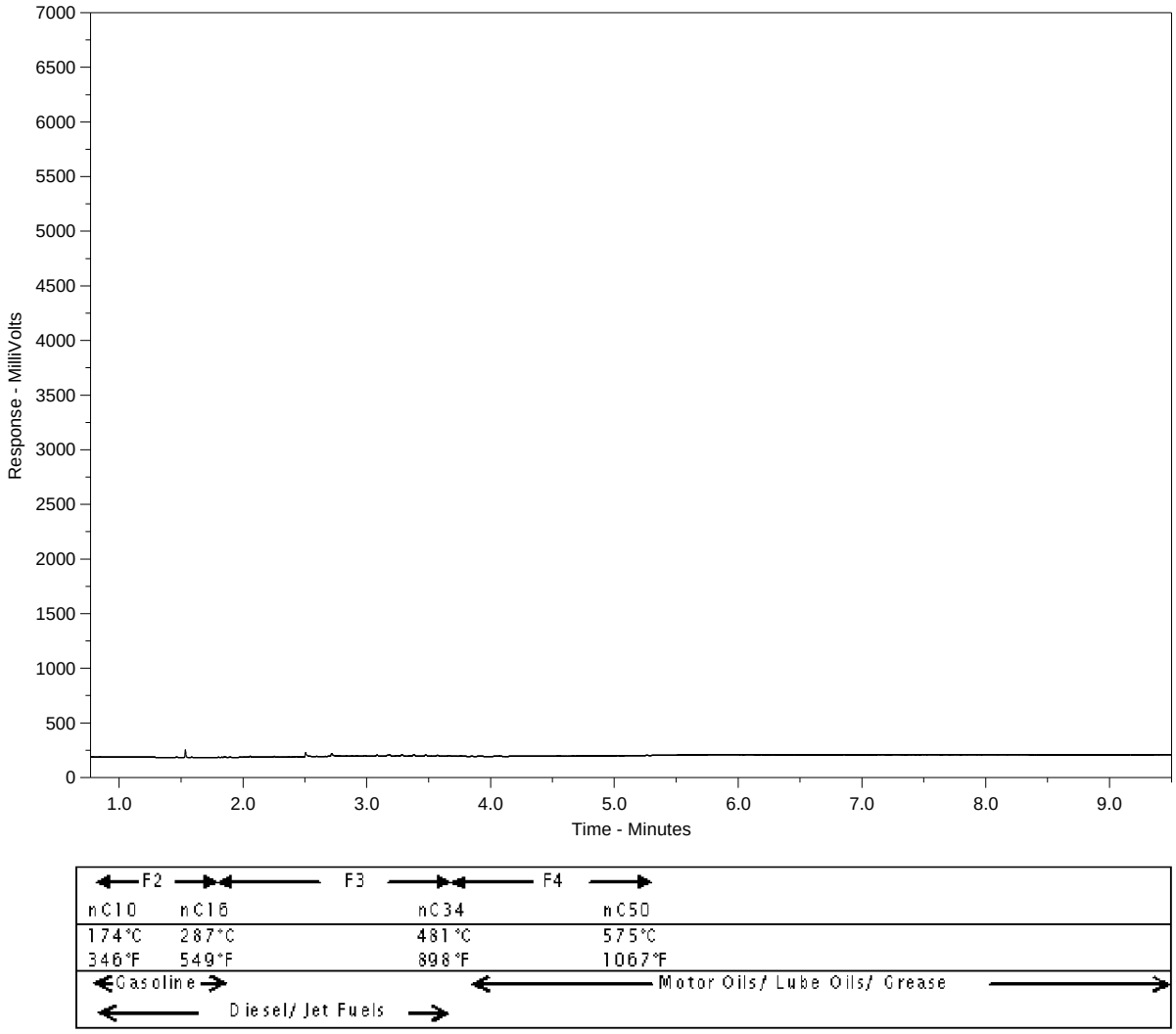
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes 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 pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2477634-1
Client Sample ID: RW-24



The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2477634-COFC

COC Number: 17 - 749865

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	Stantec W2077
Contact:	Tessia Stainton
Phone:	
Company address below will appear on the final report	
Street:	500-311 Portage Ave
City/Province:	Wpg, MB
Postal Code:	R3B 2B9
Invoice To	Same as Report To [X] YES [ ] NO
	Copy of Invoice with Report [ ] YES [ ] NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: [X] PDF [X] EXCEL [X] EDD (DIGITAL)

Quality Control (QC) Report with Report [X] YES [ ] NO

[ ] Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: [ ] EMAIL [ ] MAIL [ ] FAX

Email 1 or Fax: tessia.stainton@stantec.com

Email 2: karen.mathers@stantec.com

Email 3:

Invoice Distribution

Select Invoice Distribution: [X] EMAIL [ ] MAIL [ ] FAX

Email 1 or Fax:

Email 2:

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] [X] Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] [ ] / 3 day [P3-25%] [ ] / 2 day [P2-50%] [ ]

EMERGENCY: 1 Business day [E - 100%] [ ] / Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] [ ]

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information

ALS Account # / Quote #: Q80404

Job #: 111475107

PO / AFE:

LSD:

ALS Lab Work Order # (lab use only):

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	
ALS Contact:	Sampler: RB, ZW

Analysis Request — Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	BTX-F1-F4-WP (P)	EC-MF-WP	ROUHC-N1-WP (F/P)	TC,EC-QT51-WP (P)	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	RW-84	20-07-20	1727	W	9	✓	✓	✓	✓		

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? [ ] YES [ ] NO

Are samples for human consumption/ use? [ ] YES [ ] NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen [ ] SIF Observations Yes [ ] No [ ]

Ice Packs [ ] Ice Cubes [ ] Custody seal intact Yes [ ] No [ ]

Cooling Initiated [ ]

INITIAL COOLER TEMPERATURES °C: 3 | FINAL COOLER TEMPERATURES °C:

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: B. Lyons	Date: July 21, 2020	Time: 1645	Received by:	Date: JUL 22 2020	Time:	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION — WHITE - LABORATORY COPY — YELLOW - CLIENT COPY

JUNE 2018 FRONT

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477628
Project Ref: 111475107
Sample ID: RW-26
Sampled By:
Date Collected: 21-JUL-20
Lab Sample ID: L2477628-1
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F4						
Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total Hydrocarbons						
F1-BTEX	<0.10		mg/L			25-JUL-20
Total Hydrocarbons (C6-C50)	<0.38		mg/L			25-JUL-20
CCME PHC F2-F4 in Water						
F2 (C10-C16)	<0.10		mg/L			24-JUL-20
F3 (C16-C34)	<0.25		mg/L			24-JUL-20
F4 (C34-C50)	<0.25		mg/L			24-JUL-20
Surr: 2-Bromobenzotrifluoride	104.7		%			24-JUL-20
BTX plus F1 by GCMS						
Benzene	<0.00050		mg/L	0.005		23-JUL-20
Toluene	<0.0010		mg/L	0.06	0.024	23-JUL-20
Ethyl benzene	<0.00050		mg/L	0.14	0.0016	23-JUL-20
o-Xylene	<0.00050		mg/L			23-JUL-20
m+p-Xylenes	<0.00040		mg/L			23-JUL-20
F1 (C6-C10)	<0.10		mg/L			23-JUL-20
Surr: 4-Bromofluorobenzene (SS)	85.1		%			23-JUL-20
ROU4W Dissolved - Low Range						
Bicarbonate (HCO3)	391		mg/L			24-JUL-20
Carbonate (CO3)	<0.60		mg/L			24-JUL-20
Hydroxide (OH)	<0.34		mg/L			24-JUL-20
*Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20
pH						
pH	7.97		pH units			22-JUL-20
Turbidity						
*Turbidity	3.98		NTU			23-JUL-20
TDS calculated						
TDS (Calculated)	509		mg/L		500	27-JUL-20
Sulfate in Water by IC						
Sulfate (SO4)	146		mg/L		500	22-JUL-20
Nitrite in Water by IC (Low Level)						
*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Water by IC (Low Level)						
*Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance Calculation						
Hardness Calculated						
Hardness (as CaCO3)	353		mg/L		500	27-JUL-20

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477628
Project Ref: 111475107
Sample ID: RW-26
Sampled By:
Date Collected: 21-JUL-20
Lab Sample ID: L2477628-1
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.282		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals Filtration Location	FIELD					23-JUL-20
Calcium (Ca)-Dissolved	64.1		mg/L			23-JUL-20
Iron (Fe)-Dissolved	0.188		mg/L		0.3	23-JUL-20
Magnesium (Mg)-Dissolved	46.8		mg/L			23-JUL-20
Manganese (Mn)-Dissolved	0.0105		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	6.13		mg/L			23-JUL-20
Sodium (Na)-Dissolved	42.2		mg/L		200	23-JUL-20
Conductivity						
Conductivity	799		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (Cl)	11.5		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	321		mg/L			22-JUL-20
Fecal Coliforms	<1		CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	6		MPN/100mL	0		22-JUL-20
Escherichia Coli	0		MPN/100mL	0		22-JUL-20

CDWQG = Health Canada Guideline Limits updated **JUNE 2019**

* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only. If present as Nitrate then the limit is 10mg/L < or N.D. = less than detection limit.
* Turbidity guideline based on membrane filtration. For guidelines on conventional treatment and slow sand or diatomaceous earth filtration please see Summary Table of Guidelines for Canadian Drinking Water Quality
- A blank entry designates no known limit.
- A shaded value in the Results column exceeds CDWQG MAC and/ or Aesthetic Objective.

Approved by

Hua Wo
Account Manager

Guidelines & Objectives

Health Canada MAC Health Related Criteria Limits

Nitrate/Nitrite-N*	Criteria limit is 10 mg/L (1.0 mg/L if present as all Nitrite-N). High concentrations may contribute to blue baby syndrome in infants.
Lead*	A cumulative body poison, uncommon in naturally occurring hard waters.
Fluoride*	Present in fluoridated water supplies at 0.8 mg/L to reduce dental caries. Elevated levels causes fluorosis (mottling of teeth).
Total Coliforms*	Criteria is 0 CFU/100mL. Adverse health effects.
E. Coli*	Criteria is 0 CFU/100 mL. Certain E. Coli bacteria can be life threatening.
Manganese*	Criteria limit is 0.12 mg/L. Possible neurological effects in infants.

*Health Canada Canadian Drinking Water Quality Guidelines (MAC limit)

Aesthetic Objective Concentration Levels

Alkalinity	Acid neutralizing capacity. Usually a measure of carbonate and bicarbonates and calculated and reported as calcium carbonate.
Balance	Quality control parameter ratioing cations to anions
Bicarbonate	See Alkalinity. Report as the anion HCO3-1
Carbonate	See Alkalinity. Reported at the anion CO3-2
Calcium	See Hardness. Common major cation of water chemistry.
Chloride	Common major anion of water chemistry.
Conductance	Physical test measuring water salinity (dissolved ions or solids)
Hardness	Classical measure or capacity of water to precipitate soap (chiefly calcium and magnesium ions). Causes scaling tendency in water if carbonates/bicarbonates are present (if >200 mg/L). For drinking water purposes waters with results <200 mg/L are considered acceptable, results >200 mg/L are considered poor but can be tolerated. Results >500 mg/L are unacceptable.
Hydroxide	See alkalinity
Magnesium	See hardness. Common major cation of water chemistry. Elevated levels (>125 mg/L) may exert a cathartic or diuretic action.
pH	Measure of water acidity/alkalinity. Normal range is 7.0-8.5.
Potassium	Common major cation of water chemistry.
Sodium	Common major cation of water chemistry. Measure of salinity (saltiness).The aesthetic objective (not related to health) for sodium in drinking water is 200 mg/L. However, where sodium concentration of the drinking water exceeds 20 mg/L, it is recommended that any person on a sodium restricted diet consult with his/her physician or Medical Officer of Health concerning the use of that water.
Sulphate	Common major anion of water chemistry. Elevated levels may exert a cathartic or diuretic action.
Total Dissolved Solids	A measure of water salinity.
Iron	Causes staining to laundry and porcelain and astringent taste. Oxidizes to red-brown precipitate on exposure to air.
Heterotrophic Plate Count	Criteria is 500 cfu/mL Measure of heterotrophic bacteria present.

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
Contact: Tassia Stainton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	**Water**							
Batch R5166298								
WG3369055-19 LCS								
Alkalinity, Total (as CaCO3)			104.0		%		85-115	22-JUL-20
WG3369055-16 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	22-JUL-20
BTEXS+F1-HSMS-WP	**Water**							
Batch R5166645								
WG3368156-2 LCS								
Benzene			116.2		%		70-130	23-JUL-20
Toluene			98.2		%		70-130	23-JUL-20
Ethyl benzene			98.4		%		70-130	23-JUL-20
o-Xylene			113.0		%		70-130	23-JUL-20
m+p-Xylenes			111.4		%		70-130	23-JUL-20
WG3368156-3 LCS								
F1 (C6-C10)			98.7		%		70-130	23-JUL-20
WG3368156-1 MB								
Benzene			<0.00050		mg/L		0.0005	23-JUL-20
Toluene			<0.0010		mg/L		0.001	23-JUL-20
Ethyl benzene			<0.00050		mg/L		0.0005	23-JUL-20
o-Xylene			<0.00050		mg/L		0.0005	23-JUL-20
m+p-Xylenes			<0.00040		mg/L		0.0004	23-JUL-20
F1 (C6-C10)			<0.10		mg/L		0.1	23-JUL-20
Surrogate: 4-Bromofluorobenzene (SS)			85.2		%		70-130	23-JUL-20
CL-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-6 LCS								
Chloride (Cl)			102.6		%		90-110	22-JUL-20
WG3367901-5 MB								
Chloride (Cl)			<0.10		mg/L		0.1	22-JUL-20
EC-WP	**Water**							
Batch R5166298								
WG3369055-18 LCS								
Conductivity			97.8		%		90-110	22-JUL-20
WG3369055-16 MB								
Conductivity			<1.0		umhos/cm		1	22-JUL-20
F-IC-N-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-6 LCS								
Fluoride (F)			102.0		%		90-110	22-JUL-20
WG3367901-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	22-JUL-20
F2-F4-FID-WP	**Water**							
Batch R5167079								
WG3369781-2 LCS								
F2 (C10-C16)			99.4		%		70-130	24-JUL-20
F3 (C16-C34)			91.9		%		70-130	24-JUL-20
F4 (C34-C50)			107.6		%		70-130	24-JUL-20
WG3369781-1 MB								
F2 (C10-C16)			<0.10		mg/L		0.1	24-JUL-20
F3 (C16-C34)			<0.25		mg/L		0.25	24-JUL-20
F4 (C34-C50)			<0.25		mg/L		0.25	24-JUL-20
Surrogate: 2-Bromobenzotrifluoride			87.8		%		60-140	24-JUL-20
FC-MF-WP	**Water**							
Batch R5164763								
WG3368074-1 MB								
Fecal Coliforms			<1		CFU/100mL		1	22-JUL-20
WG3368074-2 MB								
Fecal Coliforms			<1		CFU/100mL		1	22-JUL-20
MET-D-CCMS-WP	**Water**							
Batch R5166699								
WG3368715-2 LCS								
Calcium (Ca)-Dissolved			99.3		%		80-120	23-JUL-20
Iron (Fe)-Dissolved			94.4		%		80-120	23-JUL-20
Magnesium (Mg)-Dissolved			102.0		%		80-120	23-JUL-20
Manganese (Mn)-Dissolved			100.7		%		80-120	23-JUL-20
Potassium (K)-Dissolved			103.3		%		80-120	23-JUL-20
Sodium (Na)-Dissolved			99.0		%		80-120	23-JUL-20
WG3368715-1 MB								
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-JUL-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-JUL-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-JUL-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5166699								
WG3368715-1 MB								
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
NO2-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-6 LCS								
Nitrite (as N)			104.0		%		90-110	22-JUL-20
WG3367901-5 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	22-JUL-20
NO3-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-6 LCS								
Nitrate (as N)			101.6		%		90-110	22-JUL-20
WG3367901-5 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	22-JUL-20
PH-WP	**Water**							
Batch R5166298								
WG3369055-17 LCS								
pH			7.34		pH units		7.3-7.5	22-JUL-20
SO4-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-6 LCS								
Sulfate (SO4)			104.2		%		90-110	22-JUL-20
WG3367901-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	22-JUL-20
TC,EC-QT51-WP	**Water**							
Batch R5165685								
WG3367867-2 DUP		**L2477628-1**						
Total Coliforms		6	2	DUPM	MPN/100mL	100	65	22-JUL-20
Escherichia Coli		0	0		MPN/100mL	0.0	65	22-JUL-20
WG3367867-12 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
WG3367867-13 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TC,EC-QT51-WP	**Water**							
Batch R5165685								
WG3367867-14 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
TURBIDITY-WP	**Water**							
Batch R5166411								
WG3369614-2 LCS								
Turbidity			95.0		%		85-115	23-JUL-20
WG3369614-1 MB								
Turbidity			<0.10		NTU		0.1	23-JUL-20

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
DUPM	MPN duplicate results were outside default ALS Data Quality Objective, but within 95% confidence interval for MPN reference method. Sample results are reliable.

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH							
	1	21-JUL-20 11:20	22-JUL-20 12:00	0.25	25	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2477628 were received on 22-JUL-20 08:00.

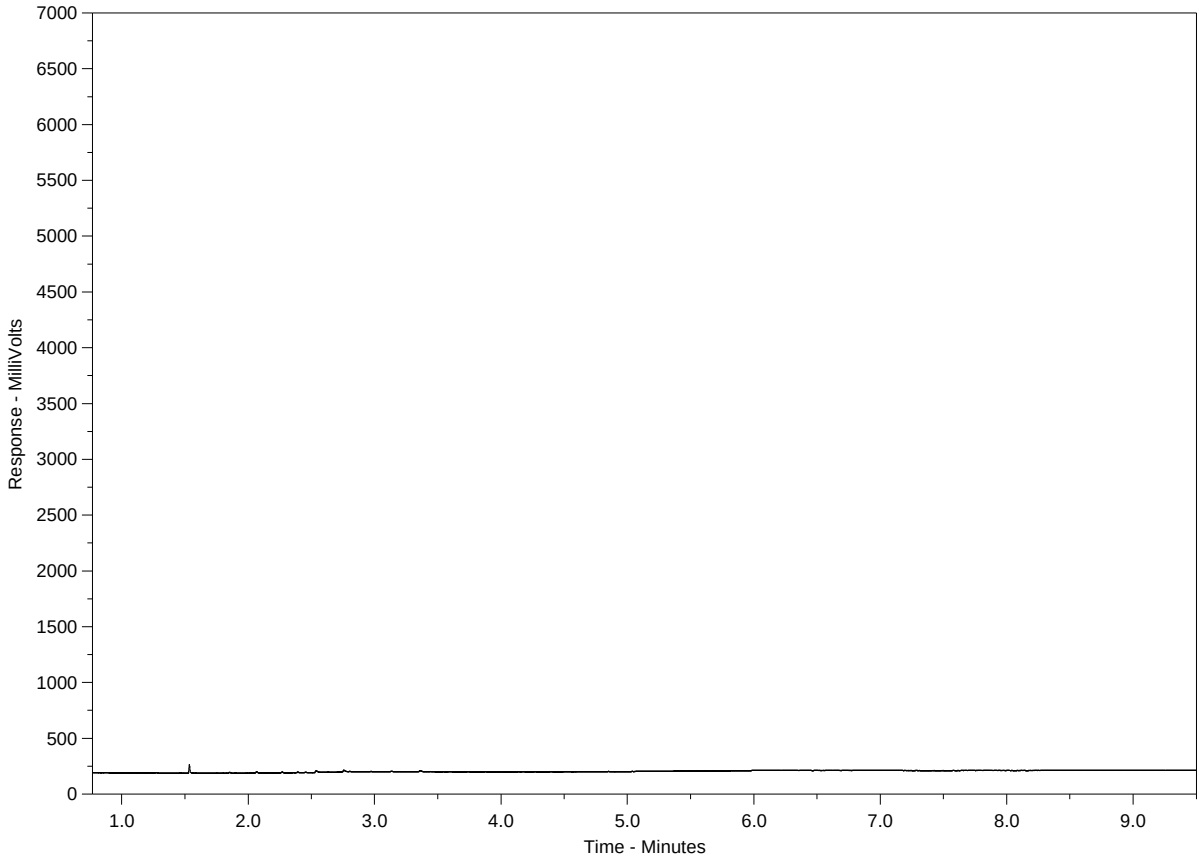
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

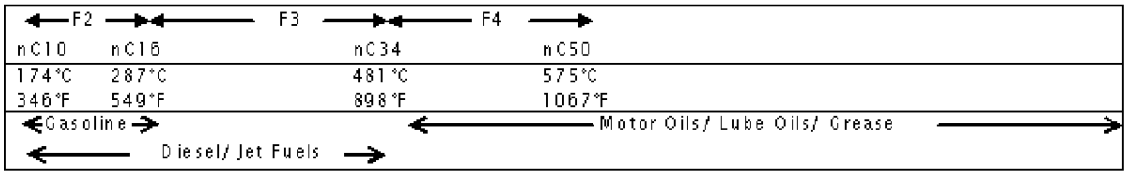
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2477628-1
Client Sample ID: RW-26





The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2477628-COFC

COC Number: 17 - 749270

Page 1 of 1

Report To	Contact and company name below will appear on the final report	Report Format / Distribution		Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)	
Company:	Stantec - 43077	Select Report Format:	PDF EXCEL EDD (DIGITAL)	Regular [R]	Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Tassia Stainton	Quality Control (QC) Report with Report	YES NO	PRIORITY (Business Days) 4 day [P4-20%]	EMERGENCY 1 Business day [E - 100%]
Phone:	204-928-7615	Compare Results to Criteria on Report - provide details below if box checked		3 day [P3-25%]	Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)]
	Company address below will appear on the final report	Select Distribution:	EMAIL MAIL FAX	2 day [P2-50%]	
Street:	500-311 Portage Ave	Email 1 or Fax	tassia.stainton@stantec.com	Date and Time Required for all E&P TATs:	dd-mmm-yy hh:mm
City/Province:	Winnipeg, MB	Email 2	Karen.mathers@stantec.com	For tests that can not be performed according to the service level selected, you will be contacted.	
Postal Code:	R3B 0R9	Email 3			

Invoice To		Invoice Distribution	
	Same as Report To YES NO	Select Invoice Distribution:	EMAIL MAIL FAX
	Copy of Invoice with Report YES NO		
Company:		Email 1 or Fax	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q80404	AFE/Cost Center:	PO#
Job #:	111475107	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):		ALS Contact:	Sampler: BB, ZW

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	BTX, F1-F4-WP	F2-MF-WP	RBHC-D-T-WP	TC, FC-BTSA-WP	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	RW-26	21.07.20	11:20	W	9	✓	✓	✓	✓		

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? YES NO	
Are samples for human consumption/ use? YES NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
			13				

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
B. Lloyd	July 21, 2020	1645		JUL 22 2020				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477636
Project Ref: 111475107
Sample ID: RW-32
Sampled By:
Date Collected: 20-JUL-20
Lab Sample ID: L2477636-1
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F4						
Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total Hydrocarbons						
F1-BTEX	<0.10		mg/L			25-JUL-20
Total Hydrocarbons (C6-C50)	<0.38		mg/L			25-JUL-20
CCME PHC F2-F4 in Water						
F2 (C10-C16)	<0.10		mg/L			24-JUL-20
F3 (C16-C34)	<0.25		mg/L			24-JUL-20
F4 (C34-C50)	<0.25		mg/L			24-JUL-20
Surr: 2-Bromobenzotrifluoride	91.0		%			24-JUL-20
BTX plus F1 by GCMS						
Benzene	<0.00050		mg/L	0.005		24-JUL-20
Toluene	<0.0010		mg/L	0.06	0.024	24-JUL-20
Ethyl benzene	<0.00050		mg/L	0.14	0.0016	24-JUL-20
o-Xylene	<0.00050		mg/L			24-JUL-20
m+p-Xylenes	<0.00040		mg/L			24-JUL-20
F1 (C6-C10)	<0.10		mg/L			24-JUL-20
Surr: 4-Bromofluorobenzene (SS)	89.4		%			24-JUL-20
ROU4W Dissolved - Low Range						
Bicarbonate (HCO3)	234		mg/L			24-JUL-20
Carbonate (CO3)	4.68		mg/L			24-JUL-20
Hydroxide (OH)	<0.34		mg/L			24-JUL-20
*Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20
pH						
pH	8.35		pH units			22-JUL-20
Turbidity						
*Turbidity	0.22		NTU			23-JUL-20
TDS calculated						
TDS (Calculated)	419		mg/L		500	27-JUL-20
Sulfate in Water by IC						
Sulfate (SO4)	142		mg/L		500	22-JUL-20
Nitrite in Water by IC (Low Level)						
*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Water by IC (Low Level)						
*Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance Calculation						
Hardness Calculated						
Hardness (as CaCO3)	227		mg/L		500	27-JUL-20

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477636
Project Ref: 111475107
Sample ID: RW-32
Sampled By:
Date Collected: 20-JUL-20
Lab Sample ID: L2477636-1
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.411		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals Filtration Location	FIELD					23-JUL-20
Calcium (Ca)-Dissolved	37.9		mg/L			23-JUL-20
Iron (Fe)-Dissolved	0.014		mg/L		0.3	23-JUL-20
Magnesium (Mg)-Dissolved	32.3		mg/L			23-JUL-20
Manganese (Mn)-Dissolved	0.00549		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	5.31		mg/L			23-JUL-20
Sodium (Na)-Dissolved	55.1		mg/L		200	23-JUL-20
Conductivity						
Conductivity	674		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (Cl)	26.9		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	199		mg/L			22-JUL-20
Fecal Coliforms	<1	MBHT	CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	0	MBHT	MPN/100mL	0		22-JUL-20
Escherichia Coli	0	MBHT	MPN/100mL	0		22-JUL-20

CDWQG = Health Canada Guideline Limits updated **JUNE 2019**

* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only. If present as Nitrate then the limit is 10mg/L < or N.D. = less than detection limit.
* Turbidity guideline based on membrane filtration. For guidelines on conventional treatment and slow sand or diatomaceous earth filtration please see Summary Table of Guidelines for Canadian Drinking Water Quality
- A blank entry designates no known limit.
- A shaded value in the Results column exceeds CDWQG MAC and/ or Aesthetic Objective.

