2022 Groundwater Quality Monitoring

Beverly Channel Monitoring Wells

Northeast Capital Industrial Association

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Abbreviations and Acronyms

Acronym/Abbreviation	Definition
4-AAP	4-aminoantipyrine
AO	Aesthetic Objective
APHA	American Public Health Association
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
COC	Chain of Custody
DOC	Dissolved Organic Carbon
EC	Electrical Conductivity
EPA	Environmental Protection Agency
GCDWQ	Guidelines for Canadian Drinking Water Quality
IAEA	International Atomic Energy Agency
LEL	Local Evaporation Line
LMWLs	Local Meteoric Water Lines
MAC	Maximum Acceptable Concentration
NCIA	Northeast Capital Industrial Association
PHC	Petroleum Hydrocarbons
QAQC	Quality Assurance Quality Control
RDL	Reportable Detection Limit
RPD	Relative Percent Difference
TDS	Total Dissolved Solids
VOC	Volatile Organic Compound

1 Introduction

1.1 General

The Northeast Capital Industrial Association's (NCIA) Beverly Channel Study Area is located within Sturgeon and Strathcona Counties and is comprised of Townships 54, 55, and 56, Ranges 21 and 22, W4M (Figure 1). Beverly Channel groundwater monitoring has been conducted within the Study Area since 2005. The groundwater monitoring program's objective is to detect changes in Beverly Channel groundwater flow and quality from the established baseline conditions in the Study Area. The monitoring network in the NCIA Study Area consists of 13 groundwater monitoring wells completed in the Beverly Channel deposits and one groundwater monitoring well completed within the bedrock (Figure 2).

1.2 Previous Work

Previous work conducted within the Study Area was described by Stantec Consulting Ltd. (Stantec; 2006a, 2006b, 2007, 2008, and 2009), WorleyParsons Canada Services Ltd. (WorleyParsons; 2010, 2011, 2012, 2013, 2014, and 2015) and Advisian (2016, 2018, and 2020) and is summarized as follows.

- Depth to the groundwater surface in the Beverly Channel has historically ranged from approximately 15 to 35 metres below ground surface (mbgs). Annual groundwater level fluctuations have generally been 1 m or less.
- The lateral groundwater flow gradient within the Beverly Channel has historically ranged from approximately 0.0005 to 0.005 m/m. Groundwater flow velocity has been estimated to vary from approximately 16 to 160 m/year in different areas of the Beverly Channel.
- Historically, sulphate concentrations have exceeded the applied guideline at MW-07, while total dissolved solids (TDS), iron, and manganese have exceeded the applied guidelines at several locations within the Study Area.
- Sodium concentrations have historically exceeded the applied guideline at MW-07 and MW-09.
- Chloride concentrations at MW-02 and MW-04 are higher than at other locations in the Beverly Channel. These chloride concentrations, nevertheless, are considered to be natural, reflecting the water quality in the underlying bedrock.

1.3 Scope of Work

The scope of the 2022 program was to conduct a groundwater monitoring event and report on groundwater levels and quality at the existing NCIA Beverly Channel monitoring network. The biennial monitoring event occurred from August 22 to 26, 2022. The 2022 program included the following tasks:

- field measurements of depth to groundwater at all monitoring wells;
- field measurements of groundwater electrical conductivity (EC), pH, and temperature;
- groundwater sampling and submission for laboratory analysis; and
- preparation of a report summarizing the program methodology, results, and providing an analysis of the groundwater data.

The analytical schedule for the 2022 monitoring program is provided in Section 3.2.2. Stable isotope analysis for hydrogen (^{2}H; deuterium) and oxygen (^{18}O) began in 2015 and has continued during subsequent monitoring events.

2 Physical Setting

2.1 Topography and Drainage

The Study Area encompasses residential, agricultural, and industrial areas, including parts of the City of Fort Saskatchewan, Strathcona County, Sturgeon County, and Lamont County. While local topography varies at each well location, the ground generally slopes toward the North Saskatchewan River, which crosses the Study Area from southwest to northeast. Surface drainage is expected to be generally toward the North Saskatchewan River or Astotin Creek, which ultimately discharges to the North Saskatchewan River (Figure 1).

2.2 Regional Geology and Hydrogeology

A detailed description of the geology and hydrogeology of the region was provided by Stantec (2006a). A summary is provided below.

Regional bedrock geology comprises Late Cretaceous-aged, marginal marine to non-marine, grey thick-bedded sandstone, grey and green mudstone, grey, clayey siltstone, coal beds, and rare intermittent ironstone beds of the Belly River Group; or marine, dark grey blocky shale and silty shale, greenish glauconitic and grey clayey sandstone, thin concretionary ironstone, and bentonitic beds of the Bearpaw Formation (Stein 1976; Prior et al. 2013). The Bearpaw Formation has been eroded over most of the Study Area but seems to be present in the southwest part of the Study Area. The Bearpaw Formation is generally considered an aquitard. The Horseshoe Canyon Formation is present outside of the Study Area toward the southwest.

Quaternary deposits consisting of pre-glacial, glacial, lacustrine, and aeolian sediments overlie the bedrock. The Beverly Channel is a major pre-glacial valley in the area that consists of a fining-upward sequence of buried sand and gravel deposits of the Empress Formation. The channel is roughly coincident with the present-day North Saskatchewan River Valley. Deposited in fast-flowing braided streams, the sand and gravels of the Beverly Channel form an important regional aquifer in the area.

Clay till is present above the Beverly Channel sand and gravels and clay overlies the clay till. The clay and clay till units provide an effective protective hydraulic barrier for the Beverly Channel over much of the region. A saturated surficial sand unit may overlie the clay unit in some areas.

Aquifers can be found in the Belly River Group, the Beverly Channel sand and gravels, sand lenses in the till, and surficial sand and gravel deposits (Stein 1976). Aquifers within the Belly River Group exhibit TDS concentrations ranging from 1,000 to more than 6,000 mg/L (Stein 1976). Areas of high TDS concentrations are typically associated with high chloride and/or high sulphate content (Stein 1976).

The Beverly Channel is hydraulically connected to the North Saskatchewan River (Stein 1976). Mineralization in the Beverly Channel generally ranges from less than 500 to 3,000 mg/L TDS. Iron concentrations within the Channel can exceed 15 mg/L and iron staining and iron bacteria are common (Stein 1976).

2.3 Regional Groundwater Use and Quality

A water well search of the Study Area was conducted in November 2022. The Alberta Water Well Information Database indicated that there were 1,352 water well records within the Study Area (Appendix 1). Most of the wells were listed for domestic use, but also included stock and municipal use (e.g. Village of Bruderheim). About 94% of the water well records had a depth between 1 and 80 m, with a median depth of 27.6 m. The existence and location of these water wells has not been field-verified. With the industrial development in the Heartland Area, many of the wells associated with the water well records are no longer in use and have been abandoned. There were 169 well records indicated as decommissioned.

Based on the water well search results, groundwater analytical data were available for 439 of the 1,352 water well records. A subset of the available chemistry data summarizing the ranges and mean concentrations of select parameters compiled from available water well record chemistry data is provided in Table 2-1. The summary does not include groundwater chemistry data from any new water wells that have been identified since analysis of the data presented in Table 2-1 was conducted.

Several water wells were identified as being completed within the Beverly Channel in the Study Area in Shell Canada Limited's (Shell) Environmental Impact Assessment for the Scotford Upgrader Expansion (Shell 2005). Water well chemistry data were unavailable for most of these water wells.

Table 2-1 Select Parameter Concentrations from Available Water Well Records

Parameter	Beverly Channel		Upper Bedrock	
	Range	Mean	Range	Mean
pH	7.3-8.5	8.1	7.8-8.7	8.0
Chloride (mg/L)	1-38	13.5	2-901	197
Sulphate (mg/L)	40-726	316	5-741	193
Iron (mg/L)	0.02-4.84	1.24	0.08-1.48	0.36
TDS (mg/L)	362-1,732	975	331-2,021	1,059
Sodium (mg/L)	54-417	200	8-825	274

Notable differences between the Beverly Channel and upper bedrock include chloride, sulphate, and iron concentrations. Within the Beverly Channel, mean chloride concentrations are lower, while mean sulphate and iron concentrations are typically higher than in the upper bedrock.

3 Field Program

3.1 Monitoring Network

The monitoring network consists of 14 monitoring wells at 13 different locations within the Study Area (Figure 2), with one nested pair of monitoring wells (MW-02 and MW-02B) at one location in the Beverly Channel Aquifer and the bedrock below. Borehole logs are provided in Appendix 2.

3.2 Groundwater Monitoring and Sampling

Groundwater monitoring and sampling were conducted according to Advisian's standard protocols. The following procedures were followed during monitoring and sampling of all monitoring wells.

- Prior to sampling, the static groundwater level was measured with an electric water level tape. The tape was cleaned by rinsing with distilled water after each reading.
- Wells were purged of standing water using a Waterra pump, a bailer, or a Geosub submersible pump. The water temperature, pH, and EC were monitored during purging. The wells were purged until these field-measured parameters stabilized.
- The pH meter was calibrated using pH 4, 7, and 10 buffer solutions while the EC meter was calibrated with a standard potassium chloride (KCl) solution of 1,413 µS/cm at 25°C prior to analyzing for field parameters.
- After purging and field measurements, groundwater samples were collected. Samples were collected in pre-cleaned bottles and vials provided by ALS Laboratory (ALS) in Edmonton, Alberta.
  - Samples for dissolved metals, dissolved ammonia, and dissolved organic carbon (DOC) analyses were field-filtered using a 45 µm inline filter.
  - Preservatives were added to DOC and dissolved metals sample bottles as directed by ALS.
  - Hydrocarbon parameter sample bottles were provided pre-charged with preservatives by ALS.
- Groundwater samples were placed in coolers with ice for transport to ALS.
- Standard chain-of-custody (COC) protocols were followed.

3.2.1 Quality Assurance/Quality Control Procedures

The quality assurance/quality control (QA/QC) procedures for the monitoring program were as follows.

- Thoroughly rinsing all equipment (e.g. water level tape and Geosub pump) with distilled water prior to monitoring and sampling a well.
- Collecting two sets of duplicate samples for data validation purposes.
- Storing samples in coolers maintained at approximately 4°C.
- Documenting sample handling, transport, and delivery to the laboratory using appropriate COC procedures and documentation.

Groundwater samples were collected between August 22 and August 26, 2022. All groundwater samples were analyzed by ALS, except for the stable isotopes, which ALS subcontracted to Isobrine Solutions Inc.

3.2.2 Analytical Schedule

The analytical schedule for each monitoring well included the following:

- major ions/routine potability parameters, including EC, pH, total alkalinity, chloride, sulphate, iron, manganese, TDS, calcium, magnesium, potassium, sodium, bicarbonate, carbonate, hydroxide, fluoride, ion balance, DOC, nitrate-as-nitrogen, nitrite-as-nitrogen, and total ammonia;
- dissolved metal and trace element parameters, including aluminium, antimony, arsenic, barium, beryllium, boron, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, titanium, uranium, vanadium, and zinc;
- petroleum hydrocarbon (PHC) parameters, including benzene, toluene, ethylbenzene, and xylenes (BTEX), PHC fraction (F)1 and F2; and
- deuterium and oxygen (^{2}H and ^{18}O) stable isotopes.

3.3 Assessment Criteria

Historically, groundwater from the Beverly Channel aquifer has been used for domestic, stock, and municipal uses (e.g. Village of Bruderheim). As such, the Health Canada (2020) Guidelines for Canadian Drinking Water Quality (GCDWQ) have been included in the summary tables for the analytical results. Their purpose is to provide a general reference for the groundwater quality in the Beverly Channel Aquifer considering the historical use, while also considering that the groundwater quality represents background conditions.

3.4 Data Analysis

3.4.1 Groundwater Monitoring Data

Upon completion of the field program, groundwater field measurements and analytical data were tabulated (Tables 1 through 6). Tables include a summary of historical parameters and minimum, maximum, and mean concentrations for each well. Select indicator parameter concentrations were then plotted and utilized for statistical and graphical analysis as described below.

3.4.1.1 Statistical and Graphical Analysis

A Mann-Kendall test is a non-parametric test for trend in a data set (Helsel and Hirsch 1992). The test evaluates whether parameter concentrations are monotonically rising or falling. Mann-Kendall analysis can be performed on a time series data set with at least four sampling points. Sen's Method is used to assess the rate of change (increase or decrease) in a trending data set (Gilbert 1987). Mann-Kendall and Sen's Method analyses were applied to chloride, sulphate, iron, manganese, sodium, fluoride, TDS, and DOC on the most recent eight data points. pH was visually analyzed for potential trends.

Following completion of the statistical calculations, the data were evaluated, and trends were considered potentially significant if:

- the data were visually monotonic;
- the Mann-Kendall probability was greater than 95% or the inferred confidence level was greater than 95% (p-value of two-tailed test was less than or equal to 0.05) and 50% of the sample results were greater than the reporting detection limit;
- Sen's normalized slope (in absolute % change per year) was 10% or greater; and
- absolute slope (in mg/L/yr) was greater than:
  - 2 mg/L/yr for chloride, TDS, sulphate, and sodium;
  - 0.1 mg/L/yr for fluoride, iron, and manganese; and
  - 0.5 mg/L/yr for DOC.

Trends apparent from visual inspection of the graphical control charts, but not indicated statistically, were also noted.

3.4.1.2 High, Low, and Average Charts

The historical and current data for key indicator parameters at each monitoring well were summarized through charts that show the historical range (i.e. highest and lowest values) and the average (mean) value.

4 Results

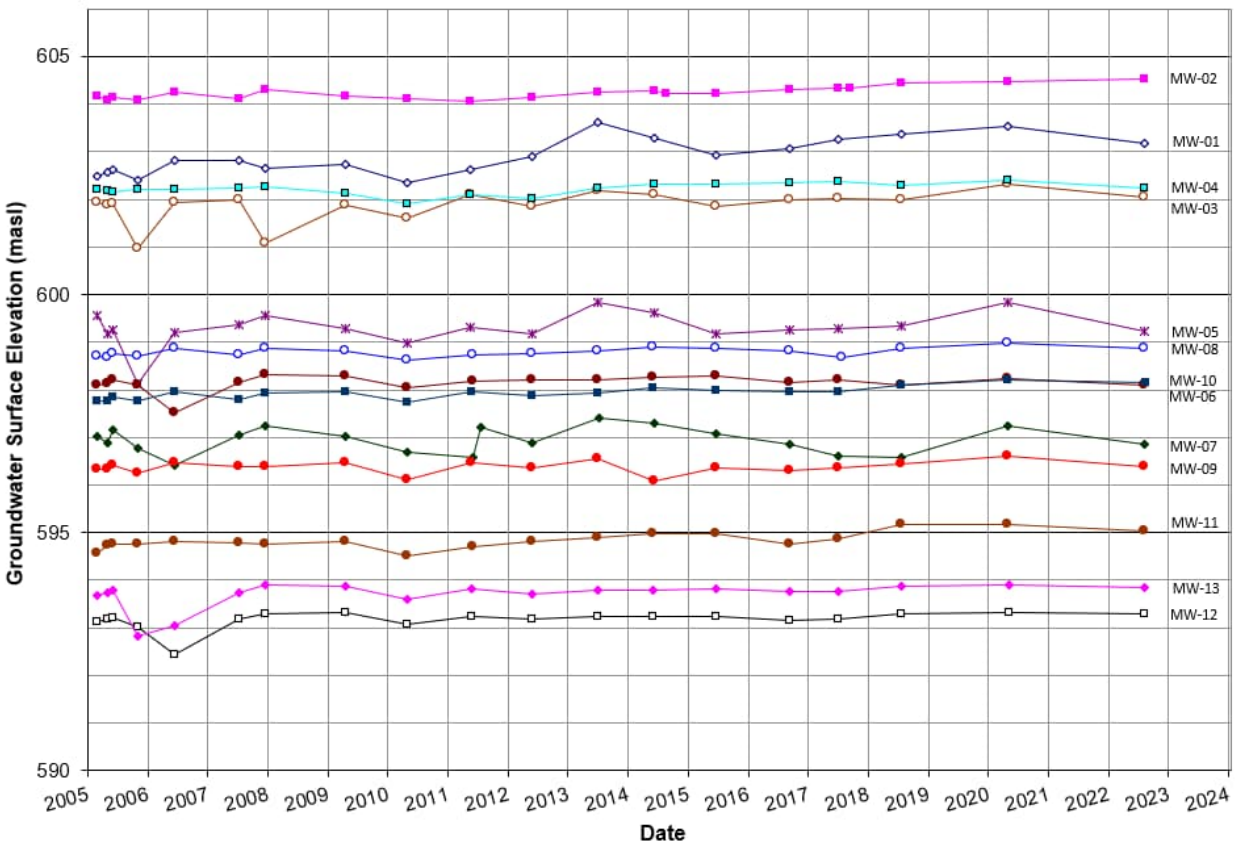
4.1 Groundwater Flow

4.1.1 Groundwater Surface Elevations

Groundwater level hydrographs are provided in Appendix 3 and summarized in Figure 4-1. Groundwater surface elevations within the Beverly Channel ranged from 593.29 to 604.52 metres above sea level (masl) at MW-12 and MW-02, respectively. Groundwater surface elevations were consistent with historical values in the Beverly Channel.

The groundwater surface elevation at the monitoring well completed in the bedrock at MW-02B was 608.09 masl during the 2022 monitoring event (Table 1). This was consistent with the elevations observed since 2017.

Figure 4-1 Current and Historical Groundwater Surface Elevations in Beverly Channel Monitoring Wells



4.1.2 Detailed Hydrographs

Water level dataloggers were installed in four of the NCIA Beverly Channel monitoring wells as part of the conditions of an NCIA partner company's term water diversion license. Water levels were recorded daily and provided a high-resolution depiction of the fluctuations in the groundwater surface elevations within the Beverly Channel. High resolution hydrographs of groundwater surface elevations at MW-04, MW-05, MW-06, and MW-07 are presented in Appendix 3.

4.1.3 Lateral Groundwater Flow

Lateral groundwater flow in the Beverly Channel was consistent with previous analyses and was generally to the northwest towards the North Saskatchewan River (Figure 3). The lateral hydraulic gradient ranged from approximately 0.001 m/m near MW-11, -12, and -13 to 0.005 m/m in the south near MW-03 and MW-04. Based on the geometric mean hydraulic conductivity of 1.5×10^{-4} m/s, the hydraulic gradient of 0.001, and the assumed effective porosity of 0.25, the linear groundwater flow velocity in the north was approximately 20 m/year. Based on the geometric mean hydraulic conductivity of 2.0×10^{-4} m/s, the hydraulic gradient of 0.005, and the assumed effective porosity of 0.25, the linear groundwater flow velocity in the south was approximately 125 m/year.

4.1.4 Vertical Groundwater Flow

The groundwater level in the bedrock (MW-02B; 608.09 masl) was higher than that in the Beverly Channel (MW-02; 604.52 masl), with a vertical hydraulic gradient of approximately 0.35 m/m in August 2022. This indicated the potential for upward flow (discharge) from the bedrock to the Beverly Channel.

4.2 Field-Measured Parameters

Field-measured parameters are presented in Table 2 and were mostly consistent with historical results. Groundwater temperatures at the Beverly Channel monitoring wells ranged from 5.8 to 11.2°C and EC values ranged from 756 to 3,020 µS/cm in 2022. Field pH readings in 2022 were higher than historic values due to a suspected malfunctioning probe. All pH values from the 2022 sampling event have therefore been set to non-reportable.

Field parameters measured in the bedrock at MW-02B during the 2022 sampling event were: temperature of 7.7°C and EC of 3,660 µS/cm.

4.3 Groundwater Quality

Groundwater analytical results are presented in Tables 3 through 6. Original laboratory analytical reports are included in Appendix 4. Hydrochemical control charts are provided in Appendix 5. A statistical table with basic statistical and Mann-Kendall analyses for indicator parameters is included in Appendix 6.

4.3.1 Select Inorganic Data

Select inorganic parameter data are presented in Table 3 and 4. Results from the 2022 sampling event are summarized as follows.

- Dissolved manganese concentrations were typically higher than the drinking water aesthetic objective (AO) of 0.02 mg/L.
- Dissolved iron concentrations continued to exceed the drinking water AO of 0.3 mg/L.
- TDS concentrations were within historical ranges at all monitoring wells in the NCIA Study Area. TDS concentrations continued to be less than the AO of 500 mg/L at MW-01 and MW-13, while they continued to be highest at MW-07 (2,300 mg/L).
- Dissolved sulphate concentrations were mostly consistent with the historical ranges in the NCIA Study Area and remained less than the 500 mg/L AO at all locations except MW-06 and MW-07. At MW-06, sulphate concentrations have ranged from 420 to 560 mg/L and at MW-07 from 622 to 1,270 mg/L.
- Sodium concentrations continued to be generally within historical ranges at all wells completed in the Beverly Channel Aquifer. Sodium concentrations are typically below the AO of 200 mg/L; however, at monitoring wells MW-07 and MW-09, sodium concentrations have ranged from 189 to 320 mg/L.
- Chloride concentrations continued to be within historical ranges at all but MW-01, MW-03, and MW-05. Chloride concentrations at MW-01 have increased from 3.02 mg/L in 2011 to 29.70 mg/L in 2022; from 44.2 mg/L in 2011 to 70.4 mg/L in 2022 at MW-03; and from 30.9 mg/L in 2011 to 51.7 mg/L in 2022 at MW-05. Typically, chloride concentrations have been less than about 70 mg/L at all Beverly Channel monitoring wells except MW-04, where they have ranged from 125 to 200 mg/L.

A comparison of the chemical composition of the waters at MW-02 and MW-02B during the 2022 sampling event is summarized as follows:

- The dissolved manganese concentrations at MW-02 and MW-02B were 0.344 and 0.057 mg/L, respectively. Dissolved manganese continued to exceed the Health Canada (2020) AO at MW-02 and MW-02B.
- The sodium concentration at MW-02 (115 mg/L) was less than the Health Canada (2020) AO (200 mg/L), while at MW-02B it was 699 mg/L, exceeding the AO.
- The chloride concentration at MW-02 was 64.3 mg/L in 2022, while the chloride concentration at MW-02B was 1,010 mg/L, exceeding the Health Canada (2020) AO of 250 mg/L.
- Sulphate concentrations were 174 mg/L at MW-02 and <1.5 mg/L at MW-02B.
- TDS concentrations at both MW-02 and MW-02B remained within historical ranges in 2022. The TDS concentration at MW-02 remained approximately half that observed at MW-02B (865 and 1,990 mg/L, respectively).

The fluctuating ion concentrations observed at MW-02 may be associated with interactions with groundwater with elevated ion concentrations from bedrock as characterized at MW-02B. The downward vertical hydraulic gradient between MW-02 and MW-02B, indicative of the potential for upward groundwater flow from bedrock to the Beverly Channel, supports this hypothesis.

4.3.2 Dissolved Metals and Trace Elements

Dissolved metals and trace element parameters are presented in Table 4. Dissolved metals and trace element concentrations were generally within the historical ranges and were below the Health Canada (2020) drinking water guidelines at all monitoring wells (where guidelines exist), except for dissolved manganese and iron (discussed in Section 4.3.1).

4.3.3 Petroleum Hydrocarbons (PHCs)

PHC results are presented in Table 5. PHC concentrations were below their corresponding reportable detection limits (RDLs) at all monitoring wells in 2022.

4.3.4 Trends and Statistical Analysis

Mann-Kendall/Sen's slope analyses are presented in Appendix 6. Results are summarized in Table 4-1.

Table 4-1 Summarized Results from Mann-Kendall/Sen's Slope Analysis and Visual Inspections

Monitoring Station	Parameter	Mann-Kendall (Statistically Significant) Trend	Visual Trend Only
MW-01	Chloride	↑	---
MW-03	Chloride	---	↑
MW-04	Sodium	---	↑
MW-05	Chloride	---	↑

Note: ↑ indicates an increasing trend, ↓ indicates a decreasing trend, --- indicates no statistically significant trend. N/A = not applicable

4.4 Stable Isotopes

4.4.1 Background

Isotopes have become a common tool used in hydrological studies in the past half-century. For groundwater studies, they are useful to quantify recharge and discharge processes, assess inter-aquifer flow processes, and determine possible sources and mechanisms of industrial pollution. The basic principle is that the stable isotopes of hydrogen and oxygen remain constant in infiltrated groundwater if there are no phase changes or fractionation (changes in relative abundance of isotopes) along the flow path. In this way, these stable isotopes become conservative tracers in the groundwater system (Clark and Fritz 1997).

The main purpose of the analysis of hydrogen and oxygen stable isotopes, which was initiated in 2015, was to generate a baseline data set for the Beverly Channel monitoring network. Stable isotopes may be used to help determine the origin(s) of groundwater at each of the monitoring locations in the Beverly Channel, the relative contribution of groundwater from bedrock, and whether industrial activities may be influencing groundwater quality in the Beverly Channel.

The main processes that affect the oxygen and hydrogen isotopic composition of groundwater include evaporation and simple mixing at or below the surface (Sidle 1998). Relationships known as local meteoric water lines (LMWLs) have been defined to characterize isotope ratios for precipitation in certain geographical areas. Historical International Atomic Energy Agency (IAEA) data of isotope ratios have thus been used to define the Edmonton LMWL, which is mathematically expressed as follows (Lemay 2002):

$$\delta^2\mathrm{H} = 7.66\ \delta^{18}\mathrm{O} - 1.00$$

The local meteoric water line provides a reference for the relative abundance of the stable isotopes and, thus, the possible origin of the water. For example, waters in ponds that experience evaporation would be expected to have an enrichment of the stable isotopes (as they are heavier) and plot below and to the right of the LMWL. Moreover, evaporated water will plot below the LMWL along a local evaporation line (LEL) which intersects the LMWL at the point representative of the isotopic composition of the original, un-evaporated water. For lakes in central Alberta, the LEL from regression of data sets from 2008 and 2009 were as follows (Gibson et al. 2016):

$$2008: \delta^2\mathrm{H} = 5.42\ \delta^{18}\mathrm{O} - 46.16$$

$$2009: \delta^2\mathrm{H} = 5.22\ \delta^{18}\mathrm{O} - 47.63$$

4.4.2 Results

Laboratory analytical results for stable isotopes oxygen-18 (^{18}O) and deuterium (^{2}H) from sampling in 2022 are presented in Table 6. The isotope ratios of oxygen in water ($\delta^{18}O_{water}$) for the Beverly Channel monitoring wells ranged from -18.70 to -16.00 ‰ at MW-13 and MW-04, respectively. The isotope ratios of deuterium in water ($\delta^{2}H_{water}$) ranged from -148.0‰ (MW-03, MW-09, and MW-13) to -132.0 ‰ (MW-04 and MW-05).

The delta (δ) values are reported as per mill (‰) differences relative to Vienna Standard Mean Ocean Water (VSMOW), the IAEA standard defining the isotopic composition of fresh water. The δ values were reported by the laboratory according to the following relationship:

$$\delta_{sample} = \left(\frac{R_x}{R_{VSMOW}} - 1\right) * 1000$$

where R_x and R_{VSMOW} are the ratios of the heavier to the lighter isotope in the sample and standard, respectively (Kendall and McDonnell 1998).

Figure 4-2 shows a plot that includes the Edmonton LMWL, the IAEA data used to generate the Edmonton LMWL, the central Alberta lake LELs, and the isotope data from the Beverly Channel monitoring wells and the bedrock monitoring well. On Figure 4-2, the analytical data for the Beverly Channel monitoring wells and the bedrock monitoring well generally plot below and to the right of the Edmonton LMWL. Moreover, the data generally plot along the lake LELs, although there is some scatter in the LMWL data indicating that signatures along the lake LELs may not solely represent evaporative enrichment in surface water

These results would appear to suggest that groundwater in the Beverly Channel has a varying influence from different sources. On the light-end of the ^{18}O-^{2}H ranges, the groundwater appears to be mostly influenced from direct surface infiltration (e.g. MW-03). On the heavier-end of the ^{18}O-^{2}H ranges, there may be a higher relative contribution of bedrock groundwater or a higher relative contribution of evaporated surface water, or both. Notably, each monitoring well has exhibited a relatively consistent groundwater signature over the available monitoring record, where stable isotopes for each monitoring well exhibit limited temporal variation relative to the spatial variation observed across the network.

Chloride concentrations may be used as a distinguishing parameter to determine which source may be of greater influence, as shown in Figure 4-3. For example, the isotope-chloride relationship may be indicating a higher relative contribution of bedrock groundwater at MW-04 and a higher relative contribution of surface water at MW-05, MW-11, and MW-12.

Figure 4-2 Comparison of Stable Isotope Results with the Edmonton LMWL

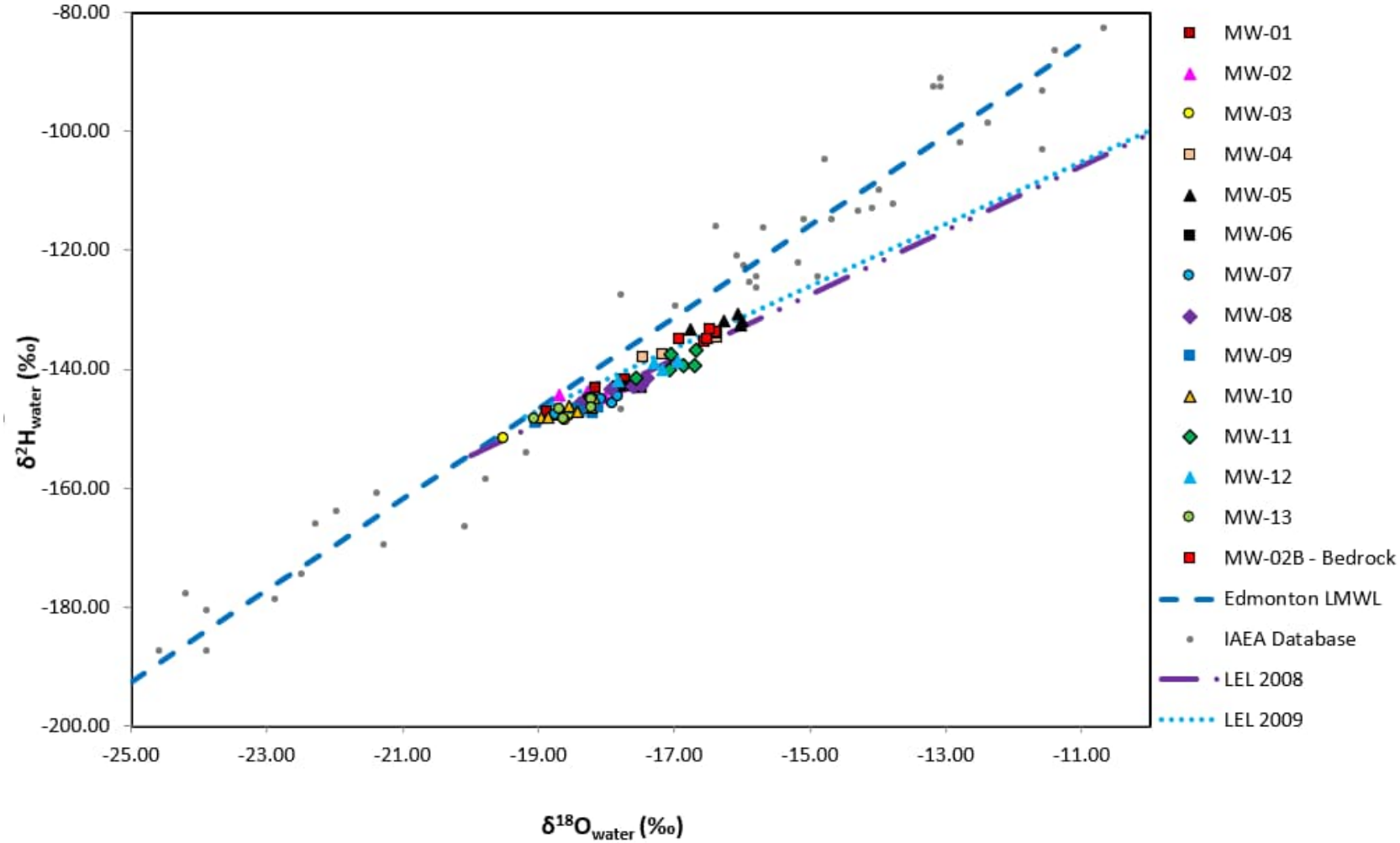
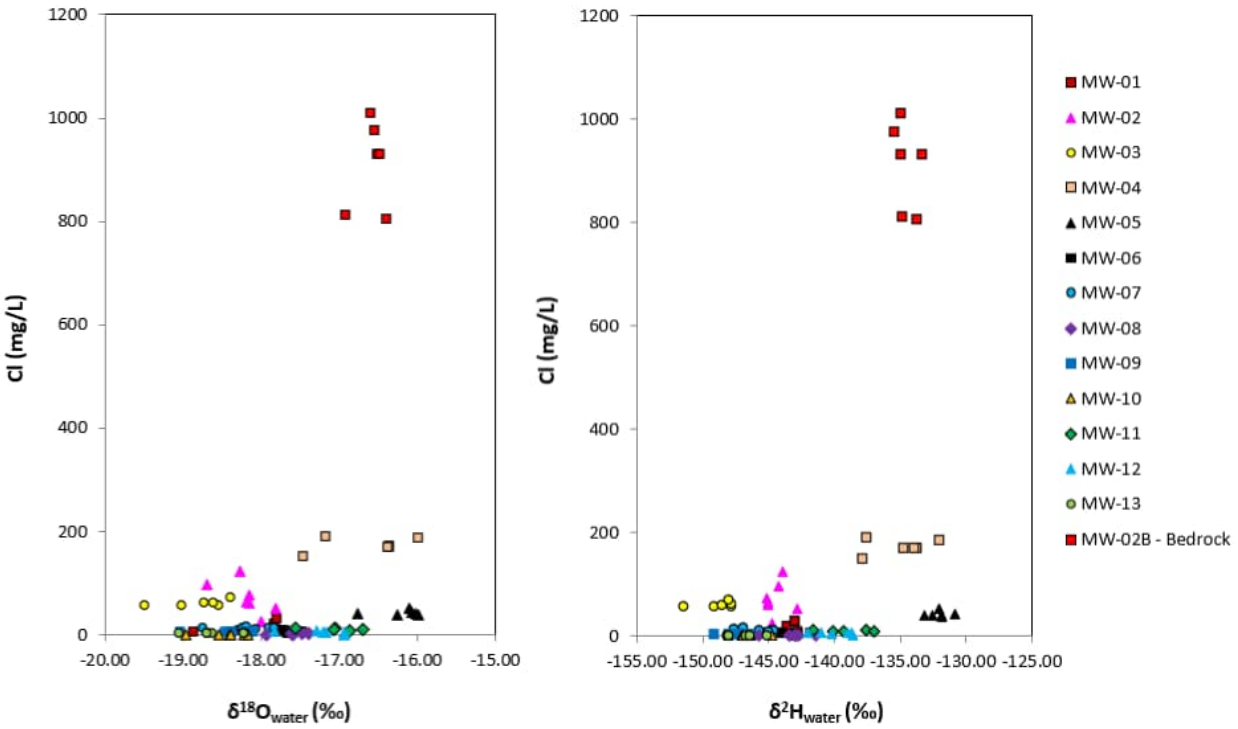


Figure 4-3 Comparison of Stable Isotope Results with Chloride Concentrations



4.4.3 Summary

When used in conjunction with other indicator parameters, stable isotopes can be used to detect changes from baseline groundwater quality. The established baseline dataset of stable isotopes, consisting of ^{18}O and ^{2}H, indicates that isotopic signatures vary between individual monitoring wells within the network. As such, baseline groundwater quality in the Beverly Channel exhibits a range of influences from different sources. Specifically, some locations have heavier isotopic signatures, indicative of influence from bedrock groundwater (e.g. MW-02) and/or evaporated surface water sources (e.g. MW-05). In contrast, other monitoring wells have lighter isotopic signatures, indicative of more direct influence by infiltrated meteoric water that has not undergone evaporation (e.g. MW-03). Stable isotope data do not presently indicate a departure from baseline groundwater quality.

4.5 QA/QC Results and Summary

After reviewing U.S. Environmental Protection Agency (USEPA) data validation guidelines for field duplicate criteria, Zeiner (1994) indicated that the relative percent difference (RPD) between sample and duplicate results should be less than 20 percent for aqueous samples. When the sample, or sample duplicate values are less than five times the RDL, the absolute value of the difference of the results should be less than or equal to the RDL for aqueous samples (Zeiner 1994). A comparison of duplicate sample collected from MW-09 indicated that all results met the above criteria except for dissolved uranium (21.8%).

American Public Health Association (APHA) et al. (2005) indicate an ion balance of ± 10% is typically acceptable. Values outside the commonly acceptable limits may arise for several reasons (e.g. analytical interference, unknown constituents, or reporting errors). Ion balance results were within this criterion (Table 3).

5 Discussion of Key Groundwater Quality Indicators

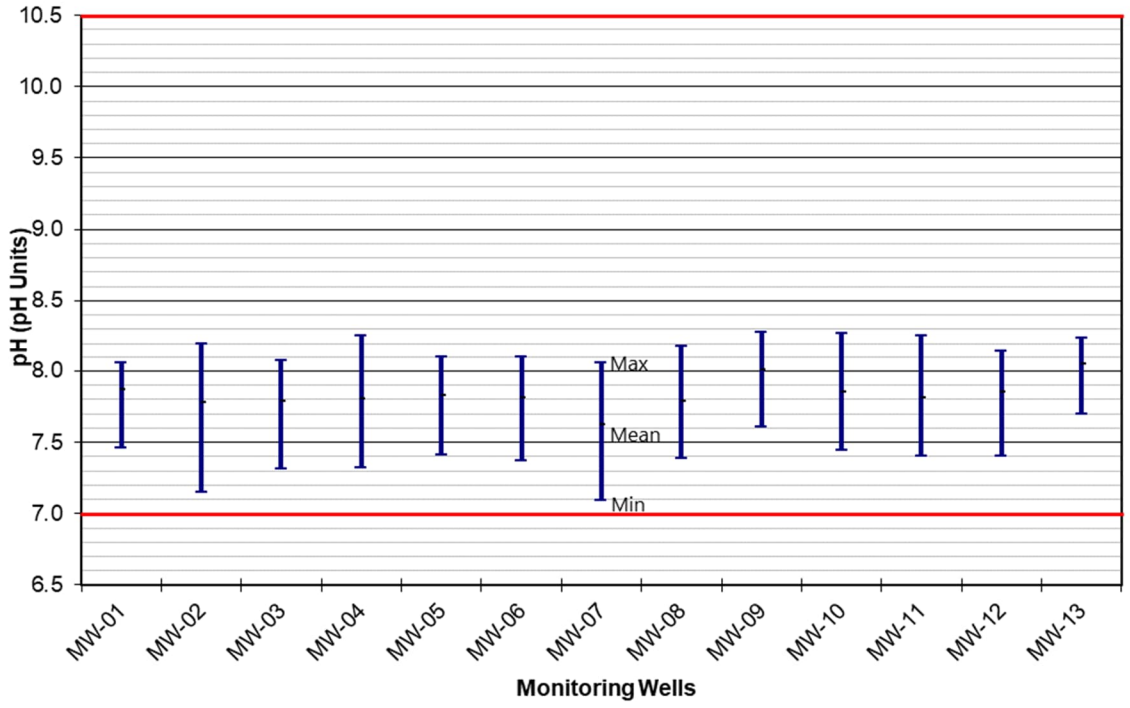
5.1 pH

Hem (1992) indicated that most groundwater has pH values ranging from approximately 6.0 to 8.5, while river water in areas not influenced by pollution reportedly have a pH range of 6.5 to 8.5.

The GCDWQ guideline suggests an acceptable pH range of 7.0 to 10.5 (Health Canada 2020), indicated by the red lines on Figure 5-1. As there are no specific health effects noted on which to base the limits for the pH of drinking water, this guideline is an AO rather than a maximum acceptable concentration (MAC). At a pH below 6.5, corrosion effects may become significant in the drinking water supply and distribution system, and at a pH above 8.5, encrustations and scaling may become an issue (Health Canada 1979a).

In the Beverly Channel, since the groundwater monitoring program began in 2005, laboratory-measured groundwater pH values have ranged from 7.09 to 8.28 (Figure 5-1) and were within the range of natural waters as defined by Hem (1992) and within the AO guideline range established by Health Canada (2020). Field-measured pH, which is generally more indicative of in-situ conditions, has historically ranged from 6.87 to 7.77 at the Beverly Channel monitoring wells. Due to a suspected malfunctioning probe in 2022, all pH values from the 2022 sampling event have been set to non-reportable.

Figure 5-1 High, Low, and Average pH Values in Beverly Channel Monitoring Wells

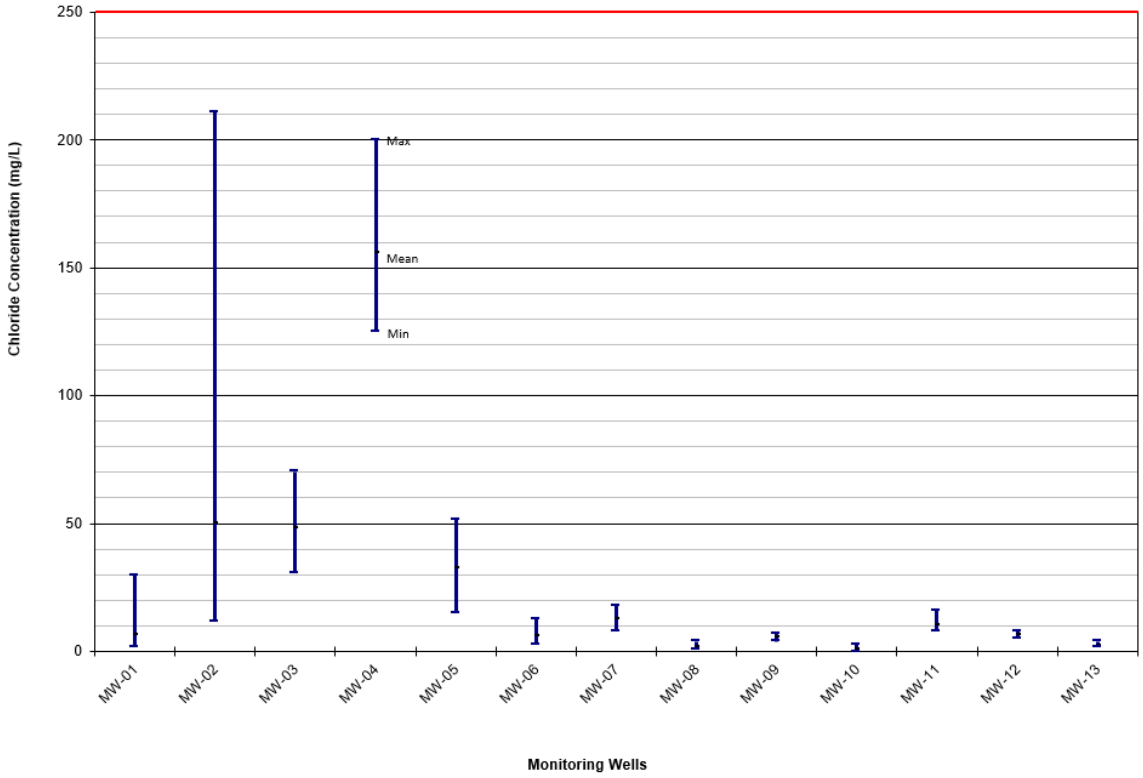


5.2 Chloride

Chloride is an inorganic, non-reactive ion that occurs widely in nature. When introduced into groundwater, chloride is highly mobile and difficult to remove due to its high solubility (Health Canada 1979b) and is generally utilized as an indicator of groundwater contamination. Typical anthropogenic uses of chloride include control of ice and snow, effluents from chemical industries, oil well operations, sewage, irrigation drainage, and refuse leachates. Chloride concentrations in groundwater originating from Quaternary deposits are typically less than 50 mg/L in Sturgeon and Strathcona Counties (see Table 2-1; Hydrogeological Consultants Ltd. [HCL] 2001a and 2001b), while they have been observed to as high as ~900 mg/L in bedrock groundwater (Table 2-1; Hydrogeological Consultants Ltd. [HCL] 2001a and 2001b). As such, it is anticipated that chloride in Quaternary deposits, including the Beverly Channel, can be naturally elevated in regional discharge areas.

Health Canada (2020) suggests an AO guideline of less than or equal to 250 mg/L for chloride (indicated by the red line on Figure 5-2) to minimize undesirable taste. At higher concentrations, chloride may also cause corrosion in distribution systems (Health Canada 1979b).

Figure 5-2 High, Low, and Average Chloride Concentrations in Beverly Channel Monitoring Wells



Chloride concentrations in the Beverly Channel Aquifer are typically less than 70 mg/L and in several monitoring wells less than 10 mg/L. Elevated chloride concentrations between 125 and 200 mg/L have been observed at MW-04 and are considered natural, reflecting mixing of water quality with underlying bedrock (WorleyParsons 2010). A statistically increasing chloride trend was observed at MW-01, while chloride concentrations were visually increasing at MW-03 and MW-05.

Increasing trends in chloride could be related to discharge from the bedrock to the Beverly Channel across the monitoring network (see also Section 4.1.4), although the current prevalence of discharge conditions across the monitoring network is uncertain.

5.3 Sulphate

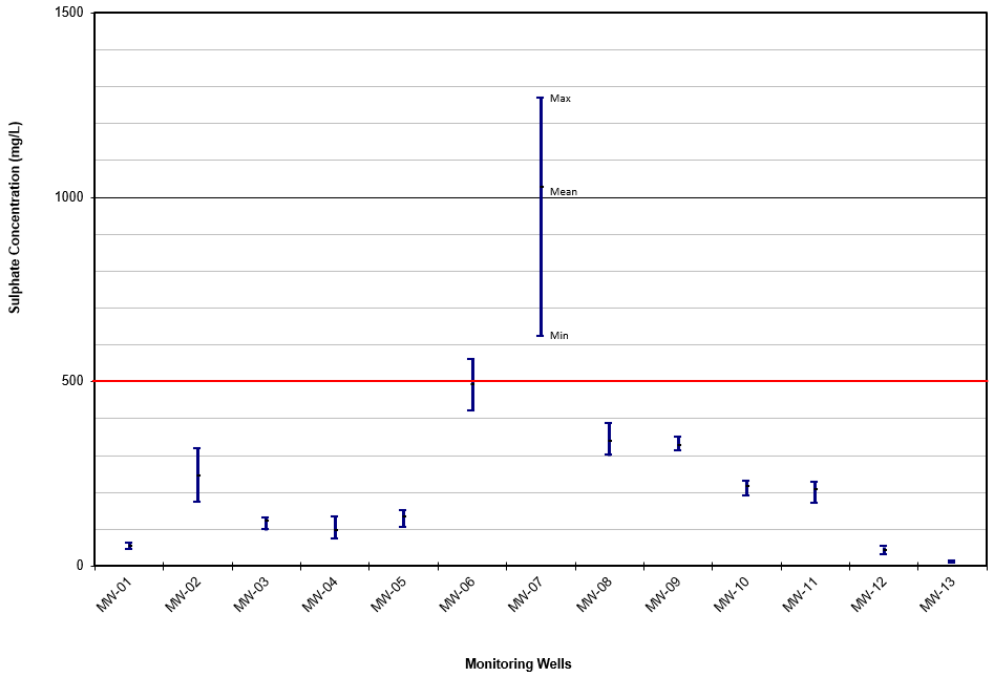
Sulphur sources that can be found in the natural environment include certain igneous rock minerals, evaporite sediment (e.g. gypsum), and geothermal water (Hem 1992). Anthropogenic sources of sulphate are mainly introduced by the combustion of fuels and the smelting of ores (Hem 1992). Industrial uses of sulphur, usually in the form of sulphuric acid, include production of fertilizer, manufacturing of chemicals, dyes, glass, paper, soaps, textiles, fungicides, insecticides, astringents, and emetics (review by Health Canada 1987).

The Health Canada (2020) AO guideline for sulphate is less than or equal to 500 mg/L (indicated by the red line on Figure 5-3). This value is based on taste considerations, although there is the possibility of adverse physiological effects at higher concentrations.

In the NCIA Study Area, background sulphate concentrations are generally less than 100 mg/L in the surficial sand deposits, range from 100 to over 1,000 mg/L in shallow bedrock, and range from less than 1,000 to over 4,000 mg/L in till and clay deposits (BA Energy Inc. 2004; Komex International Ltd. [Komex] 2006; Petro-Canada Oil Sands Inc. [PCOSI] 2006; Shell 2005, 2007; TOTAL E&P Canada Inc. [TOTAL] 2007). Monitoring well MW-07 has sulphate concentrations in the range of about 600 to 1,300 mg/L, which is similar to concentrations observed in the shallow bedrock.

There were no statistically significant or visual trends in sulphate concentrations detected in 2022.

Figure 5-3 High, Low, and Average Sulphate Concentrations in Beverly Channel Monitoring Wells



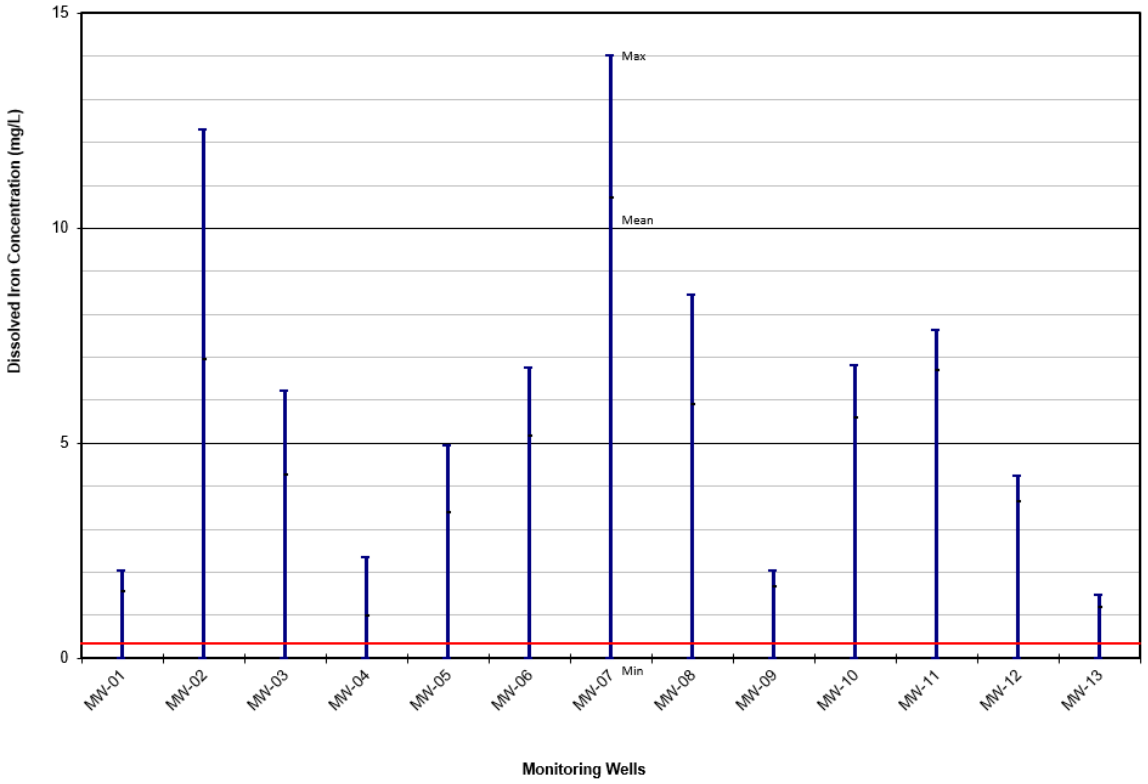
5.4 Dissolved Iron

When iron is released into water, it is generally re-precipitated nearby as sedimentary species involving sulphide, carbonate, oxide, or oxyhydroxide (Hem 1992). The availability of iron to aqueous solutions is strongly affected by environmental conditions, particularly the oxidation/reduction capacity and pH. Iron is also present in organic wastes, and in plant debris in soils (Hem 1992), which can then be released into groundwater via biodegradation processes. In aerated waters, the concentration of iron is seldom high (Health Canada 1978a).

The Health Canada (2020) AO guideline for iron in drinking water is less than or equal to 0.3 mg/L (indicated by the red line on Figure 5-4). This objective is aimed to minimize objectionable taste and appearance, as well as inefficiency in distribution systems that can result from the precipitation of insoluble hydroxides and the development of slime produced by iron oxidizing bacteria.

Within the Beverly Channel, elevated dissolved iron concentrations are generally expected. Stein (1976) indicated that dissolved iron concentrations exceeding 15 mg/L were not uncommon. HCL (2001a) reported dissolved iron concentrations exceeding 7 mg/L for a Beverly Channel water supply well for the Village of Bruderheim. Dissolved iron concentrations in the Beverly Channel monitoring wells range from non-detectable values to about 14 mg/L (Figure 5-4).

Figure 5-4 High, Low, and Average Iron Concentrations in Beverly Channel Monitoring Wells



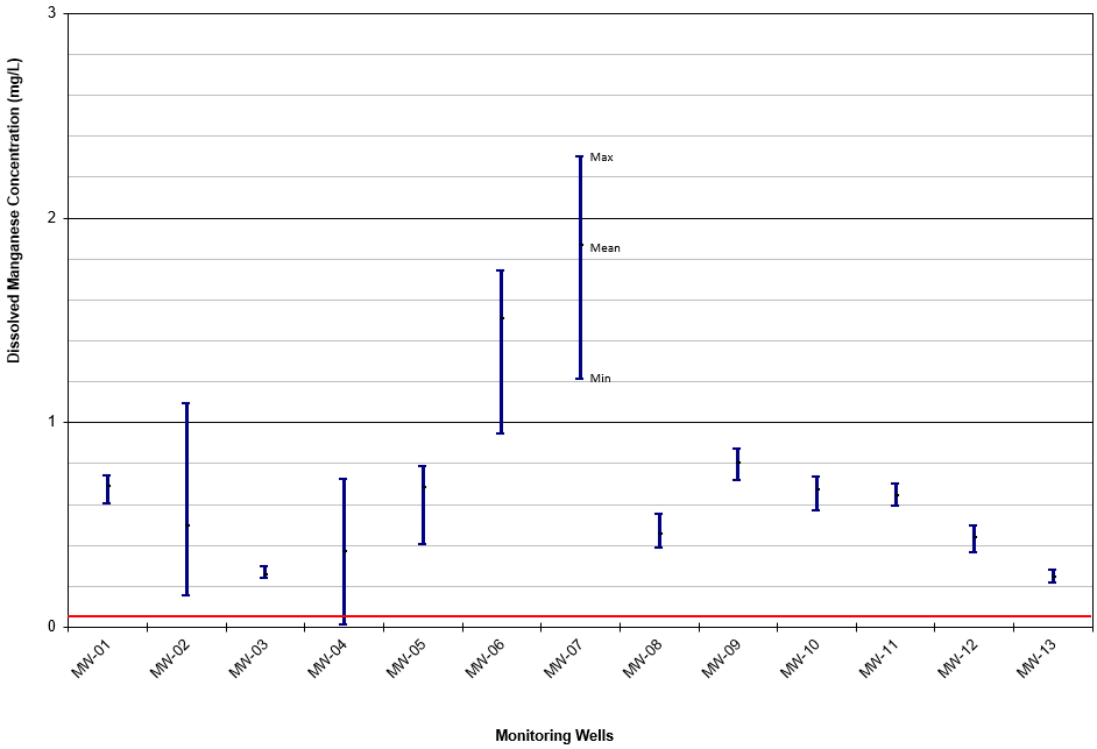
5.5 Dissolved Manganese

Manganese is most often present as a component of dioxide, carbonate, or silicate minerals (Health Canada 1979c), and many igneous and metamorphic minerals contain manganese as a minor constituent (Hem 1992). Like iron, the presence of dissolved manganese in water is dependent on both redox and pH conditions, although it is somewhat more stable toward oxidation than ferrous iron (Hem 1992).

Health Canada (2020) suggests an AO guideline of less than or equal to 0.02 mg/L for total manganese (indicated by the red line on Figure 5-5) to minimize staining, undesirable tastes in beverages, and minimize the accumulation of microbial growths in distribution systems (black precipitates; Health Canada 1979c). Health Canada (2020) also implemented a MAC of 0.12 mg/L for total manganese because too much manganese in drinking water can be a health risk to infants. Higher concentrations of manganese are expected to be more prevalent in groundwater than surface water due to the higher likelihood of reducing conditions in the subsurface (Health Canada 1979c).

The manganese concentrations in the Beverly Channel were within the combined range of surface water/groundwater manganese concentrations from data compiled by Hem (1992). Generally, manganese concentrations may be expected to be higher in the Beverly Channel than in shallower geological units as there is a higher likelihood of reducing conditions with depth. On average, the lowest concentrations of manganese were measured at monitoring wells MW-03 and MW-13; the highest concentrations occurred at MW-06 and MW-07. All concentrations typically exceed the AO and the MAC.

Figure 5-5 High, Low, and Average Manganese Concentrations in Beverly Channel Monitoring Wells



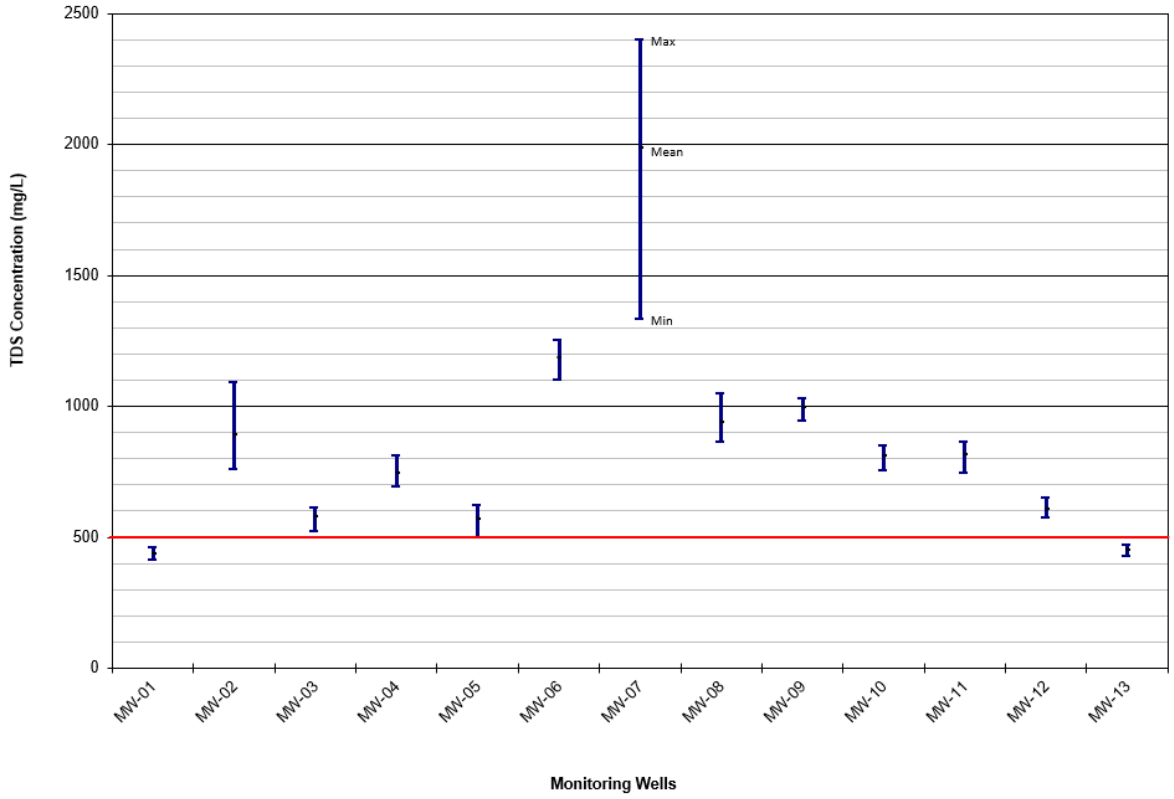
5.6 Total Dissolved Solids

TDS are dissolved constituents which comprise inorganic salts, primarily the major cations and anions used for groundwater characterization, nitrate (when introduced by agricultural use), and small amounts of organic matter (Health Canada 1978b). Sources of TDS include natural mineral sources, sewage, urban and agricultural runoff, and industrial water (Health Canada 1978b). TDS concentrations resulting from mineral dissolution vary with the solubility of the minerals present.

Health Canada (2020) suggests an AO of less than or equal to 500 mg/L for TDS (indicated by the red line on Figure 5-6) to minimize hardness, unpalatability, mineral deposition, and corrosion (Health Canada 1978b). Recent data on health effects associated with the ingestion of TDS in drinking water is limited and the data that are available are unclear; however, some individual components of TDS (e.g. chloride, sodium, and nitrate) can affect human health (Health Canada 1978b; as updated 1991).

TDS concentrations within the Beverly Channel monitoring well network ranged from 410 to 2,400 mg/L, with only two monitoring wells with a TDS of less than 500 mg/L (MW-01 and MW-13). This was generally consistent with TDS values exceeding 1,000 mg/L reported by HCL (2001a and 2001b) for the Beverly Channel. The higher TDS concentration at MW-07 may be related to local groundwater discharge from bedrock. The TDS concentration in the bedrock at MW-02B was 1,990 mg/L in 2022, consistent with the generally reported range of 1,000 to 2,000 mg/L (Stein 1976) in the area.

Figure 5-6 High, Low, and Average TDS Concentrations in Beverly Channel Monitoring Wells



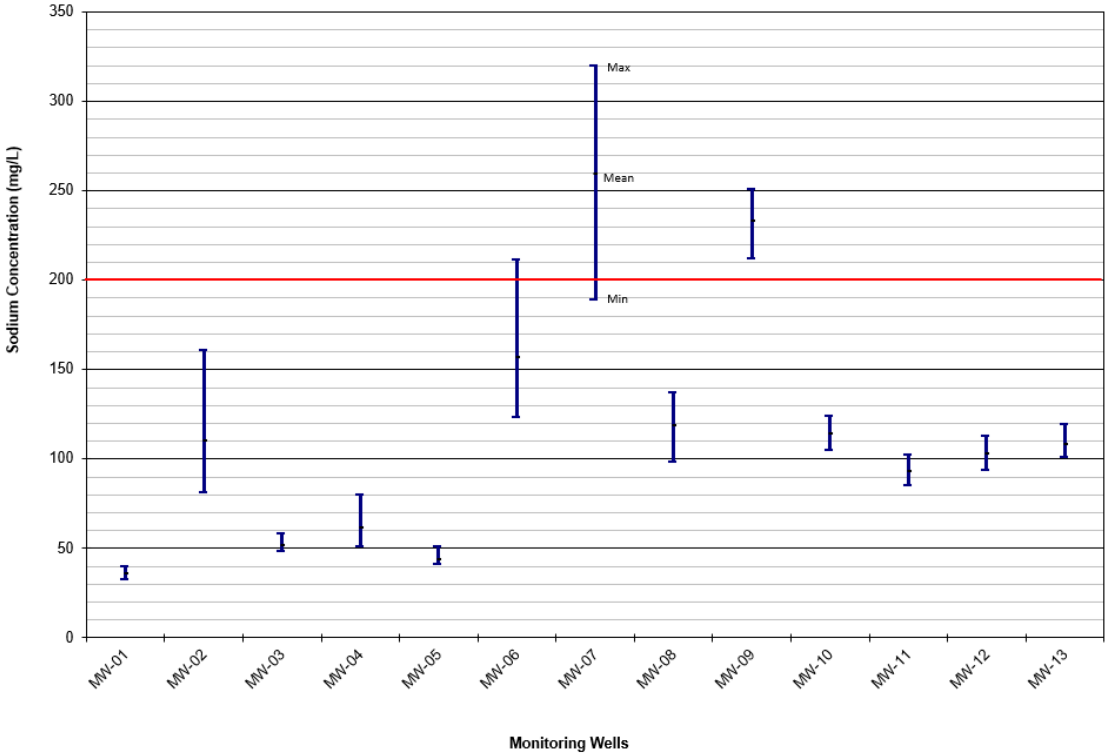
5.7 Sodium

Sodium may be present in feldspar minerals, which can release sodium into water through weathering. Sodium may be present as readily soluble salts, such as those left behind in the uplift of land surface or decline of sea level (Hem 1992). Anthropogenic sources of sodium include the use of salt for de-icing, brine disposal or leakage from oil wells, and water reuse for irrigation purposes (Hem 1992). Other potential anthropogenic sources include sewage and industrial effluents, and the use of sodium compounds for corrosion control and water-softening processes (Health Canada 1979d).

Health Canada (2020) suggests an AO of less than or equal to 200 mg/L for sodium (indicated by the red line in Figure 5-7). The human body has effective mechanisms to control sodium levels; therefore, sodium is not acutely toxic in the normal range of environmental or dietary concentrations (Health Canada 1979d). However, there is a relation in the human body between fluid volume and sodium retention, and changes in sodium intake may result in disturbances such as changes in hypertension, congestive cardiac failure, renal disease, cirrhosis, toxaemia of pregnancy, and Meniere's disease (Health Canada 1979d).

Sodium concentrations within the Beverly Channel have ranged from approximately 33 to 320 mg/L (Figure 5-7). Monitoring wells MW-06, MW-07, and MW-09 had elevated sodium concentrations compared to other monitoring wells. The elevated concentrations could be due to the proximity of the monitoring well in relation to the bedrock, where sodium concentrations are generally higher. The sodium concentration at MW-04 was visually increasing; however, the magnitude of the change was similar to historical variations in sodium concentrations at other monitoring locations.

Figure 5-7 High, Low, and Average Sodium Concentrations in Beverly Channel Monitoring Wells



6 Summary and Recommendations

Bi-annual groundwater quality monitoring of the Beverly Channel Aquifer was completed for the NCIA in August 2022. Results are summarized as follows.

- Lateral groundwater flow was generally to the northwest. The hydraulic gradient ranged from 0.001 to 0.005 m/m and the linear groundwater flow velocity ranged from 20 to 125 m/year in 2022.
- Groundwater met the Health Canada (2020) AO guideline of 7 to 10.5 for pH at all monitoring wells as measured by laboratory analysis. Due to a pH probe malfunction, all field pH values collected in 2022 were suspect and therefore set to non-reportable.
- Chloride concentrations were generally below 70 mg/L and within historical ranges. Elevated chloride concentrations reported at MW-04 were considered natural and potentially illustrate the influence of well screen proximity to bedrock (WorleyParsons 2010). This interpretation was supported by isotopic values at this location. A statistically increasing chloride trend was observed at MW-01. Visually, chloride concentrations were increasing at MW-03 and MW-05.
- There were no statistically significant trends in sulphate concentrations detected in 2022.
- The elevated sulphate concentration at MW-07 was considered to be naturally occurring. Other parameters, including dissolved iron, manganese, TDS, and sodium, are also generally higher at MW-07 than at other wells in the monitoring network. These elevated concentrations at MW-07 are likely natural and could be caused by interactions with bedrock material.
- Dissolved iron, manganese, TDS, and sodium appear to be naturally elevated in the Beverly Channel within the NCIA Study Area. While elevated, their concentrations remain well within naturally occurring ranges for groundwater within Sturgeon and Strathcona County (Stein 1976; HCL 2001a, 2001b).
- No PHCs were detected above the RDL during the 2022 sampling event.
- Analysis of oxygen (^{18}O) and deuterium (^{2}H) stable isotope results suggest that groundwater in the Beverly Channel has a varying influence from different sources. On the light-end of the ^{18}O-^{2}H ranges, the groundwater appears to be mostly influenced from direct surface infiltration (e.g., MW-03). On the heavier-end of the ^{18}O-^{2}H ranges, there may be a higher relative contribution of bedrock groundwater or a higher relative contribution of evaporated surface water, or both.
- The vertical hydraulic gradient between the bedrock and Beverly Channel Aquifer was calculated at the nested pair (MW-02 and MW-02B). Results from the 2022 sampling event indicated a potential for upward flow from the bedrock toward the overlying Beverly Channel Aquifer under a vertical gradient of 0.35 m/m. Fluctuating and increasing (i.e., chloride) concentrations at MW-02 are indicative of mixed bedrock and Beverly Channel groundwater quality.

Recommendations are as follows:

- Bi-annual groundwater monitoring should continue, with the next sampling event to be completed in 2024.
- The analytical schedule should be the same as completed in 2022, and should therefore include the following:
  - major ions/routine potability parameters, including EC, pH, total alkalinity, chloride, sulphate, iron, manganese, TDS, calcium, magnesium, potassium, sodium, bicarbonate, carbonate, hydroxide, fluoride, ion balance, DOC, nitrate-as-nitrogen, nitrite-as-nitrogen, and total ammonia;
  - dissolved metal and trace element parameters, including aluminium, antimony, arsenic, barium, beryllium, boron, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, titanium, uranium, vanadium, and zinc;
  - PHC parameters including BTEX, PHC F1 and F2; and
  - deuterium and oxygen (^{2}H and ^{18}O) stable isotopes.

7 Closure

We trust that this report satisfies your current requirements and provides suitable documentation for your records. If you have any questions or require further details, please contact the undersigned at any time.

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Senior Review by:

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11 January 2023

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Tables

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Table 1

Monitoring Well Installation Details: Datum/Groundwater Surface Elevations and Hydraulic Conductivities

PROJECT No.: 317085-44533-22100

Monitoring Station	Easting (m)	Northing (m)	Ground Elevation (masl)	Datum Elevation (masl)	Surveyed Stickup (m)	Total Depth of Piezometer (mbgs)	Bottom of Piezometer Elevation (masl)	Depth Interval of Screen (mbgs)	Elevation Interval of Screen (masl)	Depth Interval of Sand (mbgs)	Elevation Interval of Sand (masl)	Date (dd-mmm-yyyy)	Depth to Groundwater (mbtoc)	Depth to Groundwater (mbgs)	Groundwater Surface Elevation (masl)	Depth to Bottom of Well (mbtoc)	Hydraulic Conductivity (m/s)	Lithology	Completion Interval	Comments
Monitoring Wells																				
MW-01	350335.040	5951040.450	617.52	618.04	0.52	19.80	597.72	15.50 - 19.80	602.02 - 597.72	14.30 - 19.80	603.22 - 597.72	07-Mar-2005	15.55	15.03	602.49	N/M	6.80E-05	Sand and Gravel		
												04-May-2005	15.48	14.96	602.56	N/M				
												06-Jun-2005	15.42	14.90	602.62	N/M				
												17-Nov-2005	15.64	15.12	602.40	N/M				
												15-Jun-2006	15.23	14.71	602.81	N/M				
												12-Jul-2007	15.23	14.71	602.81	N/M				
												19-Dec-2007	15.38	14.86	602.66	N/M				
												21-Apr-2009	15.29	14.77	602.75	N/M				
												05-May-2010	15.70	15.18	602.34	N/M				
												25-May-2011	15.40	14.88	602.64	N/M				
												29-May-2012	15.15	14.63	602.89	20.14				
												10-Jul-2013	14.41	13.89	603.63	19.56				
												16-Jun-2014	14.76	14.24	603.28	19.30				
												29-Jun-2015	15.12	14.60	602.92	19.27				
												19-Sep-2016	14.96	14.44	603.08	20.14				
												13-Jul-2017	14.77	14.25	603.27	20.43				
												01-Aug-2018	14.66	14.14	603.38	20.33				
												12-May-2020	14.51	13.99	603.53	20.35				
												22-Aug-2022	14.85	14.33	603.19	20.30				
MW-02	352457.800	5950583.370	630.71	631.31	0.60	33.80	596.91	27.60 - 33.80	603.11 - 596.91	26.20 - 33.80	604.51 - 596.91	07-Mar-2005	27.14	26.54	604.17	N/M	1.80E-04	Sand and Gravel		
												04-May-2005	27.22	26.62	604.09	N/M				
												06-Jun-2005	27.17	26.57	604.14	N/M				
												17-Nov-2005	27.23	26.63	604.08	N/M				
												15-Jun-2006	27.05	26.45	604.26	N/M				
												13-Jul-2007	27.18	26.58	604.13	N/M				
												19-Dec-2007	26.99	26.39	604.32	N/M				
												21-Apr-2009	27.13	26.53	604.18	N/M				
												05-May-2010	27.20	26.60	604.11	N/M				
												25-May-2011	27.26	26.66	604.05	N/M				
												29-May-2012	27.16	26.56	604.15	27.16				
												10-Jul-2013	27.05	26.45	604.26	34.30				
												16-Jun-2014	27.03	26.43	604.28	34.17				
												28-Aug-2014	27.09	26.49	604.22	34.18				
												25-Jun-2015	27.08	26.48	604.23	34.17				
												19-Sep-2016	26.99	26.39	604.32	34.21				
												13-Jul-2017	26.96	26.36	604.35	34.50				
												25-Sep-2017	26.94	26.34	604.37	N/M				
												02-Aug-2018	26.86	26.26	604.45	34.22				
												12-May-2020	26.84	26.24	604.47	34.26				
												22-Aug-2022	26.79	26.19	604.52	34.25				
MW-02B	352461.377	5950583.597	630.67	631.38	0.71	41.60	589.07	40.10 - 41.60	590.57 - 589.07	38.70 - 42.70	591.97 - 587.97	20-Sep-2016	28.50	27.79	602.88	40.35		Shale		
												13-Jul-2017	23.87	23.16	607.51	41.90				
												25-Sep-2017	24.16	23.45	607.22	N/M				
												02-Aug-2018	23.63	22.92	607.75	41.80				
												12-May-2020	23.40	22.69	607.98	41.73				
												22-Aug-2022	23.29	22.58	608.09	41.85				
MW-03	353030.210	5952940.900	623.79	624.43	0.64	29.60	594.19	25.00 - 29.60	598.79 - 594.19	23.50 - 29.60	600.29 - 594.19	08-Mar-2005	22.50	21.86	601.93	N/M	2.20E-04	Sand and Gravel		
												04-May-2005	22.55	21.91	601.88	N/M				
												06-Jun-2005	22.53	21.89	601.90	N/M				
												17-Nov-2005	23.47	22.83	600.96	N/M				
												15-Jun-2006	22.50	21.86	601.93	N/M				
												12-Jul-2007	22.45	21.81	601.98	N/M				
												19-Dec-2007	23.36	22.72	601.07	N/M				
												21-Apr-2009	22.54	21.90	601.89	N/M				
												06-May-2010	22.82	22.18	601.61	N/M				
												25-May-2011	22.32	21.68	602.11	N/M				
												29-May-2012	22.57	21.93	601.86	30.12				
												10-Jul-2013	22.24	21.60	602.19	30.21				
												16-Jun-2014	22.34	21.70	602.09	30.08				
												29-Jun-2015	22.57	21.93	601.86	30.08				

Monitoring Well Installation Details: Datum/Groundwater Surface Elevations and Hydraulic Conductivities

PROJECT No.: 317085-44533-22100

Monitoring Station	Easting (m)	Northing (m)	Ground Elevation (masl)	Datum Elevation (masl)	Surveyed Stickup (m)	Total Depth of Piezometer (mbgs)	Bottom of Piezometer Elevation (masl)	Depth Interval of Screen (mbgs)	Elevation Interval of Screen (masl)	Depth Interval of Sand (mbgs)	Elevation Interval of Sand (masl)	Date (dd-mmm-yyyy)	Depth to Groundwater (mbtoc)	Depth to Groundwater (mbgs)	Groundwater Surface Elevation (masl)	Depth to Bottom of Well (mbtoc)	Hydraulic Conductivity (m/s)	Lithology	Completion Interval	Comments
MW-03 (cont'd)												19-Sep-2016	22.45	21.81	601.98	30.12				
												13-Jul-2017	22.40	21.76	602.03	30.11				
												31-Jul-2018	22.44	21.80	601.99	30.09				
												12-May-2020	22.12	21.48	602.31	30.12				
												22-Aug-2022	22.39	21.75	602.04	30.05				
MW-04	354823.410	5953959.760	620.25	620.79	0.54	26.20	594.05	21.60 - 26.20	598.65 - 594.05	19.50 - 26.20	600.75 - 594.05	08-Mar-2005	18.59	18.05	602.20	N/M	1.80E-04	Sand and Gravel		
												04-May-2005	18.61	18.07	602.18	N/M				
												06-Jun-2005	18.62	18.08	602.17	N/M				
												17-Nov-2005	18.57	18.03	602.22	N/M				
												14-Jun-2006	18.59	18.05	602.20	N/M				
												13-Jul-2007	18.55	18.01	602.24	N/M				
												19-Dec-2007	18.52	17.98	602.27	N/M				
												21-Apr-2009	18.66	18.12	602.13	N/M				
												06-May-2010	18.87	18.33	601.92	N/M				
												07-Jun-2011	18.70	18.16	602.09	N/M				
												30-May-2012	18.78	18.24	602.01	26.93				
												09-Jul-2013	18.54	18.00	602.25	27.80				
												13-Jun-2014	18.48	17.94	602.31	26.75				
												29-Jun-2015	18.48	17.94	602.31	26.72				
												19-Sep-2016	18.44	17.90	602.35	26.90				
												13-Jul-2017	18.41	17.87	602.38	27.48				
												31-Jul-2018	18.49	17.95	602.30	26.69				
												16-Jan-2019	18.46	17.92	602.33	N/M				
												24-Apr-2019	18.55	18.01	602.24	N/M				
												31-Jul-2019	18.46	17.92	602.33	N/M				
												17-Oct-2019	13.33	12.79	607.46	N/M				
												23-Jan-2020	18.30	17.76	602.49	N/M				
												12-May-2020	18.39	17.85	602.40	26.38				
												11-Nov-2020	18.48	17.94	602.31	N/M				
												29-Jan-2021	18.38	17.84	602.41	N/M				
												30-Apr-2021	18.45	17.91	602.34	N/M				
												05-Nov-2021	18.48	17.94	602.31	N/M				
												17-Jan-2022	18.37	17.83	602.42	N/M				
												06-May-2022	18.44	17.90	602.35	N/M				
												22-Aug-2022	18.54	18.00	602.25	26.86				
MW-05	354293.740	5954889.460	624.28	624.89	0.61	31.40	592.88	26.80 - 31.40	597.48 - 592.88	28.40 - 31.40	595.88 - 592.88	08-Mar-2005	25.32	24.71	599.57	N/M		Gravel		
												04-May-2005	25.71	25.10	599.18	N/M				
												06-Jun-2005	25.62	25.01	599.27	N/M				
												17-Nov-2005	26.77	26.16	598.12	N/M				
												14-Jun-2006	25.70	25.09	599.19	N/M				
												13-Jul-2007	25.52	24.91	599.37	N/M				
												19-Dec-2007	25.34	24.73	599.55	N/M				
												21-Apr-2009	25.61	25.00	599.28	N/M				
												29-Apr-2010	25.92	25.31	598.97	N/M				
												25-May-2011	25.58	24.97	599.31	N/M				
												29-May-2012	25.71	25.10	599.18	30.83				
												08-Jul-2013	25.06	24.45	599.83	30.88				
												13-Jun-2014	25.26	24.65	599.63	30.66				
												25-Jun-2015	25.72	25.11	599.17	30.67				
												19-Sep-2016	25.62	25.01	599.27	30.86				
												13-Jul-2017	25.61	25.00	599.28	30.66				
												31-Jul-2018	25.54	24.93	599.35	30.30				
												16-Jan-2019	25.31	24.70	599.58	N/M				
												24-Apr-2019	25.73	25.12	599.16	N/M				
												31-Jul-2019	25.42	24.81	599.47	N/M				
												17-Oct-2019	25.71	25.10	599.18	N/M				
												23-Jan-2020	24.59	23.98	600.30	N/M				
												12-May-2020	25.05	24.44	599.84	29.18				
												11-Nov-2020	25.85	25.24	599.04	N/M				
												29-Jan-2021	25.31	24.70	599.58	N/M				
												30-Apr-2021	25.70	25.09	599.19	N/M				
												04-Nov-2021	25.82	25.21	599.07	N/M				

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Table 1

Monitoring Well Installation Details: Datum/Groundwater Surface Elevations and Hydraulic Conductivities

PROJECT No.: 317085-44533-22100

Monitoring Station	Easting (m)	Northing (m)	Ground Elevation (masl)	Datum Elevation (masl)	Surveyed Stickup (m)	Total Depth of Piezometer (mbgs)	Bottom of Piezometer Elevation (masl)	Depth Interval of Screen (mbgs)	Elevation Interval of Screen (masl)	Depth Interval of Sand (mbgs)	Elevation Interval of Sand (masl)	Date (dd-mmm-yyyy)	Depth to Groundwater (mbtoc)	Depth to Groundwater (mbgs)	Groundwater Surface Elevation (masl)	Depth to Bottom of Well (mbtoc)	Hydraulic Conductivity (m/s)	Lithology	Completion Interval	Comments
MW-05 (cont'd)												17-Jan-2022	25.17	24.56	599.72	N/M				
												06-May-2022	25.66	25.05	599.23	N/M				
												22-Aug-2022	25.67	25.06	599.22	30.19				
MW-06	361559.340	5958812.220	629.61	630.28	0.67	39.00	590.61	34.40 - 39.00	595.21 - 590.61	32.90 - 39.00	596.71 - 590.61	08-Mar-2005	32.17	31.50	598.11	N/M	1.50E-04	Sand and Gravel		
												04-May-2005	32.16	31.49	598.12	N/M				
												06-Jun-2005	32.07	31.40	598.21	N/M				
												17-Nov-2005	32.17	31.50	598.11	N/M				
												16-Jun-2006	32.76	32.09	597.52	N/M				
												12-Jul-2007	32.13	31.46	598.15	N/M				
												19-Dec-2007	31.97	31.30	598.31	N/M				
												22-Apr-2009	31.99	31.32	598.29	N/M				
												05-May-2010	32.24	31.57	598.04	N/M				
												07-Jun-2011	32.10	31.43	598.18	N/M				
												29-May-2012	32.08	31.41	598.20	39.24				
												08-Jul-2013	32.06	31.39	598.22	39.70				
												12-Jun-2014	32.01	31.34	598.27	39.17				
												25-Jun-2015	31.98	31.31	598.30	39.20				
												20-Sep-2016	32.14	31.47	598.14	39.08				
												13-Jul-2017	32.08	31.41	598.20	39.06				
												31-Jul-2018	32.18	31.51	598.10	38.95				
												16-Jan-2019	32.12	31.45	598.16	N/M				
												24-Apr-2019	32.15	31.48	598.13	N/M				
												31-Jul-2019	31.18	30.51	599.10	N/M				
												17-Oct-2019	31.94	31.27	598.34	N/M				
												23-Jan-2020	32.12	31.45	598.16	N/M				
												13-May-2020	32.04	31.37	598.24	38.97				
												11-Nov-2020	32.16	31.49	598.12	N/M				
												29-Jan-2021	32.08	31.41	598.20	N/M				
												30-Apr-2021	32.04	31.37	598.24	N/M				
												05-Nov-2021	32.04	31.37	598.24	N/M				
												17-Jan-2022	32.02	31.35	598.26	N/M				
												06-May-2022	N/M	N/M	N/A	N/M				WL tape malfunction
												22-Aug-2022	32.17	31.50	598.11	38.97				
MW-07	359089.700	5959604.240	630.41	631.01	0.60	43.90	586.51	37.80 - 43.90	592.61 - 586.51	36.30 - 43.90	594.11 - 586.51	09-Mar-2005	33.98	33.38	597.03	N/M		Sand and Gravel		
												04-May-2005	34.14	33.54	596.87	N/M				
												06-Jun-2005	33.85	33.25	597.16	N/M				
												17-Nov-2005	34.23	33.63	596.78	N/M				
												16-Jun-2006	34.60	34.00	596.41	N/M				
												12-Jul-2007	33.97	33.37	597.04	N/M				
												19-Dec-2007	33.78	33.18	597.23	N/M				
												22-Apr-2009	34.00	33.40	597.01	N/M				
												05-May-2010	34.32	33.72	596.69	N/M				
												08-Jun-2011	34.43	33.83	596.58	N/M				
												28-Jul-2011	33.80	33.20	597.21	N/M				
												30-May-2012	34.12	33.52	596.89	44.66				
												11-Jul-2013	33.59	32.99	597.42	42.00				
												13-Jun-2014	33.70	33.10	597.31	42.00				
												25-Jun-2015	33.94	33.34	597.07	42.00				
												20-Sep-2016	34.15	33.55	596.86	42.00				
												14-Jul-2017	34.41	33.81	596.60	41.86				
												31-Jul-2018	34.44	33.84	596.57	44.56				
												16-Jan-2019	34.41	33.81	596.60	N/M				
												24-Apr-2019	34.54	33.94	596.47	N/M				
												31-Jul-2019	34.03	33.43	596.98	N/M				
												17-Oct-2019	34.33	33.73	596.68	N/M				
												23-Jan-2020	33.38	32.78	597.63	N/M				
												13-May-2020	33.77	33.17	597.24	44.60				
												11-Nov-2020	34.37	33.77	596.64	N/M				
												29-Jan-2021	34.06	33.46	596.95	N/M				
												30-Apr-2021	34.33	33.73	596.68	N/M				
												05-Nov-2021	34.43	33.83	596.58	N/M				

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Table 1

Monitoring Well Installation Details: Datum/Groundwater Surface Elevations and Hydraulic Conductivities

PROJECT No.: 317085-44533-22100

Monitoring Station	Easting (m)	Northing (m)	Ground Elevation (masl)	Datum Elevation (masl)	Surveyed Stickup (m)	Total Depth of Piezometer (mbgs)	Bottom of Piezometer Elevation (masl)	Depth Interval of Screen (mbgs)	Elevation Interval of Screen (masl)	Depth Interval of Sand (mbgs)	Elevation Interval of Sand (masl)	Date (dd-mmm-yyyy)	Depth to Groundwater (mbtoc)	Depth to Groundwater (mbgs)	Groundwater Surface Elevation (masl)	Depth to Bottom of Well (mbtoc)	Hydraulic Conductivity (m/s)	Lithology	Completion Interval	Comments
MW-07 (cont'd)												17-Jan-2022	33.88	33.28	597.13	N/M				
												06-May-2022	34.26	33.66	596.75	N/M				
												23-Aug-2022	34.16	33.56	596.85	44.60				
MW-08	363133.770	5961204.950	625.87	626.44	0.57	33.50	592.37	30.50 - 33.50	595.37 - 592.37	28.70 - 33.50	597.17 - 592.37	09-Mar-2005	27.74	27.17	598.70	N/M	9.50E-04	Gravel		
												04-May-2005	27.77	27.20	598.67	N/M				
												06-Jun-2005	27.68	27.11	598.76	N/M				
												15-Nov-2005	27.74	27.17	598.70	N/M				
												16-Jun-2006	27.58	27.01	598.86	N/M				
												11-Jul-2007	27.72	27.15	598.72	N/M				
												19-Dec-2007	27.57	27.00	598.87	N/M				
												22-Apr-2009	27.63	27.06	598.81	N/M				
												05-May-2010	27.83	27.26	598.61	N/M				
												07-Jun-2011	27.72	27.15	598.72	N/M				
												30-May-2012	27.69	27.12	598.75	34.07				
												09-Jul-2013	27.63	27.06	598.81	31.17				
												12-Jun-2014	27.55	26.98	598.89	34.00				
												24-Jun-2015	27.58	27.01	598.86	34.24				
												20-Sep-2016	27.63	27.06	598.81	34.02				
												02-Aug-2017	27.77	27.20	598.67	34.00				
												01-Aug-2018	27.56	26.99	598.88	33.94				
												13-May-2020	27.46	26.89	598.98	33.99				
												05-Nov-2021	34.43	33.86	592.01	N/M				
												23-Aug-2022	27.58	27.01	598.86	33.93				
MW-09	361003.460	5962032.280	624.06	624.73	0.67	36.60	587.46	32.00 - 36.60	592.06 - 587.46	30.50 - 36.60	593.56 - 587.46	09-Mar-2005	28.41	27.74	596.32	N/M	4.10E-04	Gravel, Sand and Gravel		
												04-May-2005	28.41	27.74	596.32	N/M				
												06-Jun-2005	28.33	27.66	596.40	N/M				
												17-Nov-2005	28.48	27.81	596.25	N/M				
												16-Jun-2006	28.27	27.60	596.46	N/M				
												11-Jul-2007	28.35	27.68	596.38	N/M				
												18-Dec-2007	28.34	27.67	596.39	N/M				
												22-Apr-2009	28.27	27.60	596.46	N/M				
												06-May-2010	28.61	27.94	596.12	N/M				
												02-Jun-2011	28.25	27.58	596.48	N/M				
												29-May-2012	28.37	27.70	596.36	37.06				
												10-Jul-2013	28.17	27.50	596.56	37.25				
												13-Jun-2014	28.64	27.97	596.09	36.70				
												25-Jun-2015	28.36	27.69	596.37	37.07				
												20-Sep-2016	28.43	27.76	596.30	36.77				
												14-Jul-2017	28.38	27.71	596.35	37.08				
												01-Aug-2018	28.28	27.61	596.45	37.03				
												13-May-2020	28.12	27.45	596.61	37.05				
												23-Aug-2022	28.34	27.67	596.39	37.06				
MW-10	364954.620	5963505.110	624.06	624.67	0.61	41.80	582.26	35.70 - 41.80	588.36 - 582.26	N/A	N/A	09-Mar-2005	26.89	26.28	597.78	N/M		Gravel, Sand and Gravel		
												04-May-2005	26.90	26.29	597.77	N/M				
												06-Jun-2005	26.82	26.21	597.85	N/M				
												16-Nov-2005	26.90	26.29	597.77	N/M				
												16-Jun-2006	26.72	26.11	597.95	N/M				
												11-Jul-2007	26.87	26.26	597.80	N/M				
												18-Dec-2007	26.74	26.13	597.93	N/M				
												22-Apr-2009	26.72	26.11	597.95	N/M				
												05-May-2010	26.93	26.32	597.74	N/M				
												02-Jun-2011	26.70	26.09	597.97	N/M				
												30-May-2012	26.80	26.19	597.87	41.78				
												09-Jul-2013	26.73	26.12	597.94	42.87				
												12-Jun-2014	26.63	26.02	598.04	41.79				
												24-Jun-2015	26.67	26.06	598.00	41.79				
												20-Sep-2016	26.72	26.11	597.95	41.86				
												14-Jul-2017	26.71	26.10	597.96	41.71				
												01-Aug-2018	26.58	25.97	598.09	41.72				
												13-May-2020	26.47	25.86	598.20	41.76				
												26-Aug-2022	26.52	25.91	598.15	41.76				

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Table 1

Monitoring Well Installation Details: Datum/Groundwater Surface Elevations and Hydraulic Conductivities

PROJECT No.: 317085-44533-22100

Monitoring Station	Easting (m)	Northing (m)	Ground Elevation (masl)	Datum Elevation (masl)	Surveyed Stickup (m)	Total Depth of Piezometer (mbgs)	Bottom of Piezometer Elevation (masl)	Depth Interval of Screen (mbgs)	Elevation Interval of Screen (masl)	Depth Interval of Sand (mbgs)	Elevation Interval of Sand (masl)	Date (dd-mmm-yyyy)	Depth to Groundwater (mbtoc)	Depth to Groundwater (mbgs)	Groundwater Surface Elevation (masl)	Depth to Bottom of Well (mbtoc)	Hydraulic Conductivity (m/s)	Lithology	Completion Interval	Comments
MW-11	362564.360	5965300.710	624.49	625.16	0.67	44.20	580.29	38.10 - 44.20	586.39 - 580.29	35.10 - 47.20	589.39 - 577.29	10-Mar-2005	30.60	29.93	594.56	N/M	1.50E-04	Sand and Gravel		
												04-May-2005	30.42	29.75	594.74	N/M				
												06-Jun-2005	30.41	29.74	594.75	N/M				
												16-Nov-2005	30.41	29.74	594.75	N/M				
												16-Jun-2006	30.34	29.67	594.82	N/M				
												11-Jul-2007	30.38	29.71	594.78	N/M				
												18-Dec-2007	30.40	29.73	594.76	N/M				
												22-Apr-2009	30.35	29.68	594.81	N/M				
												05-May-2010	30.64	29.97	594.52	N/M				
												02-Jun-2011	30.46	29.79	594.70	N/M				
												30-May-2012	30.35	29.68	594.81	44.78				
												10-Jul-2013	30.26	29.59	594.90	44.88				
												12-Jun-2014	30.19	29.52	594.97	45.31				
												24-Jun-2015	30.19	29.52	594.97	45.34				
												20-Sep-2016	30.40	29.73	594.76	45.07				
												14-Jul-2017	30.30	29.63	594.86	44.23				
												01-Aug-2018	30.13	29.46	595.03	44.73				
												13-May-2020	29.98	29.31	595.18	44.81				
												23-Aug-2022	30.13	29.46	595.03	44.70				
MW-12	366805.930	5968379.850	625.46	626.07	0.61	38.10	587.36	35.10 - 38.10	590.36 - 587.36	33.50 - 38.10	591.96 - 587.36	10-Mar-2005	32.95	32.34	593.12	N/M	1.40E-04	Sand, Sand and Gravel		
												04-May-2005	32.90	32.29	593.17	N/M				
												06-Jun-2005	32.87	32.26	593.20	N/M				
												16-Nov-2005	33.05	32.44	593.02	N/M				
												16-Jun-2006	33.62	33.01	592.45	N/M				
												11-Jul-2007	32.90	32.29	593.17	N/M				
												18-Dec-2007	32.77	32.16	593.30	N/M				
												22-Apr-2009	32.76	32.15	593.31	N/M				
												06-May-2010	33.01	32.40	593.06	N/M				
												02-Jun-2011	32.84	32.23	593.23	N/M				
												29-May-2012	32.89	32.28	593.18	38.72				
												10-Jul-2013	32.82	32.21	593.25	39.45				
												12-Jun-2014	32.84	32.23	593.23	38.70				
												24-Jun-2015	32.83	32.22	593.24	38.71				
												20-Sep-2016	32.92	32.31	593.15	38.70				
												14-Jul-2017	32.90	32.29	593.17	38.55				
												01-Aug-2018	32.77	32.16	593.30	38.50				
												14-May-2020	32.76	32.15	593.31	38.52				
												23-Aug-2022	32.78	32.17	593.29	38.51				
MW-13	365292.720	5968147.120	625.65	626.28	0.63	40.50	585.15	37.50 - 40.50	588.15 - 585.15	36.00 - 40.50	589.65 - 585.15	10-Mar-2005	32.60	31.97	593.68	N/M		Gravel		
												04-May-2005	32.54	31.91	593.74	N/M				
												06-Jun-2005	32.50	31.87	593.78	N/M				
												16-Nov-2005	33.45	32.82	592.83	N/M				
												16-Jun-2006	33.24	32.61	593.04	N/M				
												11-Jul-2007	32.54	31.91	593.74	N/M				
												18-Dec-2007	32.39	31.76	593.89	N/M				
												22-Apr-2009	32.41	31.78	593.87	N/M				
												06-May-2010	32.68	32.05	593.60	N/M				
												02-Jun-2011	32.46	31.83	593.82	N/M				
												30-May-2012	32.56	31.93	593.72	41.07				
												10-Jul-2013	32.49	31.86	593.79	41.14				
												12-Jun-2014	32.49	31.86	593.79	41.00				
												24-Jun-2015	32.45	31.82	593.83	41.23				
												20-Sep-2016	32.53	31.90	593.75	40.98				
												14-Jul-2017	32.53	31.90	593.75	41.53				
												01-Aug-2018	32.40	31.77	593.88	40.80				
												14-May-2020	32.37	31.74	593.91	40.95				
												23-Aug-2022	32.40	31.77	593.88	40.85				

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Table 1

Monitoring Well Installation Details: Datum/Groundwater Surface Elevations and Hydraulic Conductivities

PROJECT No.: 317085-44533-22100

Monitoring Station	Easting (m)	Northing (m)	Ground Elevation (masl)	Datum Elevation (masl)	Surveyed Stickup (m)	Total Depth of Piezometer (mbgs)	Bottom of Piezometer Elevation (masl)	Depth Interval of Screen (mbgs)	Elevation Interval of Screen (masl)	Depth Interval of Sand (mbgs)	Elevation Interval of Sand (masl)	Date (dd-mmm-yyyy)	Depth to Groundwater (mbtoc)	Depth to Groundwater (mbgs)	Groundwater Surface Elevation (masl)	Depth to Bottom of Well (mbtoc)	Hydraulic Conductivity (m/s)	Lithology	Completion Interval	Comments

NOTES:
1. Data may be entered to the nearest mm, but are reported above to the nearest cm.
   Apparent rounding errors may occasionally occur in calculated fields (e.g. Groundwater Surface Elevation).
2. All coordinates are provided in the UTM Zone 12N referenced to North American Datum of 1983 coordinate system.
3. N/M - Denotes not measured.
4. N/A - Denotes not available.
5. masl - Denotes metres above sea level.
6. mbgs - Denotes metres below ground surface.
7. mbtoc - Denotes metres below top of PVC casing.