Approved by

Hua Wo
Account Manager

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477636
Project Ref: 111475107
Sample ID: RW-33
Sampled By:
Date Collected: 20-JUL-20
Lab Sample ID: L2477636-2
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F4						
Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total Hydrocarbons						
F1-BTEX	<0.10		mg/L			25-JUL-20
Total Hydrocarbons (C6-C50)	<0.38		mg/L			25-JUL-20
CCME PHC F2-F4 in Water						
F2 (C10-C16)	<0.10		mg/L			24-JUL-20
F3 (C16-C34)	<0.25		mg/L			24-JUL-20
F4 (C34-C50)	<0.25		mg/L			24-JUL-20
Surr: 2-Bromobenzotrifluoride	94.5		%			24-JUL-20
BTX plus F1 by GCMS						
Benzene	<0.00050		mg/L	0.005		24-JUL-20
Toluene	<0.0010		mg/L	0.06	0.024	24-JUL-20
Ethyl benzene	<0.00050		mg/L	0.14	0.0016	24-JUL-20
o-Xylene	<0.00050		mg/L			24-JUL-20
m+p-Xylenes	<0.00040		mg/L			24-JUL-20
F1 (C6-C10)	<0.10		mg/L			24-JUL-20
Surr: 4-Bromofluorobenzene (SS)	86.6		%			24-JUL-20
ROU4W Dissolved - Low Range						
Bicarbonate (HCO3)	269		mg/L			24-JUL-20
Carbonate (CO3)	5.40		mg/L			24-JUL-20
Hydroxide (OH)	<0.34		mg/L			24-JUL-20
*Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20
pH						
pH	8.35		pH units			22-JUL-20
Turbidity						
*Turbidity	2.31		NTU			23-JUL-20
TDS calculated						
TDS (Calculated)	434		mg/L		500	27-JUL-20
Sulfate in Water by IC						
Sulfate (SO4)	139		mg/L		500	22-JUL-20
Nitrite in Water by IC (Low Level)						
*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Water by IC (Low Level)						
*Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance Calculation						
Hardness Calculated						
Hardness (as CaCO3)	249		mg/L		500	27-JUL-20

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477636
Project Ref: 111475107
Sample ID: RW-33
Sampled By:
Date Collected: 20-JUL-20
Lab Sample ID: L2477636-2
Matrix: W

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.509		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals Filtration Location	FIELD					23-JUL-20
Calcium (Ca)-Dissolved	44.5		mg/L			23-JUL-20
Iron (Fe)-Dissolved	0.060		mg/L		0.3	23-JUL-20
Magnesium (Mg)-Dissolved	33.4		mg/L			23-JUL-20
Manganese (Mn)-Dissolved	0.00552		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	6.84		mg/L			23-JUL-20
Sodium (Na)-Dissolved	50.1		mg/L		200	23-JUL-20
Conductivity						
Conductivity	696		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (Cl)	22.6		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	229		mg/L			22-JUL-20
Fecal Coliforms	<1	MBHT	CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	0	MBHT	MPN/100mL	0		22-JUL-20
Escherichia Coli	0	MBHT	MPN/100mL	0		22-JUL-20

CDWQG = Health Canada Guideline Limits updated **JUNE 2019**

* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only. If present as Nitrate then the limit is 10mg/L < or N.D. = less than detection limit.
* Turbidity guideline based on membrane filtration. For guidelines on conventional treatment and slow sand or diatomaceous earth filtration please see Summary Table of Guidelines for Canadian Drinking Water Quality
- A blank entry designates no known limit.
- A shaded value in the Results column exceeds CDWQG MAC and/ or Aesthetic Objective.

Approved by

Hua Wo
Account Manager

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477636
Project Ref: 111475107
Sample ID: RW-27
Sampled By:
Date Collected: 20-JUL-20
Lab Sample ID: L2477636-3
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F4						
Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total Hydrocarbons						
F1-BTEX	<0.10		mg/L			25-JUL-20
Total Hydrocarbons (C6-C50)	<0.38		mg/L			25-JUL-20
CCME PHC F2-F4 in Water						
F2 (C10-C16)	<0.10		mg/L			24-JUL-20
F3 (C16-C34)	<0.25		mg/L			24-JUL-20
F4 (C34-C50)	<0.25		mg/L			24-JUL-20
Surr: 2-Bromobenzotrifluoride	90.8		%			24-JUL-20
BTX plus F1 by GCMS						
Benzene	<0.00050		mg/L	0.005		24-JUL-20
Toluene	<0.0010		mg/L	0.06	0.024	24-JUL-20
Ethyl benzene	<0.00050		mg/L	0.14	0.0016	24-JUL-20
o-Xylene	<0.00050		mg/L			24-JUL-20
m+p-Xylenes	<0.00040		mg/L			24-JUL-20
F1 (C6-C10)	<0.10		mg/L			24-JUL-20
Surr: 4-Bromofluorobenzene (SS)	88.0		%			24-JUL-20
ROU4W Dissolved - Low Range						
Bicarbonate (HCO3)	243		mg/L			24-JUL-20
Carbonate (CO3)	6.36		mg/L			24-JUL-20
Hydroxide (OH)	<0.34		mg/L			24-JUL-20
*Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20
pH						
pH	8.39		pH units			22-JUL-20
Turbidity						
*Turbidity	2.79		NTU			23-JUL-20
TDS calculated						
TDS (Calculated)	428		mg/L		500	27-JUL-20
Sulfate in Water by IC						
Sulfate (SO4)	142		mg/L		500	22-JUL-20
Nitrite in Water by IC (Low Level)						
*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Water by IC (Low Level)						
*Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance Calculation						
Hardness Calculated						
Hardness (as CaCO3)	237		mg/L		500	27-JUL-20

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477636
Project Ref: 111475107
Sample ID: RW-27
Sampled By:
Date Collected: 20-JUL-20
Lab Sample ID: L2477636-3
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.445		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals Filtration Location	FIELD					23-JUL-20
Calcium (Ca)-Dissolved	41.0		mg/L			23-JUL-20
Iron (Fe)-Dissolved	0.349		mg/L		0.3	23-JUL-20
Magnesium (Mg)-Dissolved	32.8		mg/L			23-JUL-20
Manganese (Mn)-Dissolved	0.0108		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	6.08		mg/L			23-JUL-20
Sodium (Na)-Dissolved	56.0		mg/L		200	23-JUL-20
Conductivity						
Conductivity	686		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (Cl)	24.4		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	210		mg/L			22-JUL-20
Fecal Coliforms	<1	MBHT	CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	4	MBHT	MPN/100mL	0		22-JUL-20
Escherichia Coli	2	MBHT	MPN/100mL	0		22-JUL-20

CDWQG = Health Canada Guideline Limits updated **JUNE 2019**

* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only. If present as Nitrate then the limit is 10mg/L < or N.D. = less than detection limit.
* Turbidity guideline based on membrane filtration. For guidelines on conventional treatment and slow sand or diatomaceous earth filtration please see Summary Table of Guidelines for Canadian Drinking Water Quality
- A blank entry designates no known limit.
- A shaded value in the Results column exceeds CDWQG MAC and/ or Aesthetic Objective.

Approved by

Hua Wo
Account Manager

Guidelines & Objectives

Sample Parameter Qualifier key listed:

Qualifier	Description
MBHT	The APHA 30 hour hold time was exceeded for microbiological testing. Samples processed within 48 hours from time of sampling may

be valid in some cases (refer to Health Canada guidance).

Health Canada MAC Health Related Criteria Limits

Nitrate/Nitrite-N*	Criteria limit is 10 mg/L (1.0 mg/L if present as all Nitrite-N). High concentrations may contribute to blue baby syndrome in infants.
Lead*	A cumulative body poison, uncommon in naturally occurring hard waters.
Fluoride*	Present in fluoridated water supplies at 0.8 mg/L to reduce dental caries. Elevated levels causes fluorosis (mottling of teeth).
Total Coliforms*	Criteria is 0 CFU/100mL. Adverse health effects.
E. Coli*	Criteria is 0 CFU/100 mL. Certain E. Coli bacteria can be life threatening.
Manganese*	Criteria limit is 0.12 mg/L. Possible neurological effects in infants.

*Health Canada Canadian Drinking Water Quality Guidelines (MAC limit)

Aesthetic Objective Concentration Levels

Alkalinity	Acid neutralizing capacity. Usually a measure of carbonate and bicarbonates and calculated and reported as calcium carbonate.
Balance	Quality control parameter ratioing cations to anions
Bicarbonate	See Alkalinity. Report as the anion HCO3-1
Carbonate	See Alkalinity. Reported at the anion CO3-2
Calcium	See Hardness. Common major cation of water chemistry.
Chloride	Common major anion of water chemistry.
Conductance	Physical test measuring water salinity (dissolved ions or solids)
Hardness	Classical measure or capacity of water to precipitate soap (chiefly calcium and magnesium ions). Causes scaling tendency in water if carbonates/bicarbonates are present (if >200 mg/L). For drinking water purposes waters with results <200 mg/L are considered acceptable, results >200 mg/L are considered poor but can be tolerated. Results >500 mg/L are unacceptable.
Hydroxide	See alkalinity
Magnesium	See hardness. Common major cation of water chemistry. Elevated levels (>125 mg/L) may exert a cathartic or diuretic action.
pH	Measure of water acidity/alkalinity. Normal range is 7.0-8.5.
Potassium	Common major cation of water chemistry.
Sodium	Common major cation of water chemistry. Measure of salinity (saltiness).The aesthetic objective (not related to health) for sodium in drinking water is 200 mg/L. However, where sodium concentration of the drinking water exceeds 20 mg/L, it is recommended that any person on a sodium restricted diet consult with his/her physician or Medical Officer of Health concerning the use of that water.
Sulphate	Common major anion of water chemistry. Elevated levels may exert a cathartic or diuretic action.
Total Dissolved Solids	A measure of water salinity.
Iron	Causes staining to laundry and porcelain and astringent taste. Oxidizes to red-brown precipitate on exposure to air.
Heterotrophic Plate Count	Criteria is 500 cfu/mL Measure of heterotrophic bacteria present.

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
Contact: Tassia Stainton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	**Water**							
Batch R5166298								
WG3369055-24 LCS								
Alkalinity, Total (as CaCO3)			105.5		%		85-115	22-JUL-20
WG3369055-21 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	22-JUL-20
BTEXS+F1-HSMS-WP	**Water**							
Batch R5166645								
WG3368156-10 DUP		**L2477636-3**						
Benzene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	24-JUL-20
Toluene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	30	24-JUL-20
Ethyl benzene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	24-JUL-20
o-Xylene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	24-JUL-20
m+p-Xylenes		<0.00040	<0.00040	RPD-NA	mg/L	N/A	30	24-JUL-20
F1 (C6-C10)		<0.10	<0.10	RPD-NA	mg/L	N/A	30	24-JUL-20
WG3368156-2 LCS								
Benzene			116.2		%		70-130	23-JUL-20
Toluene			98.2		%		70-130	23-JUL-20
Ethyl benzene			98.4		%		70-130	23-JUL-20
o-Xylene			113.0		%		70-130	23-JUL-20
m+p-Xylenes			111.4		%		70-130	23-JUL-20
WG3368156-3 LCS								
F1 (C6-C10)			98.7		%		70-130	23-JUL-20
WG3368156-8 LCS								
Benzene			75.0		%		70-130	23-JUL-20
Toluene			77.1		%		70-130	23-JUL-20
Ethyl benzene			77.4		%		70-130	23-JUL-20
o-Xylene			92.1		%		70-130	23-JUL-20
m+p-Xylenes			88.7		%		70-130	23-JUL-20
WG3368156-9 LCS								
F1 (C6-C10)			99.1		%		70-130	23-JUL-20
WG3368156-1 MB								
Benzene			<0.00050		mg/L		0.0005	23-JUL-20
Toluene			<0.0010		mg/L		0.001	23-JUL-20
Ethyl benzene			<0.00050		mg/L		0.0005	23-JUL-20
o-Xylene			<0.00050		mg/L		0.0005	23-JUL-20
m+p-Xylenes			<0.00040		mg/L		0.0004	23-JUL-20
F1 (C6-C10)			<0.10		mg/L		0.1	23-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTEXS+F1-HSMS-WP	**Water**							
Batch R5166645								
WG3368156-1 MB								
Surrogate: 4-Bromofluorobenzene (SS)			85.2		%		70-130	23-JUL-20
WG3368156-7 MB								
Benzene			<0.00050		mg/L		0.0005	23-JUL-20
Toluene			<0.0010		mg/L		0.001	23-JUL-20
Ethyl benzene			<0.00050		mg/L		0.0005	23-JUL-20
o-Xylene			<0.00050		mg/L		0.0005	23-JUL-20
m+p-Xylenes			<0.00040		mg/L		0.0004	23-JUL-20
F1 (C6-C10)			<0.10		mg/L		0.1	23-JUL-20
Surrogate: 4-Bromofluorobenzene (SS)			86.3		%		70-130	23-JUL-20
CL-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Chloride (Cl)			100.1		%		90-110	22-JUL-20
WG3367901-9 MB								
Chloride (Cl)			<0.10		mg/L		0.1	22-JUL-20
EC-WP	**Water**							
Batch R5166298								
WG3369055-23 LCS								
Conductivity			98.0		%		90-110	22-JUL-20
WG3369055-21 MB								
Conductivity			<1.0		umhos/cm		1	22-JUL-20
F-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Fluoride (F)			101.4		%		90-110	22-JUL-20
WG3367901-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	22-JUL-20
F2-F4-FID-WP	**Water**							
Batch R5167079								
WG3369781-2 LCS								
F2 (C10-C16)			99.4		%		70-130	24-JUL-20
F3 (C16-C34)			91.9		%		70-130	24-JUL-20
F4 (C34-C50)			107.6		%		70-130	24-JUL-20
WG3369781-1 MB								
F2 (C10-C16)			<0.10		mg/L		0.1	24-JUL-20

Quality Control Report

Workorder: L2477636 Report Date: 27-JUL-20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-FID-WP	**Water**							
Batch R5167079								
WG3369781-1 MB								
F3 (C16-C34)			<0.25		mg/L		0.25	24-JUL-20
F4 (C34-C50)			<0.25		mg/L		0.25	24-JUL-20
Surrogate: 2-Bromobenzotrifluoride			87.8		%		60-140	24-JUL-20
FC-MF-WP	**Water**							
Batch R5164763								
WG3368074-1 MB								
Fecal Coliforms			<1		CFU/100mL		1	22-JUL-20
WG3368074-2 MB								
Fecal Coliforms			<1		CFU/100mL		1	22-JUL-20
MET-D-CCMS-WP	**Water**							
Batch R5166699								
WG3368715-2 LCS								
Calcium (Ca)-Dissolved			99.3		%		80-120	23-JUL-20
Iron (Fe)-Dissolved			94.4		%		80-120	23-JUL-20
Magnesium (Mg)-Dissolved			102.0		%		80-120	23-JUL-20
Manganese (Mn)-Dissolved			100.7		%		80-120	23-JUL-20
Potassium (K)-Dissolved			103.3		%		80-120	23-JUL-20
Sodium (Na)-Dissolved			99.0		%		80-120	23-JUL-20
WG3368715-1 MB								
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-JUL-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-JUL-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-JUL-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
NO2-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Nitrite (as N)			101.6		%		90-110	22-JUL-20
WG3367901-9 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	22-JUL-20
NO3-L-IC-N-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Nitrate (as N)			103.0		%		90-110	22-JUL-20
WG3367901-9 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	22-JUL-20
PH-WP	**Water**							
Batch R5166298								
WG3369055-22 LCS								
pH			7.33		pH units		7.3-7.5	22-JUL-20
SO4-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Sulfate (SO4)			102.5		%		90-110	22-JUL-20
WG3367901-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	22-JUL-20
TC,EC-QT51-WP	**Water**							
Batch R5165685								
WG3367867-9 DUP		**L2477636-3**						
Total Coliforms		4	2	DUPM	MPN/100mL	71	65	22-JUL-20
Escherichia Coli		2	0	DUPM	MPN/100mL	2	2	22-JUL-20
WG3367867-12 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
WG3367867-13 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
WG3367867-14 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
TURBIDITY-WP	**Water**							
Batch R5166411								
WG3369614-6 DUP		**L2477636-1**						
Turbidity		0.22	0.22		NTU	1.8	15	23-JUL-20
WG3369614-5 LCS								
Turbidity			96.5		%		85-115	23-JUL-20
WG3369614-4 MB								
Turbidity			<0.10		NTU		0.1	23-JUL-20

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
DUPM	MPN duplicate results were outside default ALS Data Quality Objective, but within 95% confidence interval for MPN reference method. Sample results are reliable.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH							
	1	20-JUL-20 16:18	22-JUL-20 12:00	0.25	44	hours	EHTR-FM
	2	20-JUL-20 15:50	22-JUL-20 12:00	0.25	44	hours	EHTR-FM
	3	20-JUL-20 15:05	22-JUL-20 12:00	0.25	45	hours	EHTR-FM
Bacteriological Tests							
Fecal Coliform							
	1	20-JUL-20 16:18	22-JUL-20 14:10	30	46	hours	EHTR
	2	20-JUL-20 15:50	22-JUL-20 14:10	30	46	hours	EHTR
	3	20-JUL-20 15:05	22-JUL-20 14:10	30	47	hours	EHTR
Total Coliform and E.coli							
	1	20-JUL-20 16:18	22-JUL-20 12:50	30	45	hours	EHTR
	2	20-JUL-20 15:50	22-JUL-20 12:50	30	45	hours	EHTR
	3	20-JUL-20 15:05	22-JUL-20 12:50	30	46	hours	EHTR

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2477636 were received on 22-JUL-20 08:00.

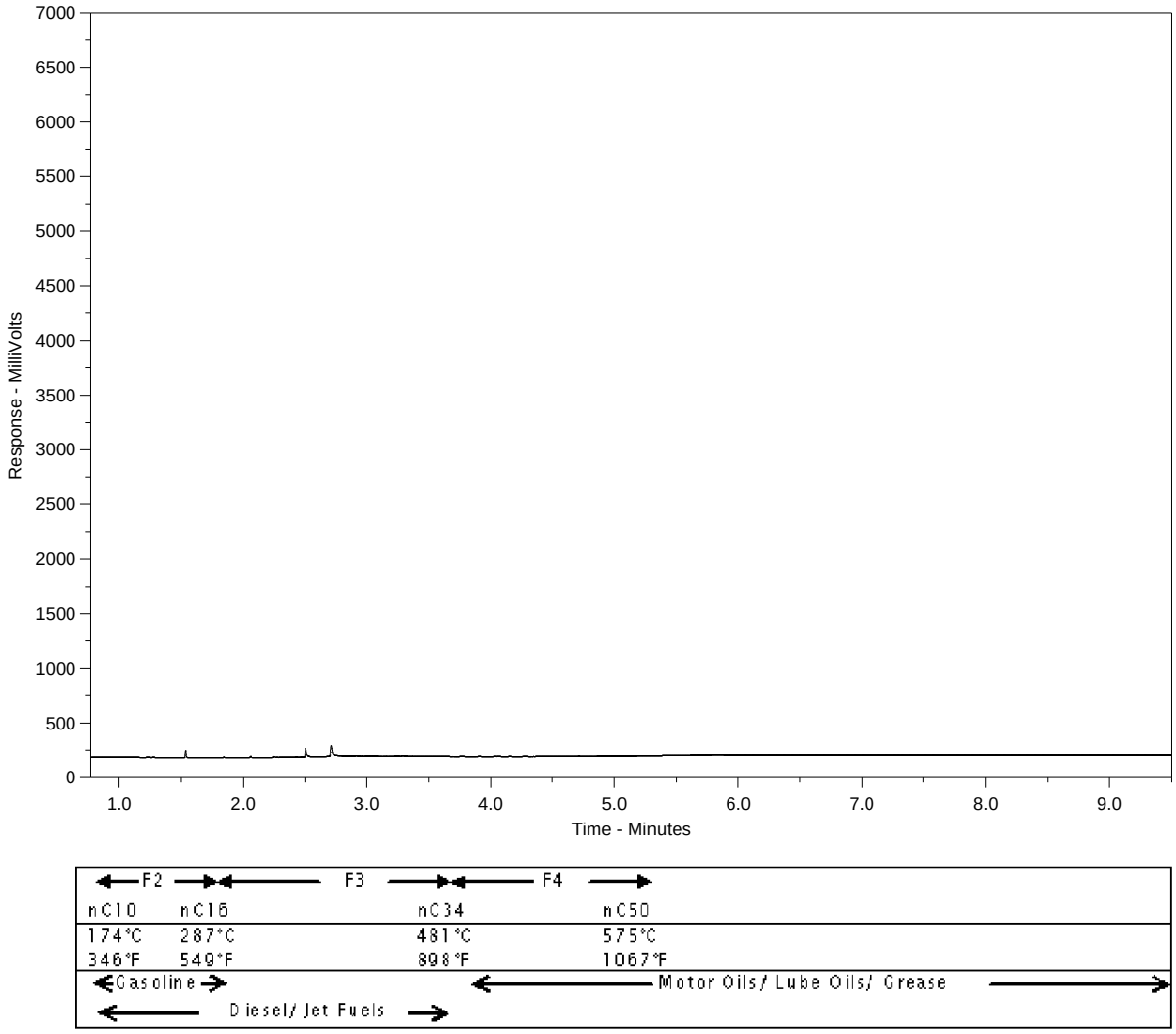
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes 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 pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2477636-1
Client Sample ID: RW-32



The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

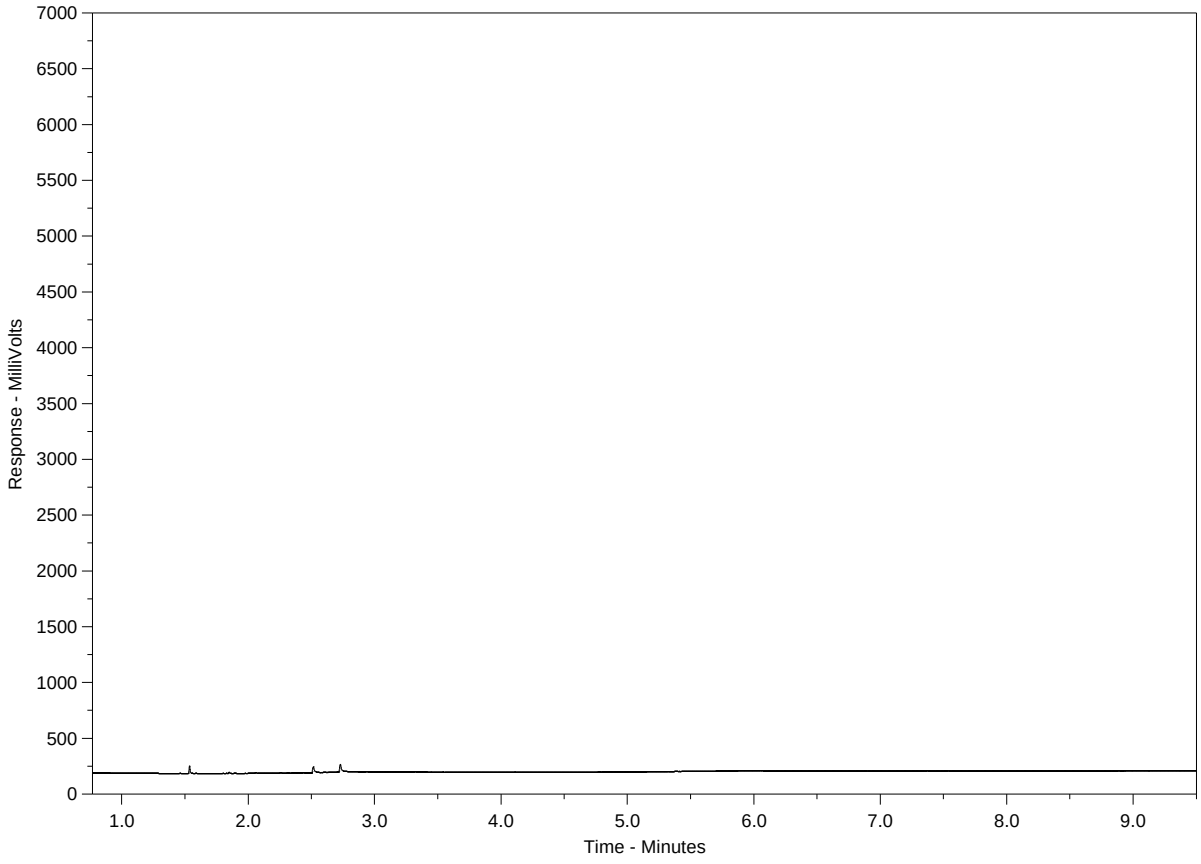
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

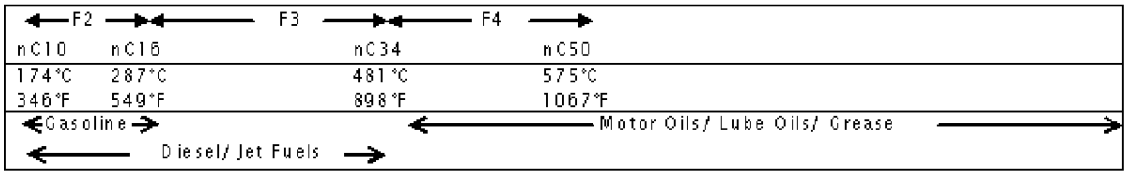
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2477636-2
Client Sample ID: RW-33





The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

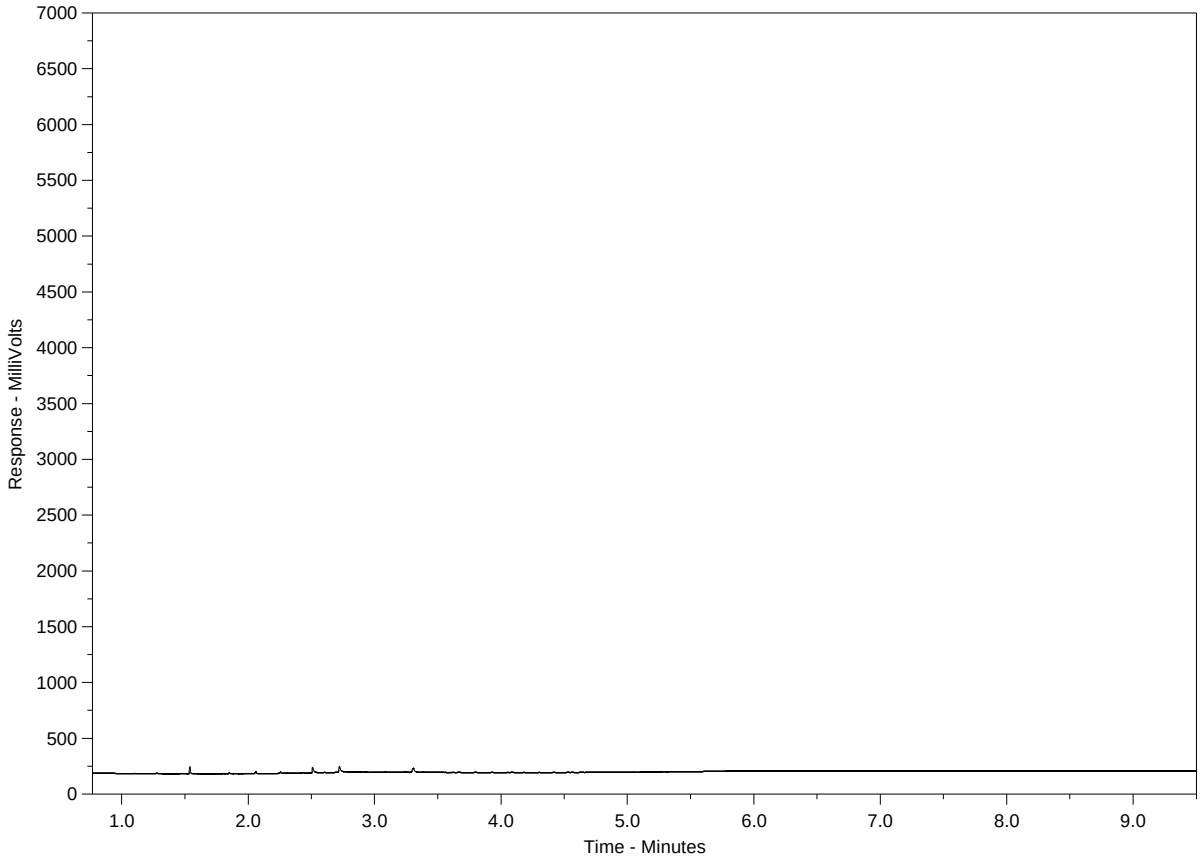
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

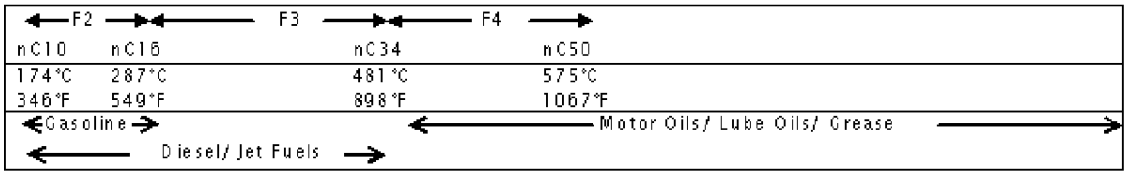
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2477636-3
Client Sample ID: RW-27





The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2477636-COFC

COC Number: 17 - 749863

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	Stantec W207
Contact:	Tassia Stainton
Phone:	204-982-7615
	Company address below will appear on the final report
Street:	500-311 Portage Ave
City/Province:	Wpg, MB
Postal Code:	R3B 2B9

Report Format / Distribution

Select Report Format: [X] PDF [X] EXCEL [X] EDD (DIGITAL)

Quality Control (QC) Report with Report [X] YES [ ] NO

[ ] Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: [X] EMAIL [ ] MAIL [ ] FAX

Email 1 or Fax: tassia.stainton@stantec.com

Email 2: Karen.mathers@stantec.com

Email 3:

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] [X] Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] [ ] 3 day [P3-25%] [ ] 2 day [P2-50%] [ ]

EMERGENCY: 1 Business day [E - 100%] [ ] Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] [ ]

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Invoice To

Same as Report To [X] YES [ ] NO

Copy of Invoice with Report [ ] YES [ ] NO

Company:

Contact:

Invoice Distribution

Select Invoice Distribution: [X] EMAIL [ ] MAIL [ ] FAX

Email 1 or Fax

Email 2

Project Information

ALS Account # / Quote #: Q80404

Job #: W475107

PO / AFE:

LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: | PO#

Major/Minor Code: | Routing Code:

Requisitioner:

Location:

ALS Lab Work Order # (lab use only):

ALS Contact:

Sampler: BB, ZW

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	BTX, F1-F4-WP (P)	FC-MF-WP	ROUHW-D-L-WP (F/P)	TC,EC-DTSA-WP (P)	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	RW-32	20.07.20	1618	W	9	✓	✓	✓	✓		
	RW-33	↓	1550	↓	9	✓	✓	✓	✓		
	RW-27	↓	1505	↓	9	✓	✓	✓	✓		

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? [ ] YES [ ] NO

Are samples for human consumption/ use? [ ] YES [ ] NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen [ ] SIF Observations Yes [ ] No [ ]

Ice Packs [ ] Ice Cubes [ ] Custody seal intact Yes [ ] No [ ]

Cooling Initiated [ ]

INITIAL COOLER TEMPERATURES °C: 3

FINAL COOLER TEMPERATURES °C:

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: B. Lyezd	Date: July 21, 2020	Time: 1615	Received by:	Date: JUL 22 2020	Time:	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY   YELLOW - CLIENT COPY

JUNE 2018 FRONT

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477637
Project Ref: 111475107
Sample ID: RW-41
Sampled By:
Date Collected: 20-JUL-20
Lab Sample ID: L2477637-1
Matrix: W

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F4						
Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total Hydrocarbons						
F1-BTEX	<0.10		mg/L			25-JUL-20
Total Hydrocarbons (C6-C50)	<0.38		mg/L			25-JUL-20
CCME PHC F2-F4 in Water						
F2 (C10-C16)	<0.10		mg/L			24-JUL-20
F3 (C16-C34)	<0.25		mg/L			24-JUL-20
F4 (C34-C50)	<0.25		mg/L			24-JUL-20
Surr: 2-Bromobenzotrifluoride	94.7		%			24-JUL-20
BTX plus F1 by GCMS						
Benzene	<0.00050		mg/L	0.005		24-JUL-20
Toluene	<0.0010		mg/L	0.06	0.024	24-JUL-20
Ethyl benzene	<0.00050		mg/L	0.14	0.0016	24-JUL-20
o-Xylene	<0.00050		mg/L			24-JUL-20
m+p-Xylenes	<0.00040		mg/L			24-JUL-20
F1 (C6-C10)	<0.10		mg/L			24-JUL-20
Surr: 4-Bromofluorobenzene (SS)	88.2		%			24-JUL-20
ROU4W Dissolved - Low Range						
Bicarbonate (HCO3)	215		mg/L			24-JUL-20
Carbonate (CO3)	4.80		mg/L			24-JUL-20
Hydroxide (OH)	<0.34		mg/L			24-JUL-20
*Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20
pH						
pH	8.34		pH units			22-JUL-20
Turbidity						
*Turbidity	0.14		NTU			23-JUL-20
TDS calculated						
TDS (Calculated)	428		mg/L		500	27-JUL-20
Sulfate in Water by IC						
Sulfate (SO4)	146		mg/L		500	22-JUL-20
Nitrite in Water by IC (Low Level)						
*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Water by IC (Low Level)						
*Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance Calculation						
Hardness Calculated						
Hardness (as CaCO3)	217		mg/L		500	27-JUL-20

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477637
Project Ref: 111475107
Sample ID: RW-41
Sampled By:
Date Collected: 20-JUL-20
Lab Sample ID: L2477637-1
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.362		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals Filtration Location	LAB					23-JUL-20
Calcium (Ca)-Dissolved	37.9		mg/L			23-JUL-20
Iron (Fe)-Dissolved	<0.010		mg/L		0.3	23-JUL-20
Magnesium (Mg)-Dissolved	29.7		mg/L			23-JUL-20
Manganese (Mn)-Dissolved	0.00287		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	5.16		mg/L			23-JUL-20
Sodium (Na)-Dissolved	64.7		mg/L		200	23-JUL-20
Conductivity						
Conductivity	683		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (Cl)	33.3		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	184		mg/L			22-JUL-20
Fecal Coliforms	<1	MBHT	CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	0	MBHT	MPN/100mL	0		22-JUL-20
Escherichia Coli	0	MBHT	MPN/100mL	0		22-JUL-20

CDWQG = Health Canada Guideline Limits updated **JUNE 2019**

* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only. If present as Nitrate then the limit is 10mg/L < or N.D. = less than detection limit.
* Turbidity guideline based on membrane filtration. For guidelines on conventional treatment and slow sand or diatomaceous earth filtration please see Summary Table of Guidelines for Canadian Drinking Water Quality
- A blank entry designates no known limit.
- A shaded value in the Results column exceeds CDWQG MAC and/ or Aesthetic Objective.

Approved by

Hua Wo
Account Manager

Guidelines & Objectives

Sample Parameter Qualifier key listed:

Qualifier	Description
MBHT	The APHA 30 hour hold time was exceeded for microbiological testing. Samples processed within 48 hours from time of sampling may

be valid in some cases (refer to Health Canada guidance).

Health Canada MAC Health Related Criteria Limits

Nitrate/Nitrite-N*	Criteria limit is 10 mg/L (1.0 mg/L if present as all Nitrite-N). High concentrations may contribute to blue baby syndrome in infants.
Lead*	A cumulative body poison, uncommon in naturally occurring hard waters.
Fluoride*	Present in fluoridated water supplies at 0.8 mg/L to reduce dental caries. Elevated levels causes fluorosis (mottling of teeth).
Total Coliforms*	Criteria is 0 CFU/100mL. Adverse health effects.
E. Coli*	Criteria is 0 CFU/100 mL. Certain E. Coli bacteria can be life threatening.
Manganese*	Criteria limit is 0.12 mg/L. Possible neurological effects in infants.

*Health Canada Canadian Drinking Water Quality Guidelines (MAC limit)

Aesthetic Objective Concentration Levels

Alkalinity	Acid neutralizing capacity. Usually a measure of carbonate and bicarbonates and calculated and reported as calcium carbonate.
Balance	Quality control parameter ratioing cations to anions
Bicarbonate	See Alkalinity. Report as the anion HCO3-1
Carbonate	See Alkalinity. Reported at the anion CO3-2
Calcium	See Hardness. Common major cation of water chemistry.
Chloride	Common major anion of water chemistry.
Conductance	Physical test measuring water salinity (dissolved ions or solids)
Hardness	Classical measure or capacity of water to precipitate soap (chiefly calcium and magnesium ions). Causes scaling tendency in water if carbonates/bicarbonates are present (if >200 mg/L). For drinking water purposes waters with results <200 mg/L are considered acceptable, results >200 mg/L are considered poor but can be tolerated. Results >500 mg/L are unacceptable.
Hydroxide	See alkalinity
Magnesium	See hardness. Common major cation of water chemistry. Elevated levels (>125 mg/L) may exert a cathartic or diuretic action.
pH	Measure of water acidity/alkalinity. Normal range is 7.0-8.5.
Potassium	Common major cation of water chemistry.
Sodium	Common major cation of water chemistry. Measure of salinity (saltiness).The aesthetic objective (not related to health) for sodium in drinking water is 200 mg/L. However, where sodium concentration of the drinking water exceeds 20 mg/L, it is recommended that any person on a sodium restricted diet consult with his/her physician or Medical Officer of Health concerning the use of that water.
Sulphate	Common major anion of water chemistry. Elevated levels may exert a cathartic or diuretic action.
Total Dissolved Solids	A measure of water salinity.
Iron	Causes staining to laundry and porcelain and astringent taste. Oxidizes to red-brown precipitate on exposure to air.
Heterotrophic Plate Count	Criteria is 500 cfu/mL Measure of heterotrophic bacteria present.

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
Contact: Tassia Stainton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	**Water**							
Batch R5166298								
WG3369055-24 LCS								
Alkalinity, Total (as CaCO3)			105.5		%		85-115	22-JUL-20
WG3369055-21 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	22-JUL-20
BTEXS+F1-HSMS-WP	**Water**							
Batch R5166645								
WG3368156-8 LCS								
Benzene			75.0		%		70-130	23-JUL-20
Toluene			77.1		%		70-130	23-JUL-20
Ethyl benzene			77.4		%		70-130	23-JUL-20
o-Xylene			92.1		%		70-130	23-JUL-20
m+p-Xylenes			88.7		%		70-130	23-JUL-20
WG3368156-9 LCS								
F1 (C6-C10)			99.1		%		70-130	23-JUL-20
WG3368156-7 MB								
Benzene			<0.00050		mg/L		0.0005	23-JUL-20
Toluene			<0.0010		mg/L		0.001	23-JUL-20
Ethyl benzene			<0.00050		mg/L		0.0005	23-JUL-20
o-Xylene			<0.00050		mg/L		0.0005	23-JUL-20
m+p-Xylenes			<0.00040		mg/L		0.0004	23-JUL-20
F1 (C6-C10)			<0.10		mg/L		0.1	23-JUL-20
Surrogate: 4-Bromofluorobenzene (SS)			86.3		%		70-130	23-JUL-20
WG3368156-11 MS		**L2477637-1**						
Benzene			87.2		%		50-150	23-JUL-20
Toluene			91.0		%		50-150	23-JUL-20
Ethyl benzene			90.3		%		50-150	23-JUL-20
o-Xylene			105.8		%		50-150	23-JUL-20
m+p-Xylenes			99.7		%		50-150	23-JUL-20
CL-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Chloride (Cl)			100.1		%		90-110	22-JUL-20
WG3367901-9 MB								
Chloride (Cl)			<0.10		mg/L		0.1	22-JUL-20
EC-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-WP	**Water**							
Batch R5166298								
WG3369055-23 LCS								
Conductivity			98.0		%		90-110	22-JUL-20
WG3369055-21 MB								
Conductivity			<1.0		umhos/cm		1	22-JUL-20
F-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Fluoride (F)			101.4		%		90-110	22-JUL-20
WG3367901-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	22-JUL-20
F2-F4-FID-WP	**Water**							
Batch R5167079								
WG3369781-2 LCS								
F2 (C10-C16)			99.4		%		70-130	24-JUL-20
F3 (C16-C34)			91.9		%		70-130	24-JUL-20
F4 (C34-C50)			107.6		%		70-130	24-JUL-20
WG3369781-1 MB								
F2 (C10-C16)			<0.10		mg/L		0.1	24-JUL-20
F3 (C16-C34)			<0.25		mg/L		0.25	24-JUL-20
F4 (C34-C50)			<0.25		mg/L		0.25	24-JUL-20
Surrogate: 2-Bromobenzotrifluoride			87.8		%		60-140	24-JUL-20
FC-MF-WP	**Water**							
Batch R5164763								
WG3368074-1 MB								
Fecal Coliforms			<1		CFU/100mL		1	22-JUL-20
WG3368074-2 MB								
Fecal Coliforms			<1		CFU/100mL		1	22-JUL-20
MET-D-CCMS-WP	**Water**							
Batch R5166699								
WG3368715-2 LCS								
Calcium (Ca)-Dissolved			99.3		%		80-120	23-JUL-20
Iron (Fe)-Dissolved			94.4		%		80-120	23-JUL-20
Magnesium (Mg)-Dissolved			102.0		%		80-120	23-JUL-20
Manganese (Mn)-Dissolved			100.7		%		80-120	23-JUL-20
Potassium (K)-Dissolved			103.3		%		80-120	23-JUL-20
Sodium (Na)-Dissolved			99.0		%		80-120	23-JUL-20
WG3368715-1								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5166699								
WG3368715-1 MB								
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-JUL-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-JUL-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-JUL-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
NO2-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Nitrite (as N)			101.6		%		90-110	22-JUL-20
WG3367901-9 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	22-JUL-20
NO3-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Nitrate (as N)			103.0		%		90-110	22-JUL-20
WG3367901-9 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	22-JUL-20
PH-WP	**Water**							
Batch R5166298								
WG3369055-22 LCS								
pH			7.33		pH units		7.3-7.5	22-JUL-20
SO4-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Sulfate (SO4)			102.5		%		90-110	22-JUL-20
WG3367901-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	22-JUL-20
TC,EC-QT51-WP	**Water**							
Batch R5165685								
WG3367867-12 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
WG3367867-13 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TC,EC-QT51-WP	**Water**							
Batch R5165685								
WG3367867-13 MB								
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
WG3367867-14 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
TURBIDITY-WP	**Water**							
Batch R5166411								
WG3369614-5 LCS								
Turbidity			96.5		%		85-115	23-JUL-20
WG3369614-4 MB								
Turbidity			<0.10		NTU		0.1	23-JUL-20

Quality Control Report

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH							
	1	20-JUL-20 14:29	22-JUL-20 12:00	0.25	46	hours	EHTR-FM
Bacteriological Tests							
Fecal Coliform							
	1	20-JUL-20 14:29	22-JUL-20 14:10	30	48	hours	EHTR
Total Coliform and E.coli							
	1	20-JUL-20 14:29	22-JUL-20 12:50	30	46	hours	EHTR

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2477637 were received on 22-JUL-20 08:00.