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Table 2

Groundwater Analytical Results: Field Measurements

PROJECT No.: 317085-44533-22100

Monitoring Station	Date (dd-mmm-yyyy)	Electrical Conductivity (uS/cm)	pH (pH Units)	Temperature (°C)	Sample Comment
Monitoring Wells					
MW-01	05-May-2010	749	6.95	5.6	
	25-May-2011	741	7.11	7.7	
	29-May-2012	749	6.88	7.6	
	10-Jul-2013	720	7.21	6.8	Clear
	16-Jun-2014	765	7.38	7.0	Clear
	29-Jun-2015	708	7.37	7.8	Colourless
	19-Sep-2016	716	7.17	8.6	Clear
	13-Jul-2017	824	7.21	7.9	Brown/Silty
	01-Aug-2018	805	7.04	6.4	Clear
	12-May-2020	772	7.61	3.8	Clear, new foot valve
	22-Aug-2022	781	---	7.5	Clear. pH probe malfunction.
MW-02	05-May-2010	1306	7.04	4.8	
	25-May-2011	1397	7.02	8.3	
	29-May-2012	1023	7.49	7.3	
	29-Jul-2013	1161	7.10	10.9	Cloudy brown
	16-Jun-2014	1298	7.19	6.7	Clear, orange
	28-Aug-2014	1355	7.12	7.0	Clear
	25-Jun-2015	1238	7.05	7.6	Light brown
	19-Sep-2016	1217	6.96	8.7	Clear
	13-Jul-2017	1412	6.92	7.6	Clear
	29-Sep-2017	1403	7.26	12.4	
	02-Aug-2018	1406	6.87	6.2	Clear
	12-May-2020	1429	7.36	3.5	Clear
	22-Aug-2022	1410	---	7.7	Clear. pH probe malfunction.
MW-02B	20-Sep-2016	2770	7.84	8.0	Brown and silty
	13-Jul-2017	4230	7.93	8.8	Brown Silty
	29-Sep-2017	3740	8.27	7.9	
	02-Aug-2018	2250	7.83	7.2	cloudy,changed foot valve
	12-May-2020	2580	8.25	3.5	Clear, new foot valve
	22-Aug-2022	3660	---	7.8	Gray, cloudy, silty. pH probe malfunction.
MW-03	06-May-2010	974	7.14	6.6	
	25-May-2011	976	7.08	8.9	Clear
	29-May-2012	958	7.72	8.3	
	10-Jul-2013	966	7.14	8.4	Cloudy brown
	16-Jun-2014	1003	7.35	8.2	Clear
	29-Jun-2015	947	7.25	8.5	Colourless (clear)
	19-Sep-2016	935	7.04	9.7	Clear
	13-Jul-2017	1071	7.16	8.6	Cloudy
	31-Jul-2018	963	7.05	7.7	brown/cloudy
	12-May-2020	1010	7.47	4.3	Clear, new foot valve
	22-Aug-2022	1048	---	9.7	Cloudy, brown. pH probe malfunction.
MW-04	06-May-2010	1213	7.14	8.2	
	07-Jun-2011	1230	7.12	8.1	Clear
	30-May-2012	1420	7.14	7.8	
	09-Jul-2013	1216	7.10	8.3	Clear
	13-Jun-2014	1289	7.27	8.0	Clear, yellow
	29-Jun-2015	1186	7.20	9.3	Clear
	19-Sep-2016	1331	7.09	8.7	Clear
	13-Jul-2017	1412	7.04	7.7	Clear
	31-Jul-2018	1262	7.11	6.7	Clear
	12-May-2020	1366	7.45	4.1	Slightly orange, brown flecks, new foot valve
	22-Aug-2022	1419	---	8.8	Clear. pH probe malfunction.
MW-05	29-Apr-2010	985	7.08	7.6	
	25-May-2011	1070	7.06	8.3	
	29-May-2012	982	7.28	9.7	
	08-Jul-2013	987	7.34	7.1	Silty
	13-Jun-2014	1004	7.41	7.6	Light grey
	25-Jun-2015	935	7.35	8.0	Light brown
	19-Sep-2016	958	7.16	8.1	Clear
	13-Jul-2017	1103	7.04	7.7	Brown/Silty
	31-Jul-2018	953	7.23	6.5	Clear, changed foot valve
	12-May-2020	986	7.60	3.3	Clear, new foot valve
	22-Aug-2022	1024	---	6.8	Slightly cloudy. pH probe malfunction.
MW-06	06-May-2010	1773	7.21	5.7	
	07-Jun-2011	1762	7.22	11.1	
	29-May-2012	1699	7.29	7.6	
	08-Jul-2013	1683	7.23	8.6	Clear
	12-Jun-2014	1755	7.33	8.6	Clear
	25-Jun-2015	1637	7.36	10.8	Clear
	20-Sep-2016	1562	7.12	7.9	Brown and silty
	13-Jul-2017	1564	7.19	7.4	Brown/Silty
	31-Jul-2018	1470	7.17	6.3	Clear
	13-May-2020	1674	7.40	4.3	Clear. Lid broken
	22-Aug-2022	1764	---	7.1	Slightly cloudy. pH probe malfunction.
MW-07	05-May-2010	2640	6.91	7.2	
	08-Jun-2011	1750	7.73	6.6	
	28-Jul-2011	2680	7.11	7.2	
	30-May-2012	2540	7.04	8.1	
	11-Jul-2013	2610	6.98	7.5	Clear
	13-Jun-2014	2910	7.12	9.1	Clear
	25-Jun-2015	2570	7.06	8.8	Clear
	20-Sep-2016	2370	6.95	10.0	Clear
	14-Jul-2017	3520	6.92	7.5	Clear
	31-Jul-2018	1970	6.91	6.8	Clear
	13-May-2020	2010	7.26	4.3	Clear
	23-Aug-2022	3020	---	8.6	Clear. pH probe malfunction.
MW-08	05-May-2010	1359	7.09	5.4	
	07-Jun-2011	1378	7.41	9.0	Slight silt
	30-May-2012	1363	7.31	7.3	
	09-Jul-2013	1198	7.34	6.9	Clear / Silty
	12-Jun-2014	1387	7.41	7.3	Murky brown
	24-Jun-2015	1327	7.30	7.6	Colourless
	20-Sep-2016	1268	7.31	7.5	Clear
	02-Aug-2017	1525	7.26	6.7	Minor Silt
	01-Aug-2018	1465	7.02	6.4	Clear
	13-May-2020	1510	7.47	3.2	Clear
	23-Aug-2022	1536	---	7.0	Clear. pH probe malfunction.
MW-09	06-May-2010	1538	7.35	6.8	
	02-Jun-2011	1548	7.49	9.1	Very silty
	29-May-2012	1507	7.43	7.7	
	10-Jul-2013	1463	7.43	8.9	Cloudy brown
	13-Jun-2014	1537	7.67	7.1	Light brown
	25-Jun-2015	1427	7.59	7.7	Light grey

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Table 2

Groundwater Analytical Results: Field Measurements

PROJECT No.: 317085-44533-22100

Monitoring Station	Date (dd-mmm-yyyy)	Electrical Conductivity (uS/cm)	pH (pH Units)	Temperature (°C)	Sample Comment
MW-09 (cont'd)	20-Sep-2016	1396	7.46	7.9	Cloudy
	14-Jul-2017	1647	7.52	7.2	Cloudy
	01-Aug-2018	1516	7.40	6.5	Clear
	13-May-2020	1545	7.65	4.2	Clear
	23-Aug-2022	1549	---	8.2	Clear. pH probe malfunction.
MW-10	05-May-2010	1287	7.11	6.6	
	25-May-2011	1192	7.36	9.1	Clear
	30-May-2012	1267	7.29	7.4	
	09-Jul-2013	1247	7.24	7.0	Clear
	12-Jun-2014	1292	7.42	7.8	Clear
	24-Jun-2015	1242	7.36	7.9	Colourless
	20-Sep-2016	1162	7.21	8.1	Clear
	14-Jul-2017	1355	7.20	7.1	Clear
	01-Aug-2018	1235	7.19	7.1	Clear
	13-May-2020	1264	7.46	3.8	Clear
	26-Aug-2022	1250	---	11.2	Clear. pH probe malfunction.
MW-11	05-May-2010	1303	7.06	7.2	
	03-Jun-2011	1341	7.42	6.9	
	30-May-2012	1282	7.19	9.8	
	10-Jul-2013	1258	7.18	7.4	Silty grey
	12-Jun-2014	1322	7.38	7.3	Cloudy brown
	24-Jun-2015	1241	7.26	7.3	light grey
	20-Sep-2016	1156	7.04	8.2	Clear
	14-Jul-2017	1448	7.11	7.2	Clear
	01-Aug-2018	1430	7.08	6.2	Clear
	13-May-2020	1331	7.39	3.8	Clear
	23-Aug-2022	1328	---	7.8	Clear. pH probe malfunction.
MW-12	06-May-2010	1032	7.32	5.1	
	02-Jun-2011	983	6.95	8.7	Clear
	29-May-2012	1024	7.37	7.3	
	10-Jul-2013	998	7.34	6.1	Murky brown
	12-Jun-2014	1020	7.42	7.6	Cloudy brown
	24-Jun-2015	992	7.30	6.6	Colourless
	20-Sep-2016	941	7.18	7.6	Brown and silty
	14-Jul-2017	1135	7.19	6.6	Cloudy, Minor Silt
	01-Aug-2018	1025	7.25	7.4	brown/cloudy
	14-May-2020	1043	7.27	2.1	Clear
	23-Aug-2022	1012	---	5.8	Clear. pH probe malfunction.
MW-13	06-May-2010	776	7.53	7.0	
	02-Jun-2011	841	7.06	8.5	Clear
	30-May-2012	733	7.69	6.9	
	10-Jul-2013	759	7.60	10.1	Cloudy brown
	12-Jun-2014	775	7.77	7.2	Cloudy brown
	24-Jun-2015	734	7.69	7.0	Colourless
	20-Sep-2016	741	7.45	7.4	Brown and silty
	14-Jul-2017	934	7.60	7.0	Brown/Silty
	01-Aug-2018	809	7.39	6.2	brown/cloudy
	14-May-2020	784	7.60	2.0	Clear
	23-Aug-2022	756	---	6.6	Slightly cloudy. pH probe malfunction.

NOTES:

1. --- in detail data row(s) denotes parameter not analyzed.

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Table 3

Groundwater Analytical Results: Indicator Analysis Parameters

PROJECT No.: 317085-44533-22100		Anions					Cations							General							Inorganic Nitrogen Compounds						Ion Balance				Miscellaneous
Monitoring Station	Date (dd-mmm-yyyy)	Bicarbonate (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Hydroxide (mg/L)	Calcium (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Fluoride (mg/L)	Alkalinity (Total; as $CaCO_3$) (mg/L)	Alkalinity (PP; as $CaCO_3$) (mg/L)	Electrical Conductivity (uS/cm)	Hardness (Total; as $CaCO_3$) (mg/L)	pH (pH Units)	Total Dissolved Solids (mg/L)	Total Dissolved Solids (Calculated) (mg/L)	Ammonia (Total; as N) (mg/L)	Nitrate (mg/L)	Nitrate (as N) (mg/L)	Nitrite (mg/L)	Nitrite (as N) (mg/L)	Nitrite-plus-Nitrate (as N) (mg/L)	Cation Sum (meq/L)	Anion Sum (meq/L)	Ion Balance (%)	Ion Balance (Balance)	Dissolved Organic Carbon (mg/L)
Canadian Drinking Water Quality Guidelines 2020 - AO		---	---	250	500	---	---	0.3	---	0.02	---	200	---	---	---	---	---	(7 - 10.5)	500	500	---	---	---	---	---	---	---	---	---	---	---
Canadian Drinking Water Quality Guidelines 2020 - MAC		---	---	---	---	---	None required	---	None required	0.12	---	---	1.5	---	---	---	None required	---	---	---	None required	45	10	3	1	---	---	---	---	---	---
Monitoring Wells																															
MW-01	07-Mar-2005	444	< 5	4	57.4	< 5	94.6	1.02	24.8	0.605	3.1	40	0.19	364	---	762	338	7.7	---	442	0.39	---	< 0.1	---	< 0.05	< 0.1	---	---	100	---	3
	17-Nov-2005	451	< 5	4	61.1	< 5	94.8	1.67	26.9	0.662	2.3	36	0.13	370	---	760	347	7.9	---	447	0.212	---	< 0.1	---	< 0.05	< 0.1	---	---	97.6	---	3
	15-Jun-2006	448	< 5	4	56.8	< 5	99.7	1.81	27.3	0.7	2.9	37	0.14	367	---	748	361	8	---	448	0.274	---	< 0.1	---	< 0.05	< 0.1	---	---	103	---	3
	12-Jul-2007	445	< 5	3	54.6	< 5	95.1	1.84	26.1	0.664	2.3	33	0.13	365	---	718	345	7.8	---	433	0.185	---	< 0.1	---	< 0.05	< 0.1	---	---	98.6	---	3
	19-Dec-2007	470	< 1	2	60	< 1	87	< 0.06	23	0.67	2.2	34	0.2	390	---	770	310	7.8	---	442	0.26	---	< 0.2	---	< 0.06	< 0.2	---	---	0.87	---	2
	21-Apr-2009	450	< 0.5	5	44	< 0.5	84	< 0.06	24	0.66	2.4	36	0.14	370	---	770	310	7.67	---	410	0.22	---	0.003	---	< 0.003	0.003	---	---	93	---	2.3
	05-May-2010	453	< 5.0	3.46	62.0	< 5.0	98.6	2.02	28.4	0.730	---	38.1	0.150	371	---	762	363	8.06	---	456	0.221	---	< 0.050	---	< 0.050	< 0.071	---	---	102	---	3.0
	25-May-2011	446	< 5.0	3.02	57.1	< 5.0	91.1	1.53	25.4	0.675	2.68	33.3	0.109	366	---	768	332	8.04	---	432	0.271	---	< 0.050	---	< 0.050	< 0.071	---	---	94.9	---	3.4
	29-May-2012	450	< 5.0	3.13	56.2	< 5.0	93.0	1.57	23.7	0.694	2.70	35.0	0.106	369	---	769	330	8.00	---	435	0.228	---	< 0.050	---	< 0.050	< 0.071	---	---	94.7	---	3.1
	10-Jul-2013	438	< 5.0	3.49	52.3	< 5.0	96.5	1.82	26.2	0.729	2.71	36.0	0.124	359	---	727	349	7.94	445	433	---	---	< 0.050	---	< 0.050	< 0.071	---	---	103	---	3.5
	16-Jun-2014	408	< 5.0	4.58	59.8	< 5.0	87.2	1.92	26.4	0.737	2.80	32.7	0.119	334	---	677	326	7.94	470	414	---	---	< 0.050	---	< 0.020	< 0.054	---	---	99.4	---	4.5
	29-Jun-2015	450	< 0.50	4.7	57	< 0.50	97	1.9	27	0.71	2.6	37	0.15	370	< 0.50	760	350	7.46	460	450	---	0.069	0.016	< 0.033	< 0.010	< 0.020	8.9	8.8	---	1.0	2.5
	19-Sep-2016	434	< 5.0	5.46	54.6	< 5.0	92.8	1.76	26.0	0.699	2.63	32.5	0.114	356	---	744	339	7.87	449	428	---	---	< 0.020	---	< 0.010	< 0.022	---	---	98.1	---	4.3
	13-Jul-2017	453	< 5.0	6.27	52.2	< 5.0	91.5	1.93	27.0	0.714	2.66	36.2	0.121	372	---	709	340	7.76	489	459	---	---	< 0.020	---	< 0.010	< 0.022	---	---	91.6	---	2.4
	01-Aug-2018	430	< 5.0	9.64	54.0	< 5.0	89.8	1.94	27.4	0.690	2.61	35.3	0.133	353	---	727	337	8.05	---	431	---	---	< 0.020	---	< 0.010	< 0.022	---	---	98.7	---	2.63
	12-May-2020	437	< 5.0	19.5	49.0	< 5.0	63.1	---	26.7	0.682	2.70	36.9	0.178	359	---	700	268	7.39	---	413	---	---	< 0.020	---	< 0.010	< 0.022	---	---	80.3	---	2.4
	22-Aug-2022	412	< 1.0	29.7	47.8	< 1.0	92.0	1.89	26.3	0.676	2.72	35.2	0.108	338	---	738	---	8.27	---	462	---	---	0.047	---	< 0.010	< 0.05	---	---	98.2	---	2.74
MW-02	07-Mar-2005	514	< 5	13	227	< 5	113	0.275	34.5	0.236	6.8	111	0.21	422	---	1210	424	7.7	---	759	1.75	---	0.1	---	< 0.05	0.1	---	---	101	---	8
	17-Nov-2005	575	< 5	38	270	< 5	125	0.085	51.3	0.671	7.2	120	0.11	471	---	1400	523	7.9	---	894	1.34	---	< 0.1	---	< 0.05	< 0.1	---	---	98.4	---	6
	15-Jun-2006	629	< 5	23	274	< 5	162	3.19	55.4	1.09	5.5	95	0.09	516	---	1420	633	7.9	---	925	1.17	---	< 0.1	---	< 0.05	< 0.1	---	---	102	---	5
	13-Jul-2007	630	< 5	12	263	< 5	154	8.72	54.4	0.841	4.3	83	0.09	516	---	1360	609	7.9	---	880	0.756	---	< 0.1	---	< 0.05	< 0.1	---	---	98.7	---	6
	19-Dec-2007	660	< 1	13	290	< 1	140	< 0.06	46	0.7	4.5	83	0.1	540	---	1400	530	7.4	---	895	0.1	---	< 0.2	---	< 0.06	< 0.2	---	---	0.84	---	5
	21-Apr-2009	610	< 0.5	18	230	< 0.5	130	1.5	44	0.53	4.4	81	0.08	500	---	1400	500	7.36	---	810	0.56	---	0.005	---	< 0.003	0.005	---	---	89	---	4.1
	05-May-2010	597	< 5.0	11.6	268	< 5.0	147	9.35	54.0	0.505	---	87.2	0.094	489	---	1290	589	7.97	---	866	0.539	---	< 0.050	---	< 0.050	< 0.071	---	---	100	---	5.4
	25-May-2011	628	< 5.0	22.3	318	< 5.0	141	9.25	51.3	0.434	4.25	97.9	< 0.050	515	---	1500	563	7.90	---	944	0.728	---	< 0.050	---	< 0.050	< 0.071	---	---	89.1	---	11.3
	30-May-2012	605	< 5.0	29.6	231	< 5.0	135	8.07	44.8	0.431	5.18	82.9	0.061	496	---	1350	522	7.80	---	826	0.538	---	< 0.050	---	< 0.050	< 0.071	---	---	91.0	---	4.9
	10-Jul-2013	588	< 5.0	24.2	194	< 5.0	172	12.3	56.4	0.554	5.25	161	0.080	482	---	1220	662	7.69	805	902	---	---	< 0.050	---	< 0.050	< 0.071	---	---	142	---	5.4
	16-Jun-2014	563	< 5.0	211	282	< 5.0	144	10.8	52.0	0.446	4.75	122	0.080	461	---	1850	574	8.02	1180	1090	---	---	< 0.050	---	< 0.020	< 0.054	---	---	80.2	---	4.5
	28-Aug-2014	590	< 5.0	41.9	211	< 5.0	139	8.49	48.5	0.488	4.66	90.8	0.067	484	---	1340	547	7.85	861	826	---	---	< 0.050	---	< 0.020	< 0.054	---	---	98.4	---	5.3
	25-Jun-2015	610	< 0.50	96	270 [#1]	< 0.50	150	11	55	0.41	4.7	160	0.078	500	< 0.50	1600	610	7.15	930	1000	---	< 0.044	< 0.010	< 0.033	< 0.010	< 0.020	20	18	---	1.1	4.7
	19-Sep-2016	575	< 5.0	123	241	< 5.0	157	9.74	53.9	0.384	4.73	150	< 0.040	471	---	1650	614	7.69	1070	1010	---	---	< 0.040	---	< 0.020	< 0.045	---	---	106	---	5.9
	13-Jul-2017	585	< 5.0	51.7	224	< 5.0	140	7.99	52.2	0.372	4.92	99.6	0.056	480	---	1310	565	7.63	900	884	---	---	< 0.020	---	< 0.010	< 0.022	---	---	96.4	---	6.2
	29-Sep-2017	498	< 5.0	25.0	250	< 5.0	157	11.2	54.8	0.467	5.08	125	< 0.10	408	---	1220	618	8.14	---	862	---	---	< 0.10	---	< 0.050	< 0.11	---	---	127	---	5.4
	02-Aug-2018	585	< 5.0	61.6	234	< 5.0	140	7.79	51.0	0.387	4.67	104	0.102	479	---	1360	560	8.20	909	883	---	---	< 0.020	---	< 0.010	< 0.022	---	---	97.7	---	7.01
	12-May-2020	599	< 5.0	74.6	213	< 5.0	88.9	---	47.2	0.153	4.81	118	0.117	491	---	1280	416	7.19	---	841	---	---	< 0.020	---	< 0.010	< 0.022	---	---	83.0	---	4.7
	22-Aug-2022	622	< 1.0	64.3	174	< 1.0	122	5.25	44.3	0.344	4.98	115	0.079	510	---	1290	---	8.14	---	865	---	---	< 0.020	---	< 0.010	< 0.05	---	---	96.8	---	6.00
MW-02B	20-Sep-2016	357	< 5.0	812	41.7	< 5.0	40.4	< 0.050	8.75	0.109	4.85	571	0.41	293	---	3180	137	8.28	1760	1650	---	---	< 0.10	---	< 0.050	< 0.11	---	---	93.4	---	9.8
	14-Jul-2017	403	< 5.0	804	13.3	< 5.0	35.8	0.687	7.18	0.200	3.60	589	0.475	330	---	3210	119	8.29	1850	1660	---	---	< 0.040	---	< 0.020	< 0.045	---	---	93.8	---	7.9
	29-Sep-2017	372	10.4	975	5.8	< 5.0	37.2	0.44	7.34	0.114	4.0	673	0.42	322	---	3370	123	8.55	---	1900	---	---	< 0.10	---	< 0.050	< 0.11	---	---	93.4	---	10.2
	02-Aug-2018	389	11.3	930	< 1.5	< 5.0	35.8	0.127	6.95	0.102	4.00	691	0.73	338	---	3460	118	8.49	1860	1870	---	---	< 0.10	---	< 0.050	< 0.11	---	---	98.5	---	8.66
	12-May-2020	412	< 5.0	931	< 1.5	< 5.0	40.3	---	6.87	0.0964	3.99	696	0.73	337	---	3270	129	7.94	---	1880	---	---	< 0.10	---	< 0.050	< 0.11	---	---	99.7	---	5.5
	22-Aug-2022	413	6.0	1010	< 1.50	< 1.0	36.3	0.661	6.74	0.0567	3.92	699	0.638	349	---	3480	---	8.40	---	1990	---	---	< 0.100	---	< 0.050	< 0.112	---	---	92.7	---	7.28
MW-03	07-Mar-2005	442	< 5	31	113	< 5	106	3.19	36.1	0.264	3.5	56	0.14	362	---	937	413	7.4	---	563	0.38	---	< 0.1	---	< 0.05	< 0.1	---	---	103	---	5
	17-Nov-2005	445	< 5	35	122	< 5	104	4.47	36.4	0.239	3	54	0.1	365	---	949	410	7.8	---	573	0.306	---	< 0.1	---	< 0.05	< 0.1	---	---	98.1	---	4
	15-Jun-2006	439	< 5	35	116	< 5	109	4.85	36.6	0.258	3	52	0.1	360	---	943	423	8	---	568	0.359	---	< 0.1	---	< 0.05	< 0.1	---	---	102	---	3
	12-Jul-2007	440	< 5	36	122	< 5	108	4.89	37.7	0.249	3	55	0.11	361	---	930	425	8	---	578	0.291	---	< 0.1	---	< 0.05	< 0.1	---	---	102	---	3
	19-Dec-2007	460	< 1	35	130	< 1	98	< 0.06	32	0.25	2.7	49	0.1	380	---	960	370	7.7	---	571	0.06	---	< 0.2	---	< 0.06	< 0.2	---	---	0.87	---	3
	21-Apr-2009	430	< 0.5	35	98	< 0.5	92	< 0.06	32	0.24	2.8	51	0.11	350	---	950	360	7.57	---	520	0.33	---	0.009	---	< 0.003	0.009	---	---	95	---	2.5
	06-May-2010	435	< 5.0	44.3	124	< 5.0	104	5.23	36.8	0.253	---	52.3	0.117	357	---	967	411	8.03	---	579	0.339	---	< 0.050	---	< 0.050	< 0.071	---	---	96.4	---	5.3
	02-Jun-2011	433	< 5.0	44.2	120	< 5.0	115	5.55	40.1	0.277	3.20	52.7	0.105	355	---	1000	452	7.98	---	588	0.302	---	< 0.050	---	< 0.050	< 0.071	---	---	105	---	3.3
	29-May-2012	434	< 5.0	45.9	115	< 5.0	102	4.83	31.8	0.246	3.05	48.8	0.080	355	---	988	386	7.83	---	560	0.327	---	< 0.050	---	< 0.050	< 0.071	---	---	91.7	---	3.4

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Table 3

Groundwater Analytical Results: Indicator Analysis Parameters

PROJECT No.: 317085-44533-22100		Anions					Cations							General							Inorganic Nitrogen Compounds						Ion Balance				Miscellaneous
Monitoring Station	Date (dd-mmm-yyyy)	Bicarbonate (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Hydroxide (mg/L)	Calcium (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Fluoride (mg/L)	Alkalinity (Total; as $CaCO_3$) (mg/L)	Alkalinity (PP; as $CaCO_3$) (mg/L)	Electrical Conductivity (uS/cm)	Hardness (Total; as $CaCO_3$) (mg/L)	pH (pH Units)	Total Dissolved Solids (mg/L)	Total Dissolved Solids (Calculated) (mg/L)	Ammonia (Total; as N) (mg/L)	Nitrate (mg/L)	Nitrate (as N) (mg/L)	Nitrite (mg/L)	Nitrite (as N) (mg/L)	Nitrite-plus-Nitrate (as N) (mg/L)	Cation Sum (meq/L)	Anion Sum (meq/L)	Ion Balance (%)	Ion Balance (Balance)	Dissolved Organic Carbon (mg/L)
Canadian Drinking Water Quality Guidelines 2020 - AO		---	---	250	500	---	---	0.3	---	0.02	---	200	---	---	---	---	---	(7 - 10.5)	500	500	---	---	---	---	---	---	---	---	---	---	---
Canadian Drinking Water Quality Guidelines 2020 - MAC		---	---	---	---	---	None required	---	None required	0.12	---	---	1.5	---	---	---	None required	---	---	---	None required	45	10	3	1	---	---	---	---	---	---
MW-03 (cont'd)	10-Jul-2013	427	< 5.0	48.3	119	< 5.0	109	5.36	38.3	0.274	3.20	57.9	0.105	350	---	963	430	7.81	608	586	---	---	< 0.050	---	< 0.050	< 0.071	---	---	103	---	3.0
	16-Jun-2014	395	< 5.0	55.9	129	< 5.0	100	5.13	36.9	0.263	3.23	48.4	0.073	324	---	933	402	7.96	612	568	---	---	< 0.050	---	< 0.020	< 0.054	---	---	95.1	---	5.9
	29-Jun-2015	430	< 0.50	56	130	< 0.50	110	5.4	39	0.27	3.1	51	0.13	350	< 0.50	1000	440	7.31	610	610	---	< 0.044	< 0.010	< 0.033	< 0.010	< 0.020	11	11	---	1.0	3.5
	19-Sep-2016	423	< 5.0	57.7	123	< 5.0	121	5.22	38.5	0.269	3.14	50.1	0.079	347	---	1000	461	7.71	630	602	---	---	< 0.020	---	< 0.010	< 0.022	---	---	103	---	5.1
	13-Jul-2017	419	< 5.0	57.6	121	< 5.0	108	5.50	40.1	0.282	3.12	52.6	0.088	344	---	958	435	7.65	629	612	---	---	< 0.020	---	< 0.010	< 0.022	---	---	95.1	---	3.8
(Duplicate)	13-Jul-2017	418	< 5.0	57.9	122	< 5.0	111	5.20	37.2	0.260	2.91	49.8	0.082	343	---	958	430	7.78	631	609	---	---	< 0.020	---	< 0.010	< 0.022	---	---	93.3	---	3.5
	31-Jul-2018	405	< 5.0	60.8	128	< 5.0	97.0	6.22	41.9	0.297	3.41	56.1	0.102	332	---	941	415	8.07	---	587	---	---	< 0.020	---	< 0.010	< 0.022	---	---	98.1	---	3.27
	12-May-2020	422	< 5.0	62.3	125	< 5.0	106	---	34.8	0.259	3.17	48.6	0.132	346	---	969	408	7.37	---	588	---	---	0.056	---	< 0.010	0.056	---	---	91.7	---	3.2
	22-Aug-2022	420	< 1.0	70.4	117	< 1.0	80.9	1.43	24.7	0.162	3.06	44.5	0.088	344	---	991	---	8.15	---	576	---	---	0.044	---	< 0.010	< 0.05	---	---	72.0	---	3.60
MW-04	08-Mar-2005	458	< 5	137	81.4	< 5	142	0.173	37.7	0.152	9.9	57	0.15	375	---	1200	510	7.5	---	694	< 0.05	---	0.8	---	< 0.05	0.8	---	---	98.5	---	1
	17-Nov-2005	449	< 5	157	87	< 5	147	0.104	40	0.053	9.5	59	0.12	368	---	1280	532	7.8	---	726	0.013	---	1.2	---	< 0.05	1.2	---	---	98.2	---	5
(Duplicate)	17-Nov-2005	452	< 5	157	89	< 5	147	0.105	40.4	0.053	9.7	60	0.12	371	---	1290	533	7.9	---	731	0.01	---	1.2	---	< 0.05	1.2	---	---	98.1	---	4
	14-Jun-2006	455	< 5	155	86.2	< 5	147	0.005	42.7	0.13	10.2	57	0.13	373	---	1280	543	7.7	---	724	0.007	---	0.5	---	< 0.05	0.5	---	---	99.4	---	4
	13-Jul-2007	449	< 5	190	84.5	< 5	154	< 0.005	43.6	0.009	10.4	68	0.14	368	---	1360	564	7.9	---	774	0.008	---	0.5	---	< 0.05	0.5	---	---	99.9	---	3
	19-Dec-2007	460	< 1	200	82	< 1	140	< 0.06	35	0.016	10	71	0.1	380	---	1400	500	7.7	---	763	0.01	---	0.6	---	< 0.06	0.6	---	---	0.9	---	3
	21-Apr-2009	450	< 0.5	150	74	< 0.5	140	< 0.06	37	0.03	9.4	63	0.14	370	---	1200	500	7.62	---	690	< 0.05	---	0.4	---	< 0.003	0.4	---	---	99	---	2.8
	06-May-2010	470	< 5.0	131	92.1	< 5.0	152	0.078	44.0	0.258	---	63.4	0.129	385	---	1220	561	8.01	---	724	< 0.050	---	0.090	---	< 0.050	0.090	---	---	107	---	3.0
	07-Jun-2011	482	< 5.0	125	88.9	< 5.0	140	0.028	41.3	0.114	8.78	50.7	0.119	395	---	1280	520	7.95	---	693	< 0.050	---	0.264	---	< 0.050	0.264	---	---	96.3	---	3.0
	30-May-2012	500	< 5.0	126	88.2	< 5.0	141	1.47	38.1	0.722	8.93	50.9	0.089	409	---	1280	509	7.88	---	699	< 0.050	---	< 0.050	---	< 0.050	< 0.071	---	---	92.8	---	3.2
(Duplicate)	30-May-2012	499	< 5.0	126	88.6	< 5.0	161	1.73	44.8	0.861	11.4	58.9	0.094	409	---	1280	587	7.94	---	736	< 0.050	---	< 0.050	---	< 0.050	< 0.071	---	---	107	---	3.3
	09-Jul-2013	493	< 5.0	129	87.8	< 5.0	154	1.70	44.0	0.561	10.8	55.8	0.082	404	---	1230	566	7.76	761	724	---	---	< 0.050	---	< 0.050	< 0.071	---	---	103	---	3.3
	13-Jun-2014	426	< 5.0	146	92.8	< 5.0	143	1.39	40.8	0.494	9.68	52.9	0.093	350	---	1190	525	8.10	808	695	---	---	< 0.050	---	< 0.020	< 0.054	---	---	100	---	3.0
	29-Jun-2015	480	< 0.50	150	100	< 0.50	150	1.9	44	0.54	9.5	59	0.13	390	< 0.50	1300	550	7.32	780	750	---	0.13	0.030	< 0.033	< 0.010	0.030	14	14	---	0.98	3.5
	19-Sep-2016	430	< 5.0	190	125	< 5.0	165	2.33	47.9	0.621	9.96	59.5	0.090	353	---	1410	609	7.76	833	809	---	---	< 0.020	---	< 0.010	< 0.022	---	---	100	---	3.6
	13-Jul-2017	425	< 5.0	171	130	< 5.0	154	2.24	47.7	0.616	9.52	62.6	0.102	348	---	1290	581	7.78	877	797	---	---	< 0.020	---	< 0.010	< 0.022	---	---	98.1	---	3.7
	31-Jul-2018	407	< 5.0	169	133	< 5.0	156	2.19	45.9	0.548	9.49	65.5	0.113	334	---	1280	579	8.25	---	779	---	---	< 0.020	---	< 0.010	< 0.022	---	---	103	---	3.40
	12-May-2020	428	< 5.0	169	125	< 5.0	163	---	42.4	0.688	9.95	71.8	0.142	351	---	1220	582	7.42	---	792	---	---	< 0.020	---	< 0.010	< 0.022	---	---	104	---	4.0
	22-Aug-2022	441	< 1.0	185	114	< 1.0	144	2.15	43.0	0.525	10.6	79.8	0.102	361	---	1360	---	8.24	---	812	---	---	< 0.020	---	< 0.010	< 0.05	---	---	98.6	---	3.35
MW-05	08-Mar-2005	403	< 5	15	105	< 5	96.2	1.14	27.5	0.402	6.1	51	0.18	330	---	831	353	7.6	---	499	0.63	---	< 0.1	---	< 0.05	< 0.1	---	---	103	---	5
	17-Nov-2005	422	< 5	21	115	< 5	98.6	3.31	30.1	0.531	6.9	43	0.11	346	---	881	370	7.9	---	522	0.331	---	< 0.1	---	< 0.05	< 0.1	---	---	95.4	---	4
	14-Jun-2006	421	< 5	22	124	< 5	107	3.48	33.5	0.583	7.6	44	0.11	345	---	902	405	7.7	---	545	0.338	---	< 0.1	---	< 0.05	< 0.1	---	---	101	---	4
	13-Jul-2007	426	< 5	25	135	< 5	110	4	34.3	0.682	7.3	42	0.11	349	---	931	416	8.1	---	563	0.216	---	< 0.1	---	< 0.05	< 0.1	---	---	98.5	---	4
	19-Dec-2007	440	< 1	22	150	< 1	100	< 0.06	30	0.66	7.4	41	0.1	360	---	930	380	7.6	---	566	0.05	---	< 0.2	---	< 0.06	< 0.2	---	---	0.88	---	3
	21-Apr-2009	420	< 0.5	30	130	< 0.5	120	< 0.06	34	0.72	7.6	43	0.12	350	---	960	430	7.58	---	570	0.22	---	0.007	---	< 0.003	0.007	---	---	100	---	2.5
	29-Apr-2010	428	< 5.0	30.6	144	< 5.0	120	3.39	36.7	0.758	---	46.1	0.107	351	---	969	451	7.95	---	596	0.234	---	< 0.050	---	< 0.050	< 0.071	---	---	103	---	3.3
	25-May-2011	433	< 5.0	30.9	141	< 5.0	105	3.82	32.7	0.657	7.29	41.7	0.075	355	---	990	397	8.05	---	572	0.261	---	< 0.050	---	< 0.050	< 0.071	---	---	91.1	---	4.4
	29-May-2012	442	< 5.0	33.7	138	< 5.0	112	3.83	31.3	0.707	8.00	42.6	0.061	362	---	1000	409	7.93	---	583	0.233	---	< 0.050	---	< 0.050	< 0.071	---	---	92.3	---	6.9
	08-Jul-2013	448	< 5.0	36.3	139	< 5.0	118	3.17	33.5	0.754	8.61	42.9	0.092	367	---	998	433	7.83	614	599	---	---	< 0.050	---	< 0.050	< 0.071	---	---	95.3	---	4.1
	13-Jun-2014	341	< 5.0	37.8	143	< 5.0	117	4.37	34.8	0.758	8.31	42.0	0.073	279	---	853	435	8.00	635	550	---	---	< 0.050	---	< 0.020	< 0.054	---	---	111	---	6.6
	25-Jun-2015	450	< 0.50	40	150	< 0.50	120	4.8	38	0.71	8.4	47	0.10	370	< 0.50	980	450	7.41	630	620	---	0.065	0.015	< 0.033	< 0.010	< 0.020	12	11	---	1.0	3.2
	19-Sep-2016	406	< 5.0	38.4	137	< 5.0	121	4.39	36.3	0.757	7.99	43.3	0.076	333	---	987	452	7.85	620	584	---	---	< 0.020	---	< 0.010	< 0.022	---	---	105	---	4.8
	13-Jul-2017	440	< 5.0	38.1	131	< 5.0	115	4.82	38.1	0.742	7.95	44.6	0.081	360	---	934	444	7.83	644	610	---	---	< 0.020	---	< 0.010	< 0.022	---	---	95.7	---	4.1
	31-Jul-2018	403	< 5.0	40.0	136	< 5.0	93.2	4.93	39.4	0.785	9.13	46.5	0.099	331	---	905	395	8.08	---	563	---	---	< 0.020	---	< 0.010	< 0.022	---	---	96.0	---	3.72
	12-May-2020	444	< 5.0	41.9	128	< 5.0	78.0	---	36.0	0.677	8.20	42.1	0.122	364	---	912	343	7.30	---	553	---	---	< 0.020	---	< 0.010	< 0.022	---	---	79.9	---	3.1
	22-Aug-2022	435	< 1.0	51.7	115	< 1.0	117	4.76	36.6	0.681	8.30	43.0	0.091	357	---	976	---	8.21	---	613	---	---	< 0.020	---	< 0.010	< 0.05	---	---	101	---	3.59
MW-06	08-Mar-2005	560	< 5	4	451	< 5	171	2.92	58.9	1.32	6.1	138	0.18	459	---	1580	670	7.5	---	1100	1.46	---	< 0.1	---	< 0.05	< 0.1	---	---	105	---	5
	17-Nov-2005	641	< 5	13	471	< 5	148	2.96	52	0.943	5	211	0.15	526	---	1780	584	8	---	1220	1.95	---	< 0.1	---	< 0.05	< 0.1	---	---	101	---	8
	16-Jun-2006	633	< 5	10	482	< 5	168	3.58	57.7	1.01	5.5	190	0.14	519	---	1700	657	7.7	---	1220	2.38	---	< 0.1	---	< 0.05	< 0.1	---	---	104	---	7
	12-Jul-2007	637	< 5	10	478	< 5	157	4.5	55.3	1.28	4.8	182	0.17	522	---	1760	620	7.9	---	1200	1.92	---	< 0.1	---	< 0.05	< 0.1	---	---	99.4	---	7
	19-Dec-2007	630	< 1	3	560	< 1	160	< 0.06	54	1.5	5	140	0.2	510	---	1700	620	7.7	---	1230	1.9	---	< 0.2	---	< 0.06	< 0.2	---	---	0.85	---	6
	22-Apr-2009	590	< 0.5	6	420	< 0.5	180	5.7	62	1.7	5.5	150	0.14	490	---	1700	710	7.47	---	1100	1.7	---	0.004	---	< 0.003	0.004	---	---	110	---	5.1
	06-May-2010	626	< 5.0	8.45	520	< 5.0	156	5.38	57.1	1.39	---	194	0.173	513	---	1770	625	8.06	---	1250	1.88	---	< 0.050	---	< 0.050	< 0.071	---	---	98.8	---	6.7
	07-Jun-2011	603	< 5.0	3.45	501	< 5.0	164	5.55	60.4	1.64	5.02	123	0.129	494	---	1760	658	7.96	---	1150	1.57	---	< 0.050	---	< 0.050	< 0.071	---	---	91.3	---	8.0
	29-May-2012	602	< 5.0	2.95	494	< 5.0	167	6.02	56.5	1.70	5.80	139	0.128	493	---	1730	650	7.81	---	1160	1.55	---	< 0.050	---	< 0.050	< 0.071	---	---	94.7	---	6.8

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Table 3

Groundwater Analytical Results: Indicator Analysis Parameters

PROJECT No.: 317085-44533-22100		Anions					Cations							General							Inorganic Nitrogen Compounds						Ion Balance				Miscellaneous
Monitoring Station	Date (dd-mmm-yyyy)	Bicarbonate (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Hydroxide (mg/L)	Calcium (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Fluoride (mg/L)	Alkalinity (Total; as $CaCO_3$) (mg/L)	Alkalinity (PP; as $CaCO_3$) (mg/L)	Electrical Conductivity (uS/cm)	Hardness (Total; as $CaCO_3$) (mg/L)	pH (pH Units)	Total Dissolved Solids (mg/L)	Total Dissolved Solids (Calculated) (mg/L)	Ammonia (Total; as N) (mg/L)	Nitrate (mg/L)	Nitrate (as N) (mg/L)	Nitrite (mg/L)	Nitrite (as N) (mg/L)	Nitrite-plus-Nitrate (as N) (mg/L)	Cation Sum (meq/L)	Anion Sum (meq/L)	Ion Balance (%)	Ion Balance (Balance)	Dissolved Organic Carbon (mg/L)
Canadian Drinking Water Quality Guidelines 2020 - AO		---	---	250	500	---	---	0.3	---	0.02	---	200	---	---	---	---	---	(7 - 10.5)	500	500	---	---	---	---	---	---	---	---	---	---	---
Canadian Drinking Water Quality Guidelines 2020 - MAC		---	---	---	---	---	None required	---	None required	0.12	---	---	1.5	---	---	---	None required	---	---	---	None required	45	10	3	1	---	---	---	---	---	---
MW-06 (cont'd)	08-Jul-2013	611	< 5.0	4.57	499	< 5.0	168	5.84	55.2	1.72	5.17	135	0.128	501	---	1720	647	7.81	1240	1170	---	---	< 0.050	---	< 0.050	< 0.071	---	---	92.2	---	6.4
	12-Jun-2014	528	< 5.0	6.67	519	< 5.0	163	5.93	57.6	1.62	5.56	152	0.119	433	---	1630	644	8.10	1260	1160	---	---	< 0.050	---	< 0.020	< 0.054	---	---	99.9	---	5.8
	25-Jun-2015	620	< 0.50	6.4	490 #1	< 0.50	160	6.1	60	1.5	5.8	180	0.15	510	< 0.50	1700	650	7.37	1200	1200	---	< 0.044	< 0.010	< 0.033	< 0.010	< 0.020	21	20	---	1.0	6.5
	20-Sep-2016	599	< 5.0	5.6	490	< 5.0	167	5.88	61.0	1.63	5.53	143	0.086	491	---	1720	668	7.84	1180	1170	---	---	< 0.040	---	< 0.020	< 0.045	---	---	97.7	---	9.0
	13-Jul-2017	598	< 5.0	4.81	494	< 5.0	157	5.83	58.9	1.63	5.12	143	0.136	490	---	1620	635	7.79	1240	1180	---	---	< 0.020	---	< 0.010	< 0.022	---	---	91.7	---	7.7
	31-Jul-2018	564	< 5.0	4.41	528	< 5.0	172	6.76	67.2	1.74	5.62	153	0.170	462	---	1590	706	8.09	---	1210	---	---	< 0.020	---	< 0.010	< 0.022	---	---	103	---	6.90
	13-May-2020	599	< 5.0	2.80	505	< 5.0	221	8.59	61.5	1.74	5.61	135	0.148	491	---	1630	805	7.79	---	1230	---	---	< 0.020	---	< 0.010	< 0.022	---	---	108	---	6.1
	22-Aug-2022	624	< 1.0	6.19	481	< 1.0	165	---	58.8	1.60	5.71	161	0.120	512	---	1690	---	8.20	---	1220	---	---	0.029	---	< 0.010	< 0.05	---	---	100	---	7.02
(Duplicate)	22-Aug-2022	616	< 1.0	5.92	468	< 1.0	162	6.10	59.8	1.60	5.58	153	0.119	505	---	1640	---	8.05	---	1190	---	---	0.032	---	< 0.010	< 0.05	---	---	100	---	7.11
MW-07	09-Mar-2005	664	< 5	13	1130	< 5	287	10.4	100	1.88	6.6	287	0.11	544	---	2680	1130	7.5	---	2150	2.24	---	0.1	---	< 0.05	0.1	---	---	102	---	5
	17-Nov-2005	666	< 5	16	1010	< 5	270	10.9	94.8	1.83	5.5	268	0.08	546	---	2670	1060	7.7	---	1990	2.03	---	< 0.1	---	< 0.05	< 0.1	---	---	102	---	6
	16-Jun-2006	661	< 5	15	1010	< 5	284	< 0.005	96.4	1.86	6.2	269	0.07	542	---	2530	1110	7.5	---	2010	2.28	---	0.1	---	< 0.05	0.1	---	---	105	---	6
	12-Jul-2007	641	< 5	12	940	< 5	257	10.9	89.8	1.78	4.6	248	0.09	526	---	2290	1010	7.6	---	1870	2.03	---	< 0.1	---	< 0.05	< 0.1	---	---	103	---	6
	19-Dec-2007	660	< 1	9	1000	< 1	220	< 0.06	72	1.6	5.1	230	0.1	540	---	2500	850	7.5	---	1890	0.26	---	< 0.2	---	< 0.06	< 0.2	---	---	0.84	---	6
	22-Apr-2009	730	< 0.5	18	1200	< 0.5	330	14	110	2.3	6.6	320	0.08	600	---	3000	1300	7.19	---	2400	2.5	---	0.004	---	< 0.003	0.004	---	---	110	---	6.6
	05-May-2010	657	< 5.0	13.2	1040	< 5.0	262	12.5	93.5	1.90	---	274	0.135	538	---	2600	1040	7.90	---	2010	2.33	---	< 0.050	---	< 0.050	< 0.071	---	---	100	---	5.8
	08-Jun-2011	537	< 5.0	8.07	622	< 5.0	178	8.26	68.8	1.21	4.38	189	0.116	440	---	1900	728	7.69	---	1330	1.83	---	< 0.050	---	< 0.050	< 0.071	---	---	104	---	11.5
	28-Jul-2011	659	< 5.0	11.8	1020	< 5.0	256	11.7	87.9	1.84	5.55	245	0.128	540	---	2670	1000	7.98	---	1950	2.39	---	< 0.050	---	< 0.050	< 0.071	---	---	95.2	---	6.3
	30-May-2012	648	< 5.0	12.6	949	< 5.0	247	11.3	80.4	1.79	6.96	245	0.093	531	---	2570	948	7.71	---	1860	2.22	---	< 0.050	---	< 0.050	< 0.071	---	---	96.9	---	6.0
	11-Jul-2013	716	< 5.0	11.5	1020	< 5.0	269	12.1	82.4	1.87	5.37	241	0.110	586	---	2680	1010	7.30	2180	1980	---	---	< 0.050	---	< 0.050	< 0.071	---	---	92.6	---	6.2
	13-Jun-2014	636	< 5.0	13.2	1270	< 5.0	289	13.8	97.9	2.26	6.09	270	0.047	521	---	2800	1120	8.06	2320	2260	---	---	< 0.050	---	< 0.020	< 0.054	---	---	92.3	---	5.8
	25-Jun-2015	690	< 0.50	13	1100 #1	< 0.50	270	13	97	1.9	6.0	280	0.086	570	< 0.50	2700	1100	7.09	2200	2100	---	< 0.044	< 0.010	< 0.033	< 0.010	< 0.020	34	35	---	0.99	6.0
	20-Sep-2016	656	< 5.0	11.3	1040	< 5.0	283	12.9	97.8	2.01	6.02	259	0.042	537	---	2680	1110	7.64	2200	2020	---	---	< 0.040	---	< 0.020	< 0.045	---	---	103	---	7.2
	14-Jul-2017	639	< 5.0	11.6	895	< 5.0	249	11.2	83.7	1.80	5.45	238	0.058	524	---	2360	966	7.51	2050	1820	---	---	< 0.040	---	< 0.020	< 0.045	---	---	99.3	---	7.3
	31-Jul-2018	608	< 5.0	11.9	964	< 5.0	254	12.3	94.2	1.88	5.97	264	0.061	498	---	2310	1020	8.00	---	1890	---	---	< 0.040	---	< 0.020	< 0.045	---	---	106	---	6.27
	13-May-2020	664	< 5.0	12.0	1070	< 5.0	202	14.0	90.4	1.85	6.03	257	0.11	544	---	2440	877	7.06	---	1960	---	---	< 0.10	---	< 0.050	< 0.11	---	---	86.1	---	5.9
(Duplicate)	13-May-2020	669	< 5.0	12.1	1100	< 5.0	211	---	87.6	1.82	6.06	257	0.11	548	---	2470	888	7.11	---	2000	---	---	< 0.10	---	< 0.050	< 0.11	---	---	85.0	---	5.7
	23-Aug-2022	694	< 1.0	14.7	1210	< 1.0	290	13.2	100	2.07	6.22	290	0.106	569	---	2870	---	8.00	---	2300	---	---	< 0.100	---	< 0.050	< 0.112	---	---	97.3	---	6.96
MW-08	09-Mar-2005	593	< 5	3	369	< 5	147	5.66	45	0.474	6	137	0.13	486	---	1470	552	7.7	---	999	1.83	---	0.1	---	< 0.05	0.1	---	---	98.8	---	5
	15-Nov-2005	549	< 5	4	300	< 5	133	5.16	37.4	0.384	5.2	112	0.11	450	---	1310	486	7.5	---	862	1.5	---	< 0.1	---	< 0.05	< 0.1	---	---	95.9	---	6
	16-Jun-2006	594	< 5	3	341	< 5	161	6.97	44.2	0.481	6.1	132	0.09	487	---	1240	584	7.7	---	980	1.89	---	< 0.1	---	< 0.05	< 0.1	---	---	104	---	6
	11-Jul-2007	583	< 5	2	316	< 5	150	7.29	42.9	0.454	5	115	0.08	478	---	1390	551	7.9	---	918	1.61	---	< 0.1	---	< 0.05	< 0.1	---	---	100	---	7
	19-Dec-2007	630	< 1	2	370	< 1	130	< 0.06	36	0.44	5.4	120	0.1	520	---	1400	480	7.7	---	977	0.25	---	< 0.2	---	< 0.06	< 0.2	---	---	0.84	---	5
	21-Apr-2009	560	< 0.5	3	300	< 0.5	150	< 0.06	40	0.45	5.6	110	0.11	450	---	1400	530	7.62	---	880	1.7	---	0.007	---	< 0.003	0.007	---	---	100	---	5.3
	05-May-2010	558	< 5.0	1.43	333	< 5.0	146	7.22	43.2	0.470	---	122	0.130	458	---	1360	542	8.04	---	927	1.74	---	< 0.050	---	< 0.050	< 0.071	---	---	101	---	5.3
	07-Jun-2011	565	< 5.0	0.97	320	< 5.0	136	5.41	38.3	0.411	5.12	98.0	0.082	463	---	1400	497	7.95	---	876	1.71	---	< 0.050	---	< 0.050	< 0.071	---	---	89.8	---	10.3
	30-May-2012	560	< 5.0	0.86	308	< 5.0	135	6.69	35.0	0.409	5.69	107	0.084	459	---	1360	481	7.93	---	867	1.76	---	< 0.050	---	< 0.050	< 0.071	---	---	92.3	---	5.7
	09-Jul-2013	535	< 5.0	1.37	304	< 5.0	149	6.47	40.4	0.415	6.47	112	0.093	439	---	1290	538	7.96	876	877	---	---	< 0.050	---	< 0.050	< 0.071	---	---	104	---	5.5
	12-Jun-2014	474	< 5.0	1.23	345	< 5.0	144	7.19	38.5	0.476	5.95	110	0.083	388	---	1260	518	7.94	938	878	---	---	< 0.050	---	< 0.020	< 0.054	---	---	102	---	5.1
	24-Jun-2015	570	< 0.50	1.6	320 #1	< 0.50	150	7.1	42	0.44	5.7	120	0.10	470	< 0.50	1400	540	7.43	950	930	---	< 0.044	< 0.010	< 0.033	< 0.010	< 0.020	16	16	---	1.0	5.4
	20-Sep-2016	515	< 5.0	1.37	331	< 5.0	152	6.96	41.4	0.441	5.86	113	0.082	422	---	1370	550	7.86	928	898	---	---	< 0.020	---	< 0.010	< 0.022	---	---	104	---	7.5
	02-Aug-2017	583	< 5.0	2.4	357	< 5.0	---	---	---	---	---	---	0.103	478	---	1460	540	7.39	1010	987	---	---	< 0.040	---	< 0.020	< 0.045	---	---	92.6	---	4.8
	01-Aug-2018	529	< 5.0	1.59	387	< 5.0	151	8.45	45.9	0.495	6.14	135	0.130	433	---	1360	566	8.18	---	987	---	---	< 0.020	---	< 0.010	< 0.022	---	---	103	---	6.15
	13-May-2020	608	< 5.0	1.78	372	< 5.0	180	---	43.4	0.551	6.28	131	0.100	498	---	1440	628	8.00	---	1030	---	---	< 0.020	---	< 0.010	< 0.022	---	---	104	---	5.8
	23-Aug-2022	606	< 1.0	1.45	362	< 1.0	170	7.94	43.4	0.487	6.21	129	0.094	497	---	1460	---	8.21	---	1050	---	---	< 0.020	---	< 0.010	< 0.05	---	---	103	---	6.33
MW-09	09-Mar-2005	626	< 5	5	313	< 5	71.6	1.11	26	0.714	4.2	226	0.29	513	---	1520	286	7.9	---	954	1.81	---	0.1	---	< 0.05	0.1	---	---	93.2	---	5
(Duplicate)	09-Mar-2005	628	< 5	5	340	< 5	79.1	1.07	27.9	0.705	4.7	243	0.29	515	---	1520	312	7.9	---	1010	1.79	---	0.1	---	< 0.05	0.1	---	---	97.4	---	5
	17-Nov-2005	640	< 5	7	312	< 5	92.6	1.4	27.3	0.752	3.9	227	0.22	524	---	1550	344	8.1	---	984	1.85	---	< 0.1	---	< 0.05	< 0.1	---	---	98	---	6
	16-Jun-2006	644	< 5	7	316	< 5	98.1	1.44	27.7	0.797	3.9	231	0.23	528	---	1520	359	7.9	---	1000	2.09	---	< 0.1	---	< 0.05	< 0.1	---	---	99.9	---	8
	11-Jul-2007	656	< 5	6	322	< 5	94.9	1.74	27.6	0.785	3.3	231	0.21	538	---	1530	351	8.1	---	1010	1.8	---	< 0.1	---	< 0.05	< 0.1	---	---	97.9	---	7
	18-Dec-2007	670	< 1	4	350	< 1	83	< 0.06	22	0.77	3.5	230	0.2	550	---	1500	300	8	---	1020	0.23	---	< 0.2	---	< 0.06	< 0.2	---	---	0.86	---	9
	22-Apr-2009	630	< 0.5	6	330	< 0.5	97	1.9	27	0.86	4.1	240	0.22	520	---	1500	350	7.73	---	1000	1.9	---	0.005	---	< 0.003	0.005	---	---	100	---	5.5

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Table 3

Groundwater Analytical Results: Indicator Analysis Parameters

PROJECT No.: 317085-44533-22100		Anions					Cations							General							Inorganic Nitrogen Compounds						Ion Balance				Miscellaneous
Monitoring Station	Date (dd-mmm-yyyy)	Bicarbonate (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Hydroxide (mg/L)	Calcium (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Fluoride (mg/L)	Alkalinity (Total; as $CaCO_3$) (mg/L)	Alkalinity (PP; as $CaCO_3$) (mg/L)	Electrical Conductivity (uS/cm)	Hardness (Total; as $CaCO_3$) (mg/L)	pH (pH Units)	Total Dissolved Solids (mg/L)	Total Dissolved Solids (Calculated) (mg/L)	Ammonia (Total; as N) (mg/L)	Nitrate (mg/L)	Nitrate (as N) (mg/L)	Nitrite (mg/L)	Nitrite (as N) (mg/L)	Nitrite-plus-Nitrate (as N) (mg/L)	Cation Sum (meq/L)	Anion Sum (meq/L)	Ion Balance (%)	Ion Balance (Balance)	Dissolved Organic Carbon (mg/L)
Canadian Drinking Water Quality Guidelines 2020 - AO		---	---	250	500	---	---	0.3	---	0.02	---	200	---	---	---	---	---	(7 - 10.5)	500	500	---	---	---	---	---	---	---	---	---	---	---
Canadian Drinking Water Quality Guidelines 2020 - MAC		---	---	---	---	---	None required	---	None required	0.12	---	---	1.5	---	---	---	None required	---	---	---	None required	45	10	3	1	---	---	---	---	---	---
MW-09 (cont'd)	06-May-2010	639	< 5.0	5.57	342	< 5.0	93.1	2.04	27.8	0.828	---	240	0.251	524	---	1540	347	8.17	---	1030	2.02	---	< 0.050	---	< 0.050	< 0.071	---	---	98.4	---	5.6
(Duplicate)	06-May-2010	641	< 5.0	5.63	345	< 5.0	93.1	2.03	27.6	0.832	---	246	0.243	526	---	1540	346	8.17	---	1040	2.00	---	< 0.050	---	< 0.050	< 0.071	---	---	99.2	---	5.5
	02-Jun-2011	646	< 5.0	5.84	325	< 5.0	87.4	1.46	25.2	0.754	4.09	212	< 0.050	530	---	1580	322	8.17	---	978	2.05	---	< 0.050	---	< 0.050	< 0.071	---	---	90.0	---	8.0
(Duplicate)	02-Jun-2011	646	< 5.0	5.64	325	< 5.0	89.5	1.29	26.0	0.773	4.16	220	< 0.050	530	---	1570	331	8.22	---	988	2.09	---	< 0.050	---	< 0.050	< 0.071	---	---	93.0	---	7.1
	29-May-2012	643	< 5.0	4.82	319	< 5.0	88.3	1.89	23.7	0.784	4.22	226	0.184	527	---	1550	318	8.04	---	982	2.02	---	< 0.050	---	< 0.050	< 0.071	---	---	94.1	---	6.0
	10-Jul-2013	644	< 5.0	5.29	327	< 5.0	96.2	1.94	26.8	0.842	4.06	251	0.203	527	---	1530	351	7.89	1030	1030	---	---	< 0.050	---	< 0.050	< 0.071	---	---	103	---	5.9
	13-Jun-2014	525	< 5.0	5.39	341	< 5.0	87.8	1.85	25.6	0.868	4.23	222	0.199	430	---	1390	325	8.12	1030	944	---	---	< 0.050	---	< 0.020	< 0.054	---	---	102	---	5.8
	25-Jun-2015	620	< 0.50	5.6	320 #1	< 0.50	93	2.0	28	0.80	4.2	250	0.24	500	< 0.50	1500	350	7.61	1000	1000	---	0.14	0.031	< 0.033	< 0.010	0.031	18	17	---	1.1	5.4
	20-Sep-2016	598	< 5.0	5.0	318	< 5.0	97.0	1.93	27.5	0.822	4.08	231	0.157	490	---	1530	355	8.07	1030	977	---	---	< 0.040	---	< 0.020	< 0.045	---	---	104	---	7.2
(Duplicate)	20-Sep-2016	626	< 5.0	4.9	319	< 5.0	97.4	1.88	27.3	0.795	4.04	223	0.158	513	---	1530	356	8.10	1040	984	---	---	< 0.040	---	< 0.020	< 0.045	---	---	99.2	---	7.1
	14-Jul-2017	650	< 5.0	5.18	325	< 5.0	90.0	1.96	27.1	0.872	3.92	240	0.216	533	---	1440	336	8.04	1030	1030	---	---	< 0.020	---	< 0.010	< 0.022	---	---	95.6	---	6.9
	01-Aug-2018	556	< 5.0	5.20	347	< 5.0	93.1	2.01	28.2	0.813	4.04	242	0.250	456	---	1420	349	8.28	---	993	---	---	< 0.020	---	< 0.010	< 0.022	---	---	107	---	6.57
	13-May-2020	639	< 5.0	5.20	329	< 5.0	47.9	---	24.7	0.780	4.09	232	0.273	524	---	1430	221	7.62	---	958	---	---	< 0.020	---	< 0.010	< 0.022	---	---	83.6	---	5.7
	23-Aug-2022	604	5.9	5.48	322	< 1.0	89.1	1.87	26.5	0.782	4.16	230	0.202	505	---	1510	---	8.34	---	1010	---	---	< 0.020	---	< 0.010	< 0.05	---	---	98.8	---	6.45
(Duplicate)	23-Aug-2022	646	< 1.0	5.36	318	< 1.0	89.3	1.87	26.8	0.811	4.20	228	0.187	530	---	1460	---	8.29	---	1020	---	---	0.026	---	< 0.010	< 0.05	---	---	96.6	---	6.69
MW-10	09-Mar-2005	628	< 5	< 1	221	< 5	131	5.29	36.1	0.639	5.3	117	0.18	514	---	1270	476	7.7	---	819	1.68	---	0.1	---	< 0.05	0.1	---	---	99.7	---	5
	16-Nov-2005	634	< 5	3	222	< 5	129	5.49	35.2	0.642	5	108	0.12	520	---	1260	467	7.5	---	814	1.36	---	< 0.1	---	< 0.05	< 0.1	---	---	93.8	---	6
	16-Jun-2006	641	< 5	2	212	< 5	139	5.89	37.8	0.67	5.6	119	0.13	525	---	1120	503	7.7	---	831	1.76	---	< 0.1	---	< 0.05	< 0.1	---	---	103	---	6
	11-Jul-2007	651	< 5	2	208	< 5	132	5.93	36.9	0.656	4.7	110	0.12	533	---	1270	482	8	---	814	1.65	---	< 0.1	---	< 0.05	< 0.1	---	---	97.2	---	5
	18-Dec-2007	660	< 1	< 1	230	< 1	120	< 0.06	29	0.64	4.8	110	0.2	540	---	1300	410	7.8	---	822	1.8	---	< 0.2	---	< 0.06	< 0.2	---	---	0.84	---	5
	22-Apr-2009	620	< 0.5	2	190	< 0.5	140	5.9	36	0.71	5.6	120	0.14	510	---	1300	490	7.51	---	800	1.8	---	0.005	---	< 0.003	0.005	---	---	110	---	4.7
	05-May-2010	633	< 5.0	0.73	227	< 5.0	139	6.80	39.1	0.735	---	124	0.169	519	---	1270	508	8.07	---	847	1.71	---	< 0.050	---	< 0.050	< 0.071	---	---	104	---	5.1
	02-Jun-2011	607	< 5.0	1.19	206	< 5.0	113	3.89	30.2	0.566	5.58	105	< 0.050	497	---	1260	407	8.04	---	759	1.60	---	< 0.050	---	< 0.050	< 0.071	---	---	89.9	---	6.7
	30-May-2012	639	< 5.0	0.53	211	< 5.0	127	5.98	31.6	0.655	5.79	111	0.113	524	---	1290	447	7.89	---	801	1.79	---	< 0.050	---	< 0.050	< 0.071	---	---	93.5	---	5.9
	09-Jul-2013	638	< 5.0	0.68	215	< 5.0	141	6.11	37.3	0.729	6.22	118	0.107	523	---	1250	506	8.09	833	832	---	---	< 0.050	---	< 0.050	< 0.071	---	---	103	---	5.4
(Duplicate)	09-Jul-2013	643	< 5.0	0.85	216	< 5.0	142	6.03	36.7	0.710	5.96	115	0.115	527	---	1250	506	8.04	837	833	---	---	< 0.050	---	< 0.050	< 0.071	---	---	101	---	5.4
	12-Jun-2014	507	< 5.0	0.67	229	< 5.0	125	6.10	34.2	0.689	5.79	108	0.110	416	---	1110	453	8.05	845	752	---	---	< 0.050	---	< 0.020	< 0.054	---	---	106	---	6.9
(Duplicate)	12-Jun-2014	543	< 5.0	0.82	229	< 5.0	124	6.08	34.5	0.740	5.84	110	0.104	445	---	1140	452	8.04	834	771	---	---	< 0.050	---	< 0.020	< 0.054	---	---	102	---	5.0
	24-Jun-2015	640	< 0.50	1.1	210 #1	< 0.50	130	6.3	36	0.67	5.8	120	0.16	520	< 0.50	1300	480	7.44	850	820	---	< 0.044	< 0.010	< 0.033	< 0.010	< 0.020	15	15	---	1.0	5.1
(Duplicate)	24-Jun-2015	630	< 0.50	1.2	200 #1	< 0.50	130	6.4	36	0.67	5.6	120	0.14	520	< 0.50	1300	480	7.41	840	820	---	< 0.044	< 0.010	< 0.033	< 0.010	< 0.020	15	15	---	1.0	5.2
	20-Sep-2016	619	< 5.0	0.66	222	< 5.0	131	6.01	35.9	0.676	5.74	111	0.114	508	---	1270	475	7.90	825	811	---	---	< 0.020	---	< 0.010	< 0.022	---	---	97.8	---	6.6
	14-Jul-2017	640	< 5.0	0.62	218	< 5.0	117	5.98	36.1	0.674	5.49	115	0.139	525	---	1200	441	7.85	834	828	---	---	< 0.020	---	< 0.010	< 0.022	---	---	89.5	---	6.4
	01-Aug-2018	585	< 5.0	0.75	229	< 5.0	130	6.51	38.8	0.692	5.58	119	0.187	480	---	1200	484	8.27	---	811	---	---	< 0.020	---	< 0.010	< 0.022	---	---	104	---	6.12
	13-May-2020	639	< 5.0	0.67	214	< 5.0	87.9	---	34.3	0.644	5.57	111	0.180	524	---	1200	361	7.29	---	768	---	---	< 0.020	---	< 0.010	< 0.022	---	---	81.4	---	5.2
	26-Aug-2022	656	< 1.0	0.82	192	< 1.0	128	5.24	36.0	0.641	5.55	114	0.128	538	---	1160	---	7.89	---	832	---	---	0.035	---	< 0.010	< 0.05	---	---	98.6	---	6.59
MW-11	10-Mar-2005	642	< 5	8	196	< 5	150	6.89	45.8	0.668	4.9	92	0.14	526	---	1270	563	7.7	---	813	1.5	---	0.1	---	< 0.05	0.1	---	---	104	---	15
	16-Nov-2005	654	< 5	16	199	< 5	140	6.95	42.5	0.628	4.5	85	0.09	536	---	1270	525	7.4	---	809	1.41	---	< 0.1	---	< 0.05	< 0.1	---	---	93.4	---	7
	16-Jun-2006	672	< 5	11	194	< 5	153	7.23	45.7	0.659	4.8	92	0.09	551	---	1100	570	7.7	---	831	1.56	---	< 0.1	---	< 0.05	< 0.1	---	---	101	---	7
	11-Jul-2007	662	< 5	8	193	< 5	143	7.15	45.3	0.632	3.9	88	0.09	542	---	1280	544	8	---	806	1.43	---	< 0.1	---	< 0.05	< 0.1	---	---	98.6	---	8
	18-Dec-2007	680	< 1	10	210	< 1	130	< 0.06	38	0.61	4.3	87	0.1	560	---	1300	480	7.7	---	810	0.2	---	< 0.2	---	< 0.06	< 0.2	---	---	0.87	---	6
	22-Apr-2009	640	< 0.5	10	170	< 0.5	150	7	45	0.67	4.9	91	0.11	530	---	1300	560	7.51	---	800	1.5	---	0.003	---	< 0.003	0.003	---	---	110	---	5.5
	05-May-2010	650	< 5.0	15.2	212	< 5.0	144	7.61	45.9	0.663	---	98.1	0.132	533	---	1290	549	8.04	---	840	1.48	---	< 0.050	---	< 0.050	< 0.071	---	---	99.1	---	6.0
	02-Jun-2011	653	< 5.0	9.69	203	< 5.0	148	6.99	46.4	0.687	5.36	96.0	< 0.050	536	---	1320	561	8.00	---	830	1.55	---	< 0.050	---	< 0.050	< 0.071	---	---	102	---	6.8
	30-May-2012	648	< 5.0	8.71	202	< 5.0	134	6.82	38.7	0.605	5.34	87.9	0.067	531	---	1300	494	7.90	---	795	1.51	---	< 0.050	---	< 0.050	< 0.071	---	---	91.8	---	6.6
	10-Jul-2013	640	< 5.0	8.92	213	< 5.0	147	7.52	44.7	0.697	5.09	102	0.105	525	---	1270	551	7.93	828	836	---	---	< 0.050	---	< 0.050	< 0.071	---	---	103	---	6.2
	12-Jun-2014	473	< 5.0	14.1	227	< 5.0	136	7.07	41.5	0.672	5.32	89.0	0.074	388	---	1090	510	7.99	856	746	---	---	< 0.050	---	< 0.020	< 0.054	---	---	110	---	5.6
	24-Jun-2015	640	< 0.50	11	210 #1	< 0.50	140	7.4	45	0.62	5.0	97	0.11	520	< 0.50	1300	540	7.42	850	830	---	< 0.044	< 0.010	< 0.033	< 0.010	< 0.020	16	15	---	1.0	6.3
	20-Sep-2016	595	< 5.0	11.4	221	< 5.0	148	6.91	44.3	0.609	4.97	90.7	0.087	488	---	1270	552	7.87	845	813	---	---	< 0.020	---	< 0.010	< 0.022	---	---	103	---	7.5
	14-Jul-2017	650	< 5.0	8.40	215	< 5.0	138	6.84	43.7	0.618	4.59	92.8	0.087	533	---	1220	525	7.77	839	845	---	---	< 0.020	---	< 0.010	< 0.022	---	---	91.6	---	7.3
	01-Aug-2018	593	< 5.0	9.38	228	< 5.0	148	7.33	45.1	0.626	4.77	96.4	0.126	486	---	1210	555	8.25	---	823	---	---	< 0.020	---	< 0.010	< 0.022	---	---	105	---	6.77
(Duplicate)	01-Aug-2018	615	< 5.0	9.67	229	< 5.0	132	7.23	44.8	0.627	4.82	96.0	0.126	504	---	1230	514	7.98	---	819	---	---	< 0.020	---	< 0.010	< 0.022	---	---	96.3	---	6.54
	13-May-2020	639	< 5.0	9.86	220	< 5.0	104	---	41.0	0.591	4.88	93.2	0.137	524	---	1230	429	7.37	---	787	---	---	< 0.020	---	< 0.010	< 0.022	---	---	83.1	---	5.7
	23-Aug-2022	649	< 1.0	11.3	214	< 1.0	136	6.88	42.0	0.598	4.93	96.6	0.108	532	---	1270	---	8.19	---	861	---	---	< 0.020	---	< 0.010	< 0.05	---	---	96.1	---	6.70

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Table 3

Groundwater Analytical Results: Indicator Analysis Parameters

PROJECT No.: 317085-44533-22100		Anions					Cations							General							Inorganic Nitrogen Compounds						Ion Balance				Miscellaneous
Monitoring Station	Date (dd-mmm-yyyy)	Bicarbonate (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Hydroxide (mg/L)	Calcium (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Fluoride (mg/L)	Alkalinity (Total; as $CaCO_3$) (mg/L)	Alkalinity (PP; as $CaCO_3$) (mg/L)	Electrical Conductivity (uS/cm)	Hardness (Total; as $CaCO_3$) (mg/L)	pH (pH Units)	Total Dissolved Solids (mg/L)	Total Dissolved Solids (Calculated) (mg/L)	Ammonia (Total; as N) (mg/L)	Nitrate (mg/L)	Nitrate (as N) (mg/L)	Nitrite (mg/L)	Nitrite (as N) (mg/L)	Nitrite-plus-Nitrate (as N) (mg/L)	Cation Sum (meq/L)	Anion Sum (meq/L)	Ion Balance (%)	Ion Balance (Balance)	Dissolved Organic Carbon (mg/L)
Canadian Drinking Water Quality Guidelines 2020 - AO		---	---	250	500	---	---	0.3	---	0.02	---	200	---	---	---	---	---	(7 - 10.5)	500	500	---	---	---	---	---	---	---	---	---	---	---
Canadian Drinking Water Quality Guidelines 2020 - MAC		---	---	---	---	---	None required	---	None required	0.12	---	---	1.5	---	---	---	None required	---	---	---	None required	45	10	3	1	---	---	---	---	---	---
MW-12	10-Mar-2005	636	< 5	6	45.9	< 5	95.7	2.78	27.9	0.365	5	106	0.13	521	---	1000	354	7.9	---	600	1.39	---	0.1	---	< 0.05	0.1	---	---	102	---	6
	16-Nov-2005	712	< 5	8	52.5	< 5	94.9	3.37	28.5	0.402	5.2	111	0.07	584	---	1020	354	7.4	---	651	1.2	---	< 0.1	---	< 0.05	< 0.1	---	---	92.7	---	7
	16-Jun-2006	669	< 5	7	44.2	< 5	100	3.76	29.1	0.436	5.1	106	0.07	549	---	904	370	7.8	---	621	1.34	---	< 0.1	---	< 0.05	< 0.1	---	---	100	---	7
	11-Jul-2007	670	< 5	7	42.4	< 5	95.4	3.77	29.2	0.422	4.2	101	0.08	550	---	1020	358	8	---	609	1.16	---	< 0.1	---	< 0.05	< 0.1	---	---	97.4	---	7
	18-Dec-2007	700	< 1	5	43	< 1	82	< 0.06	23	0.4	4.3	99	< 0.1	570	---	1000	300	7.8	---	601	0.29	---	< 0.2	---	< 0.06	< 0.2	---	---	0.84	---	7
	22-Apr-2009	650	< 0.5	8	32	< 0.5	98	4.1	29	0.45	4.9	110	0.09	540	---	1000	360	7.66	---	610	1.3	---	0.005	---	< 0.003	0.005	---	---	110	---	6.4
	06-May-2010	667	< 5.0	7.05	46.8	< 5.0	96.4	4.24	30.2	0.456	---	109	0.114	547	---	1030	365	8.13	---	623	1.32	---	< 0.050	---	< 0.050	< 0.071	---	---	100	---	10.5
	02-Jun-2011	662	< 5.0	6.40	44.6	< 5.0	98.1	3.34	30.9	0.450	4.86	95.4	0.071	543	---	1050	372	8.14	---	606	1.31	---	0.054	---	< 0.050	< 0.071	---	---	97.9	---	13.5
	30-May-2012	660	< 5.0	6.25	43.3	< 5.0	89.8	4.14	25.6	0.435	5.23	95.7	0.076	541	---	1030	330	8.03	---	591	1.32	---	< 0.050	---	< 0.050	< 0.071	---	---	91.5	---	6.6
	10-Jul-2013	649	< 5.0	6.89	44.4	< 5.0	101	3.99	28.9	0.457	5.00	113	0.083	532	---	1000	371	7.89	628	618	---	---	< 0.050	---	< 0.050	< 0.071	---	---	106	---	6.9
	12-Jun-2014	598	< 5.0	7.20	47.4	< 5.0	93.8	3.88	27.7	0.462	5.14	97.6	0.064	490	---	915	348	8.02	619	573	---	---	< 0.050	---	< 0.020	< 0.054	---	---	103	---	8.3
	24-Jun-2015	660	< 0.50	7.7	45	< 0.50	93	4.0	29	0.42	5.0	110	0.084	540	< 0.50	1000	350	7.63	620	620	---	0.047	0.011	< 0.033	< 0.010	< 0.020	12	12	---	1.0	6.8
	20-Sep-2016	646	< 5.0	6.53	43.5	< 5.0	94.9	4.21	28.4	0.442	4.76	98.2	0.063	530	---	1000	354	7.93	615	594	---	---	< 0.020	---	< 0.010	< 0.022	---	---	98.2	---	7.4
	14-Jul-2017	---	---	---	---	---	94.1	4.18	27.9	0.437	4.53	98.9	---	---	---	---	---	---	614	---	---	---	---	---	---	---	---	---	---	---	6.1
	02-Aug-2017	639	< 5.0	6.42	43.4	< 5.0	86.0	---	26.9	---	4.61	95.7	0.114	524	---	1010	326	7.43	---	597	---	---	< 0.020	---	< 0.010	< 0.022	---	---	89.4	---	---
	01-Aug-2018	648	< 5.0	5.75	38.9	< 5.0	81.2	4.17	31.3	0.493	5.66	111	0.103	531	---	969	332	8.06	---	593	---	---	< 0.020	---	< 0.010	< 0.022	---	---	100	---	7.24
	14-May-2020	678	< 5.0	5.47	35.2	< 5.0	57.5	---	27.7	0.423	4.88	98.1	0.103	555	---	962	258	7.56	---	562	---	---	< 0.020	---	< 0.010	< 0.022	---	---	79.5	---	6.6
	23-Aug-2022	650	< 1.0	5.81	33.2	< 1.0	93.7	4.21	30.2	0.458	5.01	96.2	0.090	533	---	955	---	8.24	---	617	---	---	< 0.020	---	< 0.010	< 0.05	---	---	101	---	7.42
MW-13	10-Mar-2005	531	< 5	2	10.6	< 5	53.7	0.818	16.5	0.263	4.2	112	0.2	435	---	784	202	8.1	---	460	1.4	---	0.1	---	< 0.05	0.1	---	---	100	---	4
	16-Nov-2005	537	< 5	4	12.5	< 5	51.2	1.08	16.2	0.243	3.4	103	0.14	440	---	782	195	7.8	---	454	1.29	---	< 0.1	---	< 0.05	< 0.1	---	---	92.2	---	5
	16-Jun-2006	715	541	4	10.1	< 5	55.6	1.19	17.1	0.256	3.9	112	0.14	443	---	715	209	8	---	470	1.31	---	0.2	---	< 0.05	0.2	---	---	99.4	---	5
	11-Jul-2007	541	< 5	2	9.1	< 5	53	1.26	16.9	0.252	3.5	105	0.13	444	---	782	202	8.2	---	456	1.22	---	< 0.1	---	< 0.05	< 0.1	---	---	96.3	---	5
	18-Dec-2007	560	< 1	2	9	< 1	45	< 0.06	14	0.25	3.5	110	0.2	460	---	790	170	8	---	457	0.23	---	< 0.2	---	< 0.06	< 0.2	---	---	0.87	---	5
	22-Apr-2009	520	< 0.5	3	9	< 0.5	54	1.3	17	0.26	3.9	110	0.15	430	---	770	200	7.81	---	460	1.3	---	0.005	---	< 0.003	0.005	---	---	100	---	4.5
	06-May-2010	530	< 5.0	2.15	9.54	< 5.0	50.0	1.45	16.4	0.249	---	110	0.160	435	---	776	192	8.22	---	453	1.30	---	< 0.050	---	< 0.050	< 0.071	---	---	97.5	---	4.1
	02-Jun-2011	530	< 5.0	1.92	9.12	< 5.0	48.1	1.25	15.3	0.231	3.74	103	0.162	434	---	796	183	8.24	---	442	1.36	---	< 0.050	---	< 0.050	< 0.071	---	---	92.1	---	5.2
	30-May-2012	529	< 5.0	1.81	9.24	< 5.0	48.0	1.33	14.4	0.238	4.00	101	0.119	433	---	786	179	8.18	---	438	1.31	---	< 0.050	---	< 0.050	< 0.071	---	---	90.5	---	4.6
	10-Jul-2013	525	< 5.0	2.28	10.0	< 5.0	49.7	1.17	16.2	0.252	3.98	118	0.147	430	---	769	191	7.92	464	458	---	---	< 0.050	---	< 0.050	< 0.071	---	---	102	---	4.4
	12-Jun-2014	485	< 5.0	2.63	11.0	< 5.0	48.8	1.30	15.4	0.245	4.07	104	0.129	398	---	698	185	8.16	457	425	---	---	< 0.050	---	< 0.020	< 0.054	---	---	101	---	6.3
	24-Jun-2015	530	< 0.50	2.9	13	< 0.50	49	1.3	16	0.24	3.9	110	0.16	430	< 0.50	780	190	7.70	460	460	---	< 0.044	< 0.010	< 0.033	< 0.010	< 0.020	9.0	9.0	---	1.0	4.9
	20-Sep-2016	508	< 5.0	2.09	11.3	< 5.0	50.9	1.33	15.4	0.235	3.77	105	0.124	417	---	762	191	8.14	459	439	---	---	< 0.020	---	< 0.010	< 0.022	---	---	98.2	---	7.6
	14-Jul-2017	503	< 5.0	2.43	10.8	< 5.0	42.3	1.29	15.5	0.227	3.52	106	0.125	412	---	724	169	8.15	493	445	---	---	< 0.020	---	< 0.010	< 0.022	---	---	89.8	---	5.1
	01-Aug-2018	512	< 5.0	2.00	10.4	< 5.0	44.2	1.38	16.9	0.237	4.39	119	0.161	420	---	734	180	8.14	---	449	---	---	< 0.020	---	< 0.010	< 0.022	---	---	102	---	4.92
	14-May-2020	524	< 5.0	1.97	10.1	< 5.0	30.2	---	14.2	0.281	3.76	108	0.183	429	---	721	134	7.78	---	426	---	---	< 0.020	---	< 0.010	< 0.022	---	---	84.3	---	4.3
	23-Aug-2022	501	5.0	1.89	9.01	< 1.0	46.5	1.32	15.7	0.234	3.79	104	0.123	419	---	719	---	8.35	---	457	---	---	< 0.020	---	< 0.010	< 0.05	---	---	96.2	---	5.96
QAQC																															
FIELD BLANK	05-May-2010	< 5.0	< 5.0	< 0.50	< 0.50	< 5.0	< 0.50	< 0.020	< 0.10	< 0.0050	---	< 0.50	< 0.050	< 5.0	---	1.07	< 1.0	6.06	---	< 1.0	< 0.050	---	< 0.050	---	< 0.050	< 0.071	---	---	LowTDS	---	< 1.0
	25-May-2011	< 5.0	< 5.0	< 0.50	< 0.50	< 5.0	< 0.50	< 0.020	< 0.10	< 0.0050	< 0.10	< 0.50	< 0.050	< 5.0	---	1.06	< 1.0	6.02	---	< 1.0	< 0.050	---	< 0.050	---	< 0.050	< 0.071	---	---	LowTDS	---	< 1.0
	09-Jul-2013	< 5.0	< 5.0	< 0.50	< 0.50	< 5.0	< 0.50	< 0.010	< 0.10	< 0.0020	< 0.10	< 1.0	< 0.020	< 2.0	---	1.90	< 1	6.19	< 10	< 1	---	---	< 0.050	---	< 0.050	< 0.071	---	---	Low TDS	---	3.5
	13-Jun-2014	< 5.0	< 5.0	< 0.50	< 0.50	< 5.0	< 0.50	< 0.010	< 0.10	< 0.0020	< 0.10	< 1.0	< 0.020	< 2.0	---	1.80	< 1	5.52	< 10	< 1	---	---	< 0.050	---	< 0.020	< 0.054	---	---	Low TDS	---	< 1.0
	25-Jun-2015	< 0.50	< 0.50	< 1.0	< 1.0	< 0.50	< 0.30	< 0.060	< 0.20	< 0.0040	< 0.30	< 0.50	< 0.050	< 0.50	< 0.50	< 1.0	< 0.50	4.73	< 10	< 10	---	< 0.044	< 0.010	< 0.033	< 0.010	< 0.020	0.018	0	---	< 0.010	0.56
	20-Sep-2016	< 5.0	< 5.0	< 0.50	< 0.30	< 5.0	< 0.050	< 0.010	< 0.0050	< 0.00010	< 0.050	< 0.050	< 0.020	< 2.0	---	< 2.0	< 1	5.41	< 10	< 1	---	---	< 0.020	---	< 0.010	< 0.022	---	---	Low TDS	---	< 1.0
	14-Jul-2017	---	---	---	---	---	< 0.050	< 0.010	< 0.0050	< 0.00010	< 0.050	0.102	---	---	---	---	---	---	< 10	---	---	---	---	---	---	---	---	---	---	---	< 1.0
	02-Aug-2017	< 5.0	< 5.0	< 0.50	< 0.30	< 5.0	0.110	---	0.0108	---	< 0.050	0.085	< 0.020	< 2.0	---	< 2.0	< 1	6.17	---	< 1	---	---	< 0.020	---	< 0.010	< 0.022	---	---	Low TDS	---	---
Relative Percent Difference (RPD) Report																															
MW-06	22-Aug-2022	624	< 1.0	6.19	481	< 1.0	165	---	58.8	1.60	5.71	161	0.120	512	---	1690	---	8.20	---	1220	---	---	0.029	---	< 0.010	< 0.05	---	---	100	---	7.02
(Duplicate)	22-Aug-2022	616	< 1.0	5.92	468	< 1.0	162	6.10	59.8	1.60	5.58	153	0.119	505	---	1640	---	8.05	---	1190	---	---	0.032	---	< 0.010	< 0.05	---	---	100	---	7.11
RPD(%)		1.3%	---	4.5%	2.7%	---	1.8%	---	1.7%	0.0%	2.3%	5.1%	0.8%	1.4%	---	3.0%	---	1.8%	---	2.5%	---	---	9.8%	---	---	---	---	---	0.0%	---	1.3%
MW-09	23-Aug-2022	604	5.9	5.48	322	< 1.0	89.1	1.87	26.5	0.782	4.16	230	0.202	505	---	1510	---	8.34	---	1010	---	---	< 0.020	---	< 0.010	< 0.05	---	---	98.8	---	6.45
(Duplicate)	23-Aug-2022	646	< 1.0	5.36	318	< 1.0	89.3	1.87	26.8	0.811	4.20	228	0.187	530	---	1460	---	8.29	---	1020	---	---	0.026	---	< 0.010	< 0.05	---	---	96.6	---	6.69
RPD(%)		6.7%	---	2.2%	1.3%	---	0.2%	0.0%	1.1%	3.6%	1.0%	0.9%	7.7%	4.8%	---	3.4%	---	0.6%	---	1.0%	---	---	---	---	---	---	---	---	2.3%	---	3.7%

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Table 3

Groundwater Analytical Results: Indicator Analysis Parameters

PROJECT No.: 317085-44533-22100		Anions					Cations							General							Inorganic Nitrogen Compounds						Ion Balance				Miscellaneous
Monitoring Station	Date (dd-mmm-yyyy)	Bicarbonate (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Hydroxide (mg/L)	Calcium (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Fluoride (mg/L)	Alkalinity (Total; as $CaCO_3$) (mg/L)	Alkalinity (PP; as $CaCO_3$) (mg/L)	Electrical Conductivity (uS/cm)	Hardness (Total; as $CaCO_3$) (mg/L)	pH (pH Units)	Total Dissolved Solids (mg/L)	Total Dissolved Solids (Calculated) (mg/L)	Ammonia (Total; as N) (mg/L)	Nitrate (mg/L)	Nitrate (as N) (mg/L)	Nitrite (mg/L)	Nitrite (as N) (mg/L)	Nitrite-plus-Nitrate (as N) (mg/L)	Cation Sum (meq/L)	Anion Sum (meq/L)	Ion Balance (%)	Ion Balance (Balance)	Dissolved Organic Carbon (mg/L)
Canadian Drinking Water Quality Guidelines 2020 - AO		---	---	250	500	---	---	0.3	---	0.02	---	200	---	---	---	---	---	(7 - 10.5)	500	500	---	---	---	---	---	---	---	---	---	---	---
Canadian Drinking Water Quality Guidelines 2020 - MAC		---	---	---	---	---	None required	---	None required	0.12	---	---	1.5	---	---	---	None required	---	---	---	None required	45	10	3	1	---	---	---	---	---	---

NOTES:

1. --- in guideline row(s) denotes no criteria for that parameter.
2. --- in detail data row(s) denotes parameter not analyzed.
3. Highlighting indicates non-detect parameters above applied guideline/criteria.
4. Highlighting indicates parameters at applied guideline/criteria.
5. Denotes values exceeding
   (Health Canada. 2020. Guidelines for Canadian Drinking Water Quality. Summary Table. Aesthetic Objective.
   Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.
   September 2020. https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html accessed January 13, 2021.)

   Sulphate:
   Based on taste. High levels (above 500 mg/L) can cause physiological effects such as diarrhoea or dehydration.

   pH:
   For maximizing treament effectiveness, controlling corrosion, and reducing leaching from distribution system and plumbing components. Not specifically an AO.
6. Denotes values exceeding
   (Health Canada. 2020. Guidelines for Canadian Drinking Water Quality. Summary Table. Maximum Acceptable Concentration.
   Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.
   September 2020. https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html accessed January 13, 2021.)

   Calcium:
   Guideline value not necessary. Calcium contributes to hardness.

   Magnesium:
   Guideline value not necessary.

   Hardness (Total; as $CaCO_3$):
   Guideline value has not been established. Although hardness may have significant aesthetic effects, public acceptance of hardness may vary considerably accordng to local conditions. Major contributers to hardness are not of direct public health concern.

   Ammonia (Total; as N):
   Guideline value not necessary. No adverse effects at levels found in drinking water. To help prevent nitrification, limit excess free ammonia entering the distribution system to below 0.1 mg/L and preferably below 0.05 mg/L as N.
7. Superscript [#1] - Detection limits raised due to dilution to bring analyte within the calibrated range.