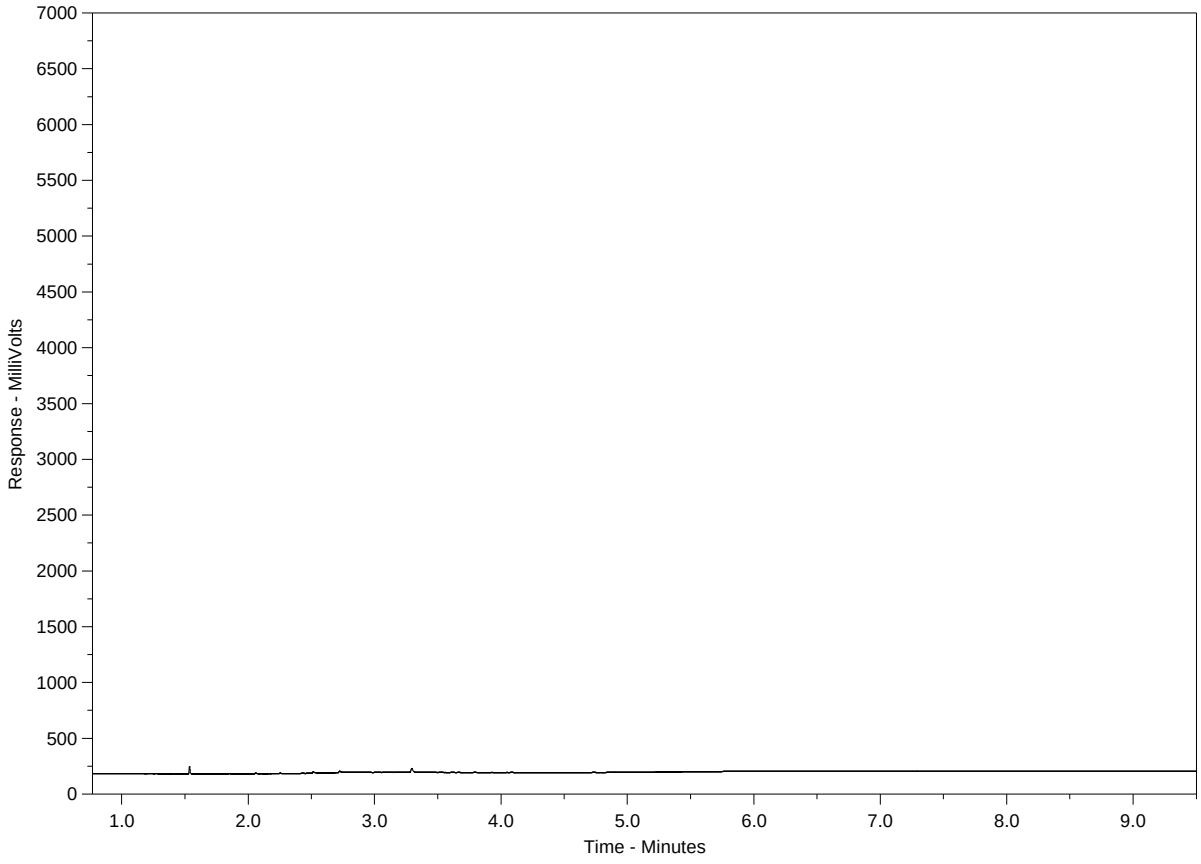
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

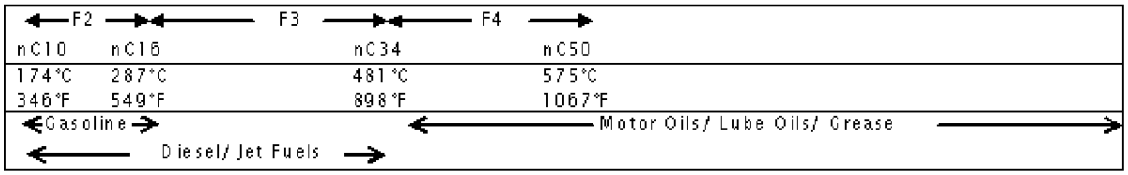
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2477637-1
Client Sample ID: RW-41





The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L2477637-COFC

COC Number: 17 - 749862

Page 1 of 1

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)
Company:	Stantec W3077	Select Report Format: ☒ PDF ☒ EXCEL ☒ EDD (DIGITAL)	Regular [R] ☒ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Tassia Stanton	Quality Control (QC) Report with Report ☒ YES ☐ NO	PRIORITY (Business Days): 4 day [P4-20%] ☐ / 3 day [P3-25%] ☐ / 2 day [P2-50%] ☐
Phone:	204-988-7615	☐ Compare Results to Criteria on Report - provide details below if box checked	EMERGENCY: 1 Business day [E - 100%] ☐ / Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐
	Company address below will appear on the final report	Select Distribution: ☒ EMAIL ☐ MAIL ☐ FAX	
Street:	500-311 Portage Ave	Email 1 or Fax tassia.stanton@stantec.com	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
City/Province:	Winnipeg MB	Email 2 Karen.mathers@stantec.com	For tests that can not be performed according to the service level selected, you will be contacted.
Postal Code:	R3B 0R9	Email 3	Analysis Request
Invoice To	Same as Report To ☒ YES ☐ NO	Invoice Distribution	
	Copy of Invoice with Report ☐ YES ☐ NO	Select Invoice Distribution: ☒ EMAIL ☐ MAIL ☐ FAX	
Company:		Email 1 or Fax	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q80404	AFE/Cost Center:	PO#
Job #:	1147507	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):		ALS Contact:	Sampler: BG, ZW

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	BTX, F1-F4-WP (P)	FC-ME-WP (F/P)	RO4HW-D-L-WP (F/P)	TC,FC-QTSA-WP (P)	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	RW-41	20.07.20	1489	W	9	✓	✓	✓	✓		

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☐ NO	
Are samples for human consumption/ use? ☐ YES ☐ NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	☐	SIF Observations	Yes ☐	No	☐
Ice Packs ☐	Ice Cubes ☐	Custody seal intact	Yes ☐	No	☐
Cooling Initiated ☐					

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
			1.3				

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
B. Lynch	July 20, 2020	1645		JUL 22 2020				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form.**

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477626
Project Ref: 111475107
Sample ID: RW-42
Sampled By:
Date Collected: 21-JUL-20
Lab Sample ID: L2477626-1
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F4						
Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total Hydrocarbons						
F1-BTEX	<0.10		mg/L			25-JUL-20
Total Hydrocarbons (C6-C50)	<0.38		mg/L			25-JUL-20
CCME PHC F2-F4 in Water						
F2 (C10-C16)	<0.10		mg/L			24-JUL-20
F3 (C16-C34)	<0.25		mg/L			24-JUL-20
F4 (C34-C50)	<0.25		mg/L			24-JUL-20
Surr: 2-Bromobenzotrifluoride	94.4		%			24-JUL-20
BTX plus F1 by GCMS						
Benzene	<0.00050		mg/L	0.005		23-JUL-20
Toluene	<0.0010		mg/L	0.06	0.024	23-JUL-20
Ethyl benzene	<0.00050		mg/L	0.14	0.0016	23-JUL-20
o-Xylene	<0.00050		mg/L			23-JUL-20
m+p-Xylenes	<0.00040		mg/L			23-JUL-20
F1 (C6-C10)	<0.10		mg/L			23-JUL-20
Surr: 4-Bromofluorobenzene (SS)	92.0		%			23-JUL-20
ROU4W Dissolved - Low Range						
Bicarbonate (HCO3)	412		mg/L			24-JUL-20
Carbonate (CO3)	<0.60		mg/L			24-JUL-20
Hydroxide (OH)	<0.34		mg/L			24-JUL-20
*Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20
pH						
pH	7.88		pH units			22-JUL-20
Turbidity						
*Turbidity	2.35		NTU			23-JUL-20
TDS calculated						
TDS (Calculated)	469		mg/L		500	27-JUL-20
Sulfate in Water by IC						
Sulfate (SO4)	107		mg/L		500	22-JUL-20
Nitrite in Water by IC (Low Level)						
*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Water by IC (Low Level)						
*Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance Calculation						
Hardness Calculated						
Hardness (as CaCO3)	347		mg/L		500	27-JUL-20

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477626
Project Ref: 111475107
Sample ID: RW-42
Sampled By:
Date Collected: 21-JUL-20
Lab Sample ID: L2477626-1
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	1.16		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Calcium (Ca)-Dissolved	65.7		mg/L			23-JUL-20
Iron (Fe)-Dissolved	0.109		mg/L		0.3	23-JUL-20
Magnesium (Mg)-Dissolved	44.4		mg/L			23-JUL-20
Manganese (Mn)-Dissolved	0.0103		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	9.26		mg/L			23-JUL-20
Sodium (Na)-Dissolved	32.2		mg/L		200	23-JUL-20
Conductivity						
Conductivity	755		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (Cl)	7.85		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	338		mg/L			22-JUL-20
Fecal Coliforms	<1		CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	2		MPN/100mL	0		22-JUL-20
Escherichia Coli	1		MPN/100mL	0		22-JUL-20

CDWQG = Health Canada Guideline Limits updated **JUNE 2019**

* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only. If present as Nitrate then the limit is 10mg/L < or N.D. = less than detection limit.
* Turbidity guideline based on membrane filtration. For guidelines on conventional treatment and slow sand or diatomaceous earth filtration please see Summary Table of Guidelines for Canadian Drinking Water Quality
- A blank entry designates no known limit.
- A shaded value in the Results column exceeds CDWQG MAC and/ or Aesthetic Objective.

Approved by

Hua Wo
Account Manager

Guidelines & Objectives

Health Canada MAC Health Related Criteria Limits

Nitrate/Nitrite-N*	Criteria limit is 10 mg/L (1.0 mg/L if present as all Nitrite-N). High concentrations may contribute to blue baby syndrome in infants.
Lead*	A cumulative body poison, uncommon in naturally occurring hard waters.
Fluoride*	Present in fluoridated water supplies at 0.8 mg/L to reduce dental caries. Elevated levels causes fluorosis (mottling of teeth).
Total Coliforms*	Criteria is 0 CFU/100mL. Adverse health effects.
E. Coli*	Criteria is 0 CFU/100 mL. Certain E. Coli bacteria can be life threatening.
Manganese*	Criteria limit is 0.12 mg/L. Possible neurological effects in infants.

*Health Canada Canadian Drinking Water Quality Guidelines (MAC limit)

Aesthetic Objective Concentration Levels

Alkalinity	Acid neutralizing capacity. Usually a measure of carbonate and bicarbonates and calculated and reported as calcium carbonate.
Balance	Quality control parameter ratioing cations to anions
Bicarbonate	See Alkalinity. Report as the anion HCO3-1
Carbonate	See Alkalinity. Reported at the anion CO3-2
Calcium	See Hardness. Common major cation of water chemistry.
Chloride	Common major anion of water chemistry.
Conductance	Physical test measuring water salinity (dissolved ions or solids)
Hardness	Classical measure or capacity of water to precipitate soap (chiefly calcium and magnesium ions). Causes scaling tendency in water if carbonates/bicarbonates are present (if >200 mg/L). For drinking water purposes waters with results <200 mg/L are considered acceptable, results >200 mg/L are considered poor but can be tolerated. Results >500 mg/L are unacceptable.
Hydroxide	See alkalinity
Magnesium	See hardness. Common major cation of water chemistry. Elevated levels (>125 mg/L) may exert a cathartic or diuretic action.
pH	Measure of water acidity/alkalinity. Normal range is 7.0-8.5.
Potassium	Common major cation of water chemistry.
Sodium	Common major cation of water chemistry. Measure of salinity (saltiness).The aesthetic objective (not related to health) for sodium in drinking water is 200 mg/L. However, where sodium concentration of the drinking water exceeds 20 mg/L, it is recommended that any person on a sodium restricted diet consult with his/her physician or Medical Officer of Health concerning the use of that water.
Sulphate	Common major anion of water chemistry. Elevated levels may exert a cathartic or diuretic action.
Total Dissolved Solids	A measure of water salinity.
Iron	Causes staining to laundry and porcelain and astringent taste. Oxidizes to red-brown precipitate on exposure to air.
Heterotrophic Plate Count	Criteria is 500 cfu/mL Measure of heterotrophic bacteria present.

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2477626 Report Date: 27-JUL-20

Client: Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
Contact: Tassia Stainton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	**Water**							
Batch R5166298								
WG3369055-25 DUP		**L2477626-1**						
Alkalinity, Total (as CaCO3)		338	335		mg/L	0.7	20	22-JUL-20
WG3369055-24 LCS								
Alkalinity, Total (as CaCO3)			105.5		%		85-115	22-JUL-20
WG3369055-21 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	22-JUL-20
BTEXS+F1-HSMS-WP	**Water**							
Batch R5166645								
WG3368156-2 LCS								
Benzene			116.2		%		70-130	23-JUL-20
Toluene			98.2		%		70-130	23-JUL-20
Ethyl benzene			98.4		%		70-130	23-JUL-20
o-Xylene			113.0		%		70-130	23-JUL-20
m+p-Xylenes			111.4		%		70-130	23-JUL-20
WG3368156-3 LCS								
F1 (C6-C10)			98.7		%		70-130	23-JUL-20
WG3368156-1 MB								
Benzene			<0.00050		mg/L		0.0005	23-JUL-20
Toluene			<0.0010		mg/L		0.001	23-JUL-20
Ethyl benzene			<0.00050		mg/L		0.0005	23-JUL-20
o-Xylene			<0.00050		mg/L		0.0005	23-JUL-20
m+p-Xylenes			<0.00040		mg/L		0.0004	23-JUL-20
F1 (C6-C10)			<0.10		mg/L		0.1	23-JUL-20
Surrogate: 4-Bromofluorobenzene (SS)			85.2		%		70-130	23-JUL-20
CL-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-6 LCS								
Chloride (Cl)			102.6		%		90-110	22-JUL-20
WG3367901-5 MB								
Chloride (Cl)			<0.10		mg/L		0.1	22-JUL-20
EC-WP	**Water**							
Batch R5166298								
WG3369055-25 DUP		**L2477626-1**						
Conductivity		755	758		umhos/cm	0.4	10	22-JUL-20
WG3369055-23 LCS								
Conductivity			98.0		%		90-110	22-JUL-20
WG3369055-21 MB								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-WP	**Water**							
Batch R5166298								
WG3369055-21 MB								
Conductivity			<1.0		umhos/cm		1	22-JUL-20
F-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-6 LCS								
Fluoride (F)			102.0		%		90-110	22-JUL-20
WG3367901-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	22-JUL-20
F2-F4-FID-WP	**Water**							
Batch R5167079								
WG3369781-2 LCS								
F2 (C10-C16)			99.4		%		70-130	24-JUL-20
F3 (C16-C34)			91.9		%		70-130	24-JUL-20
F4 (C34-C50)			107.6		%		70-130	24-JUL-20
WG3369781-1 MB								
F2 (C10-C16)			<0.10		mg/L		0.1	24-JUL-20
F3 (C16-C34)			<0.25		mg/L		0.25	24-JUL-20
F4 (C34-C50)			<0.25		mg/L		0.25	24-JUL-20
Surrogate: 2-Bromobenzotrifluoride			87.8		%		60-140	24-JUL-20
FC-MF-WP	**Water**							
Batch R5164763								
WG3368074-4 DUP		**L2477626-1**						
Fecal Coliforms		<1	<1	RPD-NA	CFU/100mL	N/A	65	22-JUL-20
WG3368074-1 MB								
Fecal Coliforms			<1		CFU/100mL		1	22-JUL-20
WG3368074-2 MB								
Fecal Coliforms			<1		CFU/100mL		1	22-JUL-20
MET-D-CCMS-WP	**Water**							
Batch R5166699								
WG3368715-4 DUP		**L2477626-1**						
Calcium (Ca)-Dissolved		65.7	65.8		mg/L	0.1	20	23-JUL-20
Iron (Fe)-Dissolved		0.109	0.110		mg/L	1.1	20	23-JUL-20
Magnesium (Mg)-Dissolved		44.4	44.3		mg/L	0.3	20	23-JUL-20
Manganese (Mn)-Dissolved		0.0103	0.0103		mg/L	0.0	20	23-JUL-20
Potassium (K)-Dissolved		9.26	9.35		mg/L	1.0	20	23-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5166699								
WG3368715-4 DUP		**L2477626-1**						
Sodium (Na)-Dissolved		32.2	32.8		mg/L	1.6	20	23-JUL-20
WG3368715-2 LCS								
Calcium (Ca)-Dissolved			99.3		%		80-120	23-JUL-20
Iron (Fe)-Dissolved			94.4		%		80-120	23-JUL-20
Magnesium (Mg)-Dissolved			102.0		%		80-120	23-JUL-20
Manganese (Mn)-Dissolved			100.7		%		80-120	23-JUL-20
Potassium (K)-Dissolved			103.3		%		80-120	23-JUL-20
Sodium (Na)-Dissolved			99.0		%		80-120	23-JUL-20
WG3368715-1 MB								
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-JUL-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-JUL-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-JUL-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
WG3368715-5 MS		**L2477626-1**						
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	23-JUL-20
Iron (Fe)-Dissolved			88.9		%		70-130	23-JUL-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	23-JUL-20
Manganese (Mn)-Dissolved			90.9		%		70-130	23-JUL-20
Potassium (K)-Dissolved			N/A	MS-B	%		-	23-JUL-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	23-JUL-20
NO2-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-6 LCS								
Nitrite (as N)			104.0		%		90-110	22-JUL-20
WG3367901-5 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	22-JUL-20
NO3-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-6 LCS								
Nitrate (as N)			101.6		%		90-110	22-JUL-20
WG3367901-5 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	22-JUL-20
PH-WP	**Water**							

Quality Control Report

Workorder: L2477626 Report Date: 27-JUL-20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-WP	**Water**							
Batch R5166298								
WG3369055-25 DUP		**L2477626-1**						
pH		7.88	7.87	J	pH units	0.01	0.2	22-JUL-20
WG3369055-22 LCS								
pH			7.33		pH units		7.3-7.5	22-JUL-20
SO4-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-6 LCS								
Sulfate (SO4)			104.2		%		90-110	22-JUL-20
WG3367901-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	22-JUL-20
TC,EC-QT51-WP	**Water**							
Batch R5165685								
WG3367867-1 DUP		**L2477626-1**						
Total Coliforms		2	1	J	MPN/100mL	1	2	22-JUL-20
Escherichia Coli		1	0	J	MPN/100mL	1	2	22-JUL-20
WG3367867-12 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
WG3367867-13 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
WG3367867-14 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
TURBIDITY-WP	**Water**							
Batch R5166411								
WG3369614-2 LCS								
Turbidity			95.0		%		85-115	23-JUL-20
WG3369614-1 MB								
Turbidity			<0.10		NTU		0.1	23-JUL-20

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH							
	1	21-JUL-20 11:41	22-JUL-20 12:00	0.25	24	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2477626 were received on 22-JUL-20 08:00.

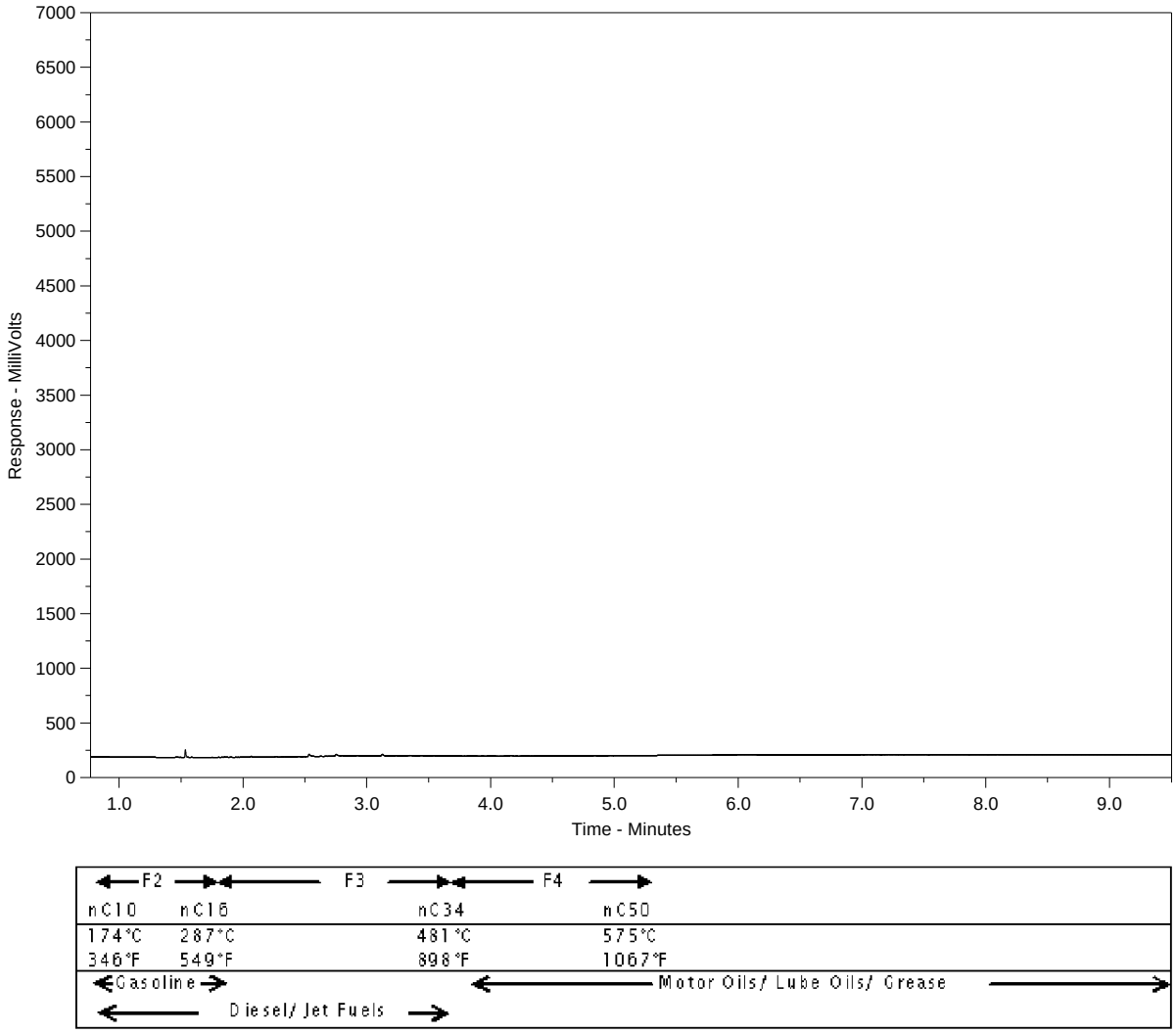
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes 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 pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2477626-1
Client Sample ID: RW-42



The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2477626-COFC

COC Number: 17 - 749271

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	Stantec - WD077
Contact:	Tassia Stanton
Phone:	204-982-7615
	Company address below will appear on the final report
Street:	500-311 Portage Ave
City/Province:	Wpg, MB
Postal Code:	R3B 2M9

Report Format / Distribution

Select Report Format: [X] PDF [X] EXCEL [X] EDD (DIGITAL)

Quality Control (QC) Report with Report [X] YES [ ] NO

[ ] Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: [ ] EMAIL [ ] MAIL [ ] FAX

Email 1 or Fax: tassia.stanton@stantec.com

Email 2: karen.mathers@stantec.com

Email 3:

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] [X] Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] [ ]; 3 day [P3-25%] [ ]; 2 day [P2-50%] [ ]

EMERGENCY: 1 Business day [E - 100%] [ ]; Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] [ ]

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Invoice To	
Same as Report To	[ ] YES [ ] NO
Copy of Invoice with Report	[ ] YES [ ] NO
Company:	
Contact:	

Invoice Distribution

Select Invoice Distribution: [X] EMAIL [ ] MAIL [ ] FAX

Email 1 or Fax:

Email 2:

Project Information

ALS Account # / Quote #: Q80404

Job #: 111475107

PO / AFE:

LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: | PO#:

Major/Minor Code: | Routing Code:

Requisitioner:

Location:

ALS Lab Work Order # (lab use only):

ALS Contact:

Sampler: BB, ZW

Analysis Request — Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	BTX, F1-F4-WP (P)	FC-MF-WP	ROUHC-D-1-WP (F/P)	TC, EC-DTS2-WP (P)	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	RW-42	21.07.20	1141	W	9	✓	✓	✓	✓		

Drinking Water (DW) Samples[1] **(client use)**

Are samples taken from a Regulated DW System? [ ] YES [ ] NO

Are samples for human consumption/ use? [ ] YES [ ] NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen [ ] | SIF Observations Yes [ ] No [ ]

Ice Packs [ ] Ice Cubes [ ] | Custody seal intact Yes [ ] No [ ]

Cooling Initiated [ ]

INITIAL COOLER TEMPERATURES °C: 13

FINAL COOLER TEMPERATURES °C:

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: B. Lypard	Date: 21.07.20	Time: 1615	Received by: [signature]	Date: JUL 22 2020	Time:	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION — WHITE - LABORATORY COPY — YELLOW - CLIENT COPY — JUNE 2018 FRONT

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477632
Project Ref: 111475107
Sample ID: RW-44
Sampled By:
Date Collected: 20-JUL-20
Lab Sample ID: L2477632-1
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F4						
Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total Hydrocarbons						
F1-BTEX	<0.10		mg/L			25-JUL-20
Total Hydrocarbons (C6-C50)	<0.38		mg/L			25-JUL-20
CCME PHC F2-F4 in Water						
F2 (C10-C16)	<0.10		mg/L			24-JUL-20
F3 (C16-C34)	<0.25		mg/L			24-JUL-20
F4 (C34-C50)	<0.25		mg/L			24-JUL-20
Surr: 2-Bromobenzotrifluoride	93.2		%			24-JUL-20
BTX plus F1 by GCMS						
Benzene	<0.00050		mg/L	0.005		24-JUL-20
Toluene	<0.0010		mg/L	0.06	0.024	24-JUL-20
Ethyl benzene	<0.00050		mg/L	0.14	0.0016	24-JUL-20
o-Xylene	<0.00050		mg/L			24-JUL-20
m+p-Xylenes	<0.00040		mg/L			24-JUL-20
F1 (C6-C10)	<0.10		mg/L			24-JUL-20
Surr: 4-Bromofluorobenzene (SS)	88.4		%			24-JUL-20
ROU4W Dissolved - Low Range						
Bicarbonate (HCO3)	251		mg/L			24-JUL-20
Carbonate (CO3)	<0.60		mg/L			24-JUL-20
Hydroxide (OH)	<0.34		mg/L			24-JUL-20
*Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20
pH						
pH	8.29		pH units			22-JUL-20
Turbidity						
*Turbidity	0.39		NTU			23-JUL-20
TDS calculated						
TDS (Calculated)	392		mg/L		500	27-JUL-20
Sulfate in Water by IC						
Sulfate (SO4)	119		mg/L		500	22-JUL-20
Nitrite in Water by IC (Low Level)						
*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Water by IC (Low Level)						
*Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance Calculation						
Hardness Calculated						
Hardness (as CaCO3)	222		mg/L		500	27-JUL-20

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477632
Project Ref: 111475107
Sample ID: RW-44
Sampled By:
Date Collected: 20-JUL-20
Lab Sample ID: L2477632-1
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.869		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals Filtration Location	FIELD					23-JUL-20
Calcium (Ca)-Dissolved	44.4		mg/L			23-JUL-20
Iron (Fe)-Dissolved	0.068		mg/L		0.3	23-JUL-20
Magnesium (Mg)-Dissolved	27.0		mg/L			23-JUL-20
Manganese (Mn)-Dissolved	0.00345		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	8.70		mg/L			23-JUL-20
Sodium (Na)-Dissolved	47.0		mg/L		200	23-JUL-20
Conductivity						
Conductivity	633		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (Cl)	22.9		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	206		mg/L			22-JUL-20
Fecal Coliforms	<1	MBHT	CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	0	MBHT	MPN/100mL	0		22-JUL-20
Escherichia Coli	0	MBHT	MPN/100mL	0		22-JUL-20

CDWQG = Health Canada Guideline Limits updated **JUNE 2019**

* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only. If present as Nitrate then the limit is 10mg/L < or N.D. = less than detection limit.
* Turbidity guideline based on membrane filtration. For guidelines on conventional treatment and slow sand or diatomaceous earth filtration please see Summary Table of Guidelines for Canadian Drinking Water Quality
- A blank entry designates no known limit.
- A shaded value in the Results column exceeds CDWQG MAC and/ or Aesthetic Objective.

Approved by

Hua Wo
Account Manager

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477632
Project Ref: 111475107
Sample ID: RW-45
Sampled By:
Date Collected: 20-JUL-20
Lab Sample ID: L2477632-2
Matrix: W

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F4						
Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total Hydrocarbons						
F1-BTEX	<0.10		mg/L			25-JUL-20
Total Hydrocarbons (C6-C50)	<0.38		mg/L			25-JUL-20
CCME PHC F2-F4 in Water						
F2 (C10-C16)	<0.10		mg/L			24-JUL-20
F3 (C16-C34)	<0.25		mg/L			24-JUL-20
F4 (C34-C50)	<0.25		mg/L			24-JUL-20
Surr: 2-Bromobenzotrifluoride	119.7		%			24-JUL-20
BTX plus F1 by GCMS						
Benzene	<0.00050		mg/L	0.005		24-JUL-20
Toluene	<0.0010		mg/L	0.06	0.024	24-JUL-20
Ethyl benzene	<0.00050		mg/L	0.14	0.0016	24-JUL-20
o-Xylene	<0.00050		mg/L			24-JUL-20
m+p-Xylenes	<0.00040		mg/L			24-JUL-20
F1 (C6-C10)	<0.10		mg/L			24-JUL-20
Surr: 4-Bromofluorobenzene (SS)	87.1		%			24-JUL-20
ROU4W Dissolved - Low Range						
Bicarbonate (HCO3)	249		mg/L			24-JUL-20
Carbonate (CO3)	4.68		mg/L			24-JUL-20
Hydroxide (OH)	<0.34		mg/L			24-JUL-20
*Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20
pH						
pH	8.33		pH units			22-JUL-20
Turbidity						
*Turbidity	0.18		NTU			23-JUL-20
TDS calculated						
TDS (Calculated)	406		mg/L		500	27-JUL-20
Sulfate in Water by IC						
Sulfate (SO4)	126		mg/L		500	22-JUL-20
Nitrite in Water by IC (Low Level)						
*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Water by IC (Low Level)						
*Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance Calculation						
Hardness Calculated						
Hardness (as CaCO3)	230		mg/L		500	27-JUL-20

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477632
Project Ref: 111475107
Sample ID: RW-45
Sampled By:
Date Collected: 20-JUL-20
Lab Sample ID: L2477632-2
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.793		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals Filtration Location	FIELD					23-JUL-20
Calcium (Ca)-Dissolved	43.3		mg/L			23-JUL-20
Iron (Fe)-Dissolved	0.030		mg/L		0.3	23-JUL-20
Magnesium (Mg)-Dissolved	29.5		mg/L			23-JUL-20
Manganese (Mn)-Dissolved	0.00641		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	7.19		mg/L			23-JUL-20
Sodium (Na)-Dissolved	50.0		mg/L		200	23-JUL-20
Conductivity						
Conductivity	656		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (Cl)	23.6		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	212		mg/L			22-JUL-20
Fecal Coliforms	<1	MBHT	CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	0	MBHT	MPN/100mL	0		22-JUL-20
Escherichia Coli	0	MBHT	MPN/100mL	0		22-JUL-20

CDWQG = Health Canada Guideline Limits updated **JUNE 2019**

* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only. If present as Nitrate then the limit is 10mg/L < or N.D. = less than detection limit.
* Turbidity guideline based on membrane filtration. For guidelines on conventional treatment and slow sand or diatomaceous earth filtration please see Summary Table of Guidelines for Canadian Drinking Water Quality
- A blank entry designates no known limit.
- A shaded value in the Results column exceeds CDWQG MAC and/ or Aesthetic Objective.

Approved by

Hua Wo
Account Manager

Guidelines & Objectives

Sample Parameter Qualifier key listed:

Qualifier	Description
MBHT	The APHA 30 hour hold time was exceeded for microbiological testing. Samples processed within 48 hours from time of sampling may

be valid in some cases (refer to Health Canada guidance).

Health Canada MAC Health Related Criteria Limits

Nitrate/Nitrite-N*	Criteria limit is 10 mg/L (1.0 mg/L if present as all Nitrite-N). High concentrations may contribute to blue baby syndrome in infants.
Lead*	A cumulative body poison, uncommon in naturally occurring hard waters.
Fluoride*	Present in fluoridated water supplies at 0.8 mg/L to reduce dental caries. Elevated levels causes fluorosis (mottling of teeth).
Total Coliforms*	Criteria is 0 CFU/100mL. Adverse health effects.
E. Coli*	Criteria is 0 CFU/100 mL. Certain E. Coli bacteria can be life threatening.
Manganese*	Criteria limit is 0.12 mg/L. Possible neurological effects in infants.

*Health Canada Canadian Drinking Water Quality Guidelines (MAC limit)

Aesthetic Objective Concentration Levels

Alkalinity	Acid neutralizing capacity. Usually a measure of carbonate and bicarbonates and calculated and reported as calcium carbonate.
Balance	Quality control parameter ratioing cations to anions
Bicarbonate	See Alkalinity. Report as the anion HCO3-1
Carbonate	See Alkalinity. Reported at the anion CO3-2
Calcium	See Hardness. Common major cation of water chemistry.
Chloride	Common major anion of water chemistry.
Conductance	Physical test measuring water salinity (dissolved ions or solids)
Hardness	Classical measure or capacity of water to precipitate soap (chiefly calcium and magnesium ions). Causes scaling tendency in water if carbonates/bicarbonates are present (if >200 mg/L). For drinking water purposes waters with results <200 mg/L are considered acceptable, results >200 mg/L are considered poor but can be tolerated. Results >500 mg/L are unacceptable.
Hydroxide	See alkalinity
Magnesium	See hardness. Common major cation of water chemistry. Elevated levels (>125 mg/L) may exert a cathartic or diuretic action.
pH	Measure of water acidity/alkalinity. Normal range is 7.0-8.5.
Potassium	Common major cation of water chemistry.
Sodium	Common major cation of water chemistry. Measure of salinity (saltiness).The aesthetic objective (not related to health) for sodium in drinking water is 200 mg/L. However, where sodium concentration of the drinking water exceeds 20 mg/L, it is recommended that any person on a sodium restricted diet consult with his/her physician or Medical Officer of Health concerning the use of that water.
Sulphate	Common major anion of water chemistry. Elevated levels may exert a cathartic or diuretic action.
Total Dissolved Solids	A measure of water salinity.
Iron	Causes staining to laundry and porcelain and astringent taste. Oxidizes to red-brown precipitate on exposure to air.
Heterotrophic Plate Count	Criteria is 500 cfu/mL Measure of heterotrophic bacteria present.

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
Contact: Tassia Stainton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	**Water**							
Batch R5166298								
WG3369055-24 LCS								
Alkalinity, Total (as CaCO3)			105.5		%		85-115	22-JUL-20
WG3369055-21 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	22-JUL-20
BTEXS+F1-HSMS-WP	**Water**							
Batch R5166645								
WG3368156-2 LCS								
Benzene			116.2		%		70-130	23-JUL-20
Toluene			98.2		%		70-130	23-JUL-20
Ethyl benzene			98.4		%		70-130	23-JUL-20
o-Xylene			113.0		%		70-130	23-JUL-20
m+p-Xylenes			111.4		%		70-130	23-JUL-20
WG3368156-3 LCS								
F1 (C6-C10)			98.7		%		70-130	23-JUL-20
WG3368156-1 MB								
Benzene			<0.00050		mg/L		0.0005	23-JUL-20
Toluene			<0.0010		mg/L		0.001	23-JUL-20
Ethyl benzene			<0.00050		mg/L		0.0005	23-JUL-20
o-Xylene			<0.00050		mg/L		0.0005	23-JUL-20
m+p-Xylenes			<0.00040		mg/L		0.0004	23-JUL-20
F1 (C6-C10)			<0.10		mg/L		0.1	23-JUL-20
Surrogate: 4-Bromofluorobenzene (SS)			85.2		%		70-130	23-JUL-20
CL-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-11 DUP		**L2477632-1**						
Chloride (Cl)		22.9	22.9		mg/L	0.0	20	22-JUL-20
WG3367901-10 LCS								
Chloride (Cl)			100.1		%		90-110	22-JUL-20
WG3367901-9 MB								
Chloride (Cl)			<0.10		mg/L		0.1	22-JUL-20
WG3367901-12 MS		**L2477632-1**						
Chloride (Cl)			108.7		%		75-125	22-JUL-20
EC-WP	**Water**							
Batch R5166298								
WG3369055-23 LCS								
Conductivity			98.0		%		90-110	22-JUL-20
WG3369055-21 MB								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-WP	**Water**							
Batch R5166298								
WG3369055-21 MB								
Conductivity			<1.0		umhos/cm		1	22-JUL-20
F-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-11 DUP		**L2477632-1**						
Fluoride (F)		0.869	0.863		mg/L	0.7	20	22-JUL-20
WG3367901-10 LCS								
Fluoride (F)			101.4		%		90-110	22-JUL-20
WG3367901-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	22-JUL-20
WG3367901-12 MS		**L2477632-1**						
Fluoride (F)			104.3		%		75-125	22-JUL-20
F2-F4-FID-WP	**Water**							
Batch R5167079								
WG3369781-2 LCS								
F2 (C10-C16)			99.4		%		70-130	24-JUL-20
F3 (C16-C34)			91.9		%		70-130	24-JUL-20
F4 (C34-C50)			107.6		%		70-130	24-JUL-20
WG3369781-1 MB								
F2 (C10-C16)			<0.10		mg/L		0.1	24-JUL-20
F3 (C16-C34)			<0.25		mg/L		0.25	24-JUL-20
F4 (C34-C50)			<0.25		mg/L		0.25	24-JUL-20
Surrogate: 2-Bromobenzotrifluoride			87.8		%		60-140	24-JUL-20
FC-MF-WP	**Water**							
Batch R5164763								
WG3368074-1 MB								
Fecal Coliforms			<1		CFU/100mL		1	22-JUL-20
WG3368074-2 MB								
Fecal Coliforms			<1		CFU/100mL		1	22-JUL-20
MET-D-CCMS-WP	**Water**							
Batch R5166699								
WG3368715-2 LCS								
Calcium (Ca)-Dissolved			99.3		%		80-120	23-JUL-20
Iron (Fe)-Dissolved			94.4		%		80-120	23-JUL-20
Magnesium (Mg)-Dissolved			102.0		%		80-120	23-JUL-20
Manganese (Mn)-Dissolved			100.7		%		80-120	23-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5166699								
WG3368715-2 LCS								
Potassium (K)-Dissolved			103.3		%		80-120	23-JUL-20
Sodium (Na)-Dissolved			99.0		%		80-120	23-JUL-20
WG3368715-1 MB								
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-JUL-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-JUL-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-JUL-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
NO2-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-11 DUP		**L2477632-1**						
Nitrite (as N)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	22-JUL-20
WG3367901-10 LCS								
Nitrite (as N)			101.6		%		90-110	22-JUL-20
WG3367901-9 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	22-JUL-20
WG3367901-12 MS		**L2477632-1**						
Nitrite (as N)			109.0		%		75-125	22-JUL-20
NO3-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-11 DUP		**L2477632-1**						
Nitrate (as N)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	22-JUL-20
WG3367901-10 LCS								
Nitrate (as N)			103.0		%		90-110	22-JUL-20
WG3367901-9 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	22-JUL-20
WG3367901-12 MS		**L2477632-1**						
Nitrate (as N)			110.9		%		75-125	22-JUL-20
PH-WP	**Water**							
Batch R5166298								
WG3369055-22 LCS								
pH			7.33		pH units		7.3-7.5	22-JUL-20
SO4-IC-N-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-11 DUP		**L2477632-1**						
Sulfate (SO4)		119	119		mg/L	0.4	20	22-JUL-20
WG3367901-10 LCS								
Sulfate (SO4)			102.5		%		90-110	22-JUL-20
WG3367901-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	22-JUL-20
WG3367901-12 MS		**L2477632-1**						
Sulfate (SO4)			N/A	MS-B	%		-	22-JUL-20
TC,EC-QT51-WP	**Water**							
Batch R5165685								
WG3367867-5 DUP		**L2477632-1**						
Total Coliforms		0	0		MPN/100mL	0.0	65	22-JUL-20
Escherichia Coli		0	0		MPN/100mL	0.0	65	22-JUL-20
WG3367867-6 DUP		**L2477632-2**						
Total Coliforms		0	0		MPN/100mL	0.0	65	22-JUL-20
Escherichia Coli		0	0		MPN/100mL	0.0	65	22-JUL-20
WG3367867-12 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
WG3367867-13 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
WG3367867-14 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
TURBIDITY-WP	**Water**							
Batch R5166411								
WG3369614-2 LCS								
Turbidity			95.0		%		85-115	23-JUL-20
WG3369614-1 MB								
Turbidity			<0.10		NTU		0.1	23-JUL-20

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH							
	1	20-JUL-20 18:06	22-JUL-20 12:00	0.25	42	hours	EHTR-FM
	2	20-JUL-20 18:20	22-JUL-20 12:00	0.25	42	hours	EHTR-FM
Bacteriological Tests							
Fecal Coliform							
	1	20-JUL-20 18:06	22-JUL-20 14:10	30	44	hours	EHTR
	2	20-JUL-20 18:20	22-JUL-20 14:10	30	44	hours	EHTR
Total Coliform and E.coli							
	1	20-JUL-20 18:06	22-JUL-20 12:50	30	43	hours	EHTR
	2	20-JUL-20 18:20	22-JUL-20 12:50	30	42	hours	EHTR

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2477632 were received on 22-JUL-20 08:00.

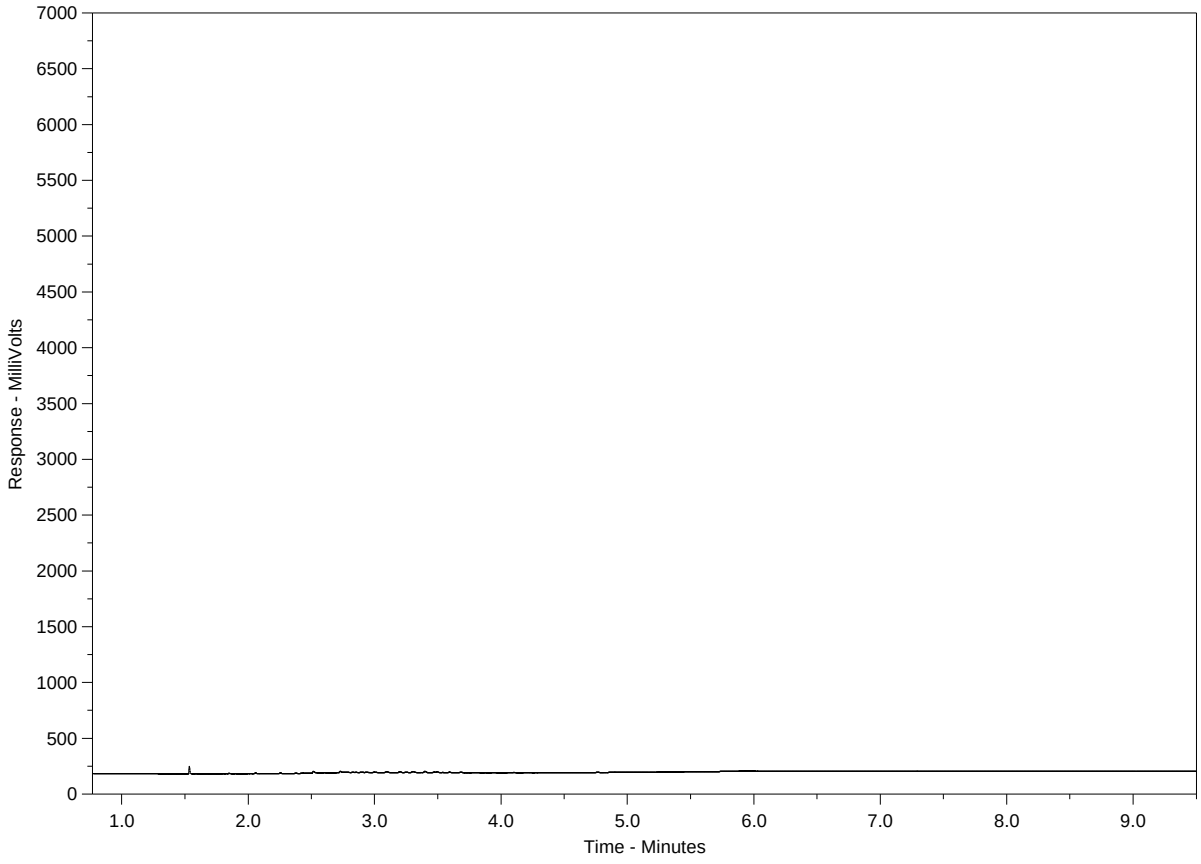
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

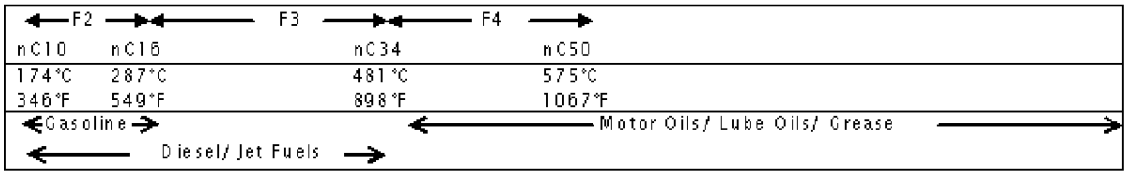
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2477632-1
Client Sample ID: RW-44





The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

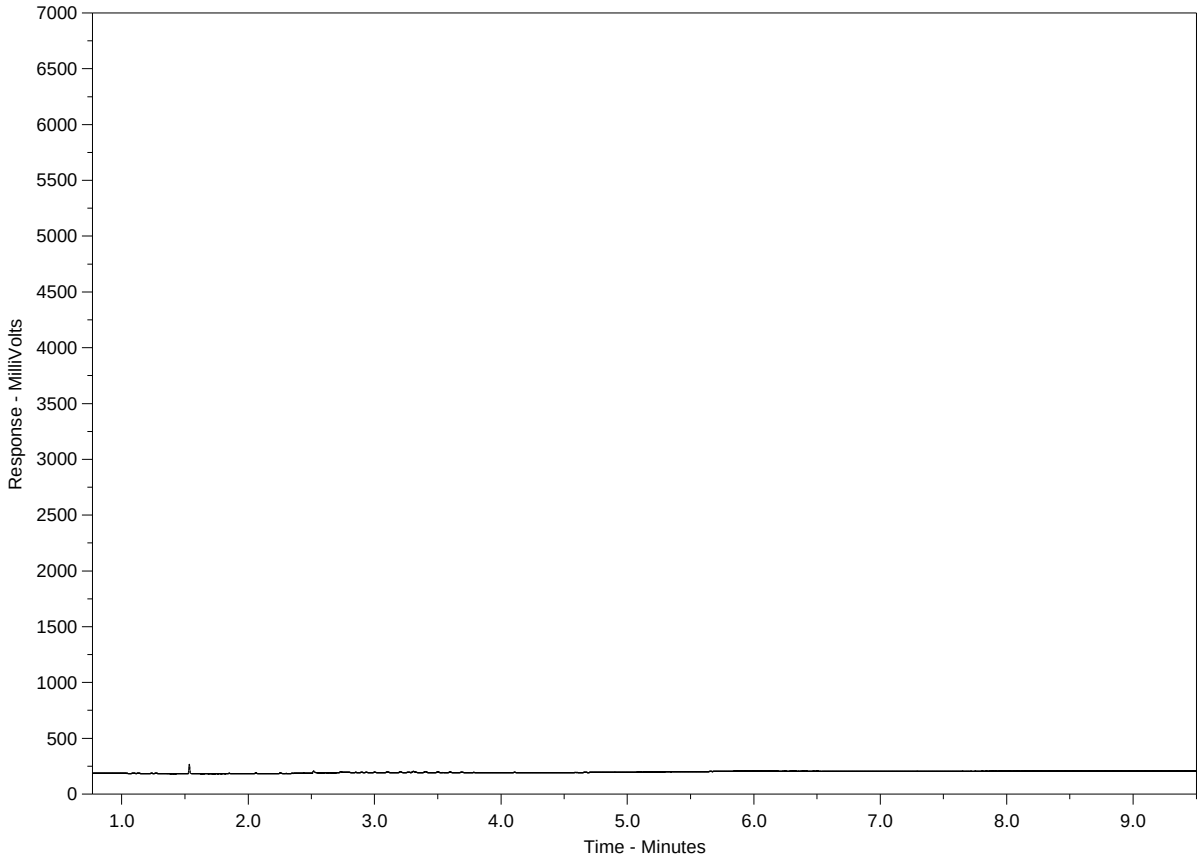
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