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Table 4

Groundwater Analytical Results: Dissolved Metals and Trace Elements

PROJECT No.: 317085-44533-22100

Monitoring Station	Date (dd-mmm-yyyy)	Aluminum (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Bismuth (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Chromium (Total) (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Lithium (mg/L)	Manganese (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Phosphorus (mg/L)	Selenium (mg/L)	Silicon (mg/L)	Silver (mg/L)	Strontium (mg/L)	Tellurium (mg/L)	Thallium (mg/L)	Tin (mg/L)	Titanium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
Canadian Drinking Water Quality Guidelines 2020 - AO		**0.1**	---	---	---	---	---	---	---	---	---	**1**	**0.3**	---	---	**0.02**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**5**
Canadian Drinking Water Quality Guidelines 2020 - MAC		---	**0.006**	**0.01**	**2**	---	---	**5**	**0.007**	**0.05**	---	**2**	---	**0.005**	---	**0.12**	**0.001**	---	---	---	**0.05**	---	**None required**	**7**	---	---	---	---	**0.02**	---	---
Monitoring Wells																															
MW-01	07-Mar-2005	0.02	0.0008	0.0008	0.199	< 0.0005	< 0.00005	0.053	< 0.0001	0.0009	0.0017	< 0.0006	**1.02**	0.0004	---	**0.605**	< 0.0001	0.0007	0.0004	---	< 0.0004	---	< 0.0002	0.579	---	< 0.0005	< 0.0002	0.0013	0.0026	0.0003	0.004
	17-Nov-2005	0.01	0.0005	0.0009	0.143	< 0.0005	< 0.0001	0.046	< 0.0001	< 0.0004	0.0015	0.0007	**1.67**	< 0.0001	---	**0.662**	< 0.0001	0.0013	0.0012	---	< 0.0004	---	< 0.0002	0.551	---	< 0.0001	< 0.0002	0.0012	0.0023	0.0001	< 0.002
	15-Jun-2006	< 0.01	0.0006	0.0009	0.134	< 0.0005	< 0.00005	0.045	< 0.0001	0.0027	0.0008	< 0.0006	**1.81**	< 0.0001	---	**0.7**	< 0.0001	0.0004	< 0.0001	---	< 0.0004	---	< 0.0002	0.554	---	< 0.00005	< 0.0002	0.001	0.0022	< 0.0001	0.005
	12-Jul-2007	< 0.01	0.0004	0.0009	0.127	< 0.0005	< 0.00005	0.054	< 0.0001	0.0011	0.0009	< 0.0006	**1.84**	< 0.0001	---	**0.664**	< 0.0001	0.0009	0.003	---	0.0005	---	< 0.0002	0.558	---	< 0.00005	< 0.0002	0.0008	0.0022	< 0.0001	< 0.002
	19-Dec-2007	< 0.001	< 0.0002	< 0.001	0.11	< 0.001	---	0.05	< 0.0002	< 0.001	0.0009	< 0.0002	< 0.06	< 0.0002	---	**0.67**	< 0.00005	0.0008	0.0027	---	< 0.001	---	< 0.0001	0.53	---	< 0.0002	< 0.001	0.001	0.0024	< 0.001	< 0.003
	21-Apr-2009	< 0.001	< 0.0002	0.0008	---	< 0.001	---	---	< 0.000005	< 0.001	0.0008	0.0005	< 0.06	< 0.0002	---	**0.66**	0.000001	0.0004	0.0009	---	< 0.0002	---	< 0.0001	---	---	< 0.0002	< 0.001	< 0.001	0.0021	< 0.001	< 0.003
	05-May-2010	< 0.0050	< 0.00040	0.00095	0.132	< 0.00050	---	0.053	< 0.00010	< 0.0050	0.00088	< 0.0010	**2.02**	< 0.00010	---	**0.730**	< 0.00010	0.00046	0.0025	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	0.00081	0.00209	< 0.00010	< 0.0020
	25-May-2011	0.0051	< 0.00040	0.00093	0.147	< 0.00050	---	< 0.050	< 0.00010	< 0.0050	0.00084	0.0017	**1.53**	< 0.00010	---	**0.675**	< 0.000020	0.00039	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00205	0.00016	0.0074
	29-May-2012	< 0.0050	< 0.00040	0.00088	0.120	< 0.00050	---	< 0.050	< 0.00010	< 0.0050	0.00068	< 0.0010	**1.57**	< 0.00010	---	**0.694**	< 0.000020	0.000423	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00194	< 0.00010	0.0034
	10-Jul-2013	< 0.0050	< 0.00040	0.00098	0.147	< 0.00050	---	< 0.050	< 0.00010	< 0.0050	0.00075	< 0.0010	**1.82**	< 0.00010	---	**0.729**	< 0.000020	0.000360	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00223	< 0.00010	< 0.0030
	16-Jun-2014	< 0.0050	< 0.00040	0.00092	0.144	< 0.00050	---	< 0.050	< 0.00010	< 0.0050	0.00072	< 0.0010	**1.92**	< 0.00010	---	**0.737**	< 0.0000050	0.000281	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00212	< 0.00010	< 0.0030
	29-Jun-2015	0.0038	< 0.00060	0.00079	0.13	< 0.0010	---	0.051	< 0.000020	< 0.0010	0.00076	0.00046	**1.9**	< 0.00020	0.027	**0.71**	---	0.00038	0.00091	< 0.10	< 0.00020	7.1	< 0.00010	0.55	---	< 0.00020	< 0.0010	< 0.0010	0.0021	< 0.0010	< 0.0030
	19-Sep-2016	< 0.0010	< 0.00010	0.00095	0.137	< 0.00010	---	0.054	< 0.0000050	< 0.00010	0.00073	< 0.00020	**1.76**	< 0.000050	---	**0.699**	< 0.0000050	0.000264	0.00100	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.00199	< 0.00050	0.0013
	13-Jul-2017	< 0.0010	< 0.00010	0.00088	0.131	< 0.00010	---	0.050	< 0.0000050	< 0.00010	0.00069	< 0.00020	**1.93**	< 0.000050	---	**0.714**	< 0.0000050	0.000177	0.00084	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.00209	< 0.00050	< 0.0010
	01-Aug-2018	< 0.0050	< 0.00050	0.00094	0.127	---	---	0.088	< 0.000025	< 0.00050	---	< 0.0010	**1.94**	< 0.00025	---	**0.690**	< 0.0000050	---	< 0.0025	---	< 0.00025	---	< 0.000050	---	---	---	---	---	0.00176	---	< 0.0050
	12-May-2020	< 0.0010	< 0.00010	0.00091	0.117	< 0.00010	---	0.046	< 0.0000050	< 0.00010	0.00030	< 0.00020	**2.20**	< 0.000050	---	**0.215**	< 0.0000050	0.000579	0.00073	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.00183	< 0.00050	0.0016
	22-Aug-2022	< 0.0010	< 0.00010	0.00090	0.133	< 0.000020	< 0.000050	0.049	< 0.0000050	< 0.00050	0.00071	< 0.00020	**1.89**	< 0.000050	0.0263	**0.676**	---	0.000744	0.00097	< 0.050	< 0.000050	7.23	< 0.000010	0.538	< 0.00020	< 0.000010	< 0.00010	< 0.00030	0.00134	< 0.00050	< 0.0010
MW-02	07-Mar-2005	0.02	0.001	0.0025	0.204	< 0.0005	< 0.00005	0.12	< 0.0001	0.0013	0.0008	0.0015	0.275	0.0004	---	**0.236**	0.0001	0.0046	< 0.0001	---	0.0008	---	< 0.0002	1.03	---	< 0.0005	< 0.0002	0.0012	0.0032	0.0017	0.004
	17-Nov-2005	0.03	0.0006	0.0014	0.152	< 0.0005	< 0.0001	0.189	< 0.0001	< 0.0004	0.0031	0.0021	0.085	< 0.0001	---	**0.671**	< 0.0001	0.0148	0.0644	---	0.0006	---	< 0.0002	1.54	---	0.00006	< 0.0002	0.0015	0.0053	0.0005	< 0.002
	15-Jun-2006	< 0.01	0.0007	0.0024	0.107	< 0.0005	0.00005	0.152	< 0.0001	0.004	0.0031	0.0011	**3.19**	< 0.0001	---	**1.09**	< 0.0001	0.0009	0.0012	---	0.0005	---	< 0.0002	1.46	---	< 0.00005	< 0.0002	0.0012	0.0023	< 0.0001	0.1012
	13-Jul-2007	< 0.01	0.0005	0.0036	0.0749	< 0.0005	< 0.00005	0.136	< 0.0001	< 0.0004	0.0032	0.0007	**8.72**	< 0.0001	---	**0.841**	< 0.0001	0.0008	0.0055	---	< 0.0004	---	< 0.0002	1.46	---	< 0.00005	< 0.0002	0.0011	0.0019	< 0.0001	< 0.002
	19-Dec-2007	< 0.001	< 0.0002	0.003	0.04	< 0.001	---	0.13	< 0.0002	0.004	0.0026	0.0005	< 0.06	0.0003	---	**0.7**	< 0.00005	0.0006	0.0046	---	< 0.001	---	< 0.0001	1.3	---	< 0.0002	< 0.001	0.002	0.0014	0.002	< 0.003
	21-Apr-2009	< 0.001	< 0.0002	0.0038	---	< 0.001	---	---	< 0.000005	< 0.001	0.0017	0.0002	**1.5**	< 0.0002	---	**0.53**	0.000001	0.0005	0.0019	---	< 0.0002	---	< 0.0001	---	---	< 0.0002	< 0.001	< 0.001	0.0014	< 0.001	< 0.003
	05-May-2010	< 0.0050	< 0.00040	0.00369	0.0544	< 0.00050	---	0.144	< 0.00010	< 0.0050	0.00157	< 0.0010	**9.35**	< 0.00010	---	**0.505**	< 0.00010	0.00041	0.0043	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	0.00104	0.00139	< 0.00010	0.0044
	25-May-2011	< 0.0050	< 0.00040	0.00327	0.0420	< 0.00050	---	0.135	< 0.00010	< 0.0050	0.00100	< 0.0010	**9.25**	< 0.00010	---	**0.434**	< 0.000020	0.00040	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00114	< 0.00010	0.0025
	30-May-2012	0.0106	< 0.00040	0.00312	0.0586	< 0.00050	---	0.133	< 0.00010	< 0.0050	0.00103	< 0.0010	**8.07**	< 0.00010	---	**0.431**	< 0.000020	0.000615	0.0027	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00123	< 0.00010	0.0031
	10-Jul-2013	< 0.0050	< 0.00040	0.00340	0.0850	< 0.00050	---	0.200	< 0.00010	< 0.0050	0.00072	< 0.0010	**12.3**	< 0.00010	---	**0.554**	< 0.000020	0.000324	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00102	< 0.00010	< 0.0030
	16-Jun-2014	< 0.0050	< 0.00040	0.00319	0.0659	< 0.00050	---	0.163	< 0.00010	< 0.0050	0.00059	< 0.0010	**10.8**	< 0.00010	---	**0.446**	< 0.0000050	0.00037	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00060	0.00097	< 0.00020	< 0.0030
	28-Aug-2014	< 0.0050	< 0.00040	0.00302	0.0686	---	---	0.144	< 0.00010	< 0.0050	---	< 0.0010	**8.49**	< 0.00010	---	**0.488**	0.0000059	---	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	---	---	---	0.00132	---	< 0.0030
	25-Jun-2015	0.0035	< 0.00060	0.0028	0.092	< 0.0010	---	0.21	< 0.000020	< 0.0010	0.00043	< 0.00020	**11**	< 0.00020	0.078	**0.41**	---	0.00036	0.00072	< 0.10	< 0.00020	8.5	< 0.00010	1.5	---	< 0.00020	< 0.0010	< 0.0010	0.00086	< 0.0010	< 0.0030
	19-Sep-2016	< 0.0020	< 0.00020	0.00322	0.114	< 0.00020	---	0.235	< 0.00010	< 0.00020	0.00035	< 0.00040	**9.74**	< 0.00010	---	**0.384**	< 0.0000050	0.00048	< 0.0010	---	< 0.00010	---	< 0.000020	---	---	< 0.000020	---	< 0.00060	0.000897	< 0.0010	0.0042
	13-Jul-2017	< 0.0010	< 0.00010	0.00345	0.124	< 0.00010	---	0.150	< 0.0000050	< 0.00010	0.00057	< 0.00020	**7.99**	0.000078	---	**0.372**	< 0.0000050	0.000337	0.00105	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.00127	< 0.00050	< 0.0010
	29-Sep-2017	< 0.0010	< 0.00010	0.00336	0.191	< 0.00010	---	0.183	< 0.0000050	< 0.00010	0.00038	< 0.00020	**11.2**	< 0.000050	---	**0.467**	< 0.0000050	0.000496	0.00091	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.000912	< 0.00050	< 0.0010
	02-Aug-2018	< 0.0050	< 0.00050	0.00329	0.129	---	---	0.194	< 0.000025	< 0.00050	---	< 0.0010	**7.79**	< 0.00025	---	**0.387**	< 0.0000050	---	< 0.0025	---	< 0.00025	---	< 0.000050	---	---	---	---	---	0.00119	---	< 0.0050
	12-May-2020	< 0.0010	< 0.00010	0.00307	0.128	< 0.00010	---	0.187	< 0.0000050	0.00035	0.00025	< 0.00020	**8.89**	< 0.000050	---	**0.153**	< 0.0000050	0.000746	0.00160	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.00102	< 0.00050	0.0020
	22-Aug-2022	< 0.0010	< 0.00010	0.00282	0.173	< 0.000020	< 0.000050	0.200	< 0.0000050	< 0.00050	0.00035	< 0.00020	**5.25**	< 0.000050	0.0716	**0.344**	---	0.000440	0.00080	< 0.050	< 0.000050	8.48	< 0.000010	1.13	< 0.00020	< 0.000010	< 0.00010	< 0.00030	0.000781	< 0.00050	< 0.0010
MW-02B	20-Sep-2016	0.0076	< 0.00050	0.00141	0.497	< 0.00050	---	0.651	< 0.000025	< 0.00050	< 0.00050	< 0.0010	< 0.050	< 0.00025	---	**0.109**	< 0.0000050	0.0157	< 0.0025	---	< 0.00025	---	< 0.000050	---	---	< 0.000050	---	< 0.0015	0.00449	< 0.0025	0.0065
	14-Jul-2017	0.0160	< 0.00050	0.00707	0.646	0.00325	---	0.705	0.00297	0.00321	0.00328	0.0032	**0.687**	0.00317	---	**0.200**	< 0.0000050	0.0112	0.0035	---	0.00332	---	< 0.000050	---	---	0.00580	---	< 0.0015	0.00601	0.0034	0.0088
	29-Sep-2017	< 0.0050	< 0.00050	0.00379	0.719	< 0.00050	---	0.765	< 0.000025	< 0.00050	< 0.00050	< 0.0010	**0.44**	< 0.00025	---	**0.114**	< 0.0000050	0.00900	< 0.0025	---	< 0.00025	---	< 0.000050	---	---	< 0.000050	---	< 0.0015	0.00225	< 0.0025	< 0.0050
	02-Aug-2018	0.0294	< 0.00050	0.00432	0.851	---	---	0.723	< 0.000025	< 0.00050	---	< 0.0010	0.127	< 0.00025	---	**0.102**	0.000221	---	< 0.0025	---	< 0.00025	---	< 0.000050	---	---	---	---	---	0.00132	---	< 0.0050
	12-May-2020	0.0024	< 0.00010	0.00550	0.893	< 0.00010	---	0.718	< 0.0000050	< 0.00010	0.00018	0.00068	**0.567**	< 0.000050	---	**0.0964**	< 0.0000050	0.00619	0.00080	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.000460	< 0.00050	0.0048
	22-Aug-2022	0.0057	< 0.00020	0.00943	1.00	< 0.000040	< 0.000100	0.752	< 0.0000100	< 0.00100	< 0.00020	0.00167	**0.661**	< 0.000100	0.109	**0.0567**	---	0.00760	< 0.00100	< 0.100	< 0.000100	4.46	< 0.000020	0.721	< 0.00040	< 0.000020	0.00023	< 0.00060	0.000203	< 0.00100	< 0.0020
MW-03	07-Mar-2005	< 0.01	0.0007	0.0012	0.0744	< 0.0005	< 0.00005	0.128	< 0.0001	0.0009	0.0012	< 0.0006	**3.19**	< 0.0001	---	**0.264**	< 0.0001	0.0008	< 0.0001	---	< 0.0004	---	< 0.0002	0.811	---	< 0.0005	< 0.0002	0.001	0.0007	< 0.0001	0.003
	17-Nov-2005	0.01	0.0006	0.0014	0.0418	< 0.0005	0.00009	0.119	< 0.0001	< 0.0004	0.0008	0.0008	**4.47**	< 0.0001	---	**0.239**	< 0.0001	0.0015	0.0003	---	0.0005	---	< 0.0002	0.828	---	< 0.0001	< 0.0002	0.0019	0.0007	< 0.0001	< 0.002
	15-Jun-2006	< 0.01	0.0006	0.0013	0.0411	< 0.00045	< 0.00005	0.109	< 0.0001	0.0029	0.0008	0.0007	**4.85**	< 0.0001	---	**0.258**	< 0.0001	0.0007	< 0.0001	---	0.0005	---	< 0.0002	0.845	---	< 0.00005	< 0.0002	0.001	0.0007	< 0.0001	0.01
	12-Jul-2007	< 0.01	0.0004	0.0014	0.0379	< 0.0005	< 0.00005	0.115	< 0.0001	0.0012	0.0008	< 0.0006	**4.89**	0.0005	---	**0.249**	0.00009	0.0029	< 0.00001	---	< 0.0002	---	< 0.0002	0.001	---	0.0007	0.882	< 0.00005	0.0002	< 0.001	< 0.002
	19-Dec-2007	< 0.001	< 0.0002	< 0.001	0.03	< 0.001	---	0.11	< 0.0002	0.002	0.0008	0.0002	< 0.06	0.0002	---	**0.25**	< 0.00005	0.0012	0.0042	---	< 0.001	---	< 0.0001	0.82	---	< 0.0002	< 0.001	0.002	0.0006	0.001	< 0.003
	21-Apr-2009	< 0.001	< 0.0002	0.0013	---	< 0.001	---	---	< 0.000005	< 0.001	0.0006	0.0007	< 0.06	< 0.0002	---	**0.24**	0.000001	0.0007	0.001	---	< 0.0002	---	< 0.0001	---	---	< 0.0002	< 0.001	< 0.001	0.0006	< 0.001	< 0.003
	06-May-2010	< 0.0050	< 0.00040	0.00154	0.0380	< 0.00050	---	0.116	< 0.00010	< 0.0050	0.00076	< 0.0010	**5.23**	< 0.00010	---	**0.253**	< 0.00010	0.00079	0.0027	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	0.00079	0.00056	0.00036	< 0.0020
	02-Jun-2011	< 0.0050	< 0.00040	0.00141	0.0389	< 0.00050	---	0.103	< 0.00010	< 0.0050	0.00061	< 0.0010	**5.55**	< 0.00010	---	**0.277**	< 0.000020	0.00056	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00058	< 0.00010	< 0.0020
	29-May-2012	< 0.0050	< 0.00040	0.00132	0.0350	< 0.00050	---	0.088	< 0.00010	< 0.0050	0.00062	< 0.0010	**4.83**	< 0.00010	---	**0.246**	< 0.000020	0.000535	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00051	< 0.00010	< 0.0030
	10-Jul-2013	< 0.0050	< 0.00040	0.00147	0.0431	< 0.00050	---	0.098	< 0.00010	< 0.0050	0.00073	< 0.0010	**5.36**	< 0.00010	---	**0.274**	< 0.000020	0.000682	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00064	< 0.00010	< 0.0030
	16-Jun-2014	< 0.0050	< 0.00040	0.00143	0.0428	< 0.00050	---	0.097	< 0.00010	< 0.0050	0.00070	< 0.0010	**5.13**	< 0.00010	---	**0.263**	< 0.0000050	0.000496	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00058	< 0.00010	< 0.0030
	29-Jun-2015	0.0031	< 0.00060	0.0014	0.043	< 0.0010	---	0.12	< 0.000020	< 0.0010	0.00074	0.00036	**5.4**	< 0.00020	0.042	**0.27**	---	0.00073	0.00083	< 0.10	< 0.00020	8.4	< 0.00010	0.88	---	< 0.00020	< 0.0010	< 0.0010	0.00059	< 0.0010	0.0097
	19-Sep-2016	< 0.0010	< 0.00010	0.00154	0.0426	< 0.00010	---	0.122	< 0.0000050	< 0.00010	0.00069	< 0.00020	**5.22**	< 0.000050	---	**0.269**	< 0.0000050	0.000443	0.00098	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.000561	< 0.00050	< 0.0010
	13-Jul-2017	< 0.0010	< 0.00010	0.00148	0.0431	< 0.00010	---	0.105	< 0.0000050	< 0.00010	0.00071	< 0.00020	**5.50**	0.000094	---	**0.282**	< 0.0000050	0.000371	0.00096	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.000619	< 0.00050	< 0.0010
(Duplicate)	13-Jul-2017	< 0.0010	< 0.00010	0.00138	0.0437	< 0.00010	---	0.111	< 0.0000050	< 0.00010	0.00066	< 0.00020	**5.20**	0.000090	---	**0.260**	< 0.0000050	0.000407	0.00088	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.000597	< 0.00050	< 0.0010

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Table 4

Groundwater Analytical Results: Dissolved Metals and Trace Elements

PROJECT No.: 317085-44533-22100

Monitoring Station	Date (dd-mmm-yyyy)	Aluminum (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Bismuth (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Chromium (Total) (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Lithium (mg/L)	Manganese (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Phosphorus (mg/L)	Selenium (mg/L)	Silicon (mg/L)	Silver (mg/L)	Strontium (mg/L)	Tellurium (mg/L)	Thallium (mg/L)	Tin (mg/L)	Titanium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
Canadian Drinking Water Quality Guidelines 2020 - AO		**0.1**	---	---	---	---	---	---	---	---	---	**1**	**0.3**	---	---	**0.02**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**5**
Canadian Drinking Water Quality Guidelines 2020 - MAC		---	**0.006**	**0.01**	**2**	---	---	**5**	**0.007**	**0.05**	---	**2**	---	**0.005**	---	**0.12**	**0.001**	---	---	---	**0.05**	---	**None required**	**7**	---	---	---	**0.02**	---	---
MW-03 (cont'd)	31-Jul-2018	**0.327**	< 0.00010	0.00197	0.0523	---	---	0.098	0.0000156	0.00088	---	0.00126	**6.22**	0.000295	---	0.297	< 0.0000050	---	0.00232	---	< 0.000050	---	< 0.000010	---	---	---	---	---	0.000478	---	0.0029
	12-May-2020	< 0.0010	< 0.00010	0.00178	0.0496	< 0.00010	---	0.108	0.0000134	< 0.00010	0.00071	0.00111	**7.15**	< 0.000050	---	0.259	< 0.0000050	0.000975	0.00176	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.000585	< 0.00050	0.0072
	22-Aug-2022	0.0026	0.00024	0.00088	0.0413	< 0.000020	< 0.000050	0.090	0.0000110	< 0.00050	0.00051	0.00057	**1.43**	< 0.000050	0.0301	0.162	---	0.00330	0.00200	< 0.050	0.000070	8.64	< 0.000010	0.636	< 0.00020	< 0.000010	0.00019	< 0.00030	0.000368	0.00055	0.0044
MW-04	08-Mar-2005	< 0.01	0.0009	0.0011	0.0737	< 0.0005	< 0.00005	0.101	< 0.0001	0.0018	0.0007	0.0008	0.173	0.0002	---	0.152	< 0.0001	0.0005	< 0.0001	---	0.0006	---	< 0.0002	0.561	---	< 0.0005	< 0.0002	0.0007	0.0029	< 0.0001	0.004
	17-Nov-2005	< 0.01	0.0007	0.0006	0.0809	< 0.0005	0.00007	0.093	< 0.0001	0.0007	0.0049	0.0012	0.104	< 0.0001	---	0.053	0.0002	0.003	0.014	---	0.0009	---	< 0.0002	0.616	---	< 0.0001	< 0.0002	0.0004	0.0025	< 0.0001	0.029
(Duplicate)	17-Nov-2005	0.01	0.0006	0.0007	0.0817	< 0.0005	0.00005	0.097	< 0.0001	0.0009	0.0051	0.0012	0.105	< 0.0001	---	0.053	0.0001	0.0028	0.0132	---	0.0009	---	< 0.0002	0.609	---	< 0.0001	< 0.0002	0.0004	0.0026	< 0.0001	0.032
	14-Jun-2006	< 0.01	0.0008	0.0006	0.764	< 0.0005	< 0.00005	0.092	< 0.0001	0.0017	< 0.0001	0.0009	0.005	< 0.0001	---	0.13	< 0.0001	0.0005	0.0007	---	0.001	---	< 0.0002	0.585	---	< 0.00005	< 0.0002	0.0003	0.0028	0.0022	0.005
	13-Jul-2007	< 0.01	< 0.0004	0.0008	0.085	< 0.0005	< 0.00005	0.1	< 0.0001	0.0047	0.0001	< 0.0006	< 0.005	< 0.0001	---	0.009	0.0002	0.0005	0.0042	---	0.0006	---	< 0.0002	0.59	---	0.00024	< 0.0002	0.0004	0.0027	0.0009	0.005
	19-Dec-2007	< 0.001	< 0.0002	< 0.001	0.08	< 0.001	---	0.09	< 0.0002	0.001	< 0.0003	0.0006	< 0.06	0.0002	---	0.016	< 0.00005	0.0006	0.0052	---	< 0.001	---	< 0.0001	0.61	---	< 0.0002	< 0.001	0.002	0.0023	< 0.001	< 0.003
	21-Apr-2009	< 0.001	< 0.0002	< 0.0002	---	< 0.001	---	---	0.000024	< 0.001	< 0.0003	0.0009	< 0.06	< 0.0002	---	0.03	0.000003	0.0004	0.0021	---	< 0.0002	---	< 0.0001	---	---	< 0.0002	< 0.001	< 0.001	0.0029	< 0.001	< 0.003
	06-May-2010	< 0.0050	< 0.00040	0.00117	0.0843	< 0.00050	---	0.098	< 0.00010	< 0.0050	0.00054	< 0.0010	0.078	< 0.00010	---	0.258	< 0.00010	0.00038	0.0047	---	0.00106	---	< 0.00010	---	---	< 0.000050	---	0.00046	0.00284	0.00072	< 0.0020
	07-Jun-2011	< 0.0050	< 0.00040	< 0.00040	0.0832	< 0.00050	---	0.090	< 0.00010	< 0.0050	0.00015	< 0.0010	0.028	< 0.00010	---	0.114	< 0.000020	0.00038	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00333	< 0.00010	< 0.0020
	30-May-2012	0.0135	< 0.00040	0.00054	0.0954	< 0.00050	---	0.086	< 0.00010	< 0.0050	0.00088	< 0.0010	**1.47**	< 0.00010	---	0.722	< 0.000020	0.000398	0.0024	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00396	< 0.00010	< 0.0030
(Duplicate)	30-May-2012	0.0112	< 0.00040	0.00059	0.0967	< 0.00050	---	0.087	< 0.00010	< 0.0050	0.00088	< 0.0010	**1.73**	< 0.00010	---	0.861	< 0.000020	0.000326	0.0022	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	0.00041	0.00404	< 0.00010	< 0.0030
	09-Jul-2013	< 0.0050	< 0.00040	0.00065	0.103	< 0.00050	---	0.091	< 0.00010	< 0.0050	0.00058	< 0.0010	**1.70**	< 0.00010	---	0.561	< 0.000020	0.000359	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00392	< 0.00010	< 0.0030
	13-Jun-2014	< 0.0050	< 0.00040	0.00053	0.109	< 0.00050	---	0.069	< 0.00010	< 0.0050	0.00035	< 0.0010	**1.39**	< 0.00010	---	0.494	< 0.0000050	0.000297	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00390	< 0.00010	< 0.0030
	29-Jun-2015	0.0035	< 0.00060	0.00057	0.11	< 0.0010	---	0.094	< 0.000020	< 0.0010	0.00042	< 0.00020	**1.9**	< 0.00020	0.041	0.54	---	0.00039	0.0018	< 0.10	< 0.00020	4.9	< 0.00010	0.63	---	< 0.00020	< 0.0010	< 0.0010	0.0038	< 0.0010	< 0.0030
	19-Sep-2016	< 0.0010	< 0.00010	0.00062	0.123	< 0.00010	---	0.094	< 0.0000050	< 0.00010	0.00044	< 0.00020	**2.33**	< 0.000050	---	0.621	< 0.0000050	0.000220	0.00221	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.00348	< 0.00050	< 0.0010
	13-Jul-2017	< 0.0010	< 0.00010	0.00077	0.118	< 0.00010	---	0.087	< 0.0000050	< 0.00010	0.00043	< 0.00020	**2.24**	0.000073	---	0.616	< 0.0000050	0.000189	0.00210	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.00357	< 0.00050	< 0.0010
	31-Jul-2018	< 0.0050	< 0.00050	0.00079	0.108	---	---	0.093	< 0.000025	< 0.00050	---	< 0.0010	**2.19**	< 0.000025	---	0.548	< 0.0000050	---	0.0026	---	< 0.00025	---	< 0.000050	---	---	---	---	---	0.00330	---	< 0.0050
	12-May-2020	0.0013	< 0.00010	0.00104	0.121	< 0.00010	---	0.086	0.0000051	< 0.00010	0.00049	< 0.00020	**3.21**	< 0.000050	---	0.688	< 0.0000050	0.000330	0.00189	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.00352	< 0.00050	0.0013
	22-Aug-2022	< 0.0010	< 0.00010	0.00095	0.123	< 0.000020	< 0.000050	0.090	< 0.0000050	< 0.00050	0.00038	< 0.00020	**2.15**	< 0.000050	0.0431	0.525	---	0.000311	0.00192	< 0.050	< 0.000050	4.96	< 0.000010	0.624	< 0.00020	< 0.000010	< 0.00010	< 0.00030	0.00289	< 0.00050	< 0.0010
MW-05	08-Mar-2005	< 0.01	0.0008	0.0035	0.0618	< 0.0005	< 0.00005	0.14	< 0.0001	0.0009	0.0008	< 0.0006	**1.14**	0.0002	---	0.402	< 0.0001	0.0022	< 0.0001	---	0.0004	---	< 0.0002	0.71	---	< 0.0005	< 0.0002	0.0008	0.0014	0.0002	0.003
	17-Nov-2005	< 0.01	0.0005	0.0081	0.0564	< 0.0005	0.00006	0.116	< 0.0001	< 0.0004	0.001	0.0007	**3.31**	< 0.0001	---	0.531	< 0.0001	0.0029	0.0022	---	0.0004	---	< 0.0002	0.667	---	< 0.0001	< 0.0002	0.0009	0.0008	0.0001	< 0.002
	14-Jun-2006	< 0.01	0.0007	0.0051	0.454	< 0.0005	< 0.00005	0.081	< 0.0001	0.0016	0.0007	0.0006	**3.48**	< 0.0001	---	0.583	< 0.0001	0.0013	0.0002	---	< 0.0004	---	< 0.0002	0.659	---	< 0.00005	< 0.0002	0.0005	0.0007	0.0008	0.004
	13-Jul-2007	< 0.01	0.0005	0.0018	0.0455	< 0.0005	< 0.00005	0.052	< 0.0001	0.0005	0.0008	0.0009	**4**	< 0.0001	---	0.682	< 0.0001	0.0006	0.0034	---	0.0005	---	< 0.0002	0.684	---	< 0.00005	< 0.0002	0.0006	0.0007	< 0.0001	0.005
	19-Dec-2007	< 0.001	< 0.0002	0.001	0.04	< 0.001	---	0.06	< 0.0002	0.003	0.0007	< 0.0002	< 0.06	0.0002	---	0.66	< 0.00005	0.0005	0.0029	---	< 0.001	---	< 0.0001	0.63	---	< 0.0002	< 0.001	0.002	0.0007	0.001	< 0.003
	21-Apr-2009	< 0.001	< 0.0002	0.0014	---	< 0.001	---	---	< 0.000005	< 0.001	0.0007	0.0008	< 0.06	< 0.0002	---	0.72	0.000001	0.0006	0.0014	---	< 0.0002	---	< 0.0001	---	---	< 0.0002	< 0.001	< 0.001	0.0007	< 0.001	< 0.003
	29-Apr-2010	< 0.0050	0.00052	0.00170	0.0478	< 0.00050	---	0.064	< 0.00010	< 0.0050	0.00082	< 0.0010	**3.39**	< 0.00010	---	0.758	< 0.00010	0.00063	0.0039	---	0.00086	---	< 0.00010	---	---	< 0.000050	---	0.00088	0.00070	0.00017	0.0025
	25-May-2011	< 0.0050	< 0.00040	0.00159	0.0552	< 0.00050	---	0.052	< 0.00010	< 0.0050	0.00075	< 0.0010	**3.82**	< 0.00010	---	0.657	< 0.000020	0.00042	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00066	< 0.00010	< 0.0020
	29-May-2012	< 0.0050	< 0.00040	0.00107	0.0455	< 0.00050	---	< 0.050	< 0.00010	< 0.0050	0.00067	< 0.0010	**3.83**	< 0.00010	---	0.707	< 0.000020	0.000321	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00063	< 0.00010	< 0.0030
	08-Jul-2013	< 0.0050	< 0.00040	0.00136	0.0547	< 0.00050	---	0.050	< 0.00010	< 0.0050	0.00082	< 0.0010	**3.17**	< 0.00010	---	0.754	< 0.000020	0.000414	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00060	< 0.00010	0.0049
	13-Jun-2014	< 0.0050	< 0.00040	0.00173	0.0486	< 0.00050	---	< 0.050	< 0.00010	< 0.0050	0.00081	< 0.0010	**4.37**	< 0.00010	---	0.758	< 0.0000050	0.000415	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00071	< 0.00010	< 0.0030
	25-Jun-2015	< 0.0030	< 0.00060	0.0018	0.051	< 0.0010	---	0.059	< 0.000020	< 0.0010	0.00084	0.00056	**4.8**	< 0.00020	0.041	0.71	---	0.00054	0.00091	< 0.10	< 0.00020	6.6	< 0.00010	0.69	---	< 0.00020	< 0.0010	< 0.0010	0.00072	< 0.0010	0.0034
	19-Sep-2016	< 0.0010	< 0.00010	0.00122	0.0504	< 0.00010	---	0.057	< 0.0000050	< 0.00010	0.00076	< 0.00020	**4.39**	< 0.000050	---	0.757	< 0.0000050	0.000272	0.00130	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.000706	< 0.00050	0.0013
	13-Jul-2017	0.0022	< 0.00010	0.00200	0.0515	< 0.00010	---	0.055	< 0.0000050	< 0.00010	0.00084	< 0.00020	**4.82**	< 0.000050	---	0.742	< 0.0000050	0.000296	0.00127	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.000755	< 0.00050	< 0.0010
	31-Jul-2018	0.0015	< 0.00010	0.00251	0.0520	---	---	0.045	< 0.0000050	< 0.00010	---	< 0.00020	**4.93**	< 0.000050	---	0.785	< 0.0000050	---	0.00125	---	< 0.000050	---	< 0.000010	---	---	---	---	---	0.000532	---	0.0013
	12-May-2020	< 0.0010	< 0.00010	0.00194	0.0467	< 0.00010	---	0.054	< 0.0000050	< 0.00010	0.00036	0.00112	**5.35**	< 0.000050	---	0.181	< 0.0000050	0.000519	0.00119	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.000613	< 0.00050	0.0010
	22-Aug-2022	< 0.0010	< 0.00010	0.00210	0.0529	< 0.000020	< 0.000050	0.059	< 0.0000050	< 0.00050	0.00091	< 0.00020	**4.76**	< 0.000050	0.0428	0.681	---	0.000459	0.00124	< 0.050	< 0.000050	6.78	< 0.000010	0.646	< 0.00020	< 0.000010	< 0.00010	< 0.00030	0.000603	< 0.00050	< 0.0010
MW-06	08-Mar-2005	< 0.01	0.0009	0.0042	0.071	< 0.0005	< 0.00005	0.148	< 0.0001	0.0035	0.0012	0.0011	**2.92**	0.0004	---	1.32	< 0.0001	0.0014	< 0.0001	---	0.0005	---	< 0.0002	1.2	---	< 0.0005	< 0.0002	0.0008	0.0023	0.0002	0.004
	17-Nov-2005	0.01	0.0005	0.0038	0.0557	< 0.0005	0.00006	0.16	< 0.0001	< 0.0004	0.0012	0.0012	**2.96**	< 0.0001	---	0.943	< 0.0001	0.0015	0.0004	---	0.0005	---	< 0.0002	1.26	---	< 0.0001	< 0.0002	0.0015	0.0015	0.0001	< 0.002
	16-Jun-2006	< 0.01	0.0009	0.0034	0.0666	< 0.0005	< 0.00005	0.149	< 0.0001	0.0015	0.0007	0.0014	**3.58**	< 0.0001	---	1.01	< 0.0001	0.0014	< 0.0001	---	0.0007	---	< 0.0002	1.28	---	< 0.0005	< 0.0002	0.001	0.0016	< 0.001	0.008
	12-Jul-2007	< 0.01	0.0005	0.0042	0.043	< 0.0005	< 0.00005	0.159	< 0.0001	0.0014	0.0009	0.0014	**4.5**	< 0.0001	---	1.28	< 0.0001	0.0016	0.006	---	< 0.0004	---	< 0.00021	1.42	---	< 0.0005	< 0.0002	0.0014	0.0016	< 0.0001	0.003
	19-Dec-2007	< 0.001	< 0.0002	0.003	0.03	< 0.001	---	0.13	< 0.0002	0.002	0.0008	0.0011	< 0.06	0.0002	---	1.5	< 0.00005	0.0012	0.0052	---	< 0.001	---	< 0.0001	1.4	---	< 0.0002	< 0.001	0.002	0.0018	0.001	< 0.003
	22-Apr-2009	< 0.001	< 0.0002	0.005	---	< 0.001	---	---	0.000009	< 0.001	0.0004	< 0.0002	**5.7**	< 0.0002	---	1.7	< 0.000001	0.001	0.0015	---	< 0.0002	---	< 0.0001	---	---	< 0.0002	< 0.001	< 0.001	0.0017	< 0.001	< 0.003
	06-May-2010	< 0.0050	< 0.00040	0.00507	0.0353	< 0.00050	---	0.150	< 0.00010	< 0.0050	0.00052	0.0012	**5.38**	< 0.00010	---	1.39	< 0.00010	0.00094	0.0039	---	0.00041	---	< 0.00010	---	---	< 0.000050	---	0.00125	0.00146	0.00016	0.0063
	07-Jun-2011	0.0288	< 0.00040	0.00570	0.0309	< 0.00050	---	0.138	< 0.00010	< 0.0050	0.00036	< 0.0010	**5.55**	< 0.00010	---	1.64	< 0.000020	0.00080	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	0.00063	0.00180	0.00016	< 0.0020
	29-May-2012	0.0104	< 0.00040	0.00525	0.0265	< 0.00050	---	0.122	< 0.00010	< 0.0050	0.00030	< 0.0010	**6.02**	< 0.00010	---	1.70	< 0.000020	0.000878	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00173	< 0.00010	0.0036
	08-Jul-2013	< 0.0050	< 0.00040	0.00544	0.0315	< 0.0010	---	0.123	< 0.00010	< 0.0050	0.00036	< 0.0010	**5.84**	< 0.00010	---	1.72	< 0.000020	0.00097	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.00010	---	< 0.00060	0.00158	< 0.00020	< 0.0030
	12-Jun-2014	< 0.0050	< 0.00040	0.00505	0.0315	< 0.00050	---	0.112	< 0.00010	< 0.0050	0.00030	< 0.0010	**5.93**	< 0.00010	---	1.62	< 0.0000050	0.00084	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00060	0.00169	< 0.00020	< 0.0030
	25-Jun-2015	< 0.0030	< 0.00060	0.0045	0.033	< 0.0010	---	0.15	< 0.000020	< 0.0010	< 0.00030	< 0.00020	**6.1**	< 0.00020	0.11	1.5	---	0.0010	< 0.00050	0.18	< 0.00020	7.6	< 0.00010	1.4	---	< 0.00020	< 0.0010	< 0.0010	0.0016	< 0.0010	< 0.0030
	20-Sep-2016	< 0.0020	< 0.00020	0.00556	0.0303	< 0.00020	---	0.147	< 0.00010	< 0.00020	0.00025	< 0.00040	**5.88**	< 0.00010	---	1.63	< 0.0000050	0.00089	< 0.0010	---	< 0.00010	---	< 0.000020	---	---	< 0.000020	---	< 0.00060	0.00179	< 0.0010	< 0.0020
	13-Jul-2017	0.0124	< 0.00020	0.00532	0.0276	< 0.00020	---	0.132	< 0.000010	< 0.00020	0.00027	< 0.00040	**5.83**	< 0.00010	---	1.63	< 0.0000050	0.00090	< 0.0010	---	< 0.00010	---	< 0.000020	---	---	< 0.000020	---	< 0.00060	0.00174	< 0.0010	< 0.0020
	31-Jul-2018	**0.131**	< 0.00050	0.00607	0.0322	---	---	0.148	< 0.000025	< 0.00050	---	< 0.0010	**6.76**	< 0.00025	---	1.74	< 0.0000050	---	< 0.0025	---	< 0.00025	---	< 0.000050	---	---	---	---	---	0.00166	---	< 0.0050
	13-May-2020	< 0.0010	< 0.00010	0.00715	0.0341	< 0.00010	---	0.145	< 0.0000050	< 0.00010	0.00059	0.00034	**8.59**	< 0.000050	---	2.51	< 0.0000050	0.000921	0.00075	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.00205	< 0.00050	0.0048
	22-Aug-2022	< 0.0010	< 0.00010	0.00618	0.0290	< 0.000020	< 0.000050	0.156	< 0.0000050	< 0.00050	0.00023	< 0.00020	**5.96**	< 0.000050	0.112	1.60	---	0.000786	< 0.00050	0.149	< 0.000050	7.94	< 0.000010	1.30	< 0.00020	< 0.000010	< 0.00010	< 0.00030	0.00150	< 0.00050	< 0.0010
(Duplicate)	22-Aug-2022	< 0.0010	< 0.00010	0.00600	0.0286	0.00775	< 0.000050	0.150	< 0.0000050	< 0.00050	0.00026	< 0.00020	**6.10**	< 0.000050	0.108	1.60	---	0.000836	< 0.00050	0.161	< 0.000050	7.94	< 0.000010	1.32	< 0.00020	< 0.000010	< 0.00010	< 0.00030	0.00167	< 0.00050	< 0.0010

Advisian
Worley Group

Table 4

Groundwater Analytical Results: Dissolved Metals and Trace Elements

PROJECT No.: 317085-44533-22100

Monitoring Station	Date (dd-mmm-yyyy)	Aluminum (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Bismuth (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Chromium (Total) (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Lithium (mg/L)	Manganese (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Phosphorus (mg/L)	Selenium (mg/L)	Silicon (mg/L)	Silver (mg/L)	Strontium (mg/L)	Tellurium (mg/L)	Thallium (mg/L)	Tin (mg/L)	Titanium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
Canadian Drinking Water Quality Guidelines 2020 - AO		**0.1**	---	---	---	---	---	---	---	---	---	**1**	**0.3**	---	---	**0.02**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**5**
Canadian Drinking Water Quality Guidelines 2020 - MAC		---	**0.006**	**0.01**	**2**	---	---	**5**	**0.007**	**0.05**	---	**2**	---	**0.005**	---	**0.12**	**0.001**	---	---	---	**0.05**	---	**None required**	**7**	---	---	---	---	**0.02**	---	---
MW-07	09-Mar-2005	< 0.01	0.0008	0.0017	0.0733	< 0.0005	< 0.00005	0.366	< 0.0001	0.0017	0.0026	0.0024	**10.4**	0.0004	---	**1.88**	< 0.0001	0.001	< 0.0001	---	0.0008	---	< 0.0002	2.49	---	< 0.0005	< 0.0002	0.0012	0.0018	< 0.0001	0.006
	17-Nov-2005	< 0.01	0.0007	0.0019	0.053	< 0.0005	0.00005	0.311	< 0.0001	< 0.0004	0.002	0.0018	**10.9**	< 0.0001	---	**1.83**	< 0.0001	0.001	< 0.0001	---	< 0.0004	---	< 0.0002	2.45	---	< 0.0001	< 0.0002	0.0009	0.0017	< 0.0001	< 0.002
	16-Jun-2006	< 0.01	0.0007	0.0022	0.0543	< 0.0005	< 0.00005	0.312	< 0.0001	0.0018	0.0012	0.0023	< 0.005	< 0.0001	---	**1.86**	< 0.0001	0.0008	< 0.0001	---	0.0007	---	< 0.0002	2.58	---	< 0.00005	< 0.0002	0.001	0.0017	< 0.0001	0.006
	12-Jul-2007	< 0.01	0.0005	0.0027	0.0596	< 0.0005	< 0.00005	0.289	< 0.0001	0.0011	0.0014	0.0015	**10.9**	< 0.0001	---	**1.78**	< 0.0001	0.0012	0.0056	---	0.0008	---	< 0.0002	2.49	---	< 0.00005	< 0.0002	0.0011	0.0016	< 0.0001	0.002
	19-Dec-2007	< 0.001	< 0.0002	0.001	0.04	< 0.001	---	0.26	< 0.0002	0.004	0.0013	0.0016	< 0.06	0.0003	---	**1.6**	< 0.00005	0.0011	0.0059	---	< 0.001	---	< 0.0001	2.2	---	< 0.0002	< 0.001	0.002	0.0014	0.002	0.003
	22-Apr-2009	< 0.001	< 0.0002	0.0021	---	< 0.001	---	---	0.000016	< 0.001	0.0013	0.0007	**14**	< 0.0002	---	**2.3**	< 0.000001	0.0004	0.0024	---	< 0.0002	---	< 0.0001	---	---	< 0.0002	< 0.001	< 0.001	0.0016	< 0.001	< 0.003
	05-May-2010	< 0.0050	< 0.00040	0.00361	0.0490	< 0.00050	---	0.279	< 0.00010	< 0.0050	0.00128	0.0014	**12.5**	< 0.00010	---	**1.90**	< 0.00010	0.00097	0.0056	---	0.00127	---	< 0.00010	---	---	< 0.000050	---	0.00109	0.00156	< 0.00010	0.0057
	08-Jun-2011	< 0.0050	< 0.00040	0.00570	0.0954	< 0.00050	---	0.215	< 0.00010	< 0.0050	0.00116	< 0.0010	**8.26**	< 0.00010	---	**1.21**	< 0.000020	0.00151	0.0021	---	< 0.00040	---	< 0.00010	---	---	0.000071	---	0.00030	0.00138	< 0.00010	0.0050
	28-Jul-2011	< 0.0050	< 0.00040	0.00333	0.0483	---	---	0.262	< 0.00010	< 0.0050	---	< 0.0010	**11.7**	< 0.00010	---	**1.84**	< 0.000020	---	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	---	---	---	0.00152	---	< 0.0030
	30-May-2012	0.0116	< 0.00040	0.00376	0.0544	< 0.00050	---	0.240	< 0.00010	< 0.0050	0.00104	< 0.0010	**11.3**	< 0.00010	---	**1.79**	< 0.000020	0.000974	0.0026	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00143	< 0.00010	< 0.0030
	11-Jul-2013	< 0.0050	< 0.00050	0.00382	0.0466	< 0.0025	---	0.276	< 0.00010	< 0.0050	0.00097	< 0.0010	**12.1**	< 0.00025	---	**1.87**	< 0.000020	0.00088	< 0.0020	---	< 0.00050	---	< 0.00010	---	---	< 0.00025	---	< 0.0015	0.00140	< 0.00050	< 0.0050
	13-Jun-2014	< 0.0050	< 0.00050	0.00319	0.0298	< 0.00050	---	0.226	< 0.00010	< 0.0050	0.00105	< 0.0010	**13.8**	< 0.00025	---	**2.26**	< 0.0000050	0.00067	< 0.0020	---	< 0.00050	---	< 0.00010	---	---	< 0.000050	---	< 0.0015	0.00170	< 0.00050	< 0.0050
	25-Jun-2015	< 0.0030	< 0.00060	0.0038	0.047	< 0.0010	---	0.29	< 0.000020	< 0.0010	0.0010	< 0.00020	**13**	< 0.00020	0.16	**1.9**	---	0.0010	0.0011	< 0.10	< 0.00020	8.0	< 0.00010	2.6	---	< 0.00020	< 0.0010	< 0.0010	0.0016	< 0.0010	< 0.0030
	20-Sep-2016	< 0.0050	< 0.00050	0.00383	0.0416	< 0.00050	---	0.300	< 0.000025	< 0.00050	0.00088	< 0.0010	**12.9**	< 0.00025	---	**2.01**	< 0.0000050	0.00078	< 0.0025	---	< 0.00025	---	< 0.000050	---	---	< 0.000050	---	< 0.0015	0.00159	< 0.0025	< 0.0050
	14-Jul-2017	< 0.0020	< 0.00020	0.00442	0.0503	< 0.00020	---	0.264	< 0.000010	< 0.00020	0.00086	< 0.00040	**11.2**	< 0.00010	---	**1.80**	< 0.0000050	0.00109	< 0.0010	---	< 0.00010	---	< 0.000020	---	---	< 0.000020	---	< 0.00060	0.00147	< 0.0010	< 0.0020
	31-Jul-2018	< 0.0050	< 0.00050	0.00505	0.0518	---	---	0.282	< 0.000025	< 0.00050	---	< 0.0010	**12.3**	< 0.00025	---	**1.88**	< 0.0000050	---	< 0.0025	---	< 0.00025	---	< 0.000050	---	---	---	---	---	0.00138	---	< 0.0050
	13-May-2020	< 0.0010	< 0.00010	0.00441	0.0383	< 0.00010	---	0.283	< 0.0000050	< 0.00010	0.00057	0.00028	**14.0**	< 0.000050	---	**0.517**	< 0.0000050	0.000958	0.00108	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.00155	< 0.00050	0.0028
(Duplicate)	13-May-2020	0.0053	< 0.00010	0.00513	0.0425	< 0.00010	---	0.270	< 0.0000050	< 0.00010	0.00072	0.00037	**16.4**	0.000050	---	**0.886**	< 0.0000050	0.00102	0.00120	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	0.00041	0.00153	< 0.00050	0.0031
	23-Aug-2022	0.0030	< 0.00020	0.00275	0.0214	< 0.000040	< 0.000100	0.324	< 0.0000100	< 0.00100	0.00102	< 0.00040	**13.2**	< 0.000100	0.182	**2.07**	---	0.000475	0.00452	< 0.100	< 0.000100	8.24	< 0.000020	2.81	< 0.00040	< 0.000020	< 0.00020	< 0.00060	0.00162	< 0.00100	0.0065
MW-08	09-Mar-2005	< 0.01	0.0006	0.0042	0.084	< 0.0005	< 0.00005	0.244	< 0.0001	0.0011	0.0008	0.001	**5.66**	0.0004	---	**0.474**	< 0.0001	0.0012	< 0.0001	---	0.0004	---	< 0.0002	1.4	---	< 0.0005	< 0.0002	0.0008	0.0011	< 0.0001	0.003
	15-Nov-2005	< 0.01	0.0005	0.0046	0.115	< 0.0005	0.00009	0.184	< 0.0001	0.0005	0.0009	0.001	**5.16**	< 0.0001	---	**0.384**	< 0.0001	0.0025	< 0.0001	---	0.0005	---	< 0.0002	1.27	---	< 0.0001	< 0.0002	0.001	0.0015	< 0.0001	< 0.002
	16-Jun-2006	< 0.01	0.0006	0.0044	0.0629	< 0.0005	< 0.00005	0.206	< 0.0001	0.0012	0.0004	0.0011	**6.97**	< 0.0001	---	**0.481**	< 0.0001	0.0011	< 0.0001	---	< 0.0004	---	< 0.0002	1.45	---	< 0.00005	< 0.0002	0.0008	0.0009	< 0.0001	0.006
	11-Jul-2007	< 0.01	0.0005	0.0052	0.0519	< 0.0005	< 0.00005	0.176	< 0.0001	0.0016	0.0005	0.0012	**7.29**	< 0.0001	---	**0.454**	< 0.0001	0.0016	0.0031	---	< 0.0004	---	< 0.0002	1.59	---	< 0.00005	< 0.0002	0.0012	0.0008	0.0004	0.004
	19-Dec-2007	< 0.001	< 0.0002	0.002	0.03	< 0.001	---	0.17	< 0.0002	0.003	0.0004	0.0006	< 0.06	0.0002	---	**0.44**	< 0.00005	0.0014	0.0036	---	< 0.001	---	< 0.0001	1.4	---	< 0.0002	< 0.001	0.002	0.0008	0.001	< 0.003
	21-Apr-2009	< 0.001	< 0.0002	0.0062	---	< 0.001	---	---	< 0.000005	< 0.001	< 0.0003	0.0016	< 0.06	< 0.0002	---	**0.45**	< 0.000001	0.002	0.0017	---	< 0.0002	---	< 0.0001	---	---	< 0.0002	< 0.001	< 0.001	0.0007	< 0.001	< 0.003
	05-May-2010	< 0.0050	< 0.00040	0.00672	0.0675	< 0.00050	---	0.179	< 0.00010	< 0.0050	0.00035	< 0.0010	**7.22**	< 0.00010	---	**0.470**	< 0.00010	0.00168	0.0027	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	0.00094	0.00072	0.00017	0.0163
	07-Jun-2011	< 0.0050	< 0.00040	0.00667	0.0614	< 0.00050	---	0.180	< 0.00010	< 0.0050	0.00036	< 0.0010	**5.41**	< 0.00010	---	**0.411**	< 0.000020	0.00154	0.0025	---	0.00159	---	< 0.00010	---	---	< 0.000050	---	0.00144	0.00080	0.00018	0.0116
	30-May-2012	0.0104	< 0.00040	0.00600	0.0499	< 0.00050	---	0.154	< 0.00010	< 0.0050	0.00018	< 0.0010	**6.69**	< 0.00010	---	**0.409**	< 0.000020	0.00137	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00069	< 0.00010	0.0042
	09-Jul-2013	< 0.0050	< 0.00040	0.00767	0.0639	< 0.00050	---	0.163	< 0.00010	< 0.0050	0.00018	< 0.0010	**6.47**	< 0.00010	---	**0.415**	< 0.000020	0.00175	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00067	< 0.00010	< 0.0030
	12-Jun-2014	< 0.0050	< 0.00040	0.00675	0.0551	< 0.00050	---	0.130	< 0.00010	< 0.0050	0.00017	< 0.0010	**7.19**	< 0.00010	---	**0.476**	< 0.0000050	0.00129	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00071	< 0.00010	< 0.0030
	24-Jun-2015	< 0.0030	< 0.00060	0.0054	0.055	< 0.0010	---	0.18	< 0.000020	< 0.0010	< 0.00030	< 0.00020	**7.1**	< 0.00020	0.092	**0.44**	---	0.0014	< 0.00050	< 0.10	< 0.00020	7.7	< 0.00010	1.4	---	< 0.00020	< 0.0010	< 0.0010	0.00067	< 0.0010	< 0.0030
	20-Sep-2016	< 0.0010	< 0.00010	0.00700	0.0658	< 0.00010	---	0.183	0.0000056	< 0.00010	0.00016	< 0.00020	**6.96**	< 0.000050	---	**0.441**	< 0.0000050	0.00108	0.00053	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.000699	< 0.00050	0.0015
	02-Aug-2017	0.0053	< 0.00010	0.00530	0.0318	< 0.00010	---	0.204	< 0.0000050	< 0.00010	0.00018	< 0.00020	---	< 0.0000050	---	---	< 0.0000050	0.00103	< 0.00050	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.000683	< 0.00050	< 0.0010
	01-Aug-2018	< 0.0050	< 0.00050	0.00513	0.0274	---	---	0.201	< 0.000025	< 0.00050	---	< 0.0010	**8.45**	< 0.00025	---	**0.495**	< 0.0000050	---	< 0.0025	---	< 0.00025	---	< 0.000050	---	---	---	---	---	0.000728	---	< 0.0050
	13-May-2020	< 0.0010	< 0.00010	0.00587	0.0305	< 0.00010	---	0.176	< 0.0000050	< 0.00010	0.00018	0.00047	**10.4**	< 0.0000050	---	**0.551**	< 0.0000050	0.000982	< 0.00050	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.000878	< 0.00050	< 0.0010
	23-Aug-2022	< 0.0010	< 0.00010	0.00513	0.0281	< 0.000020	< 0.000050	0.218	< 0.0000050	< 0.00050	0.00016	< 0.00020	**7.94**	< 0.000050	0.120	**0.487**	---	0.000959	< 0.00050	< 0.050	< 0.000050	8.00	< 0.000010	1.67	< 0.00020	< 0.000010	< 0.00010	< 0.00030	0.000817	< 0.00050	< 0.0010
MW-09	09-Mar-2005	**0.14**	0.0007	0.0019	0.0608	< 0.0005	< 0.00005	0.339	< 0.0001	0.0016	0.0011	0.001	**1.11**	0.0001	---	**0.714**	< 0.0001	0.0019	0.0002	---	< 0.0004	---	< 0.0002	0.843	---	< 0.0005	< 0.0002	0.0058	0.0019	0.0005	0.003
(Duplicate)	09-Mar-2005	**0.12**	0.0007	0.0019	0.0616	< 0.0005	< 0.00005	0.332	< 0.0001	0.0012	0.0012	0.001	**1.07**	0.0003	---	**0.705**	< 0.0001	0.0019	0.0002	---	< 0.0004	---	< 0.0002	0.841	---	< 0.0005	< 0.0002	0.0059	0.0018	0.0004	0.004
	17-Nov-2005	0.02	0.0006	0.0018	0.052	< 0.0005	< 0.0001	0.294	< 0.0001	0.0006	0.0023	0.0011	**1.4**	< 0.0001	---	**0.752**	< 0.0001	0.0038	0.0087	---	0.0005	---	< 0.0002	0.869	---	< 0.0001	< 0.0002	0.0038	0.0015	0.0002	< 0.002
	16-Jun-2006	< 0.01	0.0006	0.0018	0.0389	< 0.0005	< 0.00005	0.289	< 0.0001	0.0013	0.0011	0.0012	**1.44**	< 0.0001	---	**0.797**	< 0.0001	0.0015	< 0.0001	---	< 0.0004	---	< 0.0002	0.861	---	< 0.00005	< 0.0002	0.0008	0.0014	< 0.0001	0.005
	11-Jul-2007	< 0.01	0.0004	0.002	0.0302	< 0.0005	< 0.00005	0.26	< 0.0001	0.0016	0.0009	0.0008	**1.74**	< 0.0001	---	**0.785**	< 0.0001	0.0017	0.003	---	< 0.0004	---	< 0.0002	0.961	---	< 0.00005	< 0.0002	0.0009	0.0014	0.0005	< 0.002
	18-Dec-2007	< 0.001	< 0.0002	0.002	0.02	< 0.001	---	0.26	< 0.0002	< 0.001	0.0009	0.0008	< 0.06	< 0.0002	---	**0.77**	< 0.00005	0.0018	0.0023	---	< 0.001	---	< 0.0001	0.81	---	< 0.0002	< 0.001	0.002	0.0014	< 0.001	0.003
	22-Apr-2009	0.1	< 0.0002	0.0023	---	< 0.001	---	---	0.000008	< 0.001	0.0008	0.0003	**1.9**	< 0.0002	---	**0.86**	< 0.000001	0.0016	0.0017	---	< 0.0002	---	< 0.0001	---	---	< 0.0002	< 0.001	0.005	0.0012	< 0.001	< 0.003
	06-May-2010	< 0.0050	< 0.00040	0.00255	0.0250	< 0.00050	---	0.267	< 0.00010	< 0.0050	0.00085	< 0.0010	**2.04**	< 0.00010	---	**0.828**	< 0.00010	0.00158	0.0027	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	0.00078	0.00121	< 0.00010	< 0.0020
(Duplicate)	06-May-2010	< 0.0050	< 0.00040	0.00257	0.0247	< 0.00050	---	0.261	< 0.00010	< 0.0050	0.00086	< 0.0010	**2.03**	< 0.00010	---	**0.832**	< 0.00010	0.00154	0.0027	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	0.00077	0.00120	< 0.00010	0.0020
	02-Jun-2011	< 0.0050	< 0.00040	0.00280	0.0294	< 0.00050	---	0.255	< 0.00010	< 0.0050	0.00128	< 0.0010	**1.46**	< 0.00010	---	**0.754**	< 0.000020	0.00156	< 0.0020	---	< 0.00040	---	0.00013	---	---	< 0.000050	---	< 0.00030	0.00132	0.00012	0.0020
(Duplicate)	02-Jun-2011	< 0.0050	< 0.00040	0.00272	0.0296	< 0.00050	---	0.237	< 0.00010	< 0.0050	0.00126	< 0.0010	**1.29**	< 0.00010	---	**0.773**	< 0.000020	0.00152	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00128	0.00015	< 0.0020
	29-May-2012	0.0112	< 0.00040	0.00234	0.0209	< 0.00050	---	0.226	< 0.00010	< 0.0050	0.00080	< 0.0010	**1.89**	< 0.00010	---	**0.784**	< 0.000020	0.00143	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00121	< 0.00010	0.0030
	10-Jul-2013	< 0.0050	< 0.00040	0.00237	0.0243	< 0.0010	---	0.249	< 0.00010	< 0.0050	0.00138	< 0.0010	**1.94**	< 0.00010	---	**0.842**	< 0.000020	0.00154	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.00010	---	< 0.00060	0.00138	< 0.00020	< 0.0030
	13-Jun-2014	< 0.0050	< 0.00040	0.00232	0.0224	< 0.00050	---	0.196	< 0.00010	< 0.0050	0.00120	< 0.0010	**1.85**	< 0.00010	---	**0.868**	< 0.0000050	0.00131	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00132	< 0.00010	< 0.0030
	25-Jun-2015	< 0.0030	< 0.00060	0.0020	0.023	< 0.0010	---	0.27	< 0.000020	< 0.0010	0.0011	< 0.00020	**2.0**	< 0.00020	0.081	**0.80**	---	0.0016	0.00051	< 0.10	< 0.00020	6.4	< 0.00010	0.88	---	< 0.00020	< 0.0010	< 0.0010	0.0013	< 0.0010	< 0.0030
	20-Sep-2016	< 0.0020	< 0.00020	0.00249	0.0227	< 0.00020	---	0.285	< 0.000010	< 0.00020	0.00118	< 0.00040	**1.93**	< 0.00010	---	**0.822**	< 0.0000050	0.00161	< 0.0010	---	< 0.00010	---	< 0.000020	---	---	< 0.000020	---	< 0.00060	0.00131	< 0.0010	< 0.0020
(Duplicate)	20-Sep-2016	< 0.0020	< 0.00020	0.00240	0.0227	< 0.00020	---	0.281	< 0.000010	< 0.00020	0.00117	< 0.00040	**1.88**	< 0.00010	---	**0.795**	< 0.0000050	0.00155	< 0.0010	---	< 0.00010	---	< 0.000020	---	---	< 0.000020	---	< 0.00060	0.00129	< 0.0010	< 0.0020
	14-Jul-2017	< 0.0010	< 0.00010	0.00260	0.0223	< 0.00010	---	0.258	< 0.0000050	< 0.00010	0.00157	< 0.00020	**1.96**	< 0.000050	---	**0.872**	< 0.0000050	0.000861	0.00096	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.00130	< 0.00050	< 0.0010
	01-Aug-2018	< 0.0050	< 0.00050	0.00243	0.0199	---	---	0.268	< 0.000025	< 0.00050	---	< 0.0010	**2.01**	< 0.00025	---	**0.813**	< 0.0000050	---	< 0.0025	---	< 0.00025	---	< 0.000050	---	---	---	---	---	0.00117	---	< 0.0050
	13-May-2020	< 0.0010	< 0.00010	0.00237	0.0154	< 0.00010	---	0.259	< 0.0000050	< 0.00010	0.00082	0.00050	**2.05**	< 0.000050	---	**0.189**	< 0.0000050	0.00161	0.00109	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.00123	< 0.00050	0.0023
	23-Aug-2022	< 0.0010	< 0.00010	0.00271	0.0214	< 0.000020	< 0.000050	0.282	< 0.0000050	< 0.00050	0.00165	< 0.00020	**1.87**	< 0.000050	0.0796	**0.782**	---	0.00140	0.00096	< 0.050	< 0.000050	6.73	< 0.000010	0.816	< 0.00020	< 0.000010	< 0.00010	< 0.00030	0.00106	< 0.00050	< 0.0010
(Duplicate)	23-Aug-2022	< 0.0010	< 0.00010	0.00271	0.0211	< 0.000020	< 0.000050	0.295	< 0.0000050	< 0.00050	0.00170	< 0.00020	**1.87**	< 0.000050	0.0795	**0.811**	---	0.00147	0.00102	< 0.050	< 0.000050	6.67	< 0.000010	0.817	< 0.00020	< 0.000010	< 0.00010	< 0.00030	0.00132	< 0.00050	< 0.0010

Advisian
Worley Group

Table 4

Groundwater Analytical Results: Dissolved Metals and Trace Elements

PROJECT No.: 317085-44533-22100

Monitoring Station	Date (dd-mmm-yyyy)	Aluminum (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Bismuth (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Chromium (Total) (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Lithium (mg/L)	Manganese (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Phosphorus (mg/L)	Selenium (mg/L)	Silicon (mg/L)	Silver (mg/L)	Strontium (mg/L)	Tellurium (mg/L)	Thallium (mg/L)	Tin (mg/L)	Titanium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
Canadian Drinking Water Quality Guidelines 2020 - AO		**0.1**	---	---	---	---	---	---	---	---	---	**1**	**0.3**	---	---	**0.02**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**5**
Canadian Drinking Water Quality Guidelines 2020 - MAC		---	**0.006**	**0.01**	**2**	---	---	**5**	**0.007**	**0.05**	---	**2**	---	**0.005**	---	**0.12**	**0.001**	---	---	---	**0.05**	---	**None required**	**7**	---	---	---	---	**0.02**	---	---
MW-10	09-Mar-2005	< 0.01	0.0007	0.003	0.0296	< 0.0005	< 0.00005	0.209	< 0.0001	0.0012	0.0003	0.0007	**5.29**	0.0004	---	0.639	< 0.0001	0.0009	< 0.0001	---	< 0.0004	---	< 0.0002	1.29	---	< 0.0005	< 0.0002	0.0008	0.0019	< 0.0001	0.003
	16-Nov-2005	< 0.01	0.0006	0.0037	0.0331	< 0.0005	< 0.0001	0.202	< 0.0001	< 0.0004	0.0005	0.0009	**5.49**	< 0.0001	---	0.642	< 0.0001	0.001	< 0.0001	---	0.0006	---	< 0.0002	1.43	---	< 0.0001	< 0.0002	0.0008	0.0015	< 0.0001	< 0.002
	16-Jun-2006	< 0.01	0.0006	0.0036	0.0319	< 0.0005	< 0.00005	0.187	< 0.0001	0.0011	0.0003	0.0009	**5.89**	< 0.0001	---	0.67	< 0.0001	0.0009	< 0.0001	---	< 0.0004	---	< 0.0002	1.41	---	< 0.00005	< 0.0002	0.0007	0.0014	< 0.0001	0.009
	11-Jul-2007	< 0.01	0.0005	0.0039	0.0291	< 0.0005	< 0.00005	0.168	< 0.0001	0.0015	0.0004	0.0008	**5.93**	< 0.0001	---	0.656	< 0.0001	0.0009	0.003	---	< 0.0004	---	< 0.0002	1.55	---	< 0.00005	< 0.0002	0.0007	0.0013	0.0004	0.015
	18-Dec-2007	< 0.001	< 0.0002	0.002	0.02	< 0.001	---	0.16	< 0.0002	< 0.001	0.0005	0.0006	< 0.06	< 0.0002	---	0.64	< 0.00005	0.0011	0.0029	---	< 0.001	---	< 0.0001	1.3	---	< 0.0002	< 0.001	0.002	0.0014	< 0.001	< 0.003
	22-Apr-2009	< 0.001	< 0.0002	0.0044	---	< 0.001	---	---	0.000007	< 0.001	< 0.0003	0.0006	**5.9**	< 0.0002	---	0.71	< 0.000001	0.0009	0.001	---	< 0.0002	---	< 0.0001	---	---	< 0.0002	< 0.001	< 0.001	0.0011	< 0.001	< 0.003
	05-May-2010	< 0.0050	< 0.00040	0.00459	0.0290	< 0.00050	---	0.177	< 0.00010	< 0.0050	0.00044	0.0015	**6.80**	< 0.00010	---	0.735	< 0.00010	0.00097	0.0029	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	0.00083	0.00115	< 0.00010	0.0023
	02-Jun-2011	< 0.0050	< 0.00040	0.00287	0.0321	< 0.00050	---	0.170	< 0.00010	< 0.0050	0.00031	< 0.0010	**3.89**	< 0.00010	---	0.566	< 0.000020	0.00481	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00133	0.00021	0.0030
	30-May-2012	0.0139	< 0.00040	0.00420	0.0273	< 0.00050	---	0.150	< 0.00010	< 0.0050	0.00032	< 0.0010	**5.98**	< 0.00010	---	0.655	< 0.000020	0.000884	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00113	< 0.00010	< 0.0030
	09-Jul-2013	< 0.0050	< 0.00040	0.00485	0.0295	< 0.00050	---	0.162	< 0.00010	< 0.0050	0.00032	< 0.0010	**6.11**	< 0.00010	---	0.729	< 0.000020	0.000870	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00116	< 0.00010	< 0.0030
(Duplicate)	09-Jul-2013	< 0.0050	< 0.00040	0.00479	0.0293	< 0.00050	---	0.159	< 0.00010	< 0.0050	0.00031	< 0.0010	**6.03**	< 0.00010	---	0.710	< 0.000020	0.000863	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00115	< 0.00010	< 0.0030
	12-Jun-2014	< 0.0050	< 0.00040	0.00463	0.0282	< 0.00050	---	0.127	< 0.00010	< 0.0050	0.00031	< 0.0010	**6.10**	< 0.00010	---	0.689	< 0.0000050	0.000770	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00117	< 0.00010	< 0.0030
(Duplicate)	12-Jun-2014	< 0.0050	< 0.00040	0.00450	0.0293	< 0.00050	---	0.129	< 0.00010	< 0.0050	0.00032	< 0.0010	**6.08**	< 0.00010	---	0.740	< 0.0000050	0.000782	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00112	< 0.00010	< 0.0030
	24-Jun-2015	< 0.0030	< 0.00060	0.0039	0.030	< 0.0010	---	0.18	< 0.000020	< 0.0010	0.00030	< 0.00020	**6.3**	< 0.00020	0.10	0.67	---	0.00088	0.00085	< 0.10	< 0.00020	7.1	< 0.00010	1.4	---	< 0.00020	< 0.0010	< 0.0010	0.0012	< 0.0010	< 0.0030
(Duplicate)	24-Jun-2015	< 0.0030	< 0.00060	0.0040	0.030	< 0.0010	---	0.17	< 0.000020	< 0.0010	0.00031	< 0.00020	**6.4**	< 0.00020	0.10	0.67	---	0.00087	0.00083	< 0.10	< 0.00020	7.1	< 0.00010	1.4	---	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0030
	20-Sep-2016	< 0.0010	< 0.00010	0.00468	0.0300	< 0.00010	---	0.180	< 0.0000050	< 0.00010	0.00031	< 0.00020	**6.01**	< 0.000050	---	0.676	< 0.0000050	0.000633	0.00092	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.00113	< 0.00050	< 0.0010
	14-Jul-2017	< 0.0010	< 0.00010	0.00457	0.0311	< 0.00010	---	0.154	< 0.0000050	< 0.00010	0.00032	< 0.00020	**5.98**	0.000056	---	0.674	< 0.0000050	0.000458	0.00087	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.00112	< 0.00050	< 0.0010
	01-Aug-2018	0.0192	< 0.00050	0.00453	0.0295	---	---	0.176	< 0.000025	< 0.00050	---	< 0.0010	**6.51**	< 0.00025	---	0.692	< 0.0000050	---	< 0.0025	---	< 0.00025	---	< 0.000050	---	---	---	---	---	0.00111	---	0.0168
	13-May-2020	< 0.0010	< 0.00010	0.00497	0.0264	< 0.00010	---	0.167	< 0.0000050	< 0.00010	0.00027	0.00059	**7.08**	< 0.000050	---	0.205	< 0.0000050	0.000969	0.00082	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.00109	< 0.00050	< 0.0010
	26-Aug-2022	0.0014	0.00012	0.00456	0.0395	< 0.000020	< 0.000050	0.174	< 0.0000050	< 0.00050	0.00032	0.00116	**5.24**	< 0.000050	0.105	0.641	---	0.00117	0.00130	< 0.050	< 0.000050	7.52	< 0.000010	1.41	< 0.00020	< 0.000010	< 0.00010	< 0.00030	0.00108	< 0.00050	0.0014
MW-11	10-Mar-2005	< 0.01	0.0008	0.0022	0.0494	< 0.0005	< 0.00005	0.189	< 0.0001	0.0011	0.0006	< 0.0006	**6.89**	< 0.0001	---	0.668	< 0.0001	0.001	< 0.0001	---	< 0.0004	---	< 0.0002	1.27	---	< 0.0005	< 0.0002	0.0008	0.0012	0.0001	0.004
	16-Nov-2005	0.02	0.0006	0.0025	0.0466	< 0.0005	0.00008	0.227	< 0.0001	0.0006	0.0007	0.0009	**6.95**	< 0.0001	---	0.628	< 0.0001	0.0009	< 0.0001	---	< 0.0004	---	< 0.0002	1.24	---	< 0.0001	< 0.0002	0.001	0.0012	< 0.0001	< 0.002
	16-Jun-2006	< 0.01	0.0006	0.0022	0.044	< 0.0005	< 0.00005	0.205	< 0.0001	0.0013	0.0003	0.0009	**7.23**	< 0.0001	---	0.659	< 0.0001	0.0006	< 0.0001	---	0.0004	---	< 0.0002	1.22	---	< 0.00005	< 0.0002	0.001	0.0011	< 0.0001	0.009
	11-Jul-2007	< 0.01	0.0004	0.0023	0.0377	< 0.0005	< 0.00005	0.186	< 0.0001	0.0016	0.0004	< 0.0006	**7.15**	< 0.0001	---	0.632	< 0.0001	0.0007	0.0027	---	< 0.0004	---	< 0.0002	1.35	---	< 0.00005	< 0.0002	0.0024	0.0011	0.0004	< 0.002
	18-Dec-2007	< 0.001	< 0.0002	< 0.001	0.03	< 0.001	---	0.18	< 0.0002	< 0.001	0.0006	0.0008	< 0.06	< 0.0002	---	0.61	< 0.00005	0.001	0.0027	---	< 0.001	---	< 0.0001	1.1	---	< 0.0002	< 0.001	0.003	0.0013	< 0.001	< 0.003
	22-Apr-2009	< 0.001	< 0.0002	0.0024	---	< 0.001	---	---	0.000009	< 0.001	0.0004	0.0007	**7**	< 0.0002	---	0.67	0.000001	0.0007	0.0008	---	< 0.0002	---	< 0.0001	---	---	< 0.0002	< 0.001	< 0.001	0.001	< 0.001	< 0.003
	05-May-2010	< 0.0050	< 0.00040	0.00259	0.0396	< 0.00050	---	0.189	< 0.00010	< 0.0050	0.00047	< 0.0010	**7.61**	< 0.00010	---	0.663	< 0.00010	0.00072	0.0027	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	0.00102	0.00100	< 0.00010	0.0023
	02-Jun-2011	< 0.0050	< 0.00040	0.00239	0.0423	< 0.00050	---	0.199	< 0.00010	< 0.0050	0.00047	0.0017	**6.99**	< 0.00010	---	0.687	< 0.000020	0.00061	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00109	0.00010	0.0105
	30-May-2012	0.0106	< 0.00040	0.00232	0.0386	< 0.00050	---	0.161	< 0.00010	< 0.0050	0.00038	< 0.0010	**6.82**	< 0.00010	---	0.605	< 0.000020	0.000669	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00100	< 0.00010	< 0.0030
	10-Jul-2013	< 0.0050	< 0.00040	0.00260	0.0424	< 0.00050	---	0.173	< 0.00010	< 0.0050	0.00036	< 0.0010	**7.52**	< 0.00010	---	0.697	< 0.000020	0.000700	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00116	< 0.00010	< 0.0030
	12-Jun-2014	< 0.0050	< 0.00040	0.00255	0.0421	< 0.00050	---	0.135	< 0.00010	< 0.0050	0.00030	< 0.0010	**7.07**	< 0.00010	---	0.672	< 0.0000050	0.000539	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	0.00119	0.00099	< 0.00010	< 0.0030
	24-Jun-2015	< 0.0030	< 0.00060	0.0022	0.043	< 0.0010	---	0.19	< 0.000020	< 0.0010	< 0.00030	< 0.00020	**7.4**	< 0.00020	0.079	0.62	---	0.00065	< 0.00050	< 0.10	< 0.00020	8.0	< 0.00010	1.2	---	< 0.00020	< 0.0010	< 0.0010	0.0010	< 0.0010	< 0.0030
	20-Sep-2016	< 0.0010	< 0.00010	0.00262	0.0415	< 0.00010	---	0.206	< 0.0000050	< 0.00010	0.00028	< 0.00020	**6.91**	< 0.000050	---	0.609	< 0.0000050	0.000471	< 0.00050	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.000977	< 0.00050	< 0.0010
	14-Jul-2017	< 0.0010	< 0.00010	0.00246	0.0405	< 0.00010	---	0.187	< 0.0000050	< 0.00010	0.00027	< 0.00020	**6.84**	0.000051	---	0.618	< 0.0000050	0.000359	< 0.00050	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.00104	< 0.00050	< 0.0010
	01-Aug-2018	0.0082	< 0.00050	0.00257	0.0388	---	---	0.198	< 0.000025	0.00325	---	< 0.0010	**7.33**	< 0.00025	---	0.626	< 0.0000050	---	< 0.0025	---	< 0.00025	---	< 0.000050	---	---	---	---	---	0.000950	---	< 0.0050
(Duplicate)	01-Aug-2018	0.0063	< 0.00050	0.00247	0.0393	---	---	0.194	< 0.000025	< 0.00050	---	< 0.0010	**7.23**	< 0.00025	---	0.627	< 0.0000050	---	< 0.0025	---	< 0.00025	---	< 0.000050	---	---	---	---	---	0.000839	---	< 0.0050
	13-May-2020	0.0037	< 0.00010	0.00280	0.0388	< 0.00010	---	0.180	< 0.0000050	< 0.00010	0.00028	0.00043	**8.12**	< 0.000050	---	0.313	< 0.0000050	0.000708	< 0.00050	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.000947	< 0.00050	0.0013
	23-Aug-2022	0.0021	< 0.00010	0.00261	0.0545	< 0.000020	< 0.000050	0.194	< 0.0000050	< 0.00050	0.00026	0.00181	**6.88**	0.000056	0.0809	0.598	---	0.000585	< 0.00050	< 0.050	< 0.000050	8.47	< 0.000010	1.12	< 0.00020	< 0.000010	0.00011	< 0.00030	0.000818	< 0.00050	< 0.0010
MW-12	10-Mar-2005	< 0.01	0.0008	0.0022	0.153	< 0.0005	< 0.00005	0.234	< 0.0001	0.0038	0.0008	< 0.0006	**2.78**	0.0004	---	0.365	< 0.0001	0.0015	< 0.0001	---	< 0.0004	---	< 0.0002	0.915	---	< 0.0005	< 0.0002	0.0011	0.001	< 0.0001	0.01
	16-Nov-2005	< 0.01	0.0005	0.0026	0.182	< 0.0005	0.00006	0.282	< 0.0001	< 0.0004	0.001	0.0008	**3.37**	< 0.0001	---	0.402	< 0.0001	0.0013	< 0.0001	---	< 0.0004	---	< 0.0002	0.903	---	< 0.0001	< 0.0002	0.0008	0.0011	< 0.0001	< 0.002
	16-Jun-2006	< 0.01	0.0006	0.0023	0.178	< 0.0005	< 0.00005	0.251	< 0.00012	0.0016	0.0007	< 0.0006	**3.76**	< 0.0001	---	0.436	< 0.0001	0.0012	< 0.0001	---	< 0.0004	---	< 0.0002	0.925	---	< 0.00005	< 0.0002	0.0008	0.001	< 0.0001	0.007
	11-Jul-2007	< 0.01	0.0005	0.0025	0.146	< 0.0005	< 0.00005	0.233	< 0.001	0.0015	0.0012	< 0.0006	**3.77**	< 0.0001	---	0.422	< 0.0001	0.0017	0.0033	---	< 0.0004	---	< 0.0002	0.972	---	< 0.00005	< 0.0002	0.0007	0.0009	0.0004	0.004
	18-Dec-2007	< 0.001	< 0.0002	0.002	0.1	< 0.001	---	0.22	< 0.0002	< 0.001	0.0007	< 0.0002	< 0.06	< 0.0002	---	0.4	0.00007	0.0014	0.0021	---	< 0.001	---	< 0.0001	0.84	---	< 0.0002	< 0.001	0.002	0.0011	< 0.001	< 0.003
	22-Apr-2009	< 0.001	< 0.0002	0.0026	---	< 0.001	---	---	0.000006	< 0.001	0.0006	0.0008	**4.1**	< 0.0002	---	0.45	0.000001	0.0012	0.0012	---	< 0.0002	---	< 0.0001	---	---	< 0.0002	< 0.001	< 0.001	0.0008	< 0.001	< 0.003
	06-May-2010	< 0.0050	< 0.00040	0.00285	0.143	< 0.00050	---	0.242	< 0.00010	< 0.0050	0.00065	< 0.0010	**4.24**	< 0.00010	---	0.456	< 0.00010	0.00115	0.0022	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	0.00081	0.00083	< 0.00010	< 0.0020
	02-Jun-2011	< 0.0050	< 0.00040	0.00199	0.130	< 0.00050	---	0.244	< 0.00010	< 0.0050	0.00043	< 0.0010	**3.34**	< 0.00010	---	0.450	< 0.000020	0.00102	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00087	< 0.00010	0.0021
	30-May-2012	0.0146	< 0.00040	0.00267	0.112	< 0.00050	---	0.219	< 0.00010	< 0.0050	0.00046	< 0.0010	**4.14**	< 0.00010	---	0.435	< 0.000020	0.00121	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00085	< 0.00010	< 0.0030
	10-Jul-2013	< 0.0050	< 0.00040	0.00285	0.143	< 0.00050	---	0.227	< 0.00010	< 0.0050	0.00045	< 0.0010	**3.99**	< 0.00010	---	0.457	< 0.000020	0.00115	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00094	< 0.00010	< 0.0030
	12-Jun-2014	< 0.0050	< 0.00040	0.00266	0.125	< 0.00050	---	0.178	< 0.00010	< 0.0050	0.00044	< 0.0010	**3.88**	< 0.00010	---	0.462	< 0.0000050	0.000921	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00080	< 0.00010	0.0044
	24-Jun-2015	< 0.0030	< 0.00060	0.0022	0.12	< 0.0010	---	0.24	0.000020	< 0.0010	0.00039	< 0.00020	**4.0**	< 0.00020	0.068	0.42	---	0.0010	0.0015	< 0.10	< 0.00020	7.3	< 0.00010	0.90	---	< 0.00020	< 0.0010	< 0.0010	0.00075	< 0.0010	< 0.0030
	20-Sep-2016	0.0024	< 0.00010	0.00280	0.125	< 0.00010	---	0.245	< 0.0000050	< 0.00010	0.00041	< 0.00020	**4.21**	< 0.000050	---	0.442	< 0.0000050	0.000685	0.00062	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.000810	< 0.00050	< 0.0010
	14-Jul-2017	< 0.0010	< 0.00010	0.00268	0.122	< 0.00010	---	0.237	< 0.0000050	< 0.00010	0.00037	< 0.00020	**4.18**	< 0.000050	---	0.437	< 0.0000050	0.000594	0.00052	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.000867	< 0.00050	< 0.0010
	01-Aug-2018	0.0446	< 0.00010	0.00315	0.124	---	---	0.191	< 0.0000050	0.00013	---	0.00024	**4.17**	0.000063	---	0.493	< 0.0000050	---	0.00076	---	< 0.000050	---	< 0.000010	---	---	---	---	---	0.000667	---	0.0015
	14-May-2020	0.0201	< 0.00010	0.00287	0.0984	< 0.00010	---	0.220	< 0.0000050	< 0.00010	0.00028	0.00035	**5.22**	< 0.000050	---	0.225	< 0.0000050	0.00101	0.00051	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	0.00044	0.000842	< 0.00050	0.0061
	23-Aug-2022	< 0.0010	< 0.00010	0.00274	0.120	< 0.000020	< 0.000050	0.245	< 0.0000050	< 0.00050	0.00044	< 0.00020	**4.21**	< 0.000050	0.0707	0.458	---	0.000980	0.00056	< 0.050	< 0.000050	7.74	0.000011	0.869	< 0.00020	< 0.000010	< 0.00010	< 0.00030	0.000875	< 0.00050	< 0.0010
MW-13	10-Mar-2005	< 0.01	0.0008	0.0012	0.389	< 0.0005	< 0.00005	0.258	< 0.0001	0.0048	0.0008	< 0.0006	**0.818**	0.0002	---	0.263	< 0.0001	0.0023	0.0009	---	< 0.0004	---	< 0.0002	0.57	---	< 0.0005	< 0.0002	0.0006	0.0008	< 0.0001	0.005
	16-Nov-2005	0.07	0.0006	0.0016	0.413	< 0.0005	< 0.0001	0.301	< 0.0001	0.0007	0.0033	0.0007	**1.08**	0.0002	---	0.243	0.0001	0.0027	0.0015	---	0.0005	---	< 0.0002	0.542	---	< 0.0001	< 0.0002	0.0006	0.0009	< 0.0001	< 0.002
	16-Jun-2006	< 0.01	0.0006	0.0014	0.424	< 0.0005	< 0.00005	0.273	< 0.0001	0.0011	0.0007	< 0.0006	**1.19**	< 0.0001	---	0.256	< 0.0001	0.0021	< 0.0001	---	< 0.0004	---	< 0.0002	0.553	---	< 0.00005	< 0.0002	0.0006	0.0008	< 0.0001	0.009

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Table 4

Groundwater Analytical Results: Dissolved Metals and Trace Elements

PROJECT No.: 317085-44533-22100

Monitoring Station	Date (dd-mmm-yyyy)	Aluminum (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Bismuth (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Chromium (Total) (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Lithium (mg/L)	Manganese (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Phosphorus (mg/L)	Selenium (mg/L)	Silicon (mg/L)	Silver (mg/L)	Strontium (mg/L)	Tellurium (mg/L)	Thallium (mg/L)	Tin (mg/L)	Titanium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
Canadian Drinking Water Quality Guidelines 2020 - AO		**0.1**	---	---	---	---	---	---	---	---	---	**1**	**0.3**	---	---	**0.02**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**5**
Canadian Drinking Water Quality Guidelines 2020 - MAC		---	**0.006**	**0.01**	**2**	---	---	**5**	**0.007**	**0.05**	---	**2**	---	**0.005**	---	**0.12**	**0.001**	---	---	---	**0.05**	---	**None required**	**7**	---	---	---	---	**0.02**	---	---
MW-13 (cont'd)	11-Jul-2007	< 0.01	0.0004	0.0014	0.428	< 0.0005	< 0.00005	0.246	< 0.0001	0.0016	0.0009	< 0.0006	**1.26**	< 0.0001	---	0.252	< 0.0001	0.0023	0.0022	---	< 0.0004	---	< 0.0002	0.58	---	< 0.00005	< 0.0002	0.0006	0.0008	0.0004	< 0.002
	18-Dec-2007	< 0.001	< 0.0002	0.001	0.29	< 0.001	---	0.25	< 0.0002	< 0.001	0.0009	< 0.0002	< 0.06	< 0.0002	---	0.25	0.00007	0.0028	0.0016	---	< 0.001	---	< 0.0001	0.5	---	< 0.0002	< 0.001	0.002	0.0009	< 0.001	< 0.003
	22-Apr-2009	< 0.001	< 0.0002	0.0015	---	< 0.001	---	---	0.000005	< 0.001	0.0007	0.0003	**1.3**	< 0.0002	---	0.26	< 0.000001	0.0022	0.0012	---	< 0.0002	---	< 0.0001	---	---	< 0.0002	< 0.001	< 0.001	0.0007	< 0.001	< 0.003
	06-May-2010	< 0.0050	< 0.00040	0.00162	0.407	< 0.00050	---	0.254	< 0.00010	< 0.0050	0.00092	< 0.0010	**1.45**	< 0.00010	---	0.249	< 0.00010	0.00219	0.0021	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	0.00070	0.00069	< 0.00010	< 0.0020
	02-Jun-2011	< 0.0050	< 0.00040	0.00157	0.411	< 0.00050	---	0.265	< 0.00010	< 0.0050	0.00062	< 0.0010	**1.25**	< 0.00010	---	0.231	< 0.000020	0.00194	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00073	< 0.00010	< 0.0020
	30-May-2012	< 0.0050	< 0.00040	0.00140	0.354	< 0.00050	---	0.197	< 0.00010	< 0.0050	0.00065	< 0.0010	**1.33**	< 0.00010	---	0.238	< 0.000020	0.00180	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00063	< 0.00010	< 0.0030
	10-Jul-2013	< 0.0050	< 0.00040	0.00176	0.462	< 0.00050	---	0.221	< 0.00010	< 0.0050	0.00128	< 0.0010	**1.17**	< 0.00010	---	0.252	< 0.000020	0.00484	0.0112	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	0.00075	< 0.00010	< 0.0030
	12-Jun-2014	0.0371	< 0.00040	0.00179	0.420	< 0.00050	---	0.196	< 0.00010	< 0.0050	0.00074	< 0.0010	**1.30**	< 0.00010	---	0.245	< 0.0000050	0.00183	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	0.00148	0.00069	0.00013	< 0.0030
	24-Jun-2015	< 0.0030	< 0.00060	0.0014	0.40	< 0.0010	---	0.26	< 0.000020	< 0.0010	0.00062	< 0.00020	**1.3**	< 0.00020	0.048	0.24	---	0.0022	0.00086	< 0.10	< 0.00020	6.0	< 0.00010	0.52	---	< 0.00020	< 0.0010	< 0.0010	0.00065	< 0.0010	< 0.0030
	20-Sep-2016	0.0023	< 0.00010	0.00167	0.394	< 0.00010	---	0.266	< 0.0000050	< 0.00010	0.00064	< 0.00020	**1.33**	< 0.000050	---	0.235	0.000212	0.00157	0.00090	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.000664	< 0.00050	< 0.0010
	14-Jul-2017	< 0.0010	< 0.00010	0.00152	0.393	< 0.00010	---	0.217	< 0.0000050	< 0.00010	0.00062	< 0.00020	**1.29**	< 0.000050	---	0.227	< 0.0000050	0.00113	0.00081	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.000615	< 0.00050	< 0.0010
	01-Aug-2018	< 0.0010	< 0.00010	0.00193	0.473	---	---	0.222	< 0.0000050	< 0.00010	---	< 0.00020	**1.38**	< 0.000050	---	0.237	< 0.0000050	---	0.00083	---	< 0.000050	---	< 0.000010	---	---	---	---	---	0.000547	---	< 0.0010
	14-May-2020	< 0.0010	< 0.00010	0.00165	0.336	< 0.00010	---	0.231	< 0.0000050	< 0.00010	0.00034	0.00030	**1.44**	< 0.000050	---	**0.0882**	< 0.0000050	0.00243	0.00077	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	0.000711	< 0.00050	0.0017
	23-Aug-2022	< 0.0010	< 0.00010	0.00167	0.390	< 0.000020	< 0.000050	0.262	< 0.0000050	< 0.00050	0.00063	< 0.00020	**1.32**	< 0.000050	0.0488	0.234	---	0.00220	0.00078	< 0.050	< 0.000050	6.31	< 0.000010	0.483	< 0.00020	< 0.000010	< 0.00010	< 0.00030	0.000654	< 0.00050	< 0.0010
QAQC																															
FIELD BLANK	05-May-2010	< 0.0050	< 0.00040	< 0.00040	< 0.0050	< 0.00050	---	< 0.050	< 0.00010	< 0.0050	< 0.00010	< 0.0010	< 0.020	< 0.00010	---	< 0.0050	< 0.00010	< 0.00010	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	< 0.00010	< 0.00010	< 0.0020
	25-May-2011	< 0.0050	< 0.00040	< 0.00040	< 0.0050	< 0.00050	---	< 0.050	< 0.00010	< 0.0050	< 0.00010	< 0.0010	< 0.020	< 0.00010	---	< 0.0050	< 0.000020	< 0.00010	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	< 0.00010	< 0.00010	< 0.0020
	09-Jul-2013	< 0.0050	< 0.00040	< 0.00040	< 0.0050	< 0.00050	---	< 0.050	< 0.00010	< 0.0050	< 0.00010	< 0.0010	< 0.010	< 0.00010	---	< 0.0020	< 0.000020	< 0.000050	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	< 0.00010	< 0.00010	< 0.0030
	13-Jun-2014	< 0.0050	< 0.00040	< 0.00040	< 0.0050	< 0.00050	---	< 0.050	< 0.00010	< 0.0050	< 0.00010	< 0.0010	< 0.010	< 0.00010	---	< 0.0020	< 0.0000050	< 0.000050	< 0.0020	---	< 0.00040	---	< 0.00010	---	---	< 0.000050	---	< 0.00030	< 0.00010	< 0.00010	< 0.0030
	25-Jun-2015	< 0.0030	< 0.00060	< 0.00020	< 0.010	< 0.0010	---	< 0.020	< 0.000020	< 0.0010	< 0.00030	< 0.00020	< 0.060	< 0.00020	< 0.020	< 0.0040	---	< 0.00020	< 0.00050	< 0.10	< 0.00020	< 0.10	< 0.00010	< 0.020	---	< 0.00020	< 0.0010	< 0.0010	< 0.00010	< 0.0010	< 0.0030
	20-Sep-2016	< 0.0010	< 0.00010	< 0.00010	< 0.000050	< 0.00010	---	0.012	< 0.0000050	< 0.00010	< 0.00010	< 0.00020	< 0.010	< 0.000050	---	< 0.00010	< 0.0000050	< 0.000050	< 0.00050	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	< 0.000010	< 0.00050	< 0.0010
	14-Jul-2017	< 0.0010	< 0.00010	< 0.00010	< 0.000050	< 0.00010	---	< 0.010	< 0.0000050	< 0.00010	< 0.00010	0.00027	< 0.010	< 0.000050	---	< 0.00010	< 0.0000050	< 0.000050	< 0.00050	---	< 0.000050	---	< 0.000010	---	---	< 0.000010	---	< 0.00030	< 0.000010	< 0.00050	< 0.0010
Relative Percent Difference (RPD) Report																															
MW-06	22-Aug-2022	< 0.0010	< 0.00010	0.00618	0.0290	< 0.000020	< 0.000050	0.156	< 0.0000050	< 0.00050	0.00023	< 0.00020	**5.96**	< 0.000050	0.112	1.60	---	0.000786	< 0.00050	0.149	< 0.000050	7.94	< 0.000010	1.30	< 0.00020	< 0.000010	< 0.00010	< 0.00030	0.00150	< 0.00050	< 0.0010
(Duplicate)	22-Aug-2022	< 0.0010	< 0.00010	0.00600	0.0286	0.00775	< 0.000050	0.150	< 0.0000050	< 0.00050	0.00026	< 0.00020	**6.10**	< 0.000050	0.108	1.60	---	0.000836	< 0.00050	0.161	< 0.000050	7.94	< 0.000010	1.32	< 0.00020	< 0.000010	< 0.00010	< 0.00030	0.00167	< 0.00050	< 0.0010
RPD(%)		---	---	**3.0%**	**1.4%**	---	---	**3.9%**	---	---	**12.2%**	---	**2.3%**	---	**3.6%**	**0.0%**	---	**6.2%**	---	**7.7%**	---	**0.0%**	---	**1.5%**	---	---	---	---	**10.7%**	---	---
MW-09	23-Aug-2022	< 0.0010	< 0.00010	0.00271	0.0214	< 0.000020	< 0.000050	0.282	< 0.0000050	< 0.00050	0.00165	< 0.00020	**1.87**	< 0.000050	0.0796	0.782	---	0.00140	0.00096	< 0.050	< 0.000050	6.73	< 0.000010	0.816	< 0.00020	< 0.000010	< 0.00010	< 0.00030	0.00106	< 0.00050	< 0.0010
(Duplicate)	23-Aug-2022	< 0.0010	< 0.00010	0.00271	0.0211	< 0.000020	< 0.000050	0.295	< 0.0000050	< 0.00050	0.00170	< 0.00020	**1.87**	< 0.000050	0.0795	0.811	---	0.00147	0.00102	< 0.050	< 0.000050	6.67	< 0.000010	0.817	< 0.00020	< 0.000010	< 0.00010	< 0.00030	0.00132	< 0.00050	< 0.0010
RPD(%)		---	---	**0.0%**	**1.4%**	---	---	**4.5%**	---	---	**3.0%**	---	**0.0%**	---	**0.1%**	**3.6%**	---	**4.9%**	**6.1%**	---	---	**0.9%**	---	**0.1%**	---	---	---	---	**21.8%**	---	---

NOTES:

1. --- in guideline row(s) denotes no criteria for that parameter.
2. --- in detail data row(s) denotes parameter not analyzed.
3. Highlighting indicates non-detect parameters above applied guideline/criteria.
4. Highlighting indicates parameters at applied guideline/criteria.
5. Denotes values exceeding

(Health Canada. 2020. Guidelines for Canadian Drinking Water Quality. Summary Table. Aesthetic Objective.
Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.
September 2020. https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html accessed January 13, 2021.)

Aluminum:

Not specifically an AO. Operational guideline value, applies to drinking water treatment plants using aluminum-based coagulates: 0.1 mg/L (conventional treatment plants) and 0.2 mg/L (other treatment types).

6. Denotes values exceeding

(Health Canada. 2020. Guidelines for Canadian Drinking Water Quality. Summary Table. Maximum Acceptable Concentration.
Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.
September 2020. https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html accessed January 13, 2021.)

Chromium (Total):

MAC established for total chromium to protect from Chromium (VI).

Silver:

Guideline value not required as drinking water contributes negligibly to an individual's intake.