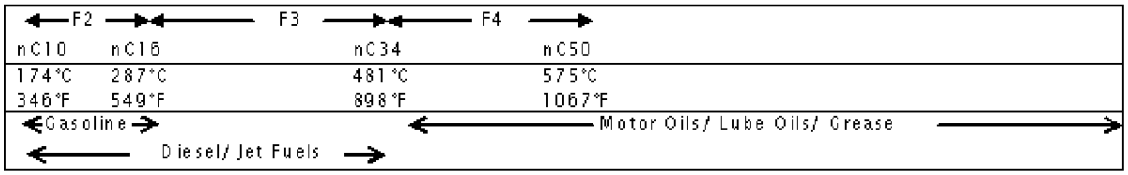
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2477632-2
Client Sample ID: RW-45





The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2477632-COFC

COC Number: 17 - 749866

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	Stantec W3077
Contact:	Tessia Stantec
Phone:	
	Company address below will appear on the final report
Street:	500-311 Portage Ave
City/Province:	Win, MB
Postal Code:	R3B 2B9
Invoice To	Same as Report To [X] YES [ ] NO
	Copy of Invoice with Report [ ] YES [ ] NO
Company:	
Contact:	

Report Format / Distribution	
Select Report Format:	[X] PDF [X] EXCEL [X] EDD (DIGITAL)
Quality Control (QC) Report with Report	[X] YES [ ] NO
[ ] Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	[X] EMAIL [ ] MAIL [ ] FAX
Email 1 or Fax	tessia.stantec@stantec.com
Email 2	karen.matthis@stantec.com
Email 3	

Invoice Distribution	
Select Invoice Distribution:	[X] EMAIL [ ] MAIL [ ] FAX
Email 1 or Fax	
Email 2	

Project Information	
ALS Account # / Quote #:	QB0404
Job #:	114751107
PO / AFE:	
LSD:	
ALS Lab Work Order # (lab use only):	

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	
ALS Contact:	Sampler: BB, ZW

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] [X] Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] [ ] | 3 day [P3-25%] [ ] | 2 day [P2-50%] [ ]

EMERGENCY: 1 Business day [E - 100%] [ ] | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] [ ]

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	BTX, F1-F4-WP	F2-MF-WP	ROHC-D-L-WP	TC,EC-QTSI-WP	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	RW-44	20-07-30	1806	W	9	✓	✓	✓	✓		
	RW-45	1	1830	1	9	✓	✓	✓	✓		

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? [ ] YES [ ] NO	
Are samples for human consumption/ use? [ ] YES [ ] NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	[ ]	SIF Observations	Yes [ ]	No	[ ]
Ice Packs [ ]	Ice Cubes [ ]	Custody seal intact	Yes [ ]	No	[ ]
Cooling Initiated [ ]					

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
			1-3				

SHIPMENT RELEASE (client use)		
Released by:	Date:	Time:
B. Lynd	July 30, 2020	1645

INITIAL SHIPMENT RECEPTION (lab use only)		
Received by:	Date:	Time:
	JUL 22 2020	

FINAL SHIPMENT RECEPTION (lab use only)		
Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form.**

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477635
Project Ref: 111475107
Sample ID: RW-51
Sampled By:
Date Collected: 20-JUL-20
Lab Sample ID: L2477635-1
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F4						
Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total Hydrocarbons						
F1-BTEX	<0.10		mg/L			25-JUL-20
Total Hydrocarbons (C6-C50)	<0.38		mg/L			25-JUL-20
CCME PHC F2-F4 in Water						
F2 (C10-C16)	<0.10		mg/L			24-JUL-20
F3 (C16-C34)	<0.25		mg/L			24-JUL-20
F4 (C34-C50)	<0.25		mg/L			24-JUL-20
Surr: 2-Bromobenzotrifluoride	96.3		%			24-JUL-20
BTX plus F1 by GCMS						
Benzene	<0.00050		mg/L	0.005		24-JUL-20
Toluene	<0.0010		mg/L	0.06	0.024	24-JUL-20
Ethyl benzene	<0.00050		mg/L	0.14	0.0016	24-JUL-20
o-Xylene	<0.00050		mg/L			24-JUL-20
m+p-Xylenes	<0.00040		mg/L			24-JUL-20
F1 (C6-C10)	<0.10		mg/L			24-JUL-20
Surr: 4-Bromofluorobenzene (SS)	90.4		%			24-JUL-20
ROU4W Dissolved - Low Range						
Bicarbonate (HCO3)	294		mg/L			24-JUL-20
Carbonate (CO3)	3.60		mg/L			24-JUL-20
Hydroxide (OH)	<0.34		mg/L			24-JUL-20
*Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20
pH						
pH	8.31		pH units			22-JUL-20
Turbidity						
*Turbidity	1.35		NTU			23-JUL-20
TDS calculated						
TDS (Calculated)	463		mg/L		500	27-JUL-20
Sulfate in Water by IC						
Sulfate (SO4)	153		mg/L		500	22-JUL-20
Nitrite in Water by IC (Low Level)						
*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Water by IC (Low Level)						
*Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance Calculation						
Hardness Calculated						
Hardness (as CaCO3)	295		mg/L		500	27-JUL-20

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 27-JUL-20
PO No.: 111475107
WO No.: L2477635
Project Ref: 111475107
Sample ID: RW-51
Sampled By:
Date Collected: 20-JUL-20
Lab Sample ID: L2477635-1
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.535		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals Filtration Location	FIELD					23-JUL-20
Calcium (Ca)-Dissolved	55.2		mg/L			23-JUL-20
Iron (Fe)-Dissolved	0.105		mg/L		0.3	23-JUL-20
Magnesium (Mg)-Dissolved	38.2		mg/L			23-JUL-20
Manganese (Mn)-Dissolved	0.00813		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	9.77		mg/L			23-JUL-20
Sodium (Na)-Dissolved	40.9		mg/L		200	23-JUL-20
Conductivity						
Conductivity	733		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (Cl)	17.4		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	247		mg/L			22-JUL-20
Fecal Coliforms	<1	MBHT	CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	0	MBHT	MPN/100mL	0		22-JUL-20
Escherichia Coli	0	MBHT	MPN/100mL	0		22-JUL-20

CDWQG = Health Canada Guideline Limits updated **JUNE 2019**

* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only. If present as Nitrate then the limit is 10mg/L < or N.D. = less than detection limit.
* Turbidity guideline based on membrane filtration. For guidelines on conventional treatment and slow sand or diatomaceous earth filtration please see Summary Table of Guidelines for Canadian Drinking Water Quality
- A blank entry designates no known limit.
- A shaded value in the Results column exceeds CDWQG MAC and/ or Aesthetic Objective.

Approved by

Hua Wo
Account Manager

Guidelines & Objectives

Sample Parameter Qualifier key listed:

Qualifier	Description
MBHT	The APHA 30 hour hold time was exceeded for microbiological testing. Samples processed within 48 hours from time of sampling may

be valid in some cases (refer to Health Canada guidance).

Health Canada MAC Health Related Criteria Limits

Nitrate/Nitrite-N*	Criteria limit is 10 mg/L (1.0 mg/L if present as all Nitrite-N). High concentrations may contribute to blue baby syndrome in infants.
Lead*	A cumulative body poison, uncommon in naturally occurring hard waters.
Fluoride*	Present in fluoridated water supplies at 0.8 mg/L to reduce dental caries. Elevated levels causes fluorosis (mottling of teeth).
Total Coliforms*	Criteria is 0 CFU/100mL. Adverse health effects.
E. Coli*	Criteria is 0 CFU/100 mL. Certain E. Coli bacteria can be life threatening.
Manganese*	Criteria limit is 0.12 mg/L. Possible neurological effects in infants.

*Health Canada Canadian Drinking Water Quality Guidelines (MAC limit)

Aesthetic Objective Concentration Levels

Alkalinity	Acid neutralizing capacity. Usually a measure of carbonate and bicarbonates and calculated and reported as calcium carbonate.
Balance	Quality control parameter ratioing cations to anions
Bicarbonate	See Alkalinity. Report as the anion HCO3-1
Carbonate	See Alkalinity. Reported at the anion CO3-2
Calcium	See Hardness. Common major cation of water chemistry.
Chloride	Common major anion of water chemistry.
Conductance	Physical test measuring water salinity (dissolved ions or solids)
Hardness	Classical measure or capacity of water to precipitate soap (chiefly calcium and magnesium ions). Causes scaling tendency in water if carbonates/bicarbonates are present (if >200 mg/L). For drinking water purposes waters with results <200 mg/L are considered acceptable, results >200 mg/L are considered poor but can be tolerated. Results >500 mg/L are unacceptable.
Hydroxide	See alkalinity
Magnesium	See hardness. Common major cation of water chemistry. Elevated levels (>125 mg/L) may exert a cathartic or diuretic action.
pH	Measure of water acidity/alkalinity. Normal range is 7.0-8.5.
Potassium	Common major cation of water chemistry.
Sodium	Common major cation of water chemistry. Measure of salinity (saltiness).The aesthetic objective (not related to health) for sodium in drinking water is 200 mg/L. However, where sodium concentration of the drinking water exceeds 20 mg/L, it is recommended that any person on a sodium restricted diet consult with his/her physician or Medical Officer of Health concerning the use of that water.
Sulphate	Common major anion of water chemistry. Elevated levels may exert a cathartic or diuretic action.
Total Dissolved Solids	A measure of water salinity.
Iron	Causes staining to laundry and porcelain and astringent taste. Oxidizes to red-brown precipitate on exposure to air.
Heterotrophic Plate Count	Criteria is 500 cfu/mL Measure of heterotrophic bacteria present.

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2477635 Report Date: 27-JUL-20

Client: Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
Contact: Tassia Stainton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	**Water**							
Batch R5166298								
WG3369055-24 LCS								
Alkalinity, Total (as CaCO3)			105.5		%		85-115	22-JUL-20
WG3369055-21 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	22-JUL-20
BTEXS+F1-HSMS-WP	**Water**							
Batch R5166645								
WG3368156-2 LCS								
Benzene			116.2		%		70-130	23-JUL-20
Toluene			98.2		%		70-130	23-JUL-20
Ethyl benzene			98.4		%		70-130	23-JUL-20
o-Xylene			113.0		%		70-130	23-JUL-20
m+p-Xylenes			111.4		%		70-130	23-JUL-20
WG3368156-3 LCS								
F1 (C6-C10)			98.7		%		70-130	23-JUL-20
WG3368156-1 MB								
Benzene			<0.00050		mg/L		0.0005	23-JUL-20
Toluene			<0.0010		mg/L		0.001	23-JUL-20
Ethyl benzene			<0.00050		mg/L		0.0005	23-JUL-20
o-Xylene			<0.00050		mg/L		0.0005	23-JUL-20
m+p-Xylenes			<0.00040		mg/L		0.0004	23-JUL-20
F1 (C6-C10)			<0.10		mg/L		0.1	23-JUL-20
Surrogate: 4-Bromofluorobenzene (SS)			85.2		%		70-130	23-JUL-20
CL-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Chloride (Cl)			100.1		%		90-110	22-JUL-20
WG3367901-9 MB								
Chloride (Cl)			<0.10		mg/L		0.1	22-JUL-20
EC-WP	**Water**							
Batch R5166298								
WG3369055-23 LCS								
Conductivity			98.0		%		90-110	22-JUL-20
WG3369055-21 MB								
Conductivity			<1.0		umhos/cm		1	22-JUL-20
F-IC-N-WP	**Water**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Fluoride (F)			101.4		%		90-110	22-JUL-20
WG3367901-9 MB								
Fluoride (F)			<0.020		mg/L		0.02	22-JUL-20
F2-F4-FID-WP	**Water**							
Batch R5167079								
WG3369781-2 LCS								
F2 (C10-C16)			99.4		%		70-130	24-JUL-20
F3 (C16-C34)			91.9		%		70-130	24-JUL-20
F4 (C34-C50)			107.6		%		70-130	24-JUL-20
WG3369781-1 MB								
F2 (C10-C16)			<0.10		mg/L		0.1	24-JUL-20
F3 (C16-C34)			<0.25		mg/L		0.25	24-JUL-20
F4 (C34-C50)			<0.25		mg/L		0.25	24-JUL-20
Surrogate: 2-Bromobenzotrifluoride			87.8		%		60-140	24-JUL-20
FC-MF-WP	**Water**							
Batch R5164763								
WG3368074-1 MB								
Fecal Coliforms			<1		CFU/100mL		1	22-JUL-20
WG3368074-2 MB								
Fecal Coliforms			<1		CFU/100mL		1	22-JUL-20
MET-D-CCMS-WP	**Water**							
Batch R5166699								
WG3368715-2 LCS								
Calcium (Ca)-Dissolved			99.3		%		80-120	23-JUL-20
Iron (Fe)-Dissolved			94.4		%		80-120	23-JUL-20
Magnesium (Mg)-Dissolved			102.0		%		80-120	23-JUL-20
Manganese (Mn)-Dissolved			100.7		%		80-120	23-JUL-20
Potassium (K)-Dissolved			103.3		%		80-120	23-JUL-20
Sodium (Na)-Dissolved			99.0		%		80-120	23-JUL-20
WG3368715-1 MB								
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-JUL-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-JUL-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-JUL-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-JUL-20

Quality Control Report

Workorder: L2477635 Report Date: 27-JUL-20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5166699								
WG3368715-1 MB								
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
NO2-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Nitrite (as N)			101.6		%		90-110	22-JUL-20
WG3367901-9 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	22-JUL-20
NO3-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Nitrate (as N)			103.0		%		90-110	22-JUL-20
WG3367901-9 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	22-JUL-20
PH-WP	**Water**							
Batch R5166298								
WG3369055-22 LCS								
pH			7.33		pH units		7.3-7.5	22-JUL-20
SO4-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-10 LCS								
Sulfate (SO4)			102.5		%		90-110	22-JUL-20
WG3367901-9 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	22-JUL-20
TC,EC-QT51-WP	**Water**							
Batch R5165685								
WG3367867-8 DUP		**L2477635-1**						
Total Coliforms		0	0		MPN/100mL	0.0	65	22-JUL-20
Escherichia Coli		0	0		MPN/100mL	0.0	65	22-JUL-20
WG3367867-12 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
WG3367867-13 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TC,EC-QT51-WP	**Water**							
Batch R5165685								
WG3367867-14 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
TURBIDITY-WP	**Water**							
Batch R5166411								
WG3369614-2 LCS								
Turbidity			95.0		%		85-115	23-JUL-20
WG3369614-1 MB								
Turbidity			<0.10		NTU		0.1	23-JUL-20

Quality Control Report

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH							
	1	20-JUL-20 16:50	22-JUL-20 12:00	0.25	43	hours	EHTR-FM
Bacteriological Tests							
Fecal Coliform							
	1	20-JUL-20 16:50	22-JUL-20 14:10	30	45	hours	EHTR
Total Coliform and E.coli							
	1	20-JUL-20 16:50	22-JUL-20 12:50	30	44	hours	EHTR

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2477635 were received on 22-JUL-20 08:00.

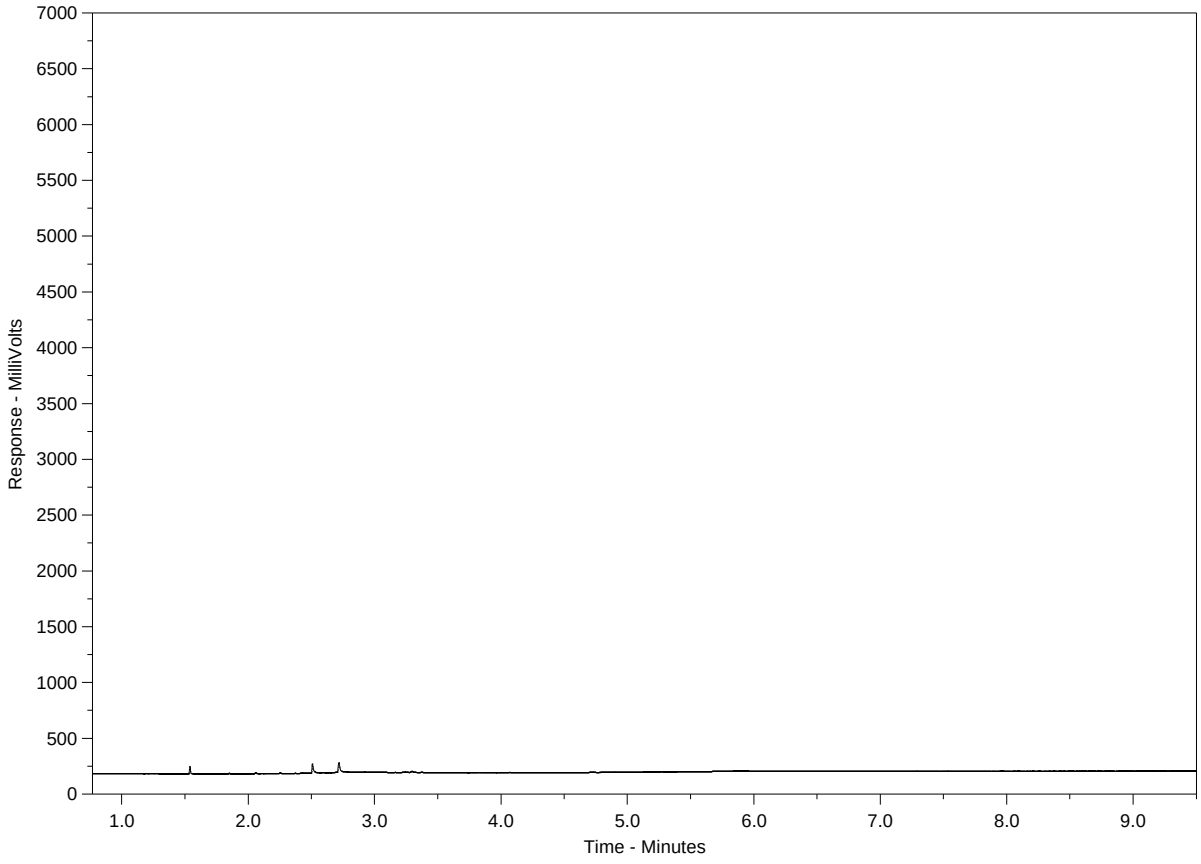
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

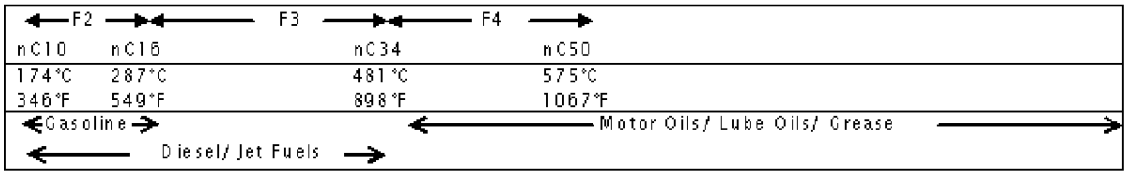
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2477635-1
Client Sample ID: RW-51





The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2477635-COFC

COC Number: 17 - 749864

Page 1 of 1

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)
Company:	Stantec WSDT	Select Report Format: ☒ PDF ☒ EXCEL ☐ EDD (DIGITAL)	Regular [R] ☒ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Tessia Stanton	Quality Control (QC) Report with Report ☒ YES ☐ NO	PRIORITY (Business Days): 4 day [P4-20%] ☐ / 3 day [P3-25%] ☐ / 2 day [P2-50%] ☐
Phone:	204-982-7615	☐ Compare Results to Criteria on Report - provide details below if box checked	EMERGENCY: 1 Business day [E - 100%] ☐ / Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐
Company address below will appear on the final report		Select Distribution: ☒ EMAIL ☐ MAIL ☐ FAX	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
Street:	500-311 Portage Ave	Email 1 or Fax: tessia.stanton@stantec.com	For tests that can not be performed according to the service level selected, you will be contacted.
City/Province:	Wpg. MB	Email 2: karen.matheson@stantec.com	
Postal Code:	R3B 2B9	Email 3	
Invoice To	Same as Report To ☒ YES ☐ NO	**Invoice Distribution**	
	Copy of Invoice with Report ☐ YES ☐ NO	Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX	
Company:		Email 1 or Fax	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q30404	AFE/Cost Center:	PO#
Job #:	114751107	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):		ALS Contact:	Sampler: BB, ZW

Analysis Request — Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	P		F/P	P										SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
						BEX, F1-FH-WP	EC-MF-WP	RO(HW)-D-L-WP	TC, EC-QTS1-WP											
	RW-51	20-07-20	1650	W	9	✓	✓	✓	✓											

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☐ NO	
Are samples for human consumption/ use? ☐ YES ☐ NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	☐	SIF Observations	Yes ☐	No ☐		
Ice Packs	☐	Ice Cubes ☐	Custody seal intact	Yes ☐	No ☐	
Cooling Initiated	☐					

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
			1.3				

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
B Lynd	July 21, 2020	1645		JUL 22 2020				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 29-JUL-20
PO No.: 111475107
WO No.: L2477630
Project Ref: 111475107
Sample ID: TRIP
Sampled By:
Date Collected:
Lab Sample ID: L2477630-1
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F4						
Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total Hydrocarbons						
F1-BTEX	<0.10		mg/L			25-JUL-20
Total Hydrocarbons (C6-C50)	<0.38		mg/L			25-JUL-20
CCME PHC F2-F4 in Water						
F2 (C10-C16)	<0.10		mg/L			24-JUL-20
F3 (C16-C34)	<0.25		mg/L			24-JUL-20
F4 (C34-C50)	<0.25		mg/L			24-JUL-20
Surr: 2-Bromobenzotrifluoride	94.0		%			24-JUL-20
BTX plus F1 by GCMS						
Benzene	<0.00050		mg/L	0.005		23-JUL-20
Toluene	<0.0010		mg/L	0.06	0.024	23-JUL-20
Ethyl benzene	<0.00050		mg/L	0.14	0.0016	23-JUL-20
o-Xylene	<0.00050		mg/L			23-JUL-20
m+p-Xylenes	<0.00040		mg/L			23-JUL-20
F1 (C6-C10)	<0.10		mg/L			23-JUL-20
Surr: 4-Bromofluorobenzene (SS)	88.8		%			23-JUL-20
ROU4W Dissolved - Low Range						
Bicarbonate (HCO3)	2.0		mg/L			24-JUL-20
Carbonate (CO3)	<0.60		mg/L			24-JUL-20
Hydroxide (OH)	<0.34		mg/L			24-JUL-20
*Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20
pH						
pH	6.10		pH units			22-JUL-20
Turbidity						
*Turbidity	<0.10		NTU			23-JUL-20
TDS calculated						
TDS (Calculated)	<5.0		mg/L		500	27-JUL-20
Sulfate in Water by IC						
Sulfate (SO4)	<0.30		mg/L		500	22-JUL-20
Nitrite in Water by IC (Low Level)						
*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Water by IC (Low Level)						
*Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Hardness Calculated						
Hardness (as CaCO3)	<0.20		mg/L		500	27-JUL-20
Fluoride in Water by IC						

Date: 29-JUL-20
PO No.: 111475107
WO No.: L2477630
Project Ref: 111475107
Sample ID: TRIP
Sampled By:
Date Collected:
Lab Sample ID: L2477630-1
Matrix: W

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	<0.020		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals Filtration Location	FIELD					23-JUL-20
Calcium (Ca)-Dissolved	<0.050		mg/L			23-JUL-20
Iron (Fe)-Dissolved	<0.010		mg/L		0.3	23-JUL-20
Magnesium (Mg)-Dissolved	<0.0050		mg/L			23-JUL-20
Manganese (Mn)-Dissolved	<0.00010		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	<0.050		mg/L			23-JUL-20
Sodium (Na)-Dissolved	<0.050		mg/L		200	23-JUL-20
Conductivity						
Conductivity	<1.0		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (Cl)	<0.10		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	1.6		mg/L			22-JUL-20
Fecal Coliforms	<1		CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	0		MPN/100mL	0		22-JUL-20
Escherichia Coli	0		MPN/100mL	0		22-JUL-20

CDWQG = Health Canada Guideline Limits updated **JUNE 2019**

* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only. If present as Nitrate then the limit is 10mg/L < or N.D. = less than detection limit.
* Turbidity guideline based on membrane filtration. For guidelines on conventional treatment and slow sand or diatomaceous earth filtration please see Summary Table of Guidelines for Canadian Drinking Water Quality
- A blank entry designates no known limit.
- A shaded value in the Results column exceeds CDWQG MAC and/ or Aesthetic Objective.

Approved by

Hua Wo
Account Manager

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 29-JUL-20
PO No.: 111475107
WO No.: L2477630
Project Ref: 111475107
Sample ID: FIELD BLANK
Sampled By:
Date Collected:
Lab Sample ID: L2477630-2
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F4						
Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total Hydrocarbons						
F1-BTEX	<0.10		mg/L			25-JUL-20
Total Hydrocarbons (C6-C50)	<0.38		mg/L			25-JUL-20
CCME PHC F2-F4 in Water						
F2 (C10-C16)	<0.10		mg/L			24-JUL-20
F3 (C16-C34)	<0.25		mg/L			24-JUL-20
F4 (C34-C50)	<0.25		mg/L			24-JUL-20
Surr: 2-Bromobenzotrifluoride	91.4		%			24-JUL-20
BTX plus F1 by GCMS						
Benzene	<0.00050		mg/L	0.005		23-JUL-20
Toluene	<0.0010		mg/L	0.06	0.024	23-JUL-20
Ethyl benzene	<0.00050		mg/L	0.14	0.0016	23-JUL-20
o-Xylene	<0.00050		mg/L			23-JUL-20
m+p-Xylenes	<0.00040		mg/L			23-JUL-20
F1 (C6-C10)	<0.10		mg/L			23-JUL-20
Surr: 4-Bromofluorobenzene (SS)	85.3		%			23-JUL-20
ROU4W Dissolved - Low Range						
Bicarbonate (HCO3)	212		mg/L			24-JUL-20
Carbonate (CO3)	4.20		mg/L			24-JUL-20
Hydroxide (OH)	<0.34		mg/L			24-JUL-20
*Nitrate and Nitrite as N	0.794		mg/L	10		24-JUL-20
pH						
pH	8.36		pH units			22-JUL-20
Turbidity						
*Turbidity	<0.10		NTU			23-JUL-20
TDS calculated						
TDS (Calculated)	182		mg/L		500	27-JUL-20
Sulfate in Water by IC						
Sulfate (SO4)	6.05		mg/L		500	22-JUL-20
Nitrite in Water by IC (Low Level)						
*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Water by IC (Low Level)						
*Nitrate (as N)	0.794		mg/L	10		22-JUL-20
Ion Balance Calculation						
Hardness Calculated						
Hardness (as CaCO3)	167		mg/L		500	27-JUL-20

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 29-JUL-20
PO No.: 111475107
WO No.: L2477630
Project Ref: 111475107
Sample ID: FIELD BLANK
Sampled By:
Date Collected:
Lab Sample ID: L2477630-2
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.065		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals Filtration Location	LAB					23-JUL-20
Calcium (Ca)-Dissolved	43.3		mg/L			23-JUL-20
Iron (Fe)-Dissolved	<0.010		mg/L		0.3	23-JUL-20
Magnesium (Mg)-Dissolved	14.2		mg/L			23-JUL-20
Manganese (Mn)-Dissolved	0.00100		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	1.33		mg/L			23-JUL-20
Sodium (Na)-Dissolved	2.60		mg/L		200	23-JUL-20
Conductivity						
Conductivity	324		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (Cl)	3.03		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	180		mg/L			22-JUL-20

CDWQG = Health Canada Guideline Limits updated **JUNE 2019**

* CDWQG for Nitrate+Nitrite-N is the limit for nitrate only. If present as Nitrate then the limit is 10mg/L < or N.D. = less than detection limit.
* Turbidity guideline based on membrane filtration. For guidelines on conventional treatment and slow sand or diatomaceous earth filtration please see Summary Table of Guidelines for Canadian Drinking Water Quality
- A blank entry designates no known limit.
- A shaded value in the Results column exceeds CDWQG MAC and/ or Aesthetic Objective.

Approved by

Hua Wo
Account Manager

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 29-JUL-20
PO No.: 111475107
WO No.: L2477630
Project Ref: 111475107
Sample ID: QC-01
Sampled By:
Date Collected: 21-JUL-20
Lab Sample ID: L2477630-3
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F4						
Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total Hydrocarbons						
F1-BTEX	<0.10		mg/L			25-JUL-20
Total Hydrocarbons (C6-C50)	<0.38		mg/L			25-JUL-20
CCME PHC F2-F4 in Water						
F2 (C10-C16)	<0.10		mg/L			24-JUL-20
F3 (C16-C34)	<0.25		mg/L			24-JUL-20
F4 (C34-C50)	<0.25		mg/L			24-JUL-20
Surr: 2-Bromobenzotrifluoride	91.4		%			24-JUL-20
BTX plus F1 by GCMS						
Benzene	<0.00050		mg/L	0.005		24-JUL-20
Toluene	<0.0010		mg/L	0.06	0.024	24-JUL-20
Ethyl benzene	<0.00050		mg/L	0.14	0.0016	24-JUL-20
o-Xylene	<0.00050		mg/L			24-JUL-20
m+p-Xylenes	<0.00040		mg/L			24-JUL-20
F1 (C6-C10)	<0.10		mg/L			24-JUL-20
Surr: 4-Bromofluorobenzene (SS)	87.1		%			24-JUL-20
ROU4W Dissolved - Low Range						
Bicarbonate (HCO3)	305		mg/L			24-JUL-20
Carbonate (CO3)	<0.60		mg/L			24-JUL-20
Hydroxide (OH)	<0.34		mg/L			24-JUL-20
*Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20
pH						
pH	8.27		pH units			22-JUL-20
Turbidity						
*Turbidity	7.09		NTU			23-JUL-20
TDS calculated						
TDS (Calculated)	514		mg/L		500	27-JUL-20
Sulfate in Water by IC						
Sulfate (SO4)	179		mg/L		500	22-JUL-20
Nitrite in Water by IC (Low Level)						
*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Water by IC (Low Level)						
*Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance Calculation						
Hardness Calculated						
Hardness (as CaCO3)	306		mg/L		500	27-JUL-20

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ATTN: Tassia Stainton

Date: 29-JUL-20
PO No.: 111475107
WO No.: L2477630
Project Ref: 111475107
Sample ID: QC-01
Sampled By:
Date Collected: 21-JUL-20
Lab Sample ID: L2477630-3
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.787		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals Filtration Location	FIELD					23-JUL-20
Calcium (Ca)-Dissolved	62.8		mg/L			23-JUL-20
Iron (Fe)-Dissolved	0.097		mg/L		0.3	23-JUL-20
Magnesium (Mg)-Dissolved	36.2		mg/L			23-JUL-20
Manganese (Mn)-Dissolved	0.00226		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	12.9		mg/L			23-JUL-20
Sodium (Na)-Dissolved	49.0		mg/L		200	23-JUL-20
Conductivity						
Conductivity	809		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (Cl)	24.5		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	250		mg/L			22-JUL-20
Fecal Coliforms	<1		CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	10		MPN/100mL	0		22-JUL-20
Escherichia Coli	0		MPN/100mL	0		22-JUL-20

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Approved by

Hua Wo
Account Manager

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ATTN: Tassia Stainton

Date: 29-JUL-20
PO No.: 111475107
WO No.: L2477630
Project Ref: 111475107
Sample ID: QC-02
Sampled By:
Date Collected: 21-JUL-20
Lab Sample ID: L2477630-4
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F4						
Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total Hydrocarbons						
F1-BTEX	<0.10		mg/L			25-JUL-20
Total Hydrocarbons (C6-C50)	<0.38		mg/L			25-JUL-20
CCME PHC F2-F4 in Water						
F2 (C10-C16)	<0.10		mg/L			24-JUL-20
F3 (C16-C34)	<0.25		mg/L			24-JUL-20
F4 (C34-C50)	<0.25		mg/L			24-JUL-20
Surr: 2-Bromobenzotrifluoride	97.7		%			24-JUL-20
BTX plus F1 by GCMS						
Benzene	<0.00050		mg/L	0.005		24-JUL-20
Toluene	<0.0010		mg/L	0.06	0.024	24-JUL-20
Ethyl benzene	<0.00050		mg/L	0.14	0.0016	24-JUL-20
o-Xylene	<0.00050		mg/L			24-JUL-20
m+p-Xylenes	<0.00040		mg/L			24-JUL-20
F1 (C6-C10)	<0.10		mg/L			24-JUL-20
Surr: 4-Bromofluorobenzene (SS)	85.2		%			24-JUL-20
ROU4W Dissolved - Low Range						
Bicarbonate (HCO3)	466		mg/L			24-JUL-20
Carbonate (CO3)	12.1		mg/L			24-JUL-20
Hydroxide (OH)	<0.34		mg/L			24-JUL-20
*Nitrate and Nitrite as N	<0.0051		mg/L	10		24-JUL-20
pH						
pH	8.54		pH units			22-JUL-20
Turbidity						
*Turbidity	0.75		NTU			23-JUL-20
TDS calculated						
TDS (Calculated)	443		mg/L		500	27-JUL-20
Sulfate in Water by IC						
Sulfate (SO4)	6.62		mg/L		500	22-JUL-20
Nitrite in Water by IC (Low Level)						
*Nitrite (as N)	<0.0010		mg/L	1		22-JUL-20
Nitrate in Water by IC (Low Level)						
*Nitrate (as N)	<0.0050		mg/L	10		22-JUL-20
Ion Balance Calculation						
Hardness Calculated						
Hardness (as CaCO3)	0.35		mg/L		500	27-JUL-20

Stantec Consulting (Winnipeg)
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ATTN: Tassia Stainton

Date: 29-JUL-20
PO No.: 111475107
WO No.: L2477630
Project Ref: 111475107
Sample ID: QC-02
Sampled By:
Date Collected: 21-JUL-20
Lab Sample ID: L2477630-4
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.411		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals Filtration Location	FIELD					23-JUL-20
Calcium (Ca)-Dissolved	0.093		mg/L			23-JUL-20
Iron (Fe)-Dissolved	0.013		mg/L		0.3	23-JUL-20
Magnesium (Mg)-Dissolved	0.0276		mg/L			23-JUL-20
Manganese (Mn)-Dissolved	0.00019		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	0.475		mg/L			23-JUL-20
Sodium (Na)-Dissolved	186		mg/L		200	23-JUL-20
Conductivity						
Conductivity	723		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (Cl)	7.82		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	402		mg/L			22-JUL-20
Fecal Coliforms	<1		CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	1		MPN/100mL	0		22-JUL-20
Escherichia Coli	0		MPN/100mL	0		22-JUL-20

CDWQG = Health Canada Guideline Limits updated **JUNE 2019**

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Approved by

Hua Wo
Account Manager

Stantec Consulting (Winnipeg)
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Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 29-JUL-20
PO No.: 111475107
WO No.: L2477630
Project Ref: 111475107
Sample ID: RW-57
Sampled By:
Date Collected: 21-JUL-20
Lab Sample ID: L2477630-5
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
BTEX plus F1-F4						
Xylenes (Total)	<0.00064		mg/L	0.09	0.02	24-JUL-20
CCME Total Hydrocarbons						
F1-BTEX	<0.10		mg/L			25-JUL-20
Total Hydrocarbons (C6-C50)	<0.38		mg/L			25-JUL-20
CCME PHC F2-F4 in Water						
F2 (C10-C16)	<0.10		mg/L			24-JUL-20
F3 (C16-C34)	<0.25		mg/L			24-JUL-20
F4 (C34-C50)	<0.25		mg/L			24-JUL-20
Surr: 2-Bromobenzotrifluoride	91.1		%			24-JUL-20
BTX plus F1 by GCMS						
Benzene	<0.00050		mg/L	0.005		24-JUL-20
Toluene	<0.0010		mg/L	0.06	0.024	24-JUL-20
Ethyl benzene	<0.00050		mg/L	0.14	0.0016	24-JUL-20
o-Xylene	<0.00050		mg/L			24-JUL-20
m+p-Xylenes	<0.00040		mg/L			24-JUL-20
F1 (C6-C10)	<0.10		mg/L			24-JUL-20
Surr: 4-Bromofluorobenzene (SS)	83.6		%			24-JUL-20
ROU4W Dissolved - Low Range						
Bicarbonate (HCO3)	214		mg/L			24-JUL-20
Carbonate (CO3)	<0.60		mg/L			24-JUL-20
Hydroxide (OH)	<0.34		mg/L			24-JUL-20
*Nitrate and Nitrite as N	<0.010		mg/L	10		24-JUL-20
pH						
pH	8.29		pH units			22-JUL-20
Turbidity						
*Turbidity	0.46		NTU			23-JUL-20
TDS calculated						
TDS (Calculated)	531		mg/L		500	27-JUL-20
Sulfate in Water by IC						
Sulfate (SO4)	135		mg/L		500	22-JUL-20
Nitrite in Water by IC (Low Level)						
*Nitrite (as N)	<0.0020	DLM	mg/L	1		22-JUL-20
Nitrate in Water by IC (Low Level)						
*Nitrate (as N)	<0.010	DLM	mg/L	10		22-JUL-20
Ion Balance Calculation						
Hardness Calculated						
Hardness (as CaCO3)	186		mg/L		500	27-JUL-20

Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
ATTN: Tassia Stainton

Date: 29-JUL-20
PO No.: 111475107
WO No.: L2477630
Project Ref: 111475107
Sample ID: RW-57
Sampled By:
Date Collected: 21-JUL-20
Lab Sample ID: L2477630-5
Matrix: W

Test Description	Result	Qualifier	Units of Measure	CDWQG MAC	Aesthetic Objective	Date Analyzed
ROU4W Dissolved - Low Range						
Fluoride in Water by IC						
Fluoride (F)	0.965		mg/L	1.5		22-JUL-20
Dissolved Metals in Water by CRC ICPMS						
Dissolved Metals Filtration Location	FIELD					23-JUL-20
Calcium (Ca)-Dissolved	37.7		mg/L			23-JUL-20
Iron (Fe)-Dissolved	0.085		mg/L		0.3	23-JUL-20
Magnesium (Mg)-Dissolved	22.3		mg/L			23-JUL-20
Manganese (Mn)-Dissolved	0.00088		mg/L	0.12	0.02	23-JUL-20
Potassium (K)-Dissolved	9.96		mg/L			23-JUL-20
Sodium (Na)-Dissolved	108		mg/L		200	23-JUL-20
Conductivity						
Conductivity	876		umhos/cm			22-JUL-20
Chloride in Water by IC (Low Level)						
Chloride (Cl)	113		mg/L		250	22-JUL-20
Alkalinity, Total (as CaCO3)						
Alkalinity, Total (as CaCO3)	176		mg/L			22-JUL-20
Fecal Coliforms	<1		CFU/100mL	0		22-JUL-20
Total Coliform and E.coli						
Total Coliforms	0		MPN/100mL	0		22-JUL-20
Escherichia Coli	0		MPN/100mL	0		22-JUL-20

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- A shaded value in the Results column exceeds CDWQG MAC and/ or Aesthetic Objective.

Approved by

Hua Wo
Account Manager

Guidelines & Objectives

Sample Parameter Qualifier key listed:

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

Health Canada MAC Health Related Criteria Limits

Nitrate/Nitrite-N*	Criteria limit is 10 mg/L (1.0 mg/L if present as all Nitrite-N). High concentrations may contribute to blue baby syndrome in infants.
Lead*	A cumulative body poison, uncommon in naturally occurring hard waters.
Fluoride*	Present in fluoridated water supplies at 0.8 mg/L to reduce dental caries. Elevated levels causes fluorosis (mottling of teeth).
Total Coliforms*	Criteria is 0 CFU/100mL. Adverse health effects.
E. Coli*	Criteria is 0 CFU/100 mL. Certain E. Coli bacteria can be life threatening.
Manganese*	Criteria limit is 0.12 mg/L. Possible neurological effects in infants.

*Health Canada Canadian Drinking Water Quality Guidelines (MAC limit)

Aesthetic Objective Concentration Levels

Alkalinity	Acid neutralizing capacity. Usually a measure of carbonate and bicarbonates and calculated and reported as calcium carbonate.
Balance	Quality control parameter ratioing cations to anions
Bicarbonate	See Alkalinity. Report as the anion HCO3-1
Carbonate	See Alkalinity. Reported at the anion CO3-2
Calcium	See Hardness. Common major cation of water chemistry.
Chloride	Common major anion of water chemistry.
Conductance	Physical test measuring water salinity (dissolved ions or solids)
Hardness	Classical measure or capacity of water to precipitate soap (chiefly calcium and magnesium ions). Causes scaling tendency in water if carbonates/bicarbonates are present (if >200 mg/L). For drinking water purposes waters with results <200 mg/L are considered acceptable, results >200 mg/L are considered poor but can be tolerated. Results >500 mg/L are unacceptable.
Hydroxide	See alkalinity
Magnesium	See hardness. Common major cation of water chemistry. Elevated levels (>125 mg/L) may exert a cathartic or diuretic action.
pH	Measure of water acidity/alkalinity. Normal range is 7.0-8.5.
Potassium	Common major cation of water chemistry.
Sodium	Common major cation of water chemistry. Measure of salinity (saltiness).The aesthetic objective (not related to health) for sodium in drinking water is 200 mg/L. However, where sodium concentration of the drinking water exceeds 20 mg/L, it is recommended that any person on a sodium restricted diet consult with his/her physician or Medical Officer of Health concerning the use of that water.
Sulphate	Common major anion of water chemistry. Elevated levels may exert a cathartic or diuretic action.
Total Dissolved Solids	A measure of water salinity.
Iron	Causes staining to laundry and porcelain and astringent taste. Oxidizes to red-brown precipitate on exposure to air.
Heterotrophic Plate Count	Criteria is 500 cfu/mL Measure of heterotrophic bacteria present.

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2477630 Report Date: 29-JUL-20

Client: Stantec Consulting (Winnipeg)
500 - 311 Portage Ave
Winnipeg MB R3B 2B9
Contact: Tassia Stainton

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-WP	**Water**							
Batch R5166298								
WG3369055-24 LCS								
Alkalinity, Total (as CaCO3)			105.5		%		85-115	22-JUL-20
WG3369055-21 MB								
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	22-JUL-20
BTEXS+F1-HSMS-WP	**Water**							
Batch R5166645								
WG3368156-2 LCS								
Benzene			116.2		%		70-130	23-JUL-20
Toluene			98.2		%		70-130	23-JUL-20
Ethyl benzene			98.4		%		70-130	23-JUL-20
o-Xylene			113.0		%		70-130	23-JUL-20
m+p-Xylenes			111.4		%		70-130	23-JUL-20
WG3368156-3 LCS								
F1 (C6-C10)			98.7		%		70-130	23-JUL-20
WG3368156-1 MB								
Benzene			<0.00050		mg/L		0.0005	23-JUL-20
Toluene			<0.0010		mg/L		0.001	23-JUL-20
Ethyl benzene			<0.00050		mg/L		0.0005	23-JUL-20
o-Xylene			<0.00050		mg/L		0.0005	23-JUL-20
m+p-Xylenes			<0.00040		mg/L		0.0004	23-JUL-20
F1 (C6-C10)			<0.10		mg/L		0.1	23-JUL-20
Surrogate: 4-Bromofluorobenzene (SS)			85.2		%		70-130	23-JUL-20
CL-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-6 LCS								
Chloride (Cl)			102.6		%		90-110	22-JUL-20
WG3367901-5 MB								
Chloride (Cl)			<0.10		mg/L		0.1	22-JUL-20
EC-WP	**Water**							
Batch R5166298								
WG3369055-23 LCS								
Conductivity			98.0		%		90-110	22-JUL-20
WG3369055-21 MB								
Conductivity			<1.0		umhos/cm		1	22-JUL-20
F-IC-N-WP	**Water**							

Quality Control Report

Workorder: L2477630 Report Date: 29-JUL-20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-6 LCS								
Fluoride (F)			102.0		%		90-110	22-JUL-20
WG3367901-5 MB								
Fluoride (F)			<0.020		mg/L		0.02	22-JUL-20
F2-F4-FID-WP	**Water**							
Batch R5167079								
WG3369781-2 LCS								
F2 (C10-C16)			99.4		%		70-130	24-JUL-20
F3 (C16-C34)			91.9		%		70-130	24-JUL-20
F4 (C34-C50)			107.6		%		70-130	24-JUL-20
WG3369781-1 MB								
F2 (C10-C16)			<0.10		mg/L		0.1	24-JUL-20
F3 (C16-C34)			<0.25		mg/L		0.25	24-JUL-20
F4 (C34-C50)			<0.25		mg/L		0.25	24-JUL-20
Surrogate: 2-Bromobenzotrifluoride			87.8		%		60-140	24-JUL-20
FC-MF-WP	**Water**							
Batch R5164763								
WG3368074-1 MB								
Fecal Coliforms			<1		CFU/100mL		1	22-JUL-20
WG3368074-2 MB								
Fecal Coliforms			<1		CFU/100mL		1	22-JUL-20
MET-D-CCMS-WP	**Water**							
Batch R5166699								
WG3368715-2 LCS								
Calcium (Ca)-Dissolved			99.3		%		80-120	23-JUL-20
Iron (Fe)-Dissolved			94.4		%		80-120	23-JUL-20
Magnesium (Mg)-Dissolved			102.0		%		80-120	23-JUL-20
Manganese (Mn)-Dissolved			100.7		%		80-120	23-JUL-20
Potassium (K)-Dissolved			103.3		%		80-120	23-JUL-20
Sodium (Na)-Dissolved			99.0		%		80-120	23-JUL-20
WG3368715-1 MB								
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-JUL-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-JUL-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-JUL-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-JUL-20

Quality Control Report

Workorder: L2477630 Report Date: 29-JUL-20

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WP	**Water**							
Batch R5166699								
WG3368715-1 MB								
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-JUL-20
NO2-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-6 LCS								
Nitrite (as N)			104.0		%		90-110	22-JUL-20
WG3367901-5 MB								
Nitrite (as N)			<0.0010		mg/L		0.001	22-JUL-20
NO3-L-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-6 LCS								
Nitrate (as N)			101.6		%		90-110	22-JUL-20
WG3367901-5 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	22-JUL-20
PH-WP	**Water**							
Batch R5166298								
WG3369055-22 LCS								
pH			7.33		pH units		7.3-7.5	22-JUL-20
SO4-IC-N-WP	**Water**							
Batch R5166703								
WG3367901-6 LCS								
Sulfate (SO4)			104.2		%		90-110	22-JUL-20
WG3367901-5 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	22-JUL-20
TC,EC-QT51-WP	**Water**							
Batch R5165685								
WG3367867-4 DUP		**L2477630-4**						
Total Coliforms		1	0	J	MPN/100mL	1	2	22-JUL-20
Escherichia Coli		0	0		MPN/100mL	0.0	65	22-JUL-20
WG3367867-12 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
WG3367867-13 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TC,EC-QT51-WP	**Water**							
Batch R5165685								
WG3367867-14 MB								
Total Coliforms			0		MPN/100mL		1	22-JUL-20
Escherichia Coli			0		MPN/100mL		1	22-JUL-20
TURBIDITY-WP	**Water**							
Batch R5166411								
WG3369614-2 LCS								
Turbidity			95.0		%		85-115	23-JUL-20
WG3369614-1 MB								
Turbidity			<0.10		NTU		0.1	23-JUL-20

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH							
	1	Not provided	22-JUL-20 12:00	0.25	4.1	hours	EHTR-FM
	2	Not provided	22-JUL-20 12:00	0.25	4.1	hours	EHTR-FM
	3	21-JUL-20	22-JUL-20 12:00	0.25	24	hours	EHTR-FM
	4	21-JUL-20	22-JUL-20 12:00	0.25	24	hours	EHTR-FM
	5	21-JUL-20 09:08	22-JUL-20 12:00	0.25	27	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2477630 were received on 22-JUL-20 08:00.