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Table 5

Groundwater Analytical Results: Petroleum Hydrocarbons (PHCs)

PROJECT No.: 317085-44533-22100

Monitoring Station	Date (dd-mmm-yyyy)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (Total) (mg/L)	PHC F1 (C_6-C_{10}) - BTEX (mg/L)	PHC F2 (C_{10}-C_{16}) (mg/L)
Canadian Drinking Water Quality Guidelines 2020 - AO		**---**	**0.024**	**0.0016**	**0.02**	**---**	**---**
Canadian Drinking Water Quality Guidelines 2020 - MAC		**0.005**	**0.06**	**0.14**	**0.09**	**---**	**---**
Monitoring Wells							
MW-01	07-Mar-2005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	17-Nov-2005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	15-Jun-2006	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	12-Jul-2007	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	19-Dec-2007	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.1	< 0.1
	21-Apr-2009	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.1	< 0.1
	05-May-2010	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
	25-May-2011	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
	29-May-2012	---	---	---	---	---	< 0.25
	10-Jul-2013	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
	16-Jun-2014	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
	29-Jun-2015	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.10	< 0.10
	19-Sep-2016	< 0.00050	0.00112	< 0.00050	0.00253	< 0.10	< 0.10
	13-Jul-2017	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	01-Aug-2018	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	12-May-2020	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	22-Aug-2022	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.1	< 0.1
MW-02	07-Mar-2005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	17-Nov-2005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	15-Jun-2006	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	13-Jul-2007	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	19-Dec-2007	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.1	< 0.1
	21-Apr-2009	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.1	< 0.1
	05-May-2010	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
	25-May-2011	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
	30-May-2012	---	---	---	---	---	< 0.25
	10-Jul-2013	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	0.31
	16-Jun-2014	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
	28-Aug-2014	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
	25-Jun-2015	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.10	0.10
	19-Sep-2016	< 0.00050	0.00099	< 0.00050	< 0.00071	< 0.10	< 0.10
	13-Jul-2017	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	29-Sep-2017	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	02-Aug-2018	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	12-May-2020	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	22-Aug-2022	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.1	< 0.1
MW-02B	20-Sep-2016	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	14-Jul-2017	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	29-Sep-2017	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	02-Aug-2018	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	12-May-2020	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	22-Aug-2022	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.1	< 0.1

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Table 5

Groundwater Analytical Results: Petroleum Hydrocarbons (PHCs)

PROJECT No.: 317085-44533-22100

Monitoring Station	Date (dd-mmm-yyyy)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (Total) (mg/L)	PHC F1 (C_6-C_{10}) - BTEX (mg/L)	PHC F2 (C_{10}-C_{16}) (mg/L)
Canadian Drinking Water Quality Guidelines 2020 - AO		**---**	**0.024**	**0.0016**	**0.02**	**---**	**---**
Canadian Drinking Water Quality Guidelines 2020 - MAC		**0.005**	**0.06**	**0.14**	**0.09**	**---**	**---**
MW-03	07-Mar-2005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	17-Nov-2005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	15-Jun-2006	< 0.0005	0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	12-Jul-2007	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	19-Dec-2007	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.1	< 0.1
	21-Apr-2009	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.1	< 0.1
	06-May-2010	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
	02-Jun-2011	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
	29-May-2012	---	---	---	---	---	< 0.25
	10-Jul-2013	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
	16-Jun-2014	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
	29-Jun-2015	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.10	< 0.10
	19-Sep-2016	< 0.00050	0.00309	< 0.00050	0.00234	< 0.10	< 0.10
	13-Jul-2017	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
(Duplicate)	13-Jul-2017	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	31-Jul-2018	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	12-May-2020	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	22-Aug-2022	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.1	< 0.1
MW-04	08-Mar-2005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	17-Nov-2005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
(Duplicate)	17-Nov-2005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	14-Jun-2006	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	13-Jul-2007	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	19-Dec-2007	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.1	< 0.1
	21-Apr-2009	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.1	< 0.1
	06-May-2010	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
	07-Jun-2011	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
	30-May-2012	---	---	---	---	---	< 0.25
(Duplicate)	30-May-2012	---	---	---	---	---	< 0.25
	09-Jul-2013	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
	13-Jun-2014	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
	29-Jun-2015	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.10	< 0.10
	19-Sep-2016	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	13-Jul-2017	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	31-Jul-2018	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	12-May-2020	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	22-Aug-2022	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.1	< 0.1

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Table 5

Groundwater Analytical Results: Petroleum Hydrocarbons (PHCs)

PROJECT No.: 317085-44533-22100

Monitoring Station	Date (dd-mmm-yyyy)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (Total) (mg/L)	PHC F1 (C_6-C_{10}) - BTEX (mg/L)	PHC F2 (C_{10}-C_{16}) (mg/L)
Canadian Drinking Water Quality Guidelines 2020 - AO		**---**	**0.024**	**0.0016**	**0.02**	**---**	**---**
Canadian Drinking Water Quality Guidelines 2020 - MAC		**0.005**	**0.06**	**0.14**	**0.09**	**---**	**---**
MW-05	08-Mar-2005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	17-Nov-2005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	14-Jun-2006	< 0.0005	0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	13-Jul-2007	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	19-Dec-2007	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.1	< 0.1
	21-Apr-2009	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.1	< 0.1
	29-Apr-2010	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
	25-May-2011	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
	29-May-2012	---	---	---	---	---	< 0.25
	08-Jul-2013	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
	13-Jun-2014	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
	25-Jun-2015	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.10	< 0.10
	19-Sep-2016	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	13-Jul-2017	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	31-Jul-2018	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	12-May-2020	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	22-Aug-2022	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.1	< 0.1
MW-06	08-Mar-2005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	17-Nov-2005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	16-Jun-2006	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	12-Jul-2007	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	19-Dec-2007	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.1	< 0.1
	22-Apr-2009	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.1	< 0.1
	06-May-2010	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
	07-Jun-2011	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
	29-May-2012	---	---	---	---	---	< 0.25
	08-Jul-2013	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
	12-Jun-2014	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
	25-Jun-2015	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.10	< 0.10
	20-Sep-2016	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	13-Jul-2017	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	31-Jul-2018	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	13-May-2020	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	22-Aug-2022	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.1	< 0.1
(Duplicate)	22-Aug-2022	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.1	< 0.1
MW-07	09-Mar-2005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	17-Nov-2005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	16-Jun-2006	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	12-Jul-2007	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	19-Dec-2007	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.1	< 0.1
	22-Apr-2009	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.1	< 0.1
	05-May-2010	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
	08-Jun-2011	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
	28-Jul-2011	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
	30-May-2012	---	---	---	---	---	< 0.25
	11-Jul-2013	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
	13-Jun-2014	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
	25-Jun-2015	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.10	< 0.10
	20-Sep-2016	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	14-Jul-2017	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	31-Jul-2018	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	13-May-2020	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
(Duplicate)	13-May-2020	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	23-Aug-2022	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.1	< 0.1

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Table 5

Groundwater Analytical Results: Petroleum Hydrocarbons (PHCs)

PROJECT No.: 317085-44533-22100

Monitoring Station	Date (dd-mmm-yyyy)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (Total) (mg/L)	PHC F1 (C_6-C_{10}) - BTEX (mg/L)	PHC F2 (C_{10}-C_{16}) (mg/L)
Canadian Drinking Water Quality Guidelines 2020 - AO		**---**	**0.024**	**0.0016**	**0.02**	**---**	**---**
Canadian Drinking Water Quality Guidelines 2020 - MAC		**0.005**	**0.06**	**0.14**	**0.09**	**---**	**---**
MW-08	09-Mar-2005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	15-Nov-2005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	16-Jun-2006	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	11-Jul-2007	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	19-Dec-2007	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.1	< 0.1
	21-Apr-2009	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.1	< 0.1
	05-May-2010	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
	07-Jun-2011	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
	30-May-2012	---	---	---	---	---	< 0.25
	09-Jul-2013	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
	12-Jun-2014	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
	24-Jun-2015	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.10	< 0.10
	20-Sep-2016	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	02-Aug-2017	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	01-Aug-2018	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	13-May-2020	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	23-Aug-2022	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.1	< 0.1
MW-09	09-Mar-2005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
(Duplicate)	09-Mar-2005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	17-Nov-2005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	16-Jun-2006	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	11-Jul-2007	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	18-Dec-2007	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.1	< 0.1
	22-Apr-2009	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.1	0.3
	06-May-2010	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
(Duplicate)	06-May-2010	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
	02-Jun-2011	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
(Duplicate)	02-Jun-2011	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
	29-May-2012	---	---	---	---	---	< 0.25
	10-Jul-2013	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
	13-Jun-2014	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
	25-Jun-2015	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.10	< 0.10
	20-Sep-2016	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
(Duplicate)	20-Sep-2016	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	14-Jul-2017	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	01-Aug-2018	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	13-May-2020	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	23-Aug-2022	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.1	< 0.1
(Duplicate)	23-Aug-2022	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.1	< 0.1

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Table 5

Groundwater Analytical Results: Petroleum Hydrocarbons (PHCs)

PROJECT No.: 317085-44533-22100

Monitoring Station	Date (dd-mmm-yyyy)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (Total) (mg/L)	PHC F1 (C_6-C_{10}) - BTEX (mg/L)	PHC F2 (C_{10}-C_{16}) (mg/L)
Canadian Drinking Water Quality Guidelines 2020 - AO		**---**	**0.024**	**0.0016**	**0.02**	**---**	**---**
Canadian Drinking Water Quality Guidelines 2020 - MAC		**0.005**	**0.06**	**0.14**	**0.09**	**---**	**---**
MW-10	09-Mar-2005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	16-Nov-2005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	16-Jun-2006	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	11-Jul-2007	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	18-Dec-2007	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.1	< 0.1
	22-Apr-2009	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.1	< 0.1
	05-May-2010	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
	02-Jun-2011	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
	30-May-2012	---	---	---	---	---	< 0.25
	09-Jul-2013	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
(Duplicate)	09-Jul-2013	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
	12-Jun-2014	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
(Duplicate)	12-Jun-2014	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
	24-Jun-2015	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.10	< 0.10
(Duplicate)	24-Jun-2015	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.10	< 0.10
	20-Sep-2016	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	14-Jul-2017	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	01-Aug-2018	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	13-May-2020	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	26-Aug-2022	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.1	< 0.1
MW-11	10-Mar-2005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	16-Nov-2005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	16-Jun-2006	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	11-Jul-2007	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	18-Dec-2007	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.1	< 0.1
	22-Apr-2009	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.1	< 0.1
	05-May-2010	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
	02-Jun-2011	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
	30-May-2012	---	---	---	---	---	< 0.25
	10-Jul-2013	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
	12-Jun-2014	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
	24-Jun-2015	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.10	< 0.10
	20-Sep-2016	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	14-Jul-2017	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	01-Aug-2018	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
(Duplicate)	01-Aug-2018	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	13-May-2020	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	23-Aug-2022	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.1	< 0.1

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Table 5

Groundwater Analytical Results: Petroleum Hydrocarbons (PHCs)

PROJECT No.: 317085-44533-22100

Monitoring Station	Date (dd-mmm-yyyy)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (Total) (mg/L)	PHC F1 (C_6-C_{10}) - BTEX (mg/L)	PHC F2 (C_{10}-C_{16}) (mg/L)
Canadian Drinking Water Quality Guidelines 2020 - AO		**---**	**0.024**	**0.0016**	**0.02**	**---**	**---**
Canadian Drinking Water Quality Guidelines 2020 - MAC		**0.005**	**0.06**	**0.14**	**0.09**	**---**	**---**
MW-12	10-Mar-2005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	16-Nov-2005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	16-Jun-2006	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	11-Jul-2007	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	18-Dec-2007	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.1	< 0.1
	22-Apr-2009	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.1	< 0.1
	06-May-2010	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
	02-Jun-2011	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
	30-May-2012	---	---	---	---	---	< 0.25
	10-Jul-2013	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
	12-Jun-2014	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
	24-Jun-2015	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.10	< 0.10
	20-Sep-2016	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	02-Aug-2017	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	01-Aug-2018	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	14-May-2020	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	23-Aug-2022	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.1	< 0.1
MW-13	10-Mar-2005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	16-Nov-2005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	16-Jun-2006	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	11-Jul-2007	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.1	< 0.05
	18-Dec-2007	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.1	< 0.1
	22-Apr-2009	< 0.0004	< 0.0004	< 0.0004	< 0.0008	< 0.1	< 0.1
	06-May-2010	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
	02-Jun-2011	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
	30-May-2012	---	---	---	---	---	< 0.25
	10-Jul-2013	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
	12-Jun-2014	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
	24-Jun-2015	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.10	< 0.10
	20-Sep-2016	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	14-Jul-2017	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	01-Aug-2018	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	14-May-2020	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	23-Aug-2022	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.1	< 0.1
QAQC							
FIELD BLANK	05-May-2010	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
	25-May-2011	< 0.00050	< 0.00075	< 0.00050	< 0.001	< 0.10	< 0.25
	30-May-2012	---	---	---	---	---	< 0.25
	09-Jul-2013	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
	13-Jun-2014	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.25
	25-Jun-2015	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.10	< 0.10
	20-Sep-2016	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10
	02-Aug-2017	< 0.00050	< 0.00050	< 0.00050	< 0.00071	< 0.10	< 0.10

Relative Percent Difference (RPD) Report							
MW-06	22-Aug-2022	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.1	< 0.1
(Duplicate)	22-Aug-2022	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.1	< 0.1
RPD(%)		**---**	**---**	**---**	**---**	**---**	**---**
MW-09	23-Aug-2022	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.1	< 0.1
(Duplicate)	23-Aug-2022	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.1	< 0.1
RPD(%)		**---**	**---**	**---**	**---**	**---**	**---**

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Table 5

Groundwater Analytical Results: Petroleum Hydrocarbons (PHCs)

PROJECT No.: 317085-44533-22100

Monitoring Station	Date (dd-mmm-yyyy)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (Total) (mg/L)	PHC F1 (C_6-C_{10}) - BTEX (mg/L)	PHC F2 (C_{10}-C_{16}) (mg/L)
Canadian Drinking Water Quality Guidelines 2020 - AO		---	0.024	0.0016	0.02	---	---
Canadian Drinking Water Quality Guidelines 2020 - MAC		0.005	0.06	0.14	0.09	---	---

NOTES:

1. --- in guideline row(s) denotes no criteria for that parameter.
2. --- in detail data row(s) denotes parameter not analyzed.
3. Highlighting indicates non-detect parameters above applied guideline/criteria.
4. Highlighting indicates parameters at applied guideline/criteria.
5. Denotes values exceeding
   (Health Canada. 2020. Guidelines for Canadian Drinking Water Quality. Summary Table. Aesthetic Objective. Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario. September 2020. https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html accessed January 13, 2021.)
6. Denotes values exceeding
   (Health Canada. 2020. Guidelines for Canadian Drinking Water Quality. Summary Table. Maximum Acceptable Concentration. Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario. September 2020. https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking -water-quality-summary-table.html accessed January 13, 2021.)

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Table 6

Groundwater Analytical Results: Isotopes

PROJECT No.: 317085-44533-22100

Monitoring Station	Date (dd-mmm-yyyy)	delta ^{18}O (H_2O) (‰)	delta ^{2}H (H_2O) (‰)
Monitoring Wells			
MW-01	29-Jun-2015	-18.87	-147.2
	19-Sep-2016	-18.15	-143.1
	13-Jul-2017	-17.72	-141.8
	01-Aug-2018	-17.83	-142.8
	12-May-2020	-17.85	-143.6
	22-Aug-2022	-17.80	-143.0
MW-02	25-Jun-2015	-18.69	-144.3
	19-Sep-2016	-18.28	-143.9
	13-Jul-2017	-17.82	-142.8
	29-Sep-2017	-18.02	-144.8
	02-Aug-2018	-18.16	-145.0
	12-May-2020	-18.16	-145.1
	22-Aug-2022	-18.20	-145.0
MW-02B	20-Sep-2016	-16.93	-134.9
	14-Jul-2017	-16.40	-133.8
	29-Sep-2017	-16.56	-135.5
	02-Aug-2018	-16.51	-135.0
	12-May-2020	-16.47	-133.4
	22-Aug-2022	-16.60	-135.0
MW-03	29-Jun-2015	-19.51	-151.5
	19-Sep-2016	-19.03	-149.1
	13-Jul-2017	-18.54	-147.8
(Duplicate)	14-Jul-2017	-18.55	-147.5
	31-Jul-2018	-18.62	-148.5
	12-May-2020	-18.73	-147.8
	22-Aug-2022	-18.40	-148.0
MW-04	29-Jun-2015	-17.47	-137.9
	19-Sep-2016	-17.18	-137.5
	13-Jul-2017	-16.37	-133.8
	31-Jul-2018	-16.37	-134.7
	12-May-2020	-16.39	-134.0
	22-Aug-2022	-16.00	-132.0
MW-05	25-Jun-2015	-16.77	-133.2
	19-Sep-2016	-16.26	-131.8
	13-Jul-2017	-16.00	-131.8
	31-Jul-2018	-16.03	-132.6
	12-May-2020	-16.07	-130.8
	22-Aug-2022	-16.10	-132.0
MW-06	25-Jun-2015	-18.27	-145.3
	20-Sep-2016	-17.79	-142.8
	13-Jul-2017	-17.48	-143.2
	31-Jul-2018	-17.52	-143.2
	12-May-2020	-17.67	-143.0
	22-Aug-2022	-17.60	-144.0
(Duplicate)	22-Aug-2022	-17.70	-144.0
MW-07	25-Jun-2015	-18.76	-147.7
	20-Sep-2016	-18.24	-144.7
	14-Jul-2017	-17.91	-145.7
	31-Jul-2018	-17.84	-144.6
	13-May-2020	-18.08	-145.0
(Duplicate)	13-May-2020	-18.05	-144.2
	23-Aug-2022	-18.20	-147.0

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Table 6

Groundwater Analytical Results: Isotopes

PROJECT No.: 317085-44533-22100

Monitoring Station	Date (dd-mmm-yyyy)	delta ^{18}O (H_2O) (‰)	delta ^{2}H (H_2O) (‰)
MW-08	24-Jun-2015	-18.39	-145.7
	20-Sep-2016	-17.93	-143.4
	02-Aug-2017	-17.39	-141.4
	01-Aug-2018	-17.49	-142.7
	13-May-2020	-17.61	-142.9
	23-Aug-2022	-17.60	-143.0
MW-09	25-Jun-2015	-19.04	-149.1
	20-Sep-2016	-18.47	-146.7
(Duplicate)	20-Sep-2016	-18.48	-146.6
	14-Jul-2017	-18.21	-147.3
	01-Aug-2018	-18.11	-146.5
	13-May-2020	-18.38	-147.2
	23-Aug-2022	-18.40	-148.0
(Duplicate)	23-Aug-2022	-18.50	-148.0
MW-10	24-Jun-2015	-18.97	-148.1
(Duplicate)	24-Jun-2015	-18.86	-148.0
	20-Sep-2016	-18.54	-146.3
	14-Jul-2017	-18.23	-146.5
	01-Aug-2018	-18.17	-144.8
	13-May-2020	-18.42	-147.1
	26-Aug-2022	-18.40	-147.0
MW-11	24-Jun-2015	-17.57	-141.6
	20-Sep-2016	-17.05	-137.6
	14-Jul-2017	-16.86	-139.3
	01-Aug-2018	-16.69	-136.9
(Duplicate)	01-Aug-2018	-16.71	-139.4
	13-May-2020	-17.07	-140.1
	23-Aug-2022	-17.10	-141.0
MW-12	24-Jun-2015	-17.84	-142.0
	20-Sep-2016	-17.30	-139.0
	14-Jul-2017	-16.95	-138.6
	01-Aug-2018	-16.95	-138.7
	14-May-2020	-17.18	-140.2
	23-Aug-2022	-17.20	-141.0
MW-13	24-Jun-2015	-19.06	-148.2
	20-Sep-2016	-18.69	-146.7
	14-Jul-2017	-18.22	-145.1
	01-Aug-2018	-18.23	-146.4
	14-May-2020	-18.63	-148.2
	23-Aug-2022	-18.70	-148.0
QAQC			
FIELD BLANK	25-Jun-2015	-20.20	-153.2
	20-Sep-2016	-18.73	-143.5
	14-Jul-2017	-19.35	-148.8

Relative Percent Difference (RPD) Report			
MW-09	23-Aug-2022	-18.40	-148.0
(Duplicate)	23-Aug-2022	-18.50	-148.0
RPD(%)		**0.5%**	

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Table 6

Groundwater Analytical Results: Isotopes

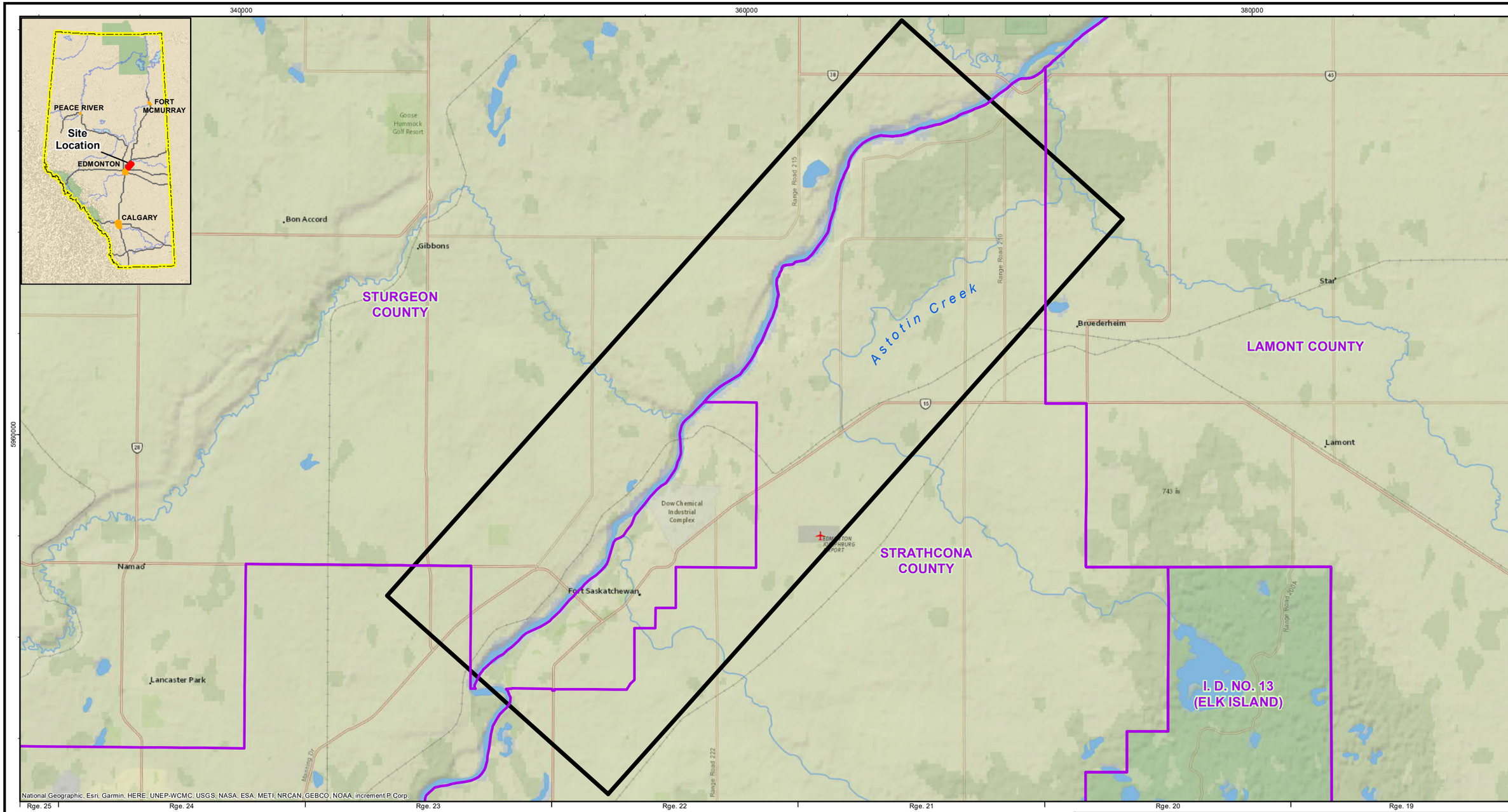
PROJECT No.: 317085-44533-22100

Monitoring Station	Date (dd-mmm-yyyy)	delta ^{18}O (H_2O) (‰)	delta ^{2}H (H_2O) (‰)

NOTES:

1. --- in guideline row(s) denotes no criteria for that parameter.
2. --- in detail data row(s) denotes parameter not analyzed.
3. Highlighting indicates non-detect parameters above applied guideline/criteria.
4. Highlighting indicates parameters at applied guideline/criteria.

Figures



Study Area

County Boundaries

0 2.5 5

Kilometers

1:150,000

NAD 1983 UTM Zone 12N

NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2022 GROUNDWATER QUALITY MONITORING
BEVERLY CHANNEL MONITORING WELLS

SITE LOCATION

Date: 07-NOV-22	Drawn by: KR	Edited by:	App'd by: TB
Advisian Worley Group		Project No. 317085-44533-22100	
		FIG No 1	REV 0

"This drawing is prepared solely for the use of our customers as specified in the accompanying report. Worley Canada Services Ltd. assumes no liability to any other party for any representations contained in this drawing."

PLOT DATE & TIME: 11/7/2022 7:24:33 AM USER NAME: kenneth.wirtchie
SAVE DATE & TIME: 11/7/2022 7:24:15 AM ISSUING OFFICE: EDMONTON GIS

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FILE LOCATION: Q:\PROJECTS\NCIA\Beverly Channel\MXDs\317085-44533-22100\MonitoringWellLocations.mxd

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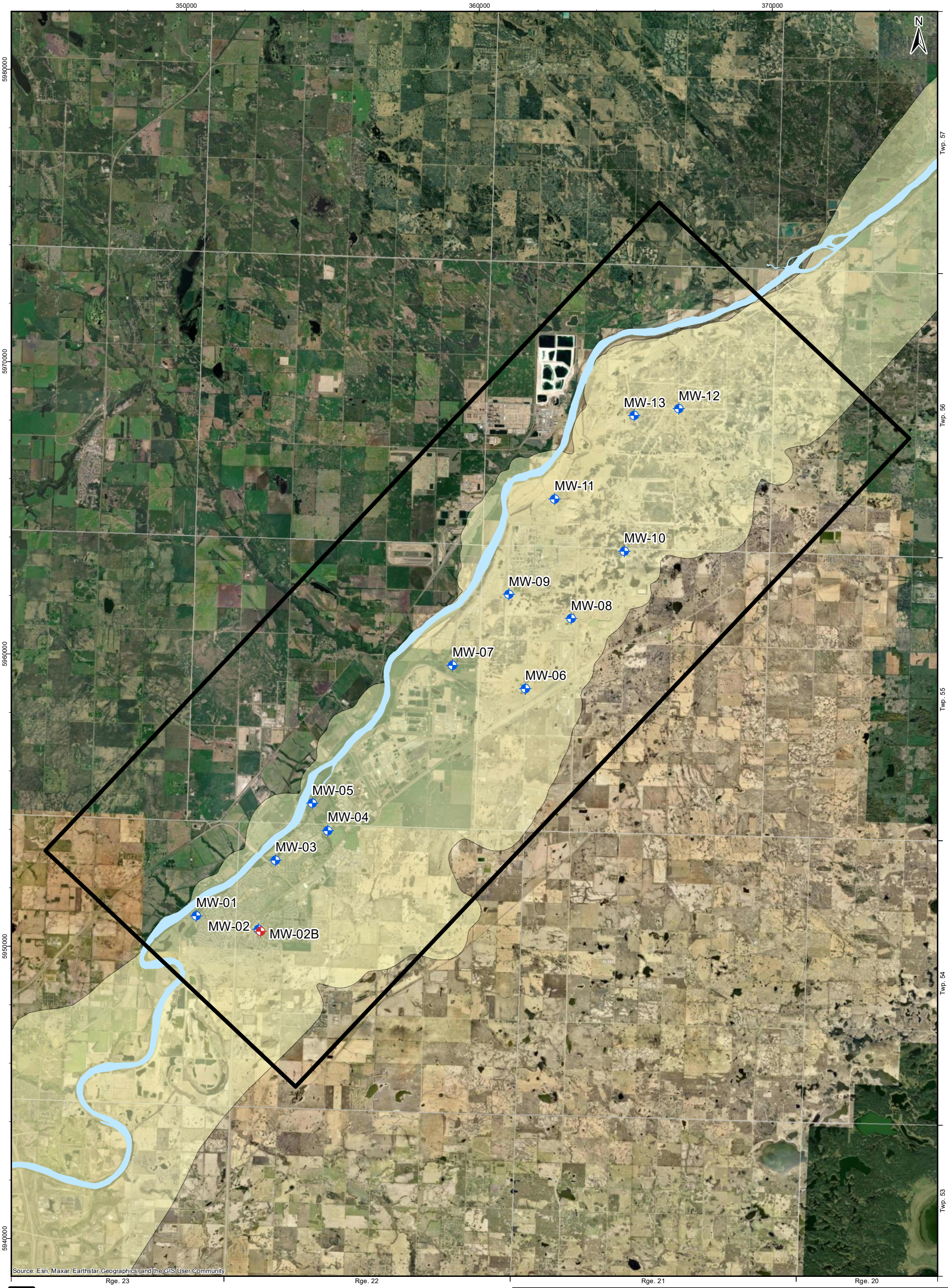
SAVE DATE & TIME: 11/7/2022 7:38:34 AM
USER NAME: kenneth.w.ritchie
ISSUING OFFICE: EDMONTON GIS



Study Area
Beverly Channel
Beverly Channel Monitoring Well
Bedrock Monitoring Well

0 2.5 5
Kilometres
1:125,000
NAD 1983 UTM Zone 12N

NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2022 GROUNDWATER QUALITY MONITORING
BEVERLY CHANNEL MONITORING WELLS

MONITORING WELL LOCATIONS

Date: 07-NOV-22	Drawn by: KR	Edited by:	App'd by: TB
Advisian Worley Group		Project No. 317085-44533-22100	
		FIG No 2	REV 0

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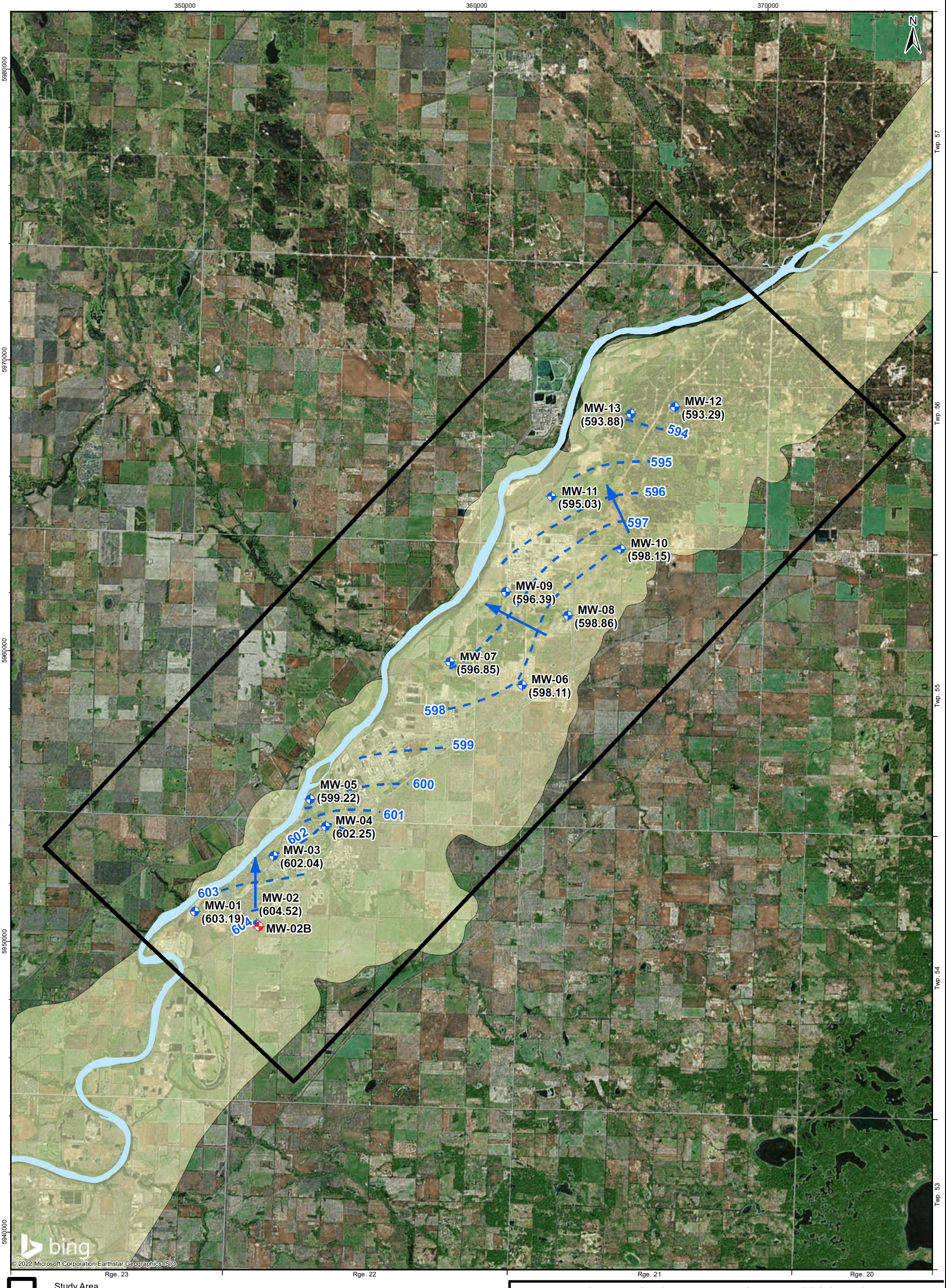
FILE LOCATION: Q:\PROJECTS\NCIA\Beverly Channel\MXDs\317085-44533-22100\GW Elevations 2022.mxd

PLOT DATE & TIME: 12/6/2022 9:17:24 AM
SAVE DATE & TIME: 12/6/2022 9:17:03 AM

USER NAME: Kenneth.W.Ritchie
ISSUING OFFICE: EDMONTON GIS



Study Area

Beverly Channel

Beverly Channel Monitoring Well

Bedrock Monitoring Well

Groundwater Surface Elevation Contour (masl)

Inferred Groundwater Flow Direction

(602.30) Groundwater Surface Elevation (masl) Measured 22 & 23 August, 2022

0 2.5 5
Kilometres
1:125,000
NAD 1983 UTM Zone 12N

NOTE: MW-02B NOT INCLUDED FOR GROUNDWATER FLOW INTERPRETATION

NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2022 GROUNDWATER QUALITY MONITORING
BEVERLY CHANNEL MONITORING WELLS

2022 GROUNDWATER SURFACE ELEVATIONS

Date: 06-DEC-22	Drawn by: KR	Edited by: KR	App'd by: TB
Advisian Worley Group		Project No. 317085-44533-22100	
		FIG No 3	REV 0

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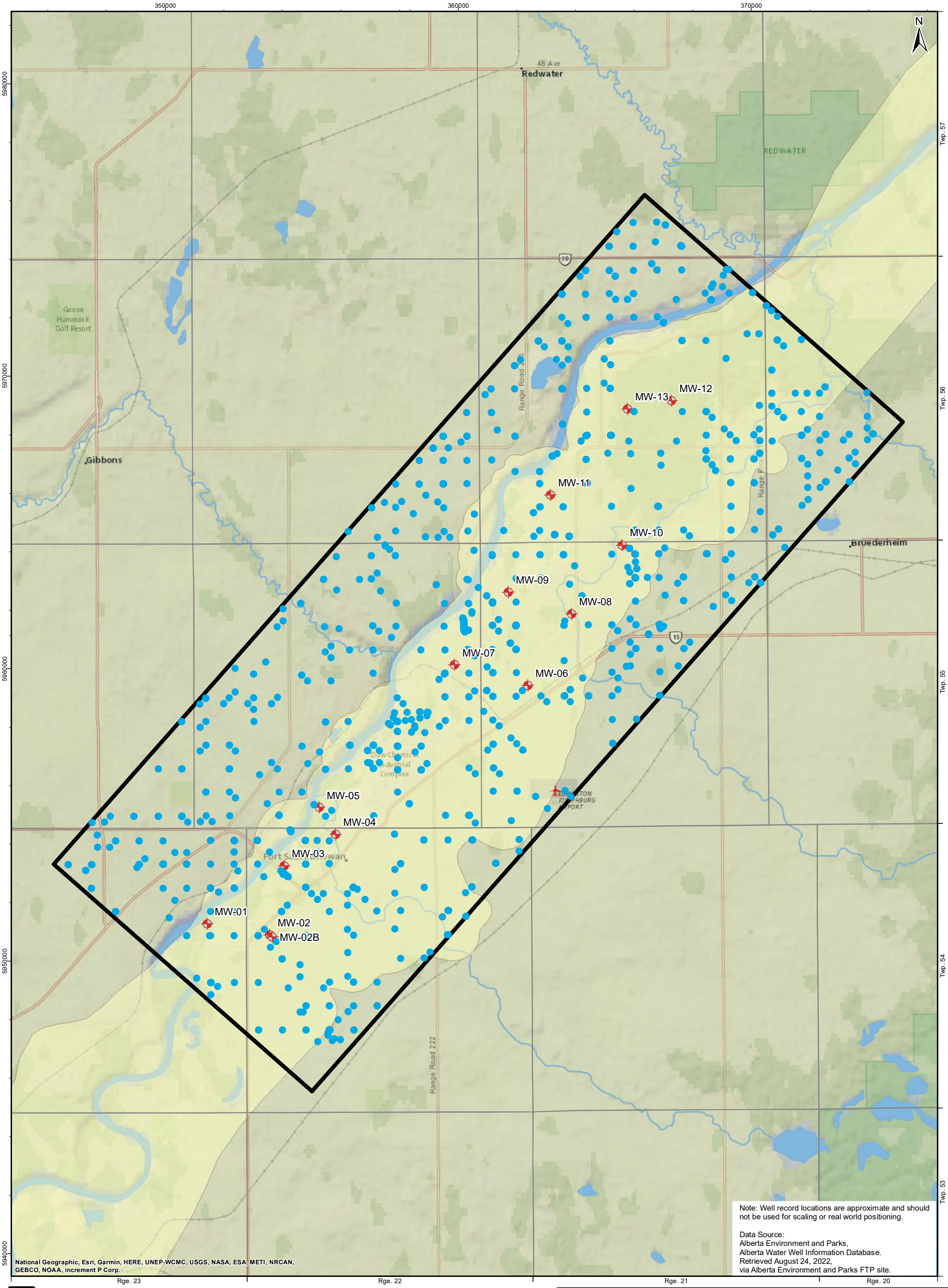
Appendix 1
Water Well Records

FILE LOCATION: N:\BaseData\Infrastructure\WaterWells\2022\317085-44533-22100\WaterWellRecords.mxd

PLOT DATE & TIME: 11/7/2022 12:21:57 PM
SAVE DATE & TIME: 11/7/2022 12:21:35 PM
USER NAME: kenneth.w.ritchie
ISSUING OFFICE: EDMONTON GIS



Note: Well record locations are approximate and should not be used for scaling or real world positioning.

Data Source:
Alberta Environment and Parks,
Alberta Water Well Information Database.
Retrieved August 24, 2022,
via Alberta Environment and Parks FTP site.

- Study Area
- Beverly Channel
- NCIA Monitoring Well
- Water Well Record

0 2.5 5
Kilometres
1:125,000
NAD 1983 UTM Zone 12N

NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2022 GROUNDWATER QUALITY MONITORING
BEVERLY CHANNEL MONITORING WELLS

WATER WELL RECORDS WITHIN THE STUDY AREA

Date: 07-NOV-22	Drawn by: KR	Edited by:	App'd by: .
Advisian Worley Group		Project No. 317085-44533-22100	
		FIG No A1 - 1	REV A

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Appendix A1-1

Water Well Records Within the Study Area

	WELL ID	LOCATION					WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED USE	TYPE OF WORK	DRILL METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN		FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
1	1421800	8	14	55	22	4														KEYERA				No Chemistry
2	1716347	2	27	55	21	4														LEDCOR				No Chemistry
3	1716349	2	27	55	21	4														LEDCOR				No Chemistry
4	1716350	2	27	55	21	4														LEDCOR				No Chemistry
5	1716352	2	27	55	21	4														LEDCOR				No Chemistry
6	261198	SE	7	55	22	4	1.8													HERDER, H		Chemistry	Hand Dug	Chemistry Exists
7	261609	10	18	55	22	4	792.5											8/11/1953		MID-WESTERN #10-18		Oil Exploratory	Unknown	No Chemistry
8	261734	4	27	55	22	4	256.3											5/22/1953		IMPERIAL OIL LTD #AO282-6		Oil Exploratory	Unknown	No Chemistry
9	261824	4	34	55	22	4	295.7											5/22/1953		IMPERIAL OIL LTD #AO282 4		Oil Exploratory	Unknown	No Chemistry
10	261829	1	3	56	22	4	268.2											5/13/1953		IMPERIAL OIL LTD #AO190-173		Oil Exploratory	Unknown	No Chemistry
11	261847	4	36	55	22	4	299.0											5/21/1953		IMPERIAL OIL LTD		Oil Exploratory	Unknown	No Chemistry
12	263716	16	12	56	21	4	42.7							34.1	35.7			11/17/1975		BRUDERHEIM, TOWN OF #15-75		Unknown	Unknown	No Chemistry
13	42021	13	24	56	21	4														ALTA ENV		Unknown	Unknown	No Chemistry
14	42022	4	14	56	21	4																Unknown	Unknown	No Chemistry
15	1690170	SE	12	55	22	4	38.7							35.4	38.4			10/23/2014		CORMODE-DICKSON	Commercial	New Well	Rotary - Mud	No Chemistry
16	1716880	9	25	55	22	4	11.0	2.4	11.0									7/10/2019		CANADIAN DEWATERING	Commercial	New Well	Rotary - Air	No Chemistry
17	1716880	9	25	55	22	4														CANADIAN DEWATERING	Commercial	Existing Well-Decommissioned	Not Applicable	No Chemistry
18	1716881	9	25	55	22	4														CANADIAN DEWATERING	Commercial	Existing Well-Decommissioned	Not Applicable	No Chemistry
19	1716881	9	25	55	22	4	4.9							3.4	4.9			7/10/2019		CANADIAN DEWATERING	Commercial	New Well	Rotary - Air	No Chemistry
20	1270077	7	10	55	22	4	21.6							17.1	20.1			5/25/1998		DOW CHEMICAL CANADA LTD	Contamination Invest.	New Well	Drilled	No Chemistry
21	1270078	7	10	55	22	4	24.7							19.2	22.3			5/25/1998		DOW CHEMICAL CANADA LTD	Contamination Invest.	New Well	Drilled	No Chemistry
22	1270079	7	10	55	22	4	27.1							20.7	23.8			5/26/1998		DOW CHEMICAL CANADA LTD	Contamination Invest.	New Well	Rotary	No Chemistry
23	1270080	7	10	55	22	4	24.4							18.9	21.9			5/27/1998		DOW CHEMICAL CANADA LTD	Contamination Invest.	New Well	Rotary	No Chemistry
24	1270081	7	10	55	22	4	29.6							22.3	25.3			5/27/1998		DOW CHEMICAL CANADA LTD	Contamination Invest.	New Well	Rotary	No Chemistry
25	1270082	7	10	55	22	4	28.3							22.6	25.6			5/28/1998		DOW CHEMICAL CANADA LTD	Contamination Invest.	New Well	Rotary	No Chemistry
26	1270083	7	10	55	22	4	28.0							22.6	25.6			6/23/1998		DOW CHEMICAL CANADA LTD	Contamination Invest.	New Well	Rotary	No Chemistry
27	1270084	7	10	55	22	4	30.5							24.1	27.4			6/25/1998		DOW CHEMICAL CANADA LTD	Contamination Invest.	New Well	Rotary	No Chemistry
28	1270085	7	10	55	22	4	24.7							20.7	23.8			6/24/1998		DOW CHEMICAL CANADA LTD	Contamination Invest.	New Well	Rotary	No Chemistry
29	1270086	7	10	55	22	4	13.4							10.1	11.6			9/29/1998		DOW CHEMICAL CANADA LTD	Contamination Invest.	New Well	Rotary	No Chemistry
30	261191	SE	7	55	22	4	6.1													HERDER, H	Contamination Invest.	Chemistry	Hand Dug	Chemistry Exists
31	1320051	1	35	56	21	4	11.9							8.5	10.1			11/4/2008		AMEC EARTH & ENVIRONMENTAL	Dewatering	New Well	Bored	No Chemistry
32	1716651	2	25	55	22	4													5/30/2018	CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
33	1716651	2	25	55	22	4	11.6							2.4	11.6			4/9/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
34	1716652	2	25	55	22	4	11.6							2.4	11.6			4/9/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
35	1716652	2	25	55	22	4													5/30/2018	CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
36	1716656	2	25	55	22	4	11.6							2.4	11.6			4/10/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
37	1716656	2	25	55	22	4													7/11/2018	CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
38	1716657	2	25	55	22	4	11.6							2.4	11.6			4/10/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
39	1716657	2	25	55	22	4													4/11/2018	CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
40	1716658	2	25	55	22	4	11.6							2.4	11.6			4/10/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
41	1716658	2	25	55	22	4													7/11/2018	CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
42	1716659	2	25	55	22	4	11.6							2.4	11.6			4/10/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
43	1716659	2	25	55	22	4													7/11/2018	CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
44	1716660	2	25	55	22	4													7/11/2018	CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
45	1716660	2	25	55	22	4	11.6							2.4	11.6			4/10/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
46	1716661	2	25	55	22	4	11.6							2.4	11.6			4/11/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
47	1716661	2	25	55	22	4													7/3/2018	CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
48	1716662	2	25	55	22	4													7/3/2018	CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
49	1716662	2	25	55	22	4	11.6							2.4	11.6			4/11/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
50	1716663	2	25	55	22	4	11.6							2.4	11.6			4/11/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
51	1716663	2	25	55	22	4													7/3/2018	CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
52	1716684	2	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
53	1716684	2	25	55	22	4	11.6							2.4	11.6			4/23/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
54	1716685	2	25	55	22	4	11.6							2.4	11.6			4/23/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
55	1716685	2	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Unknown	No Chemistry
56	1716686	2	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
57	1716686	2	25	55	22	4	11.6							2.4	11.6			4/23/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
58	1716687	7	25	55	22	4	11.6							2.4	11.6			4/23/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
59	1716687	7	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
60	1716688	7	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
61	1716688	7	25	55	22	4	11.6							2.4	11.6			4/24/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
62	1716689	7	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
63	1716689	7	25	55	22	4	11.6							2.4	11.6			4/24/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
64	1716690	2	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
65	1716690	2	25	55	22	4	11.6							2.4	11.6			4/24/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
66	1716691	7	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
67	1716691	7	25	55	22	4	11.6							2.4	11.6			4/24/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
68	1716692	7	25	55	22	4	11.6							2.4	11.6			4/25/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
69	1716692	7	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
70	1716693	7	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
71	1716693	7	25	55	22	4	11.6							2.4	11.6			4/25/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
72	1716694	7	25	55	22	4	11.6							2.4	11.6			4/25/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
73	1716694	7	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
74	1716695	7	25	55	22	4	11.6							2.4	11.6			4/25/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
75	1716695	7	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
76	1716696	7	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
77	1716696	7	25	55	22	4	11.6							2.4	11.6			4/25/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
78	1716697	7	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
79	1716697	7	25	55	22	4	11.6							2.4	11.6			4/26/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
80	1716698	7	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
81	1716698	7	25	55	22	4	11.6							2.4	11.6			4/26/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
82	1716699	7	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
83	1716699	7	25	55	22	4	11.6							2.4	11.6			4/26/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
84	1716700	7	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
85	1716700	7	25	55	22	4	11.6							2.4	11.6			4/26/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry

	WELL ID	LOCATION					WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED USE	TYPE OF WORK	DRILL METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN		FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
86	1716701	7	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
87	1716701	7	25	55	22	4	11.6							2.4	11.6			4/26/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
88	1716702	7	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
89	1716702	7	25	55	22	4	11.6							2.4	11.6			4/27/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
90	1716703	7	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
91	1716703	7	25	55	22	4	11.6							2.4	11.6			4/27/2018		CANADIAN DEWATERTNG	Dewatering	New Well	Rotary - Air	No Chemistry
92	1716704	7	25	55	22	4	11.6							2.4	11.6			4/27/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
93	1716704	7	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
94	1716705	7	25	55	22	4	11.6							2.4	11.6			4/27/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
95	1716705	7	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
96	1716738	2	25	55	22	4	11.6							2.4	11.6			4/12/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
97	1716738	2	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
98	1716739	2	25	55	22	4	11.6							2.4	11.6			4/12/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
99	1716739	2	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
100	1716740	2	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
101	1716740	2	25	55	22	4	11.6							2.4	11.6			4/12/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
102	1716741	2	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
103	1716741	2	25	55	22	4	11.6							2.4	11.6			4/12/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
104	1716742	2	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
105	1716742	2	25	55	22	4	11.6							2.4	11.6			4/12/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
106	1716743	2	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
107	1716743	2	25	55	22	4	11.6							2.4	11.6			4/13/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
108	1716744	2	25	55	22	4	11.6							2.4	11.6			4/13/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
109	1716744	2	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
110	1716745	2	25	55	22	4	11.6							2.4	11.6			4/13/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
111	1716745	2	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
112	1716746	2	25	55	22	4	11.6							2.4	11.6			4/13/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
113	1716746	2	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
114	1716747	2	25	55	22	4														CANADIAN DEWATERING	Dewatering	Existing Well-Decommissioned	Not Applicable	No Chemistry
115	1716747	2	25	55	22	4	11.6							2.4	11.6			4/13/2018		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Air	No Chemistry
116	1716959	2	5	56	21	4	11.6	2.4	11.6									10/31/2019		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Mud	No Chemistry
117	1716960	2	5	56	21	4	11.6	2.4	11.6									10/31/2019		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Mud	No Chemistry
118	1716961	2	5	56	21	4	11.6	2.4	11.6									10/31/2019		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Mud	No Chemistry
119	1716962	2	5	56	21	4	11.6	2.4	11.6									10/31/2019		CANADIAN DEWATERING	Dewatering	New Well	Rotary - Mud	No Chemistry
120	1717117	1	31	54	22	4														MCL CONTRACTING	Dewatering	Existing Well-Decommissioned	Unknown	No Chemistry
121	1717117	1	31	54	22	4	18.3	3.0	18.3									7/28/2020		MCL CONTRACTING	Dewatering	New Well	Rotary - Mud	No Chemistry
122	1717118	1	31	54	22	4														MCL CONTRACTING	Dewatering	Existing Well-Decommissioned	Unknown	No Chemistry
123	1717118	1	31	54	22	4	18.3	3.0	18.3									7/28/2020		MCL CONTRACTNG	Dewatering	New Well	Rotary - Mud	No Chemistry
124	1717119	1	31	54	22	4														MCL CONTRACTING	Dewatering	Existing Well-Decommissioned	Unknown	No Chemistry
125	1717119	1	31	54	22	4	18.3	3.0	18.3									7/29/2020		MCL CONTRACTING	Dewatering	New Well	Rotary - Mud	No Chemistry
126	1717120	1	31	54	22	4	18.3	3.0	18.3									7/29/2020		MCL CONTRACTING	Dewatering	New Well	Rotary - Mud	No Chemistry
127	1717120	1	31	54	22	4														MCL CONTRACTING	Dewatering	Existing Well-Decommissioned	Unknown	No Chemistry
128	1717121	2	31	54	22	4	15.2	3.0	15.2									10/24/2020		MCL CONTRACTING	Dewatering	New Well	Rotary - Mud	No Chemistry
129	1717122	2	31	54	22	4	15.2	3.0	15.2									10/24/2020		MCL CONTRACTING	Dewatering	New Well	Rotary - Mud	No Chemistry
130	1717123	1	31	54	22	4	15.2	3.0	15.2									10/24/2020		MCL CONTRACTING	Dewatering	New Well	Rotary - Mud	No Chemistry
131	1717124	1	31	54	22	4	15.2	3.0	15.2									10/25/2020		MCL CONTRACTING	Dewatering	New Well	Rotary - Mud	No Chemistry
132	1717125	1	31	54	22	4	15.2	3.0	15.2									10/25/2020		MCL CONTRACTING	Dewatering	New Well	Rotary - Mud	No Chemistry
133	1717126	1	31	54	22	4	15.2	3.0	15.2									10/26/2020		MCL CONTRACTING	Dewatering	New Well	Rotary - Mud	No Chemistry
134	1717127	1	31	54	22	4	15.2	3.0	15.2									10/26/2020		MCL CONTRACTING	Dewatering	New Well	Rotary - Mud	No Chemistry
135	1717128	1	31	54	22	4	15.2	3.0	15.2									10/26/2020		MCL CONTRACTING	Dewatering	New Well	Rotary - Mud	No Chemistry
136	1717129	16	30	54	22	4	15.2	3.0	15.2									10/28/2020		MCL CONTRACTING	Dewatering	New Well	Rotary - Mud	No Chemistry
137	1717130	1	31	54	22	4	18.3	3.0	18.3									12/3/2020		MCL CONTRACTING	Dewatering	New Well	Rotary - Mud	No Chemistry
138	1717131	1	31	54	22	4	18.3	3.0	18.3									12/3/2020		MCL CONTRACTING	Dewatering	New Well	Rotary - Mud	No Chemistry
139	1717132	1	31	54	22	4	18.3	3.0	18.3									12/4/2020		MCL CONTRACTING	Dewatering	New Well	Rotary - Mud	No Chemistry
140	1717133	1	31	54	22	4	18.3	3.0	18.3									12/4/2020		MCL CONTRACTING	Dewatering	New Well	Rotary - Mud	No Chemistry
141	2088626	15	8	56	21	4	11.9							2.7	8.8			1/20/2014		CITY OF EDMONTON	Dewatering	New Well	Rotary - Air	No Chemistry
142	2088627	15	8	56	21	4	11.6											1/21/2014		CITY OF EDMONTON	Dewatering	New Well	Rotary - Air	No Chemistry
143	100929	SW	8	56	20	4	7.9													SCHRAM, ED	Domestic	Chemistry	Hand Dug	Chemistry Exists
144	100930	SE	8	56	20	4	9.1													KRAUSE, F.	Domestic	Chemistry	Unknown	Chemistry Exists
145	100931		8	56	20	4	17.1													INKSTER, COLIN	Domestic	Chemistry	Unknown	Chemistry Exists
146	100932	NE	8	56	20	4	19.5											7/14/1973		INKSTER, COLIN	Domestic	New Well	Bored	No Chemistry
147	100943	SW	16	56	20	4	62.5	56.4	62.5									11/1/1973		ROSNAU, NEIL	Domestic	New Well	Cable Tool	Chemistry Exists
148	100944	SW	16	56	20	4	93.0													ROSNAU, NEIL	Domestic	Chemistry	Unknown	Chemistry Exists
149	100945	SW	16	56	20	4	24.7													BOWES, GEORGE	Domestic	Chemistry	Unknown	Chemistry Exists
150	100946	SW	16	56	20	4	28.7											10/18/1977		ROSNAU, WESLEY	Domestic	New Well	Bored	Chemistry Exists
151	100947	SW	20	56	20	4	45.7													BETTAC, E.	Domestic	Chemistry	Unknown	Chemistry Exists
152	100948	SW	20	56	20	4	45.7													WATSON, D.	Domestic	Chemistry	Unknown	No Chemistry
153	1130470	NW	34	55	21	4	35.4	29.3	35.4									7/19/2007		HALLS AUTO PARTS	Domestic	New Well	Rotary	No Chemistry
154	1130875	11	13	54	23	4	41.1							27.4	33.5			11/8/2010		OYAMA, ROSE-ANN & SONNIE	Domestic	New Well	Combination	No Chemistry
155	1131346	7	3	57	21	4	37.5							27.4	33.5			3/10/2016		FINNEGAN, LORNE & SHIRLEY	Domestic	New Well	Cable Tool	No Chemistry
156	1165834	NE	34	54	23	4	30.5	12.8	15.5	18.6	20.4	21.9	22.9					9/11/2014		PARADIS, GILBERT	Domestic	New Well	Combination	No Chemistry
157	1166277	13	35	55	22	4														CANDO RAIL SERVICES	Domestic	Existing Well-Decommissioned	Unknown	No Chemistry
158	1166278	13	35	55	22	4														CANDO RAIL SERVICES	Domestic	Existing Well-Decommissioned	Not Applicable	No Chemistry
159	1300079	NW	23	54	22	4	42.7	25.0	42.7									2/24/2005		MCEACHERN, MEL	Domestic	New Well	Rotary	No Chemistry
160	1370431	1	36	55	22	4	43.9							39.6	42.7			10/6/2010		YOUNG, CARL	Domestic	New Well	Combination	No Chemistry
161	1370496	5	22	55	21	4	37.2	30.5	37.2									10/25/2012		ROCQUE, SHANE	Domestic	New Well	Combination	No Chemistry
162	1370549	SW	30	56	20	4	36.6	29.0	35.1									6/30/2014		SHILOH YOUTH RANCH	Domestic	New Well	Combination	No Chemistry
163	1422029	14	30	54	22	4	42.7							5.2	8.2			6/21/2018		SAWCHUK, TERRY	Domestic	New Well	Rotary - Mud	No Chemistry
164	150309	SE	29	55	22	4	91.4											1/25/1990		GROOT, DON	Domestic	New Well	Combination	No Chemistry
165	152373	WH	8	56	21	4	25.0											6/26/1990		MASCHMEYER, RAY	Domestic	New Well	Rotary	No Chemistry
166	153167	SE	22	55	21	4	48.8							41.1	42.7			7/20/1990		POULIN, RODGER	Domestic	New Well	Rotary	No Chemistry
167	154895	NW	16	55	21	4	48.8	42.7	48.8									10/13/1990		KREBS, BERNARD L.	Domestic	New Well	Rotary	No Chemistry
168	156817	NW	7	54	22	4	67.1													ALLEN, GERALD	Domestic	Chemistry	Unknown	No Chemistry
169	156870	NW	16	55	21	4	74.7													KREBS, BERNARD L	Domestic	Chemistry	Rotary	Chemistry Exists
170	156871	SE	30	55	21	4	9.8													HONISCH, VERNON	Domestic	Chemistry	Not Applicable	No Chemistry
171	156872	SW	1	55	22	4	0.0													THEROUX, CHRIS	Domestic	Chemistry	Not Applicable	No Chemistry
172	156874		20	55	22	4	8.5													LAMOUREUX, JOHN C./CRAIG, RAY	Domestic	Chemistry	Not Applicable	No Chemistry

	WELL ID	LOCATION					WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED USE	TYPE OF WORK	DRILL METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN		FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
173	157040	NW	1	56	21	4	11.0													CHOLOWSKI, TOM	Domestic	Chemistry	Hand Dug	No Chemistry
174	157041	NE	27	56	21	4	54.9													EASTWOOD, J.W.	Domestic	Chemistry	Not Applicable	No Chemistry
175	158532	NE	8	54	22	4	14.0											7/7/1979		MAKUCH, PETER J.	Domestic	New Well	Bored	No Chemistry
176	158533	NE	8	54	22	4	23.2											7/1/1972		OGDEN, WAYNE	Domestic	New Well	Bored	No Chemistry
177	158577	NE	3	56	22	4	64.0	30.5	64.0									4/6/1968		KUGLER, ERIKA	Domestic	New Well	Rotary	No Chemistry
178	159287	SE	5	55	22	4	14.6	8.2	14.6									7/10/1991		GODBOUT, ROMEO	Domestic	New Well	Bored	No Chemistry
179	160456	NE	34	56	21	4	12.2													GORGICHUK, DIANA	Domestic	Chemistry	Not Applicable	No Chemistry
180	160666	SE	30	55	21	4	8.5													SOWDEN, HELEN	Domestic	Chemistry	Not Applicable	No Chemistry
181	160801	SE	16	54	22	4	5.5													BONOWICZ, KEN	Domestic	Chemistry	Not Applicable	No Chemistry
182	161740	NE	8	54	22	4	30.5													OSTERLAND, JOYCE	Domestic	Chemistry	Not Applicable	No Chemistry
183	161789	NE	19	56	21	4	7.6													MELTON, JAMES	Domestic	Chemistry	Not Applicable	No Chemistry
184	161790	NW	27	56	21	4	3.7													JOHNSTON, DAVID	Domestic	Chemistry	Not Applicable	No Chemistry
185	162337	9	4	57	21	4	22.9											5/26/2001		LANE, C.	Domestic	Old Well-Yield	Not Applicable	No Chemistry
186	162337	9	4	57	21	4	21.3							17.7	21.3			12/31/1991		LANE, C/EST OF M PICH	Domestic	Reconditioned	Not Applicable	No Chemistry
187	162337	9	4	57	21	4	22.9							16.2	22.3			11/16/1991		LANE, C./EST OF M. PICH	Domestic	New Well	Cable Tool	No Chemistry
188	1640316	16	14	54	23	4	15.2							12.2	15.2			11/5/2010		MOIZARD, ANDRE	Domestic	New Well	Rotary - Mud	No Chemistry
189	165347	SE	34	54	23	4	24.4													MOAK, CARL A.	Domestic	Chemistry	Unknown	No Chemistry
190	166298	NE	8	54	22	4	73.2	42.7	72.2									6/1/1992		TAPLEY, CAM	Domestic	New Well	Rotary	No Chemistry
191	167085	NE	8	54	22	4	11.6													AMBLER, TERRY D.	Domestic	Chemistry	Unknown	No Chemistry
192	167584	NW	25	55	21	4	61.0													PROKOPCZAK, WM	Domestic	Chemistry	Unknown	No Chemistry
193	168098	16	8	54	22	4	14.6	4.3	9.8									6/25/1992		COOL, NORMAND	Domestic	New Well	Bored	No Chemistry
194	168181	9	18	54	22	4	9.8	4.9	9.8									7/21/1992		DAKIN, DEXTER	Domestic	New Well	Bored	No Chemistry
195	168267	NE	8	54	22	4	11.3	6.1	11.3									7/16/1992		DORLICH, HELGA	Domestic	New Well	Bored	No Chemistry
196	1690074	SE	1	55	22	4	59.4	51.8	57.9									5/13/1999		RASMUSSEN, RON	Domestic	New Well	Rotary	No Chemistry
197	1690085	NE	36	54	23	4	17.7	12.2	17.4									9/28/1999		NYHUIS, DAVE	Domestic	New Well	Rotary	No Chemistry
198	1690122	NE	24	55	22	4	18.0	4.6	12.2									10/17/2008		AUX-SABLE CANADA LTD	Domestic	New Well	Bored	No Chemistry
199	1690124	16	31	54	22	4	17.4	8.5	14.9									6/5/2008		LAMOUREUX, ART	Domestic	New Well	Bored	No Chemistry
200	1690166	1	1	55	22	4	52.4	45.7	51.8									8/11/2011		SCHOENLEBER, TIM	Domestic	New Well	Rotary - Mud	No Chemistry
201	169284	8	14	55	22	4	40.5							37.8	39.3			10/2/1992		FEDERATED PIPELINE LTD	Domestic	New Well	Rotary	No Chemistry
202	169305	NE	8	54	22	4	9.4													DAKIN, DOREEN	Domestic	Chemistry	Unknown	No Chemistry
203	169519	SW	2	57	21	4	3.0													SUDAYKO, MIKE	Domestic	Chemistry	Unknown	No Chemistry
204	169601	SW	2	57	21	4	48.8													SUDAYKO, MIKE	Domestic	Chemistry	Unknown	No Chemistry
205	1755005	SW	2	57	21	4	18.3	4.0	5.8									10/22/2002		SUDAYKO, MIKE	Domestic	New Well	Bored	No Chemistry
206	1755094	11	25	54	23	4	25.0	15.8	18.6									9/8/2009		KAM, IAN	Domestic	New Well	Bored	No Chemistry
207	1755120	SE	35	56	21	4	36.6	29.3	33.2									7/8/2011		BADRY, RICK	Domestic	New Well	Bored	No Chemistry
208	1795056	NE	8	54	22	4	93.0	67.1	93.0									7/18/2003		SUPINA, NICK	Domestic	New Well	Rotary	No Chemistry
209	1795213	NE	25	54	23	4	74.7											4/21/2009		KAM, IAN	Domestic	New Well	Rotary	No Chemistry
210	1795249	NW	25	54	23	4	74.7	48.8	73.2									4/21/2009		KAM, IAN	Domestic	New Well	Combination	No Chemistry
211	1795445	NE	7	56	20	4	117.3	85.3	115.8									12/13/2018		WHITE, BETH & SCHULTZ, DALE	Domestic	New Well	Combination	No Chemistry
212	1888906	11	28	54	22	4	31.4							28.3	29.9			7/21/2009		KROHMAN, KURT	Domestic	New Well	Rotary	No Chemistry
213	1888958	1	36	54	23	4	73.2	61.0	73.2									6/24/2010		FIVE STAR POULTRY	Domestic	New Well	Rotary - Mud	No Chemistry
214	1889569	9	3	57	21	4	23.2	17.1	23.2									6/3/2021		HARASIMIUK, BRANDYN	Domestic	New Well	Bored	No Chemistry
215	1889571	9	3	57	21	4	48.8											5/10/2021		HARASIMIUK, BRANDYN	Domestic	Test Hole-Decommissioned	Rotary - Mud	No Chemistry
216	1912482	NE	23	54	23	4	42.7	30.5	36.6									8/13/2019		CURRIE, JOHN	Domestic	New Well	Rotary - Mud	No Chemistry
217	193975	SW	30	55	21	4	42.7												1/1/2001	G&J TRAILER ENT	Domestic	Chemistry	Unknown	No Chemistry
218	195146	NW	33	56	21	4	15.2											8/1/1973		PICH, PETER	Domestic	New Well	Bored	No Chemistry
219	196672	SE	8	56	20	4	6.1													ALEXANDER, BOB	Domestic	Chemistry	Unknown	No Chemistry
220	208911	SE	16	56	21	4	11.9	4.6	11.3									9/25/1992		HENKELMAN, PERCY	Domestic	New Well	Bored	No Chemistry
221	2096934	16	31	54	22	4	16.8													KLAUTT, BRENT & NIKKI	Domestic	New Well	Unknown	No Chemistry
222	224564	SE	18	56	20	4	42.7							35.4	41.5			10/9/1993		MCLELLAN, ART	Domestic	New Well	Rotary	No Chemistry
223	225468	10	8	54	22	4	14.9	7.3	8.5	10.1	14.6							8/26/1993		HESKE, GERRY	Domestic	New Well	Bored	No Chemistry
224	225474	9	8	54	22	4	14.9	6.1	12.2									8/27/1993		CLARK, DARCY	Domestic	New Well	Bored	No Chemistry
225	231919	NW	13	54	23	4	31.7							29.3	31.7			12/20/1977		ESQUIRE HOMES LTD/FUNG, DR. G.	Domestic	New Well	Rotary	No Chemistry
226	238531	NW	30	55	21	4	42.1	36.0	42.1									1/26/1994	1/1/2001	LEUENG, DALE	Domestic	New Well	Rotary	No Chemistry
227	240644	NE	8	54	22	4	64.0	57.9	64.0									3/16/1994		GETSON, DON	Domestic	New Well	Cable Tool	No Chemistry
228	240722	9	8	54	22	4	14.9	4.6	10.7									10/22/1993		MRASEK, DAVID	Domestic	New Well	Bored	No Chemistry
229	240723	9	8	54	22	4	14.9	5.5	11.6									10/1/1993		BALANKO, RON	Domestic	New Well	Bored	No Chemistry
230	241116	10	8	54	22	4	14.9	4.9	12.2									5/13/1994		BOWES, MURRAY	Domestic	New Well	Bored	No Chemistry
231	260033	NE	7	54	22	4	59.7											1/1/1958		GALLOWAY, K.	Domestic	New Well	Cable Tool	Chemistry Exists
232	260035	NW	8	54	22	4	61.0	48.8	57.9									9/22/1983		CHIMERA, WALTER	Domestic	New Well	Cable Tool	Chemistry Exists
233	260037	NE	8	54	22	4	73.5											10/1/1973		GYDISH, ROBERT	Domestic	New Well	Cable Tool	Chemistry Exists
234	260038	NE	8	54	22	4	73.2	47.5	73.2									3/8/1974		RAFUSE, A.J.	Domestic	New Well	Cable Tool	No Chemistry
235	260039	NE	8	54	22	4	8.5											4/1/1971		SWANSON, K.	Domestic	New Well	Bored	No Chemistry
236	260045	NE	8	54	22	4	73.2	45.7	73.2									6/16/1972		KALISTA, M.J.	Domestic	New Well	Cable Tool	Chemistry Exists
237	260046	NE	8	54	22	4	9.1											8/28/1978		TOMPLINS, D.	Domestic	New Well	Bored	Chemistry Exists
238	260048	NE	8	54	22	4	8.8											9/6/1979		THOME, MIKE	Domestic	New Well	Bored	No Chemistry
239	260052	NE	8	54	22	4	9.1											10/27/1980		KROENTING, GREG	Domestic	New Well	Bored	Chemistry Exists
240	260054	NE	8	54	22	4	10.1											4/30/1984		KENSON HLDG	Domestic	New Well	Bored	No Chemistry
241	260058	NE	8	54	22	4	11.9											5/28/1986		HESKE, GERRY	Domestic	New Well	Bored	Chemistry Exists
242	260171	SE	16	54	22	4	61.0	54.9	61.0									11/3/1988		BONOWICZ, JOE	Domestic	New Well	Cable Tool	Chemistry Exists
243	260194	NW	21	54	22	4	70.1	61.0	68.6									4/3/1985		GRAYMAN, LYLE	Domestic	New Well	Cable Tool	No Chemistry
244	260203	NW	23	54	22	4	46.9	22.6	46.0									4/17/1984		MCEACHERN, MEL	Domestic	New Well	Rotary	Chemistry Exists
245	260225	SW	27	54	22	4	50.3	33.5	47.2									12/20/1969		SHAREK, TONY	Domestic	New Well	Rotary	No Chemistry
246	260227	NE	27	54	22	4	61.9	24.4	61.0									4/11/1967		SIMMONS, HECTOR	Domestic	New Well	Rotary	Chemistry Exists
247	260229	NW	28	54	22	4	47.5											2/29/1960		DAVIS, DON	Domestic	New Well	Rotary	No Chemistry
248	260230	NW	28	54	22	4	73.2	67.1	71.9									8/12/1976		ROBERT, VICTOR	Domestic	New Well	Rotary	Chemistry Exists
249	260232	NW	28	54	22	4	27.4											8/20/1960		SNEDSTEAD	Domestic	New Well	Drilled	No Chemistry
250	260233	NW	28	54	22	4	30.5											9/25/1960		STARK, R.	Domestic	New Well	Drilled	No Chemistry
251	260234	NW	28	54	22	4	60.0											5/6/1970		PIERCE, E.	Domestic	New Well	Rotary	Chemistry Exists
252	260235	NW	28	54	22	4	30.5											9/17/1959		BOHNET, HANS	Domestic	New Well	Rotary	Chemistry Exists
253	260236	NW	28	54	22	4	30.5											10/7/1960		PETROSKI CONTRACTING	Domestic	New Well	Drilled	No Chemistry
254	260237	NW	28	54	22	4	30.5											1/19/1961		WETZTREN, M.	Domestic	New Well	Cable Tool	Chemistry Exists
255	260366	NW	28	54	22	4	76.8											10/26/1977		SHEPPARD, JOHN	Domestic	New Well	Rotary	No Chemistry
256	260369	12	28	54	22	4	32.3							28.3	29.3			7/2/1959		HAMILTON, CALVIN	Domestic	New Well	Rotary	Chemistry Exists
257	260375	NW	29	54	22	4	13.7													VLA	Domestic	Chemistry	Hand Dug	Chemistry Exists
258	260383	SE	30	54	22	4	76.2													KREBS, D.	Domestic	Chemistry	Unknown	Chemistry Exists
259	260386	SE	30	54	22	4	76.2											5/30/1968		KREBS, DON	Domestic	New Well	Rotary	No Chemistry

	WELL ID	LOCATION					WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED USE	TYPE OF WORK	DRILL METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN		FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
260	260397	SE	32	54	22	4	24.4													CHOLOWSKI, GERALD	Domestic	Chemistry	Unknown	Chemistry Exists
261	260425	SW	34	54	22	4	45.7													FLEMING, ERNEST	Domestic	Chemistry	Drilled	Chemistry Exists
262	260441	NE	34	54	22	4	57.9													BARTELL, RICHARD	Domestic	Chemistry	Unknown	Chemistry Exists
263	260447	NW	35	54	22	4	48.2											1/1/1912		SIMMONS, F.	Domestic	New Well	Drilled	No Chemistry
264	260903	WH	13	54	23	4	3.7													MITHELL, DOUG	Domestic	Chemistry	Unknown	Chemistry Exists
265	260906	NW	13	54	23	4	31.7							28.3	31.7			10/1/1977		OBRADOVICH, VUKSAN	Domestic	New Well	Rotary	Chemistry Exists
266	260914	NW	13	54	23	4	82.3													ELLEFSON, NORM	Domestic	Chemistry	Cable Tool	Chemistry Exists
267	260922	NW	13	54	23	4	82.3													GAVINCHUK, GEORGE	Domestic	Chemistry	Drilled	Chemistry Exists
268	260948	NW	13	54	23	4	31.7							29.0	31.4			3/23/1978		PESSKLEVIS, ALBERT	Domestic	New Well	Rotary	Chemistry Exists
269	260972	NW	13	54	23	4	32.0							29.3	32.0			5/29/1979		KIEL, RUDY	Domestic	New Well	Rotary	Chemistry Exists
270	260980	NW	13	54	23	4	31.7											7/4/1979		SIGURDSON, HOWARD	Domestic	New Well	Rotary	Chemistry Exists
271	260987	NW	13	54	23	4	42.7							29.9	31.4			11/4/1980		MITCHELL, DOUGLAS B.	Domestic	New Well	Rotary	No Chemistry
272	260996	NW	13	54	23	4	36.6													BERG, AARON	Domestic	Chemistry	Unknown	Chemistry Exists
273	261001	NW	13	54	23	4	32.0							29.0	32.0			4/24/1980		BERG, AARON	Domestic	New Well	Rotary	No Chemistry
274	261009	NE	13	54	23	4	12.2											1/1/1935		DAWSON, MAJ.	Domestic	Federal Well Survey	Hand Dug	No Chemistry
275	261032	SE	1	55	22	4	45.7													SCHWANDT, E A	Domestic	Chemistry	Unknown	Chemistry Exists
276	261039	SE	1	55	22	4	54.9													HANSEN, P E	Domestic	New Well	Unknown	No Chemistry
277	261073	SE	1	55	22	4	0.0													WALLACE, J	Domestic	Chemistry	Unknown	Chemistry Exists
278	261075	SE	1	55	22	4	0.0													BARR, F	Domestic	Chemistry	Unknown	Chemistry Exists
279	261078	SE	1	55	22	4	121.9													BEST, S.	Domestic	Chemistry	Unknown	Chemistry Exists
280	261082	SE	1	55	22	4	0.0													SCHLOSSER, D	Domestic	Chemistry	Unknown	Chemistry Exists
281	261107	16	31	54	22	4	2.7													CAMERON, D.	Domestic	Chemistry	Unknown	Chemistry Exists
282	261129		4	55	22	4	0.0													LAMOUREUX CHILDRENS HOME	Domestic	Chemistry	Hand Dug	Chemistry Exists
283	261133	SE	5	55	22	4	11.3											9/14/1982		LAMOUREUX, J	Domestic	New Well	Bored	Chemistry Exists
284	261139	SE	5	55	22	4	11.3											5/11/1959		LAMOUREUX, R	Domestic	New Well	Bored	Chemistry Exists
285	261147	SW	6	55	22	4	39.6											7/1/1973		GABERT, B	Domestic	New Well	Cable Tool	No Chemistry
286	261149	SE	6	55	22	4	73.2	43.3	49.4									7/15/1980		BOYCHUK, N	Domestic	New Well	Rotary	No Chemistry
287	261151	3	6	55	22	4	8.2											1/1/1906		LAMOUREUX, A.L.	Domestic	Federal Well Survey	Hand Dug	No Chemistry
288	261154	4	6	55	22	4	51.8													ZIMA, M	Domestic	Chemistry	Unknown	Chemistry Exists
289	261182	NE	6	55	22	4	79.2													ELLIOTT, F	Domestic	Chemistry	Unknown	Chemistry Exists
290	261187	9	6	55	22	4	18.3											1/1/1927		ADAMS, B.S.	Domestic	Federal Well Survey	Drilled	No Chemistry
291	261202	SE	7	55	22	4	9.1													HERDER, H	Domestic	Chemistry	Drilled	Chemistry Exists
292	261203	SE	7	55	22	4	82.3											8/26/1974	8/26/1974	JUKASZ, A.	Domestic	Dry Hole-Decommissioned	Rotary	No Chemistry
293	261213	NW	7	55	22	4	18.3											5/23/1969		CHRISTIANSEN, J.M.	Domestic	New Well	Bored	Chemistry Exists
294	261220	NE	7	55	22	4	10.7													PRINS, W	Domestic	Chemistry	Unknown	Chemistry Exists
295	261225	NE	7	55	22	4	11.6											10/21/1978		PRINS, W	Domestic	New Well	Bored	No Chemistry
296	261250	10	9	55	22	4	19.8													KEITH, D	Domestic	Chemistry	Unknown	Chemistry Exists
297	261348	SE	11	55	22	4	36.9							34.4	36.9			4/27/1978		WOUDENBERG, M.	Domestic	New Well	Rotary	No Chemistry
298	261357	SE	11	55	22	4	79.2											8/1/1965		TIMNALL, C./V.	Domestic	New Well	Rotary	No Chemistry
299	261368	SE	11	55	22	4	73.2													SHEWCHUK, S	Domestic	Chemistry	Unknown	Chemistry Exists
300	261376	SE	11	55	22	4	61.0													HAREL, C.	Domestic	Chemistry	Unknown	Chemistry Exists
301	261383	SE	11	55	22	4	121.9	103.6	121.9									10/20/1977		WOUDENBERG, M.	Domestic	New Well	Rotary	No Chemistry
302	261396	SE	11	55	22	4	64.0													TINDALL, V	Domestic	Chemistry	Unknown	Chemistry Exists
303	261398	SE	11	55	22	4	27.4													DENNIS, D.	Domestic	Chemistry	Unknown	Chemistry Exists
304	261403	SW	11	55	22	4	54.9													SHEWCHUK, T	Domestic	Chemistry	Unknown	Chemistry Exists
305	261446	NW	13	55	22	4	24.4													WOUDENBERG, M.	Domestic	Chemistry	Unknown	Chemistry Exists
306	261447	NW	13	55	22	4	12.2													WOUDENBERG, M.	Domestic	Chemistry	Drilled	Chemistry Exists
307	261449	NE	13	55	22	4	7.3											4/1/1971		BARON, F.	Domestic	New Well	Bored	No Chemistry
308	261450	NE	13	55	22	4	7.3													MCARTHUR, DOUGLAS	Domestic	Chemistry	Unknown	Chemistry Exists
309	261453	NE	13	55	22	4	7.3													DAWSON, J B	Domestic	Chemistry	Bored	Chemistry Exists
310	261468	SW	14	55	22	4	64.0											4/1/1959			Domestic	New Well	Unknown	No Chemistry
311	261493	NW	14	55	22	4	18.3													TAILLEFER, G	Domestic	Chemistry	Drilled	Chemistry Exists
312	261513	SW	17	55	22	4	0.0													GRANT, G.	Domestic	Chemistry	Unknown	Chemistry Exists
313	261521	NW	17	55	22	4	18.3													READNER, H	Domestic	Chemistry	Bored	Chemistry Exists
314	261530	NE	17	55	22	4	115.8													RUSSEL, L	Domestic	Chemistry	Unknown	Chemistry Exists
315	261542	SW	18	55	22	4	9.1													CURTIS, L	Domestic	Chemistry	Bored	Chemistry Exists
316	261556	NW	18	55	22	4	8.2													CURTIS, R.	Domestic	Chemistry	Unknown	Chemistry Exists
317	261563	NW	24	54	23	4	9.1														Domestic	Chemistry	Unknown	Chemistry Exists
318	261564	NE	24	54	23	4	53.3											7/16/1980		MOLINEUX, RALPH/TABLER, PAUL	Domestic	New Well	Cable Tool	No Chemistry
319	261567	SE	25	54	23	4	6.4													FT SASK LANDFILL #OBS WELL	Domestic	Chemistry	Unknown	Chemistry Exists
320	261575	SE	25	54	23	4	36.0													BARRY, M	Domestic	Chemistry	Drilled	Chemistry Exists
321	261578	NW	18	55	22	4	9.1													CURTIS, R.	Domestic	Chemistry	Unknown	Chemistry Exists
322	261586	NW	18	55	22	4	0.0													CURTIS, R.L.	Domestic	Chemistry	Unknown	Chemistry Exists
323	261587	NW	25	54	23	4	28.3													ORAM, JAMES M	Domestic	Chemistry	Unknown	Chemistry Exists
324	261588	NW	25	54	23	4	12.8													VILLENEUVE, L	Domestic	Chemistry	Hand Dug	Chemistry Exists
325	261589	NW	18	55	22	4	22.9													CURTIS, R.	Domestic	Chemistry	Unknown	Chemistry Exists
326	261590	NW	25	54	23	4	0.0													MURPHY, H	Domestic	Chemistry	Drilled	Chemistry Exists
327	261591	NW	18	55	22	4	15.2													CURTIS, R.	Domestic	Chemistry	Unknown	Chemistry Exists
328	261593	NE	25	54	23	4	10.1													BYERS, D.H.	Domestic	Chemistry	Unknown	No Chemistry
329	261598	NW	26	54	23	4	29.0	21.3	27.4									6/1/1969		MCGEACHY, JIM	Domestic	New Well	Rotary	No Chemistry
330	261605	NE	26	54	23	4	73.2											6/7/1978		SIMPSON, TOM	Domestic	New Well	Rotary	No Chemistry
331	261606	NE	18	55	22	4	0.0													ANWEILER, S.	Domestic	Chemistry	Unknown	Chemistry Exists
332	261610		26	54	23	4	9.8													KIEL, RUDOLF	Domestic	Chemistry	Unknown	Chemistry Exists
333	261614	SW	20	55	22	4	30.5											1/1/1960		CRAIG, R.S.	Domestic	Chemistry	Unknown	Chemistry Exists
334	261615	SW	27	54	23	4	24.4													PENNY, STEPHEN	Domestic	Chemistry	Unknown	Chemistry Exists
335	261618	1	21	55	22	4	10.4													DEMERS,	Domestic	Chemistry	Unknown	Chemistry Exists
336	261619	SW	27	54	23	4	61.0	24.4	61.0									5/31/1978		FYITH, JAMES	Domestic	New Well	Rotary	Chemistry Exists
337	261629	SW	27	54	23	4	29.9													FEDORAK, NESTOR	Domestic	Chemistry	Unknown	Chemistry Exists
338	261635	SW	21	55	22	4	11.6											6/30/1975		COURCHESNE, L	Domestic	Chemistry	Bored	Chemistry Exists
339	261639	SW	21	55	22	4	7.6													COURCHESNE, L	Domestic	Chemistry	Hand Dug	Chemistry Exists
340	261640	3	21	55	22	4	91.4	79.2	91.4									4/8/1986		COURCHESNE, L E	Domestic	New Well	Rotary	Chemistry Exists
341	261646	16	21	55	22	4	61.0											12/18/1962		DAMCHUK, J	Domestic	New Well	Rotary	No Chemistry
342	261652	NE	21	55	22	4	0.0													GAUMONT, J R	Domestic	Chemistry	Unknown	No Chemistry
343	261653	NW	22	55	22	4	0.0													RIVARD, K	Domestic	Chemistry	Unknown	Chemistry Exists
344	261654	NE	22	55	22	4	97.5	85.3	97.5									11/26/1981		CNR	Domestic	New Well	Rotary	No Chemistry
345	261657	NE	23	55	22	4	20.4													JOHNSTON, GARY	Domestic	Chemistry	Drilled	Chemistry Exists
346	261660	SE	24	55	22	4	6.1													ESLER, J	Domestic	Chemistry	Hand Dug	Chemistry Exists

	WELL ID	LOCATION					WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED USE	TYPE OF WORK	DRILL METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN		FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
347	261662	SW	24	55	22	4	12.2							5.8	7.3			7/23/1966		MCGEE, K.	Domestic	New Well	Rotary	Chemistry Exists
348	261669	SW	24	55	22	4	4.6													MAGEE, K	Domestic	Chemistry	Bored	Chemistry Exists
349	261670	4	24	55	22	4	4.3													SELTHGATE, G A	Domestic	Federal Well Survey	Hand Dug	No Chemistry
350	261672	NW	24	55	22	4	30.5													MAGEE,, K	Domestic	Chemistry	Drilled	Chemistry Exists
351	261675	NE	24	55	22	4	0.0													FISH & GAME ASSOC	Domestic	Chemistry	Unknown	Chemistry Exists
352	261678	NE	28	54	23	4	13.1													PARENTEAU, L	Domestic	Chemistry	Bored	Chemistry Exists
353	261681	NW	25	55	22	4	7.6													GAUMONT, M	Domestic	Chemistry	Unknown	Chemistry Exists
354	261710	NE	25	55	22	4	76.2													GAUMONT, M	Domestic	New Well	Unknown	Chemistry Exists
355	261716	NE	25	55	22	4	61.0													GAUMONT, M	Domestic	Chemistry	Unknown	Chemistry Exists
356	261726	NW	26	55	22	4	54.9											1/1/1963		JIGOLYK, L.	Domestic	Chemistry	Unknown	Chemistry Exists
357	261729	SE	27	55	22	4	6.1													BELAIR, R	Domestic	Chemistry	Unknown	Chemistry Exists
358	261731	SE	27	55	22	4	96.0	50.3	96.0									10/14/1986		BELAIR, R	Domestic	New Well	Rotary	No Chemistry
359	261737	SE	28	55	22	4	0.0													SAWCHUK, J	Domestic	Chemistry	Unknown	Chemistry Exists
360	261738	NW	28	55	22	4	50.9											4/30/1965		GOUTBECK, P.	Domestic	New Well	Rotary	Chemistry Exists
361	261742	SE	1	55	23	4	0.0													SERNA, VICTOR	Domestic	Chemistry	Unknown	Chemistry Exists
362	261744	SE	1	55	23	4	0.0													SERNA, VICTOR	Domestic	Chemistry	Unknown	Chemistry Exists
363	261745	SE	1	55	23	4	15.2													SERNA, VICTOR	Domestic	Chemistry	Unknown	Chemistry Exists
364	261746	NW	28	55	22	4	30.5													BOHNET, H	Domestic	Chemistry	Drilled	Chemistry Exists
365	261748	SE	1	55	23	4	15.2													SERNA, VICTOR	Domestic	Chemistry	Unknown	Chemistry Exists
366	261750	NW	28	55	22	4	0.0													VAN BOOM, H.	Domestic	Chemistry	Unknown	Chemistry Exists
367	261752	SE	1	55	23	4	94.5	61.0	94.5									9/1/1984		SERNA, VICTOR	Domestic	New Well	Rotary	Chemistry Exists
368	261757	SE	1	55	23	4	48.8											8/21/1984		SERNA, VICTOR	Domestic	Dry Hole	Rotary	No Chemistry
369	261759	SE	1	55	23	4	80.5											8/20/1984		SERNA, VICTOR	Domestic	Dry Hole	Rotary	No Chemistry
370	261764	SW	1	55	23	4	24.4													PARADIS, F.	Domestic	Chemistry	Drilled	Chemistry Exists
371	261769	SE	2	55	23	4	24.4													PARADIS, NORMAN	Domestic	Chemistry	Unknown	Chemistry Exists
372	261771	SE	2	55	23	4	22.9													PARADIS, NORMAN	Domestic	Chemistry	Drilled	Chemistry Exists
373	261813	SE	33	55	22	4	42.7													ALLISON, G	Domestic	Chemistry	Unknown	Chemistry Exists
374	261820	SE	34	55	22	4	9.4													JIGOLYK, H.	Domestic	Chemistry	Unknown	Chemistry Exists
375	261823	SH	34	55	22	4	9.8													CARROLL, T	Domestic	Chemistry	Unknown	Chemistry Exists
376	261827	NE	34	55	22	4	45.7													HOLMES, S	Domestic	Chemistry	Drilled	Chemistry Exists
377	261828	NE	34	55	22	4	39.6	27.4	39.6											HOLMES, R	Domestic	New Well	Cable Tool	No Chemistry
378	261830	NW	35	55	22	4	49.7													DOSHEWNEK, G	Domestic	Chemistry	Drilled	Chemistry Exists
379	261845	NW	35	55	22	4	51.8							24.4	42.7			5/12/1983		SYVENKY, P.	Domestic	New Well	Rotary	No Chemistry
380	262011	2	33	54	23	4	37.5													STRAUSS, HOWARD	Domestic	Chemistry	Unknown	Chemistry Exists
381	262057	SE	34	54	23	4	29.6													BLOWER, JERRY	Domestic	Chemistry	Bored	Chemistry Exists
382	262061	SE	34	54	23	4	22.6											6/20/1975		NEWMAN, NELSON	Domestic	New Well	Bored	Chemistry Exists
383	262070	SE	34	54	23	4	0.0													THIMER, ERIC	Domestic	Chemistry	Unknown	Chemistry Exists
384	262074	SE	34	54	23	4	61.0													MARSH, JEROME L	Domestic	Chemistry	Rotary	Chemistry Exists
385	262083	NW	34	54	23	4	76.2													MELNYCHUK, GEORGE G	Domestic	Chemistry	Drilled	Chemistry Exists
386	262104	NW	34	54	23	4	24.4													PARADIS, GILBERT	Domestic	Chemistry	Unknown	Chemistry Exists
387	262109	NE	34	54	23	4	61.0													MELNYCHUK, GEORGE G	Domestic	Chemistry	Unknown	Chemistry Exists
388	262113	SE	35	54	23	4	76.2													DEVEREUX, J.R.	Domestic	Chemistry	Unknown	Chemistry Exists
389	262141	SW	1	55	23	4	19.8											7/10/1920		PARDIS, W.	Domestic	Federal Well Survey	Backhoe	No Chemistry
390	262261	SW	35	54	23	4	30.5													GAUMONT, P	Domestic	Chemistry	Unknown	Chemistry Exists
391	262265	SW	35	54	23	4	28.3													KJENNER, GEORGE	Domestic	Chemistry	Drilled	Chemistry Exists
392	262271	SW	35	54	23	4	16.8													L. PETERSON DEV LTD	Domestic	Chemistry	Hand Dug	Chemistry Exists
393	262278	SW	35	54	23	4	21.3													L. PETERSON DEV LTD	Domestic	Chemistry	Hand Dug	Chemistry Exists
394	262285	SW	35	54	23	4	36.6													HANES, ALBERT	Domestic	Chemistry	Unknown	Chemistry Exists
395	262292	SW	35	54	23	4	42.7													HOFFSTETER, B.	Domestic	Chemistry	Unknown	Chemistry Exists
396	262296	SW	35	54	23	4	25.9													HOFFSTETER, BEN	Domestic	Chemistry	Bored	Chemistry Exists
397	262305	SW	35	54	23	4	31.1													FEDORAK, J	Domestic	Chemistry	Unknown	Chemistry Exists
398	262314	SW	35	54	23	4	30.5													PALTZAT, MARVIN	Domestic	Chemistry	Bored	Chemistry Exists
399	262324	SW	35	54	23	4	25.0											9/9/1980		BURAK, FRED	Domestic	New Well	Bored	Chemistry Exists
400	262332	SW	35	54	23	4	54.9	42.7	54.9									6/7/1978		HORNES, ALBERT	Domestic	New Well	Rotary	No Chemistry
401	262356	NW	35	54	23	4	19.8											8/1/1976		L. PETERSON DEV LTD	Domestic	Chemistry	Bored	Chemistry Exists
402	262366		35	54	23	4	16.8													PALZAT, M.	Domestic	Chemistry	Drilled	No Chemistry
403	262369	SE	36	54	23	4	80.5	73.2	79.2									11/3/1977		MAYRHUT, JAMES	Domestic	New Well	Rotary	No Chemistry
404	262385	NW	36	54	23	4	20.1													NYHUIS, ALBERT	Domestic	Chemistry	Unknown	Chemistry Exists
405	262393	NE	36	54	23	4	13.1											8/15/1986		GAUMONT, EMIL	Domestic	New Well	Bored	No Chemistry
406	262397	NE	36	54	23	4	12.2													SEVNE, GEORGE	Domestic	Chemistry	Unknown	No Chemistry
407	262468	SW	12	55	23	4	21.3											5/1/1968		STRAUSS, L.	Domestic	New Well	Rotary	Chemistry Exists
408	262511	SE	13	55	23	4	13.4													COURCHESNE, RAY	Domestic	Chemistry	Drilled	Chemistry Exists
409	263303	SE	1	56	21	4	12.2													GUENETTE, D	Domestic	Chemistry	Bored	Chemistry Exists
410	263308	SW	1	56	21	4	14.0													TARON, D.E.	Domestic	Chemistry	Drilled	Chemistry Exists
411	263315	SW	1	56	21	4	36.6													OLD, R/C	Domestic	Chemistry	Unknown	Chemistry Exists
412	263327	SW	2	56	21	4	10.7													HALABEY, A	Domestic	Chemistry	Bored	Chemistry Exists
413	263334	3	2	56	21	4	118.9											7/9/1965		HALABEY, ALEX	Domestic	New Well	Drilled	Chemistry Exists
414	263375	SW	3	56	21	4	6.4											1/1/1973		HANNERMAN, R	Domestic	Chemistry	Unknown	Chemistry Exists
415	263380	NE	3	56	21	4	39.6													VELTMAN, H	Domestic	Chemistry	Unknown	Chemistry Exists
416	263474	SW	5	56	21	4	16.8													REED, D	Domestic	Chemistry	Drilled	Chemistry Exists
417	263484	4	5	56	21	4	8.5											1/28/1970		YARSHUK, P	Domestic	New Well	Bored	No Chemistry
418	263489	NW	13	54	23	4	33.5							30.8	32.3			2/5/1987		DOREJKO, GERRY	Domestic	New Well	Rotary	No Chemistry
419	263492	NW	5	56	21	4	42.7											1/12/1961	2/28/1974	CHOLOWSKI, R.	Domestic	Existing Well-Decommissioned	Drilled	No Chemistry
420	263502	NW	13	54	23	4	34.1							32.3	33.8			5/5/1981		NISBET, BOB	Domestic	New Well	Rotary	No Chemistry
421	263525	NE	5	56	21	4	6.1													CHOLOWSKI, R.	Domestic	Chemistry	Bored	Chemistry Exists
422	263543	NE	5	56	21	4	4.9													CHOLOWSKI, R.	Domestic	Chemistry	Unknown	Chemistry Exists
423	263560	SW	8	56	21	4	48.8											4/1/1973		KOFLUK, D	Domestic	New Well	Rotary	Chemistry Exists
424	263579	SW	8	56	21	4	25.0							22.9	24.4			11/11/1966		MASCHMEYER, R	Domestic	New Well	Rotary	No Chemistry
425	263583	15	8	56	21	4	11.6													BRODIE, H.L.	Domestic	Chemistry	Unknown	Chemistry Exists
426	263592	SW	9	56	21	4	0.0													LECHENKO #3 DRINKING WELL	Domestic	Chemistry	Unknown	Chemistry Exists
427	263595	NE	11	56	21	4	64.6													NAURATIL, J	Domestic	Chemistry	Drilled	Chemistry Exists
428	263633	9	11	56	21	4	10.7													NAVRATIL, J	Domestic	Chemistry	Bored	Chemistry Exists
429	263640	NE	11	56	21	4	43.3							41.1	42.4			8/17/1984		ANDRUCHOW, E	Domestic	New Well	Rotary	Chemistry Exists
430	263645	NE	11	56	21	4	36.6													O'BRIEN, N	Domestic	Chemistry	Unknown	Chemistry Exists
431	263651	NE	11	56	21	4	18.0											6/20/1986		BREIT, E	Domestic	New Well	Backhoe	Chemistry Exists
432	263676	SE	12	56	21	4	7.9													ESCH, G	Domestic	Chemistry	Hand Dug	Chemistry Exists
433	263683	SE	12	56	21	4	91.4	79.2	91.4									11/5/1981		ESCH, G	Domestic	New Well	Rotary	No Chemistry

	WELL ID	LOCATION					WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED USE	TYPE OF WORK	DRILL METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN		FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
434	263697	SE	12	56	21	4	0.0													MIZERA, T.	Domestic	Chemistry	Unknown	Chemistry Exists
435	263707	SW	12	56	21	4	61.0													GABERT, M.	Domestic	Chemistry	Unknown	Chemistry Exists
436	263714	NW	12	56	21	4	33.5													GABERT, M.	Domestic	Chemistry	Unknown	Chemistry Exists
437	263736	SE	13	56	21	4	7.9													YOUNG, C.S.	Domestic	Chemistry	Unknown	Chemistry Exists
438	263842	SE	14	56	21	4	3.7													SMART, D	Domestic	Chemistry	Hand Dug	Chemistry Exists
439	263852	SW	2	56	22	4	61.0													NOEL, MAURICE	Domestic	Chemistry	Unknown	Chemistry Exists
440	263854	NW	2	56	22	4	36.6													SANK, LLOYD	Domestic	Chemistry	Unknown	Chemistry Exists
441	263867	SW	3	56	22	4	54.9													MELENKA, ALEX	Domestic	Chemistry	Unknown	Chemistry Exists
442	263870	NE	14	56	21	4	10.7													HODGSON, G A	Domestic	Chemistry	Unknown	Chemistry Exists
443	263877	NE	14	56	21	4	13.4											8/1/1972		HODGSON, G	Domestic	New Well	Bored	No Chemistry
444	263883	NE	14	56	21	4	11.3													PERCY, G.	Domestic	Chemistry	Bored	Chemistry Exists
445	263887	NE	14	56	21	4	48.8											5/17/1985		PERCY, G.	Domestic	New Well	Rotary	No Chemistry
446	263910	NE	14	56	21	4	0.0													SMIBERT, R	Domestic	Chemistry	Unknown	No Chemistry
447	263924	SW	16	56	21	4	0.0													KROPP, L.	Domestic	Spring	Not Applicable	Chemistry Exists
448	263933	SW	16	56	21	4	0.0													BOLTON SCHOOL	Domestic	Chemistry	Unknown	Chemistry Exists
449	263959	SW	16	56	21	4	9.1													MARQUARDT, E	Domestic	Chemistry	Drilled	Chemistry Exists
450	263963	NW	16	56	21	4	6.7													BLENN	Domestic	Chemistry	Unknown	Chemistry Exists
451	263969	NW	18	56	21	4	22.9													VISSCHER, H	Domestic	Chemistry	Unknown	Chemistry Exists
452	263970	NW	18	56	21	4	12.2													VISSCHER, H	Domestic	Chemistry	Unknown	Chemistry Exists
453	263974	SE	19	56	21	4	9.1													CAMPBELL, R	Domestic	Chemistry	Hand Dug	Chemistry Exists
454	263991	SW	19	56	21	4	22.9													SMULSKI, J.	Domestic	Chemistry	Unknown	Chemistry Exists
455	263992	SW	19	56	21	4	18.9											6/20/1984		S V HALF DIAMOND RANCHES	Domestic	New Well	Bored	No Chemistry
456	263993	NE	19	56	21	4	12.2													ROBINSON, J	Domestic	Chemistry	Unknown	Chemistry Exists
457	263996	NE	19	56	21	4	8.5													ROBINSON, J	Domestic	Chemistry	Hand Dug	Chemistry Exists
458	264112	SW	11	56	22	4	106.7	14.0	64.0									3/6/1980		BRIGGS, EARL	Domestic	Deepened	Cable Tool	No Chemistry
459	264146	SW	12	56	22	4	0.0													SERINK, MIKE	Domestic	Chemistry	Unknown	No Chemistry
460	264148	SE	20	56	21	4	54.9											8/1/1977		SAWYER, D	Domestic	Chemistry	Drilled	Chemistry Exists
461	264150	SW	12	56	22	4	0.0													SERINK, MIKE	Domestic	Chemistry	Unknown	No Chemistry
462	264151	NW	12	56	22	4	22.9											5/1/1968		MINCHOU, CLARENCE	Domestic	New Well	Unknown	Chemistry Exists
463	264156	15	20	56	21	4	19.8											10/24/1958		FEDORAK, M	Domestic	New Well	Bored	No Chemistry
464	264163	NE	12	56	22	4	76.2													PUCHALIK, NICK	Domestic	Chemistry	Drilled	Chemistry Exists
465	264167	NE	20	56	21	4	24.4													FEDORAK, M	Domestic	Chemistry	Unknown	Chemistry Exists
466	264173	SE	13	56	22	4	35.1							32.0	35.1			11/3/1989		DUPONT CAN	Domestic	New Well	Rotary	No Chemistry
467	264176	16	20	56	21	4	0.0											1/1/1921		MYRON, S.	Domestic	Federal Well Survey	Drilled	No Chemistry
468	264184	SW	13	56	22	4	76.2													BLOM, BERNARD	Domestic	Chemistry	Drilled	Chemistry Exists
469	264187	SW	13	56	22	4	65.5													BLOM, KLAAS	Domestic	Chemistry	Unknown	Chemistry Exists
470	264190	SE	21	56	21	4	16.5											5/12/1978		DEBAAN, J	Domestic	New Well-Decommissioned	Rotary	No Chemistry
471	264203	SE	21	56	21	4	57.9							12.8	14.3			9/12/1978		DEBAAN, J	Domestic	New Well	Rotary	No Chemistry
472	264255	7	25	56	21	4	14.6											8/20/1984		ESSO RES	Domestic	New Well	Bored	Chemistry Exists
473	264258	SE	26	56	21	4	39.0											5/12/1987		VAN INVEN, F.	Domestic	Unknown	Unknown	No Chemistry
474	264263	SW	26	56	21	4	4.3													SAWATZKY, H	Domestic	Chemistry	Unknown	Chemistry Exists
475	264268	SW	26	56	21	4	17.4	4.6	12.2									3/31/1988		SAWATZKI, W	Domestic	New Well	Bored	No Chemistry
476	264277	9	27	56	21	4	61.0	50.3	56.4									7/24/1979		RYKMANS, H.	Domestic	New Well	Rotary	No Chemistry
477	264286	SE	28	56	21	4	21.3													BELLAND, R.	Domestic	Chemistry	Drilled	Chemistry Exists
478	264289	NW	28	56	21	4	4.6													RESEARCH COUNCIL #6-DRINKING	Domestic	Chemistry	Unknown	Chemistry Exists
479	264290	SE	5	55	22	4	4.3													GODBOUT, VIVIAN	Domestic	Chemistry	Unknown	No Chemistry
480	264293	SE	5	55	22	4	0.0													GAUMONT, GILBERTE	Domestic	Chemistry	Unknown	Chemistry Exists
481	264297	NE	28	56	21	4	18.3													SHIPLEY, J.	Domestic	Chemistry	Auger	Chemistry Exists
482	264298	NW	6	55	22	4	18.3													JESKE, O.	Domestic	Chemistry	Unknown	Chemistry Exists
483	264304	NE	25	55	22	4	61.0													GAUMONT, MICHAEL #2	Domestic	Chemistry	Unknown	Chemistry Exists
484	264305	SE	29	56	21	4	54.9													PACHALUCK, P.	Domestic	Chemistry	Unknown	Chemistry Exists
485	264343	SE	29	56	21	4	7.6											8/15/1963		SMULSKI, J.	Domestic	New Well	Backhoe	No Chemistry
486	264347	SE	29	56	21	4	76.2													KALISVAART, J/T	Domestic	Chemistry	Drilled	Chemistry Exists
487	264357	SE	29	56	21	4	74.7											9/2/1961		PUCHALIK, P.	Domestic	Deepened	Drilled	Chemistry Exists
488	264368	SE	29	56	21	4	14.0													PUCHALIK, P.	Domestic	Chemistry	Unknown	Chemistry Exists
489	264384	SW	29	56	21	4	9.8													PUCHALIK, S.	Domestic	Chemistry	Unknown	Chemistry Exists
490	264385	SW	29	56	21	4	0.0													PUCHALIK, S.	Domestic	Chemistry	Unknown	Chemistry Exists
491	264386	SW	29	56	21	4	7.3											9/24/1958		PUCHALIK, S.	Domestic	New Well	Bored	Chemistry Exists
492	264392	SW	29	56	21	4	0.0													PUCHALIK, S.#PUMPHOUSE WELL	Domestic	Chemistry	Unknown	Chemistry Exists
493	264393	SW	29	56	21	4	13.7													PUCHALIK, S.	Domestic	Chemistry	Unknown	Chemistry Exists
494	264396	NE	29	56	21	4	0.0													SAUNDERS, P	Domestic	Chemistry	Unknown	No Chemistry
495	264424	SE	32	56	21	4	27.4													YAKIMETS, O	Domestic	Chemistry	Unknown	Chemistry Exists
496	264437	SE	32	56	21	4	42.7	36.6	39.6									4/16/1980		YAKIMETES, O J	Domestic	New Well	Rotary	No Chemistry
497	264466	1	33	56	21	4	19.5							17.7	18.9			5/1/1977		KUIPER, A/D	Domestic	New Well	Rotary	Chemistry Exists
498	264491	NE	33	56	21	4	0.0													LUBEMSKI, K.	Domestic	Chemistry	Unknown	No Chemistry
499	264507	4	34	56	21	4	15.2	3.7	4.6									6/12/1985		WOLANSKY, W	Domestic	New Well	Backhoe	Chemistry Exists
500	264531	SW	34	56	21	4	61.0	15.2	24.4									3/30/1974		WOLANSKI, W.	Domestic	New Well	Rotary	Chemistry Exists
501	264630	NW	34	56	21	4	24.4													MAHONEY, R.	Domestic	Chemistry	Unknown	Chemistry Exists
502	264637	NE	34	56	21	4	32.0	26.5	32.0									3/10/1974		ANDERSON, K	Domestic	New Well	Rotary	Chemistry Exists
503	264659	8	35	56	21	4	4.9													SCHILLER, J.	Domestic	Chemistry	Auger	Chemistry Exists
504	264666	NW	35	56	21	4	4.3													HESS, R	Domestic	Chemistry	Jet	Chemistry Exists
505	264680	SE	36	56	21	4	5.2													RUDKO, W.	Domestic	Chemistry	Unknown	Chemistry Exists
506	264699	SW	36	56	21	4	7.3													DRABBLE, R.	Domestic	Chemistry	Unknown	Chemistry Exists
507	264707	NW	36	56	21	4	9.1													MAKOWECKI, A	Domestic	Chemistry	Drilled	Chemistry Exists
508	264712	NW	36	56	21	4	6.4													MAKOWECKI, A	Domestic	Chemistry	Hand Dug	Chemistry Exists
509	264902	NE	8	54	22	4	79.9											6/24/1970		KENNEDY, CLIFF	Domestic	New Well	Rotary	Chemistry Exists
510	264908	NE	8	54	22	4	54.9													KALISTA, JOE	Domestic	Chemistry	Drilled	Chemistry Exists
511	264911	NE	8	54	22	4	9.1													ATTEW, ELAINE	Domestic	Chemistry	Bored	Chemistry Exists
512	264913	NE	8	54	22	4	11.6													SPALLIN, K./L.	Domestic	Chemistry	Drilled	Chemistry Exists
513	264915	NE	8	54	22	4	13.1											6/8/1979		LEVERSEDGE, DAN	Domestic	New Well	Bored	Chemistry Exists
514	264921	NE	8	54	22	4	10.4													KENNEDY, C.A.	Domestic	Chemistry	Unknown	Chemistry Exists
515	264923	NE	8	54	22	4	14.9											6/11/1979		KENNEDY, KEN	Domestic	New Well	Bored	Chemistry Exists
516	265801	SW	2	57	21	4	27.4													MCCULLOUGH, DAVID	Domestic	Chemistry	Hand Dug	Chemistry Exists
517	265802	SW	2	57	21	4	74.7											10/5/1981		ROMANIUK, ELI	Domestic	New Well	Rotary	No Chemistry
518	265804	SW	2	57	21	4	3.0													MCCULLOUGH, DAVE	Domestic	Chemistry	Unknown	Chemistry Exists
519	265805	SW	3	57	21	4	10.4											1/1/1940		LIBBEY, KATHERINE	Domestic	Chemistry	Drilled	Chemistry Exists
520	265811	SE	4	57	21	4	30.5							25.0	27.4			8/3/1979		SCHWING, ROMAN	Domestic	New Well	Rotary	Chemistry Exists

	WELL ID	LOCATION					WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED USE	TYPE OF WORK	DRILL METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN		FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
521	266031	SE	13	56	22	4	12.2													SCHROTER, RON	Domestic	Chemistry	Unknown	Chemistry Exists
522	267205	SW	1	55	23	4	64.0	57.9	64.0									9/6/1976		ROLF, RON	Domestic	New Well	Rotary	No Chemistry
523	271650	SE	5	55	22	4	59.4							57.0	58.5			7/13/1978		GODBOUT, ROMEO	Domestic	New Well	Rotary	No Chemistry
524	271736	SW	36	54	23	4	39.3													SMITH, B.B.	Domestic	Chemistry	Drilled	Chemistry Exists
525	273997	NW	36	54	23	4	24.4													BISSON, R	Domestic	Chemistry	Unknown	Chemistry Exists
526	274006	EH	36	54	23	4	0.0													GAUMONT, E	Domestic	Chemistry	Unknown	Chemistry Exists
527	274171	SE	5	55	22	4	14.9	8.2	12.8									8/19/1991		GILLARD, R	Domestic	New Well	Bored	No Chemistry
528	274184	16	31	54	22	4	14.6											5/8/1989		BANDURA, E	Domestic	New Well	Bored	No Chemistry
529	274248	SE	5	55	22	4	12.2											6/20/1985		LAMOUREUX, C	Domestic	New Well	Bored	Chemistry Exists
530	274249	SE	5	55	22	4	14.6	9.1	12.8									3/24/1988		LAMOUREAX, R.	Domestic	New Well	Bored	No Chemistry
531	274956	NE	5	55	21	4	41.1											9/5/1978		PICKETT, J	Domestic	New Well	Rotary	Chemistry Exists
532	280645	NW	31	54	22	4	10.7											9/18/1980		LAMOUREUX HALL	Domestic	New Well	Bored	No Chemistry
533	280650	SW	28	55	21	4	9.1													VISSCHER, D.	Domestic	Chemistry	Unknown	Chemistry Exists
534	280651		4	55	22	4	15.2													FLEMING, E.B.	Domestic	Chemistry	Unknown	Chemistry Exists
535	280653	SE	16	55	22	4	6.1													RANDON, J.R.	Domestic	Chemistry	Unknown	Chemistry Exists
536	280654	SE	16	55	22	4	39.6													RANDON, J.R.	Domestic	Chemistry	Unknown	Chemistry Exists
537	280657	SE	16	55	22	4	7.6													GEM SOD FARMS	Domestic	Chemistry	Hand Dug	Chemistry Exists
538	280703	SE	9	55	22	4	17.4	7.6	15.2									4/26/1994		LAMOUREUX, ROBERT	Domestic	New Well	Bored	No Chemistry
539	282099	NW	18	55	21	4	24.4													MAGEE, KEN	Domestic	Chemistry	Hand Dug	Chemistry Exists
540	285787	NE	17	55	21	4	18.6							12.2	18.3			6/4/1996		HUTTERIAN BRETHREN	Domestic	New Well	Rotary	No Chemistry
541	285789	NW	30	55	21	4	51.8							46.3	47.9			5/30/1995	1/1/2001	BENFELD, BILL	Domestic	New Well	Rotary	No Chemistry
542	285792	SE	12	55	23	4	21.9	9.8	11.9	18.6	19.5							10/24/1996		PICKUNYK, NICK	Domestic	New Well	Bored	No Chemistry
543	286113	WH	17	55	22	4	22.9											4/30/1968		READNER, HENRY #400-H	Domestic	New Well	Auger	No Chemistry
544	286990	NE	8	54	22	4	85.3	43.9	85.3									1/7/1997		MARSHALL, RANDY	Domestic	New Well	Rotary	No Chemistry
545	286991	SE	31	54	22	4	16.2	9.8	14.9									7/27/1996		GAUMONT, LARRAINE	Domestic	New Well	Bored	No Chemistry
546	287800	NE	8	54	22	4	82.3	70.1	82.3									9/11/1996		RICE, LYALL	Domestic	New Well	Rotary	No Chemistry
547	287802	NE	28	54	23	4	61.0											7/10/1997	7/10/1997	NORTH COUNTRY CATTLE CO	Domestic	Test Hole-Decommissioned	Rotary	No Chemistry
548	289102	NE	28	54	23	4	48.8	36.6	45.7									7/11/1997		NORTH COUNTRY CATTLE CO	Domestic	New Well	Rotary	No Chemistry
549	289381	SE	9	55	22	4	73.2	61.0	73.2									5/19/1998		NANAKSAR, GURDWARA	Domestic	New Well	Rotary	No Chemistry
550	290926	SE	12	55	23	4	23.8	6.7	9.1	16.2	17.1							5/20/1998		PICHUNYH, JACK	Domestic	New Well	Bored	No Chemistry
551	290974	SE	28	54	22	4	39.6	33.5	39.6									10/7/1998		ROBERTSON, DALE	Domestic	New Well	Rotary	No Chemistry
552	290979	SE	21	56	21	4	18.3	3.7	4.3	13.1	14.3	16.2	16.8					7/14/1998		MARQUARDT, BRENT	Domestic	New Well	Bored	No Chemistry
553	292191	SE	33	55	22	4	47.2	39.6	45.7									4/26/1999		WESTRA, MARTIN/WESTRALIA FARMS	Domestic	New Well	Rotary	No Chemistry
554	293392	NW	31	55	21	4	24.4							19.8	21.3			9/13/1999		MCKAY, BRIAN	Domestic	New Well	Rotary	No Chemistry
555	293774	SW	17	56	20	4	85.3	72.2	74.7	77.7	80.8							10/17/1999		SCHRAM, BARRY	Domestic	New Well	Rotary	No Chemistry
556	293775	SW	17	56	20	4	123.4											10/12/1999	10/12/1999	SCHRAM, BARRY	Domestic	Dry Hole-Decommissioned	Rotary	No Chemistry
557	294342	SE	21	56	21	4	24.4	10.1	12.5	15.5	20.1	23.2	23.5					8/8/1998		SOOREE, DICK	Domestic	New Well	Bored	No Chemistry
558	295164	SW	30	56	20	4	37.2	31.1	37.2									5/18/2000		SHILOH REBMAN YOUTH CAMP	Domestic	New Well	Rotary	No Chemistry
559	297082	SE	33	54	23	4	36.6											6/21/2001	6/21/2001	STRAUSS, HOWARD #1	Domestic	Test Hole-Decommissioned	Rotary	No Chemistry
560	297083	SE	33	54	23	4	36.6	25.9	32.0									6/22/2001		STRAUSS, HOWARD	Domestic	New Well	Rotary	No Chemistry
561	297115	NE	18	56	20	4	18.3											10/7/2000		MARTIN, BONNIE	Domestic	Old Well-Yield	Unknown	No Chemistry
562	297409	SW	30	56	20	4	82.3											5/18/2000	5/18/2001	SHILOH REBMAN YOUTH CAMP	Domestic	Dry Hole-Decommissioned	Rotary	No Chemistry
563	297410	SW	30	56	20	4	85.3	36.6	42.7	48.8	54.9	61.0	67.1					5/15/2000	5/16/2000	SHILOH REBMAN YOUTH CAMP #2	Domestic	New Well	Rotary	No Chemistry
564	297411	SW	30	56	20	4	36.6	26.8	32.9									5/17/2000		SHILOH REBMAN YOUTH CAMP #3	Domestic	New Well	Rotary	No Chemistry
565	297579	7	21	56	21	4	21.0	13.7	16.8									9/18/2001		MARQUARDT, B.	Domestic	New Well	Bored	No Chemistry
566	297579	7	21	56	21	4	18.3												7/26/2007	MARQUARDT, BRENT & CINDY	Domestic	Existing Well-Decommissioned	Bored	No Chemistry
567	297580	NE	21	56	21	4	21.0	13.7	16.8									9/19/2001		LEICHNER, WALTER	Domestic	New Well	Bored	No Chemistry
568	299631	NW	7	55	21	4	71.0	63.1	69.2									5/17/2001		CHARTRAND, LOUIE/MARY	Domestic	New Well	Rotary	No Chemistry
569	40488	SE	19	55	21	4	13.4											2/2/1970		HEARTLAND PROPERTIES	Domestic	Existing Well-Decommissioned	Not Applicable	No Chemistry
570	40835	NW	3	57	21	4	18.3	12.2	18.3									8/22/2001		LANE, COLLEEN	Domestic	New Well	Rotary	No Chemistry
571	83363	6	5	55	21	4	35.1													WESTMAN, F.W.	Domestic	Chemistry	Drilled	Chemistry Exists
572	83364	12	5	55	21	4	24.4											1/1/1920		COATTA, E.J.	Domestic	Federal Well Survey	Bored	No Chemistry
573	83365	9	5	55	21	4	4.3													PICKETT, JACK	Domestic	Chemistry	Unknown	Chemistry Exists
574	83367	NW	6	55	21	4	64.0											8/3/1979		GAUF, ROD	Domestic	New Well	Rotary	No Chemistry
575	83368	NE	6	55	21	4	18.3													SCHNEIDER, EARL A.	Domestic	Chemistry	Bored	Chemistry Exists
576	83372	SW	7	55	21	4	39.6													NEWMAN, WILBERT	Domestic	Chemistry	Drilled	Chemistry Exists
577	83373	9	7	55	21	4	30.5													MELTON, OTIS	Domestic	Chemistry	Drilled	Chemistry Exists
578	83374	12	7	55	21	4	24.4											1/1/1920		THORNE, A.	Domestic	Federal Well Survey	Drilled	No Chemistry
579	83375	NW	7	55	21	4	54.9	48.8	54.9									9/12/1987		FINCH, E.	Domestic	New Well	Cable Tool	No Chemistry
580	83376	NW	7	55	21	4	9.1													FINCH, EDWARD	Domestic	Chemistry	Drilled	Chemistry Exists
581	83377	NE	7	55	21	4	9.1													ENGLISH, LESLIE	Domestic	Chemistry	Unknown	Chemistry Exists
582	83379	15	7	55	21	4	81.1													GEISLINGER, W.	Domestic	Chemistry	Unknown	Chemistry Exists
583	83383	NE	9	55	21	4	0.0													EDE, W.	Domestic	Chemistry	Unknown	No Chemistry
584	83417	SW	15	55	21	4	54.9	48.8	54.9									6/8/1989		WHELAN, JAMES	Domestic	New Well	Rotary	No Chemistry
585	83418	NE	15	55	21	4	91.4													ANWEILER, SAL	Domestic	Chemistry	Unknown	Chemistry Exists
586	83419	NW	16	55	21	4	56.4													KREBS, BERNARD	Domestic	Chemistry	Unknown	Chemistry Exists
587	83423	11	17	55	21	4	21.3							20.1	21.3			4/9/1985		CNR	Domestic	New Well	Rotary	No Chemistry
588	83425	NE	17	55	21	4	82.3	70.1	82.3									8/17/1983		SCOTFORD COLONY	Domestic	New Well	Rotary	No Chemistry
589	83426	NE	17	55	21	4	79.2													SCOTFORD HUTTERITE BRETHREN	Domestic	Chemistry	Unknown	Chemistry Exists
590	83428	NE	17	55	21	4	36.6													SCOTFORD COLONY	Domestic	Chemistry	Unknown	Chemistry Exists
591	83439	SW	18	55	21	4	45.7													DUECK, MICHAEL	Domestic	Chemistry	Unknown	No Chemistry
592	83440	NW	18	55	21	4	5.5													MAGEE, GARY	Domestic	Chemistry	Unknown	Chemistry Exists
593	83447	5	19	55	21	4	46.9													DZURNY, EMIL	Domestic	Chemistry	Unknown	Chemistry Exists
594	83448	NW	19	55	21	4	6.1												1/1/2001	BACHLEITNER, CATHY	Domestic	Chemistry	Hand Dug	Chemistry Exists
595	83449	NE	19	55	21	4	39.6							36.6	38.1			7/23/1975	1/1/2001	EDE, WILLIAM	Domestic	New Well	Rotary	Chemistry Exists
596	83450	NE	19	55	21	4	61.0													OLSON, FRED	Domestic	Chemistry	Unknown	Chemistry Exists
597	83451	NE	19	55	21	4	40.2							34.7	40.2			10/10/1981		EDE, W.J.	Domestic	New Well	Rotary	No Chemistry
598	83452	NE	19	55	21	4	48.8													ENOS, AL	Domestic	Chemistry	Drilled	Chemistry Exists
599	83453	NE	19	55	21	4	39.0													NEBEL, ROBERT	Domestic	Chemistry	Drilled	Chemistry Exists
600	83455	15	19	55	21	4	11.6							10.1	11.3			5/11/1978		NEBEL, ROBERT	Domestic	New Well	Rotary	No Chemistry
601	83458	NE	19	55	21	4	18.3													NYHUIS, ALBERT	Domestic	Chemistry	Hand Dug	Chemistry Exists
602	83460	NE	19	55	21	4	9.1													DOIGE, J.F.	Domestic	Chemistry	Unknown	Chemistry Exists
603	83461	NE	19	55	21	4	50.3													CAMERON, ED	Domestic	Chemistry	Unknown	Chemistry Exists
604	83462	SE	20	55	21	4	99.4													CNR#BEAMER SPUR	Domestic	Chemistry	Unknown	Chemistry Exists
605	83463	SE	20	55	21	4	0.0													CNR#SCOTFORD YARD	Domestic	Chemistry	Unknown	No Chemistry
606	83467	NE	20	55	21	4	76.2													SCOTFORD HUTTERITE COLONY	Domestic	Chemistry	Unknown	Chemistry Exists
607	83470	NW	22	55	21	4	64.0													LARSEN, SVEND	Domestic	Chemistry	Drilled	Chemistry Exists

	WELL ID	LOCATION					WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED USE	TYPE OF WORK	DRILL METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN		FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
608	83471	NW	22	55	21	4	54.9													LARSEN, HELEN	Domestic	Chemistry	Unknown	Chemistry Exists
609	83473	NE	22	55	21	4	18.3													CHERNICHAN, JOHN	Domestic	Chemistry	Bored	Chemistry Exists
610	83500	SW	27	55	21	4	0.0													CHOLOWSKI, ALBERT	Domestic	Chemistry	Unknown	No Chemistry
611	83501	SW	27	55	21	4	67.1													CHIPCHASE, G.	Domestic	Chemistry	Unknown	Chemistry Exists
612	83502	NW	27	55	21	4	42.7													MILLWARD, DONALD	Domestic	Chemistry	Unknown	Chemistry Exists
613	83503	NW	27	55	21	4	42.7													MILLWARD, DONALD	Domestic	Chemistry	Unknown	Chemistry Exists
614	83505	SE	28	55	21	4	38.7													ROYCE, SIDNEY	Domestic	Chemistry	Drilled	Chemistry Exists
615	83506	SE	28	55	21	4	24.4													ROYCE, SIDNEY	Domestic	Chemistry	Unknown	No Chemistry
616	83510	SE	30	55	21	4	9.8													WATERS, DEAN	Domestic	Chemistry	Unknown	Chemistry Exists
617	83511	SE	30	55	21	4	7.6												1/1/2001	DOCKSTEADER, ILEF	Domestic	Chemistry	Hand Dug	Chemistry Exists
618	83512	SE	30	55	21	4	9.1													HARBOWAY, M.	Domestic	Chemistry	Hand Dug	Chemistry Exists
619	83513	SE	30	55	21	4	14.3											2/15/1970		BALIMORE, WESLY	Domestic	New Well	Bored	No Chemistry
620	83514	SE	30	55	21	4	6.1													ORDELL, RICHARD	Domestic	Chemistry	Unknown	Chemistry Exists
621	83516	SE	30	55	21	4	12.2													WATERS, DEAN	Domestic	Chemistry	Drilled	Chemistry Exists
622	83517	SE	30	55	21	4	45.7													WOUDENBURG, MARY	Domestic	Chemistry	Unknown	Chemistry Exists
623	83518	SW	30	55	21	4	6.1											12/12/1968		DAYTON, GEORGE	Domestic	Chemistry	Bored	Chemistry Exists
624	83519	SW	30	55	21	4	6.7													DEMEULE, LORETTA	Domestic	Chemistry	Hand Dug	Chemistry Exists
625	83520	6	30	55	21	4	41.1							39.6	41.1			8/8/1984		MOSER, GEORGETTE	Domestic	New Well	Rotary	No Chemistry
626	83521	3	30	55	21	4	13.4											2/2/1970		YARSHUK, PETE	Domestic	New Well	Bored	No Chemistry
627	83522	SW	30	55	21	4	10.7													WIEBE, G.	Domestic	Chemistry	Unknown	Chemistry Exists
628	83523	SW	30	55	21	4	9.1													DEMEULE, N.E.	Domestic	Chemistry	Drilled	Chemistry Exists
629	83524	NW	30	55	21	4	6.7													BAKER, I.H.	Domestic	Chemistry	Drilled	Chemistry Exists
630	83525	NW	30	55	21	4	7.3													LINING, DALE	Domestic	Chemistry	Bored	Chemistry Exists
631	83526	NW	30	55	21	4	7.3													FRANCOUER, LARRY	Domestic	Chemistry	Unknown	Chemistry Exists
632	83527	NW	30	55	21	4	9.1													BECK, LINDA	Domestic	Chemistry	Unknown	Chemistry Exists
633	83528	NW	30	55	21	4	12.2													FRANCOUER, LARRY	Domestic	Chemistry	Drilled	Chemistry Exists
634	83529	NW	30	55	21	4	9.8											11/30/1965		YANCHUK, PETE	Domestic	New Well	Bored	No Chemistry
635	83531	NW	30	55	21	4	12.2											2/6/1970		YARSHUK, PETER	Domestic	New Well	Bored	No Chemistry
636	83532	13	30	55	21	4	8.5											2/12/1970	1/1/2001	YARSHUK, PETER	Domestic	New Well	Bored	No Chemistry
637	83533	SE	31	55	21	4	41.1													PCL BRAUN SIMONS LTD	Domestic	Chemistry	Unknown	Chemistry Exists
638	83534	NE	31	55	21	4	39.6													PCL BRAUN SIMONS LTD	Domestic	Chemistry	Unknown	Chemistry Exists
639	83536	NW	32	55	21	4	39.6													PCL BRAUN SIMONS LTD	Domestic	Chemistry	Unknown	Chemistry Exists
640	83537	NW	32	55	21	4	39.6													PCL BRAUN SIMONS LTD	Domestic	Chemistry	Unknown	Chemistry Exists
641	83538	NW	32	55	21	4	45.7													PCL BRAUN SIMONS LTD	Domestic	Chemistry	Unknown	Chemistry Exists
642	83544	NE	32	55	21	4	46.3													VISSCHER, D.	Domestic	Chemistry	Unknown	Chemistry Exists
643	83548	SW	34	55	21	4	15.2													RADKE, JAMES	Domestic	Chemistry	Drilled	Chemistry Exists
644	83549	4	34	55	21	4	12.2											8/26/1975		RADKE, BEN	Domestic	New Well	Bored	No Chemistry
645	83551	SW	34	55	21	4	0.0													RADKE	Domestic	Chemistry	Unknown	No Chemistry
646	83552	5	34	55	21	4	35.1							32.0	35.1			2/9/1986		RADKE, J./ R.	Domestic	New Well	Rotary	No Chemistry
647	83554	NW	34	55	21	4	18.3													PICKARD, WAYNE	Domestic	Chemistry	Drilled	Chemistry Exists
648	83556	NW	34	55	21	4	39.6							34.4	36.0			10/1/1970		FISHER, GEORGE P.	Domestic	New Well	Rotary	No Chemistry
649	83560	NW	34	55	21	4	42.7							36.6	42.7			8/14/1989		DAOUST, C.	Domestic	New Well	Rotary	No Chemistry
650	83561	NE	34	55	21	4	30.5							28.3	29.9			6/5/1968		BERG, ALFRED	Domestic	New Well	Rotary	No Chemistry
651	83564	NE	35	55	21	4	12.8													CHARBONNEAU, MARCEL	Domestic	Chemistry	Drilled	Chemistry Exists
652	83570	SE	36	55	21	4	18.3													NAVRATIL, JOHN	Domestic	Chemistry	Bored	Chemistry Exists
653	83571	SE	36	55	21	4	15.2													WIENS, LORI	Domestic	Chemistry	Unknown	Chemistry Exists
654	83572	SW	36	55	21	4	39.6	37.8	39.6									4/7/1988		UNITED GRAIN GROWERS LTD	Domestic	New Well	Cable Tool	No Chemistry
655	83573	NW	36	55	21	4	12.2													PROKOPCZAK, DAVID	Domestic	Chemistry	Unknown	Chemistry Exists
656	83656	SE	16	55	21	4	48.2													RIETVELD, LEENDERT	Domestic	Chemistry	Drilled	Chemistry Exists
657	90354	SE	27	55	21	4	54.9	39.0	42.7									8/1/1972		CHOLOWSKI, ALBERT	Domestic	New Well	Rotary	No Chemistry
658	91494	4	6	56	20	4	6.1													SAMPERT, T.	Domestic	Federal Well Survey	Hand Dug	No Chemistry
659	91496	SW	6	56	20	4	3.0													THORNE, KEITH	Domestic	Chemistry	Unknown	No Chemistry
660	91498	NE	6	56	20	4	91.4													SCHRAM, GEORGE	Domestic	Chemistry	Unknown	Chemistry Exists
661	91502	9	7	56	20	4	9.1													DRIESNER, D.	Domestic	Federal Well Survey	Bored	No Chemistry
662	91504	SW	8	56	20	4	23.8													SCHRAM, ED	Domestic	Chemistry	Unknown	Chemistry Exists
663	91506	16	8	56	20	4	75.0											11/15/1961		FREY, BERT W.	Domestic	New Well	Rotary	Chemistry Exists
664	91507	NE	8	56	20	4	5.5													FREY, B.	Domestic	Chemistry	Unknown	No Chemistry
665	91508	9	8	56	20	4	12.2											1/1/1920		FREY, J.	Domestic	Federal Well Survey	Bored	No Chemistry
666	91550	SW	16	56	20	4	6.1													ROSNAU, N.	Domestic	Chemistry	Unknown	Chemistry Exists
667	91553	12	16	56	20	4	19.5											3/20/1985		NEAVE, JOHN	Domestic	New Well	Bored	Chemistry Exists
668	91554	2	17	56	20	4	34.1											5/6/1981		SAMPERT, RAY	Domestic	New Well	Bored	No Chemistry
669	91558	SE	18	56	20	4	5.8													MCLELLAN, ARTHUR	Domestic	Chemistry	Unknown	Chemistry Exists
670	91559	SE	18	56	20	4	6.7													MCLELLAN, ARTHUR	Domestic	Chemistry	Hand Dug	Chemistry Exists
671	91561	SE	18	56	20	4	33.5											12/17/1981		MCLELLAN, ARTHUR L.	Domestic	New Well	Cable Tool	No Chemistry
672	91562	SE	18	56	20	4	67.1											10/7/2000		HELMER, MURIEL/ABNER	Domestic	Old Well-Yield	Not Applicable	Chemistry Exists
673	91562	SE	18	56	20	4	67.1	61.0	67.1									12/31/1981		MCLELLAN, ARTHUR	Domestic	New Well	Rotary	Chemistry Exists
674	91564	4	18	56	20	4	0.0													STELTER, A.	Domestic	Federal Well Survey	Hand Dug	No Chemistry
675	91565	NW	18	56	20	4	12.2													SERINK, W.	Domestic	Chemistry	Bored	Chemistry Exists
676	91566	11	18	56	20	4	14.9											6/17/1979		SERINK, W.	Domestic	New Well	Bored	No Chemistry
677	91572	4	19	56	20	4	44.2											9/23/1978		SERINK, BILL	Domestic	New Well	Rotary	No Chemistry
678	91573	12	19	56	20	4	10.4											7/1/1974		MATTHEWS, BILL	Domestic	New Well	Bored	Chemistry Exists
679	9676085	15	11	56	21	4	44.8							42.4	43.9			7/27/2017		HANS, KARAM	Domestic	New Well	Rotary - Mud	No Chemistry
680	264494	9	33	56	21	4	23.5											8/16/1961		SCURRY RAINBOW OIL LTD	Domestic & Industrial	New Well	Rotary	Chemistry Exists
681	153068	NE	8	54	22	4	73.2	61.0	73.2									9/26/1988		BORYS, BILLIE	Domestic & Stock	New Well	Cable Tool	No Chemistry
682	153696	13	36	56	21	4	45.7	36.6	45.7									4/14/1989		BOWERIN, CATHERINE	Domestic & Stock	New Well	Cable Tool	No Chemistry
683	153768	NW	23	55	21	4	42.7							35.4	36.6			8/31/1990		ARNDT, R.E.	Domestic & Stock	New Well	Rotary	No Chemistry
684	154442	SE	36	55	22	4	30.5							29.3	30.5			3/21/1990		STEFFLER, BEN/GERALD	Domestic & Stock	New Well	Rotary	No Chemistry
685	158576	SW	8	56	20	4	21.0											9/25/1979		SCHRAM, EDWARD	Domestic & Stock	New Well	Bored	No Chemistry
686	160258	SW	16	54	22	4	15.2	7.6	13.7									11/9/1991		BIZUK, MORRIS	Domestic & Stock	New Well	Bored	No Chemistry
687	164457	NE	11	56	22	4	59.4	30.2	58.5									3/10/1992		BRIGGS, ALAN	Domestic & Stock	New Well	Rotary	No Chemistry
688	166391	SE	17	54	22	4	12.2	6.1	10.7									6/28/1989		TWIGGE, MRS E.	Domestic & Stock	New Well	Bored	No Chemistry
689	1911765	SW	2	57	21	4	79.2	71.0	77.1									2/27/2006	2/27/2006	SUNDAY KO, MIKE	Domestic & Stock	New Well	Rotary	No Chemistry
690	206702	NE	3	56	21	4	44.2							40.5	42.1			3/26/1993		VELTMAN, HERB	Domestic & Stock	New Well	Rotary	No Chemistry
691	208867	SW	6	56	20	4	16.5	4.6	13.7									3/12/1993		YAWORSKI, MICHEAL	Domestic & Stock	New Well	Bored	No Chemistry
692	220716	NE	17	55	21	4	105.2											9/20/1991		SCOTFORD COLONY	Domestic & Stock	Reconditioned	Cable Tool	No Chemistry
693	231536	SW	2	55	23	4	67.1	57.9	64.0									8/9/1993		ARNDT, PETER	Domestic & Stock	New Well	Rotary	No Chemistry
694	260034	NW	8	54	22	4	47.2											1/1/1925		ARBS, E.	Domestic & Stock	New Well	Drilled	No Chemistry

	WELL ID	LOCATION					WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED USE	TYPE OF WORK	DRILL METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN		FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
695	260068	NW	9	54	22	4	30.5													MCEACHERN, J.	Domestic & Stock	Chemistry	Drilled	No Chemistry
696	260172	4	16	54	22	4	6.7													FLEMING, J.	Domestic & Stock	New Well	Hand Dug	No Chemistry
697	260174	13	16	54	22	4	24.4											1/1/1910		SPALAN, G.	Domestic & Stock	New Well	Drilled	No Chemistry
698	260179	SW	17	54	22	4	61.0											1/1/1935		GALLOWY, P.	Domestic & Stock	New Well	Drilled	No Chemistry
699	260181	13	17	54	22	4	25.9													PETERS, H.B.	Domestic & Stock	New Well	Bored	No Chemistry
700	260192	NW	20	54	22	4	36.6							27.4	29.0			5/10/1966		STETSON, H.A.	Domestic & Stock	New Well	Rotary	Chemistry Exists
701	260193	5	21	54	22	4	42.7											1/1/1920		ARMSTRONG, J.	Domestic & Stock	New Well	Drilled	No Chemistry
702	260195	13	21	54	22	4	61.0											1/1/1928		ARMSTRONG, G.	Domestic & Stock	New Well	Drilled	No Chemistry
703	260196	SE	22	54	22	4	37.2											11/29/1988		LA TRACE, DARLENE	Domestic & Stock	New Well	Rotary	Chemistry Exists
704	260198	13	22	54	22	4	61.0											1/1/1916		ROTH, H.G.	Domestic & Stock	New Well	Drilled	No Chemistry
705	260217	2	26	54	22	4	70.1	50.3	61.3									12/12/1966		SLATER, GRACE	Domestic & Stock	New Well	Rotary	Chemistry Exists
706	260219	4	26	54	22	4	59.4	49.1	55.2									3/24/1969		KLAUTT, A.R.	Domestic & Stock	New Well	Drilled	No Chemistry
707	260223	SW	26	54	22	4	61.0	47.9	61.0									10/4/1984		GALLOWAY, ED	Domestic & Stock	New Well	Cable Tool	No Chemistry
708	260224	10	26	54	22	4	30.2											1/1/1930		BETHIEL, A.	Domestic & Stock	New Well	Drilled	No Chemistry
709	260226	12	27	54	22	4	21.3													ROBERTSON, F.A.	Domestic & Stock	New Well	Bored	No Chemistry
710	260228	5	28	54	22	4	30.5											1/1/1928		CRANSON, G.A.	Domestic & Stock	New Well	Drilled	No Chemistry
711	260378	11	29	54	22	4	61.0											1/1/1911		ADAMSON, R.F.	Domestic & Stock	New Well	Drilled	No Chemistry
712	260424	SE	32	54	22	4	6.1														Domestic & Stock	New Well	Hand Dug	No Chemistry
713	260427	4	34	54	22	4	48.8											1/1/1930		LAWRENCE, F.B.	Domestic & Stock	New Well	Drilled	No Chemistry
714	260438	13	34	54	22	4	54.9											1/1/1926		WALL, T.	Domestic & Stock	New Well	Drilled	No Chemistry
715	260442	NE	34	54	22	4	42.7											11/21/1988		BARTEL, RICHARD	Domestic & Stock	New Well	Rotary	Chemistry Exists
716	260928	NW	13	54	23	4	4.9													TURNBULL, R.J.	Domestic & Stock	Chemistry	Hand Dug	Chemistry Exists
717	261215	12	7	55	22	4	5.5											1/1/1908		LAMOUREUX, A.	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
718	261229	7	8	55	22	4	9.1													ADDERHORD, A.	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
719	261231	SE	8	55	22	4	14.9	7.0	9.1	12.2	14.9							7/28/1988		COURCHESNE, R	Domestic & Stock	New Well	Bored	No Chemistry
720	261392	8	11	55	22	4	61.0											1/1/1921		MAGEE, K	Domestic & Stock	Federal Well Survey	Drilled	No Chemistry
721	261429	1	12	55	22	4	32.3											1/1/1922		BRICKRIDGE, A	Domestic & Stock	Federal Well Survey	Drilled	No Chemistry
722	261433	4	13	55	22	4	111.3											1/1/1922		KELLY, G	Domestic & Stock	Federal Well Survey	Drilled	No Chemistry
723	261595	3	26	54	23	4	4.9													PODHANIUK, W.	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
724	261602	12	18	55	22	4	6.4											1/1/1930		MCIASSIC, S	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
725	261651	9	21	55	22	4	11.0											1/1/1922		GAUMONT, A	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
726	261679	9	24	55	22	4	4.9											1/1/1932		THORNE, R E	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
727	261728	1	27	55	22	4	4.6													BELAIR, E C	Domestic & Stock	Chemistry	Hand Dug	Chemistry Exists
728	261778	9	29	55	22	4	22.9											1/1/1931		LANGLOIS, G R	Domestic & Stock	Federal Well Survey	Bored	No Chemistry
729	261821	8	34	55	22	4	60.0											1/1/1926		LA CHAPPELLE	Domestic & Stock	Federal Well Survey	Drilled	No Chemistry
730	261822	SE	34	55	22	4	54.9	42.7	53.3									3/19/1984		JIGOLYK, H.	Domestic & Stock	New Well	Cable Tool	No Chemistry
731	261844	13	35	55	22	4	22.9											1/1/1935		LECLAIRE, L	Domestic & Stock	Federal Well Survey	Bored	No Chemistry
732	261886	9	1	56	21	4	4.6													SCHULTZ, E	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
733	262005	SE	33	54	23	4	42.7											11/3/1988	11/3/1988	STRAUSS, HOWARD #TEST HOLE	Domestic & Stock	Test Hole	Rotary	No Chemistry
734	262018	SW	33	54	23	4	45.7											11/2/1988	11/2/1988	STRAUSS, HOWARD #TEST HOLE 2	Domestic & Stock	Test Hole	Rotary	No Chemistry
735	262076	8	34	54	23	4	18.3											1/1/1928		PARRIDY, C.	Domestic & Stock	Federal Well Survey	Bored	No Chemistry
736	262102	12	34	54	23	4	35.1											1/1/1921		SPEER, C.R.	Domestic & Stock	Federal Well Survey	Bored	No Chemistry
737	262130	SE	35	54	23	4	79.2	67.1	79.2									11/22/1988		DEVEREUX, W	Domestic & Stock	New Well	Rotary	No Chemistry
738	262341	SW	35	54	23	4	48.8	36.6	48.8									10/13/1981		HANES, ALBERT R	Domestic & Stock	New Well	Rotary	No Chemistry
739	262348	SW	35	54	23	4	42.7	30.5	42.7									9/26/1988		HANES, ALBERT	Domestic & Stock	New Well	Rotary	No Chemistry
740	262432	4	2	55	23	4	0.0													SPEER, C.R.	Domestic & Stock	Federal Well Survey	Bored	No Chemistry
741	262523	SE	13	55	23	4	103.6	82.3	103.6									3/19/1983		KOZAK, NICK	Domestic & Stock	New Well	Rotary	Chemistry Exists
742	263732	SE	13	56	21	4	42.1													WAGNER, J	Domestic & Stock	New Well	Cable Tool	No Chemistry
743	263735	8	13	56	21	4	4.9											1/1/1927		WAGNER, J	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
744	263820	SW	13	56	21	4	47.2	35.1	47.2									5/9/1988		PROCHNAU, E.	Domestic & Stock	New Well	Rotary	No Chemistry
745	263834	4	1	56	22	4	64.0											1/1/1929		MORROW, E.	Domestic & Stock	New Well	Drilled	No Chemistry
746	263841	NW	1	56	22	4	34.4											12/10/1987		LAMOUREUX, RENALD	Domestic & Stock	New Well	Bored	Chemistry Exists
747	263856	14	2	56	22	4	54.9											1/1/1924		TROTTER, J.	Domestic & Stock	New Well	Drilled	No Chemistry
748	263863	10	2	56	22	4	10.7											1/1/1900		MCPIKE, T.	Domestic & Stock	New Well	Hand Dug	No Chemistry
749	263896	NE	14	56	21	4	48.8							42.4	43.9			11/4/1988		HODGSON, G	Domestic & Stock	New Well	Rotary	No Chemistry
750	263966	6	18	56	21	4	42.7											1/1/1922		MATHIEU, A	Domestic & Stock	Federal Well Survey	Drilled	No Chemistry
751	263979	4	19	56	21	4	15.2											1/1/1921		TAYLOR, J	Domestic & Stock	Federal Well Survey	Drilled	No Chemistry
752	264014	16	19	56	21	4	7.3											1/1/1930		SMOLSKI, D.	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
753	264143	SW	12	56	22	4	26.8											8/22/1985		SERINK, MIKE	Domestic & Stock	New Well	Bored	Chemistry Exists
754	264170	2	13	56	22	4	10.7											1/1/1916		BERWICK, C.D.	Domestic & Stock	New Well	Hand Dug	No Chemistry
755	264301	SE	22	55	22	4	14.3											6/25/1985		GODBOUT, N.	Domestic & Stock	New Well	Bored	No Chemistry
756	264335	SE	29	56	21	4	70.1											6/2/1976		PUCHALIK, P.	Domestic & Stock	New Well	Cable Tool	Chemistry Exists
757	264354	1	29	56	21	4	30.5													PUCHLUK, J.	Domestic & Stock	Federal Well Survey	Bored	No Chemistry
758	264375	8	35	56	21	4	3.7													CONSARTO	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
759	264387	3	29	56	21	4	5.5													PUCHALACH	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
760	264395	9	29	56	21	4	12.2													KACHUK	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
761	264486	12	33	56	21	4	24.4													PSYCH	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
762	264503	4	34	56	21	4	3.7													MALOWNY	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
763	264662	4	35	56	21	4	19.2													ROMANIUK, E.	Domestic & Stock	Federal Well Survey	Bored	No Chemistry
764	264672	SE	36	56	21	4	42.7	27.4	42.7									5/12/1976		CORNELIUS	Domestic & Stock	New Well	Cable Tool	No Chemistry
765	264716	12	36	56	21	4	4.0													TKACHUK	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
766	264931	NE	17	54	22	4													6/25/2012	ARMSTRONG, JIM	Domestic & Stock	Existing Well-Decommissioned	Unknown	Chemistry Exists
767	265807	SE	4	57	21	4	30.5											12/2/1976		SAWKA, WALTER	Domestic & Stock	New Well	Cable Tool	Chemistry Exists
768	266021	13	1	56	22	4	18.3											1/1/1934		YANCH, J.	Domestic & Stock	New Well	Bored	Chemistry Exists
769	271540	NE	5	55	22	4	13.4											6/21/1985		GODBOUT, ROMEO	Domestic & Stock	New Well	Bored	No Chemistry
770	274016	EH	36	54	23	4	17.7											4/25/1983		GAUMONT, C	Domestic & Stock	New Well	Bored	Chemistry Exists
771	274028	EH	36	54	23	4	15.5	9.8	13.7									4/20/1989		GAUMONT, L	Domestic & Stock	New Well	Bored	No Chemistry
772	280646	NE	36	54	23	4	14.3											10/19/1987		LAMOUREUX, JIM	Domestic & Stock	New Well	Bored	No Chemistry
773	299620	SW	33	54	23	4	54.9	29.9	32.6	35.7	51.8							3/23/2002		HAZELAAR, HARVEY	Domestic & Stock	New Well	Rotary	No Chemistry
774	83010	13	25	55	21	4	27.4													HOFFMAN	Domestic & Stock	Federal Well Survey	Bored	No Chemistry
775	83265	14	31	55	20	4	24.1											1/1/1915		FISHER, J.	Domestic & Stock	Federal Well Survey	Drilled	No Chemistry
776	83366	2	6	55	21	4	16.5													BRICK, A.W.	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
777	83378	9	7	55	21	4	12.2													MAGEE, H.	Domestic & Stock	Federal Well Survey	Bored	No Chemistry
778	83420	NE	16	55	21	4	51.8											4/23/1965		MOHR, GUS	Domestic & Stock	New Well	Jet	No Chemistry
779	83433	NE	17	55	21	4	109.7	91.4	109.7									3/19/1986		SCOTFORD COLONY	Domestic & Stock	Deepened	Rotary	No Chemistry
780	83435	NE	17	55	21	4	97.5	85.3	97.5									6/18/1985		SCOTFORD COLONY	Domestic & Stock	New Well	Rotary	No Chemistry
781	83436	NE	17	55	21	4	79.9													SCOTFORD HUTTERITE BRETHREN	Domestic & Stock	Chemistry	Unknown	Chemistry Exists

	WELL ID	LOCATION					WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED USE	TYPE OF WORK	DRILL METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN		FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
782	83437	NE	17	55	21	4	0.0													SCOTFORD COLONY	Domestic & Stock	Chemistry	Unknown	No Chemistry
783	83438	3	18	55	21	4	12.2											1/1/1938		MOORE, T.	Domestic & Stock	Federal Well Survey	Bored	No Chemistry
784	83459	NE	19	55	21	4	0.0													SPRUCE HILL HOG RANCH	Domestic & Stock	Chemistry	Unknown	No Chemistry
785	83465	SE	21	55	21	4	64.0											9/12/1982		THOMAS, WARREN	Domestic & Stock	New Well	Rotary	No Chemistry
786	83468	5	22	55	21	4	39.0											1/1/1915		LANGHAUSEN, J.	Domestic & Stock	Federal Well Survey	Drilled	No Chemistry
787	83469	NW	22	55	21	4	51.8											4/1/1965		LARSEN, S.A.	Domestic & Stock	New Well	Cable Tool	No Chemistry
788	83477	NW	23	55	21	4	36.6							35.4	36.6			7/2/1968		ARNDT, ERDMAN	Domestic & Stock	New Well	Rotary	No Chemistry
789	83497	9	26	55	21	4	13.7											1/1/1933		FLUKER, R.	Domestic & Stock	Federal Well Survey	Bored	No Chemistry
790	83499	5	27	55	21	4	30.5											1/1/1924		UNDERSCHULTZ, A.	Domestic & Stock	Federal Well Survey	Drilled	No Chemistry
791	83535	1	32	55	21	4	0.0													MOHR, G.P.	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
792	83555	NW	34	55	21	4	42.7							38.1	39.9			9/1/1970		DAUST, CHARLIE	Domestic & Stock	New Well	Rotary	No Chemistry
793	83563	4	35	55	21	4	30.5											1/1/1926		BERG, R.	Domestic & Stock	Federal Well Survey	Drilled	No Chemistry
794	91495	4	6	56	20	4	17.1											4/16/1986		YAWORSKI, MIKE	Domestic & Stock	New Well	Bored	No Chemistry
795	91499	16	6	56	20	4	68.0	48.8	68.0									4/12/1985		SCHRAM, GEORGE	Domestic & Stock	New Well	Rotary	Chemistry Exists
796	91500	8	7	56	20	4	14.6											7/24/1981		SCHRAM, ELMER	Domestic & Stock	New Well	Bored	No Chemistry
797	91503	4	8	56	20	4	7.6											1/1/1919		RISKE, E.	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
798	91505	13	8	56	20	4	17.7											7/18/1984		SAMPERT, ROGER	Domestic & Stock	New Well	Bored	Chemistry Exists
799	91551	5	16	56	20	4	4.9											1/1/1930		KALAS	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
800	91552	4	16	56	20	4	6.7											1/1/1930		HENKLEMAN	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
801	91555	SE	17	56	20	4	19.2	4.3	17.4									8/19/1986		SAMPERT, RAY	Domestic & Stock	New Well	Bored	No Chemistry
802	91560	SE	18	56	20	4	15.8											8/9/1978		MCLELLAN, ARTHUR	Domestic & Stock	New Well	Bored	No Chemistry
803	91563	8	18	56	20	4	4.6											1/1/1925		KAUS, A.	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
804	91570	2	19	56	20	4	12.8													SCHUMAK, A.	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
805	91574	12	19	56	20	4	14.6											9/20/1985		MATTHEWS, B.	Domestic & Stock	New Well	Bored	No Chemistry
806	91575	4	20	56	20	4	3.7											1/1/1917		WIKEHLERK	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
807	1270376	1	27	55	21	4	46.9	32.0	46.9									6/13/2016		INTERCHEM CANADA	Industrial	New Well	Combination	No Chemistry
808	1270378	1	27	55	21	4	30.5							22.3	24.4			6/7/2016		INTERCHEM CANADA	Industrial	New Well	Combination	No Chemistry
809	1270379	8	29	55	21	4	48.8							33.5	35.1			6/29/2016		PEMBINA MIDSTREAM LTD.	Industrial	New Well	Rotary - Mud	No Chemistry
810	1270389	1	27	55	21	4	33.5	22.8	25.9									6/1/2017		INTERCHEM CANADA	Industrial	Piezometer	Rotary - Mud	No Chemistry
811	1270390	1	27	55	21	4	21.3	16.8	19.8									6/5/2017		INTERCHEM CANADA	Industrial	Piezometer	Rotary - Mud	No Chemistry
812	1270530	1	27	55	21	4	45.7	31.8	45.5									9/23/2021		HEARTLAND SULPHUR	Industrial	New Well	Combination	No Chemistry
813	1300178	12	5	56	21	4	39.6							31.4	34.4			4/18/2007		SHELL CANADA/THURBER ENG.	Industrial	New Well	Rotary	No Chemistry
814	1421784	2	14	55	22	4														KEYERA CORP	Industrial	New Well	Rotary - Mud	No Chemistry
815	1421795	7	14	55	22	4	48.8							37.1	42.1			10/30/2015		KEYERA CORP	Industrial	New Well	Rotary - Mud	No Chemistry
816	1421796	SE	14	55	22	4	48.8							37.2	42.2			10/24/2015		KEYERA CORP	Industrial	New Well	Rotary - Mud	No Chemistry
817	1421797	3	14	55	22	4	46.6							34.7	39.7			11/2/2015		KEYERA CORP	Industrial	New Well	Rotary - Mud	No Chemistry
818	1421798	4	14	55	22	4	45.7							34.0	39.1			11/6/2015		KEYERA CORP	Industrial	New Well	Rotary - Mud	No Chemistry
819	1421799	5	14	55	22	4	46.6							34.6	39.6			11/8/2015		KEYERA	Industrial	New Well	Rotary - Mud	No Chemistry
820	1421801	8	14	55	22	4	48.8							36.6	41.6			11/27/2015		KEYERA	Industrial	New Well	Rotary - Mud	No Chemistry
821	1422455	13	18	55	21	4	46.0							35.8	39.0			12/14/2017		KEYERA CORP	Industrial	New Well	Rotary - Mud	No Chemistry
822	152045	NW	10	55	22	4	37.8							34.7	37.8			12/8/1989		DOW CHEMICAL#MONITORING WELL 1	Industrial	New Well	Rotary	No Chemistry
823	152046	NW	10	55	22	4	36.0							32.9	36.0			12/12/1989		DOW CHEMICAL#MONITORING WELL 2	Industrial	New Well	Rotary	No Chemistry
824	152047	NW	10	55	22	4	41.1							38.1	41.1			12/10/1989		DOW CHEMICAL#MONITORING WELL 3	Industrial	New Well	Rotary	No Chemistry
825	152048	NW	10	55	22	4	37.8							34.7	37.8			12/13/1989		DOW CHEMICAL#MONITORING WELL	Industrial	New Well	Rotary	No Chemistry
826	1575400	SE	18	56	21	4	47.2							16.8	47.2			10/25/2006		ACCESS PIPELINES	Industrial	New Well	Rotary	No Chemistry
827	1889277	5	18	55	21	4	49.4							36.9	43.0			3/2/2015		KEYERA CORP.	Industrial	New Well	Rotary - Mud	No Chemistry
828	260182	10	17	54	22	4	780.3											5/10/1954		TRIZONE OIL DEV CO LTD	Industrial	Oil Exploratory	Drilled	No Chemistry
829	260380	10	29	54	22	4	751.3											10/2/1953		MID-WESTERN IND GAS LTD	Industrial	Oil Exploratory	Drilled	No Chemistry
830	260402	NW	32	54	22	4	64.0											11/29/1956		PEACE RIVER GLASS	Industrial	New Well	Drilled	No Chemistry
831	260408	NW	32	54	22	4	35.7	31.4	35.1									1/1/1955		PEACE RIVER GLASS	Industrial	New Well	Unknown	No Chemistry
832	261083		2	55	22	4	44.2	33.5	39.6									2/24/1978		DOW CHEMICAL	Industrial	New Well	Unknown	No Chemistry
833	261087		2	55	22	4	25.9	21.3	25.9									3/2/1978		DOW CHEMICALS	Industrial	New Well	Unknown	No Chemistry
834	261092		2	55	22	4	42.7	39.6	42.7									3/8/1978		DOW CHEMICALS	Industrial	New Well	Unknown	No Chemistry
835	261097	SE	3	55	22	4	64.0													CAN COMSTOCK LTD	Industrial	Chemistry	Unknown	Chemistry Exists
836	261104	8	4	55	22	4	762.0											9/3/1962		MIDWESTERN IND GAS LTD #8-4	Industrial	New Well	Unknown	No Chemistry
837	261247	6	9	55	22	4	765.0											12/3/1959		DOME PETRO LTD	Industrial	Oil Exploratory	Unknown	No Chemistry
838	261344	10	10	55	22	4	1881.5											8/30/1966		DOW CHEMICAL #NACL	Industrial	Cathodic Protection	Unknown	No Chemistry
839	261436	SW	13	55	22	4	4.9													DOW CHEMICAL	Industrial	Chemistry	Unknown	No Chemistry
840	261496	11	14	55	22	4	39.6							33.2	35.1			9/14/1974		DOME PETRO	Industrial	New Well	Rotary	No Chemistry
841	261535	10	17	55	22	4	967.7											6/12/1953		NORTHWESTERN UTILITIES LTD#5	Industrial	Unknown	Unknown	No Chemistry
842	261682	4	36	55	22	4	299.0											5/21/1953		IMPERIAL OIL LTD #AO282-2	Industrial	Oil Exploratory	Unknown	No Chemistry
843	261723	4	26	55	22	4	317.9											5/17/1953		IMPERIAL OIL LTD #AO282-1	Industrial	Oil Exploratory	Unknown	No Chemistry
844	261736	16	27	55	22	4	304.5											5/21/1953		IMPERIAL OIL LTD #AO282-3	Industrial	Oil Exploratory	Unknown	No Chemistry
845	261761	1	1	55	23	4	9.1													#SP. 1914497	Industrial	Flowing Shot Hole	Unknown	No Chemistry
846	261825	12	34	55	22	4	304.5											5/13/1953		IMPERIAL OIL LTD #AO282 5	Industrial	Oil Exploratory	Unknown	No Chemistry
847	261848	16	36	55	22	4	365.8											5/11/1946		IMPERIAL OIL LTD #615	Industrial	Oil Exploratory	Unknown	No Chemistry
848	263838	3	1	56	22	4	1321.3											2/28/1951		LINGNORA GOLD MINES LTD	Industrial	Unknown	Drilled	No Chemistry
849	263849	1	2	56	22	4	304.5											5/17/1953		IMPERIAL OIL LTD	Industrial	Oil Exploratory	Drilled	No Chemistry
850	263860	13	2	56	22	4	286.5											5/18/1953		IMPERIAL OIL LTD	Industrial	Oil Exploratory	Drilled	No Chemistry
851	263918	4	15	56	21	4	996.1											11/15/1950		SEABOARD OIL CO #4-15	Industrial	Oil Exploratory	Unknown	No Chemistry
852	264108	1	11	56	22	4	286.5											5/14/1953		IMPERIAL OIL LTD	Industrial	Test Hole	Drilled	No Chemistry
853	264153	4	13	56	22	4	0.0											8/11/1953		IMPERIAL OIL LTD	Industrial	Flowing Shot Hole	Unknown	No Chemistry
854	264161	13	12	56	22	4	292.6											5/14/1953		IMPERIAL OIL LTD	Industrial	Test Hole	Drilled	No Chemistry
855	264189	3	13	56	22	4	246.3														Industrial	Flowing Shot Hole	Drilled	No Chemistry
856	280652	WH	11	55	22	4	29.0											7/19/1984		DOW CHEMICAL	Industrial	Cathodic Protection	Rotary	No Chemistry
857	282100	NW	2	55	22	4	70.7											5/9/1984		DOW CHEMICAL#R-240-1	Industrial	New Well	Rotary	No Chemistry
858	282101	SE	10	55	22	4	71.9											5/8/1984		DOW CHEMICAL#R-90-3	Industrial	New Well	Rotary	No Chemistry
859	282102	SW	11	55	22	4	27.4											5/3/1984		DOW CHEMICAL #R-240-2	Industrial	New Well	Rotary	No Chemistry
860	282103	NW	11	55	22	4	98.8											5/1/1984		DOW CHEMICAL #370-5	Industrial	New Well	Rotary	No Chemistry
861	282104	NW	11	55	22	4	100.6											5/3/1984		DOW CHEMICAL #370-4	Industrial	New Well	Rotary	No Chemistry
862	282105	NW	11	55	22	4	100.0											4/26/1984		DOW CHEMICAL #370-3	Industrial	New Well	Rotary	No Chemistry
863	282106	NW	11	55	22	4	94.8											4/25/1984		DOW CHEMICAL #370-2	Industrial	New Well	Rotary	No Chemistry
864	282117	SE	10	55	22	4	25.9											5/4/1984		DOW CHEMICAL #150-2	Industrial	New Well	Rotary	No Chemistry
865	289172	EH	7	56	21	4	30.5											9/6/1997	9/6/1997	I.O.L. #1	Industrial	Test Hole-Decommissioned	Rotary	No Chemistry
866	289173	EH	17	56	21	4	15.2	11.9	13.4									9/9/1997	9/9/1997	I.O.L. #6	Industrial	Test Hole-Decommissioned	Rotary	No Chemistry
867	289174	EH	17	56	21	4	13.4											9/8/1997	9/8/1997	I.O.L. #5	Industrial	Test Hole-Decommissioned	Rotary	No Chemistry
868	289175	EH	17	56	21	4	14.9	11.9	14.9									9/6/1997	9/6/1997	I.O.L. #2	Industrial	Test Hole-Decommissioned	Rotary	No Chemistry

	WELL ID	LOCATION					WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED USE	TYPE OF WORK	DRILL METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN		FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
869	289176	EH	17	56	21	4	18.3	15.8	17.4									9/7/1997	9/7/1997	I.O.L. #3	Industrial	Test Hole-Decommissioned	Rotary	No Chemistry
870	289177	EH	17	56	21	4	15.2											9/8/1997	9/8/1997	I.O.L. #4	Industrial	Test Hole-Decommissioned	Rotary	No Chemistry
871	298284	SW	19	55	21	4	41.1														Industrial	Existing Well-Decommissioned	Not Applicable	No Chemistry
872	83509	SE	29	55	21	4	45.7	41.8	44.8									6/24/1977		CF BRAUN CO	Industrial	New Well	Rotary	No Chemistry
873	83539	NE	32	55	21	4	41.1							35.1	41.1			10/9/1981		PCL BRAUN SIMONS LTD #WELL4	Industrial	New Well	Rotary	Chemistry Exists
874	83540	NE	32	55	21	4	41.1							35.7	41.1			10/6/1981		PCL BRAUN SIMONS LTD #HOLE5	Industrial	New Well	Rotary	No Chemistry
875	83541	NE	32	55	21	4	42.7	40.2	42.7									8/20/1981		PCL BRAUN SIMONS LTD #HOLE1	Industrial	New Well	Rotary	No Chemistry
876	83542	NE	32	55	21	4	42.7	40.2	42.7									9/2/1981		PCL BRAUN SIMONS LTD #HOLE2	Industrial	New Well	Rotary	No Chemistry
877	83543	NE	32	55	21	4	42.7	40.5	42.7									8/25/1981		PCL BRAUN SIMONS LTD #HOLE3	Industrial	New Well	Rotary	No Chemistry
878	83545	SE	34	55	21	4	54.9	0.3	54.9									10/19/1982		NORTHWESTERN UTILITIES	Industrial	New Well	Rotary	No Chemistry
879	83546	SH	34	55	21	4	36.6													NORTHWESTERN UTILITIES	Industrial	Chemistry	Unknown	No Chemistry
880	83565	1	36	55	21	4	24.4							18.0	22.6			11/15/1980		SHELL OIL	Industrial	New Well	Rotary	No Chemistry
881	83566	1	36	55	21	4	24.4	20.4	21.9									11/16/1980		SHELL OIL	Industrial	New Well	Rotary	No Chemistry
882	83567	1	36	55	21	4	45.7	40.2	41.5									11/17/1980		SHELL OIL	Industrial	New Well	Rotary	No Chemistry
883	83568	2	36	55	21	4	15.2	11.9	13.1									11/18/1980		SHELL OIL	Industrial	New Well	Rotary	No Chemistry
884	83569	1	36	55	21	4	30.5							13.1	18.9			11/6/1980		SHELL OIL	Industrial	New Well	Rotary	No Chemistry
885	91601	3	30	56	20	4	954.0											12/21/1950		IMPERIAL OIL LTD	Industrial	Oil Exploratory	Rotary	No Chemistry
886	1270418	7	14	55	22	4	37.5							35.7	37.2			11/29/2017		KEYERA ENERGY	Investigation	Piezometer	Rotary - Mud	No Chemistry
887	1270419	4	14	55	22	4	36.9							35.3	36.8			11/30/2017		KEYERA ENERGY	Investigation	Piezometer	Rotary - Mud	No Chemistry
888	1270420	6	14	55	22	4	39.6							37.5	39.0			12/1/2017		KEYERA ENERGY	Investigation	Piezometer	Rotary - Mud	No Chemistry
889	242397	SE	10	55	22	4	12.2											11/14/1978		DOW CHEMICAL	Investigation	Test Hole	Cable Tool	No Chemistry
890	242398	NW	11	55	22	4	7.3	0.9	7.3									11/22/1978		DOW CHEMICAL	Investigation	New Well	Cable Tool	No Chemistry
891	242399	NW	11	55	22	4	7.6	0.9	7.6									11/22/1978		DOW CHEMICAL	Investigation	New Well	Cable Tool	No Chemistry
892	242400	NW	11	55	22	4	7.9	0.9	7.9									11/22/1978		DOW CHEMICAL	Investigation	New Well	Cable Tool	No Chemistry
893	242401	NW	11	55	22	4	8.5	0.9	8.5									11/22/1978		DOW CHEMICAL	Investigation	New Well	Cable Tool	No Chemistry
894	242402	NW	11	55	22	4	9.4	0.9	9.4									11/22/1978		DOW CHEMICAL	Investigation	New Well	Cable Tool	No Chemistry
895	242403	NW	11	55	22	4	9.8	0.9	9.8									11/22/1978		DOW CHEMICAL	Investigation	New Well	Cable Tool	No Chemistry
896	242404	NW	11	55	22	4	10.7	0.9	10.7									11/22/1978		DOW CHEMICAL	Investigation	New Well	Cable Tool	No Chemistry
897	242405	NW	11	55	22	4	11.6	0.9	11.6									11/22/1978		DOW CHEMICAL	Investigation	New Well	Cable Tool	No Chemistry
898	242406	SE	11	55	22	4	13.1											11/29/1978		DOW CHEMICAL	Investigation	New Well	Cable Tool	No Chemistry
899	261846	NE	35	54	22	4	30.5											8/5/1976		ALTA ENV	Investigation	Test Hole	Unknown	No Chemistry
900	281168	SH	6	56	21	4	36.6											5/11/1969		ALTA ENV #0294E	Investigation	Test Hole	Drilled	No Chemistry
901	281169	9	33	56	21	4	19.8											4/18/1972		ALTA ENV #0792E	Investigation	Test Hole	Drilled	No Chemistry
902	281170	9	32	55	21	4	47.2							40.5	42.1	45.1	46.3	5/9/1970		ALTA ENV #0499E	Investigation	New Well	Drilled	Chemistry Exists
903	281173	SE	1	56	22	4	29.0											5/11/1969		ALTA ENV #0292E	Investigation	Test Hole	Drilled	No Chemistry
904	1270257	5	14	55	22	4	37.6							35.2	36.7			12/20/2013		KEYERA ENERGY LTD.	Monitoring	New Well	Rotary - Mud	No Chemistry
905	1270258	6	14	55	22	4	36.4							34.9	36.4			12/18/2013		KEYERA ENERGY LTD.	Monitoring	New Well	Rotary - Mud	No Chemistry
906	1270271	1	14	55	22	4	41.8	39.0	40.5					39.0	40.5			9/30/2014		KEYERA ENERGY LTD.	Monitoring	Piezometer	Rotary - Mud	No Chemistry
907	1270272	2	14	55	22	4	39.2	36.6	38.1					36.6	38.1			10/2/2014		KEYERA ENERGY LTD.	Monitoring	Piezometer	Rotary - Mud	No Chemistry
908	1270273	2	14	55	22	4	38.7	36.0	37.7					36.0	37.6			10/3/2014		KEYERA ENERGY LTD.	Monitoring	Piezometer	Rotary - Mud	No Chemistry
909	1420288	NW	14	56	21	4	42.7							35.1	38.1			2/2/2005		NCIA	Monitoring	New Well	Rotary	No Chemistry
910	1420299	SW	31	54	22	4	32.0							25.0	29.6			1/25/2005		NCIA	Monitoring	New Well	Rotary	No Chemistry
911	1420305	NW	31	55	21	4	42.7							31.1	37.2			1/28/2005		NCIA	Monitoring	Test Hole	Rotary	No Chemistry
912	1420309	NE	33	55	21	4	44.8							35.7	41.8			1/27/2005		NCIA	Monitoring	New Well	Rotary	No Chemistry
913	1420313	SE	4	55	22	4	36.6							26.5	31.1			2/3/2005		NCIA	Monitoring	New Well	Rotary	No Chemistry
914	1420564	NW	19	54	22	4	38.1							27.7	34.4			1/24/2005		N C I A	Monitoring	New Well	Rotary	No Chemistry
915	2093187	1	35	56	21	4	8.4							4.6	7.6			11/10/2008		AMEC EARTH & ENVIRONMENT	Monitoring	New Well	Auger	No Chemistry
916	2093188	1	35	56	21	4	13.0							9.8	12.8			11/10/2008		AMEC EARTH & ENVIRONMENTAL	Monitoring	New Well	Auger	No Chemistry
917	2093213	1	35	56	21	4	8.4							4.8	7.8			11/11/2008		AMEC EARTH & ENVIRONMENTAL	Monitoring	New Well	Auger	No Chemistry
918	2093222	1	35	56	21	4	10.0							7.0	10.0			9/18/2008		AMEC EARTH & ENVIRONMENTAL	Monitoring	New Well	Auger	No Chemistry
919	2093223	1	35	56	21	4	9.8							6.8	9.8			9/19/2008		AMEC EARTH & ENVIRONMENTAL	Monitoring	New Well	Auger	No Chemistry
920	2093224	1	35	56	21	4	12.0							9.0	12.0			9/19/2008		AMEC EARTH & ENVIRONMENTAL	Monitoring	New Well	Auger	No Chemistry
921	2093225	1	35	56	21	4	12.0							7.0	10.0			9/19/2008		AMEC EARTH & ENVIRONMENTAL	Monitoring	New Well	Auger	No Chemistry
922	2093226	1	35	56	21	4	13.1							7.7	10.7			9/22/2008		AMEC EARTH & ENVIRONMENTAL	Monitoring	New Well	Auger	No Chemistry
923	2093227	1	35	56	21	4	9.9							5.2	8.2			12/13/2007		AMEC EARTH & ENVIRONMENTAL	Monitoring	New Well	Auger	No Chemistry
924	2093228	1	35	56	21	4	13.1							8.5	11.5			9/22/2008		AMEC EARTH & ENVIRONMENTAL	Monitoring	New Well	Auger	No Chemistry
925	2093229	1	35	56	21	4	13.0							7.1	10.1			11/10/2008		AMEC EARTH & ENVIRONMENTAL	Monitoring	New Well	Auger	No Chemistry
926	2093230	1	35	56	21	4	12.0							7.0	10.0			9/19/2008		AMEC EARTH & ENVIRONMENTAL	Monitoring	New Well	Auger	No Chemistry
927	2093232	1	35	56	21	4	8.4							5.0	8.0			9/18/2008		AMEC EARTH & ENVIRONMENTAL	Monitoring	New Well	Auger	No Chemistry
928	2093233	1	35	56	21	4	8.4							5.2	8.2			12/13/2007		AMEC EARTH & ENVIRONMENTAL	Monitoring	New Well	Auger	No Chemistry
929	2093235	1	35	56	21	4	12.5							9.0	12.0			9/18/2008		AMEC EARTH & ENVIRONMENTAL	Monitoring	New Well	Auger	No Chemistry
930	2093241	1	35	56	21	4	8.4							4.6	7.6			11/11/2008		AMEC EARTH & ENVIRONMENTAL	Monitoring	New Well	Auger	No Chemistry
931	2093243	1	35	56	21	4	11.5							7.1	10.1			12/13/2007		AMEC EARTH & ENVIRONMENTAL	Monitoring	New Well	Auger	No Chemistry
932	2093244	1	35	56	21	4	9.9							6.8	9.9			12/13/2007		AMEC EARTH & ENVIRONMENTAL	Monitoring	New Well	Auger	No Chemistry
933	2093249	1	35	56	21	4	8.4							5.2	8.2			12/14/2007		AMEC EARTH & ENVIRONMENTAL	Monitoring	New Well	Auger	No Chemistry
934	2093250	1	35	56	21	4	8.4							5.2	8.2			12/14/2007		AMEC EARTH & ENVIRONMENTAL	Monitoring	New Well	Auger	No Chemistry
935	261254	SE	10	55	22	4	8.5											11/8/1978		DOW CHEMICAL #MONCTOUNGWELL 5	Monitoring	New Well	Cable Tool	No Chemistry
936	261261	8	10	55	22	4	7.9											11/14/1978		DOW CHEMICAL LTD #8	Monitoring	Test Hole	Cable Tool	No Chemistry
937	261265	7	10	55	22	4	33.5											11/8/1978		DOW CHEMICAL #6 MONITORING	Monitoring	Test Hole	Cable Tool	No Chemistry
938	261271	NW	10	55	22	4	16.8							13.4	16.5			10/24/1989		DOW CHEMICAL	Monitoring	Test Hole	Rotary	No Chemistry
939	261281	NW	10	55	22	4	18.0							13.7	16.8			10/21/1989		DOW CHEMICAL #1 MONITOR	Monitoring	Test Hole	Rotary	No Chemistry
940	261285	NW	10	55	22	4	16.2							13.1	16.2			10/26/1989		DOW CHEMICAL	Monitoring	Test Hole	Rotary	No Chemistry
941	261294	NW	10	55	22	4	16.5							13.4	16.5			10/26/1989		DOW CHEMICAL	Monitoring	Test Hole	Rotary	No Chemistry
942	261297	NW	10	55	22	4	18.0							14.9	18.0			10/26/1989		DOW CHEMICAL	Monitoring	Test Hole	Rotary	No Chemistry
943	261302	10	10	55	22	4	5.2											4/9/1979		DOW CHEMICAL #21	Monitoring	Test Hole	Cable Tool	No Chemistry
944	261321	10	10	55	22	4	4.9											4/9/1979		DOW CHEMICAL #22 MONITORING W	Monitoring	Test Hole	Cable Tool	No Chemistry
945	261340	9	10	55	22	4	5.8											4/9/1979		DOW CHEMICAL	Monitoring	Test Hole	Cable Tool	No Chemistry
946	261414	NW	11	55	22	4	36.6							34.1	35.7			8/27/1980		DOW CHEMICAL	Monitoring	Test Hole	Rotary	No Chemistry
947	261420	NW	11	55	22	4	39.6							36.0	37.5			8/25/1980		DOW CHEMICAL	Monitoring	Test Hole	Rotary	No Chemistry
948	261423	NE	11	55	22	4	39.6											11/27/1978		DOW CHEMICAL #10 MONITORING W	Monitoring	Test Hole	Cable Tool	No Chemistry
949	261427	NE	11	55	22	4	7.3	0.9	7.3									11/22/1978		DOW CHEMICAL #12 MONITORING W	Monitoring	Test Hole	Cable Tool	No Chemistry
950	261428	10	11	55	22	4	7.3	0.9	7.3									11/22/1978		DOW CHEMICAL #13 MONITORING W	Monitoring	Test Hole	Cable Tool	No Chemistry
951	261460	SW	14	55	22	4	6.1							4.6	6.1					DOME PETRO#BRINE UGS PITSITE 1	Monitoring	Chemistry	Unknown	Chemistry Exists
952	261475	SW	14	55	22	4	6.1							4.6	6.1					DOME PETRO#BRINE UGS PITSITE 2	Monitoring	Chemistry	Unknown	Chemistry Exists
953	261485	SW	14	55	22	4	6.1							4.6	6.1					DOME PETRO#UGS@BRINEPITSITE 3	Monitoring	Chemistry	Unknown	Chemistry Exists
954	261489	SW	14	55	22	4	6.1							4.6	6.1					DOME PETRO#UGS@BRINEPITSITE 4	Monitoring	Chemistry	Unknown	Chemistry Exists
955	263387	1	5	56	21	4	42.1	39.3	42.1									4/27/1982		CAN BADGER CO LTD #7	Monitoring	New Well	Rotary	No Chemistry

	WELL ID	LOCATION					WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED USE	TYPE OF WORK	DRILL METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN		FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
956	263397	1	5	56	21	4	45.7	38.1	39.6									3/30/1982	3/30/1982	CAN BADGER CO LTD	Monitoring	New Well-Decommissioned	Rotary	No Chemistry
957	263410	1	5	56	21	4	47.2	38.1	41.1									4/6/1982		CAN BADGER CO LTD #2	Monitoring	New Well	Rotary	No Chemistry
958	263417	1	5	56	21	4	61.0	45.7	61.0									4/8/1982		CAN BADGER CO LTD #3	Monitoring	New Well	Rotary	No Chemistry
959	263423	1	5	56	21	4	61.0	45.7	61.0									4/13/1982		CAN BADGER CO LTD #4	Monitoring	New Well	Rotary	No Chemistry
960	263439	1	5	56	21	4	91.4	76.5	82.3									4/16/1982	4/16/1982	CAN BADGER CO LTD	Monitoring	New Well-Decommissioned	Rotary	No Chemistry
961	263447	1	5	56	21	4	76.2	64.0	73.2									4/22/1982	4/22/1982	CAN BADGER CO LTD	Monitoring	New Well-Decommissioned	Rotary	No Chemistry
962	263459	1	5	56	21	4	42.7							39.0	40.5			5/3/1982		CAN BADGER CO LTD #8	Monitoring	New Well	Rotary	No Chemistry
963	263465	1	5	56	21	4	42.7											5/5/1982		CAN BADGER CO LTD #9	Monitoring	New Well	Rotary	No Chemistry
964	264021	SE	20	56	21	4	5.2													IMPERIAL OIL #6A	Monitoring	Chemistry	Unknown	Chemistry Exists
965	264030	SE	20	56	21	4	7.9													IMPERIAL OIL #6D	Monitoring	Chemistry	Unknown	Chemistry Exists
966	264036	SE	20	56	21	4	21.9													IMPERIAL OIL #5B	Monitoring	Chemistry	Unknown	Chemistry Exists
967	264045	SE	20	56	21	4	33.5													IMPERIAL OIL #6B	Monitoring	Chemistry	Unknown	Chemistry Exists
968	264050	SE	20	56	21	4	43.0													IMPERIAL OIL #3B	Monitoring	Chemistry	Unknown	Chemistry Exists
969	264054	SE	20	56	21	4	2.1													IMPERIAL OIL #5F	Monitoring	Chemistry	Unknown	Chemistry Exists
970	264056	SE	20	56	21	4	43.3													IMPERIAL OIL #5A	Monitoring	Chemistry	Unknown	Chemistry Exists
971	264061	SE	20	56	21	4	15.2													IMPERIAL OIL #6C	Monitoring	Chemistry	Unknown	Chemistry Exists
972	264075	SE	20	56	21	4	7.3													IMPERIAL OIL #5D	Monitoring	Chemistry	Unknown	Chemistry Exists
973	264078	SE	20	56	21	4	5.5													IMPERIAL OIL #7	Monitoring	Chemistry	Unknown	Chemistry Exists
974	264081	SE	20	56	21	4	5.5													IMPERIAL OIL #10	Monitoring	Chemistry	Unknown	Chemistry Exists
975	264086	SE	20	56	21	4	4.3													IMPERIAL OIL #8	Monitoring	Chemistry	Unknown	Chemistry Exists
976	264089	SE	20	56	21	4	4.3													IMPERIAL OIL #5H	Monitoring	Chemistry	Unknown	Chemistry Exists
977	264094	SE	20	56	21	4	4.3													IMPERIAL OIL #5E	Monitoring	Chemistry	Unknown	Chemistry Exists
978	264096	SE	20	56	21	4	4.0													IMPERIAL OIL #4A	Monitoring	Chemistry	Unknown	Chemistry Exists
979	264098	SE	20	56	21	4	4.0													IMPERIAL OIL #5G	Monitoring	Chemistry	Unknown	Chemistry Exists
980	264103	SE	20	56	21	4	3.0													IMPERIAL OIL #9	Monitoring	Chemistry	Unknown	Chemistry Exists
981	42021	13	24	56	21	4	4.6							3.0	4.6			9/25/1991		ALTA ENV	Monitoring	New Well	Rotary	No Chemistry
982	101384	NW	32	54	22	4	0.0													FT SASK, TOWN OF #WELL 1	Municipal	Unknown	Unknown	No Chemistry
983	1495323	NE	12	56	21	4	38.1							33.2	36.3			8/22/2007		STRATHCONA COUNTY / UMA	Municipal	New Well	Rotary	No Chemistry
984	156873	NW	9	55	22	4	0.0													U.M.O.L.-C.R.N.E.W.S.	Municipal	Chemistry	Not Applicable	No Chemistry
985	260180	4	17	54	22	4	29.0											4/22/1972		ALTA ENV/WATER RES	Municipal	Unknown	Drilled	No Chemistry
986	260416	NH	32	54	22	4	18.6														Municipal	New Well	Drilled	No Chemistry
987	263723	16	12	56	21	4	42.7							29.3	30.8			11/6/1975		BRUDERHEIM, TOWN OF#11-75	Municipal	New Well	Unknown	Chemistry Exists
988	263728	16	12	56	21	4	42.7							35.7	37.2			10/3/1975		BRUDERHEIM, TOWN OF #9-75	Municipal	New Well	Unknown	Chemistry Exists
989	263729	16	12	56	21	4	42.7							33.8	37.2			11/4/1975		BRUDERHEIM, TOWN OF#10-75	Municipal	New Well	Unknown	Chemistry Exists
990	263738	1	13	56	21	4	43.6	30.8	38.4									7/16/1975		BRUDERHEIM, TOWN OF#6-75 PUMP	Municipal	New Well	Unknown	Chemistry Exists
991	263821	5	13	56	21	4	48.8							41.8	43.0			11/11/1975		BRUDERHEIM, TOWN OF#14-75	Municipal	New Well	Unknown	Chemistry Exists
992	263828	16	13	56	21	4	36.6							31.1	32.3			11/10/1975		BRUDERHEIM, TOWN OF#13-75	Municipal	New Well-Decommissioned	Unknown	Chemistry Exists
993	263912	9	14	56	21	4	49.4											7/16/1975		BRUDERHEIM, TOWN OF	Municipal	New Well	Unknown	No Chemistry
994	264233	15	21	56	21	4	42.7							34.1	35.4			11/7/1975		BRUDERHEIM, TOWN OF#12-75	Municipal	New Well	Unknown	Chemistry Exists
995	263789	1	13	56	21	4	35.7	34.4	35.7									7/16/1975		BRUDERHEIM, TOWN OF	Municipal & Observation	New Well	Unknown	No Chemistry
996	1270377	1	27	55	21	4	61.0							36.0	42.1			6/10/2016		INTERCHEM CANADA	Observation	New Well	Combination	No Chemistry
997	1300177	12	5	56	21	4	43.0							30.5	39.9			4/16/2007		SHELL CANADA/THURBER ENG.	Observation	Piezometer	Rotary	No Chemistry
998	1420001	NE	10	55	22	4	19.2							16.2	19.2			2/10/2005		AGRIUM PLANT-FORT SASKATCHEWAN	Observation	New Well	Rotary	No Chemistry
999	1420003	NW	5	56	21	4	44.2							38.1	44.2			9/24/2004		SHELL CANADA	Observation	New Well	Rotary	No Chemistry
1000	1420007	SW	24	55	22	4	43.9							37.8	43.9			5/15/2005		NCIA	Observation	New Well	Rotary	No Chemistry
1001	1420016	NE	10	55	22	4	17.4							14.3	17.4			2/10/2005		AGRIUM PLANT-FORT SASKATCHEWAN	Observation	New Well	Rotary	No Chemistry
1002	1420018	NE	3	56	21	4	48.8											1/20/2005	1/20/2005	NCIA	Observation	Test Hole-Decommissioned	Rotary	No Chemistry
1003	1420020	SE	29	55	21	4	33.5							30.5	33.5			2/3/2005		NICA	Observation	New Well	Rotary	No Chemistry
1004	1420023	NE	18	55	21	4	38.7							34.1	38.7			1/31/2005		NCIA	Observation	New Well	Rotary	No Chemistry
1005	1420030	NE	32	54	22	4	30.5							21.6	26.2			1/26/2005		NCIA	Observation	New Well	Rotary	No Chemistry
1006	1420050	NW	24	54	23	4	19.8							15.5	19.8			1/24/2005		NCIA	Observation	New Well	Rotary	No Chemistry
1007	1420097	9	10	56	21	4	36.6											3/24/2004	3/24/2004	STANTEC CONSULTING LTD	Observation	Test Hole-Decommissioned	Unknown	No Chemistry
1008	1420104	SW	10	55	22	4	15.8							12.8	15.8			11/10/2005		AGRIUM	Observation	New Well	Rotary	No Chemistry
1009	1420115	NE	10	55	22	4	24.7							18.6	24.7			2/9/2005		AGRIUM PLANT -FT SASKATCHEWAN	Observation	New Well	Rotary	No Chemistry
1010	1420135	NE	10	55	22	4	18.3							15.2	18.3			2/10/2005		AGRIUM PLANT	Observation	New Well	Rotary	No Chemistry
1011	1420143	NE	10	55	22	4	19.2							15.2	18.3			2/11/2005		AGRIUM PLANT-FT SASKATCHEWAN	Observation	New Well	Rotary	No Chemistry
1012	1420152	SW	25	55	22	4	48.8											1/21/2005	2/21/2005	NCIA	Observation	Test Hole-Decommissioned	Rotary	No Chemistry
1013	1420161	SW	15	55	22	4	36.6											1/18/2005	1/18/2005	NCIA	Observation	Dry Hole-Decommissioned	Rotary	No Chemistry
1014	1420165	NW	4	55	22	4	12.2											1/18/2005	1/18/2005	NCIA	Observation	Dry Hole-Decommissioned	Rotary	No Chemistry
1015	1420173	SW	26	55	22	4	30.5											1/18/2005	1/18/2005	NCIA	Observation	Dry Hole-Decommissioned	Rotary	No Chemistry
1016	1420174	SE	30	55	21	4	47.2											1/19/2005	1/19/2005	NCIA	Observation	Dry Hole-Decommissioned	Rotary	No Chemistry
1017	1420181	SE	36	55	22	4	12.2											1/19/2005	1/19/2005	NCIA	Observation	Dry Hole-Decommissioned	Rotary	No Chemistry
1018	1420197	SW	34	55	21	4	54.9											1/20/2005	1/20/2005	NCIA	Observation	Test Hole-Decommissioned	Rotary	No Chemistry
1019	1420210	15	9	56	21	4	48.8							32.0	53.3			3/22/2004		STANTEC CONSULTING LTD	Observation	New Well	Rotary	No Chemistry
1020	1420217	13	10	56	21	4	48.8							38.7	44.8			3/23/2004		STANTEC CONSULTING LTD	Observation	New Well	Rotary	No Chemistry
1021	1420224	16	10	56	21	4	48.8							40.2	43.3			3/24/2004		STANTEC CONSULTING LTD	Observation	New Well	Rotary	No Chemistry
1022	1420228	4	10	56	21	4	36.6							33.5	36.6			3/23/2004		STANTEC CONSULTING LTD	Observation	New Well	Rotary	No Chemistry
1023	1420242	NW	15	56	21	4	42.7							36.0	40.5			2/2/2005		NCIA	Observation	New Well	Rotary	No Chemistry
1024	1420259	SE	29	54	22	4	36.6											1/17/2005	1/17/2005	NCIA	Observation	Test Hole-Decommissioned	Rotary	No Chemistry
1025	1420418	NE	10	55	22	4	25.0							21.9	25.0			2/9/2005		AGRIUM PLANT, FT SASKATCHEWAN	Observation	New Well	Rotary	No Chemistry
1026	1420419	NE	10	55	22	4	30.5							21.9	25.0			2/9/2005		AGRIUM PLANT, FT SASKATCHEWAN	Observation	New Well	Rotary	No Chemistry
1027	1420432	SW	32	55	21	4	17.1							14.0	17.1			9/8/2006		SHELL SCOTTFORD REFINERY	Observation	Piezometer	Rotary	No Chemistry
1028	1420433	SW	32	55	21	4	45.7							38.7	41.8			9/8/2006		SHELL SCOTTFORD REFINERY	Observation	Piezometer	Rotary	No Chemistry
1029	1420565	SW	34	55	21	4	42.7											1/21/2005	1/21/2005	N C I A	Observation	New Well-Decommissioned	Rotary	No Chemistry
1030	1420578	SE	16	56	21	4	48.8							39.6	45.7			6/23/2006		SHELL SCOTFORD	Observation	New Well	Rotary	No Chemistry
1031	1420579	NE	4	56	21	4	44.2							36.9	39.9			6/21/2006		SHELL SCOTFORD	Observation	New Well	Rotary	No Chemistry
1032	1421030	SW	36	54	22	4	24.4							14.3	15.8	15.8	18.9	7/3/2010		REPERIO RESOURCES	Observation	New Well	Rotary - Mud	No Chemistry
1033	1421033	NE	26	54	22	4	10.7							6.4	9.4			6/24/2010		REPERIO RESOURCES	Observation	New Well	Rotary - Mud	No Chemistry
1034	1421034	NE	26	54	22	4	12.2							7.6	10.7			6/25/2010		REPERIO RESOURCES	Observation	New Well	Rotary - Mud	No Chemistry
1035	1421035	SW	26	54	22	4	11.3							8.2	9.8			7/1/2010		REPERIO RESOURCES	Observation	New Well	Rotary - Mud	No Chemistry
1036	1421038	SW	26	54	22	4	16.5							9.1	15.2			7/1/2010		REPERIO RESOURCES	Observation	New Well	Rotary - Mud	No Chemistry
1037	1421039	NE	26	54	22	4	10.7							6.1	9.1			6/29/2010		REPERIO RESOURCES	Observation	New Well	Rotary - Mud	No Chemistry
1038	1421785	3	14	55	22	4	41.1							35.2	39.9			11/3/2015		KERYERA CORP	Observation	New Well	Rotary - Mud	No Chemistry
1039	1421793	SE	14	55	22	4	42.7							37.1	41.8			10/27/2015		KEYERA CORP	Observation	New Well	Rotary - Mud	No Chemistry
1040	1421794	SE	14	55	22	4	43.2							37.4	42.1			10/30/2015		KEYERA CORP	Observation	New Well	Rotary - Mud	No Chemistry
1041	1421865	14	19	54	22	4	42.7							39.6	41.1			9/2/2016		NCIA	Observation	New Well	Rotary - Mud	No Chemistry
1042	1422457	13	18	55	21	4	42.4							35.8	38.9			12/8/2020		KEYERA CORP	Observation	New Well	Rotary - Mud	No Chemistry

	WELL ID	LOCATION					WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED USE	TYPE OF WORK	DRILL METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN		FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
1043	1422458	13	18	55	21	4	44.8							36.6	41.1			12/8/2017		KEYERA CORP	Observation	New Well	Rotary - Mud	No Chemistry
1044	1422459	13	18	55	21	4	42.1							35.1	38.1			12/7/2017		KEYERA CORP	Observation	New Well	Rotary - Mud	No Chemistry
1045	1495324	NE	12	56	21	4	34.4							31.1	34.1			8/22/2007		STRATHCONA COUNTY / UMA	Observation	New Well	Rotary	No Chemistry
1046	2058433	4	17	54	22	4	29.0											4/22/1972		ALTA ENV - #791E	Observation	Other	Unknown	No Chemistry
1047	215410	8	30	54	22	4	42.7	29.0	34.1									8/6/1976		ALTA ENV #1619E	Observation	Test Hole	Unknown	No Chemistry
1048	224185	SE	18	56	20	4	73.2											10/8/1993	10/8/1993	MCLELLAN, ART	Observation	Test Hole-Decommissioned	Rotary	No Chemistry
1049	234510	NW	30	56	20	4	51.8											5/12/1969		ALTA ENV #0298E	Observation	Test Hole	Unknown	No Chemistry
1050	234526	SE	30	56	20	4	37.5											5/13/1969		ALTA ENV #0299E	Observation	Test Hole	Unknown	No Chemistry
1051	234530	13	30	56	20	4	10.1													ALBERTA ENVIRONMENT	Observation	Old Well-Yield	Unknown	Chemistry Exists
1052	234530	13	30	56	20	4	10.1							8.5	10.1			3/27/1985		ALTA ENV #2342E	Observation	Test Hole	Rotary	Chemistry Exists
1053	234532	13	30	56	20	4	36.9							35.4	36.9			3/26/1985		ALBERTA ENVIRONMENT	Observation	Test Hole	Rotary	No Chemistry
1054	234538	13	30	56	20	4	10.1							8.5	10.1			3/27/1985		ALBERTA ENVIRONMENT	Observation	Test Hole	Rotary	Chemistry Exists
1055	234538	13	30	56	20	4	10.1													ALBERTA ENVIRONMENT	Observation	Old Well-Yield	Unknown	Chemistry Exists
1056	234545	13	30	56	20	4	48.2							46.3	47.9			3/22/1985		ALBERTA ENVIRONMENT	Observation	Test Hole	Rotary	No Chemistry
1057	234548	13	30	56	20	4	78.9													ALBERTA ENVIRONMENT	Observation	Old Well-Yield	Unknown	Chemistry Exists
1058	234548	13	30	56	20	4	78.9											3/19/1985		ALBERTA ENVIRONMENT	Observation	Test Hole	Rotary	Chemistry Exists
1059	234549	13	30	56	20	4	72.5											3/11/1985		ALTA ENV #2334E	Observation	Test Hole-Decommissioned	Rotary	No Chemistry
1060	260051	NE	8	54	22	4	38.1							6.4	12.8			4/14/1977		KENNEDY	Observation	New Well	Rotary	No Chemistry
1061	260458	SW	36	54	22	4	13.7											4/7/1988			Observation	Test Hole	Bored	No Chemistry
1062	262034	9	33	54	23	4	56.4											10/6/1972		ALTA ENV #0886E	Observation	Test Hole	Unknown	No Chemistry
1063	263831	SW	1	56	22	4	19.8													ALTA ENV/WATER RES #0293E	Observation	Test Hole	Rotary	No Chemistry
1064	286110	1	28	55	21	4	21.3											6/24/1969		#HOLE 670-H	Observation	Test Hole	Auger	No Chemistry
1065	286112	13	22	55	21	4	30.8											6/24/1969		#HOLE 671-H	Observation	Test Hole	Auger	No Chemistry
1066	286117	13	28	55	21	4	29.3											6/25/1969		#HOLE 669-H	Observation	Test Hole	Auger	No Chemistry
1067	42022	4	14	56	21	4	6.1							3.1	4.6			9/25/1991		ALTA ENV/CHMILIAR, W.	Observation	New Well	Rotary	No Chemistry
1068	83369	NE	6	55	21	4	15.2											4/8/1988		ALTA ENV	Observation	Test Hole	Auger	No Chemistry
1069	83370	SW	7	55	21	4	42.7											8/6/1976		ALTA ENV #1619BE	Observation	Test Hole	Rotary	No Chemistry
1070	83472	12	22	55	21	4	30.8											6/24/1969		ALTA AGRICULTURE	Observation	Test Hole	Rotary	No Chemistry
1071	1421047	SW	36	54	22	4	10.1							7.6	9.1			6/25/2010		REPERIO RESOURCES	Other	New Well	Rotary - Mud	No Chemistry
1072	1421611	SW	14	55	22	4	45.7							33.8	38.4	38.4	44.5	7/24/2014		KEYERA ENERGY	Other	New Well	Rotary - Mud	No Chemistry
1073	1421680	SW	14	55	22	4	46.6							33.9	39.3			12/4/2014		KEYERA ENERGY	Other	New Well	Rotary - Mud	No Chemistry
1074	1476845	6	34	55	21	4	119.8											11/4/2015		SKYSTONE ENGINEERING	Other	Other	Unknown	No Chemistry
1075	1476846	6	34	55	21	4	119.8											11/7/2015		SKYSTONE ENGINEERING	Other	Other	Rotary - Mud	No Chemistry
1076	1476847	5	34	55	21	4	94.5											11/8/2015		SKYSTONE ENGINEERING	Other	Other	Rotary - Mud	No Chemistry
1077	1795266	SE	32	56	21	4	3.6											4	9/29/2010	TOTAL E & P CANADA LTD.	Other	Existing Well-Decommissioned	Other	No Chemistry
1078	1795267	SE	32	56	21	4	12.5												9/28/2010	TOTAL E & P CANADA	Other	Existing Well-Decommissioned	Unknown	No Chemistry
1079	1795268	SE	32	56	21	4	23.7												9/30/2010	TOTAL E & P CANADA LTD	Other	Existing Well-Decommissioned	Bored	No Chemistry
1080	1795269	SE	32	56	21	4	14.5												9/30/2010	TOTAL E & P CANADA LTD	Other	Existing Well-Decommissioned	Unknown	No Chemistry
1081	1795270	NW	33	56	21	4	13.7												10/1/2010	TOTAL E & P CANADA LTD.	Other	Existing Well-Decommissioned	Unknown	No Chemistry
1082	1795271	NW	33	56	21	4	14.3												10/1/2010	TOTAL E & P CANADA LTD	Other	Existing Well-Decommissioned	Unknown	No Chemistry
1083	1795277	NW	33	56	21	4	14.3												10/4/2010	TOTAL E & P CANADA LTD	Other	Existing Well-Decommissioned	Unknown	No Chemistry
1084	1795278	SW	33	56	21	4	8.8												10/5/2010	TOTAL E & P CANADA LTD.	Other	Existing Well-Decommissioned	Bored	No Chemistry
1085	1795279	SE	33	56	21	4	33.5							32.0	33.5				10/7/2010	TOTAL E & P CANADA LTD.	Other	Existing Well-Decommissioned	Unknown	No Chemistry
1086	1795280	NE	33	56	21	4	28.0												10/12/2010	TOTAL E & P CANADA LTD.	Other	Existing Well-Decommissioned	Unknown	No Chemistry
1087	1795281	NE	34	56	21	4	30.7												10/6/2010	TOTAL E & P CANADA LTD	Other	Existing Well-Decommissioned	Unknown	No Chemistry
1088	1795282	SE	4	57	21	4	27.7												10/6/2010	TOTAL E & P CANADA LTD	Other	Existing Well-Decommissioned	Unknown	No Chemistry
1089	1795283	NE	33	56	21	4	16.8												10/5/2010	TOTAL E& P CANADA LTD	Other	Existing Well-Decommissioned	Unknown	No Chemistry
1090	1795285	SE	28	56	21	4	10.3												10/4/2010	TOTAL E & P CANADA LTD	Other	Existing Well-Decommissioned	Unknown	No Chemistry
1091	1795286	15	34	56	21	4	13.3												10/7/2010	TOTAL E & P CANADA LTD.	Other	Existing Well-Decommissioned	Unknown	No Chemistry
1092	1888893	4	18	56	21	4	48.8							30.5	33.5	33.5	36.6	6/29/2009		ACCESS PIPELINES	Other	New Well	Rotary	No Chemistry
1093	196962	8	22	54	22	4	150.9											5/29/1975		ARC# TH 3-75	Other	Coal Test Hole	Unknown	No Chemistry
1094	261523	12	17	55	22	4	10.7											1/1/1935		NORMANDEAU, J	Other	Federal Well Survey	Hand Dug	No Chemistry
1095	1325000	NE	35	54	22	4	51.8											9/1/1973		SIMMONS, HECTOR	Stock	New Well	Cable Tool	No Chemistry
1096	154375	NE	3	56	22	4	59.4	45.7	57.9									4/17/1985		KUGLER, IRWIN	Stock	New Well	Rotary	No Chemistry
1097	159190	NE	17	55	21	4	82.3											5/28/1976		SCOTFORD COLONY#PUMP HOUSE	Stock	New Well	Rotary	Chemistry Exists
1098	159197	NE	34	55	21	4	54.9	46.6	52.7									9/29/1991		BERG, RON	Stock	New Well	Rotary	No Chemistry
1099	159288	SE	5	55	22	4	13.4	8.2	12.2									7/10/1991		GODBOUT, ROMEO	Stock	Reconditioned	Bored	No Chemistry
1100	167849	NE	17	55	21	4	14.9											7/10/1992		SCOTFORD COLONY	Stock	New Well-Decommissioned	Bored	No Chemistry
1101	167850	NE	17	55	21	4	20.4	12.2	13.1	19.5	20.4							7/12/1992		SCOTFORD COLONY	Stock	New Well	Bored	No Chemistry
1102	1690056	NW	9	56	21	4	11.6	3.0	9.1									7/9/2002		GAUMONT, CONARD	Stock	New Well	Bored	No Chemistry
1103	185985	SW	17	56	20	4	67.1	48.8	61.0									10/28/1992		SCHRAM, BARRY	Stock	New Well	Rotary	No Chemistry
1104	1912209	SW	8	56	20	4	85.3											10/9/2013	10/9/2013	SHRAM, BARRY	Stock	Dry Hole-Decommissioned	Rotary - Mud	No Chemistry
1105	1912211	SW	8	56	20	4	97.5	91.4	97.5									10/13/2013		SHRAM, BARRY	Stock	New Well	Rotary - Mud	No Chemistry
1106	1912296	SW	17	56	20	4	91.4	79.2	85.3									11/5/2014		SCHRAM, BARRY	Stock	New Well	Rotary - Mud	No Chemistry
1107	260183	NW	18	54	22	4	36.6											2/1/1974		SMITH, HARRY	Stock	New Well	Cable Tool	No Chemistry
1108	260184	SE	19	54	22	4	28.3							26.5	28.0			4/27/1968		GALLOWAY, R.	Stock	New Well	Drilled	No Chemistry
1109	260190	SE	19	54	22	4	28.7											1/1/1925		LOREN, J.	Stock	New Well	Combination	No Chemistry
1110	260222	SW	26	54	22	4	54.9											6/8/1978		GALLOWAY, ED	Stock	New Well	Rotary	No Chemistry
1111	261227	9	7	55	22	4	7.9											1/1/1930		VILLENEUVE, E.	Stock	Federal Well Survey	Hand Dug	No Chemistry
1112	261236	3	8	55	22	4	105.5											1/1/1924		HOULE, O.	Stock	Federal Well Survey	Drilled	No Chemistry
1113	261456	16	13	55	22	4	103.6											1/1/1924		KREPS, J.	Stock	Federal Well Survey	Drilled	No Chemistry
1114	261550	4	18	55	22	4	118.9											1/1/1930		VILLENEUVE, M	Stock	Federal Well Survey	Drilled	No Chemistry
1115	261611	8	19	55	22	4	5.5											1/1/1931		ROCK, L.C.	Stock	Federal Well Survey	Hand Dug	No Chemistry
1116	261753	8	29	55	22	4	22.9											1/1/1933		LANGLOIS, L	Stock	Federal Well Survey	Bored	No Chemistry
1117	261833	NE	14	56	21	4	11.3											4/19/1989		HODGSON, GEORGE	Stock	Deepened	Bored	No Chemistry
1118	262001	2	33	54	23	4	152.4											1/1/1931		DORLAND	Stock	Federal Well Survey	Drilled	No Chemistry
1119	262022	16	33	54	23	4	15.2											1/1/1916		WILSON	Stock	Federal Well Survey	Bored	No Chemistry
1120	262123	SE	35	54	23	4	36.6	24.4	25.0	27.4	30.5	32.0	32.6					6/1/1975		DEVEREUX, JOHN	Stock	New Well	Drilled	No Chemistry
1121	262361	EH	35	54	23	4	35.1	26.5	31.1									9/1/1973		DEVEREUX, J	Stock	New Well	Rotary	No Chemistry
1122	262430	SE	1	55	23	4	12.2											7/14/1922		VAN ACKER, L.	Stock	Federal Well Survey	Hand Dug	No Chemistry
1123	262520	SE	13	55	23	4	120.1											7/13/1925		VILLENEUVE, O.	Stock	Federal Well Survey	Drilled	No Chemistry
1124	263351	SE	3	56	21	4	10.7	6.1	10.7									9/17/1974		PROKOPCZAK, J.	Stock	New Well	Backhoe	No Chemistry
1125	263599	NE	11	56	21	4	36.6													TAYLOR, G.J	Stock	New Well	Cable Tool	Chemistry Exists
1126	263607	NE	11	56	21	4	37.2											8/1/1973		FAIRWEATHER, B.	Stock	New Well	Cable Tool	Chemistry Exists
1127	263699	SW	12	56	21	4	31.1													OLSON, R	Stock	New Well	Cable Tool	No Chemistry
1128	263703	SW	12	56	21	4	13.7											9/3/1977		OLSEN, R	Stock	New Well	Rotary	No Chemistry
1129	263710	NW	12	56	21	4	44.2											8/12/1983		GABERT, M.	Stock	New Well	Rotary	No Chemistry