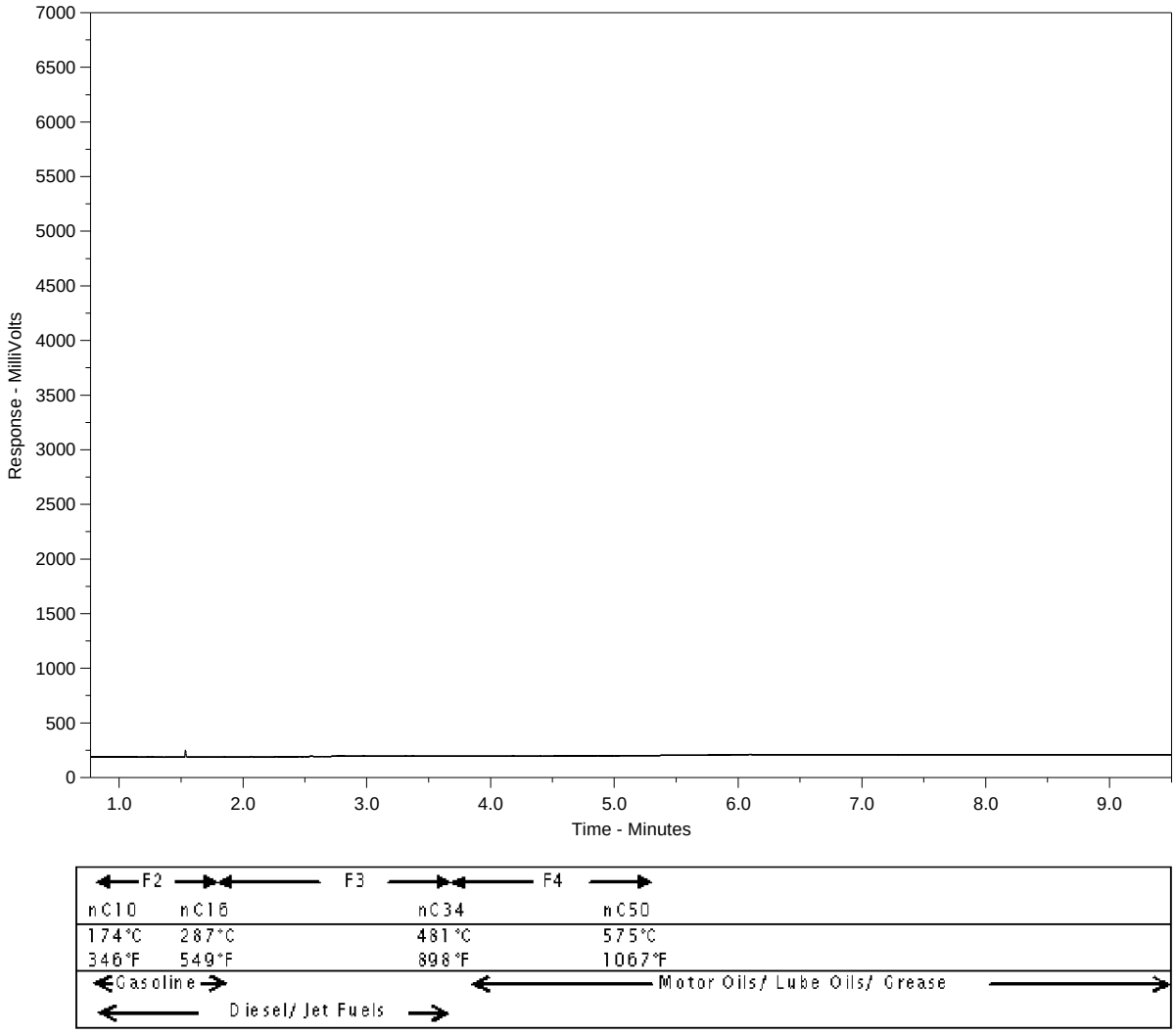
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes 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 pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2477630-1
Client Sample ID: TRIP



The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

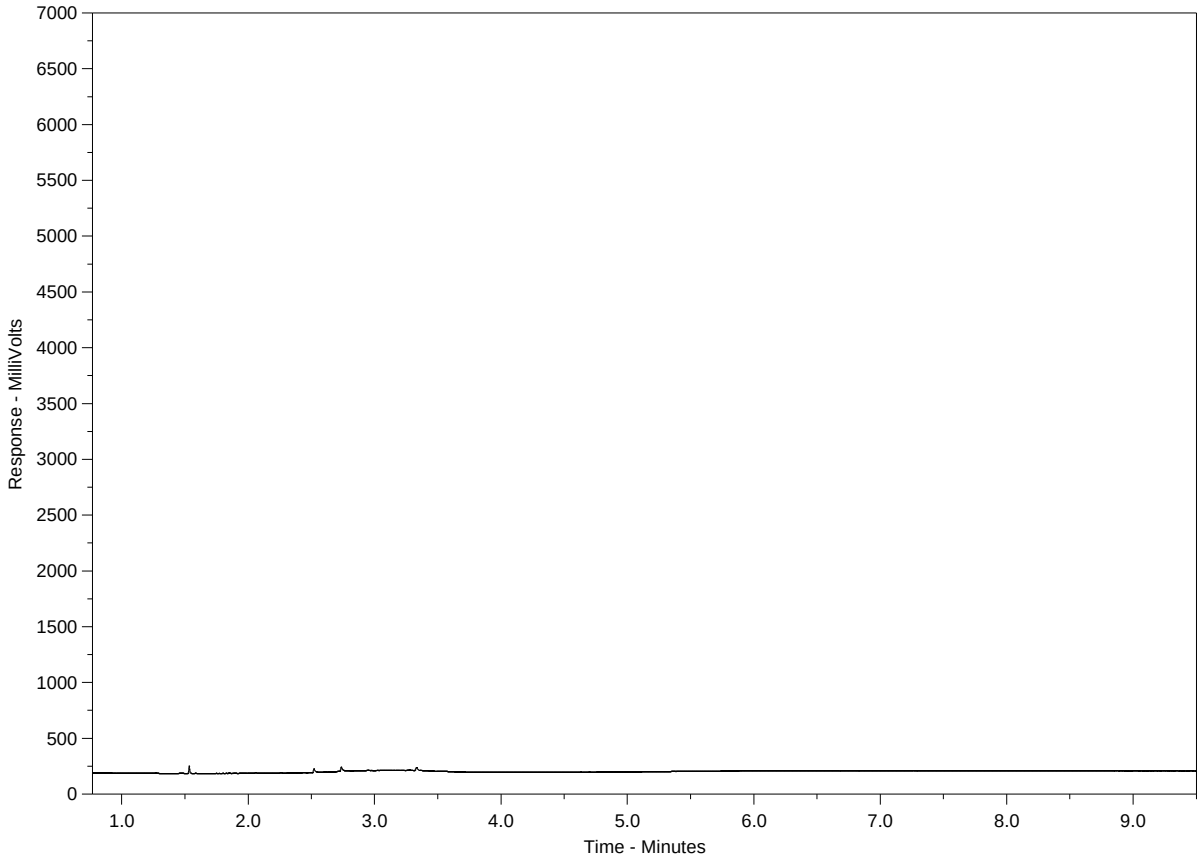
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

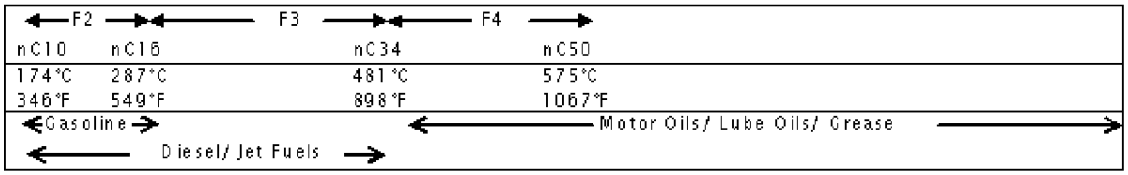
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2477630-2
Client Sample ID: FIELD BLANK





The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

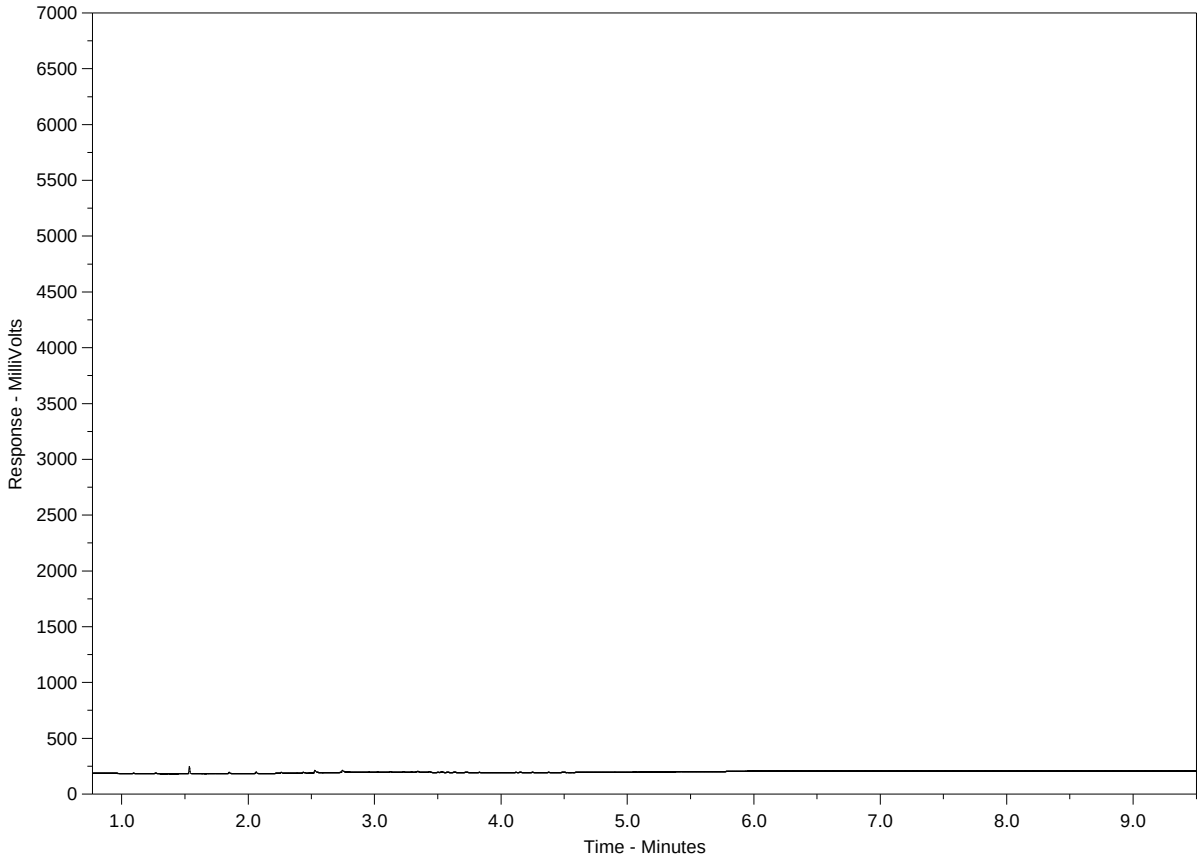
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

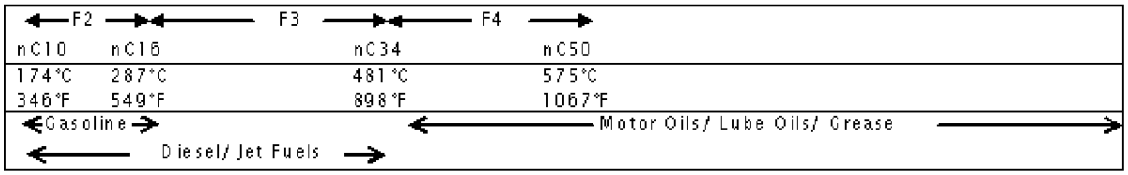
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2477630-3
Client Sample ID: QC-01





The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

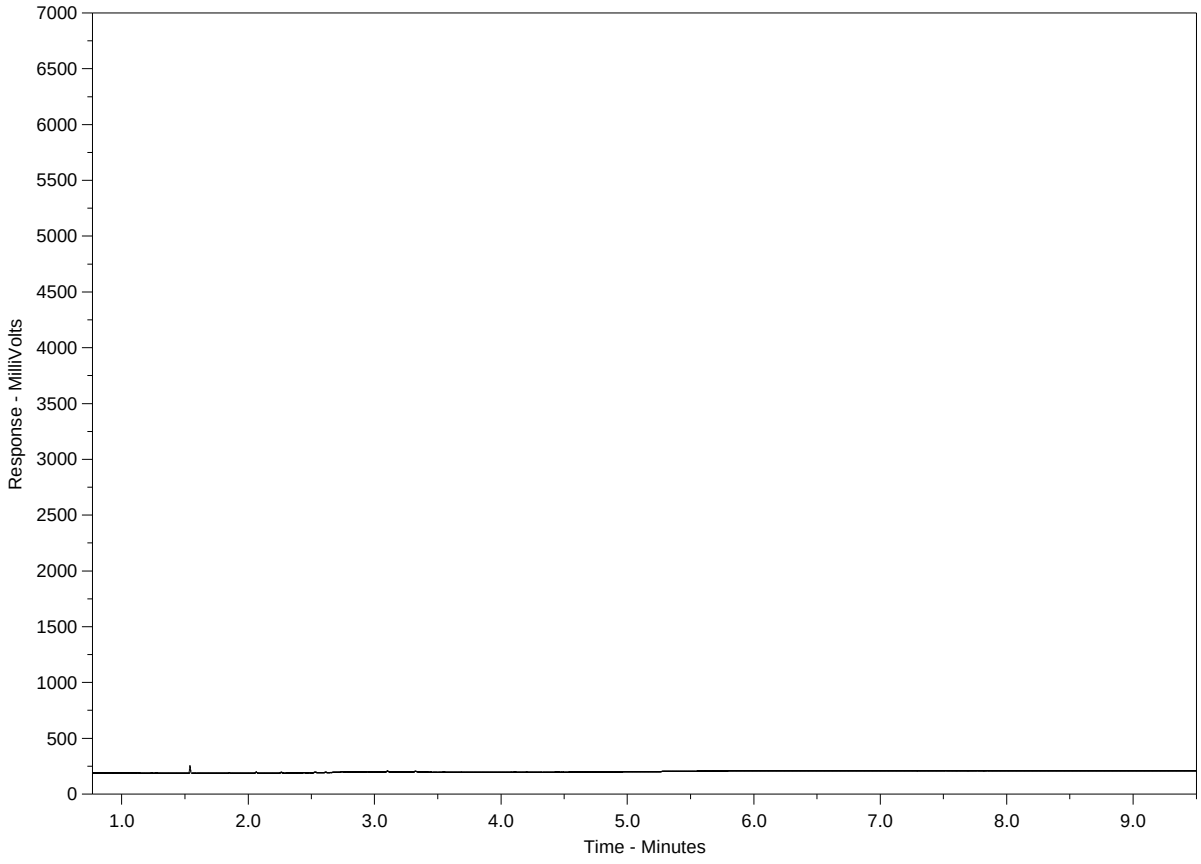
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

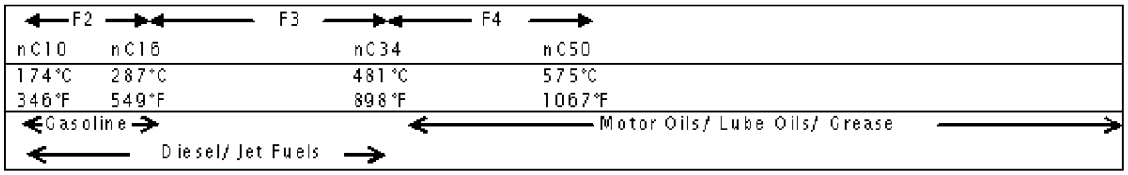
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2477630-4
Client Sample ID: QC-02





The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

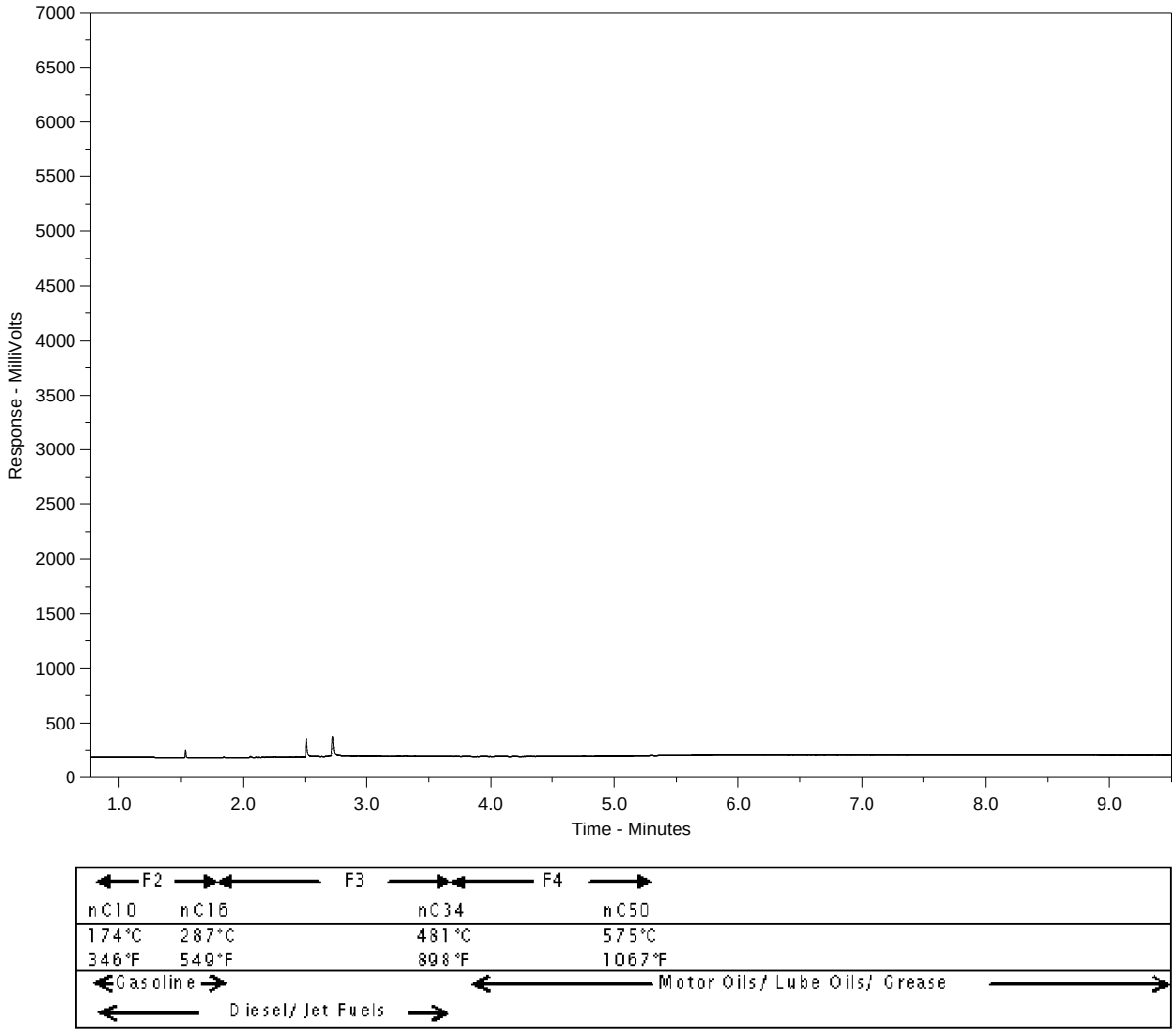
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L2477630-5
Client Sample ID: RW-57



The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2477630-COFC

COC Number: 17 - 749268

Page 1 of 1

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)
Company:	Stantec - W2077	Select Report Format: [X] PDF [X] EXCEL [X] EDD (DIGITAL)	Regular [R] [X] Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Teresa Stanton	Quality Control (QC) Report with Report [X] YES [ ] NO	PRIORITY (Business Days): 4 day [P4-20%] [ ]; 3 day [P3-25%] [ ]; 2 day [P2-50%] [ ]
Phone:		[ ] Compare Results to Criteria on Report - provide details below if box checked	EMERGENCY: 1 Business day [E - 100%] [ ]; Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] [ ]
	Company address below will appear on the final report	Select Distribution: [X] EMAIL [ ] MAIL [ ] FAX	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
Street:	500-311 Portage Ave	Email 1 or Fax: teresa.stanton@stantec.com	For tests that can not be performed according to the service level selected, you will be contacted.
City/Province:	Wpg, MB	Email 2: karen.mather@stantec.com	
Postal Code:	R3B 2B9	Email 3	
Invoice To	Same as Report To [X] YES [ ] NO	**Invoice Distribution**	**Analysis Request**
	Copy of Invoice with Report [ ] YES [ ] NO	Select Invoice Distribution: [X] EMAIL [ ] MAIL [ ] FAX	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
Company:		Email 1 or Fax	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q80404	AFE/Cost Center:	PO#
Job #:	111475107	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):		ALS Contact:	Sampler: BB, ZW

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	BTX, F1-F4-WP	EC-MF-WP	RBCHC-D-WP	TC, EC-QTS1-WP	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
						P		F/P	P		
	Trip Blank	-	-	W	9	✓	✓	✓	✓		
	Field Blank				6	✓		✓			
	QC-01	31-07-20	-		9	✓	✓	✓	✓		
	QC-03	31-07-20	-		9	✓	✓	✓	✓		
	MW-57	31-07-20	0908	W	9	✓	✓	✓	✓		

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? [ ] YES [ ] NO	
Are samples for human consumption/ use? [ ] YES [ ] NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen [ ] SIF Observations Yes [ ] No [ ]
Ice Packs [ ] Ice Cubes [ ] Custody seal intact Yes [ ] No [ ]
Cooling Initiated [ ]

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
			13				

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
B. Lynn	July 31, 2020	1645		JUL 22 2020				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.