	WELL ID	LOCATION					WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED USE	TYPE OF WORK	DRILL METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN		FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
1130	263818	3	13	56	21	4	4.9													PROCNAIM, R.	Stock	Federal Well Survey	Hand Dug	No Chemistry
1131	263941	4	16	56	21	4	42.7													KROPP, L.	Stock	New Well	Cable Tool	Chemistry Exists
1132	264180	SE	21	56	21	4	54.9							47.5	48.2			7/3/1978		DEBAAN, J	Stock	New Well	Rotary	No Chemistry
1133	264218	SW	21	56	21	4	53.6											3/1/1974		SMITH, E.	Stock	New Well	Cable Tool	Chemistry Exists
1134	264254	8	25	56	21	4	14.9											6/17/1978		SERINK, W	Stock	New Well	Bored	No Chemistry
1135	264272	SW	26	56	21	4	39.6	31.7	37.8									4/12/1988		SAWATZKI, W	Stock	New Well	Rotary	No Chemistry
1136	264282	9	27	56	21	4	67.1							30.5	36.6	42.7	48.8	5/20/1986		MEDAK, W	Stock	New Well	Rotary	No Chemistry
1137	264315	SE	29	56	21	4	7.3													PUCHALUK, P.	Stock	Chemistry	Unknown	Chemistry Exists
1138	264931	NE	17	54	22	4	67.1											4/18/1955		ARMSTRONG	Stock	New Well	Drilled	Chemistry Exists
1139	264947	NE	35	54	22	4	51.8											9/1/1973		SIMMONS, HECTOR	Stock	New Well	Cable Tool	Chemistry Exists
1140	267241	SE	3	56	21	4	10.7	4.6	10.7									10/10/1974		PROKOPCZAK, L.J.	Stock	New Well	Bored	No Chemistry
1141	270766	4	21	56	20	4	68.6													GRONER, LARRY	Stock	New Well	Cable Tool	No Chemistry
1142	290971	SW	34	56	21	4	16.8	12.8	15.8									10/18/1998		WOHNSKY, WALT	Stock	New Well	Bored	No Chemistry
1143	297412	5	36	56	21	4	48.8	36.6	48.8									5/23/2000		DRABBLE, R.	Stock	New Well	Rotary	No Chemistry
1144	83371	3	7	55	21	4	50.3	39.6	50.3									9/11/1981		MOYSEY, FRANK	Stock	New Well	Rotary	No Chemistry
1145	83421	16	16	55	21	4	14.0											1/1/1934		MANZ, A.	Stock	Federal Well Survey	Bored	No Chemistry
1146	83422	NW	17	55	21	4	39.6											11/1/1973		SCOTFORD COLONY	Stock	New Well	Cable Tool	No Chemistry
1147	83424	NE	17	55	21	4	85.3	73.2	85.3									12/7/1983		SCOTFORD COLONY	Stock	New Well	Rotary	Chemistry Exists
1148	83427	16	17	55	21	4	82.3											7/2/1974		SCOTFORD COLONY	Stock	New Well	Cable Tool	No Chemistry
1149	83429	9	17	55	21	4	45.7											8/1/1973		SCOTFORD COLONY	Stock	New Well	Cable Tool	No Chemistry
1150	83430	16	17	55	21	4	73.2	71.6	73.2									6/23/1978		SCOTFORD COLONY	Stock	New Well	Rotary	No Chemistry
1151	83431	16	17	55	21	4	85.3													MANN, A.A.	Stock	Federal Well Survey	Drilled	No Chemistry
1152	83432	16	17	55	21	4	134.1											12/2/1983		SCOTFORD COLONY	Stock	New Well	Rotary	No Chemistry
1153	83434	NE	17	55	21	4	21.3							17.7	19.2			8/27/1986		SCOTFORD COLONY	Stock	New Well	Rotary	No Chemistry
1154	83441	16	18	55	21	4	12.2											1/1/1928		BARCLEY, E.H.	Stock	Federal Well Survey	Bored	No Chemistry
1155	83442	SW	19	55	21	4	2.4													WING, H.S.	Stock	Chemistry	Hand Dug	Chemistry Exists
1156	83443	SW	19	55	21	4	3.0													WING, GERRY	Stock	Chemistry	Hand Dug	Chemistry Exists
1157	83444	SW	19	55	21	4	4.3													BLACKLOCK, BRIAN	Stock	Chemistry	Hand Dug	Chemistry Exists
1158	83454	15	19	55	21	4	7.3											5/10/1968	1/1/2001	NEBEL, ROBERT	Stock	New Well	Bored	Chemistry Exists
1159	83456	15	19	55	21	4	8.5	1.8	7.9									1/7/1980		HENDERSON, GARTH	Stock	New Well	Bored	No Chemistry
1160	83457	15	19	55	21	4	12.2	5.5	7.6									1/2/1980	1/1/2001	HENDERSON, GARTH	Stock	New Well	Bored	No Chemistry
1161	83464	1	21	55	21	4	38.1	31.7	36.6									4/3/1980		KRIBS, ROBERT	Stock	New Well	Rotary	Chemistry Exists
1162	83466	4	21	55	21	4	18.3											9/14/1983		WAKARYK, ANDREW	Stock	New Well	Bored	No Chemistry
1163	83475	5	23	55	21	4	54.9											1/1/1926		PENELTON, J.	Stock	Federal Well Survey	Drilled	No Chemistry
1164	83478	14	23	55	21	4	13.4											1/1/1926		ARNDT, G.	Stock	Federal Well Survey	Bored	No Chemistry
1165	83498	SE	27	55	21	4	56.4	40.2	51.2									11/30/1962		CHOLOWSKI, ALBERT	Stock	New Well	Rotary	No Chemistry
1166	83504	16	27	55	21	4	26.8											7/5/1974		HEINRICHS, ED	Stock	New Well	Cable Tool	Chemistry Exists
1167	83515	SE	30	55	21	4	9.8	3.7	9.8									8/20/1975	1/1/2001	GODBOUT, STAN	Stock	New Well	Bored	No Chemistry
1168	83530	13	30	55	21	4	42.7											5/1/1974		LIVING, DALE	Stock	New Well	Cable Tool	Chemistry Exists
1169	83547	4	34	55	21	4	32.0											4/13/1982		RADKE, BEN	Stock	New Well	Cable Tool	No Chemistry
1170	83547	4	34	55	21	4	32.0											4/18/1982		RADKE, JAMES & RANDY	Stock	Well Inventory	Unknown	No Chemistry
1171	83550	SW	34	55	21	4	94.5	85.3	94.5									9/28/1977		RADKE, BEN	Stock	New Well	Rotary	Chemistry Exists
1172	83553	4	34	55	21	4	14.6											11/6/1981		RADKE, BEN	Stock	New Well	Bored	No Chemistry
1173	83557	13	34	55	21	4	36.6											9/9/1981		HALL'S AUTO	Stock	New Well	Cable Tool	No Chemistry
1174	83558	13	34	55	21	4	40.5											10/19/1978		DAOUST, CHARLES	Stock	New Well	Cable Tool	No Chemistry
1175	83559	13	34	55	21	4	42.7							36.6	42.7			7/14/1987		DAOUST, C.	Stock	New Well	Rotary	No Chemistry
1176	83562	16	34	55	21	4	53.3											5/1/1982		BERG, RON	Stock	New Well	Cable Tool	No Chemistry
1177	83574	12	36	55	21	4	12.2											1/1/1936		PROKOPCZAK, J.	Stock	Federal Well Survey	Bored	No Chemistry
1178	91556	4	17	56	20	4	42.7	27.4	42.7									8/16/1982		SCHRAM, BARRY	Stock	New Well	Cable Tool	No Chemistry
1179	91557	12	17	56	20	4	48.8							39.6	41.5			6/4/1984		HODGSON, L.	Stock	New Well	Rotary	No Chemistry
1180	91567	13	18	56	20	4	6.7											1/1/1918		SERANT, M.	Stock	Federal Well Survey	Unknown	No Chemistry
1181	91568	NW	18	56	20	4	47.2											8/24/1987		SERINK, WILLIAM	Stock	New Well	Rotary	No Chemistry
1182	91569	1	19	56	20	4	50.3											7/31/1975		RADKE, SIEGFRIED	Stock	New Well	Cable Tool	No Chemistry
1183	91571	4	19	56	20	4	45.7											7/8/1977		SERINK, WILLIAM	Stock	New Well	Rotary	Chemistry Exists
1184	10096056	11	34	55	21	4														R3 DECONSTRUCTION AND ABATEMENT	Unknown	Existing Well-Decommissioned	Not Applicable	No Chemistry
1185	1125042	9	1	56	22	4	15.2												9/26/2011	PROVIDENT ENERGY / WILLIAMS ENERGY	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1186	1165818	SW	34	55	21	4	33.2											5/13/2014	5/13/2014	RADKE, BEN	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1187	1165819	SW	34	55	21	4	7.6											5/13/2014	5/13/2014	RADKE, BEN	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1188	1165820	SW	34	55	21	4												5/13/2014	5/13/2014	RADKE, BEN	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1189	1165821	SW	34	55	21	4												5/13/2014	5/13/2014	RADKE, BEN	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1190	1165822	SW	35	55	21	4	89.0											5/13/2014	5/13/2014	RADKE, BEN	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1191	1270253	15	8	56	21	4	12.2	2.4	11.6									10/18/2013		CITY OF EDMONTON	Unknown	Other	Rotary - Mud	No Chemistry
1192	1270254	15	8	56	21	4	12.2	2.4	11.6									10/19/2013		CITY OF EDMONTON	Unknown	Other	Rotary - Mud	No Chemistry
1193	1270255	15	8	56	21	4	21.3	8.5	20.7									10/19/2013		CITY OF EDMONTON	Unknown	Other	Rotary - Mud	No Chemistry
1194	1270256	15	8	56	21	4	21.3	8.5	20.7									10/21/2013		CITY OF EDMONTON	Unknown	Other	Rotary - Mud	No Chemistry
1195	1370431	1	36	55	22	4														YOUNG, CARL	Unknown	Old Well-Yield	Not Applicable	No Chemistry
1196	1420003	NW	5	56	21	4													11/1/2007	SHELL CANADA LIMITED	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1197	1420578	SE	16	56	21	4													11/1/2007	SHELL CANADA LIMITED	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1198	1421030	SW	36	54	22	4														JOBURG AGGREGATES	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1199	1421047	SW	36	54	22	4														JOBURG AGGREGATES	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1200	152372	WH	8	56	21	4	30.5											6/26/1990		MASCHMEYER, RAY	Unknown	Dry Hole	Rotary	No Chemistry
1201	1575400	SE	18	56	21	4													7/8/2009	ACCESS PIPELINES	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1202	1575427	SW	9	56	21	4													10/19/2007	SHELL CANADA LIMITED OIL SANDS	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1203	1575428	SW	9	56	21	4													10/19/2007	SHELL CANADA LIMITED OIL SANDS	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1204	1575581	NW	9	56	21	4													10/20/2007	SHELL CANADA LIMITED	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1205	1575582	SW	16	56	21	4													10/20/2007	SHELL CANADA LIMITED	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1206	1575583	SW	16	56	21	4													10/20/2007	SHELL CANADA LIMITED	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1207	1575584	SE	16	56	21	4													11/1/2007	SHELL CANADA LIMITED	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1208	1575585	SE	30	55	21	4													11/2/2007	SHELL CANADA LIMITED	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1209	1575586	SE	30	55	21	4													11/2/2007	SHELL CANADA LIMITED	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1210	1575587	SE	30	55	21	4													11/2/2007	SHELL CANADA LIMITED	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1211	1575588	SE	30	55	21	4													11/2/2007	SHELL CANADA LIMITED	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1212	1575589	NW	30	55	21	4													11/2/2007	SHELL CANADA LIMITED	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1213	1575666	SW	12	56	22	4													12/8/2008	PETRO CANADA	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1214	1575667	SW	13	56	22	4													12/9/2008	PETRO CANADA	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1215	1575668	SW	13	56	22	4													12/9/2008	PETRO CANADA	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1216	1575669	SW	16	56	21	4													6/11/2008	SHELL CANADA LTD.	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry

	WELL ID	LOCATION					WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED USE	TYPE OF WORK	DRILL METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN		FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
1217	1575670	SW	16	56	21	4													6/11/2008	SHELL CANADA LTD.	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1218	1575671	SE	16	56	21	4													6/11/2008	SHELL CANADA LTD.	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1219	1575697	NE	35	55	21	4	18.3												7/2/2009	CHICHAK, L.	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1220	1575698	NE	35	55	21	4	4.9												7/1/2009	CHICHAK, L.	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1221	1575699	NW	26	55	21	4	30.5												7/2/2009	PROKOPCZAK, L.	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1222	1575700	NW	26	55	21	4	18.3												7/10/2009	PROKOPCZAK, L.	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1223	1575701	NW	26	55	21	4	27.4												7/10/2009	PROKOPCZAK, L.	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1224	1575702	SW	35	55	21	4	42.7												7/2/2009	HALLABEY, S.	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1225	1575703	NW	30	55	21	4	5.5												7/1/2009	PROKOPCZAK, B.	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1226	1575880	SE	11	56	22	4													12/9/2008	PETRO CANADA	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1227	1575882	NW	12	56	22	4													12/9/2008	PETRO CANADA	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1228	1575883	SW	12	56	22	4													12/9/2008	PETRO CANADA	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1229	1576821	NE	3	57	21	4	88.4											10/31/2021		BABYSH, DARCIE & HARNSIMIUK, BRANDYN	Unknown	New Well-Decommissioned	Combination	No Chemistry
1230	160230	NE	8	54	22	4	17.7	6.1	13.7									10/24/1991		KROENING, GREG	Unknown	New Well	Bored	No Chemistry
1231	164457	NE	11	56	22	4													12/8/2008	PETRO CANADA	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1232	1690056	NW	9	56	21	4													11/1/2007	SHELL CANADA LIMITED	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1233	169121	SE	16	56	21	4	34.7											9/23/1992	9/23/1992	HENKELMAN, P.R.	Unknown	New Well-Decommissioned	Rotary	No Chemistry
1234	1716348	2	27	55	21	4													7/5/2016	LEDCOR	Unknown	Existing Well-Decommissioned	Not Applicable	No Chemistry
1235	1716351	2	27	55	21	4													7/5/2016	LEDCOR	Unknown	Existing Well-Decommissioned	Not Applicable	No Chemistry
1236	1716770	2	25	55	22	4														CANADIAN DEWATERING	Unknown	Existing Well-Decommissioned	Not Applicable	No Chemistry
1237	1795275	15	34	56	21	4	3.7											6/14/2011	6/14/2011	TOTAL E & P CANADA LTD.	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1238	1795449	NE	7	56	20	4														WHITE, BETH & SCHULTZ, DALE	Unknown	Existing Well-Decommissioned	Not Applicable	No Chemistry
1239	208911	SE	16	56	21	4													11/1/2007	SHELL CANADA LIMITED	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1240	240750	NE	30	55	21	4	42.7											5/11/1969		ALTA ENV/WATER RES #0295E	Unknown	Test Hole	Rotary	No Chemistry
1241	240751	EH	20	55	21	4	45.1											5/12/1969		ALTA ENV/WATER RES #0296E	Unknown	Test Hole	Rotary	No Chemistry
1242	240752	NE	15	55	21	4	24.4											5/12/1969		ALTA ENV #0297E	Unknown	Test Hole	Rotary	No Chemistry
1243	240761	2	33	54	23	4	42.7											9/20/1973		ALTA ENV #1072E	Unknown	Test Hole	Rotary	Chemistry Exists
1244	240767	NE	36	54	22	4	12.2											8/8/1976		ALTA ENV #1621E	Unknown	Test Hole	Rotary	No Chemistry
1245	240768	NE	35	54	22	4	30.5											8/5/1976		ALTA ENV #1618E	Unknown	Test Hole	Auger	No Chemistry
1246	240769	NE	34	54	22	4	36.6											8/7/1976		ALTA ENV #1620E	Unknown	Test Hole	Rotary	No Chemistry
1247	240770	NW	29	54	22	4	42.7											8/8/1976		ALTA ENV #1622E	Unknown	Test Hole	Rotary	No Chemistry
1248	260032	NW	7	54	22	4	45.7													HOPKIN, JIM	Unknown	Chemistry	Drilled	Chemistry Exists
1249	260036	NE	8	54	22	4	21.3													TUCKER, CHARLES	Unknown	Chemistry	Bored	Chemistry Exists
1250	260040	NE	8	54	22	4	20.7											10/28/1974		KREBS, CLIFF	Unknown	Chemistry	Drilled	Chemistry Exists
1251	260041	NE	8	54	22	4	23.8													WILKINSON, J.P.	Unknown	Chemistry	Bored	Chemistry Exists
1252	260042	NE	8	54	22	4	0.0													GIDYCH, R.T.	Unknown	Chemistry	Unknown	Chemistry Exists
1253	260043	NE	8	54	22	4	8.2													STEVENSON, R.C.	Unknown	Chemistry	Hand Dug	Chemistry Exists
1254	260044	NE	8	54	22	4	7.9													LIVINGSTON, BRIAN	Unknown	Chemistry	Bored	Chemistry Exists
1255	260047	NE	8	54	22	4	67.1													MCKINLAY, R.L.	Unknown	Chemistry	Drilled	Chemistry Exists
1256	260049	NE	8	54	22	4	12.2													KENSON HLDG	Unknown	Chemistry	Bored	Chemistry Exists
1257	260050	NE	8	54	22	4	12.2													KENSON HLDG	Unknown	Chemistry	Bored	Chemistry Exists
1258	260053	NE	8	54	22	4	0.0													SUPINA, NICK	Unknown	Chemistry	Unknown	Chemistry Exists
1259	260055	NE	8	54	22	4	7.9													BECKER, MARK	Unknown	Chemistry	Unknown	Chemistry Exists
1260	260056	NE	8	54	22	4	24.4													HENDRICKSON, CONNIE	Unknown	Chemistry	Unknown	Chemistry Exists
1261	260057	NE	8	54	22	4	3.0													SPALLIN, LYNNE	Unknown	Chemistry	Unknown	Chemistry Exists
1262	260059	NE	8	54	22	4	16.8													KENNEDY, KENNETH	Unknown	Chemistry	Unknown	Chemistry Exists
1263	260060	NE	8	54	22	4	9.1													GROTEN, HELEN	Unknown	Chemistry	Unknown	Chemistry Exists
1264	260061		8	54	22	4	10.7													DIRKS, G.A.	Unknown	Chemistry	Unknown	Chemistry Exists
1265	260067	NW	9	54	22	4	61.0													VAN CAMP, ERIC	Unknown	Chemistry	Drilled	Chemistry Exists
1266	260173	NW	16	54	22	4	27.4													THOMAS, ALFRED	Unknown	Chemistry	Unknown	Chemistry Exists
1267	260175	NW	16	54	22	4	29.6													MCKAY, A.A.	Unknown	Chemistry	Unknown	Chemistry Exists
1268	260176	NE	16	54	22	4	24.1													GUY, F.E.	Unknown	Chemistry	Unknown	Chemistry Exists
1269	260177	SE	17	54	22	4	6.1													TWIGGE, E.R.	Unknown	Chemistry	Drilled	Chemistry Exists
1270	260178	SW	17	54	22	4	80.8													GALLOWAY, LLOYD	Unknown	Chemistry	Unknown	Chemistry Exists
1271	260185	SE	19	54	22	4	54.9													RIVER BRAE FARM	Unknown	Chemistry	Unknown	Chemistry Exists
1272	260186	SE	19	54	22	4	56.4													GALLOWAY, ROY	Unknown	Chemistry	Unknown	Chemistry Exists
1273	260187	NW	19	54	22	4	57.9													LAMPRECHT, HENRY	Unknown	Chemistry	Unknown	Chemistry Exists
1274	260188	NW	19	54	22	4	70.1													GABERT, DOUG	Unknown	Chemistry	Drilled	Chemistry Exists
1275	260189	10	19	54	22	4	32.9														Unknown	Chemistry	Unknown	Chemistry Exists
1276	260191	4	20	54	22	4	28.3											1/1/1915		PETERS, R.J.	Unknown	New Well	Drilled	No Chemistry
1277	260192	NW	20	54	22	4													12/5/2014	SUREWAY CONSTRUCTION	Unknown	Existing Well-Decommissioned	Unknown	Chemistry Exists
1278	260197	SW	22	54	22	4	9.1													SHACKLETON, STV	Unknown	Chemistry	Unknown	Chemistry Exists
1279	260218	2	26	54	22	4	22.9							12.2	13.4			9/18/1964		MID WESTERN INDUSTRIAL GAS LTD	Unknown	New Well	Unknown	No Chemistry
1280	260220	SW	26	54	22	4	61.0													IRELAND, KEN	Unknown	Chemistry	Bored	Chemistry Exists
1281	260221	SW	26	54	22	4	51.8													GALLOWAY, EDWARD	Unknown	Chemistry	Drilled	Chemistry Exists
1282	260231	NW	28	54	22	4	61.0													RUDOLPH, MARJORIE	Unknown	Chemistry	Drilled	Chemistry Exists
1283	260359	NW	28	54	22	4	32.0													KOVAC, JOE	Unknown	Chemistry	Unknown	Chemistry Exists
1284	260361	NW	28	54	22	4	30.5													MCNIRNE, ROBERT	Unknown	Chemistry	Unknown	Chemistry Exists
1285	260363	NW	28	54	22	4	29.9													HAMER, LYLE	Unknown	Chemistry	Unknown	Chemistry Exists
1286	260364	NW	28	54	22	4	25.9													LEONHARDT, C.J.	Unknown	Chemistry	Drilled	Chemistry Exists
1287	260371		28	54	22	4	24.4													FINDLAY, W.	Unknown	Chemistry	Unknown	No Chemistry
1288	260372	NW	29	54	22	4	10.4													VAN DEN BERG	Unknown	Chemistry	Unknown	Chemistry Exists
1289	260374	NW	29	54	22	4	35.1													VAN DEN BERG	Unknown	Chemistry	Unknown	Chemistry Exists
1290	260381		29	54	22	4	15.5											5/1/1965		HANFORD, R.M.	Unknown	New Well	Bored	No Chemistry
1291	260385	SE	30	54	22	4	67.1													LAINPRECHT, H.	Unknown	Chemistry	Unknown	Chemistry Exists
1292	260389	NW	31	54	22	4	18.9													#TH 1	Unknown	Test Hole	Unknown	No Chemistry
1293	260391	NW	31	54	22	4	16.2													#TH 2	Unknown	Test Hole	Unknown	No Chemistry
1294	260392	NW	31	54	22	4	16.8													#TH 3	Unknown	Test Hole	Unknown	No Chemistry
1295	260394	NW	31	54	22	4	15.8													#TH 4	Unknown	Test Hole	Unknown	No Chemistry
1296	260395	NW	31	54	22	4	23.2													#TH 5	Unknown	Test Hole	Unknown	No Chemistry
1297	260398	SW	32	54	22	4	71.6													SEWCHUK, S.	Unknown	Chemistry	Unknown	Chemistry Exists
1298	260399	SW	32	54	22	4	0.0													SCOTFORD COLONY	Unknown	Chemistry	Unknown	No Chemistry
1299	260400	SW	32	54	22	4	9.1													KOHUT, WM	Unknown	Chemistry	Drilled	Chemistry Exists
1300	260401	SW	32	54	22	4	12.8													DONALDSON, ARTHUR	Unknown	Chemistry	Unknown	Chemistry Exists
1301	260405	NW	32	54	22	4	15.8											1/1/1927		HOPPER#N SASK RIVER	Unknown	New Well	Drilled	No Chemistry
1302	260413	NW	32	54	22	4	0.0													WALKER, L	Unknown	Chemistry	Unknown	No Chemistry
1303	260415	NW	32	54	22	4	0.0													SHERRITT GORDON MINES	Unknown	Chemistry	Unknown	No Chemistry

	WELL ID	LOCATION					WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED USE	TYPE OF WORK	DRILL METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN		FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
1304	260431	SW	34	54	22	4	49.4											5/2/1955			Unknown	New Well	Drilled	No Chemistry
1305	260436	SW	34	54	22	4	0.0													EMONTS, GERALD	Unknown	Chemistry	Unknown	No Chemistry
1306	260462	EH	36	54	22	4	12.2													LAMOUREUX, JIM	Unknown	Chemistry	Unknown	No Chemistry
1307	260942	NW	13	54	23	4	69.5											9/2/1930		ARMSTRONG, E.	Unknown	Other	Drilled	No Chemistry
1308	261035	SE	1	55	22	4	69.5											9/1/1930		ATKINSON, H	Unknown	Well Inventory	Unknown	No Chemistry
1309	261038	SE	1	55	22	4	54.9											7/19/1959		HANSEN, P E	Unknown	New Well	Unknown	No Chemistry
1310	261055	NW	28	54	22	4	36.0														Unknown	New Well	Drilled	No Chemistry
1311	261166	NW	6	55	22	4	57.9													JESKE, O	Unknown	Test Hole	Rotary	No Chemistry
1312	261432	SE	13	55	22	4	56.4											9/1/1930		TATHAM, J	Unknown	New Well	Unknown	No Chemistry
1313	261583	SW	25	54	23	4	39.6											10/12/1963		HANES, A	Unknown	New Well	Rotary	No Chemistry
1314	261596	16	18	55	22	4	12.5											10/23/1964		LAMOUREUX, J A	Unknown	New Well	Bored	No Chemistry
1315	261749	SE	1	55	23	4	4.6														Unknown	Unknown	Unknown	No Chemistry
1316	261751	SE	1	55	23	4	29.6											8/28/1984	8/28/1984	SERNA, VICTOR	Unknown	New Well-Decommissioned	Bored	No Chemistry
1317	262042	SE	34	54	23	4	91.4	24.4	42.7									10/28/1974		BELYEA, A.F.	Unknown	New Well	Unknown	Chemistry Exists
1318	262078	NW	34	54	23	4	67.1											7/1/1954		SPEER, A.	Unknown	New Well	Drilled	No Chemistry
1319	262257	SW	35	54	23	4	21.0											11/12/1977	11/12/1977	YUSKIW, N	Unknown	Existing Well-Decommissioned	Bored	No Chemistry
1320	262433	1	3	55	23	4	15.2													WILSON	Unknown	Federal Well Survey	Bored	No Chemistry
1321	263525	NE	5	56	21	4													10/19/2007	SHELL CANAD LIMITED	Unknown	Existing Well-Decommissioned	Unknown	Chemistry Exists
1322	263554	NW	7	56	21	4	56.7													VISSCHER, P.	Unknown	Unknown	Unknown	No Chemistry
1323	263560	SW	8	56	21	4													11/1/2007	SHELL CANADA - OIL SANDS	Unknown	Existing Well-Decommissioned	Unknown	Chemistry Exists
1324	263661	9	11	56	21	4	66.4	32.9	36.0	36.9	37.8							8/31/1973		ANURATIL, J.	Unknown	Unknown	Unknown	No Chemistry
1325	263852	SW	2	56	22	4													12/7/2010	NOEL, MAURICE	Unknown	Existing Well-Decommissioned	Unknown	Chemistry Exists
1326	263867	SW	3	56	22	4	54.9												7/24/2008	MELENKA, ALEX	Unknown	Existing Well-Decommissioned	Unknown	Chemistry Exists
1327	263992	SW	19	56	21	4	18.1												6/8/2016	NORTH WEST REDWATER PTR	Unknown	Existing Well-Decommissioned	Not Applicable	No Chemistry
1328	264091	SE	11	56	22	4	64.0	51.8	64.0									10/10/1973		SERINK, MIKE	Unknown	New Well	Rotary	Chemistry Exists
1329	264141	SE	12	56	22	4	61.0													SERINK, MIKE	Unknown	Chemistry	Unknown	Chemistry Exists
1330	264168	SE	13	56	22	4	61.0													BLOOM, B.	Unknown	Chemistry	Unknown	Chemistry Exists
1331	264193	NE	13	56	22	4	50.3													OOSTERHUIS, H.T.	Unknown	Chemistry	Unknown	Chemistry Exists
1332	264390	SW	29	56	21	4	0.0													ESSO RES	Unknown	Chemistry	Unknown	Chemistry Exists
1333	268135	SE	1	55	23	4	4.6														Unknown	Unknown	Unknown	No Chemistry
1334	268141	SE	1	55	23	4	4.6														Unknown	Unknown	Unknown	No Chemistry
1335	297410	SW	30	56	20	4													7/28/2015	SHILOH YOUTH RANCH	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1336	297411	SW	30	56	20	4													7/28/2015	SHILOH YOUTH RANCH	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1337	298285	NE	19	55	21	4	0.0														Unknown	Existing Well-Decommissioned	Not Applicable	No Chemistry
1338	42021	13	24	56	21	4	4.6											3/4/1994		ALBERTA ENVIRONMENT	Unknown	Old Well-Yield	Unknown	No Chemistry
1339	42022	4	14	56	21	4	5.5													ALBERTA ENVIRONMENT	Unknown	Other	Unknown	No Chemistry
1340	83442	SW	19	55	21	4	5.2												11/3/2008	WING, H.S.	Unknown	Existing Well-Decommissioned	Unknown	Chemistry Exists
1341	83445	SW	19	55	21	4	0.0													BLACKLOCK, OLGA	Unknown	Chemistry	Unknown	No Chemistry
1342	83446	SW	19	55	21	4	3.7												12/20/2002	DZURNY, E.	Unknown	Chemistry	Unknown	No Chemistry
1343	83468	5	22	55	21	4													10/30/2012	ROCQUE, SHANE	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1344	83504	16	27	55	21	4	27.4												7/2/2009	HEINRICHS, E & D	Unknown	Existing Well-Decommissioned	Unknown	Chemistry Exists
1345	83507	1	28	55	21	4	21.3											6/24/1969		ALTA AGRICULTURE #670H	Unknown	Test Hole	Rotary	No Chemistry
1346	83508	13	28	55	21	4	29.3											6/25/1969		ALTA AGRICULTURE #669H	Unknown	Test Hole	Rotary	No Chemistry
1347	83529	NW	30	55	21	4													11/2/2007	SHELL CANADA LIMITED	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1348	83564	NE	35	55	21	4	11.0												7/10/2009	CHICHAK, L.	Unknown	Existing Well-Decommissioned	Unknown	Chemistry Exists
1349	83574	12	36	55	21	4	12.2												7/1/2009	PROKOPCZAK, B.	Unknown	Existing Well-Decommissioned	Unknown	No Chemistry
1350	91497	4	6	56	20	4	7.0											7/17/1975		HYDROGEOLOGICAL CONSULT LTD	Unknown	Test Hole	Auger	No Chemistry
1351	91501	1	7	56	20	4	27.4											7/17/1975		HYDROGEOLOGICAL CONSULT LTD	Unknown	Test Hole	Auger	No Chemistry
1352	9676120	2	34	54	23	4														R3-DECONSTRUCTION	Unknown	Existing Well-Decommissioned	Not Applicable	No Chemistry

* Data Source: Alberta Groundwater Information Centre, Alberta Water Well Information Database. Retrieved August 24, 2022, via Alberta Groundwater Information Centre web site.
* Date of Search: August 24, 2022

Appendix 2
Borehole Logs

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-01
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:350335.04 N:5951040.45	ELEVATION: 617.52 (m)

SAMPLE TYPE: SHELBY TUBE, NO RECOVERY, GRAB, SPT, A-CASING, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, PELTONITE, SAND

DEPTH(m)	LITHOLOGY	SAMPLE TYPE / SAMPLE NO	HC VAPOUR	WELL INSTALLATION / WELL COMPLETION DATA	ELEVATION(m)
0.0	ORGANIC SOIL; frozen, black			STICKUP (0.52 m)	617.0
1.0	SAND; brown, fine to medium grained, some clay			-51 mm PVC CASING	616.0
2.0	CLAY;				615.0
3.0					614.0
4.0	CLAY TILL; brown, sandy clay, some pebbles				613.0
5.0				-TOC ELEVATION: 618.04 m	612.0
6.0		MW1			611.0
7.0	- at 6.7 m turns grey				610.0
8.0					609.0
9.0					608.0
10.0				-BOREHOLE DIAMETER = 159 mm	607.0
11.0					606.0
12.0		MW1			605.0
13.0					604.0
14.0				-14.0 m -14.3 m	603.0
15					602.0
16.0	- at 15.5 m drill stem chatter SAND AND GRAVEL; coarse grained sand, gravel, lots of coal, wood chips			-15.5 m	601.0
17.0		MW1			600.0
18.0				-51 mm 0.020 SLOT PVC SCREEN	599.0
19.0		MW1			598.0
20.0	SHALE; grey, dense			-19.8 m	597.0
21.0		MW1			596.0
22.0					595.0
23.0					594.0
24.0				-24.4 m	593.0
25.0	END OF HOLE 24.4 m				

Stantec Consulting Ltd.	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 24.4 m
Edmonton, Alberta	REVIEWED BY: D. YOSHISAKA	COMPLETE: 01/24/05
	Fig. No: 17094	Page 1 of 1

05/11/04 02:28PM (PEUGH-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-02
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:352457.80 N:5950583.37	ELEVATION: 630.71 (m)

SAMPLE TYPE: SHELBY TUBE, NO RECOVERY, GRAB, SPT, A-CASING, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, PELTONITE, SAND

DEPTH(m)	SOIL SYMBOL	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
0.0		ORGANIC SOIL; frozen, black					STICKUP (0.60 m)	
1.0		SAND; brown, medium grained					-51 mm PVC CASING	630.0
2.0							-TOC ELEVATION: 631.31 m	629.0
3.0							-BOREHOLE DIAMETER = 159 mm	628.0
4.0								627.0
5.0								626.0
6.0								625.0
7.0		CLAY TILL; brown, sandy clay, silty, some pebbles, coal chips						624.0
8.0								623.0
9.0								622.0
10.0								621.0
11.0								620.0
12.0								619.0
13.0								618.0
14.0		SAND; brown, grey, speckled medium grained sand						617.0
15.0								616.0
16.0								615.0
17.0		CLAY; brown, sandy						614.0
		SAND; grey, medium speckled sand						
18.0				MW2				613.0
19.0								612.0
20.0								611.0
21.0								610.0
22.0								609.0
23.0								608.0
24.0				MW2				607.0
25.0								606.0

Stantec Consulting Ltd.	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 38.1 m
Edmonton, Alberta	REVIEWED BY: D. YOSHISAKA	COMPLETE: 01/24/05
	Fig. No: 17094	Page 1 of 2

05/11/04 02:28PM (PELTON-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-02
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:352457.80 N:5950583.37	ELEVATION: 630.71 (m)

SAMPLE TYPE: SHELBY TUBE, NO RECOVERY, GRAB, SPT, A-CASING, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, PELTONITE, SAND

DEPTH(m)	SOIL SYMBOL	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
25.0								605.0
26.0							-25.9 m -26.2 m	
27.0		SAND AND GRAVEL; coarse grained sand and gravel, coal chips, wood						604.0
28.0								603.0
29.0		- at 29.0 m lots of chatter on drill stem						602.0
30.0				MW2			-51 mm 0.020 SLOT PVC SCREEN	601.0
31.0								600.0
32.0								599.0
33.0								598.0
34.0		SHALE; grey, dense					-33.8 m	597.0
35.0								596.0
36.0				MW2				595.0
37.0								594.0
38.0							-38.1 m	593.0
		END OF HOLE 38.1 m						
39.0								592.0
40.0								591.0
41.0								590.0
42.0								589.0
43.0								588.0
44.0								587.0
45.0								586.0
46.0								585.0
47.0								584.0
48.0								583.0
49.0								582.0
50.0								581.0

Stantec Consulting Ltd. Edmonton, Alberta	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 38.1 m
	REVIEWED BY: D. YOSHISAKA	COMPLETE: 01/24/05
	Fig. No: 17094	Page 2 of 2

05/11/04 02:28PM (PELTGH-1)

Advisian
WorleyParsons Group

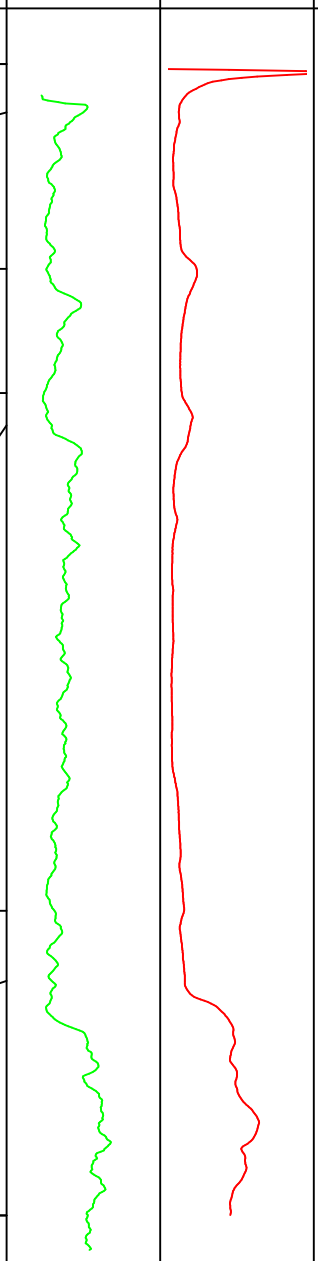
Borehole # MW-02B

PROJECT # 307075-01608-200

Project Name: 2016 Beverly Channel Groundwater Monitoring
Client: Northwest Capital Industry Association
Drilled by: Lakeland Drilling
Drilling Method: Mud-Rotary
Drill Date: 02-Sep-2016
Logged by: Josh Malkin

Location: 14-19-054-22 W4M
Northing: 5950323.21 m
Easting: 50604.05 m
Elevation: 630.67 masl

Depth (m)	Symbol	Description
0		Ground Surface
1–2		***CLAY (0.0-1.8 m)*** Silt; grey; moderately firm; medium plasticity; cohessive.
2–7		***SAND (1.8-7.6 m)*** Medium grained; well sorted; rounded; brownish grey; coal inclusions.
8–12		***SILTY CLAY (7.6-12.2 m)*** Some sand; trace clay; brown; moderately soft; trace coal fragements.
13–14		***SITY CLAY TILL (12.2-13.4 m)*** Greyish black; moderately soft; low plasticity; trace coal fragments; trace sand stringer.
14–31		***SAND (13.4-31.4 m)*** Well sorted; rounded; brown; loose; trace potassium feldspar.
32–34		***SAND AND GRAVEL (31.4-34.0 m)*** Poorly sorted; sub-rounded to sub-angular; brown; loose; some coal fragments.
35–42		***SHALE (34.0-42.7 m)*** Bluish grey; consistant sorting; firm.
43		42.7 m End of Borehole



Well Data

Stickup 0.71 m
72 mm (ID) SCH 40 PVC Pipe
Bentonite chips (hydrated) 0.0-4.0 m
51 mm (ID) SCH 80, Buttress PVC Pipe
Mud-Rotary Borehole dia.159 mm
Bentonite grout (granular) 4.0-38.1 m
Peltonite (3/8" coated) 38.1-38.7 m
Sand 38.7-42.7 m
Screen 40.1-41.6 m
51 mm (ID) SCH 80, Buttress PVCScreen (Slot #10)
T.D. of Borehole at 42.7 m

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-03
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:353030.21 N:5952940.90	ELEVATION: 623.79 (m)

SAMPLE TYPE: SHELBY TUBE, NO RECOVERY, GRAB, SPT, A-CASING, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, PELTONITE, SAND

DEPTH(m)	LITHOLOGY	SAMPLE NO	WELL COMPLETION DATA	ELEVATION(m)
0.0	ORGANIC SOIL; frozen, black, grass mat, some fill beneath		STICKUP (0.64 m)	623.0
1.0	SAND; brown, fine to medium grained		-51 mm PVC CASING	
2.0				622.0
3.0			-3.1 m	621.0
4.0				620.0
5.0			-TOC ELEVATION: 624.43 m	619.0
6.0			-BOREHOLE DIAMETER = 159 mm	618.0
7.0	CLAY; grey, silty	MW3		617.0
8.0		MW3		616.0
9.0				615.0
10.0				614.0
11				613.0
12.0				612.0
13.0				611.0
14.0				610.0
15.0				609.0
16.0				608.0
17.0		MW3		607.0
18.0	CLAY TILL; grey silty clay, some sand and pebbles			606.0
19.0				605.0
20.0				604.0
21.0				603.0
22.0				602.0
23.0			-22.9 m	601.0
24.0			-23.5 m	600.0
25.0	SAND AND GRAVEL; coarse grained sand			599.0

Stantec Consulting Ltd.	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 31.4 m
Edmonton, Alberta	REVIEWED BY: D. YOSHISAKA	COMPLETE: 01/25/05
	Fig. No: 17094	Page 1 of 2

05/11/04 02:28PM (PETIGH-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-03
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:353030.21 N:5952940.90	ELEVATION: 623.79 (m)

SAMPLE TYPE: SHELBY TUBE, NO RECOVERY, GRAB, SPT, A-CASING, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, PELTONITE, SAND

DEPTH(m)	SOIL SYMBOL	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
25.0		with coal and gravel		MW3			-25.0 m	598.0
26.0				MW3				597.0
27.0							-51 mm 0.020 SLOT PVC SCREEN	596.0
28.0								595.0
29.0							-29.6 m	594.0
30.0		SHALE; grey, dense		MW3				593.0
31.0							-31.4 m	592.0
32.0		END OF HOLE 31.4 m						591.0
33.0								590.0
34.0								589.0
35.0								588.0
36.0								587.0
37.0								586.0
38.0								585.0
39.0								584.0
40.0								583.0
41.0								582.0
42.0								581.0
43.0								580.0
44.0								579.0
45.0								578.0
46.0								577.0
47.0								576.0
48.0								575.0
49.0								574.0
50.0								

Stantec Consulting Ltd.	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 31.4 m
Edmonton, Alberta	REVIEWED BY: D. YOSHISAKA	COMPLETE: 01/25/05
	Fig. No: 17094	Page 2 of 2

05/11/04 02:26PM (PETION-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-04
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:354823.41 N:5953959.76	ELEVATION: 620.25 (m)

SAMPLE TYPE: SHELBY TUBE, NO RECOVERY, GRAB, SPT, A-CASING, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, PELTONITE, SAND

DEPTH(m)	LITHOLOGY	SAMPLE TYPE / SAMPLE NO	HC VAPOUR	WELL INSTALLATION / WELL COMPLETION DATA	ELEVATION(m)
0.0	ORGANIC SOIL; black, frozen			STICKUP (0.54 m)	620.0
1.0	CLAY; grey, sandy			-152 mm PVC CASING	619.0
				-1.5 m	
2.0					618.0
3.0				-TOC ELEVATION: 620.79 m	617.0
				-BOREHOLE DIAMETER = 222 mm	
4.0					616.0
5.0					615.0
6.0					614.0
7.0	SAND; brown, fine to coarse grained, pebbles, black speckles	MW4			613.0
8.0					612.0
9.0					611.0
10.0					610.0
11.0					609.0
12.0					608.0
13.0					607.0
14.0					606.0
15.0					605.0
16.0					604.0
17.0	- at 16.8 m finer grained brown sand				603.0
18.0				-18.3 m	602.0
19.0	- at 18.3 m back to medium to coarse grained grey/brown sand			-19.5 m	601.0
20.0	SHALE; grey, clay				600.0
21.0		MW4			599.0
22.0	SAND; grey, medium to coarse grained	MW4		-21.6 m	598.0
23.0	SAND AND GRAVEL; grey, coarse grained sand and gravel, wood fibers	MW4			597.0
24.0				-155 mm 0.020 SLOT PVC SCREEN	596.0
25.0					

Stantec Consulting Ltd. Edmonton, Alberta	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 30.5 m
	REVIEWED BY: D. YOSHISAKA	COMPLETE: 01/25/05
	Fig. No: 17094	Page 1 of 2

05/11/04 02:32PM (PETDGH-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-04
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:354823.41 N:5953959.76	ELEVATION: 620.25 (m)

SAMPLE TYPE: SHELBY TUBE, NO RECOVERY, GRAB, SPT, A-CASING, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, PELTONITE, SAND

DEPTH(m)	SOIL SYMBOL	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
25.0								595.0
26.0							-26.2 m	594.0
		SHALE; grey						
27.0								593.0
28.0								592.0
29.0								591.0
30.0				MW4				590.0
							-30.5 m	
31.0		END OF HOLE 30.5 m						589.0
32.0								588.0
33.0								587.0
34.0								586.0
35.0								585.0
36.0								584.0
37.0								583.0
38.0								582.0
39.0								581.0
40.0								580.0
41.0								579.0
42.0								578.0
43.0								577.0
44.0								576.0
45.0								575.0
46.0								574.0
47.0								573.0
48.0								572.0
49.0								571.0
50.0								

Stantec Consulting Ltd.	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 30.5 m
Edmonton, Alberta	REVIEWED BY: D. YOSHISAKA	COMPLETE: 01/25/05
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(5/11/04 01:52PM (PELYCH-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-05
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:354293.74 N:5954889.46	ELEVATION: 624.28 (m)

SAMPLE TYPE: SHELBY TUBE, NO RECOVERY, GRAB, SPT, A-CASING, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, PELTONITE, SAND

DEPTH(m)	LITHOLOGY	SAMPLE TYPE / SAMPLE NO	HC VAPOUR	WELL INSTALLATION / WELL COMPLETION DATA	ELEVATION(m)
0.0	TOPSOIL; frozen, black, some organics			STICKUP (0.61 m)	624.0
1.0	SAND; brown, fine to medium grained			-51 mm PVC CASING	623.0
2.0					622.0
3.0				-3.1 m	621.0
4.0	CLAY; brown, soft, silty			-TOC ELEVATION: 624.89 m	620.0
5.0				-BOREHOLE DIAMTER = 159 mm	619.0
6.0					618.0
7.0					617.0
8.0	- from 7.3 to 10.7 m blue, silty clay				616.0
9.0					615.0
10.0					614.0
11.0	TILL; blue, silty clay, small gravel, multi colored				613.0
12.0					612.0
13.0					611.0
14.0					610.0
15.0					609.0
16.0	GRAVEL; large gravel, multi colored, tower shakes				608.0
17.0	TILL; sandy, sandy clay, fine grained, small gravel, grey				607.0
18.0	SAND AND GRAVEL; grey, medium to coarse grained sand, small gravel				606.0
19.0	CLAY TILL; sandy, grey, fine grained sandy clay till	MW5			605.0
20.0					604.0
21.0					603.0
22.0					602.0
23.0				-22.6 m	
24.0	- well cemented from 23.2 to 25.0 m			-23.2 m	601.0
25.0		MW5			600.0

Stantec Consulting Ltd. Edmonton, Alberta	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 37.5 m
	REVIEWED BY: D. YOSHISAKA	COMPLETE: 02/03/05
	Fig. No: 17094	Page 1 of 2

05/11/04 02:29PM (PELTON-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-05
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:354293.74 N:5954889.46	ELEVATION: 624.28 (m)

SAMPLE TYPE: SHELBY TUBE, NO RECOVERY, GRAB, SPT, A-CASING, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, PELTONITE, SAND

DEPTH(m)	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	WELL COMPLETION DATA	ELEVATION(m)
25.0			MW5			599.0
26.0	SAND; grey, salt and pepper color, fine to medium grained sand					598.0
27.0					-26.8 m	597.0
28.0	GRAVEL; small to large gravel, multi colored, sand and gravel mixed alot		MW		-28.4 m	596.0
29.0						595.0
30.0					-51 mm 0.020 SLOT PVC SCREEN	594.0
31.0					-31.4 m	593.0
32.0	SHALE; grey, dense					592.0
33.0						591.0
34.0						590.0
35.0						589.0
36.0						588.0
37.0					-37.5 m	587.0
38.0	END OF HOLE 37.5 m					586.0
39.0						585.0
40.0						584.0
41.0						583.0
42.0						582.0
43.0						581.0
44.0						580.0
45.0						579.0
46.0						578.0
47.0						577.0
48.0						576.0
49.0						575.0
50.0						

Stantec Consulting Ltd.	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 37.5 m
Edmonton, Alberta	REVIEWED BY: D. YOSHISAKA	COMPLETE: 02/03/05
	Fig. No: 17094	Page 2 of 2

05/11/04 02:29PM (PELTON-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-06
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:361559.34 N:5958812.22	ELEVATION: 629.61 (m)

SAMPLE TYPE: SHELBY TUBE, NO RECOVERY, GRAB, SPT, A-CASING, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, PELTONITE, SAND

DEPTH(m)	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
0.0	TOPSOIL; black/brown, frozen, organics					STICKUP (0.67 m)	629.0
1.0	CLAY; sandy, light brown, fine grained					-51 mm PVC CASING	628.0
2.0							627.0
3.0	- at 3.1 m turns grey, silty					-3.1 m	626.0
4.0			MW6			-TOC ELEVATION: 630.28 m -BOREHOLE DIAMETER = 159 mm	625.0
5.0							624.0
6.0							623.0
7.0			MW6				622.0
8.0	CLAY TILL; grey, silty, clay, some rocks and pebbles						621.0
9.0							620.0
10.0							619.0
11.0							618.0
12.0							617.0
13.0							616.0
14.0	- at 13.7 m becomes more sandy, firm						615.0
15.0							614.0
16.0							613.0
17.0							612.0
18.0							611.0
19.0							610.0
20.0							609.0
21.0							608.0
22.0							607.0
23.0	SAND; grey, black speckled, medium grained, some silt		MW6				606.0
24.0	CLAY; grey, sandy, silty						
25.0	SAND;						605.0

Stantec Consulting Ltd. Edmonton, Alberta	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 45.7 m
	REVIEWED BY: D. YOSHISAKA	COMPLETE: 01/31/05
	Fig. No: 17094	Page 1 of 2

05/11/04 02:42PM (PELTON-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-06
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:361559.34 N:5958812.22	ELEVATION: 629.61 (m)

SAMPLE TYPE: SHELBY TUBE, NO RECOVERY, GRAB, SPT, A-CASING, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, PELTONITE, SAND

DEPTH(m)	LITHOLOGY	SAMPLE TYPE / SAMPLE NO	HC VAPOUR	WELL INSTALLATION / WELL COMPLETION DATA	ELEVATION(m)
25.0					604.0
26.0					603.0
27.0	CLAY, grey, sandy, silty				602.0
28.0	SAND; grey, black speckled, some silt				601.0
29.0		MW6			600.0
30.0	CLAY; grey, sandy, silty				599.0
31.0	SAND;				598.0
32.0				-32.3 m	597.0
	CLAY; grey, sandy, silty			-32.9 m	
33.0	SAND; grey, medium to coarse, speckled, some silt				596.0
34.0		MW6		-34.4 m	595.0
35.0					594.0
36.0	SAND AND GRAVEL; coarse sand and gravel with coal			-51 mm 0.020 SLOT PVC SCREEN	593.0
37.0		MW6			592.0
38.0					591.0
39.0	SHALE; grey, dense			-39.0 m	590.0
40.0					589.0
41.0	SANDSTONE; hard, brown	MW6			588.0
42.0	SHALE; grey, dense				587.0
43.0		MW6			586.0
44.0					585.0
45.0				-45.7 m	584.0
46.0	END OF HOLE 45.7 m				583.0
47.0					582.0
48.0					581.0
49.0					580.0
50.0					

Stantec Consulting Ltd.
Edmonton, Alberta

LOGGED BY: H. LOVETT	COMPLETION DEPTH: 45.7 m
REVIEWED BY: D. YOSHISAKA	COMPLETE: 01/31/05
Fig. No: 17094	Page 2 of 2

05/11/04 02:42PM (PELSON-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-07
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:359089.70 N:5959604.24	ELEVATION: 630.41 (m)

SAMPLE TYPE: SHELBY TUBE, NO RECOVERY, GRAB, SPT, A-CASING, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, PELTONITE, SAND

DEPTH(m)	SOIL SYMBOL	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
0.0		SAND; brown, medium to coarse grained sand and gravel					STICKUP (0.60 m) -152 mm PVC CASING	630.0
1.0								629.0
2.0								628.0
3.0		CLAY; grey, sandy					-TOC ELEVATION: 631.01 m -BOREHOLE DIAMETER = 222 mm	627.0
4.0		SAND; grey, fine grained						626.0
5.0								625.0
6.0								624.0
7.0								623.0
8.0								622.0
9.0								621.0
10.0		CLAY; grey, sandy						620.0
11.0								619.0
12.0								618.0
13.0		SAND; grey, fine grained						617.0
14.0								616.0
15.0								615.0
16.0								614.0
17.0		CLAY TILL; grey, sandy clay with pebbles						613.0
18.0								612.0
19.0								611.0
20.0								610.0
21.0								609.0
22.0								608.0
23.0								607.0
24.0								606.0
25.0								

Stantec Consulting Ltd. Edmonton, Alberta	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 49.7 m
	REVIEWED BY: D. YOSHISAKA	COMPLETE: 02/14/05
	Fig. No: 17094	Page 1 of 2

05/11/04 02:47PM (PELTON-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-07
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:359089.70 N:5959604.24	ELEVATION: 630.41 (m)

SAMPLE TYPE: SHELBY TUBE, NO RECOVERY, GRAB, SPT, A-CASING, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, PELTONITE, SAND

DEPTH(m)	SOIL SYMBOL	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
25.0								605.0
26.0								604.0
27.0								603.0
28.0								602.0
29.0								601.0
30.0								600.0
31.0								599.0
32.0								598.0
33.0								597.0
34.0				MW7				596.0
35.0								595.0
36.0							-36.3 m	594.0
37.0		SAND; grey, fine to medium grained, black speckled						593.0
38.0		SAND AND GRAVEL; coarse sand and gravel, coal					-37.8 m	592.0
39.0				MW7				591.0
40.0								590.0
41.0				MW7			-152 mm 0.020 SLOT PVC SCREEN	589.0
42.0								588.0
43.0								587.0
44.0							-43.9 m	586.0
45.0		SHALE; weathered						585.0
46.0		SHALE; grey, dense						584.0
47.0								583.0
48.0								582.0
49.0		SANDSTONE; light brown, grey						581.0
50.0		SHALE; grey, dense		MW7			-49.7 m	

Stantec Consulting Ltd. Edmonton, Alberta	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 49.7 m
	REVIEWED BY: D. YOSHISAKA	COMPLETE: 02/14/05
	Fig. No: 17094	Page 2 of 2

05/11/04 02:47PM (PETION-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-08
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:363133.77 N:5961204.95	ELEVATION: 625.87 (m)

SAMPLE TYPE: SHELBY TUBE, NO RECOVERY, GRAB, SPT, A-CASING, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, PELTONITE, SAND

DEPTH(m)	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
0.0	TOPSOIL; black, roots, grasses					STICKUP (0.57 m)	625.0
1.0	SAND; brown/black grains, fine to medium grained					-51 mm PVC CASING	
2.0	CLAY; brown/grey, silty						624.0
3.0						-3.1 m	623.0
4.0						-TOC ELEVATION: 626.44 m -BOREHOLE DIAMETER = 159 mm	622.0
5.0	SAND; silty, brown, very fine grained						621.0
6.0							620.0
7.0							619.0
8.0							618.0
9.0							617.0
10.0	CLAY; blue/grey, silty						616.0
11.0							615.0
12.0							614.0
13.0							613.0
14.0	CLAY TILL; blue clay, sandy						612.0
15.0							611.0
16.0							610.0
17.0							609.0
18.0							608.0
19.0	SAND; coarse grained, grey/brown						607.0
20.0	CLAY TILL; blue clay, small gravel, sandy						606.0
21.0							605.0
22.0			MW8				604.0
23.0							603.0
24.0	SHALE; rafted						602.0
25.0							601.0

Stantec Consulting Ltd. Edmonton, Alberta	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 37.8 m
	REVIEWED BY: D. YOSHISAKA	COMPLETE: 02/03/05
	Fig. No: 17094	Page 1 of 2

05/11/04 02:28PM (PELIGN-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-08
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:363133.77 N:5961204.95	ELEVATION: 625.87 (m)

SAMPLE TYPE: SHELBY TUBE, NO RECOVERY, GRAB, SPT, A-CASING, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, PELTONITE, SAND

DEPTH(m)	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
25.0							
26.0	SAND; fine to medium grained, grey, black specks						600.0
27.0							599.0
28.0			MW8			-28.0 m	598.0
						-28.7 m	
29.0			MW8				597.0
30.0							596.0
						-30.5 m	
31.0	GRAVEL; brown/black, small gravel, coal chunks						595.0
32.0						-51 mm 0.020 SLOT PVC SCREEN	594.0
33.0			MW8			-33.5 m	593.0
34.0							592.0
	SHALE; grey, dense						
35.0							591.0
36.0			MW8				590.0
37.0							589.0
						-37.8 m	
38.0	END OF HOLE 37.8 m						588.0
39.0							587.0
40.0							586.0
41.0							585.0
42.0							584.0
43.0							583.0
44.0							582.0
45.0							581.0
46.0							580.0
47.0							579.0
48.0							578.0
49.0							577.0
50.0							576.0

Stantec Consulting Ltd.
Edmonton, Alberta

LOGGED BY: H. LOVETT	COMPLETION DEPTH: 37.8 m
REVIEWED BY: D. YOSHISAKA	COMPLETE: 02/03/05
Fig. No: 17094	Page 2 of 2

05/11/24 02:29PM (PETIGR-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-09
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:361003.46 N:5962032.28	ELEVATION: 624.06 (m)

SAMPLE TYPE: SHELBY TUBE, NO RECOVERY, GRAB, SPT, A-CASING, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, PELTONITE, SAND

DEPTH(m)	SOIL SYMBOL	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
0.0		ORGANIC SOIL; frozen, black					STICKUP (0.67 m) -51 mm PVC CASING	624.0
1.0		CLAY; silty, light brown, some sand, some pebbles						623.0
2.0								622.0
3.0		- at 3.1 m turns darker brown					-TOC ELEVATION: 624.73 m -BOREHOLE DIAMETER = 159 mm	621.0
4.0								620.0
5.0								619.0
6.0								618.0
7.0								617.0
8.0								616.0
9.0								615.0
10.0								614.0
11.0		CLAY TILL; grey, silty, some pebbles						613.0
12.0								612.0
13.0								611.0
14.0								610.0
15.0		- at 14.6 m becomes sandy						609.0
16.0								608.0
17.0								607.0
18.0		SAND; grey, fine to medium grained, some clay and coal						606.0
19.0		CLAY TILL; grey, fine to medium grained sand and pebbles						605.0
20.0								604.0
21.0								603.0
22.0								602.0
23.0								601.0
24.0								600.0
25.0								

Stantec Consulting Ltd. Edmonton, Alberta	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 43.6 m
	REVIEWED BY: D. YOSHISAKA	COMPLETE: 01/28/05
	Fig. No: 17094	Page 1 of 2

05/11/04 02:30PM (PETION-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-09
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:361003.46 N:5962032.28	ELEVATION: 624.06 (m)

SAMPLE TYPE: SHELBY TUBE, NO RECOVERY, GRAB, SPT, A-CASING, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, PELTONITE, SAND

DEPTH(m)	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
25.0–26.0							599.0–598.0
26.0–29.0	SAND; grey, medium grained, some clay, black coal speckles						598.0–595.0
29.0	CLAY; grey, sandy						595.0
29.0–31.0	GRAVEL; gravel with coarse sand and gravel					-29.9 m -30.5 m	594.0–593.0
31.0–34.0	SAND AND GRAVEL; coarse sand and coal with gravel		MW9			-32.0 m	593.0–591.0
34.0–39.0	GRAVEL; gravel with coarse sand and coal		MW9			-51 mm 0.020 SLOT PVC SCREEN -36.6 m	590.0–585.0
39.0–43.6	SHALE; grey, dense		MW9			-43.6 m	585.0–580.0
43.6	END OF HOLE 43.6 m						580.0
44.0–50.0							579.0–575.0

Stantec Consulting Ltd Edmonton, Alberta	LOGGED BY: H. LOVETT REVIEWED BY: D. YOSHISAKA Fig. No: 17094	COMPLETION DEPTH: 43.6 m COMPLETE: 01/28/05 Page 2 of 2

05/11/04 02:50PM (PELICAN-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-10
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:364,954.62 N:5,963,505.11	ELEVATION: 624.06 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | GRAB | SPT | A-CASING | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | PELTONITE | SAND

DEPTH(m)	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
0.0	TOPSOIL; brown, frozen, sandy					STICKUP (0.61 m)	624.0
1.0	SAND; brown, fine to medium grained					-152 mm PVC CASING	623.0
2.0							622.0
3.0	- at 3.1 m turns grey, some silt					-3.0 m	621.0
4.0						-TOC ELEVATION: 624.67 m -BOREHOLE DIAMETER = 200 mm	620.0
5.0							619.0
6.0							618.0
7.0							617.0
8.0	CLAY; grey, silty						616.0
9.0							615.0
10.0							614.0
11.0							613.0
12.0	SAND; grey, fine grained						612.0
13.0							611.0
14.0							610.0
15.0							609.0
16.0	CLAY TILL; grey, silty						608.0
17.0	SILT; sandy, grey, fine grained sand and silt						607.0
18.0	CLAY TILL; grey, silty						606.0
19.0							605.0
20.0							604.0
21.0							603.0
22.0							602.0
23.0	SAND; grey, fine grained, some silt						601.0
24.0							600.0
25.0	CLAY; grey, silty, harder						

Stantec Consulting Ltd.	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 44.8 m
Edmonton, Alberta	REVIEWED BY: D. YOSHISAKA	COMPLETE: 01/26/05
	Fig. No: 17094	Page 1 of 2

06/06/29 11:06AM (PETIGRI-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-10
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:364,954.62 N:5,963,505.11	ELEVATION: 624.06 (m)

SAMPLE TYPE: SHELBY TUBE, NO RECOVERY, GRAB, SPT, A-CASING, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, PELTONITE, SAND

DEPTH(m)	LITHOLOGY	SAMPLE TYPE / SAMPLE NO	HC VAPOUR	WELL INSTALLATION / WELL COMPLETION DATA	ELEVATION(m)
25.0					599.0
26.0	SAND; cemented, grey, black speckled				598.0
27.0					597.0
28.0		MW10			596.0
29.0					595.0
30.0				-30.2 m	594.0
31.0				-31.4 m	593.0
32.0					592.0
33.0					591.0
34.0	SAND AND GRAVEL; coarse grained sand and gravel, coal	MW10		-SHALE BASKET	590.0
35.0					589.0
36.0				-35.7 m	588.0
37.0		MW10		-152 mm 0.020 SLOT PVC SCREEN	587.0
38.0					586.0
39.0	GRAVEL; mostly gravel, lots of drill stem chatter, some sand				585.0
40.0					584.0
41.0					583.0
42.0	SHALE; grey, dense			-41.8 m	582.0
43.0		MW10			581.0
44.0					580.0
45.0	END OF HOLE 44.8 m			-44.8 m	579.0
46.0					578.0
47.0					577.0
48.0					576.0
49.0					575.0
50.0					

Stantec Consulting Ltd. Edmonton, Alberta	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 44.8 m
	REVIEWED BY: D. YOSHISAKA	COMPLETE: 01/26/05
	Fig. No: 17094	Page 2 of 2

CLIENT: NCIA	DRILLING COMPANY: SPT DRILLING LTD.	BOREHOLE NO: MW-11
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: N:5,965,300.71 E:362,564.36	ELEVATION: 624.491 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | GRAB | SPT | A-CASING | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | PELTONITE | SAND

DEPTH(m)	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	SLOTTED PIEZOMETER	WELL COMPLETION DATA	ELEVATION(m)
0.0	TOPSOIL; soft, black, organic silty soil					-STICKUP (0.67 m)	624.0
	SAND; loose, brown, fine to medium grained					-51 mm PVC CASING	
1.0	CLAY; firm, brown, orange, grey, silty, no pebbles						623.0
2.0	CLAY TILL; firm, brown, sandy clay, grey, silt strands, some orange oxidation, some coal, pebbles						622.0
3.0						-3.0 m	621.0
4.0							620.0
5.0						-BOREHOLE DIAMETER 160 mm	619.0
6.0	- at 5.5 m turns grey						618.0
7.0	- at 6.4 m damp to moist						617.0
8.0							616.0
9.0							615.0
10.0							614.0
11.0							613.0
12.0							612.0
13.0							611.0
14.0							610.0
15.0							609.0
16.0	- from 15.2 to 17.7 m lots of sand, coarse grained, speckled, larger rocks mixed with clay, wet						608.0
17.0							607.0
18.0	- at 17.7 m returns to firm, grey clay till						606.0
19.0	- at 18.9 m small band of coarse grained sand then returns to grey						605.0
20.0							

Stantec Consulting Ltd.	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 44.2 m
Edmonton, Alberta	REVIEWED BY: H. LOVETT	COMPLETE: 09/24/04
	Fig. No: 17094	Page 1 of 3

06/08/29 11:10AM (PB1101-1)

CLIENT: NCIA	DRILLING COMPANY: SPT DRILLING LTD.	BOREHOLE NO: MW-11
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: N:5,965,300.71 E:362,564.36	ELEVATION: 624.491 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | GRAB | SPT | A-CASING | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | PELTONITE | SAND

DEPTH(m)	SOIL SYMBOL	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	SLOTTED PIEZOMETER	WELL COMPLETION DATA	ELEVATION(m)
20.0		clay till						604.0
21.0								603.0
22.0								602.0
23.0								601.0
24.0								600.0
25.0								599.0
26.0								598.0
27.0		SAND; loose, fine to medium grained, wet						597.0
28.0								596.0
29.0								595.0
30.0								594.0
31.0								593.0
32.0								592.0
33.0								591.0
34.0								590.0
35.0							35.1 m	589.0
36.0								588.0
37.0		SAND AND GRAVEL; loose, grey, wet, large gravel						587.0
38.0							38.1 m	586.0
39.0								585.0
40.0								

Stantec Consulting Ltd.	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 44.2 m
Edmonton, Alberta	REVIEWED BY: H. LOVETT	COMPLETE: 09/24/04
	Fig. No: 17094	Page 2 of 3

CLIENT: NCIA	DRILLING COMPANY: SPT DRILLING LTD.	BOREHOLE NO: MW-11
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: N:5,965,300.71 E:362,564.36	ELEVATION: 624.491 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | GRAB | SPT | A-CASING | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | PELTONITE | SAND

DEPTH(m)	SOIL SYMBOL	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	SLOTTED PIEZOMETER	WELL COMPLETION DATA	ELEVATION(m)
40.0								584.0
41.0							-51 mm 0.010 SLOT PVC SCREEN	583.0
42.0								582.0
43.0								581.0
44.0							-44.2 m	580.0
45.0		SHALE; dark grey, dry						579.0
46.0								578.0
47.0							-47.2 m	577.0
48.0		END OF HOLE 47.2 m NOTE: ON COMPLETION -backfill borehole with 10/20 grade sand to 44.2 mBGL MONITOR WELL INSTALLED -blue steel casing protector with lock added -above ground PVC stickup (0.67 mAGL) ON SEPTEMBER 24, 2004 -water level at 29.84 mBGL ON SEPTEMBER 28, 2004 -water level at 29.83 mBGL LOCAL COORDINATES: N:5242.77 E:2786.27 NOTE: -Originally installed for Shell Scotford Upgrader 04-10-44						576.0
49.0								575.0
50.0								574.0
51.0								573.0
52.0								572.0
53.0								571.0
54.0								570.0
55.0								569.0
56.0								568.0
57.0								567.0
58.0								566.0
59.0								565.0
60.0								

Stantec Consulting Ltd.	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 44.2 m
	REVIEWED BY: H. LOVETT	COMPLETE: 09/24/04
Edmonton, Alberta	Fig. No: 17094	Page 3 of 3

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-12
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:366805.93 N:5968379.85	ELEVATION: 625.46 (m)

SAMPLE TYPE: SHELBY TUBE, NO RECOVERY, GRAB, SPT, A-CASING, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, PELTONITE, SAND

DEPTH(m)	LITHOLOGY	SAMPLE TYPE / SAMPLE NO / HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
0.0	MOSS; frozen, green, some organics			STICKUP (0.61 m)	625.0
1.0	SAND; brown, fine to medium grained			-51 mm PVC CASING	624.0
2.0					623.0
3.0				-3.1 m	622.0
4.0				-TOC ELEVATION: 626.07 m -BOREHOLE DIAMETER = 159 mm	621.0
5.0					620.0
6.0					619.0
7.0					618.0
8.0	CLAY; grey, silty SILT; grey				617.0
9.0					616.0
10.0					615.0
11.0	CLAY; grey, silty				614.0
12.0					613.0
13.0	SILT; grey				612.0
14.0					611.0
15.0	CLAY; grey, silty				610.0
16.0					609.0
17.0					608.0
18.0					607.0
19.0	CLAY TILL; grey, sandy, clay, some silt, some pebbles				606.0
20.0					605.0
21.0					604.0
22.0					603.0
23.0					602.0
24.0					601.0
25.0					

Stantec Consulting Ltd. Edmonton, Alberta	LOGGED BY: H. LOVETT REVIEWED BY: D. YOSHISAKA Fig. No: 17094	COMPLETION DEPTH: 42.7 m COMPLETE: 01/02/05 Page 1 of 2

05/11/04 02:07PM (PETRON-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-12
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:366805.93 N:5968379.85	ELEVATION: 625.46 (m)

SAMPLE TYPE: SHELBY TUBE, NO RECOVERY, GRAB, SPT, A-CASING, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, PELTONITE, SAND

DEPTH(m)	LITHOLOGY	SAMPLE TYPE / SAMPLE NO	HC VAPOUR	WELL INSTALLATION / WELL COMPLETION DATA	ELEVATION(m)
25.0					600.0
26.0		MW12			599.0
27.0					598.0
28.0	SAND; grey, medium grained, black speckled	MW12			597.0
29.0					596.0
30.0					595.0
31.0					594.0
32.0					593.0
33.0				-32.9 m -33.5 m	592.0
34.0					591.0
35.0					590.0
36.0				-51 mm 0.020 SLOT PVC SCREEN	589.0
37.0	SAND AND GRAVEL; coarse sand and gravel, coal				588.0
38.0		MW12		-38.1 m	587.0
39.0	SHALE; grey, dense				586.0
40.0	- brown, soft shale				585.0
41.0					584.0
42.0	- grey, dense	MW12			583.0
43.0	END OF HOLE 42.7 m			-42.7 m	582.0
44.0					581.0
45.0					580.0
46.0					579.0
47.0					578.0
48.0					577.0
49.0					576.0
50.0					

Stantec Consulting Ltd. Edmonton, Alberta	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 42.7 m
	REVIEWED BY: D. YOSHISAKA	COMPLETE: 01/02/05
	Fig. No: 17094	Page 2 of 2

05/11/04 02:50PM (PELTON-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-13
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:365292.72 N:5968147.12	ELEVATION: 625.65 (m)

SAMPLE TYPE: SHELBY TUBE, NO RECOVERY, GRAB, SPT, A-CASING, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, PELTONITE, SAND

DEPTH(m)	LITHOLOGY	SAMPLE TYPE / SAMPLE NO	HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
0.0	PEAT MOSS;				STICKUP (0.63 m)	625.0
1.0	SAND; brown, fine to medium grained				-51 mm PVC CASING	
2.0						624.0
3.0						623.0
4.0					-3.1 m -TOC ELEVATION: 626.28 m -BOREHOLE DIAMETER = 159 mm	622.0
5.0						621.0
6.0						620.0
7.0						619.0
8.0	CLAY; brown grey, silty					618.0
9.0	SAND; brown, grey, fine to medium grained, some clay					617.0
10.0	CLAY; grey, silty					616.0
11.0						615.0
12.0						614.0
13.0						613.0
14.0						612.0
15.0						611.0
16.0						610.0
17.0						609.0
18.0						608.0
19.0						607.0
20.0	CLAY TILL; grey, sandy (fine to medium grained), clay with pebbles - at 19.8 m rock					606.0
21.0						605.0
22.0						604.0
23.0		MW13				603.0
24.0						602.0
25.0						601.0

Stantec Consulting Ltd. Edmonton, Alberta	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 43.6 m
	REVIEWED BY: D. YOSHISAKA	COMPLETE: 01/02/05
	Fig. No: 17094	Page 1 of 2

05/11/04 02:48PM (PELTON-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-13
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:365292.72 N:5968147.12	ELEVATION: 625.65 (m)

SAMPLE TYPE: SHELBY TUBE, NO RECOVERY, GRAB, SPT, A-CASING, CORE

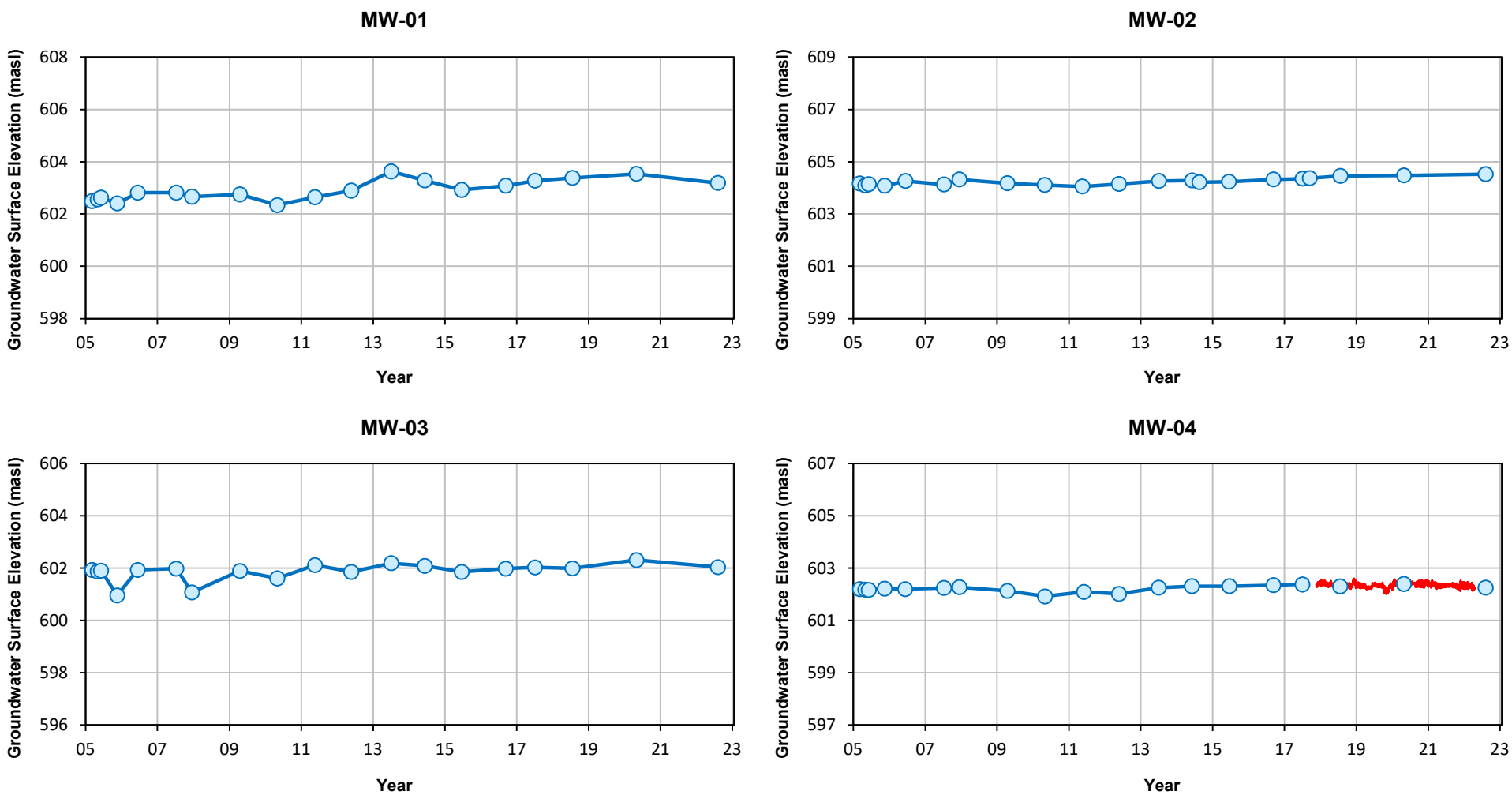
BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, PELTONITE, SAND

DEPTH(m)	SOIL SYMBOL	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
25.0		SAND; cemented, grey, black speckled medium grained						600.0
26.0								599.0
27.0				MW13				598.0
28.0								597.0
29.0								596.0
30.0								595.0
31.0								594.0
32.0								593.0
33.0								592.0
34.0								591.0
35.0							-35.4 m	590.0
36.0							-36.0 m	589.0
37.0		- at 36.3 m coarse grained sand		MW13				588.0
38.0		GRAVEL; coarse sand - at 37.5 m drill stem chatter					-37.5 m -51 mm 0.020 SLOT PVC SCREEN	587.0
39.0								586.0
40.0								585.0
41.0				MW13			-40.5 m	584.0
42.0		SHALE; grey, dense		MW13				583.0
43.0								582.0
44.0		END OF HOLE 43.6 m					-43.6 m	581.0
45.0								580.0
46.0								579.0
47.0								578.0
48.0								577.0
49.0								576.0
50.0								

Stantec Consulting Ltd. Edmonton, Alberta	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 43.6 m
	REVIEWED BY: D. YOSHISAKA	COMPLETE: 01/02/05
	Fig. No: 17094	Page 2 of 2

05/11/04 02:48PM (PELTON-1)

Appendix 3
Groundwater Hydrographs



Notes:

- Filled symbols denote measurable values; unfilled symbols denote dry wells
- Dashed line between data points indicates data gap of more than two years
- Red line between data points indicates available logger data

NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2022 GROUNDWATER QUALITY MONITORING
BEVERLY CHANNEL MONITORING WELLS

GROUNDWATER HYDROGRAPHS
MW-01, MW-02, MW-03, AND MW-04

Date:	Drawn by:	Edited by:	App'd by:
2-Nov-22	DS	RM	

NCIA Northeast Capital Industrial Association

Advisian Worley Group

WorleyParsons Project No. 317085-44533-22100

FIG No. A3-1 REV A

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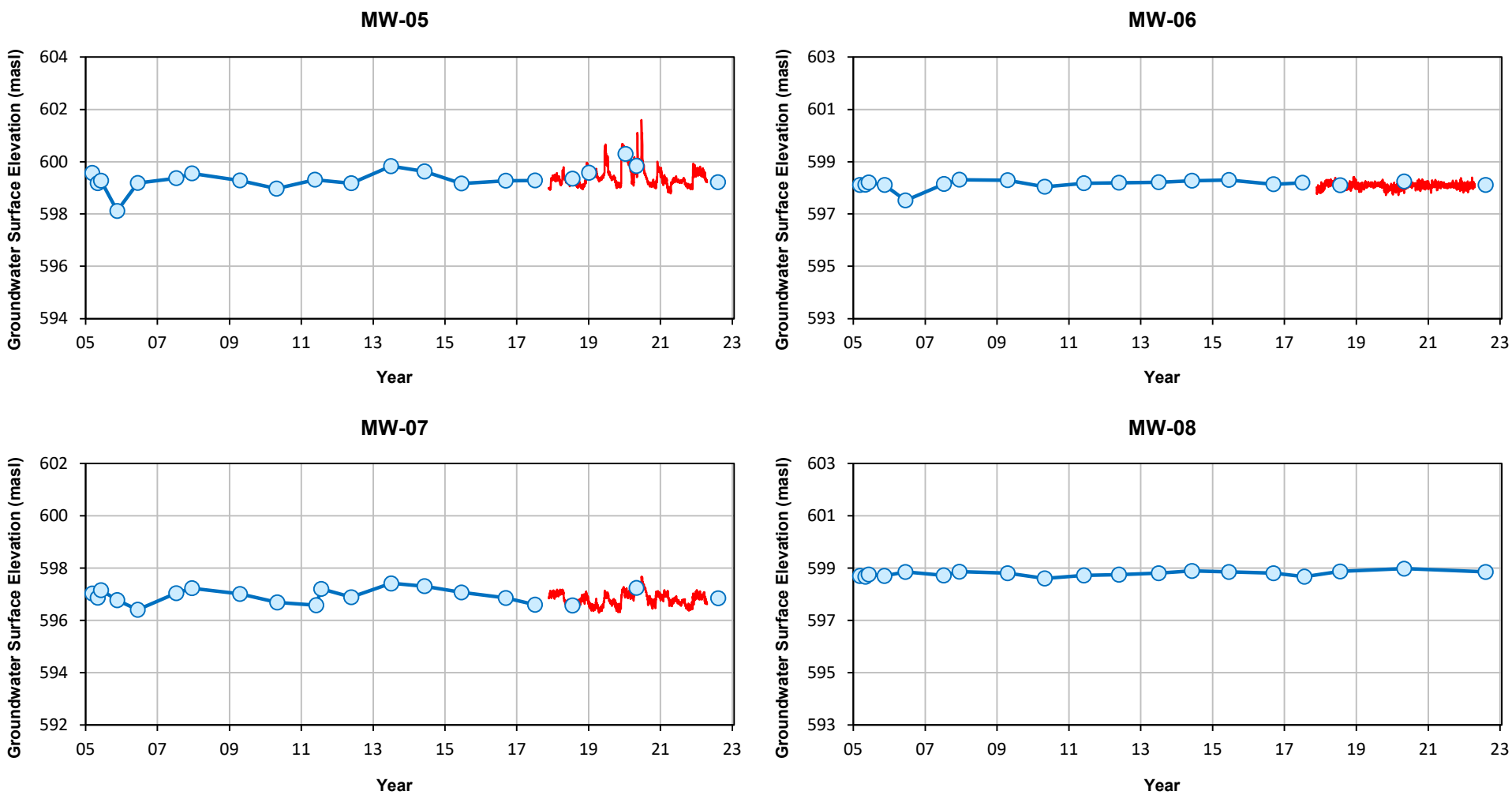
FILE LOCATION: EDMONTON

FILE DIRECTORY: U:\EDM\GBS\307075-01608\600-2020_GW MON\12.0_REPORTS\12.3_BACKEND\APDX 3 HYDROGRAPHS



Notes:

- Filled symbols denote measurable values; unfilled symbols denote dry wells
- Dashed line between data points indicates data gap of more than two years
- Red line between data points indicates available logger data

NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2022 GROUNDWATER QUALITY MONITORING
BEVERLY CHANNEL MONITORING WELLS

GROUNDWATER HYDROGRAPHS
MW-05, MW-06, MW-07, AND MW-08

Date:	Drawn by:	Edited by:	App'd by:
2-Nov-22	DS	RM	

NCIA Northeast Capital Industrial Association

Advisian Worley Group

WorleyParsons Project No. 317085-44533-22100

FIG No. A3-2 REV A

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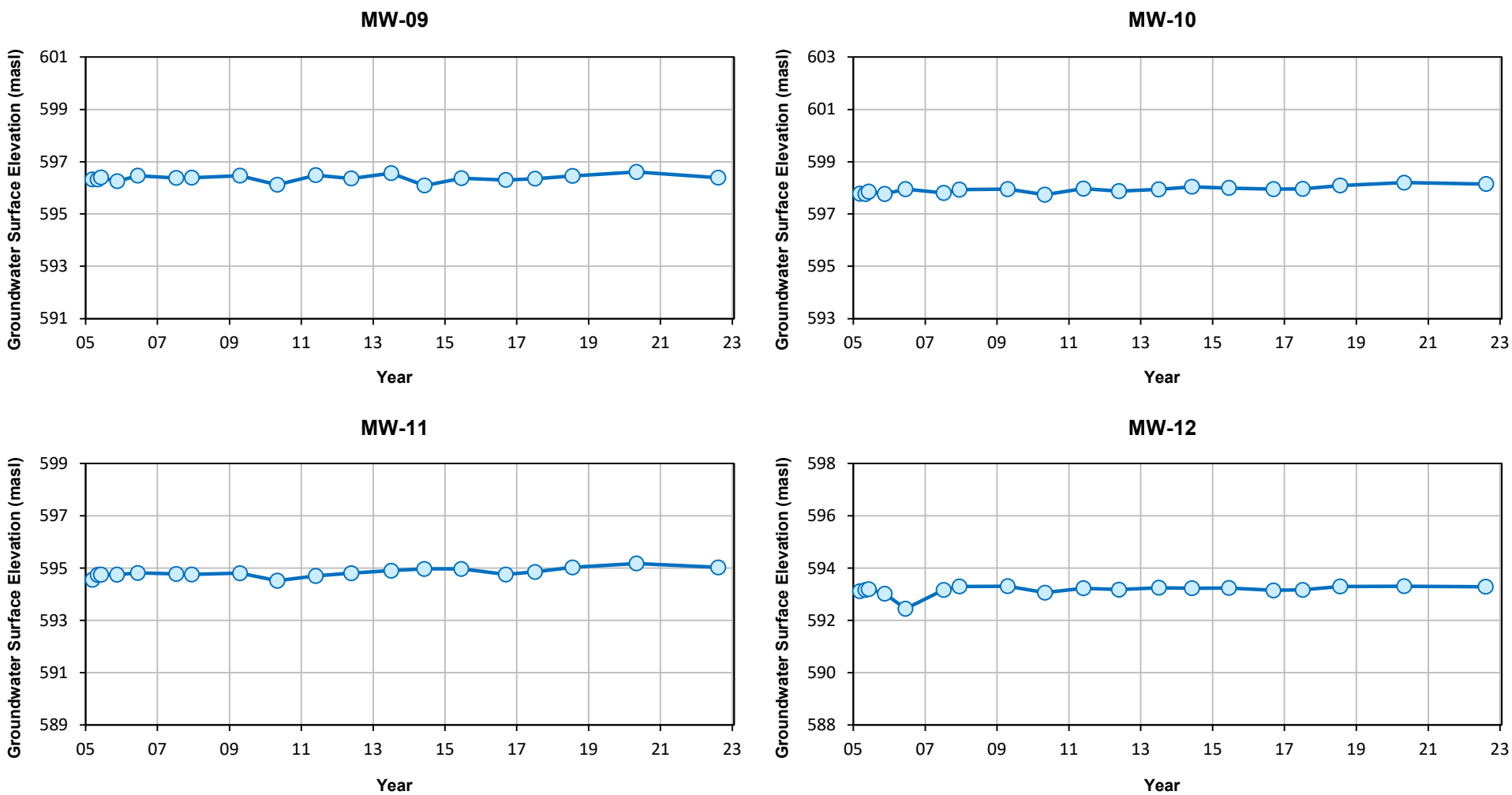
FILE DIRECTORY: U:\EDM\GBS\307075-01608\600-2020_GW MON\12.0_REPORTS\12.3_BACKEND\APDX 3 HYDROGRAPHS



Notes:

- Filled symbols denote measurable values; unfilled symbols denote dry wells
- Dashed line between data points indicates data gap of more than two years

NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2022 GROUNDWATER QUALITY MONITORING
BEVERLY CHANNEL MONITORING WELLS

GROUNDWATER HYDROGRAPHS
MW-09, MW-10, MW-11, AND MW-12

Date:	2-Nov-22	Drawn by:	DS	Edited by:	RM	App'd by:	
				WorleyParsons Project No.	317085-44533-22100		
				FIG No.	A3-3	REV	A

NCIA Northeast Capital Industrial Association

Advisian Worley Group

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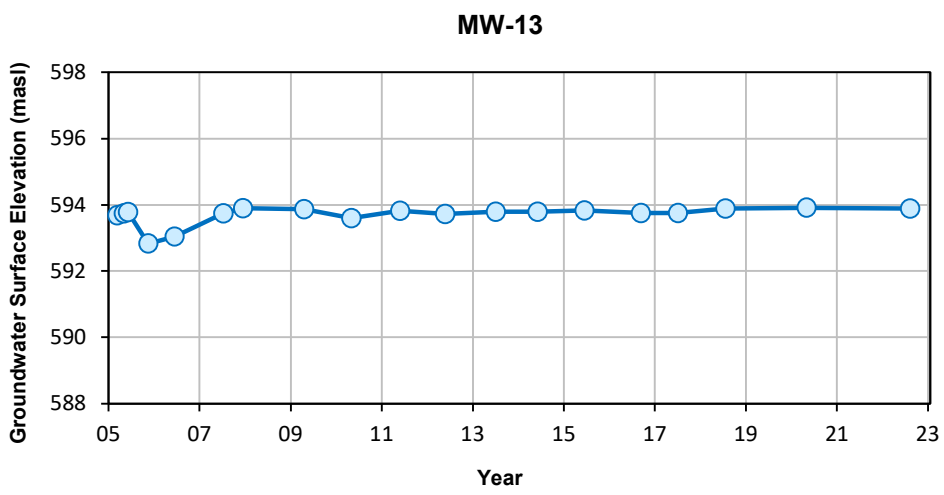
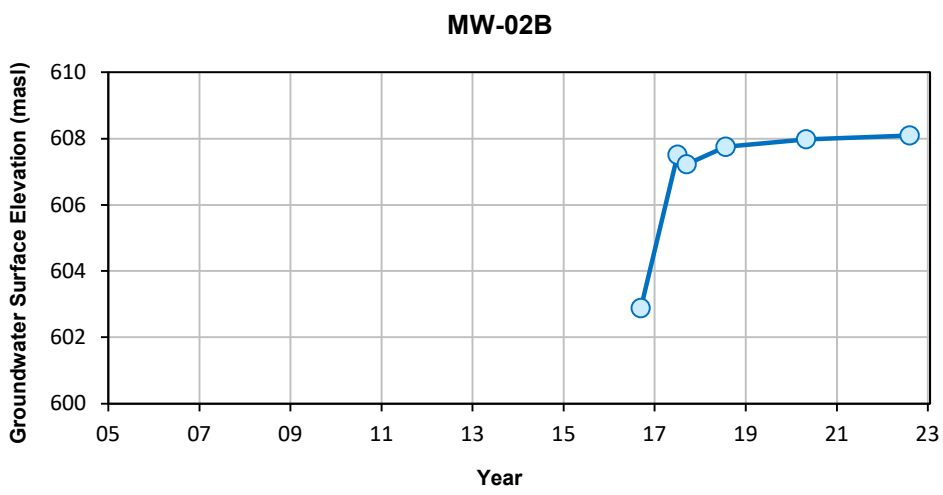
FILE LOCATION: EDMONTON

FILE DIRECTORY: U:\EDM\GBS\307075-01608\600-2020_GW MON\12.0_REPORTS\12.3_BACKEND\APDX 3 HYDROGRAPHS





Notes:

- Filled symbols denote measurable values; unfilled symbols denote dry wells
- Dashed line between data points indicates data gap of more than two years

NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2022 GROUNDWATER QUALITY MONITORING
BEVERLY CHANNEL MONITORING WELLS

GROUNDWATER HYDROGRAPHS
MW-13, AND MW-02B

Date:	2-Nov-22	Drawn by:	DS	Edited by:	RM	App'd by:	
				WorleyParsons Project No.	317085-44533-22100		
				FIG No.	A3-4	REV	A

NCIA Northeast Capital Industrial Association

Advisian Worley Group

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FILE LOCATION: EDMONTON

FILE DIRECTORY: U:\EDM\GBS\307075-01608\600-2020_GW MON\12.0_REPORTS\12.3_BACKEND\APDX 3 HYDROGRAPHS

Appendix 4
Laboratory Analytical Data

CERTIFICATE OF ANALYSIS

Work Order	: **EO2206890**	Page	: 1 of 32
Client	: **Worley Canada Services Ltd.**	Laboratory	: Edmonton - Environmental
Contact	: Trevor Butterfield	Account Manager	: Dana Brown
Address	: 200 - 8615 51 Ave NW Edmonton AB Canada T6E 6A8	Address	: 9450 - 17 Avenue NW Edmonton AB Canada T6N 1M9
Telephone	: 780 440-5260	Telephone	: 7804136472
Project	: 317085-44533-22100	Date Samples Received	: 24-Aug-2022 14:20
PO	: ----	Date Analysis Commenced	: 25-Aug-2022
C-O-C number	: 20-1009440	Issue Date	: 03-Sep-2022 17:37
Sampler	: RM		
Site	: ----		
Quote number	: EO22-WORL100-006 Q79426		
No. of samples received	: 15		
No. of samples analysed	: 15		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Alex Drake	Lab Analyst	Inorganics, Edmonton, Alberta
Alex Drake	Lab Analyst	Metals, Edmonton, Alberta
Angeli Marzan	Lab Analyst	Inorganics, Edmonton, Alberta
Austin Wasylyshyn	Lab Analyst	Metals, Edmonton, Alberta
Brandon Green	Lab Assistant	Metals, Edmonton, Alberta
Jessica Maitland	Lab Assistant	Inorganics, Edmonton, Alberta
Kari Mulroy	Lab Supervisor - Environmental	Organics, Edmonton, Alberta
Ryan Huynh	Lab Assistant	Inorganics, Edmonton, Alberta
Shelly Nimilowich	Account Manager	External Subcontracting, Edmonton, Alberta
Shruti Mudliar	Lab Analyst	Inorganics, Edmonton, Alberta
Yan Zhang	Lab Analyst	Organics, Edmonton, Alberta

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.
Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

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

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
‰ VSMOW	parts per thousand Vienna Standard Mean Ocean Water
meq/L	milliequivalents per litre
mg/L	milligrams per litre
pH units	pH units

>: greater than.
<: less than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	*Description*
DLDS	*Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.*
IB:INT	*Ion Balance Reviewed: Imbalance is due to interference or non-measured component.*
RRV	*Reported result verified by repeat analysis.*

Analytical Results

EO2206890-001

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: MW-01

Client sampling date / time: 22-Aug-2022 12:02

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests									
hardness (as CaCO3), dissolved	----	338	-	0.50	mg/L	EC100	-	29-Aug-2022	-
conductivity	----	738	± 56.8	2.0	µS/cm	E100	25-Aug-2022	25-Aug-2022	619128
pH	----	8.27	± 0.12	0.10	pH units	E108	25-Aug-2022	25-Aug-2022	619127
alkalinity, bicarbonate (as HCO3)	71-52-3	412	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, carbonate (as CO3)	3812-32-6	<1.0	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, hydroxide (as OH)	14280-30-9	<1.0	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, total (as CaCO3)	----	338	± 25.2	2.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
solids, total dissolved [TDS], calculated	----	462	-	1.0	mg/L	EC103	-	26-Aug-2022	-
Anions and Nutrients									
ammonia, total dissolved (as N)	7664-41-7	0.234	-	0.0050	mg/L	E309	25-Aug-2022	25-Aug-2022	619026
chloride	16887-00-6	29.7	± 1.35	0.50	mg/L	E235.Cl	25-Aug-2022	25-Aug-2022	618370
fluoride	16984-48-8	0.108	± 0.008	0.020	mg/L	E235.F	25-Aug-2022	25-Aug-2022	618369
nitrate (as N)	14797-55-8	0.047	± 0.005	0.020	mg/L	E235.NO3	25-Aug-2022	25-Aug-2022	618366
nitrite (as N)	14797-65-0	<0.010	± 0.002	0.010	mg/L	E235.NO2	25-Aug-2022	25-Aug-2022	618367
sulfate (as SO4)	14808-79-8	47.8	± 2.36	0.30	mg/L	E235.SO4	25-Aug-2022	25-Aug-2022	618368
nitrate + nitrite (as N)	----	<0.0500	-	0.05	mg/L	EC235.N+N	-	26-Aug-2022	-
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	2.74	-	0.50	mg/L	E358-L	30-Aug-2022	31-Aug-2022	625749
Ion Balance									
anion sum	----	8.60	-	0.10	meq/L	EC101	-	26-Aug-2022	-
cation sum	----	8.45	-	0.10	meq/L	EC101	-	26-Aug-2022	-
ion balance (APHA)	----	0.880	-	0.010	%	EC101	-	26-Aug-2022	-
ion balance (cations/anions)	----	98.2	-	0.010	%	EC101	-	26-Aug-2022	-
Dissolved Metals									
aluminum, dissolved	7429-90-5	<0.0010	± 0.0008	0.0010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
antimony, dissolved	7440-36-0	<0.00010	± 0.00001	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
arsenic, dissolved	7440-38-2	0.00090	± 0.00012	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
barium, dissolved	7440-39-3	0.133	± 0.0114	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
beryllium, dissolved	7440-41-7	<0.000020	± 0.000002	0.000020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
bismuth, dissolved	7440-69-9	<0.000050	± 0.000007	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
boron, dissolved	7440-42-8	0.049	± 0.010	0.010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cadmium, dissolved	7440-43-9	<0.0000050	± 0.0000009	0.0000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
calcium, dissolved	7440-70-2	92.0	± 8.17	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cesium, dissolved	7440-46-2	<0.000010	± 0.000001	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
chromium, dissolved	7440-47-3	<0.00050	± 0.00008	0.00050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cobalt, dissolved	7440-48-4	0.00071	± 0.00009	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
copper, dissolved	7440-50-8	<0.00020	± 0.00012	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
iron, dissolved	7439-89-6	1.89	± 0.272	0.030	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
lead, dissolved	7439-92-1	<0.000050	± 0.000005	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
lithium, dissolved	7439-93-2	0.0263	± 0.0036	0.0010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
magnesium, dissolved	7439-95-4	26.3	± 2.56	0.0050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
manganese, dissolved	7439-96-5	0.676	± 0.0652	0.00500	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
molybdenum, dissolved	7439-98-7	0.000744	± 0.000094	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
nickel, dissolved	7440-02-0	0.00097	± 0.00013	0.00050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435

Analytical Results

EO2206890-001

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: MW-01

Client sampling date / time: 22-Aug-2022 12:02

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Dissolved Metals									
phosphorus, dissolved	7723-14-0	<0.050	± 0.013	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
potassium, dissolved	7440-09-7	2.72	± 0.242	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
rubidium, dissolved	7440-17-7	0.00143	± 0.00019	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
selenium, dissolved	7782-49-2	<0.000050	± 0.000009	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
silicon, dissolved	7440-21-3	7.23	± 0.867	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
silver, dissolved	7440-22-4	<0.000010	± 0.000004	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
sodium, dissolved	7440-23-5	35.2	± 3.28	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
strontium, dissolved	7440-24-6	0.538	± 0.0446	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
sulfur, dissolved	7704-34-9	17.7	± 2.91	0.50	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tellurium, dissolved	13494-80-9	<0.00020	± 0.00004	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
thallium, dissolved	7440-28-0	<0.000010	± 0.000001	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
thorium, dissolved	7440-29-1	<0.00010	± 0.00002	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tin, dissolved	7440-31-5	<0.00010	± 0.00006	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
titanium, dissolved	7440-32-6	<0.00030	± 0.00014	0.00030	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tungsten, dissolved	7440-33-7	0.00017	± 0.00004	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
uranium, dissolved	7440-61-1	0.00134	± 0.000156	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
vanadium, dissolved	7440-62-2	<0.00050	± 0.00010	0.00050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
zinc, dissolved	7440-66-6	<0.0010	± 0.0003	0.0010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
zirconium, dissolved	7440-67-7	<0.00020	± 0.00004	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
dissolved metals filtration location	----	Field	-	-	-	EP421	-	28-Aug-2022	622435
Volatile Organic Compounds									
benzene	71-43-2	<0.50	± 0.20	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
ethylbenzene	100-41-4	<0.50	± 0.30	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
toluene	108-88-3	<0.50	± 0.37	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, m+p-	179601-23-1	<0.40	± 0.50	0.40	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, o-	95-47-6	<0.30	± 0.30	0.30	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylenes, total	1330-20-7	<0.50	-	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
Volatile Organic Compounds Surrogates									
bromofluorobenzene, 4-	460-00-4	81.7	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
difluorobenzene, 1,4-	540-36-3	96.2	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
Hydrocarbons									
F1 (C6-C10)	----	<100	± 30	100	µg/L	E581.F1	27-Aug-2022	27-Aug-2022	619148
F1-BTEX	----	<100	-	100	µg/L	EC580	-	28-Aug-2022	-
F2 (C10-C16)	----	<100	± 10	100	µg/L	E601	28-Aug-2022	28-Aug-2022	620464
Hydrocarbons Surrogates									
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	97.3	-	1.0	%	E601	28-Aug-2022	28-Aug-2022	620464
dichlorotoluene, 3,4-	97-75-0	104	-	1.0	%	E581.F1	27-Aug-2022	27-Aug-2022	619148
Stable Isotope									
delta-oxygen-18	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-
delta-hydrogen-2	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-

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

Analytical Results

EO2206890-002

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: MW-02

Client sampling date / time: 22-Aug-2022 10:20

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests									
hardness (as CaCO3), dissolved	----	487	-	0.50	mg/L	EC100	-	29-Aug-2022	-
conductivity	----	1290	± 98.8	2.0	µS/cm	E100	25-Aug-2022	25-Aug-2022	619128
pH	----	8.14	± 0.12	0.10	pH units	E108	25-Aug-2022	25-Aug-2022	619127
alkalinity, bicarbonate (as HCO3)	71-52-3	622	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, carbonate (as CO3)	3812-32-6	<1.0	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, hydroxide (as OH)	14280-30-9	<1.0	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, total (as CaCO3)	----	510	± 37.9	2.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
solids, total dissolved [TDS], calculated	----	865	-	1.0	mg/L	EC103	-	26-Aug-2022	-
Anions and Nutrients									
ammonia, total dissolved (as N)	7664-41-7	0.561	-	0.0050	mg/L	E309	25-Aug-2022	27-Aug-2022	619026
chloride	16887-00-6	64.3	± 2.90	0.50	mg/L	E235.Cl	25-Aug-2022	25-Aug-2022	618370
fluoride	16984-48-8	0.079	± 0.006	0.020	mg/L	E235.F	25-Aug-2022	25-Aug-2022	618369
nitrate (as N)	14797-55-8	<0.020	± 0.004	0.020	mg/L	E235.NO3	25-Aug-2022	25-Aug-2022	618366
nitrite (as N)	14797-65-0	<0.010	± 0.002	0.010	mg/L	E235.NO2	25-Aug-2022	25-Aug-2022	618367
sulfate (as SO4)	14808-79-8	174	± 8.55	0.30	mg/L	E235.SO4	25-Aug-2022	25-Aug-2022	618368
nitrate + nitrite (as N)	----	<0.0500	-	0.05	mg/L	EC235.N+N	-	26-Aug-2022	-
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	6.00	-	0.50	mg/L	E358-L	30-Aug-2022	30-Aug-2022	625749
Ion Balance									
anion sum	----	15.6	-	0.10	meq/L	EC101	-	26-Aug-2022	-
cation sum	----	15.1	-	0.10	meq/L	EC101	-	26-Aug-2022	-
ion balance (APHA)	----	1.63	-	0.010	%	EC101	-	26-Aug-2022	-
ion balance (cations/anions)	----	96.8	-	0.010	%	EC101	-	26-Aug-2022	-
Dissolved Metals									
aluminum, dissolved	7429-90-5	<0.0010	± 0.0008	0.0010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
antimony, dissolved	7440-36-0	<0.00010	± 0.00001	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
arsenic, dissolved	7440-38-2	0.00282	± 0.00036	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
barium, dissolved	7440-39-3	0.173	± 0.0148	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
beryllium, dissolved	7440-41-7	<0.000020	± 0.000002	0.000020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
bismuth, dissolved	7440-69-9	<0.000050	± 0.000007	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
boron, dissolved	7440-42-8	0.200	± 0.037	0.010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cadmium, dissolved	7440-43-9	<0.0000050	± 0.0000009	0.0000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
calcium, dissolved	7440-70-2	122	± 10.8	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cesium, dissolved	7440-46-2	<0.000010	± 0.000001	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
chromium, dissolved	7440-47-3	<0.00050	± 0.00008	0.00050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cobalt, dissolved	7440-48-4	0.00035	± 0.00005	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
copper, dissolved	7440-50-8	<0.00020	± 0.00012	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
iron, dissolved	7439-89-6	5.25	± 0.758	0.030	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
lead, dissolved	7439-92-1	<0.000050	± 0.000005	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
lithium, dissolved	7439-93-2	0.0716	± 0.0095	0.0010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
magnesium, dissolved	7439-95-4	44.3	± 4.31	0.0050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
manganese, dissolved	7439-96-5	0.344	± 0.0331	0.00500	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
molybdenum, dissolved	7439-98-7	0.000440	± 0.000056	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
nickel, dissolved	7440-02-0	0.00080	± 0.00012	0.00050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435

Analytical Results

EO2206890-002

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: MW-02

Client sampling date / time: 22-Aug-2022 10:20

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Dissolved Metals									
phosphorus, dissolved	7723-14-0	<0.050	± 0.013	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
potassium, dissolved	7440-09-7	4.98	± 0.439	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
rubidium, dissolved	7440-17-7	0.00214	± 0.00028	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
selenium, dissolved	7782-49-2	<0.000050	± 0.000009	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
silicon, dissolved	7440-21-3	8.48	± 1.02	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
silver, dissolved	7440-22-4	<0.000010	± 0.000004	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
sodium, dissolved	7440-23-5	115	± 10.7	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
strontium, dissolved	7440-24-6	1.13	± 0.0942	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
sulfur, dissolved	7704-34-9	63.4	± 10.3	0.50	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tellurium, dissolved	13494-80-9	<0.00020	± 0.00004	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
thallium, dissolved	7440-28-0	<0.000010	± 0.000001	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
thorium, dissolved	7440-29-1	<0.00010	± 0.00002	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tin, dissolved	7440-31-5	<0.00010	± 0.00006	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
titanium, dissolved	7440-32-6	<0.00030	± 0.00014	0.00030	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tungsten, dissolved	7440-33-7	0.00019	± 0.00004	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
uranium, dissolved	7440-61-1	0.000781	± 0.000091	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
vanadium, dissolved	7440-62-2	<0.00050	± 0.00010	0.00050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
zinc, dissolved	7440-66-6	<0.0010	± 0.0003	0.0010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
zirconium, dissolved	7440-67-7	0.00025	± 0.00005	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
dissolved metals filtration location	----	Field	-	-	-	EP421	-	28-Aug-2022	622435
Volatile Organic Compounds									
benzene	71-43-2	<0.50	± 0.20	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
ethylbenzene	100-41-4	<0.50	± 0.30	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
toluene	108-88-3	<0.50	± 0.37	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, m+p-	179601-23-1	<0.40	± 0.50	0.40	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, o-	95-47-6	<0.30	± 0.30	0.30	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylenes, total	1330-20-7	<0.50	-	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
Volatile Organic Compounds Surrogates									
bromofluorobenzene, 4-	460-00-4	80.8	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
difluorobenzene, 1,4-	540-36-3	94.6	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
Hydrocarbons									
F1 (C6-C10)	----	<100	± 30	100	µg/L	E581.F1	27-Aug-2022	27-Aug-2022	619148
F1-BTEX	----	<100	-	100	µg/L	EC580	-	28-Aug-2022	-
F2 (C10-C16)	----	<100	± 10	100	µg/L	E601	28-Aug-2022	28-Aug-2022	620464
Hydrocarbons Surrogates									
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	101	-	1.0	%	E601	28-Aug-2022	28-Aug-2022	620464
dichlorotoluene, 3,4-	97-75-0	100	-	1.0	%	E581.F1	27-Aug-2022	27-Aug-2022	619148
Stable Isotope									
delta-oxygen-18	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-
delta-hydrogen-2	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-

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

Analytical Results

EO2206890-003

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: MW-02B

Client sampling date / time: 22-Aug-2022 10:35

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests									
hardness (as CaCO3), dissolved	----	118	-	0.50	mg/L	EC100	-	29-Aug-2022	-
conductivity	----	3480	± 265	2.0	µS/cm	E100	25-Aug-2022	25-Aug-2022	619128
pH	----	8.40	± 0.12	0.10	pH units	E108	25-Aug-2022	25-Aug-2022	619127
alkalinity, bicarbonate (as HCO3)	71-52-3	413	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, carbonate (as CO3)	3812-32-6	6.0	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, hydroxide (as OH)	14280-30-9	<1.0	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, total (as CaCO3)	----	349	± 26.0	2.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
solids, total dissolved [TDS], calculated	----	1990	-	1.0	mg/L	EC103	-	26-Aug-2022	-
Anions and Nutrients									
ammonia, total dissolved (as N)	7664-41-7	1.67	-	0.0500	mg/L	E309	25-Aug-2022	27-Aug-2022	619026
chloride	16887-00-6	1010 DLDS	± 45.6	2.50	mg/L	E235.Cl	25-Aug-2022	25-Aug-2022	618370
fluoride	16984-48-8	0.638 DLDS	± 0.046	0.100	mg/L	E235.F	25-Aug-2022	25-Aug-2022	618369
nitrate (as N)	14797-55-8	<0.100 DLDS	± 0.008	0.100	mg/L	E235.NO3	25-Aug-2022	25-Aug-2022	618366
nitrite (as N)	14797-65-0	<0.050 DLDS	± 0.006	0.050	mg/L	E235.NO2	25-Aug-2022	25-Aug-2022	618367
sulfate (as SO4)	14808-79-8	<1.50 DLDS	± 0.08	1.50	mg/L	E235.SO4	25-Aug-2022	25-Aug-2022	618368
nitrate + nitrite (as N)	----	<0.112	-	0.112	mg/L	EC235.N+N	-	26-Aug-2022	-
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	7.28	-	0.50	mg/L	E358-L	30-Aug-2022	30-Aug-2022	625749
Ion Balance									
anion sum	----	35.5	-	0.10	meq/L	EC101	-	26-Aug-2022	-
cation sum	----	32.9	-	0.10	meq/L	EC101	-	26-Aug-2022	-
ion balance (APHA)	----	3.80	-	0.010	%	EC101	-	26-Aug-2022	-
ion balance (cations/anions)	----	92.7	-	0.010	%	EC101	-	26-Aug-2022	-
Dissolved Metals									
aluminum, dissolved	7429-90-5	0.0057	± 0.0011	0.0020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
antimony, dissolved	7440-36-0	<0.00020 DLDS	± 0.00003	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
arsenic, dissolved	7440-38-2	0.00943	± 0.00121	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
barium, dissolved	7440-39-3	1.00	± 0.0860	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
beryllium, dissolved	7440-41-7	<0.000040 DLDS	± 0.000005	0.000040	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
bismuth, dissolved	7440-69-9	<0.000100 DLDS	± 0.000013	0.000100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
boron, dissolved	7440-42-8	0.752	± 0.139	0.020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cadmium, dissolved	7440-43-9	<0.0000100 DLDS	± 0.0000019	0.0000100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
calcium, dissolved	7440-70-2	36.3	± 3.22	0.100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cesium, dissolved	7440-46-2	0.000066	± 0.000008	0.000020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
chromium, dissolved	7440-47-3	<0.00100 DLDS	± 0.00015	0.00100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cobalt, dissolved	7440-48-4	<0.00020 DLDS	± 0.00003	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
copper, dissolved	7440-50-8	0.00167	± 0.00020	0.00040	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
iron, dissolved	7439-89-6	0.661	± 0.095	0.060	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
lead, dissolved	7439-92-1	<0.000100 DLDS	± 0.000011	0.000100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
lithium, dissolved	7439-93-2	0.109	± 0.0145	0.0020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
magnesium, dissolved	7439-95-4	6.74	± 0.655	0.0100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
manganese, dissolved	7439-96-5	0.0567	± 0.00546	0.0100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
molybdenum, dissolved	7439-98-7	0.00760	± 0.000957	0.000100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
nickel, dissolved	7440-02-0	<0.00100 DLDS	± 0.00013	0.00100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435

Analytical Results

EO2206890-003

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: MW-02B

Client sampling date / time: 22-Aug-2022 10:35

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Dissolved Metals									
phosphorus, dissolved	7723-14-0	<0.100 DLDS	± 0.019	0.100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
potassium, dissolved	7440-09-7	3.92	± 0.347	0.100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
rubidium, dissolved	7440-17-7	0.00795	± 0.00104	0.00040	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
selenium, dissolved	7782-49-2	<0.000100 DLDS	± 0.000019	0.000100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
silicon, dissolved	7440-21-3	4.46	± 0.535	0.100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
silver, dissolved	7440-22-4	<0.000020 DLDS	± 0.000007	0.000020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
sodium, dissolved	7440-23-5	699	± 65.0	0.100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
strontium, dissolved	7440-24-6	0.721	± 0.0598	0.00040	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
sulfur, dissolved	7704-34-9	<1.00 DLDS	± 0.36	1.00	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tellurium, dissolved	13494-80-9	<0.00040 DLDS	± 0.00007	0.00040	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
thallium, dissolved	7440-28-0	<0.000020 DLDS	± 0.000002	0.000020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
thorium, dissolved	7440-29-1	<0.00020 DLDS	± 0.00003	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tin, dissolved	7440-31-5	0.00023	± 0.00007	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
titanium, dissolved	7440-32-6	<0.00060 DLDS	± 0.00020	0.00060	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tungsten, dissolved	7440-33-7	0.00063	± 0.00014	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
uranium, dissolved	7440-61-1	0.000203	± 0.000024	0.000020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
vanadium, dissolved	7440-62-2	<0.00100 DLDS	± 0.00013	0.00100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
zinc, dissolved	7440-66-6	<0.0020 DLDS	± 0.0004	0.0020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
zirconium, dissolved	7440-67-7	<0.00040 DLDS	± 0.00007	0.00040	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
dissolved metals filtration location	----	Field	-	-	-	EP421	-	28-Aug-2022	622435
Volatile Organic Compounds									
benzene	71-43-2	<0.50	± 0.20	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
ethylbenzene	100-41-4	<0.50	± 0.30	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
toluene	108-88-3	<0.50	± 0.37	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, m+p-	179601-23-1	<0.40	± 0.50	0.40	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, o-	95-47-6	<0.30	± 0.30	0.30	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylenes, total	1330-20-7	<0.50	-	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
Volatile Organic Compounds Surrogates									
bromofluorobenzene, 4-	460-00-4	82.0	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
difluorobenzene, 1,4-	540-36-3	108	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
Hydrocarbons									
F1 (C6-C10)	----	<100	± 30	100	µg/L	E581.F1	27-Aug-2022	27-Aug-2022	619148
F1-BTEX	----	<100	-	100	µg/L	EC580	-	28-Aug-2022	-
F2 (C10-C16)	----	<100	± 10	100	µg/L	E601	28-Aug-2022	28-Aug-2022	620464
Hydrocarbons Surrogates									
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	99.7	-	1.0	%	E601	28-Aug-2022	28-Aug-2022	620464
dichlorotoluene, 3,4-	97-75-0	102	-	1.0	%	E581.F1	27-Aug-2022	27-Aug-2022	619148
Stable Isotope									
delta-oxygen-18	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-
delta-hydrogen-2	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-

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

Analytical Results

EO2206890-004

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: MW-03

Client sampling date / time: 22-Aug-2022 13:20

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests									
hardness (as CaCO3), dissolved	----	304	-	0.50	mg/L	EC100	-	29-Aug-2022	-
conductivity	----	991 RRV	± 76.0	2.0	µS/cm	E100	25-Aug-2022	25-Aug-2022	619128
pH	----	8.15 RRV	± 0.12	0.10	pH units	E108	25-Aug-2022	25-Aug-2022	619127
alkalinity, bicarbonate (as HCO3)	71-52-3	420 RRV	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, carbonate (as CO3)	3812-32-6	<1.0 RRV	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, hydroxide (as OH)	14280-30-9	<1.0 RRV	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, total (as CaCO3)	----	344 RRV	± 25.7	2.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
solids, total dissolved [TDS], calculated	----	576	-	1.0	mg/L	EC103	-	26-Aug-2022	-
Anions and Nutrients									
ammonia, total dissolved (as N)	7664-41-7	0.213	-	0.0050	mg/L	E309	25-Aug-2022	25-Aug-2022	619026
chloride	16887-00-6	70.4 RRV	± 3.18	0.50	mg/L	E235.Cl	25-Aug-2022	25-Aug-2022	618382
fluoride	16984-48-8	0.088	± 0.007	0.020	mg/L	E235.F	25-Aug-2022	25-Aug-2022	618381
nitrate (as N)	14797-55-8	0.044	± 0.004	0.020	mg/L	E235.NO3	25-Aug-2022	25-Aug-2022	618378
nitrite (as N)	14797-65-0	<0.010	± 0.002	0.010	mg/L	E235.NO2	25-Aug-2022	25-Aug-2022	618379
sulfate (as SO4)	14808-79-8	117 RRV	± 5.78	0.30	mg/L	E235.SO4	25-Aug-2022	25-Aug-2022	618380
nitrate + nitrite (as N)	----	<0.0500	-	0.05	mg/L	EC235.N+N	-	26-Aug-2022	-
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	3.60	-	0.50	mg/L	E358-L	30-Aug-2022	30-Aug-2022	625749
Ion Balance									
anion sum	----	11.3	-	0.10	meq/L	EC101	-	26-Aug-2022	-
cation sum	----	8.14	-	0.10	meq/L	EC101	-	26-Aug-2022	-
ion balance (APHA)	----	16.2	-	0.010	%	EC101	-	26-Aug-2022	-
ion balance (cations/anions)	----	72.0 IB:INT	-	0.010	%	EC101	-	26-Aug-2022	-
Dissolved Metals									
aluminum, dissolved	7429-90-5	0.0026	± 0.0009	0.0010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
antimony, dissolved	7440-36-0	0.00024	± 0.00003	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
arsenic, dissolved	7440-38-2	0.00088	± 0.00011	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
barium, dissolved	7440-39-3	0.0413	± 0.00354	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
beryllium, dissolved	7440-41-7	<0.000020	± 0.000002	0.000020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
bismuth, dissolved	7440-69-9	<0.000050	± 0.000007	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
boron, dissolved	7440-42-8	0.090	± 0.017	0.010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cadmium, dissolved	7440-43-9	0.0000110	± 0.0000021	0.0000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
calcium, dissolved	7440-70-2	80.9 RRV	± 7.18	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cesium, dissolved	7440-46-2	<0.000010	± 0.000001	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
chromium, dissolved	7440-47-3	<0.00050	± 0.00008	0.00050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cobalt, dissolved	7440-48-4	0.00051	± 0.00006	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
copper, dissolved	7440-50-8	0.00057	± 0.00013	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
iron, dissolved	7439-89-6	1.43	± 0.206	0.030	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
lead, dissolved	7439-92-1	<0.000050	± 0.000005	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
lithium, dissolved	7439-93-2	0.0301	± 0.0041	0.0010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
magnesium, dissolved	7439-95-4	24.7 RRV	± 2.40	0.0050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
manganese, dissolved	7439-96-5	0.162	± 0.0156	0.00500	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
molybdenum, dissolved	7439-98-7	0.00330	± 0.000416	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
nickel, dissolved	7440-02-0	0.00200	± 0.00021	0.00050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435

Analytical Results

EO2206890-004

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: MW-03

Client sampling date / time: 22-Aug-2022 13:20

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Dissolved Metals									
phosphorus, dissolved	7723-14-0	<0.050	± 0.013	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
potassium, dissolved	7440-09-7	3.06 RRV	± 0.271	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
rubidium, dissolved	7440-17-7	0.00139	± 0.00018	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
selenium, dissolved	7782-49-2	0.000070	± 0.000013	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
silicon, dissolved	7440-21-3	8.64	± 1.04	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
silver, dissolved	7440-22-4	<0.000010	± 0.000004	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
sodium, dissolved	7440-23-5	44.5 RRV	± 4.14	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
strontium, dissolved	7440-24-6	0.636	± 0.0528	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
sulfur, dissolved	7704-34-9	37.1	± 6.05	0.50	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tellurium, dissolved	13494-80-9	<0.00020	± 0.00004	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
thallium, dissolved	7440-28-0	<0.000010	± 0.000001	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
thorium, dissolved	7440-29-1	<0.00010	± 0.00002	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tin, dissolved	7440-31-5	0.00019	± 0.00007	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
titanium, dissolved	7440-32-6	<0.00030	± 0.00014	0.00030	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tungsten, dissolved	7440-33-7	0.00052	± 0.00012	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
uranium, dissolved	7440-61-1	0.000368	± 0.000043	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
vanadium, dissolved	7440-62-2	0.00055	± 0.00010	0.00050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
zinc, dissolved	7440-66-6	0.0044	± 0.0007	0.0010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
zirconium, dissolved	7440-67-7	<0.00020	± 0.00004	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
dissolved metals filtration location	----	Field	-	-	-	EP421	-	28-Aug-2022	622435
Volatile Organic Compounds									
benzene	71-43-2	<0.50	± 0.20	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
ethylbenzene	100-41-4	<0.50	± 0.30	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
toluene	108-88-3	<0.50	± 0.37	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, m+p-	179601-23-1	<0.40	± 0.50	0.40	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, o-	95-47-6	<0.30	± 0.30	0.30	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylenes, total	1330-20-7	<0.50	-	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
Volatile Organic Compounds Surrogates									
bromofluorobenzene, 4-	460-00-4	81.5	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
difluorobenzene, 1,4-	540-36-3	97.0	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
Hydrocarbons									
F1 (C6-C10)	----	<100	± 30	100	µg/L	E581.F1	27-Aug-2022	27-Aug-2022	619148
F1-BTEX	----	<100	-	100	µg/L	EC580	-	28-Aug-2022	-
F2 (C10-C16)	----	<100	± 10	100	µg/L	E601	28-Aug-2022	28-Aug-2022	620464
Hydrocarbons Surrogates									
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	100.0	-	1.0	%	E601	28-Aug-2022	28-Aug-2022	620464
dichlorotoluene, 3,4-	97-75-0	106	-	1.0	%	E581.F1	27-Aug-2022	27-Aug-2022	619148
Stable Isotope									
delta-oxygen-18	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-
delta-hydrogen-2	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-

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

Analytical Results

EO2206890-005

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: MW-04

Client sampling date / time: 22-Aug-2022 15:55

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests									
hardness (as CaCO3), dissolved	----	537	-	0.50	mg/L	EC100	-	29-Aug-2022	-
conductivity	----	1360	± 104	2.0	µS/cm	E100	25-Aug-2022	25-Aug-2022	619128
pH	----	8.24	± 0.12	0.10	pH units	E108	25-Aug-2022	25-Aug-2022	619127
alkalinity, bicarbonate (as HCO3)	71-52-3	441	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, carbonate (as CO3)	3812-32-6	<1.0	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, hydroxide (as OH)	14280-30-9	<1.0	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, total (as CaCO3)	----	361	± 26.9	2.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
solids, total dissolved [TDS], calculated	----	812	-	1.0	mg/L	EC103	-	26-Aug-2022	-
Anions and Nutrients									
ammonia, total dissolved (as N)	7664-41-7	<0.0050	-	0.0050	mg/L	E309	25-Aug-2022	25-Aug-2022	619026
chloride	16887-00-6	185	± 8.35	0.50	mg/L	E235.Cl	25-Aug-2022	25-Aug-2022	618382
fluoride	16984-48-8	0.102	± 0.008	0.020	mg/L	E235.F	25-Aug-2022	25-Aug-2022	618381
nitrate (as N)	14797-55-8	<0.020	± 0.004	0.020	mg/L	E235.NO3	25-Aug-2022	25-Aug-2022	618378
nitrite (as N)	14797-65-0	<0.010	± 0.002	0.010	mg/L	E235.NO2	25-Aug-2022	25-Aug-2022	618379
sulfate (as SO4)	14808-79-8	114	± 5.60	0.30	mg/L	E235.SO4	25-Aug-2022	25-Aug-2022	618380
nitrate + nitrite (as N)	----	<0.0500	-	0.05	mg/L	EC235.N+N	-	26-Aug-2022	-
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	3.35	-	0.50	mg/L	E358-L	30-Aug-2022	30-Aug-2022	625749
Ion Balance									
anion sum	----	14.8	-	0.10	meq/L	EC101	-	26-Aug-2022	-
cation sum	----	14.6	-	0.10	meq/L	EC101	-	26-Aug-2022	-
ion balance (APHA)	----	0.680	-	0.010	%	EC101	-	26-Aug-2022	-
ion balance (cations/anions)	----	98.6	-	0.010	%	EC101	-	26-Aug-2022	-
Dissolved Metals									
aluminum, dissolved	7429-90-5	<0.0010	± 0.0008	0.0010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
antimony, dissolved	7440-36-0	<0.00010	± 0.00001	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
arsenic, dissolved	7440-38-2	0.00095	± 0.00012	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
barium, dissolved	7440-39-3	0.123	± 0.0105	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
beryllium, dissolved	7440-41-7	<0.000020	± 0.000002	0.000020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
bismuth, dissolved	7440-69-9	<0.000050	± 0.000007	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
boron, dissolved	7440-42-8	0.090	± 0.017	0.010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cadmium, dissolved	7440-43-9	<0.0000050	± 0.0000009	0.0000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
calcium, dissolved	7440-70-2	144	± 12.7	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cesium, dissolved	7440-46-2	<0.000010	± 0.000001	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
chromium, dissolved	7440-47-3	<0.00050	± 0.00008	0.00050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cobalt, dissolved	7440-48-4	0.00038	± 0.00005	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
copper, dissolved	7440-50-8	<0.00020	± 0.00012	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
iron, dissolved	7439-89-6	2.15	± 0.311	0.030	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
lead, dissolved	7439-92-1	<0.000050	± 0.000005	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
lithium, dissolved	7439-93-2	0.0431	± 0.0058	0.0010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
magnesium, dissolved	7439-95-4	43.0	± 4.18	0.0050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
manganese, dissolved	7439-96-5	0.525	± 0.0506	0.00500	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
molybdenum, dissolved	7439-98-7	0.000311	± 0.000039	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
nickel, dissolved	7440-02-0	0.00192	± 0.00020	0.00050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435

Analytical Results

EO2206890-005

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: MW-04

Client sampling date / time: 22-Aug-2022 15:55

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Dissolved Metals									
phosphorus, dissolved	7723-14-0	<0.050	± 0.013	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
potassium, dissolved	7440-09-7	10.6	± 0.931	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
rubidium, dissolved	7440-17-7	0.00155	± 0.00020	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
selenium, dissolved	7782-49-2	<0.000050	± 0.000009	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
silicon, dissolved	7440-21-3	4.96	± 0.595	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
silver, dissolved	7440-22-4	<0.000010	± 0.000004	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
sodium, dissolved	7440-23-5	79.8	± 7.43	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
strontium, dissolved	7440-24-6	0.624	± 0.0518	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
sulfur, dissolved	7704-34-9	41.7	± 6.79	0.50	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tellurium, dissolved	13494-80-9	<0.00020	± 0.00004	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
thallium, dissolved	7440-28-0	<0.000010	± 0.000001	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
thorium, dissolved	7440-29-1	<0.00010	± 0.00002	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tin, dissolved	7440-31-5	<0.00010	± 0.00006	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
titanium, dissolved	7440-32-6	<0.00030	± 0.00014	0.00030	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tungsten, dissolved	7440-33-7	<0.00010	± 0.00002	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
uranium, dissolved	7440-61-1	0.00289	± 0.000338	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
vanadium, dissolved	7440-62-2	<0.00050	± 0.00010	0.00050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
zinc, dissolved	7440-66-6	<0.0010	± 0.0003	0.0010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
zirconium, dissolved	7440-67-7	<0.00020	± 0.00004	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
dissolved metals filtration location	----	Field	-	-	-	EP421	-	28-Aug-2022	622435
Volatile Organic Compounds									
benzene	71-43-2	<0.50	± 0.20	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
ethylbenzene	100-41-4	<0.50	± 0.30	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
toluene	108-88-3	<0.50	± 0.37	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, m+p-	179601-23-1	<0.40	± 0.50	0.40	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, o-	95-47-6	<0.30	± 0.30	0.30	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylenes, total	1330-20-7	<0.50	-	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
Volatile Organic Compounds Surrogates									
bromofluorobenzene, 4-	460-00-4	79.6	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
difluorobenzene, 1,4-	540-36-3	88.1	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
Hydrocarbons									
F1 (C6-C10)	----	<100	± 30	100	µg/L	E581.F1	27-Aug-2022	27-Aug-2022	619148
F1-BTEX	----	<100	-	100	µg/L	EC580	-	28-Aug-2022	-
F2 (C10-C16)	----	<100	± 10	100	µg/L	E601	28-Aug-2022	28-Aug-2022	620464
Hydrocarbons Surrogates									
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	97.8	-	1.0	%	E601	28-Aug-2022	28-Aug-2022	620464
dichlorotoluene, 3,4-	97-75-0	94.9	-	1.0	%	E581.F1	27-Aug-2022	27-Aug-2022	619148
Stable Isotope									
delta-oxygen-18	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-
delta-hydrogen-2	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-

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

Analytical Results

EO2206890-006

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: MW-05

Client sampling date / time: 22-Aug-2022 14:40

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests									
hardness (as CaCO3), dissolved	----	443	-	0.50	mg/L	EC100	-	29-Aug-2022	-
conductivity	----	976	± 74.9	2.0	µS/cm	E100	25-Aug-2022	25-Aug-2022	619128
pH	----	8.21	± 0.12	0.10	pH units	E108	25-Aug-2022	25-Aug-2022	619127
alkalinity, bicarbonate (as HCO3)	71-52-3	435	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, carbonate (as CO3)	3812-32-6	<1.0	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, hydroxide (as OH)	14280-30-9	<1.0	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, total (as CaCO3)	----	357	± 26.6	2.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
solids, total dissolved [TDS], calculated	----	613	-	1.0	mg/L	EC103	-	26-Aug-2022	-
Anions and Nutrients									
ammonia, total dissolved (as N)	7664-41-7	0.201	-	0.0050	mg/L	E309	25-Aug-2022	25-Aug-2022	619026
chloride	16887-00-6	51.7	± 2.34	0.50	mg/L	E235.Cl	25-Aug-2022	25-Aug-2022	618382
fluoride	16984-48-8	0.091	± 0.007	0.020	mg/L	E235.F	25-Aug-2022	25-Aug-2022	618381
nitrate (as N)	14797-55-8	<0.020	± 0.004	0.020	mg/L	E235.NO3	25-Aug-2022	25-Aug-2022	618378
nitrite (as N)	14797-65-0	<0.010	± 0.002	0.010	mg/L	E235.NO2	25-Aug-2022	25-Aug-2022	618379
sulfate (as SO4)	14808-79-8	115	± 5.68	0.30	mg/L	E235.SO4	25-Aug-2022	25-Aug-2022	618380
nitrate + nitrite (as N)	----	<0.0500	-	0.05	mg/L	EC235.N+N	-	26-Aug-2022	-
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	3.59	-	0.50	mg/L	E358-L	30-Aug-2022	30-Aug-2022	625749
Ion Balance									
anion sum	----	11.0	-	0.10	meq/L	EC101	-	26-Aug-2022	-
cation sum	----	11.1	-	0.10	meq/L	EC101	-	26-Aug-2022	-
ion balance (APHA)	----	0.452	-	0.010	%	EC101	-	26-Aug-2022	-
ion balance (cations/anions)	----	101	-	0.010	%	EC101	-	26-Aug-2022	-
Dissolved Metals									
aluminum, dissolved	7429-90-5	<0.0010	± 0.0008	0.0010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
antimony, dissolved	7440-36-0	<0.00010	± 0.00001	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
arsenic, dissolved	7440-38-2	0.00210	± 0.00027	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
barium, dissolved	7440-39-3	0.0529	± 0.00453	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
beryllium, dissolved	7440-41-7	<0.000020	± 0.000002	0.000020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
bismuth, dissolved	7440-69-9	<0.000050	± 0.000007	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
boron, dissolved	7440-42-8	0.059	± 0.011	0.010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cadmium, dissolved	7440-43-9	<0.0000050	± 0.0000009	0.0000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
calcium, dissolved	7440-70-2	117	± 10.4	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cesium, dissolved	7440-46-2	<0.000010	± 0.000001	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
chromium, dissolved	7440-47-3	<0.00050	± 0.00008	0.00050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cobalt, dissolved	7440-48-4	0.00091	± 0.00011	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
copper, dissolved	7440-50-8	<0.00020	± 0.00012	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
iron, dissolved	7439-89-6	4.76	± 0.687	0.030	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
lead, dissolved	7439-92-1	<0.000050	± 0.000005	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
lithium, dissolved	7439-93-2	0.0428	± 0.0057	0.0010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
magnesium, dissolved	7439-95-4	36.6	± 3.55	0.0050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
manganese, dissolved	7439-96-5	0.681	± 0.0656	0.00500	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
molybdenum, dissolved	7439-98-7	0.000459	± 0.000058	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
nickel, dissolved	7440-02-0	0.00124	± 0.00015	0.00050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435

Analytical Results

EO2206890-006

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: MW-05

Client sampling date / time: 22-Aug-2022 14:40

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Dissolved Metals									
phosphorus, dissolved	7723-14-0	<0.050	± 0.013	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
potassium, dissolved	7440-09-7	8.30	± 0.729	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
rubidium, dissolved	7440-17-7	0.00173	± 0.00023	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
selenium, dissolved	7782-49-2	<0.000050	± 0.000009	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
silicon, dissolved	7440-21-3	6.78	± 0.813	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
silver, dissolved	7440-22-4	<0.000010	± 0.000004	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
sodium, dissolved	7440-23-5	43.0	± 4.00	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
strontium, dissolved	7440-24-6	0.646	± 0.0536	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
sulfur, dissolved	7704-34-9	42.8	± 6.97	0.50	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tellurium, dissolved	13494-80-9	<0.00020	± 0.00004	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
thallium, dissolved	7440-28-0	<0.000010	± 0.000001	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
thorium, dissolved	7440-29-1	<0.00010	± 0.00002	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tin, dissolved	7440-31-5	<0.00010	± 0.00006	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
titanium, dissolved	7440-32-6	<0.00030	± 0.00014	0.00030	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tungsten, dissolved	7440-33-7	<0.00010	± 0.00002	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
uranium, dissolved	7440-61-1	0.000603	± 0.000070	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
vanadium, dissolved	7440-62-2	<0.00050	± 0.00010	0.00050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
zinc, dissolved	7440-66-6	<0.0010	± 0.0003	0.0010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
zirconium, dissolved	7440-67-7	<0.00020	± 0.00004	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
dissolved metals filtration location	----	Field	-	-	-	EP421	-	28-Aug-2022	622435
Volatile Organic Compounds									
benzene	71-43-2	<0.50	± 0.20	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
ethylbenzene	100-41-4	<0.50	± 0.30	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
toluene	108-88-3	<0.50	± 0.37	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, m+p-	179601-23-1	<0.40	± 0.50	0.40	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, o-	95-47-6	<0.30	± 0.30	0.30	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylenes, total	1330-20-7	<0.50	-	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
Volatile Organic Compounds Surrogates									
bromofluorobenzene, 4-	460-00-4	81.8	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
difluorobenzene, 1,4-	540-36-3	88.0	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
Hydrocarbons									
F1 (C6-C10)	----	<100	± 30	100	µg/L	E581.F1	27-Aug-2022	27-Aug-2022	619148
F1-BTEX	----	<100	-	100	µg/L	EC580	-	28-Aug-2022	-
F2 (C10-C16)	----	<100	± 10	100	µg/L	E601	28-Aug-2022	28-Aug-2022	620464
Hydrocarbons Surrogates									
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	99.3	-	1.0	%	E601	28-Aug-2022	28-Aug-2022	620464
dichlorotoluene, 3,4-	97-75-0	93.2	-	1.0	%	E581.F1	27-Aug-2022	27-Aug-2022	619148
Stable Isotope									
delta-oxygen-18	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-
delta-hydrogen-2	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-

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

Analytical Results

EO2206890-007

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: MW-06

Client sampling date / time: 22-Aug-2022 17:45

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests									
hardness (as CaCO3), dissolved	----	654	-	0.50	mg/L	EC100	-	29-Aug-2022	-
conductivity	----	1690	± 129	2.0	µS/cm	E100	25-Aug-2022	25-Aug-2022	619128
pH	----	8.20	± 0.12	0.10	pH units	E108	25-Aug-2022	25-Aug-2022	619127
alkalinity, bicarbonate (as HCO3)	71-52-3	624	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, carbonate (as CO3)	3812-32-6	<1.0	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, hydroxide (as OH)	14280-30-9	<1.0	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, total (as CaCO3)	----	512	± 38.0	2.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
solids, total dissolved [TDS], calculated	----	1220	-	1.0	mg/L	EC103	-	26-Aug-2022	-
Anions and Nutrients									
ammonia, total dissolved (as N)	7664-41-7	1.63	-	0.0500	mg/L	E309	25-Aug-2022	27-Aug-2022	619026
chloride	16887-00-6	6.19	± 0.29	0.50	mg/L	E235.Cl	25-Aug-2022	25-Aug-2022	618382
fluoride	16984-48-8	0.120	± 0.009	0.020	mg/L	E235.F	25-Aug-2022	25-Aug-2022	618381
nitrate (as N)	14797-55-8	0.029	± 0.004	0.020	mg/L	E235.NO3	25-Aug-2022	25-Aug-2022	618378
nitrite (as N)	14797-65-0	<0.010	± 0.002	0.010	mg/L	E235.NO2	25-Aug-2022	25-Aug-2022	618379
sulfate (as SO4)	14808-79-8	481	± 23.7	0.30	mg/L	E235.SO4	25-Aug-2022	25-Aug-2022	618380
nitrate + nitrite (as N)	----	<0.0500	-	0.05	mg/L	EC235.N+N	-	26-Aug-2022	-
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	7.02	-	0.50	mg/L	E358-L	30-Aug-2022	31-Aug-2022	625749
Ion Balance									
anion sum	----	20.4	-	0.10	meq/L	EC101	-	26-Aug-2022	-
cation sum	----	20.5	-	0.10	meq/L	EC101	-	26-Aug-2022	-
ion balance (APHA)	----	0.244	-	0.010	%	EC101	-	26-Aug-2022	-
ion balance (cations/anions)	----	100	-	0.010	%	EC101	-	26-Aug-2022	-
Dissolved Metals									
aluminum, dissolved	7429-90-5	<0.0010	± 0.0008	0.0010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
antimony, dissolved	7440-36-0	<0.00010	± 0.00001	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
arsenic, dissolved	7440-38-2	0.00618	± 0.00080	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
barium, dissolved	7440-39-3	0.0290	± 0.00248	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
beryllium, dissolved	7440-41-7	<0.000020	± 0.000002	0.000020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
bismuth, dissolved	7440-69-9	<0.000050	± 0.000007	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
boron, dissolved	7440-42-8	0.156	± 0.029	0.010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cadmium, dissolved	7440-43-9	<0.0000050	± 0.0000009	0.0000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
calcium, dissolved	7440-70-2	165	± 14.6	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cesium, dissolved	7440-46-2	<0.000010	± 0.000001	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
chromium, dissolved	7440-47-3	<0.00050	± 0.00008	0.00050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cobalt, dissolved	7440-48-4	0.00023	± 0.00003	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
copper, dissolved	7440-50-8	<0.00020	± 0.00012	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
iron, dissolved	7439-89-6	5.96	± 0.860	0.030	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
lead, dissolved	7439-92-1	<0.000050	± 0.000005	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
lithium, dissolved	7439-93-2	0.112	± 0.0149	0.0010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
magnesium, dissolved	7439-95-4	58.8	± 5.72	0.0050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
manganese, dissolved	7439-96-5	1.60	± 0.154	0.00500	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
molybdenum, dissolved	7439-98-7	0.000786	± 0.000099	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
nickel, dissolved	7440-02-0	<0.00050	± 0.00010	0.00050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435

Analytical Results

EO2206890-007

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: MW-06

Client sampling date / time: 22-Aug-2022 17:45

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Dissolved Metals									
phosphorus, dissolved	7723-14-0	0.149	± 0.026	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
potassium, dissolved	7440-09-7	5.71	± 0.503	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
rubidium, dissolved	7440-17-7	0.00193	± 0.00025	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
selenium, dissolved	7782-49-2	<0.000050	± 0.000009	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
silicon, dissolved	7440-21-3	7.94	± 0.953	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
silver, dissolved	7440-22-4	<0.000010	± 0.000004	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
sodium, dissolved	7440-23-5	161	± 15.0	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
strontium, dissolved	7440-24-6	1.30	± 0.108	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
sulfur, dissolved	7704-34-9	173	± 28.1	0.50	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tellurium, dissolved	13494-80-9	<0.00020	± 0.00004	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
thallium, dissolved	7440-28-0	<0.000010	± 0.000001	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
thorium, dissolved	7440-29-1	<0.00010	± 0.00002	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tin, dissolved	7440-31-5	<0.00010	± 0.00006	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
titanium, dissolved	7440-32-6	<0.00030	± 0.00014	0.00030	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tungsten, dissolved	7440-33-7	<0.00010	± 0.00002	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
uranium, dissolved	7440-61-1	0.00150	± 0.000176	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
vanadium, dissolved	7440-62-2	<0.00050	± 0.00010	0.00050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
zinc, dissolved	7440-66-6	<0.0010	± 0.0003	0.0010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
zirconium, dissolved	7440-67-7	<0.00020	± 0.00004	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
dissolved metals filtration location	----	Field	-	-	-	EP421	-	28-Aug-2022	622435
Volatile Organic Compounds									
benzene	71-43-2	<0.50	± 0.20	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
ethylbenzene	100-41-4	<0.50	± 0.30	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
toluene	108-88-3	<0.50	± 0.37	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, m+p-	179601-23-1	<0.40	± 0.50	0.40	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, o-	95-47-6	<0.30	± 0.30	0.30	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylenes, total	1330-20-7	<0.50	-	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
Volatile Organic Compounds Surrogates									
bromofluorobenzene, 4-	460-00-4	80.8	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
difluorobenzene, 1,4-	540-36-3	91.2	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
Hydrocarbons									
F1 (C6-C10)	----	<100	± 30	100	µg/L	E581.F1	27-Aug-2022	27-Aug-2022	619148
F1-BTEX	----	<100	-	100	µg/L	EC580	-	28-Aug-2022	-
F2 (C10-C16)	----	<100	± 10	100	µg/L	E601	28-Aug-2022	28-Aug-2022	620464
Hydrocarbons Surrogates									
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	99.1	-	1.0	%	E601	28-Aug-2022	28-Aug-2022	620464
dichlorotoluene, 3,4-	97-75-0	101	-	1.0	%	E581.F1	27-Aug-2022	27-Aug-2022	619148
Stable Isotope									
delta-oxygen-18	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-
delta-hydrogen-2	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-

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

Analytical Results

EO2206890-008

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: MW-07

Client sampling date / time: 23-Aug-2022 10:30

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests									
hardness (as CaCO3), dissolved	----	1140	-	0.50	mg/L	EC100	-	29-Aug-2022	-
conductivity	----	2870	± 219	2.0	µS/cm	E100	25-Aug-2022	25-Aug-2022	619128
pH	----	8.00	± 0.11	0.10	pH units	E108	25-Aug-2022	25-Aug-2022	619127
alkalinity, bicarbonate (as HCO3)	71-52-3	694	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, carbonate (as CO3)	3812-32-6	<1.0	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, hydroxide (as OH)	14280-30-9	<1.0	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, total (as CaCO3)	----	569	± 42.3	2.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
solids, total dissolved [TDS], calculated	----	2300	-	1.0	mg/L	EC103	-	26-Aug-2022	-
Anions and Nutrients									
ammonia, total dissolved (as N)	7664-41-7	2.64	-	0.0500	mg/L	E309	25-Aug-2022	27-Aug-2022	619026
chloride	16887-00-6	14.7 DLDS	± 0.67	2.50	mg/L	E235.Cl	25-Aug-2022	25-Aug-2022	618382
fluoride	16984-48-8	0.106 DLDS	± 0.008	0.100	mg/L	E235.F	25-Aug-2022	25-Aug-2022	618381
nitrate (as N)	14797-55-8	<0.100 DLDS	± 0.008	0.100	mg/L	E235.NO3	25-Aug-2022	25-Aug-2022	618378
nitrite (as N)	14797-65-0	<0.050 DLDS	± 0.006	0.050	mg/L	E235.NO2	25-Aug-2022	25-Aug-2022	618379
sulfate (as SO4)	14808-79-8	1210 DLDS	± 59.7	1.50	mg/L	E235.SO4	25-Aug-2022	25-Aug-2022	618380
nitrate + nitrite (as N)	----	<0.112	-	0.112	mg/L	EC235.N+N	-	26-Aug-2022	-
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	6.96	-	0.50	mg/L	E358-L	30-Aug-2022	30-Aug-2022	625749
Ion Balance									
anion sum	----	37.0	-	0.10	meq/L	EC101	-	26-Aug-2022	-
cation sum	----	36.0	-	0.10	meq/L	EC101	-	26-Aug-2022	-
ion balance (APHA)	----	1.37	-	0.010	%	EC101	-	26-Aug-2022	-
ion balance (cations/anions)	----	97.3	-	0.010	%	EC101	-	26-Aug-2022	-
Dissolved Metals									
aluminum, dissolved	7429-90-5	0.0030	± 0.0009	0.0020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
antimony, dissolved	7440-36-0	<0.00020 DLDS	± 0.00003	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
arsenic, dissolved	7440-38-2	0.00275	± 0.00035	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
barium, dissolved	7440-39-3	0.0214	± 0.00183	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
beryllium, dissolved	7440-41-7	<0.000040 DLDS	± 0.000005	0.000040	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
bismuth, dissolved	7440-69-9	<0.000100 DLDS	± 0.000013	0.000100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
boron, dissolved	7440-42-8	0.324	± 0.060	0.020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cadmium, dissolved	7440-43-9	<0.0000100 DLDS	± 0.0000019	0.0000100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
calcium, dissolved	7440-70-2	290	± 25.8	0.100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cesium, dissolved	7440-46-2	<0.000020 DLDS	± 0.000002	0.000020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
chromium, dissolved	7440-47-3	<0.00100 DLDS	± 0.00015	0.00100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cobalt, dissolved	7440-48-4	0.00102	± 0.00012	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
copper, dissolved	7440-50-8	<0.00040 DLDS	± 0.00013	0.00040	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
iron, dissolved	7439-89-6	13.2	± 1.91	0.060	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
lead, dissolved	7439-92-1	<0.000100 DLDS	± 0.000011	0.000100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
lithium, dissolved	7439-93-2	0.182	± 0.0242	0.0020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
magnesium, dissolved	7439-95-4	100	± 9.72	0.0100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
manganese, dissolved	7439-96-5	2.07	± 0.200	0.0100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
molybdenum, dissolved	7439-98-7	0.000475	± 0.000060	0.000100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
nickel, dissolved	7440-02-0	0.00452	± 0.00042	0.00100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435

Analytical Results

EO2206890-008

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: MW-07

Client sampling date / time: 23-Aug-2022 10:30

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Dissolved Metals									
phosphorus, dissolved	7723-14-0	<0.100 DLDS	± 0.019	0.100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
potassium, dissolved	7440-09-7	6.22	± 0.547	0.100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
rubidium, dissolved	7440-17-7	0.00311	± 0.00041	0.00040	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
selenium, dissolved	7782-49-2	<0.000100 DLDS	± 0.000019	0.000100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
silicon, dissolved	7440-21-3	8.24	± 0.989	0.100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
silver, dissolved	7440-22-4	<0.000020 DLDS	± 0.000007	0.000020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
sodium, dissolved	7440-23-5	290	± 26.9	0.100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
strontium, dissolved	7440-24-6	2.81	± 0.233	0.00040	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
sulfur, dissolved	7704-34-9	409	± 66.5	1.00	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tellurium, dissolved	13494-80-9	<0.00040 DLDS	± 0.00007	0.00040	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
thallium, dissolved	7440-28-0	<0.000020 DLDS	± 0.000002	0.000020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
thorium, dissolved	7440-29-1	<0.00020 DLDS	± 0.00003	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tin, dissolved	7440-31-5	<0.00020 DLDS	± 0.00007	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
titanium, dissolved	7440-32-6	<0.00060 DLDS	± 0.00020	0.00060	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tungsten, dissolved	7440-33-7	<0.00020 DLDS	± 0.00005	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
uranium, dissolved	7440-61-1	0.00162	± 0.000190	0.000020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
vanadium, dissolved	7440-62-2	<0.00100 DLDS	± 0.00013	0.00100	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
zinc, dissolved	7440-66-6	0.0065	± 0.0010	0.0020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
zirconium, dissolved	7440-67-7	<0.00040 DLDS	± 0.00007	0.00040	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
dissolved metals filtration location	----	Field	-	-	-	EP421	-	28-Aug-2022	622435
Volatile Organic Compounds									
benzene	71-43-2	<0.50	± 0.20	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
ethylbenzene	100-41-4	<0.50	± 0.30	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
toluene	108-88-3	<0.50	± 0.37	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, m+p-	179601-23-1	<0.40	± 0.50	0.40	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, o-	95-47-6	<0.30	± 0.30	0.30	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylenes, total	1330-20-7	<0.50	-	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
Volatile Organic Compounds Surrogates									
bromofluorobenzene, 4-	460-00-4	81.4	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
difluorobenzene, 1,4-	540-36-3	95.3	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
Hydrocarbons									
F1 (C6-C10)	----	<100	± 30	100	µg/L	E581.F1	27-Aug-2022	27-Aug-2022	619148
F1-BTEX	----	<100	-	100	µg/L	EC580	-	28-Aug-2022	-
F2 (C10-C16)	----	<100	± 10	100	µg/L	E601	28-Aug-2022	28-Aug-2022	620464
Hydrocarbons Surrogates									
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	99.2	-	1.0	%	E601	28-Aug-2022	28-Aug-2022	620464
dichlorotoluene, 3,4-	97-75-0	99.3	-	1.0	%	E581.F1	27-Aug-2022	27-Aug-2022	619148
Stable Isotope									
delta-oxygen-18	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-
delta-hydrogen-2	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-

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

Analytical Results

EO2206890-009

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: MW-08

Client sampling date / time: 23-Aug-2022 13:15

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests									
hardness (as CaCO3), dissolved	----	603	-	0.50	mg/L	EC100	-	29-Aug-2022	-
conductivity	----	1460	± 112	2.0	µS/cm	E100	25-Aug-2022	25-Aug-2022	619128
pH	----	8.21	± 0.12	0.10	pH units	E108	25-Aug-2022	25-Aug-2022	619127
alkalinity, bicarbonate (as HCO3)	71-52-3	606	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, carbonate (as CO3)	3812-32-6	<1.0	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, hydroxide (as OH)	14280-30-9	<1.0	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, total (as CaCO3)	----	497	± 36.9	2.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
solids, total dissolved [TDS], calculated	----	1050	-	1.0	mg/L	EC103	-	26-Aug-2022	-
Anions and Nutrients									
ammonia, total dissolved (as N)	7664-41-7	1.90	-	0.0250	mg/L	E309	29-Aug-2022	29-Aug-2022	623374
chloride	16887-00-6	1.45	± 0.08	0.50	mg/L	E235.Cl	25-Aug-2022	25-Aug-2022	618382
fluoride	16984-48-8	0.094	± 0.007	0.020	mg/L	E235.F	25-Aug-2022	25-Aug-2022	618381
nitrate (as N)	14797-55-8	<0.020	± 0.004	0.020	mg/L	E235.NO3	25-Aug-2022	25-Aug-2022	618378
nitrite (as N)	14797-65-0	<0.010	± 0.002	0.010	mg/L	E235.NO2	25-Aug-2022	25-Aug-2022	618379
sulfate (as SO4)	14808-79-8	362	± 17.8	0.30	mg/L	E235.SO4	25-Aug-2022	25-Aug-2022	618380
nitrate + nitrite (as N)	----	<0.0500	-	0.05	mg/L	EC235.N+N	-	26-Aug-2022	-
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	6.33	-	0.50	mg/L	E358-L	30-Aug-2022	30-Aug-2022	625749
Ion Balance									
anion sum	----	17.5	-	0.10	meq/L	EC101	-	26-Aug-2022	-
cation sum	----	18.1	-	0.10	meq/L	EC101	-	26-Aug-2022	-
ion balance (APHA)	----	1.68	-	0.010	%	EC101	-	26-Aug-2022	-
ion balance (cations/anions)	----	103	-	0.010	%	EC101	-	26-Aug-2022	-
Dissolved Metals									
aluminum, dissolved	7429-90-5	<0.0010	± 0.0008	0.0010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
antimony, dissolved	7440-36-0	<0.00010	± 0.00001	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
arsenic, dissolved	7440-38-2	0.00513	± 0.00066	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
barium, dissolved	7440-39-3	0.0281	± 0.00240	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
beryllium, dissolved	7440-41-7	<0.000020	± 0.000002	0.000020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
bismuth, dissolved	7440-69-9	<0.000050	± 0.000007	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
boron, dissolved	7440-42-8	0.218	± 0.041	0.010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cadmium, dissolved	7440-43-9	<0.0000050	± 0.0000009	0.0000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
calcium, dissolved	7440-70-2	170	± 15.1	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cesium, dissolved	7440-46-2	<0.000010	± 0.000001	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
chromium, dissolved	7440-47-3	<0.00050	± 0.00008	0.00050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cobalt, dissolved	7440-48-4	0.00016	± 0.00003	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
copper, dissolved	7440-50-8	<0.00020	± 0.00012	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
iron, dissolved	7439-89-6	7.94	± 1.15	0.030	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
lead, dissolved	7439-92-1	<0.000050	± 0.000005	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
lithium, dissolved	7439-93-2	0.120	± 0.0159	0.0010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
magnesium, dissolved	7439-95-4	43.4	± 4.22	0.0050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
manganese, dissolved	7439-96-5	0.487	± 0.0470	0.00500	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
molybdenum, dissolved	7439-98-7	0.000959	± 0.000121	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
nickel, dissolved	7440-02-0	<0.00050	± 0.00010	0.00050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435

Analytical Results

EO2206890-009

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: MW-08

Client sampling date / time: 23-Aug-2022 13:15

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Dissolved Metals									
phosphorus, dissolved	7723-14-0	<0.050	± 0.013	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
potassium, dissolved	7440-09-7	6.21	± 0.546	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
rubidium, dissolved	7440-17-7	0.00202	± 0.00026	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
selenium, dissolved	7782-49-2	<0.000050	± 0.000009	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
silicon, dissolved	7440-21-3	8.00	± 0.960	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
silver, dissolved	7440-22-4	<0.000010	± 0.000004	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
sodium, dissolved	7440-23-5	129	± 12.0	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
strontium, dissolved	7440-24-6	1.67	± 0.138	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
sulfur, dissolved	7704-34-9	128	± 20.8	0.50	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tellurium, dissolved	13494-80-9	<0.00020	± 0.00004	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
thallium, dissolved	7440-28-0	<0.000010	± 0.000001	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
thorium, dissolved	7440-29-1	<0.00010	± 0.00002	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tin, dissolved	7440-31-5	<0.00010	± 0.00006	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
titanium, dissolved	7440-32-6	<0.00030	± 0.00014	0.00030	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tungsten, dissolved	7440-33-7	<0.00010	± 0.00002	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
uranium, dissolved	7440-61-1	0.000817	± 0.000096	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
vanadium, dissolved	7440-62-2	<0.00050	± 0.00010	0.00050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
zinc, dissolved	7440-66-6	<0.0010	± 0.0003	0.0010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
zirconium, dissolved	7440-67-7	<0.00020	± 0.00004	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
dissolved metals filtration location	----	Field	-	-	-	EP421	-	28-Aug-2022	622435
Volatile Organic Compounds									
benzene	71-43-2	<0.50	± 0.20	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
ethylbenzene	100-41-4	<0.50	± 0.30	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
toluene	108-88-3	<0.50	± 0.37	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, m+p-	179601-23-1	<0.40	± 0.50	0.40	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, o-	95-47-6	<0.30	± 0.30	0.30	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylenes, total	1330-20-7	<0.50	-	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
Volatile Organic Compounds Surrogates									
bromofluorobenzene, 4-	460-00-4	80.3	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
difluorobenzene, 1,4-	540-36-3	93.7	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
Hydrocarbons									
F1 (C6-C10)	----	<100	± 30	100	µg/L	E581.F1	27-Aug-2022	27-Aug-2022	619148
F1-BTEX	----	<100	-	100	µg/L	EC580	-	28-Aug-2022	-
F2 (C10-C16)	----	<100	± 10	100	µg/L	E601	28-Aug-2022	28-Aug-2022	620464
Hydrocarbons Surrogates									
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	100	-	1.0	%	E601	28-Aug-2022	28-Aug-2022	620464
dichlorotoluene, 3,4-	97-75-0	96.0	-	1.0	%	E581.F1	27-Aug-2022	27-Aug-2022	619148
Stable Isotope									
delta-oxygen-18	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-
delta-hydrogen-2	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-

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

Analytical Results

EO2206890-010

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: MW-09

Client sampling date / time: 23-Aug-2022 12:10

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests									
hardness (as CaCO3), dissolved	----	332	-	0.50	mg/L	EC100	-	29-Aug-2022	-
conductivity	----	1510	± 115	2.0	µS/cm	E100	25-Aug-2022	25-Aug-2022	619143
pH	----	8.34	± 0.12	0.10	pH units	E108	25-Aug-2022	25-Aug-2022	619141
alkalinity, bicarbonate (as HCO3)	71-52-3	604	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619142
alkalinity, carbonate (as CO3)	3812-32-6	5.9	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619142
alkalinity, hydroxide (as OH)	14280-30-9	<1.0	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619142
alkalinity, total (as CaCO3)	----	505	± 37.5	2.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619142
solids, total dissolved [TDS], calculated	----	1010	-	1.0	mg/L	EC103	-	26-Aug-2022	-
Anions and Nutrients									
ammonia, total dissolved (as N)	7664-41-7	2.02	-	0.0250	mg/L	E309	29-Aug-2022	29-Aug-2022	623374
chloride	16887-00-6	5.48	± 0.26	0.50	mg/L	E235.Cl	25-Aug-2022	25-Aug-2022	618382
fluoride	16984-48-8	0.202	± 0.015	0.020	mg/L	E235.F	25-Aug-2022	25-Aug-2022	618381
nitrate (as N)	14797-55-8	<0.020	± 0.004	0.020	mg/L	E235.NO3	25-Aug-2022	25-Aug-2022	618378
nitrite (as N)	14797-65-0	<0.010	± 0.002	0.010	mg/L	E235.NO2	25-Aug-2022	25-Aug-2022	618379
sulfate (as SO4)	14808-79-8	322	± 15.8	0.30	mg/L	E235.SO4	25-Aug-2022	25-Aug-2022	618380
nitrate + nitrite (as N)	----	<0.0500	-	0.05	mg/L	EC235.N+N	-	26-Aug-2022	-
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	6.45	-	0.50	mg/L	E358-L	30-Aug-2022	30-Aug-2022	625749
Ion Balance									
anion sum	----	17.0	-	0.10	meq/L	EC101	-	26-Aug-2022	-
cation sum	----	16.8	-	0.10	meq/L	EC101	-	26-Aug-2022	-
ion balance (APHA)	----	0.592	-	0.010	%	EC101	-	26-Aug-2022	-
ion balance (cations/anions)	----	98.8	-	0.010	%	EC101	-	26-Aug-2022	-
Dissolved Metals									
aluminum, dissolved	7429-90-5	<0.0010	± 0.0008	0.0010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
antimony, dissolved	7440-36-0	<0.00010	± 0.00001	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
arsenic, dissolved	7440-38-2	0.00271	± 0.00035	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
barium, dissolved	7440-39-3	0.0214	± 0.00183	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
beryllium, dissolved	7440-41-7	<0.000020	± 0.000002	0.000020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
bismuth, dissolved	7440-69-9	<0.000050	± 0.000007	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
boron, dissolved	7440-42-8	0.282	± 0.052	0.010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cadmium, dissolved	7440-43-9	<0.0000050	± 0.0000009	0.0000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
calcium, dissolved	7440-70-2	89.1	± 7.91	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cesium, dissolved	7440-46-2	<0.000010	± 0.000001	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
chromium, dissolved	7440-47-3	<0.00050	± 0.00008	0.00050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cobalt, dissolved	7440-48-4	0.00165	± 0.00019	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
copper, dissolved	7440-50-8	<0.00020	± 0.00012	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
iron, dissolved	7439-89-6	1.87	± 0.270	0.030	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
lead, dissolved	7439-92-1	<0.000050	± 0.000005	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
lithium, dissolved	7439-93-2	0.0796	± 0.0106	0.0010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
magnesium, dissolved	7439-95-4	26.5	± 2.57	0.0050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
manganese, dissolved	7439-96-5	0.782	± 0.0754	0.00500	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
molybdenum, dissolved	7439-98-7	0.00140	± 0.000176	0.00050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
nickel, dissolved	7440-02-0	0.00096	± 0.00013	0.00050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435

Analytical Results

EO2206890-010

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: MW-09

Client sampling date / time: 23-Aug-2022 12:10

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Dissolved Metals									
phosphorus, dissolved	7723-14-0	<0.050	± 0.013	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
potassium, dissolved	7440-09-7	4.16	± 0.367	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
rubidium, dissolved	7440-17-7	0.00117	± 0.00015	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
selenium, dissolved	7782-49-2	<0.000050	± 0.000009	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
silicon, dissolved	7440-21-3	6.73	± 0.807	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
silver, dissolved	7440-22-4	<0.000010	± 0.000004	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
sodium, dissolved	7440-23-5	230	± 21.4	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
strontium, dissolved	7440-24-6	0.816	± 0.0677	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
sulfur, dissolved	7704-34-9	115	± 18.6	0.50	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tellurium, dissolved	13494-80-9	<0.00020	± 0.00004	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
thallium, dissolved	7440-28-0	<0.000010	± 0.000001	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
thorium, dissolved	7440-29-1	<0.00010	± 0.00002	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tin, dissolved	7440-31-5	<0.00010	± 0.00006	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
titanium, dissolved	7440-32-6	<0.00030	± 0.00014	0.00030	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tungsten, dissolved	7440-33-7	<0.00010	± 0.00002	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
uranium, dissolved	7440-61-1	0.00106	± 0.000124	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
vanadium, dissolved	7440-62-2	<0.00050	± 0.00010	0.00050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
zinc, dissolved	7440-66-6	<0.0010	± 0.0003	0.0010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
zirconium, dissolved	7440-67-7	<0.00020	± 0.00004	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
dissolved metals filtration location	----	Field	-	-	-	EP421	-	28-Aug-2022	622435
Volatile Organic Compounds									
benzene	71-43-2	<0.50	± 0.20	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
ethylbenzene	100-41-4	<0.50	± 0.30	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
toluene	108-88-3	<0.50	± 0.37	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, m+p-	179601-23-1	<0.40	± 0.50	0.40	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, o-	95-47-6	<0.30	± 0.30	0.30	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylenes, total	1330-20-7	<0.50	-	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
Volatile Organic Compounds Surrogates									
bromofluorobenzene, 4-	460-00-4	78.7	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
difluorobenzene, 1,4-	540-36-3	95.1	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
Hydrocarbons									
F1 (C6-C10)	----	<100	± 30	100	µg/L	E581.F1	27-Aug-2022	27-Aug-2022	619148
F1-BTEX	----	<100	-	100	µg/L	EC580	-	28-Aug-2022	-
F2 (C10-C16)	----	<100	± 10	100	µg/L	E601	28-Aug-2022	28-Aug-2022	620464
Hydrocarbons Surrogates									
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	96.0	-	1.0	%	E601	28-Aug-2022	28-Aug-2022	620464
dichlorotoluene, 3,4-	97-75-0	99.9	-	1.0	%	E581.F1	27-Aug-2022	27-Aug-2022	619148
Stable Isotope									
delta-oxygen-18	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-
delta-hydrogen-2	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-

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

Analytical Results

EO2206890-011

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: MW-11

Client sampling date / time: 23-Aug-2022 14:20

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests									
hardness (as CaCO3), dissolved	----	512	-	0.50	mg/L	EC100	-	29-Aug-2022	-
conductivity	----	1270	± 97.2	2.0	µS/cm	E100	25-Aug-2022	25-Aug-2022	619128
pH	----	8.19	± 0.12	0.10	pH units	E108	25-Aug-2022	25-Aug-2022	619127
alkalinity, bicarbonate (as HCO3)	71-52-3	649	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, carbonate (as CO3)	3812-32-6	<1.0	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, hydroxide (as OH)	14280-30-9	<1.0	-	1.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
alkalinity, total (as CaCO3)	----	532	± 39.5	2.0	mg/L	E290	25-Aug-2022	25-Aug-2022	619129
solids, total dissolved [TDS], calculated	----	861	-	1.0	mg/L	EC103	-	26-Aug-2022	-
Anions and Nutrients									
ammonia, total dissolved (as N)	7664-41-7	1.56	-	0.0250	mg/L	E309	29-Aug-2022	29-Aug-2022	623374
chloride	16887-00-6	11.3	± 0.52	0.50	mg/L	E235.Cl	25-Aug-2022	25-Aug-2022	618382
fluoride	16984-48-8	0.108	± 0.008	0.020	mg/L	E235.F	25-Aug-2022	25-Aug-2022	618381
nitrate (as N)	14797-55-8	<0.020	± 0.004	0.020	mg/L	E235.NO3	25-Aug-2022	25-Aug-2022	618378
nitrite (as N)	14797-65-0	<0.010	± 0.002	0.010	mg/L	E235.NO2	25-Aug-2022	25-Aug-2022	618379
sulfate (as SO4)	14808-79-8	214	± 10.6	0.30	mg/L	E235.SO4	25-Aug-2022	25-Aug-2022	618380
nitrate + nitrite (as N)	----	<0.0500	-	0.05	mg/L	EC235.N+N	-	26-Aug-2022	-
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	6.70	-	0.50	mg/L	E358-L	30-Aug-2022	30-Aug-2022	625749
Ion Balance									
anion sum	----	15.4	-	0.10	meq/L	EC101	-	26-Aug-2022	-
cation sum	----	14.8	-	0.10	meq/L	EC101	-	26-Aug-2022	-
ion balance (APHA)	----	1.99	-	0.010	%	EC101	-	26-Aug-2022	-
ion balance (cations/anions)	----	96.1	-	0.010	%	EC101	-	26-Aug-2022	-
Dissolved Metals									
aluminum, dissolved	7429-90-5	0.0021	± 0.0008	0.0010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
antimony, dissolved	7440-36-0	<0.00010	± 0.00001	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
arsenic, dissolved	7440-38-2	0.00261	± 0.00034	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
barium, dissolved	7440-39-3	0.0545	± 0.00466	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
beryllium, dissolved	7440-41-7	<0.000020	± 0.000002	0.000020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
bismuth, dissolved	7440-69-9	<0.000050	± 0.000007	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
boron, dissolved	7440-42-8	0.194	± 0.036	0.010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cadmium, dissolved	7440-43-9	<0.0000050	± 0.0000009	0.0000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
calcium, dissolved	7440-70-2	136	± 12.1	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cesium, dissolved	7440-46-2	<0.000010	± 0.000001	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
chromium, dissolved	7440-47-3	<0.00050	± 0.00008	0.00050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
cobalt, dissolved	7440-48-4	0.00026	± 0.00004	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
copper, dissolved	7440-50-8	0.00181	± 0.00021	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
iron, dissolved	7439-89-6	6.88	± 0.994	0.030	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
lead, dissolved	7439-92-1	0.000056	± 0.000006	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
lithium, dissolved	7439-93-2	0.0809	± 0.0108	0.0010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
magnesium, dissolved	7439-95-4	42.0	± 4.08	0.0050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
manganese, dissolved	7439-96-5	0.598	± 0.0577	0.00500	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
molybdenum, dissolved	7439-98-7	0.000585	± 0.000074	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
nickel, dissolved	7440-02-0	<0.00050	± 0.00010	0.00050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435

Analytical Results

EO2206890-011

Sub-Matrix: **Water**
(Matrix: **Water**)

Client sample ID: MW-11
Client sampling date / time: 23-Aug-2022 14:20

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Dissolved Metals									
phosphorus, dissolved	7723-14-0	<0.050	± 0.013	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
potassium, dissolved	7440-09-7	4.93	± 0.434	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
rubidium, dissolved	7440-17-7	0.00195	± 0.00026	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
selenium, dissolved	7782-49-2	<0.000050	± 0.000009	0.000050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
silicon, dissolved	7440-21-3	8.47	± 1.02	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
silver, dissolved	7440-22-4	<0.000010	± 0.000004	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
sodium, dissolved	7440-23-5	96.6	± 8.99	0.050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
strontium, dissolved	7440-24-6	1.12	± 0.0933	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
sulfur, dissolved	7704-34-9	78.2	± 12.7	0.50	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tellurium, dissolved	13494-80-9	<0.00020	± 0.00004	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
thallium, dissolved	7440-28-0	<0.000010	± 0.000001	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
thorium, dissolved	7440-29-1	<0.00010	± 0.00002	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tin, dissolved	7440-31-5	0.00011	± 0.00006	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
titanium, dissolved	7440-32-6	<0.00030	± 0.00014	0.00030	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
tungsten, dissolved	7440-33-7	<0.00010	± 0.00002	0.00010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
uranium, dissolved	7440-61-1	0.000818	± 0.000096	0.000010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
vanadium, dissolved	7440-62-2	<0.00050	± 0.00010	0.00050	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
zinc, dissolved	7440-66-6	<0.0010	± 0.0003	0.0010	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
zirconium, dissolved	7440-67-7	<0.00020	± 0.00004	0.00020	mg/L	E421	28-Aug-2022	28-Aug-2022	622435
dissolved metals filtration location	----	Field	-	-	-	EP421	-	28-Aug-2022	622435
Volatile Organic Compounds									
benzene	71-43-2	<0.50	± 0.20	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
ethylbenzene	100-41-4	<0.50	± 0.30	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
toluene	108-88-3	<0.50	± 0.37	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, m+p-	179601-23-1	<0.40	± 0.50	0.40	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, o-	95-47-6	<0.30	± 0.30	0.30	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylenes, total	1330-20-7	<0.50	-	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
Volatile Organic Compounds Surrogates									
bromofluorobenzene, 4-	460-00-4	78.4	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
difluorobenzene, 1,4-	540-36-3	88.9	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
Hydrocarbons									
F1 (C6-C10)	----	<100	± 30	100	µg/L	E581.F1	27-Aug-2022	27-Aug-2022	619148
F1-BTEX	----	<100	-	100	µg/L	EC580	-	28-Aug-2022	-
F2 (C10-C16)	----	<100	± 10	100	µg/L	E601	28-Aug-2022	28-Aug-2022	620464
Hydrocarbons Surrogates									
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	98.1	-	1.0	%	E601	28-Aug-2022	28-Aug-2022	620464
dichlorotoluene, 3,4-	97-75-0	92.4	-	1.0	%	E581.F1	27-Aug-2022	27-Aug-2022	619148
Stable Isotope									
delta-oxygen-18	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-
delta-hydrogen-2	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-

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

Analytical Results

EO2206890-012

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: MW-12

Client sampling date / time: 23-Aug-2022 15:15

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests									
hardness (as CaCO3), dissolved	----	358	-	0.50	mg/L	EC100	-	02-Sep-2022	-
conductivity	----	955	± 73.3	2.0	µS/cm	E100	25-Aug-2022	26-Aug-2022	619374
pH	----	8.24	± 0.12	0.10	pH units	E108	25-Aug-2022	26-Aug-2022	619373
alkalinity, bicarbonate (as HCO3)	71-52-3	650	-	1.0	mg/L	E290	25-Aug-2022	26-Aug-2022	619375
alkalinity, carbonate (as CO3)	3812-32-6	<1.0	-	1.0	mg/L	E290	25-Aug-2022	26-Aug-2022	619375
alkalinity, hydroxide (as OH)	14280-30-9	<1.0	-	1.0	mg/L	E290	25-Aug-2022	26-Aug-2022	619375
alkalinity, total (as CaCO3)	----	533	± 39.6	2.0	mg/L	E290	25-Aug-2022	26-Aug-2022	619375
solids, total dissolved [TDS], calculated	----	617	-	1.0	mg/L	EC103	-	26-Aug-2022	-
Anions and Nutrients									
ammonia, total dissolved (as N)	7664-41-7	1.44	-	0.0250	mg/L	E309	29-Aug-2022	29-Aug-2022	623377
chloride	16887-00-6	5.81	± 0.27	0.50	mg/L	E235.Cl	25-Aug-2022	25-Aug-2022	618382
fluoride	16984-48-8	0.090	± 0.007	0.020	mg/L	E235.F	25-Aug-2022	25-Aug-2022	618381
nitrate (as N)	14797-55-8	<0.020	± 0.004	0.020	mg/L	E235.NO3	25-Aug-2022	25-Aug-2022	618378
nitrite (as N)	14797-65-0	<0.010	± 0.002	0.010	mg/L	E235.NO2	25-Aug-2022	25-Aug-2022	618379
sulfate (as SO4)	14808-79-8	33.2	± 1.64	0.30	mg/L	E235.SO4	25-Aug-2022	25-Aug-2022	618380
nitrate + nitrite (as N)	----	<0.0500	-	0.05	mg/L	EC235.N+N	-	26-Aug-2022	-
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	7.42	-	0.50	mg/L	E358-L	30-Aug-2022	30-Aug-2022	625749
Ion Balance									
anion sum	----	11.5	-	0.10	meq/L	EC101	-	26-Aug-2022	-
cation sum	----	11.6	-	0.10	meq/L	EC101	-	26-Aug-2022	-
ion balance (APHA)	----	0.433	-	0.010	%	EC101	-	26-Aug-2022	-
ion balance (cations/anions)	----	101	-	0.010	%	EC101	-	26-Aug-2022	-
Dissolved Metals									
aluminum, dissolved	7429-90-5	<0.0010	± 0.0008	0.0010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
antimony, dissolved	7440-36-0	<0.00010	± 0.00001	0.00010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
arsenic, dissolved	7440-38-2	0.00274	± 0.00035	0.00010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
barium, dissolved	7440-39-3	0.120	± 0.0102	0.00010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
beryllium, dissolved	7440-41-7	<0.000020	± 0.000002	0.000020	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
bismuth, dissolved	7440-69-9	<0.000050	± 0.000007	0.000050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
boron, dissolved	7440-42-8	0.245	± 0.046	0.010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
cadmium, dissolved	7440-43-9	<0.0000050	± 0.0000009	0.0000050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
calcium, dissolved	7440-70-2	93.7	± 8.32	0.050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
cesium, dissolved	7440-46-2	<0.000010	± 0.000001	0.000010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
chromium, dissolved	7440-47-3	<0.00050	± 0.00008	0.00050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
cobalt, dissolved	7440-48-4	0.00044	± 0.00006	0.00010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
copper, dissolved	7440-50-8	<0.00020	± 0.00012	0.00020	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
iron, dissolved	7439-89-6	4.21	± 0.608	0.030	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
lead, dissolved	7439-92-1	<0.000050	± 0.000005	0.000050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
lithium, dissolved	7439-93-2	0.0707	± 0.0094	0.0010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
magnesium, dissolved	7439-95-4	30.2	± 2.93	0.0050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
manganese, dissolved	7439-96-5	0.458	± 0.0442	0.00500	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
molybdenum, dissolved	7439-98-7	0.000980	± 0.000123	0.000050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
nickel, dissolved	7440-02-0	0.00056	± 0.00010	0.00050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610

Analytical Results

EO2206890-012

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: MW-12

Client sampling date / time: 23-Aug-2022 15:15

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Dissolved Metals									
phosphorus, dissolved	7723-14-0	<0.050	± 0.013	0.050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
potassium, dissolved	7440-09-7	5.01	± 0.441	0.050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
rubidium, dissolved	7440-17-7	0.00238	± 0.00031	0.00020	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
selenium, dissolved	7782-49-2	<0.000050	± 0.000009	0.000050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
silicon, dissolved	7440-21-3	7.74	± 0.929	0.050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
silver, dissolved	7440-22-4	0.000011	± 0.000004	0.000010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
sodium, dissolved	7440-23-5	96.2	± 8.95	0.050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
strontium, dissolved	7440-24-6	0.869	± 0.0721	0.00020	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
sulfur, dissolved	7704-34-9	12.7	± 2.10	0.50	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
tellurium, dissolved	13494-80-9	<0.00020	± 0.00004	0.00020	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
thallium, dissolved	7440-28-0	<0.000010	± 0.000001	0.000010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
thorium, dissolved	7440-29-1	<0.00010	± 0.00002	0.00010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
tin, dissolved	7440-31-5	<0.00010	± 0.00006	0.00010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
titanium, dissolved	7440-32-6	<0.00030	± 0.00014	0.00030	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
tungsten, dissolved	7440-33-7	<0.00010	± 0.00002	0.00010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
uranium, dissolved	7440-61-1	0.000875	± 0.000102	0.000010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
vanadium, dissolved	7440-62-2	<0.00050	± 0.00010	0.00050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
zinc, dissolved	7440-66-6	<0.0010	± 0.0003	0.0010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
zirconium, dissolved	7440-67-7	<0.00020	± 0.00004	0.00020	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
dissolved metals filtration location	----	Field	-	-	-	EP421	-	01-Sep-2022	628610
Volatile Organic Compounds									
benzene	71-43-2	<0.50	± 0.20	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
ethylbenzene	100-41-4	<0.50	± 0.30	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
toluene	108-88-3	<0.50	± 0.37	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, m+p-	179601-23-1	<0.40	± 0.50	0.40	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, o-	95-47-6	<0.30	± 0.30	0.30	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylenes, total	1330-20-7	<0.50	-	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
Volatile Organic Compounds Surrogates									
bromofluorobenzene, 4-	460-00-4	77.4	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
difluorobenzene, 1,4-	540-36-3	96.1	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
Hydrocarbons									
F1 (C6-C10)	----	<100	± 30	100	µg/L	E581.F1	27-Aug-2022	27-Aug-2022	619148
F1-BTEX	----	<100	-	100	µg/L	EC580	-	28-Aug-2022	-
F2 (C10-C16)	----	<100	± 10	100	µg/L	E601	30-Aug-2022	31-Aug-2022	624711
Hydrocarbons Surrogates									
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	97.6	-	1.0	%	E601	30-Aug-2022	31-Aug-2022	624711
dichlorotoluene, 3,4-	97-75-0	93.8	-	1.0	%	E581.F1	27-Aug-2022	27-Aug-2022	619148
Stable Isotope									
delta-oxygen-18	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-
delta-hydrogen-2	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-

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

Analytical Results

EO2206890-013

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: MW-13

Client sampling date / time: 23-Aug-2022 16:05

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests									
hardness (as CaCO3), dissolved	----	181	-	0.50	mg/L	EC100	-	02-Sep-2022	-
conductivity	----	719	± 55.4	2.0	µS/cm	E100	25-Aug-2022	26-Aug-2022	619374
pH	----	8.35	± 0.12	0.10	pH units	E108	25-Aug-2022	26-Aug-2022	619373
alkalinity, bicarbonate (as HCO3)	71-52-3	501	-	1.0	mg/L	E290	25-Aug-2022	26-Aug-2022	619375
alkalinity, carbonate (as CO3)	3812-32-6	5.0	-	1.0	mg/L	E290	25-Aug-2022	26-Aug-2022	619375
alkalinity, hydroxide (as OH)	14280-30-9	<1.0	-	1.0	mg/L	E290	25-Aug-2022	26-Aug-2022	619375
alkalinity, total (as CaCO3)	----	419	± 31.2	2.0	mg/L	E290	25-Aug-2022	26-Aug-2022	619375
solids, total dissolved [TDS], calculated	----	457	-	1.0	mg/L	EC103	-	26-Aug-2022	-
Anions and Nutrients									
ammonia, total dissolved (as N)	7664-41-7	1.38	-	0.0250	mg/L	E309	29-Aug-2022	29-Aug-2022	623377
chloride	16887-00-6	1.89	± 0.10	0.50	mg/L	E235.Cl	25-Aug-2022	25-Aug-2022	618382
fluoride	16984-48-8	0.123	± 0.009	0.020	mg/L	E235.F	25-Aug-2022	25-Aug-2022	618381
nitrate (as N)	14797-55-8	<0.020	± 0.004	0.020	mg/L	E235.NO3	25-Aug-2022	25-Aug-2022	618378
nitrite (as N)	14797-65-0	<0.010	± 0.002	0.010	mg/L	E235.NO2	25-Aug-2022	25-Aug-2022	618379
sulfate (as SO4)	14808-79-8	9.01	± 0.45	0.30	mg/L	E235.SO4	25-Aug-2022	25-Aug-2022	618380
nitrate + nitrite (as N)	----	<0.0500	-	0.05	mg/L	EC235.N+N	-	26-Aug-2022	-
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	5.96	-	0.50	mg/L	E358-L	02-Sep-2022	02-Sep-2022	631104
Ion Balance									
anion sum	----	8.62	-	0.10	meq/L	EC101	-	26-Aug-2022	-
cation sum	----	8.29	-	0.10	meq/L	EC101	-	26-Aug-2022	-
ion balance (APHA)	----	1.95	-	0.010	%	EC101	-	26-Aug-2022	-
ion balance (cations/anions)	----	96.2	-	0.010	%	EC101	-	26-Aug-2022	-
Dissolved Metals									
aluminum, dissolved	7429-90-5	<0.0010	± 0.0008	0.0010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
antimony, dissolved	7440-36-0	<0.00010	± 0.00001	0.00010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
arsenic, dissolved	7440-38-2	0.00167	± 0.00021	0.00010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
barium, dissolved	7440-39-3	0.390	± 0.0334	0.00010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
beryllium, dissolved	7440-41-7	<0.000020	± 0.000002	0.000020	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
bismuth, dissolved	7440-69-9	<0.000050	± 0.000007	0.000050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
boron, dissolved	7440-42-8	0.262	± 0.049	0.010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
cadmium, dissolved	7440-43-9	<0.0000050	± 0.0000009	0.0000050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
calcium, dissolved	7440-70-2	46.5	± 4.13	0.050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
cesium, dissolved	7440-46-2	<0.000010	± 0.000001	0.000010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
chromium, dissolved	7440-47-3	<0.00050	± 0.00008	0.00050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
cobalt, dissolved	7440-48-4	0.00063	± 0.00008	0.00010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
copper, dissolved	7440-50-8	<0.00020	± 0.00012	0.00020	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
iron, dissolved	7439-89-6	1.32	± 0.190	0.030	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
lead, dissolved	7439-92-1	<0.000050	± 0.000005	0.000050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
lithium, dissolved	7439-93-2	0.0488	± 0.0065	0.0010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
magnesium, dissolved	7439-95-4	15.7	± 1.52	0.0050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
manganese, dissolved	7439-96-5	0.234	± 0.0225	0.00500	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
molybdenum, dissolved	7439-98-7	0.00220	± 0.000277	0.000050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
nickel, dissolved	7440-02-0	0.00078	± 0.00012	0.00050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610

Analytical Results

EO2206890-013

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: MW-13

Client sampling date / time: 23-Aug-2022 16:05

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Dissolved Metals									
phosphorus, dissolved	7723-14-0	<0.050	± 0.013	0.050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
potassium, dissolved	7440-09-7	3.79	± 0.335	0.050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
rubidium, dissolved	7440-17-7	0.00120	± 0.00016	0.00020	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
selenium, dissolved	7782-49-2	<0.000050	± 0.000009	0.000050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
silicon, dissolved	7440-21-3	6.31	± 0.757	0.050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
silver, dissolved	7440-22-4	<0.000010	± 0.000004	0.000010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
sodium, dissolved	7440-23-5	104	± 9.71	0.050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
strontium, dissolved	7440-24-6	0.483	± 0.0401	0.00020	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
sulfur, dissolved	7704-34-9	3.74	± 0.70	0.50	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
tellurium, dissolved	13494-80-9	<0.00020	± 0.00004	0.00020	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
thallium, dissolved	7440-28-0	<0.000010	± 0.000001	0.000010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
thorium, dissolved	7440-29-1	<0.00010	± 0.00002	0.00010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
tin, dissolved	7440-31-5	<0.00010	± 0.00006	0.00010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
titanium, dissolved	7440-32-6	<0.00030	± 0.00014	0.00030	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
tungsten, dissolved	7440-33-7	<0.00010	± 0.00002	0.00010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
uranium, dissolved	7440-61-1	0.000654	± 0.000076	0.000010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
vanadium, dissolved	7440-62-2	<0.00050	± 0.00010	0.00050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
zinc, dissolved	7440-66-6	<0.0010	± 0.0003	0.0010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
zirconium, dissolved	7440-67-7	<0.00020	± 0.00004	0.00020	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
dissolved metals filtration location	----	Field	-	-	-	EP421	-	01-Sep-2022	628610
Volatile Organic Compounds									
benzene	71-43-2	<0.50	± 0.20	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
ethylbenzene	100-41-4	<0.50	± 0.30	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
toluene	108-88-3	<0.50	± 0.37	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, m+p-	179601-23-1	<0.40	± 0.50	0.40	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, o-	95-47-6	<0.30	± 0.30	0.30	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylenes, total	1330-20-7	<0.50	-	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
Volatile Organic Compounds Surrogates									
bromofluorobenzene, 4-	460-00-4	79.2	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
difluorobenzene, 1,4-	540-36-3	95.4	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
Hydrocarbons									
F1 (C6-C10)	----	<100	± 30	100	µg/L	E581.F1	27-Aug-2022	27-Aug-2022	619148
F1-BTEX	----	<100	-	100	µg/L	EC580	-	28-Aug-2022	-
F2 (C10-C16)	----	<100	± 10	100	µg/L	E601	30-Aug-2022	31-Aug-2022	624711
Hydrocarbons Surrogates									
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	96.8	-	1.0	%	E601	30-Aug-2022	31-Aug-2022	624711
dichlorotoluene, 3,4-	97-75-0	96.0	-	1.0	%	E581.F1	27-Aug-2022	27-Aug-2022	619148
Stable Isotope									
delta-oxygen-18	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-
delta-hydrogen-2	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-

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

Analytical Results

EO2206890-014

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: D22-1

Client sampling date / time: 22-Aug-2022 17:50

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests									
hardness (as CaCO3), dissolved	----	651	-	0.50	mg/L	EC100	-	02-Sep-2022	-
conductivity	----	1640	± 125	2.0	µS/cm	E100	26-Aug-2022	27-Aug-2022	621059
pH	----	8.05	± 0.11	0.10	pH units	E108	26-Aug-2022	27-Aug-2022	621058
alkalinity, bicarbonate (as HCO3)	71-52-3	616	-	1.0	mg/L	E290	26-Aug-2022	27-Aug-2022	621060
alkalinity, carbonate (as CO3)	3812-32-6	<1.0	-	1.0	mg/L	E290	26-Aug-2022	27-Aug-2022	621060
alkalinity, hydroxide (as OH)	14280-30-9	<1.0	-	1.0	mg/L	E290	26-Aug-2022	27-Aug-2022	621060
alkalinity, total (as CaCO3)	----	505	± 37.5	2.0	mg/L	E290	26-Aug-2022	27-Aug-2022	621060
solids, total dissolved [TDS], calculated	----	1190	-	1.0	mg/L	EC103	-	26-Aug-2022	-
Anions and Nutrients									
ammonia, total dissolved (as N)	7664-41-7	1.84	-	0.0250	mg/L	E309	29-Aug-2022	29-Aug-2022	623377
chloride	16887-00-6	5.92	± 0.28	0.50	mg/L	E235.Cl	25-Aug-2022	25-Aug-2022	618382
fluoride	16984-48-8	0.119	± 0.009	0.020	mg/L	E235.F	25-Aug-2022	25-Aug-2022	618381
nitrate (as N)	14797-55-8	0.032	± 0.004	0.020	mg/L	E235.NO3	25-Aug-2022	25-Aug-2022	618378
nitrite (as N)	14797-65-0	<0.010	± 0.002	0.010	mg/L	E235.NO2	25-Aug-2022	25-Aug-2022	618379
sulfate (as SO4)	14808-79-8	468	± 23.0	0.30	mg/L	E235.SO4	25-Aug-2022	25-Aug-2022	618380
nitrate + nitrite (as N)	----	<0.0500	-	0.05	mg/L	EC235.N+N	-	26-Aug-2022	-
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	7.11	-	0.50	mg/L	E358-L	02-Sep-2022	02-Sep-2022	631104
Ion Balance									
anion sum	----	20.0	-	0.10	meq/L	EC101	-	26-Aug-2022	-
cation sum	----	20.1	-	0.10	meq/L	EC101	-	26-Aug-2022	-
ion balance (APHA)	----	0.249	-	0.010	%	EC101	-	26-Aug-2022	-
ion balance (cations/anions)	----	100	-	0.010	%	EC101	-	26-Aug-2022	-
Dissolved Metals									
aluminum, dissolved	7429-90-5	<0.0010	± 0.0008	0.0010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
antimony, dissolved	7440-36-0	<0.00010	± 0.00001	0.00010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
arsenic, dissolved	7440-38-2	0.00600	± 0.00077	0.00010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
barium, dissolved	7440-39-3	0.0286	± 0.00245	0.00010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
beryllium, dissolved	7440-41-7	0.00775	± 0.000996	0.000020	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
bismuth, dissolved	7440-69-9	<0.000050	± 0.000007	0.000050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
boron, dissolved	7440-42-8	0.150	± 0.028	0.010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
cadmium, dissolved	7440-43-9	<0.0000050	± 0.0000009	0.0000050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
calcium, dissolved	7440-70-2	162	± 14.4	0.050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
cesium, dissolved	7440-46-2	<0.000010	± 0.000001	0.000010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
chromium, dissolved	7440-47-3	<0.00050	± 0.00008	0.00050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
cobalt, dissolved	7440-48-4	0.00026	± 0.00004	0.00010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
copper, dissolved	7440-50-8	<0.00020	± 0.00012	0.00020	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
iron, dissolved	7439-89-6	6.10	± 0.881	0.030	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
lead, dissolved	7439-92-1	<0.000050	± 0.000005	0.000050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
lithium, dissolved	7439-93-2	0.108	± 0.0143	0.0010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
magnesium, dissolved	7439-95-4	59.8	± 5.82	0.0050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
manganese, dissolved	7439-96-5	1.60	± 0.154	0.00500	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
molybdenum, dissolved	7439-98-7	0.000836	± 0.000105	0.000050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
nickel, dissolved	7440-02-0	<0.00050	± 0.00010	0.00050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610

Analytical Results

EO2206890-014

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: D22-1

Client sampling date / time: 22-Aug-2022 17:50

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Dissolved Metals									
phosphorus, dissolved	7723-14-0	0.161	± 0.028	0.050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
potassium, dissolved	7440-09-7	5.58	± 0.492	0.050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
rubidium, dissolved	7440-17-7	0.00190	± 0.00025	0.00020	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
selenium, dissolved	7782-49-2	<0.000050	± 0.000009	0.000050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
silicon, dissolved	7440-21-3	7.94	± 0.952	0.050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
silver, dissolved	7440-22-4	<0.000010	± 0.000004	0.000010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
sodium, dissolved	7440-23-5	153	± 14.2	0.050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
strontium, dissolved	7440-24-6	1.32	± 0.109	0.00020	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
sulfur, dissolved	7704-34-9	169	± 27.5	0.50	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
tellurium, dissolved	13494-80-9	<0.00020	± 0.00004	0.00020	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
thallium, dissolved	7440-28-0	<0.000010	± 0.000001	0.000010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
thorium, dissolved	7440-29-1	<0.00010	± 0.00002	0.00010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
tin, dissolved	7440-31-5	<0.00010	± 0.00006	0.00010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
titanium, dissolved	7440-32-6	<0.00030	± 0.00014	0.00030	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
tungsten, dissolved	7440-33-7	<0.00010	± 0.00002	0.00010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
uranium, dissolved	7440-61-1	0.00167	± 0.000195	0.000010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
vanadium, dissolved	7440-62-2	<0.00050	± 0.00010	0.00050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
zinc, dissolved	7440-66-6	<0.0010	± 0.0003	0.0010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
zirconium, dissolved	7440-67-7	<0.00020	± 0.00004	0.00020	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
dissolved metals filtration location	----	Field	-	-	-	EP421	-	01-Sep-2022	628610
Volatile Organic Compounds									
benzene	71-43-2	<0.50	± 0.20	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
ethylbenzene	100-41-4	<0.50	± 0.30	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
toluene	108-88-3	<0.50	± 0.37	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, m+p-	179601-23-1	<0.40	± 0.50	0.40	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, o-	95-47-6	<0.30	± 0.30	0.30	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylenes, total	1330-20-7	<0.50	-	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
Volatile Organic Compounds Surrogates									
bromofluorobenzene, 4-	460-00-4	80.0	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
difluorobenzene, 1,4-	540-36-3	109	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
Hydrocarbons									
F1 (C6-C10)	----	<100	± 30	100	µg/L	E581.F1	27-Aug-2022	27-Aug-2022	619148
F1-BTEX	----	<100	-	100	µg/L	EC580	-	28-Aug-2022	-
F2 (C10-C16)	----	<100	± 10	100	µg/L	E601	30-Aug-2022	31-Aug-2022	624711
Hydrocarbons Surrogates									
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	98.5	-	1.0	%	E601	30-Aug-2022	31-Aug-2022	624711
dichlorotoluene, 3,4-	97-75-0	103	-	1.0	%	E581.F1	27-Aug-2022	27-Aug-2022	619148
Stable Isotope									
delta-oxygen-18	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-
delta-hydrogen-2	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-

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

Analytical Results

EO2206890-015

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: D22-2

Client sampling date / time: 23-Aug-2022 12:15

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests									
hardness (as CaCO3), dissolved	----	333	-	0.50	mg/L	EC100	-	02-Sep-2022	-
conductivity	----	1460	± 112	2.0	µS/cm	E100	26-Aug-2022	27-Aug-2022	621059
pH	----	8.29	± 0.12	0.10	pH units	E108	26-Aug-2022	27-Aug-2022	621058
alkalinity, bicarbonate (as HCO3)	71-52-3	646	-	1.0	mg/L	E290	26-Aug-2022	27-Aug-2022	621060
alkalinity, carbonate (as CO3)	3812-32-6	<1.0	-	1.0	mg/L	E290	26-Aug-2022	27-Aug-2022	621060
alkalinity, hydroxide (as OH)	14280-30-9	<1.0	-	1.0	mg/L	E290	26-Aug-2022	27-Aug-2022	621060
alkalinity, total (as CaCO3)	----	530	± 39.4	2.0	mg/L	E290	26-Aug-2022	27-Aug-2022	621060
solids, total dissolved [TDS], calculated	----	1020	-	1.0	mg/L	EC103	-	26-Aug-2022	-
Anions and Nutrients									
ammonia, total dissolved (as N)	7664-41-7	2.07	-	0.0250	mg/L	E309	29-Aug-2022	29-Aug-2022	623377
chloride	16887-00-6	5.36	± 0.25	0.50	mg/L	E235.Cl	25-Aug-2022	25-Aug-2022	618382
fluoride	16984-48-8	0.187	± 0.014	0.020	mg/L	E235.F	25-Aug-2022	25-Aug-2022	618381
nitrate (as N)	14797-55-8	0.026	± 0.004	0.020	mg/L	E235.NO3	25-Aug-2022	25-Aug-2022	618378
nitrite (as N)	14797-65-0	<0.010	± 0.002	0.010	mg/L	E235.NO2	25-Aug-2022	25-Aug-2022	618379
sulfate (as SO4)	14808-79-8	318	± 15.6	0.30	mg/L	E235.SO4	25-Aug-2022	25-Aug-2022	618380
nitrate + nitrite (as N)	----	<0.0500	-	0.05	mg/L	EC235.N+N	-	26-Aug-2022	-
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	6.69	-	0.50	mg/L	E358-L	02-Sep-2022	02-Sep-2022	631104
Ion Balance									
anion sum	----	17.4	-	0.10	meq/L	EC101	-	26-Aug-2022	-
cation sum	----	16.8	-	0.10	meq/L	EC101	-	26-Aug-2022	-
ion balance (APHA)	----	1.75	-	0.010	%	EC101	-	26-Aug-2022	-
ion balance (cations/anions)	----	96.6	-	0.010	%	EC101	-	26-Aug-2022	-
Dissolved Metals									
aluminum, dissolved	7429-90-5	<0.0010	± 0.0008	0.0010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
antimony, dissolved	7440-36-0	<0.00010	± 0.00001	0.00010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
arsenic, dissolved	7440-38-2	0.00271	± 0.00035	0.00010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
barium, dissolved	7440-39-3	0.0211	± 0.00180	0.00010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
beryllium, dissolved	7440-41-7	<0.000020	± 0.000002	0.000020	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
bismuth, dissolved	7440-69-9	<0.000050	± 0.000007	0.000050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
boron, dissolved	7440-42-8	0.295	± 0.055	0.010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
cadmium, dissolved	7440-43-9	<0.0000050	± 0.0000009	0.0000050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
calcium, dissolved	7440-70-2	89.3	± 7.93	0.050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
cesium, dissolved	7440-46-2	<0.000010	± 0.000001	0.000010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
chromium, dissolved	7440-47-3	<0.00050	± 0.00008	0.00050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
cobalt, dissolved	7440-48-4	0.00170	± 0.00019	0.00010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
copper, dissolved	7440-50-8	<0.00020	± 0.00012	0.00020	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
iron, dissolved	7439-89-6	1.87	± 0.270	0.030	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
lead, dissolved	7439-92-1	<0.000050	± 0.000005	0.000050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
lithium, dissolved	7439-93-2	0.0795	± 0.0106	0.0010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
magnesium, dissolved	7439-95-4	26.8	± 2.61	0.0050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
manganese, dissolved	7439-96-5	0.811	± 0.0782	0.00500	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
molybdenum, dissolved	7439-98-7	0.00147	± 0.000186	0.000050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
nickel, dissolved	7440-02-0	0.00102	± 0.00013	0.00050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610

Analytical Results

EO2206890-015

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: D22-2

Client sampling date / time: 23-Aug-2022 12:15

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Dissolved Metals									
phosphorus, dissolved	7723-14-0	<0.050	± 0.013	0.050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
potassium, dissolved	7440-09-7	4.20	± 0.371	0.050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
rubidium, dissolved	7440-17-7	0.00123	± 0.00016	0.00020	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
selenium, dissolved	7782-49-2	<0.000050	± 0.000009	0.000050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
silicon, dissolved	7440-21-3	6.67	± 0.800	0.050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
silver, dissolved	7440-22-4	<0.000010	± 0.000004	0.000010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
sodium, dissolved	7440-23-5	228	± 21.2	0.050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
strontium, dissolved	7440-24-6	0.817	± 0.0678	0.00020	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
sulfur, dissolved	7704-34-9	113	± 18.4	0.50	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
tellurium, dissolved	13494-80-9	<0.00020	± 0.00004	0.00020	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
thallium, dissolved	7440-28-0	<0.000010	± 0.000001	0.000010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
thorium, dissolved	7440-29-1	<0.00010	± 0.00002	0.00010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
tin, dissolved	7440-31-5	<0.00010	± 0.00006	0.00010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
titanium, dissolved	7440-32-6	<0.00030	± 0.00014	0.00030	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
tungsten, dissolved	7440-33-7	<0.00010	± 0.00002	0.00010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
uranium, dissolved	7440-61-1	0.00132	± 0.000154	0.000010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
vanadium, dissolved	7440-62-2	<0.00050	± 0.00010	0.00050	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
zinc, dissolved	7440-66-6	<0.0010	± 0.0003	0.0010	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
zirconium, dissolved	7440-67-7	<0.00020	± 0.00004	0.00020	mg/L	E421	01-Sep-2022	01-Sep-2022	628610
dissolved metals filtration location	----	Field	-	-	-	EP421	-	01-Sep-2022	628610
Volatile Organic Compounds									
benzene	71-43-2	<0.50	± 0.20	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
ethylbenzene	100-41-4	<0.50	± 0.30	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
toluene	108-88-3	<0.50	± 0.37	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, m+p-	179601-23-1	<0.40	± 0.50	0.40	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylene, o-	95-47-6	<0.30	± 0.30	0.30	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
xylenes, total	1330-20-7	<0.50	-	0.50	µg/L	E611A	27-Aug-2022	27-Aug-2022	619147
Volatile Organic Compounds Surrogates									
bromofluorobenzene, 4-	460-00-4	79.9	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
difluorobenzene, 1,4-	540-36-3	115	-	1.0	%	E611A	27-Aug-2022	27-Aug-2022	619147
Hydrocarbons									
F1 (C6-C10)	----	<100	± 30	100	µg/L	E581.F1	27-Aug-2022	27-Aug-2022	619148
F1-BTEX	----	<100	-	100	µg/L	EC580	-	28-Aug-2022	-
F2 (C10-C16)	----	<100	± 10	100	µg/L	E601	30-Aug-2022	31-Aug-2022	625429
Hydrocarbons Surrogates									
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	105	-	1.0	%	E601	30-Aug-2022	31-Aug-2022	625429
dichlorotoluene, 3,4-	97-75-0	95.3	-	1.0	%	E581.F1	27-Aug-2022	27-Aug-2022	619148
Stable Isotope									
delta-oxygen-18	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-
delta-hydrogen-2	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-

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

CERTIFICATE OF ANALYSIS

Work Order	: **EO2207003**	Page	: 1 of 4
Client	: **Worley Canada Services Ltd.**	Laboratory	: Edmonton - Environmental
Contact	: Trevor Butterfield	Account Manager	: Dana Brown
Address	: 200 - 8615 51 Ave NW Edmonton AB Canada T6E 6A8	Address	: 9450 - 17 Avenue NW Edmonton AB Canada T6N 1M9
Telephone	: 780 440-5260	Telephone	: 7804136472
Project	: 317085-44533-22100	Date Samples Received	: 27-Aug-2022 14:56
PO	: ----	Date Analysis Commenced	: 28-Aug-2022
C-O-C number	: 20-1011004	Issue Date	: 03-Sep-2022 17:40
Sampler	: RM		
Site	: ----		
Quote number	: EO22-WORL100-006 Q79426		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
Alex Drake	Lab Analyst	Inorganics, Edmonton, Alberta
Alex Drake	Lab Analyst	Metals, Edmonton, Alberta
Austin Wasylyshyn	Lab Analyst	Metals, Edmonton, Alberta
Jennifer Lupuliak	Lab Assistant	Metals, Edmonton, Alberta
Jessica Maitland	Lab Assistant	Inorganics, Edmonton, Alberta
Kari Mulroy	Lab Supervisor - Environmental	Organics, Edmonton, Alberta
Ryan Huynh	Lab Assistant	Inorganics, Edmonton, Alberta
Shelly Nimilowich	Account Manager	External Subcontracting, Edmonton, Alberta
Shruti Mudliar	Lab Analyst	Inorganics, Edmonton, Alberta
Yan Zhang	Lab Analyst	Organics, Edmonton, Alberta

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.
Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

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

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
‰ VSMOW	parts per thousand Vienna Standard Mean Ocean Water
meq/L	milliequivalents per litre
mg/L	milligrams per litre
pH units	pH units

>: greater than.
<: less than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical Results

EO2207003-001

Sub-Matrix: **Water** (Matrix: **Water**)

Client sample ID: MW-10

Client sampling date / time: 26-Aug-2022 14:35

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests									
hardness (as CaCO3), dissolved	----	468	-	0.50	mg/L	EC100	-	01-Sep-2022	-
conductivity	----	1160	± 88.6	2.0	µS/cm	E100	29-Aug-2022	30-Aug-2022	623403
pH	----	7.89	± 0.11	0.10	pH units	E108	29-Aug-2022	30-Aug-2022	623405
alkalinity, bicarbonate (as HCO3)	71-52-3	656	-	1.0	mg/L	E290	29-Aug-2022	30-Aug-2022	623404
alkalinity, carbonate (as CO3)	3812-32-6	<1.0	-	1.0	mg/L	E290	29-Aug-2022	30-Aug-2022	623404
alkalinity, hydroxide (as OH)	14280-30-9	<1.0	-	1.0	mg/L	E290	29-Aug-2022	30-Aug-2022	623404
alkalinity, total (as CaCO3)	----	538	± 40.0	2.0	mg/L	E290	29-Aug-2022	30-Aug-2022	623404
solids, total dissolved [TDS], calculated	----	832	-	1.0	mg/L	EC103	-	30-Aug-2022	-
Anions and Nutrients									
ammonia, total dissolved (as N)	7664-41-7	1.90	-	0.0250	mg/L	E309	29-Aug-2022	29-Aug-2022	623374
chloride	16887-00-6	0.82	± 0.06	0.50	mg/L	E235.Cl	28-Aug-2022	29-Aug-2022	622672
fluoride	16984-48-8	0.128	± 0.010	0.020	mg/L	E235.F	28-Aug-2022	29-Aug-2022	622668
nitrate (as N)	14797-55-8	0.035	± 0.004	0.020	mg/L	E235.NO3	28-Aug-2022	29-Aug-2022	622669
nitrite (as N)	14797-65-0	<0.010	± 0.002	0.010	mg/L	E235.NO2	28-Aug-2022	29-Aug-2022	622670
sulfate (as SO4)	14808-79-8	192	± 9.47	0.30	mg/L	E235.SO4	28-Aug-2022	29-Aug-2022	622671
nitrate + nitrite (as N)	----	<0.0500	-	0.05	mg/L	EC235.N+N	-	30-Aug-2022	-
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	6.59	-	0.50	mg/L	E358-L	02-Sep-2022	02-Sep-2022	630849
Ion Balance									
anion sum	----	14.8	-	0.10	meq/L	EC101	-	30-Aug-2022	-
cation sum	----	14.6	-	0.10	meq/L	EC101	-	30-Aug-2022	-
ion balance (APHA)	----	0.680	-	0.010	%	EC101	-	30-Aug-2022	-
ion balance (cations/anions)	----	98.6	-	0.010	%	EC101	-	30-Aug-2022	-
Dissolved Metals									
aluminum, dissolved	7429-90-5	0.0014	± 0.0008	0.0010	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
antimony, dissolved	7440-36-0	0.00012	± 0.00002	0.00010	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
arsenic, dissolved	7440-38-2	0.00456	± 0.00059	0.00010	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
barium, dissolved	7440-39-3	0.0395	± 0.00338	0.00010	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
beryllium, dissolved	7440-41-7	<0.000020	± 0.000002	0.000020	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
bismuth, dissolved	7440-69-9	<0.000050	± 0.000007	0.000050	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
boron, dissolved	7440-42-8	0.174	± 0.032	0.010	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
cadmium, dissolved	7440-43-9	<0.0000050	± 0.0000009	0.0000050	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
calcium, dissolved	7440-70-2	128	± 11.4	0.050	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
cesium, dissolved	7440-46-2	<0.000010	± 0.000001	0.000010	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
chromium, dissolved	7440-47-3	<0.00050	± 0.00008	0.00050	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
cobalt, dissolved	7440-48-4	0.00032	± 0.00004	0.00010	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
copper, dissolved	7440-50-8	0.00116	± 0.00016	0.00020	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
iron, dissolved	7439-89-6	5.24	± 0.756	0.030	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
lead, dissolved	7439-92-1	<0.000050	± 0.000005	0.000050	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
lithium, dissolved	7439-93-2	0.105	± 0.0140	0.0010	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
magnesium, dissolved	7439-95-4	36.0	± 3.50	0.0050	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
manganese, dissolved	7439-96-5	0.641	± 0.0618	0.00500	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
molybdenum, dissolved	7439-98-7	0.00117	± 0.000147	0.000050	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
nickel, dissolved	7440-02-0	0.00130	± 0.00015	0.00050	mg/L	E421	30-Aug-2022	31-Aug-2022	625692

Analytical Results

EO2207003-001

Sub-Matrix: **Water** (Matrix: **Water**)

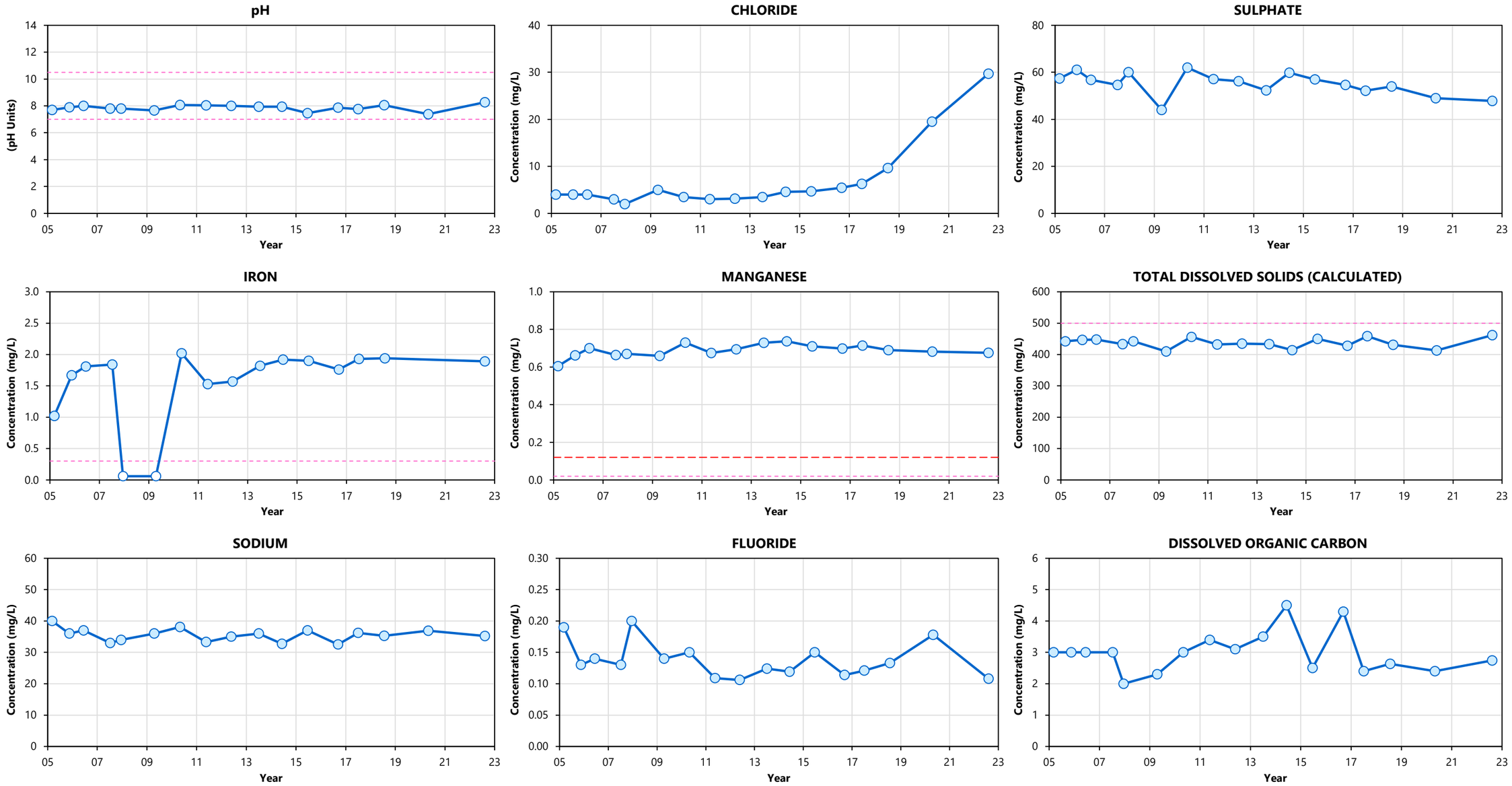
Client sample ID: MW-10

Client sampling date / time: 26-Aug-2022 14:35

Analyte	CAS Number	Result	Measurement Uncertainty	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Dissolved Metals									
phosphorus, dissolved	7723-14-0	<0.050	± 0.013	0.050	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
potassium, dissolved	7440-09-7	5.55	± 0.489	0.050	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
rubidium, dissolved	7440-17-7	0.00272	± 0.00036	0.00020	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
selenium, dissolved	7782-49-2	<0.000050	± 0.000009	0.000050	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
silicon, dissolved	7440-21-3	7.52	± 0.902	0.050	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
silver, dissolved	7440-22-4	<0.000010	± 0.000004	0.000010	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
sodium, dissolved	7440-23-5	114	± 10.6	0.050	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
strontium, dissolved	7440-24-6	1.41	± 0.117	0.00020	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
sulfur, dissolved	7704-34-9	71.7	± 11.7	0.50	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
tellurium, dissolved	13494-80-9	<0.00020	± 0.00004	0.00020	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
thallium, dissolved	7440-28-0	<0.000010	± 0.000001	0.000010	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
thorium, dissolved	7440-29-1	0.00012	± 0.00002	0.00010	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
tin, dissolved	7440-31-5	<0.00010	± 0.00006	0.00010	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
titanium, dissolved	7440-32-6	<0.00030	± 0.00014	0.00030	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
tungsten, dissolved	7440-33-7	<0.00010	± 0.00002	0.00010	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
uranium, dissolved	7440-61-1	0.00108	± 0.000127	0.000010	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
vanadium, dissolved	7440-62-2	<0.00050	± 0.00010	0.00050	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
zinc, dissolved	7440-66-6	0.0014	± 0.0004	0.0010	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
zirconium, dissolved	7440-67-7	<0.00020	± 0.00004	0.00020	mg/L	E421	30-Aug-2022	31-Aug-2022	625692
dissolved metals filtration location	----	Field	-	-	-	EP421	-	30-Aug-2022	625692
Volatile Organic Compounds									
benzene	71-43-2	<0.50	± 0.20	0.50	µg/L	E611A	31-Aug-2022	31-Aug-2022	625445
ethylbenzene	100-41-4	<0.50	± 0.30	0.50	µg/L	E611A	31-Aug-2022	31-Aug-2022	625445
toluene	108-88-3	<0.50	± 0.37	0.50	µg/L	E611A	31-Aug-2022	31-Aug-2022	625445
xylene, m+p-	179601-23-1	<0.40	± 0.50	0.40	µg/L	E611A	31-Aug-2022	31-Aug-2022	625445
xylene, o-	95-47-6	<0.30	± 0.30	0.30	µg/L	E611A	31-Aug-2022	31-Aug-2022	625445
xylenes, total	1330-20-7	<0.50	-	0.50	µg/L	E611A	31-Aug-2022	31-Aug-2022	625445
Volatile Organic Compounds Surrogates									
bromofluorobenzene, 4-	460-00-4	88.7	-	1.0	%	E611A	31-Aug-2022	31-Aug-2022	625445
difluorobenzene, 1,4-	540-36-3	94.0	-	1.0	%	E611A	31-Aug-2022	31-Aug-2022	625445
Hydrocarbons									
F1 (C6-C10)	----	<100	± 30	100	µg/L	E581.F1	31-Aug-2022	31-Aug-2022	625444
F1-BTEX	----	<100	-	100	µg/L	EC580	-	01-Sep-2022	-
F2 (C10-C16)	----	<100	± 10	100	µg/L	E601	30-Aug-2022	30-Aug-2022	624522
Hydrocarbons Surrogates									
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	105	-	1.0	%	E601	30-Aug-2022	30-Aug-2022	624522
dichlorotoluene, 3,4-	97-75-0	102	-	1.0	%	E581.F1	31-Aug-2022	31-Aug-2022	625444
Stable Isotope									
delta-oxygen-18	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-
delta-hydrogen-2	n/a	See attached	-	-	‰ VSMOW	H2+O18	-	02-Sep-2022	-

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

Appendix 5
Hydrochemical Control Charts



Notes:

- Blue circles denote normal sampling data (filled: detected; unfilled: < RDL)

Canadian Drinking Water Quality Guidelines 2020 - MAC:

Canadian Drinking Water Quality Guidelines 2020 - AO:

- pH: --- / 7 - 10.5 pH Units
- Iron: --- / 0.3 mg/L
- Sodium: --- / 200 mg/L
- Chloride: --- / 250 mg/L
- Manganese: 0.12 / 0.02 mg/L
- Fluoride: 1.5 / --- mg/L
- Sulphate: --- / 500 mg/L
- Total Dissolved Solids (Calculated): --- / 500 mg/L
- Dissolved Organic Carbon: --- / --- mg/L

NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2022 GROUNDWATER QUALITY MONITORING
BEVERLY CHANNEL MONITORING WELLS

HYDROCHEMICAL CONTROL CHARTS

MW-01

Date: 02-Nov-22	Drawn by: RM	Edited by:	App'd by:
		Worley Project No. 317085-44533-22100	
		Figure # A5-1	Rev A

NCIA Northeast Capital Industrial Association

Advisian Worley Group

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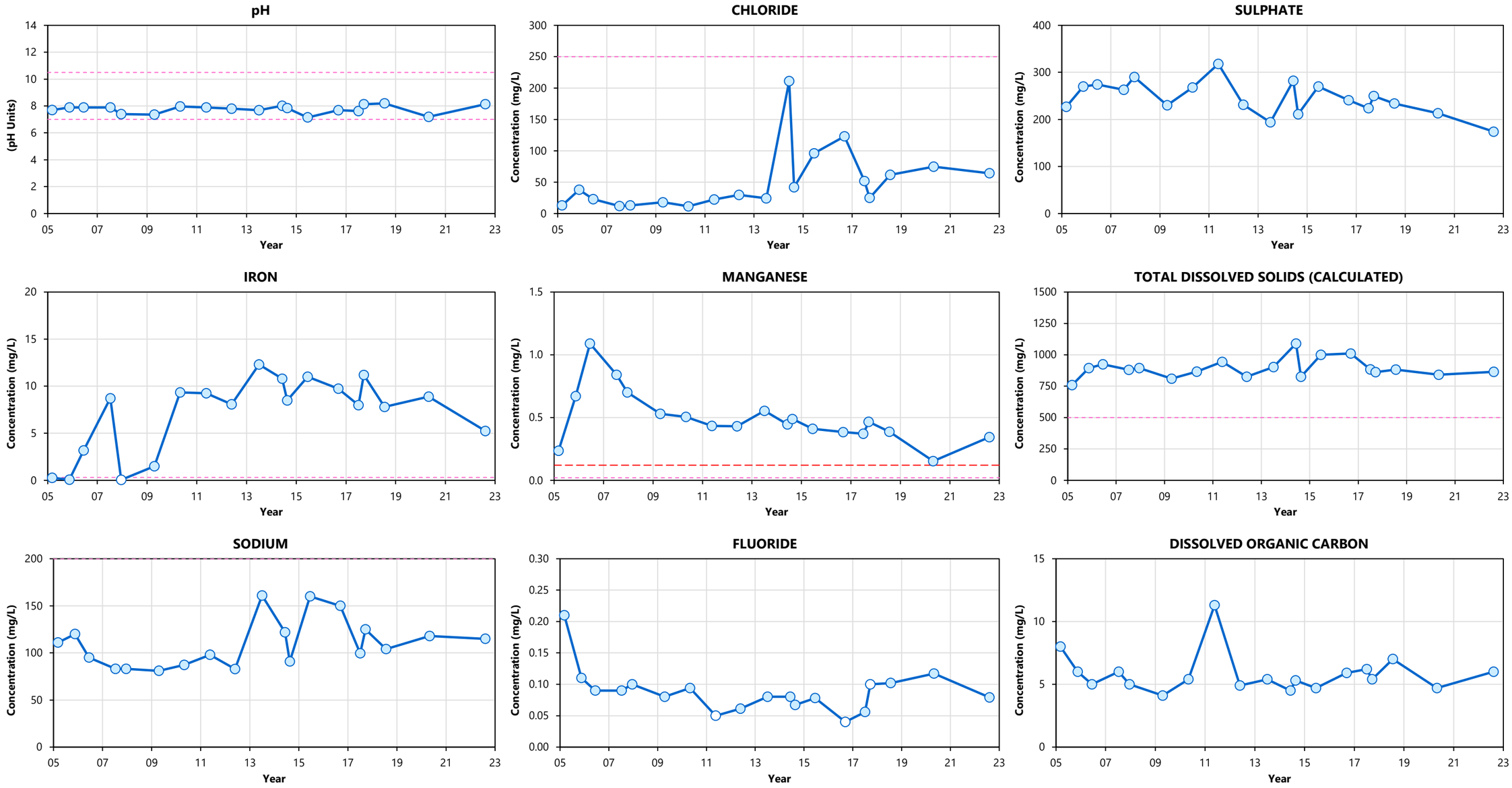
Worley Canada Services Ltd. assumes no liability to any other party for any representations contained in this drawing.

FILE LOCATION: EDMONTON

FILE DIRECTORY: U:\EDM\GBS\307075-01608\700-2022_GW MON\2022 REPORT\APDX 5 HYDROCHEMICAL CONTROL CHARTS\WORKING FILES\



Notes:

- Blue circles denote normal sampling data (filled: detected; unfilled: < RDL)

Canadian Drinking Water Quality Guidelines 2020 - MAC:

Canadian Drinking Water Quality Guidelines 2020 - AO:

- pH: --- / 7 - 10.5 pH Units
- Iron: --- / 0.3 mg/L
- Sodium: --- / 200 mg/L
- Chloride: --- / 250 mg/L
- Manganese: 0.12 / 0.02 mg/L
- Fluoride: 1.5 / --- mg/L
- Sulphate: --- / 500 mg/L
- Total Dissolved Solids (Calculated): --- / 500 mg/L
- Dissolved Organic Carbon: --- / --- mg/L

NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2022 GROUNDWATER QUALITY MONITORING
BEVERLY CHANNEL MONITORING WELLS

HYDROCHEMICAL CONTROL CHARTS

MW-02

Date: 02-Nov-22	Drawn by: RM	Edited by:	App'd by:
NCIA Northeast Capital Industrial Association	Advisian Worley Group	Worley Project No. 317085-44533-22100	
		Figure # A5-2	Rev A

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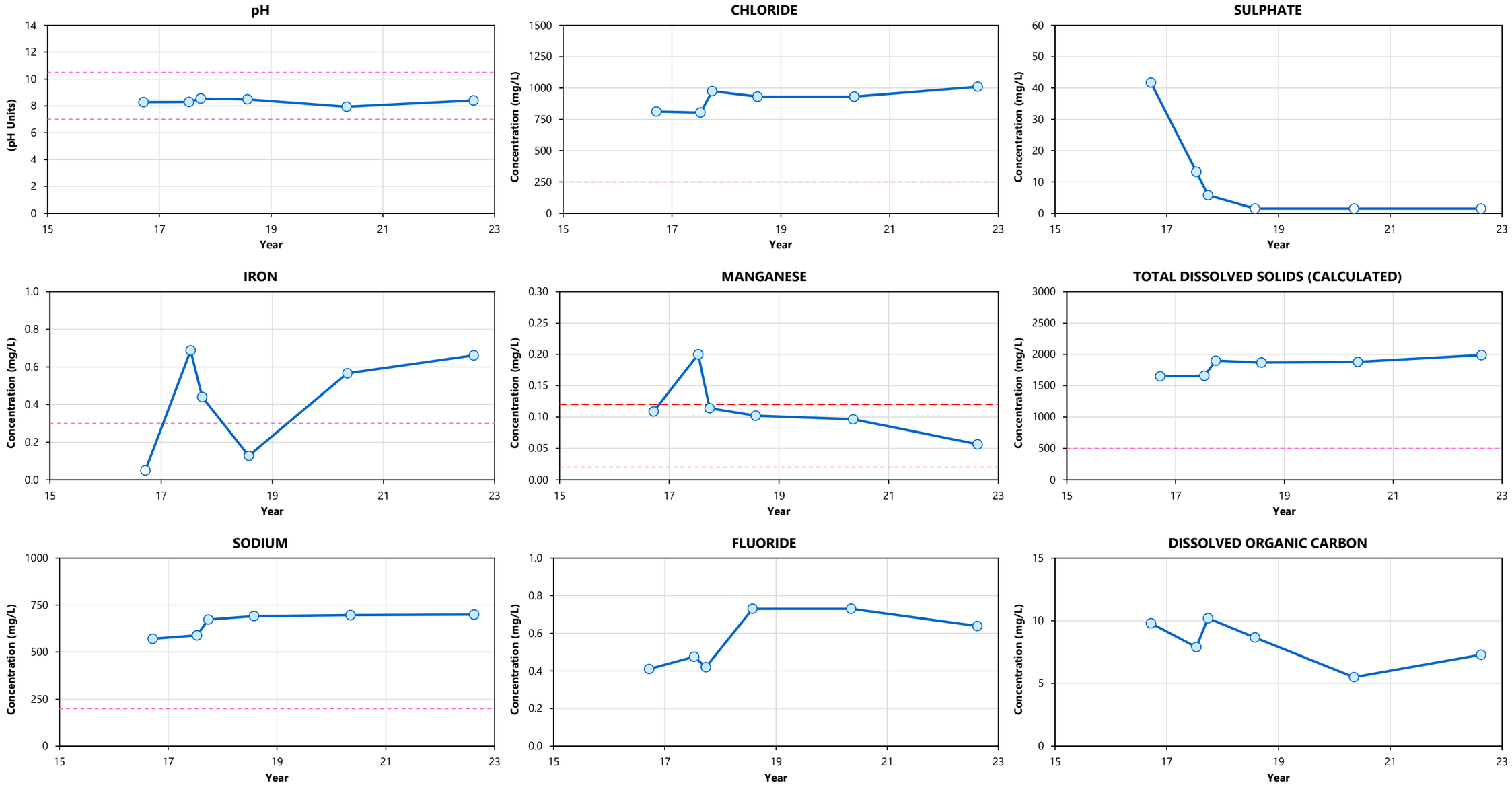
FILE DIRECTORY: U:\EDM\GBS\307075-01608\700-2022_GW MON\2022 REPORT\APDX 5 HYDROCHEMICAL CONTROL CHARTS\WORKING FILES\



Notes:

- Blue circles denote normal sampling data (filled: detected; unfilled: < RDL)

Canadian Drinking Water Quality Guidelines 2020 - MAC:

Canadian Drinking Water Quality Guidelines 2020 - AO:

- pH: --- / 7 - 10.5 pH Units
- Iron: --- / 0.3 mg/L
- Sodium: --- / 200 mg/L
- Chloride: --- / 250 mg/L
- Manganese: 0.12 / 0.02 mg/L
- Fluoride: 1.5 / --- mg/L
- Sulphate: --- / 500 mg/L
- Total Dissolved Solids (Calculated): --- / 500 mg/L
- Dissolved Organic Carbon: --- / --- mg/L

NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2022 GROUNDWATER QUALITY MONITORING
BEVERLY CHANNEL MONITORING WELLS

HYDROCHEMICAL CONTROL CHARTS

MW-02B

Date: 02-Nov-22	Drawn by: RM	Edited by:	App'd by:
		Worley Project No. 317085-44533-22100	
		Figure # A5-3	Rev A

NCIA Northeast Capital Industrial Association

Advisian Worley Group

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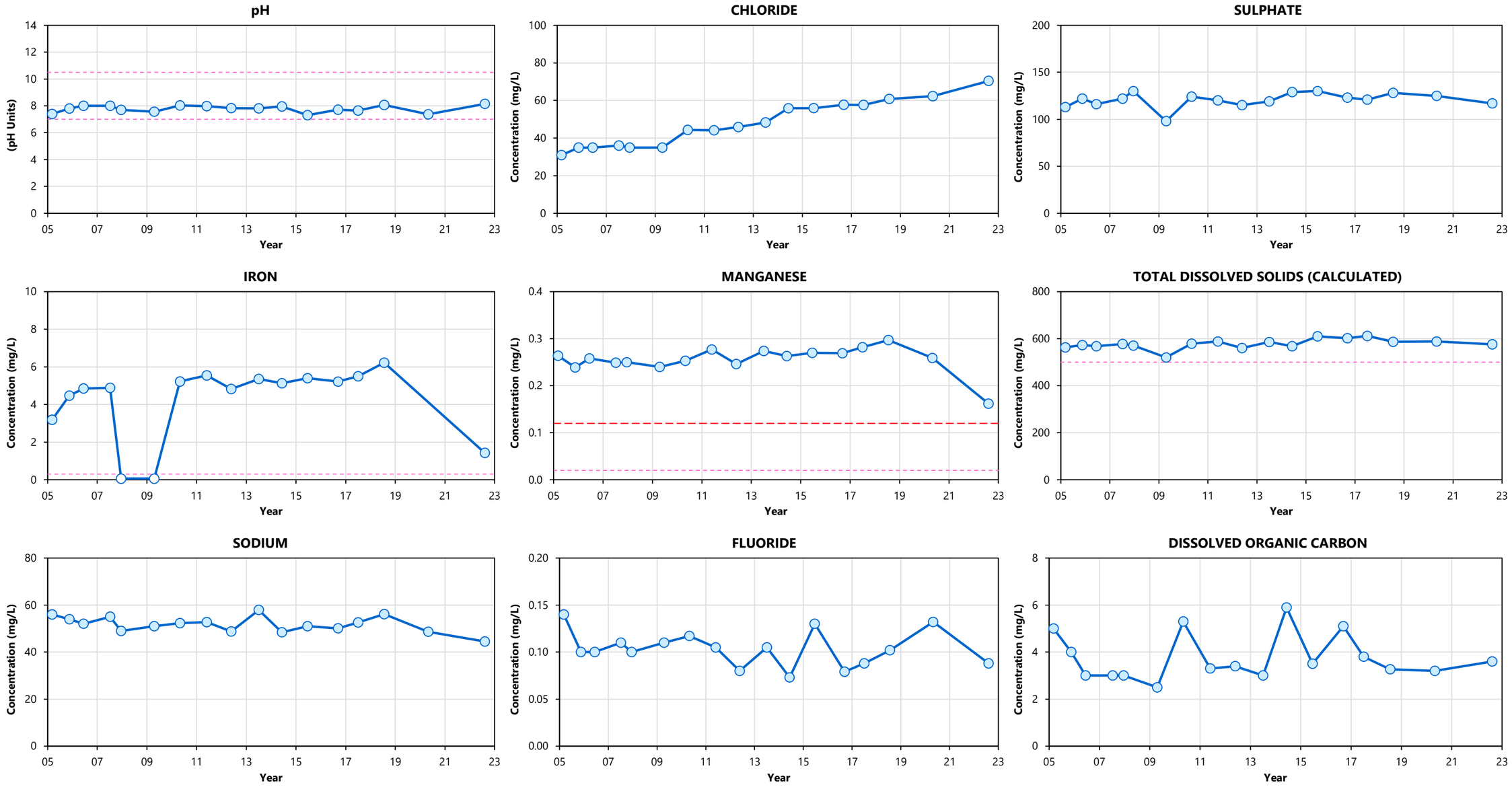
FILE LOCATION: EDMONTON

FILE DIRECTORY: U:\EDM\GBS\307075-01608\700-2022_GW MON\2022 REPORT\APDX 5 HYDROCHEMICAL CONTROL CHARTS\WORKING FILES\



Notes:

- Blue circles denote normal sampling data (filled: detected; unfilled: < RDL)

Canadian Drinking Water Quality Guidelines 2020 - MAC:

Canadian Drinking Water Quality Guidelines 2020 - AO:

- pH: --- / 7 - 10.5 pH Units
- Iron: --- / 0.3 mg/L
- Sodium: --- / 200 mg/L
- Chloride: --- / 250 mg/L
- Manganese: 0.12 / 0.02 mg/L
- Fluoride: 1.5 / --- mg/L
- Sulphate: --- / 500 mg/L
- Total Dissolved Solids (Calculated): --- / 500 mg/L
- Dissolved Organic Carbon: --- / --- mg/L

NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2022 GROUNDWATER QUALITY MONITORING
BEVERLY CHANNEL MONITORING WELLS

HYDROCHEMICAL CONTROL CHARTS

MW-03

Date: 02-Nov-22	Drawn by: RM	Edited by:	App'd by:
NCIA Northeast Capital Industrial Association	Advisian Worley Group	Worley Project No. 317085-44533-22100	
		Figure # A5-4	Rev A

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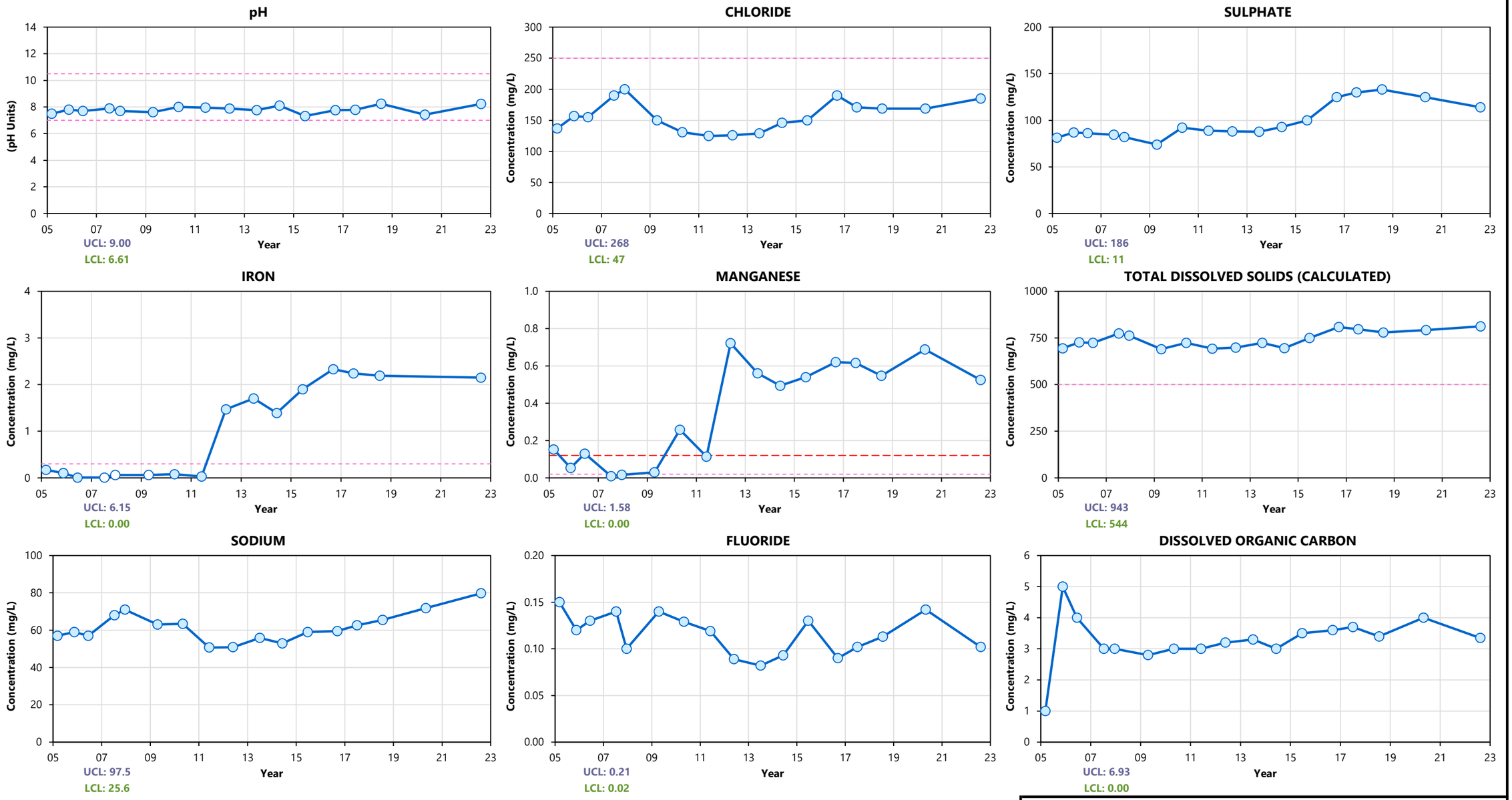
FILE LOCATION: EDMONTON

FILE DIRECTORY: U:\EDM\GBS\307075-01608\700-2022_GW MON\2022 REPORT\APDX 5 HYDROCHEMICAL CONTROL CHARTS\WORKING FILES\



Notes:

- Blue circles denote normal sampling data (filled: detected; unfilled: < RDL)

- - - - - - - - Canadian Drinking Water Quality Guidelines 2020 - MAC:

— — — — — Canadian Drinking Water Quality Guidelines 2020 - AO:

- pH: --- / 7 - 10.5 pH Units
- Iron: --- / 0.3 mg/L
- Sodium: --- / 200 mg/L
- Chloride: --- / 250 mg/L
- Manganese: 0.12 / 0.02 mg/L
- Fluoride: 1.5 / --- mg/L
- Sulphate: --- / 500 mg/L
- Total Dissolved Solids (Calculated): --- / 500 mg/L
- Dissolved Organic Carbon: --- / --- mg/L

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BEVERLY CHANNEL MONITORING WELLS

HYDROCHEMICAL CONTROL CHARTS

MW-04

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Worley Project No. 317085-44533-22100

Figure # 5-5 | Rev A

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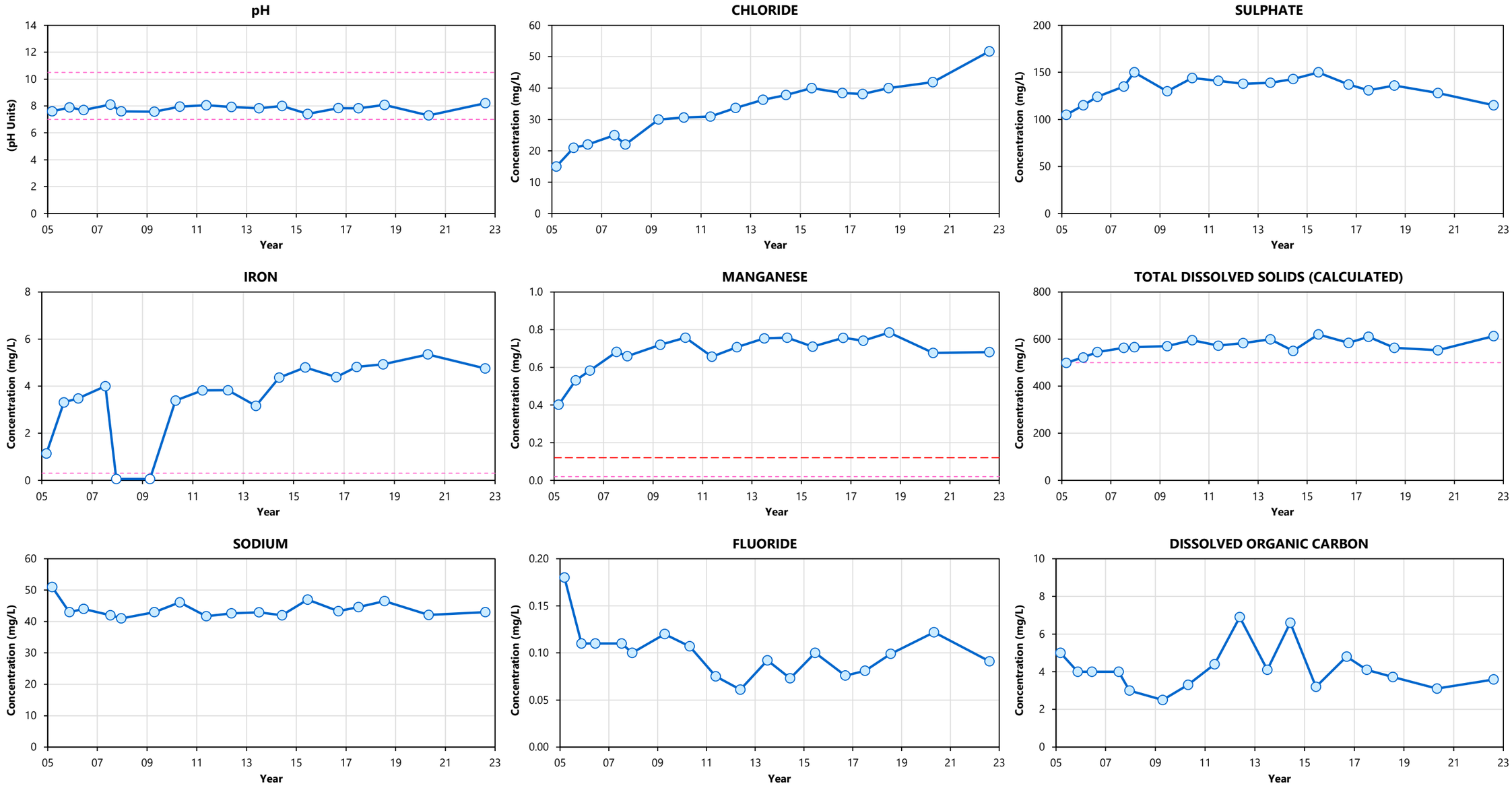

Notes:

- Blue circles denote normal sampling data (filled: detected; unfilled: < RDL)

- - - - - - - - Canadian Drinking Water Quality Guidelines 2020 - MAC:

— — — — — Canadian Drinking Water Quality Guidelines 2020 - AO:

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- Sulphate: --- / 500 mg/L
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2022 GROUNDWATER QUALITY MONITORING
BEVERLY CHANNEL MONITORING WELLS

HYDROCHEMICAL CONTROL CHARTS

MW-05

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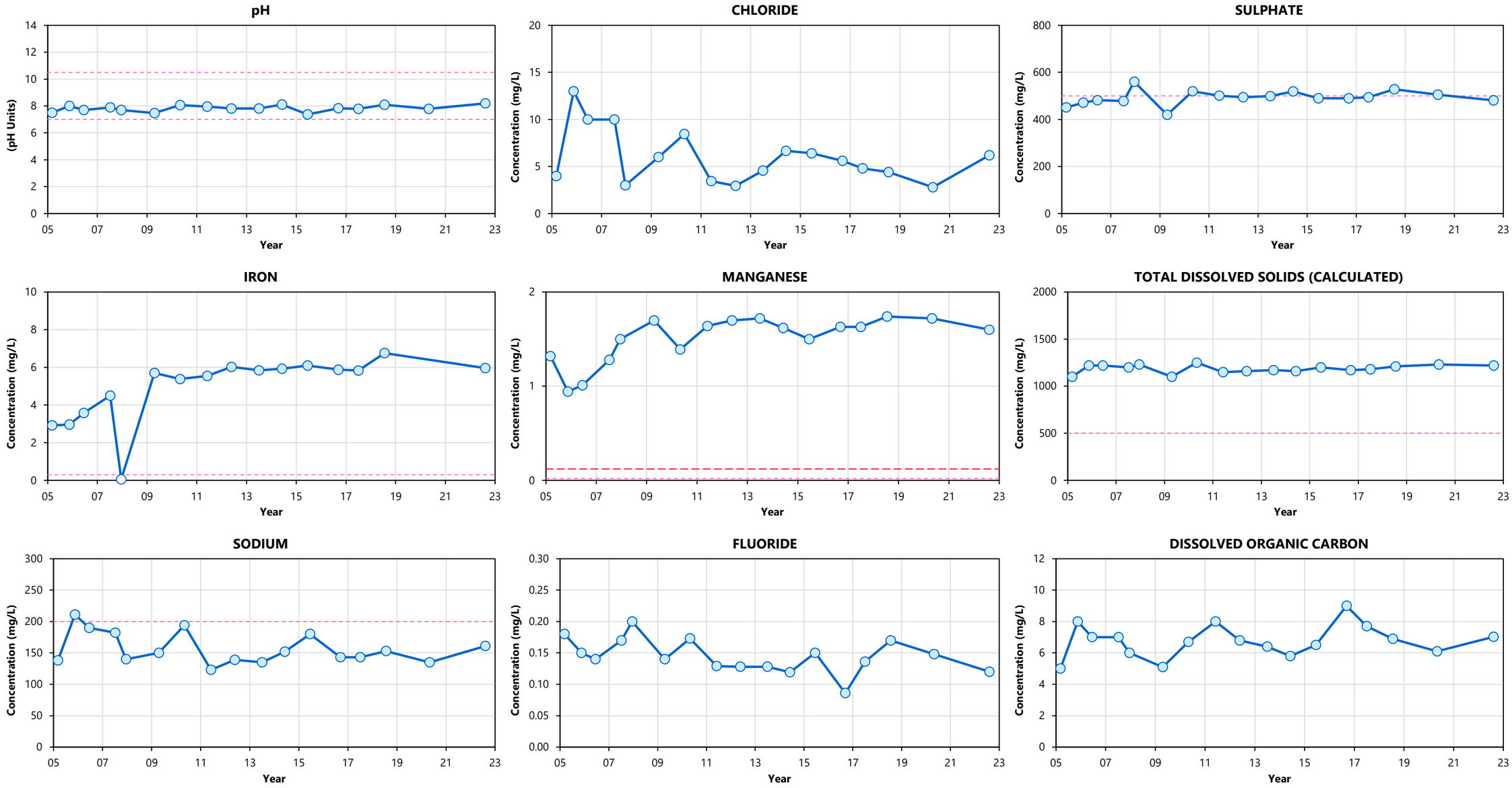

Notes:

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Canadian Drinking Water Quality Guidelines 2020 - MAC:

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- Fluoride: 1.5 / --- mg/L
- Sulphate: --- / 500 mg/L
- Total Dissolved Solids (Calculated): --- / 500 mg/L
- Dissolved Organic Carbon: --- / --- mg/L

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HYDROCHEMICAL CONTROL CHARTS

MW-06

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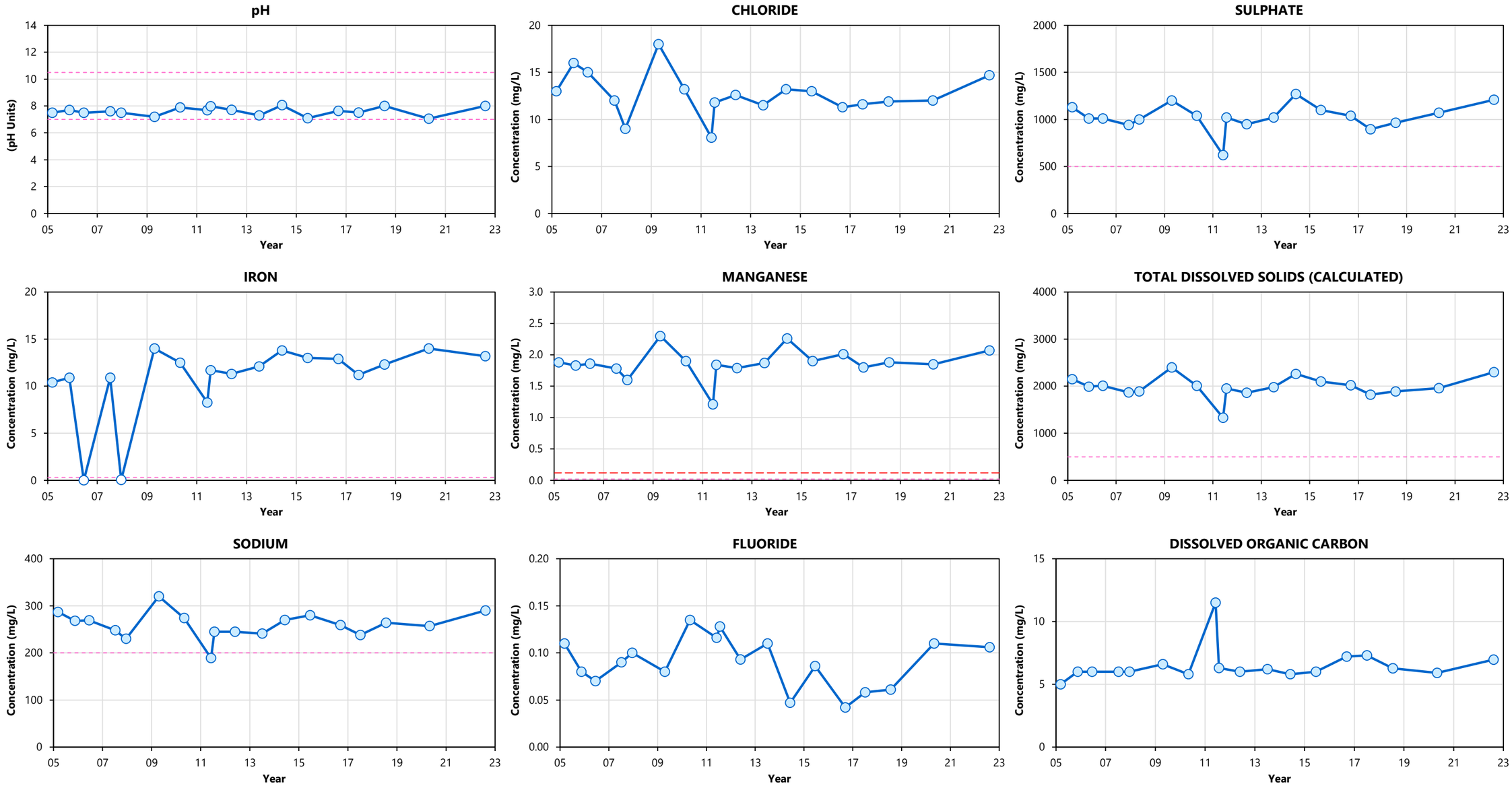

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Canadian Drinking Water Quality Guidelines 2020 - MAC:

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- Fluoride: 1.5 / --- mg/L
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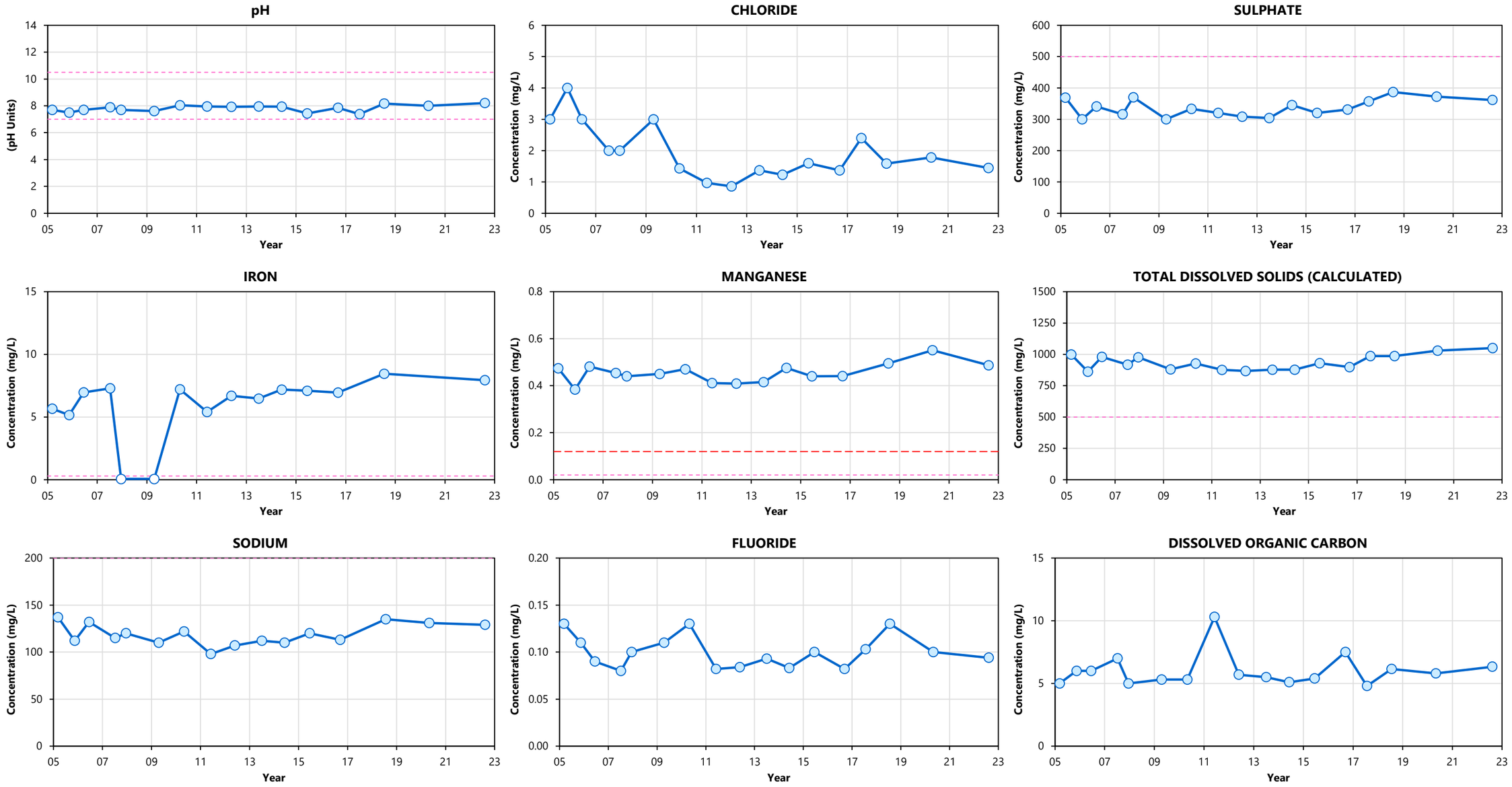

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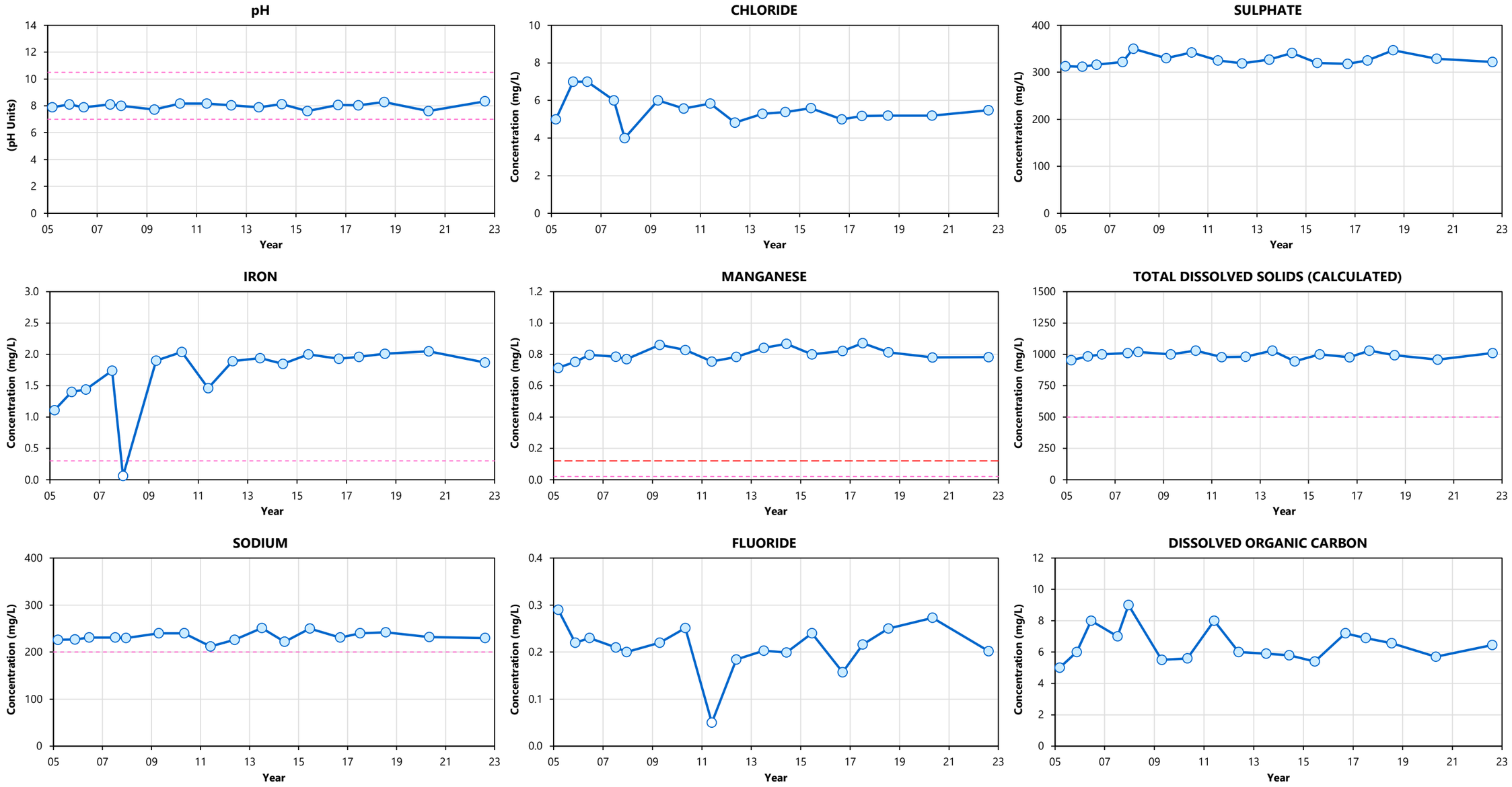

Notes:

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Canadian Drinking Water Quality Guidelines 2020 - MAC:

Canadian Drinking Water Quality Guidelines 2020 - AO:

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- Fluoride: 1.5 / --- mg/L
- Sulphate: --- / 500 mg/L
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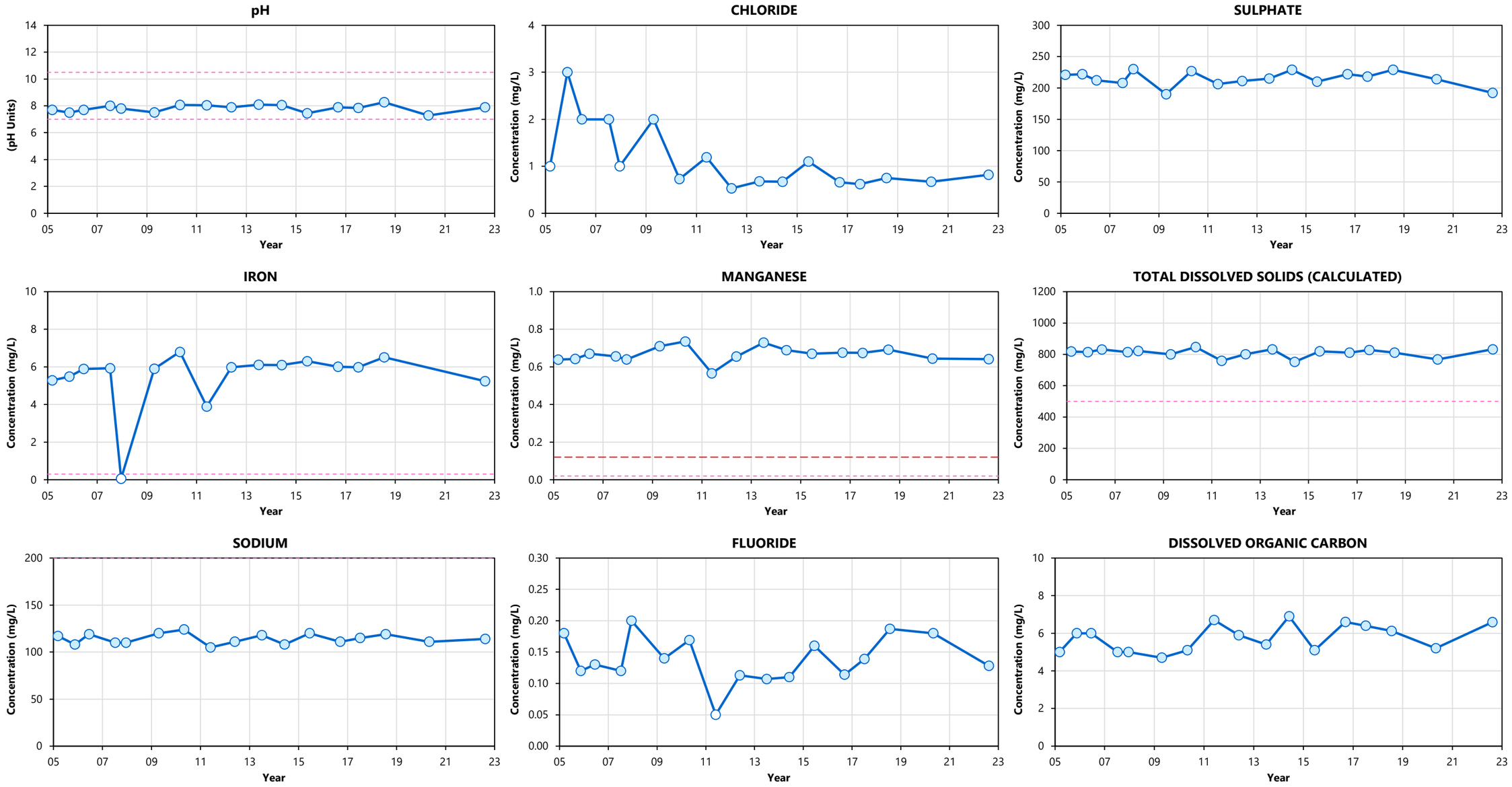

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Canadian Drinking Water Quality Guidelines 2020 - MAC:

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- Sulphate: --- / 500 mg/L
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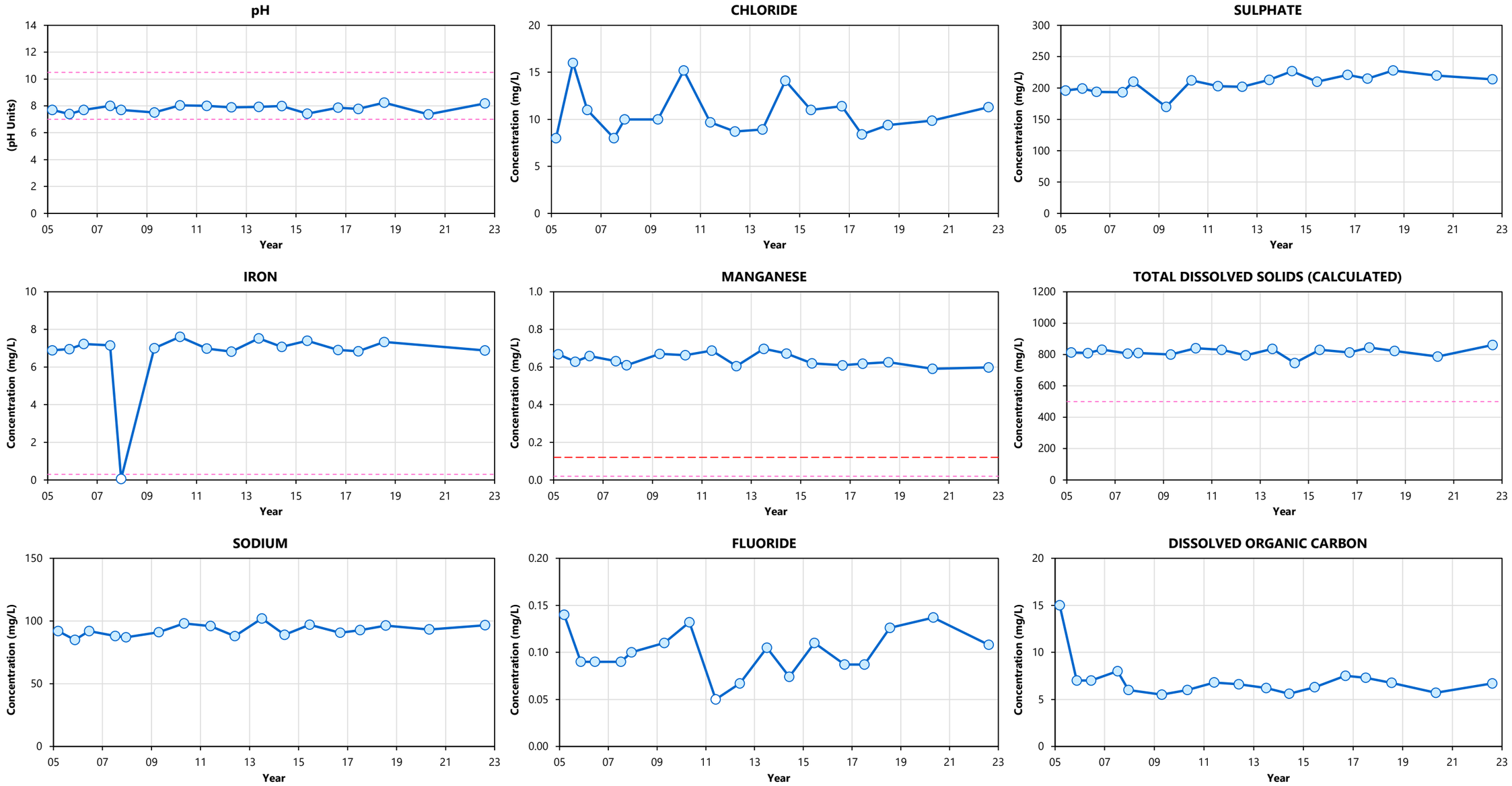

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Canadian Drinking Water Quality Guidelines 2020 - MAC:

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- Iron: --- / 0.3 mg/L
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- Fluoride: 1.5 / --- mg/L
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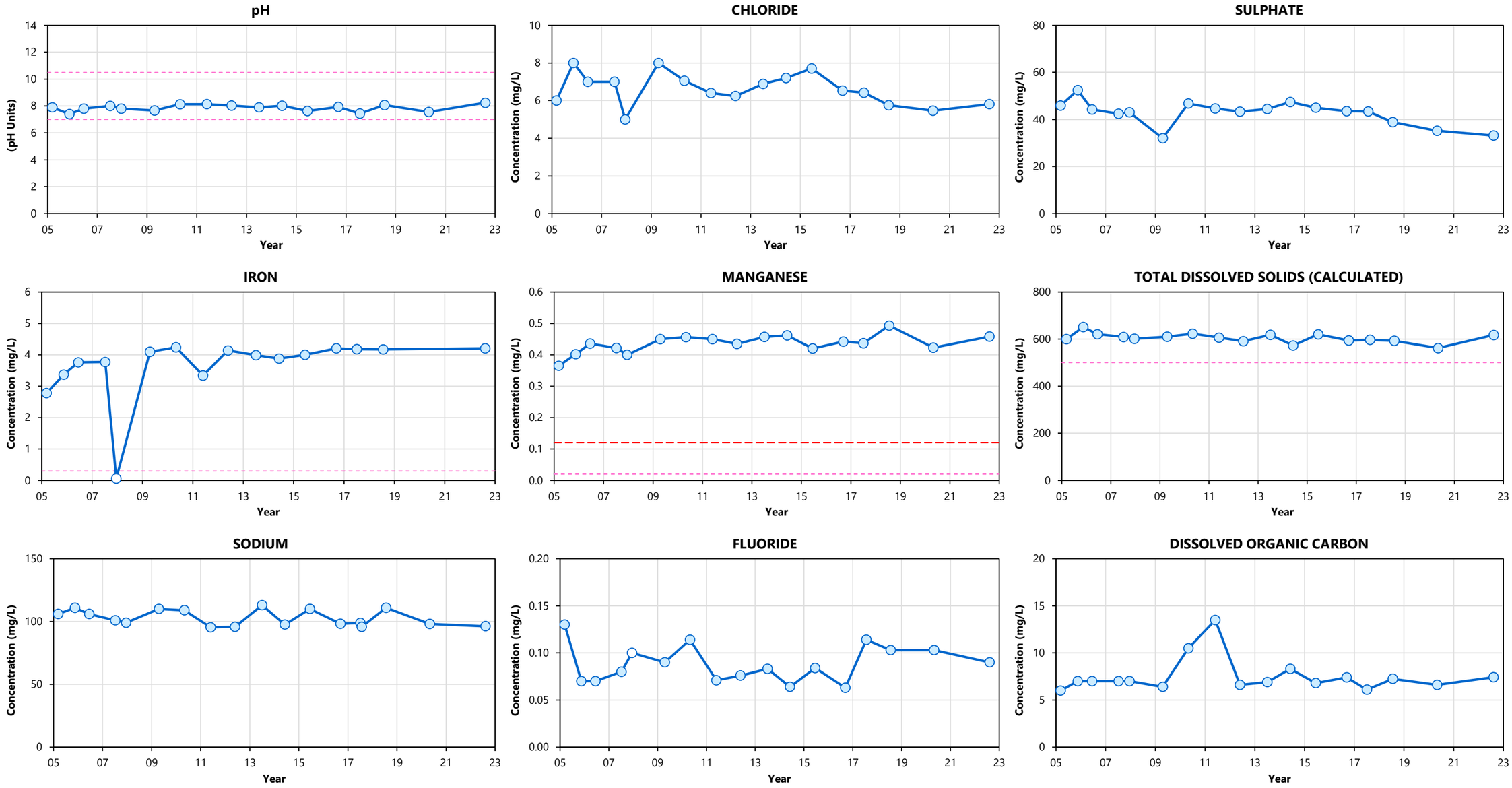

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Canadian Drinking Water Quality Guidelines 2020 - MAC:

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- Manganese: 0.12 / 0.02 mg/L
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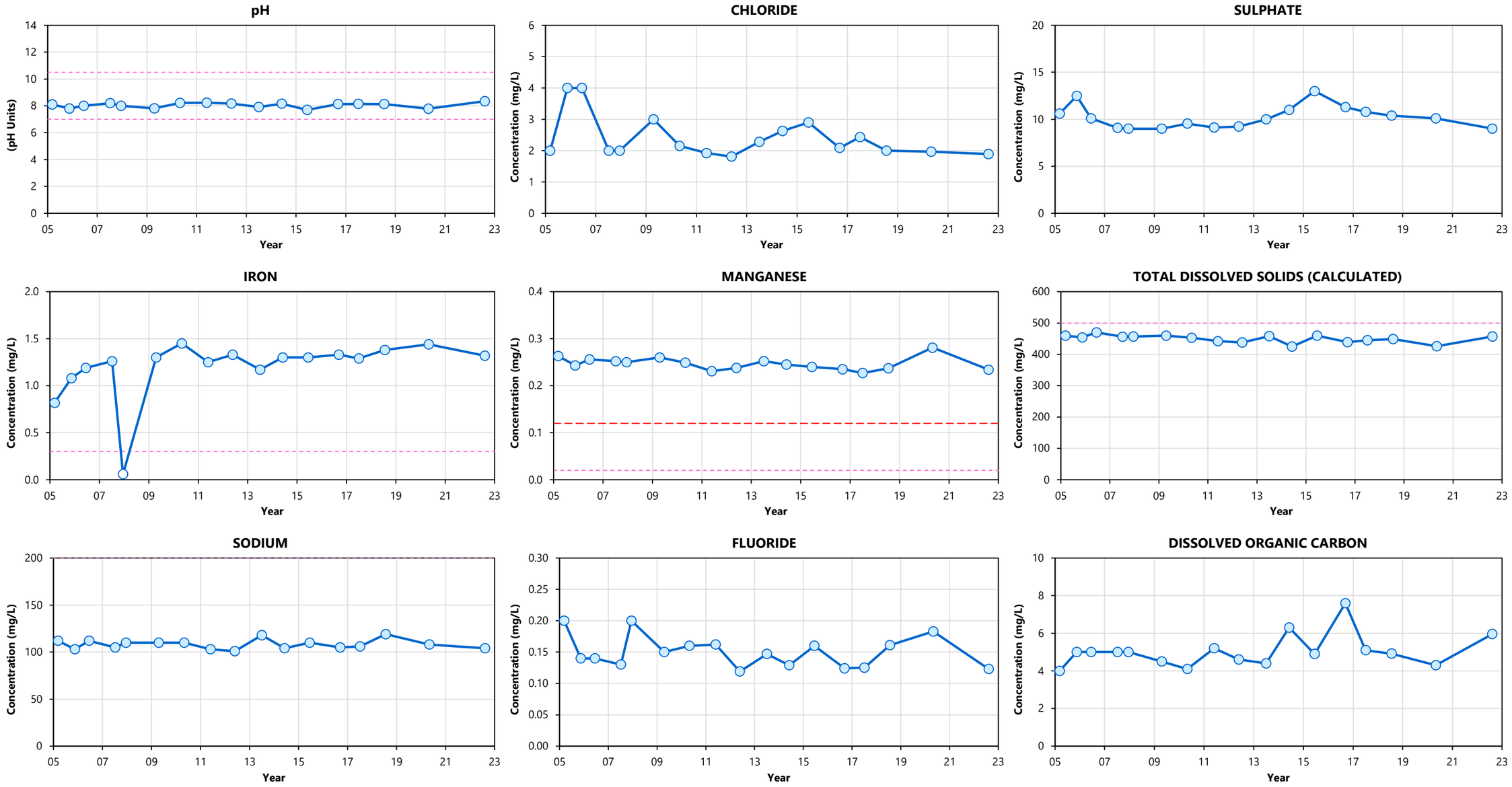

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- - - - - - - - Canadian Drinking Water Quality Guidelines 2020 - MAC:

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- Fluoride: 1.5 / --- mg/L
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HYDROCHEMICAL CONTROL CHARTS

MW-13

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Appendix 6
Mann-Kendall/Sen's Slope Analysis and Statistical Table

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Table 6-1
Statistical Analysis

Project #: 317085-44533-22100		Mann-Kendall Analysis[1]								Visual Trend Analysis		Guideline Exceedances				Basic Analysis						
Monitoring Station	Parameter	S-Stat (-)	Z-Stat (-)	P Value of Two Tailed Test (-)	Inferred Confidence Level (of Trend Present in Data Set) (%)	Slope (units/yr)	Normalized Slope (%/yr)	Meets Trend Assumptions?	Statistically Significant Mann-Kendall Trend	Probable Visual Trend?	Visual Trend Classification	Canadian Drinking Water Quality Guidelines 2020 - AO (units)	Reporting Period Values Greater Than Guideline	Canadian Drinking Water Quality Guidelines 2020 - MAC (units)	Reporting Period Values Greater Than Guideline	Count	Min (units)	Median (units)	Max (units)	Range (units)	Average (units)	Standard Deviation (units)
Monitoring Wells																						
MW-01	Chloride	28	3.34	0.00	99.9%	2.29	39.06	Y	Up			250	0	---	---	17	2	4.00	29.7	27.7	6.76	7.16
	Sulphate	-18	-2.10	0.04	96.5%	-1.22	-2.29	Y	---			500	0	---	---	17	44	56.2	62.0	18.0	55.1	4.86
	Iron	10	1.11	0.27	73.4%	0.014	0.72	Y	---			0.3	1	---	---	17	< 0.06	1.82	2.20	2.14	1.58	0.64
	Manganese	-22	-2.60	0.01	99.1%	-0.0067	-0.95	Y	---			0.02	1	0.12	1	17	0.605	0.69	0.737	0.13	0.69	0.033
	Sodium	0	0.00	1.00	0.0%	0.015	0.04	Y	---			200	0	---	---	17	32.5	36.0	40	7.50	35.5	2.02
	Fluoride	0	0.00	1.00	0.0%	-0.000049	-0.04	Y	---			---	---	1.5	0	17	0.106	0.13	0.2	0.094	0.14	0.028
	Total Dissolved Solids (Calculated)	4	0.37	0.71	28.9%	1.64	0.38	Y	---			500	0	---	---	17	410	435	462	52.0	437.4	15.7
	Dissolved Organic Carbon	-9	-1.00	0.32	68.1%	-0.11	-4.05	Y	---			---	---	---	---	17	2	3.00	4.5	2.50	2.99	0.66
MW-02	Chloride	2	0.12	0.90	9.8%	1.57	2.49	Y	---			250	0	---	---	19	11.6	29.6	211	199	50.2	49.7
	Sulphate	-10	-1.11	0.27	73.4%	-9.31	-4.07	Y	---			500	0	---	---	19	174	241	318	144	245.5	35.6
	Iron	-10	-1.11	0.27	73.4%	-0.42	-4.82	Y	---			0.3	1	---	---	19	< 0.06	8.49	12.3	12.2	7.05	4.05
	Manganese	-16	-1.86	0.06	93.7%	-0.018	-4.74	Y	---			0.02	1	0.12	1	19	0.153	0.45	1.09	0.94	0.50	0.21
	Sodium	-2	-0.12	0.90	9.8%	-1.68	-1.44	Y	---			200	0	---	---	19	81	104	161	80.0	109.8	25.5
	Fluoride	10	1.11	0.27	73.4%	0.0079	10.84	Y	---			---	---	1.5	0	19	< 0.040	0.080	0.21	0.17	0.084	0.040
	Total Dissolved Solids (Calculated)	-6	-0.62	0.54	46.4%	-6.23	-0.71	Y	---			500	1	---	---	19	759	883	1090	331	892.7	77.1
	Dissolved Organic Carbon	7	0.75	0.45	54.6%	0.11	1.86	Y	---			---	---	---	---	19	4.1	5.40	11.3	7.20	5.83	1.61
MW-02B	Chloride	---	---	---	---	---	---	N (Ins. trend data)	---			250	1	---	---	6	804	931	1010	206	910.3	84.7
	Sulphate	---	---	---	---	---	---	N (Ins. trend data)	---			500	0	---	---	6	< 1.5	3.28	41.7	40.2	10.5	16.1
	Iron	---	---	---	---	---	---	N (Ins. trend data)	---			0.3	1	---	---	6	< 0.050	0.50	0.687	0.64	0.42	0.28
	Manganese	---	---	---	---	---	---	N (Ins. trend data)	---			0.02	1	0.12	0	6	0.0567	0.11	0.200	0.14	0.11	0.047
	Sodium	---	---	---	---	---	---	N (Ins. trend data)	---			200	1	---	---	6	571	682	699	128	653.2	57.7
	Fluoride	---	---	---	---	---	---	N (Ins. trend data)	---			---	---	1.5	0	6	0.41	0.56	0.73	0.32	0.57	0.15
	Total Dissolved Solids (Calculated)	---	---	---	---	---	---	N (Ins. trend data)	---			500	1	---	---	6	1650	1875	1990	340	1825.0	138
	Dissolved Organic Carbon	---	---	---	---	---	---	N (Ins. trend data)	---			---	---	---	---	6	5.5	8.28	10.2	4.70	8.22	1.73
MW-03	Chloride	26	3.09	0.00	99.8%	1.72	2.98	Y	---	Y	Up	250	0	---	---	17	31	45.9	70.4	39.4	47.7	12.0
	Sulphate	-6	-0.62	0.54	46.4%	-0.66	-0.53	Y	---			500	0	---	---	17	98	122	130	32.0	120.7	7.82
	Iron	8	0.87	0.39	61.4%	0.085	1.57	Y	---			0.3	1	---	---	17	< 0.06	5.13	7.15	7.09	4.38	2.04
	Manganese	-6	-0.62	0.54	46.4%	-0.0018	-0.67	Y	---			0.02	1	0.12	1	17	0.162	0.26	0.297	0.14	0.26	0.029
	Sodium	-8	-0.87	0.39	61.4%	-0.61	-1.21	Y	---			200	0	---	---	17	44.5	52.0	57.9	13.4	51.8	3.41
	Fluoride	5	0.50	0.62	38.2%	0.0017	1.76	Y	---			---	---	1.5	0	17	0.073	0.10	0.14	0.067	0.10	0.019
	Total Dissolved Solids (Calculated)	0	0.00	1.00	0.0%	-0.45	-0.08	Y	---			500	1	---	---	17	520	578	612	92.0	578.2	21.3
	Dissolved Organic Carbon	-4	-0.37	0.71	28.9%	-0.050	-1.42	Y	---			---	---	---	---	17	2.5	3.40	5.9	3.40	3.76	0.98
MW-04	Chloride	15	1.75	0.08	91.9%	5.23	3.10	Y	---			250	0	---	---	17	125	155	200	75.0	157.6	24.2
	Sulphate	15	1.75	0.08	91.9%	5.41	4.53	Y	---			500	0	---	---	17	74	88.9	133	59.0	98.3	19.1
	Iron	12	1.36	0.17	82.6%	0.12	5.44	Y	---			0.3	1	---	---	17	0.005	1.39	3.21	3.21	1.12	1.10
	Manganese	4	0.37	0.71	28.9%	0.0084	1.52	Y	---			0.02	1	0.12	1	17	0.009	0.49	0.722	0.71	0.36	0.27
	Sodium	26	3.09	0.00	99.8%	2.98	4.88	Y	---	Y	Up	200	0	---	---	17	50.7	59.5	79.8	29.1	61.6	7.86
	Fluoride	13	1.50	0.13	86.5%	0.0039	3.80	Y	---			---	---	1.5	0	17	0.082	0.12	0.15	0.068	0.12	0.021
	Total Dissolved Solids (Calculated)	16	1.86	0.06	93.7%	9.52	1.21	Y	---			500	1	---	---	17	690	726	812	122	743.8	43.6
	Dissolved Organic Carbon	10	1.11	0.27	73.4%	0.095	2.76	Y	---			---	---	---	---	17	1	3.30	5	4.00	3.29	0.80

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Table 6-1
Statistical Analysis

Project #: 317085-44533-22100		Mann-Kendall Analysis[1]								Visual Trend Analysis		Guideline Exceedances				Basic Analysis						
Monitoring Station	Parameter	S-Stat (-)	Z-Stat (-)	P Value of Two Tailed Test (-)	Inferred Confidence Level (of Trend Present in Data Set) (%)	Slope (units/yr)	Normalized Slope (%/yr)	Meets Trend Assumptions?	Statistically Significant Mann-Kendall Trend	Probable Visual Trend?	Visual Trend Classification	Canadian Drinking Water Quality Guidelines 2020 - AO (units)	Reporting Period Values Greater Than Guideline	Canadian Drinking Water Quality Guidelines 2020 - MAC (units)	Reporting Period Values Greater Than Guideline	Count	Min (units)	Median (units)	Max (units)	Range (units)	Average (units)	Standard Deviation (units)
MW-05	Chloride	21	2.49	0.01	98.7%	0.91	2.32	Y	---	Y	Up	250	0	---	---	17	15	33.7	51.7	36.7	32.6	9.38
	Sulphate	-20	-2.35	0.02	98.1%	-2.64	-1.93	Y	---			500	0	---	---	17	105	136	150	45.0	133.0	12.5
	Iron	18	2.10	0.04	96.5%	0.16	3.26	Y	---			0.3	1	---	---	17	< 0.06	3.83	5.35	5.29	3.51	1.63
	Manganese	-8	-0.87	0.39	61.4%	-0.0060	-0.80	Y	---			0.02	1	0.12	1	17	0.402	0.71	0.785	0.38	0.68	0.097
	Sodium	2	0.12	0.90	9.8%	0.014	0.03	Y	---			200	0	---	---	17	41	43.0	51	10.0	43.9	2.52
	Fluoride	8	0.87	0.39	61.4%	0.0024	2.58	Y	---			---	---	1.5	0	17	0.061	0.10	0.18	0.12	0.10	0.027
	Total Dissolved Solids (Calculated)	0	0.00	1.00	0.0%	-0.24	-0.04	Y	---			500	1	---	---	17	499	570	620	121	571.1	32.2
	Dissolved Organic Carbon	-13	-1.50	0.13	86.5%	-0.18	-4.48	Y	---			---	---	---	---	17	2.5	4.00	6.9	4.40	4.14	1.18
MW-06	Chloride	-10	-1.11	0.27	73.4%	-0.32	-6.17	Y	---			250	0	---	---	17	2.80	5.60	13	10.2	6.02	2.88
	Sulphate	-3	-0.25	0.80	19.7%	-1.25	-0.25	Y	---			500	0	---	---	17	420	494	560	140	493.1	31.1
	Iron	10	1.11	0.27	73.4%	0.061	1.03	Y	---			0.3	1	---	---	17	< 0.06	5.83	8.59	8.53	5.15	1.91
	Manganese	4	0.38	0.71	29.4%	0.0031	0.19	Y	---			0.02	1	0.12	1	17	0.943	1.62	1.74	0.80	1.51	0.25
	Sodium	4	0.38	0.71	29.4%	0.67	0.45	Y	---			200	0	---	---	17	123	150	211	88.0	157.0	25.2
	Fluoride	4	0.37	0.71	28.9%	0.0025	1.86	Y	---			---	---	1.5	0	17	0.086	0.14	0.2	0.11	0.15	0.027
	Total Dissolved Solids (Calculated)	19	2.24	0.02	97.5%	7.58	0.64	Y	---			500	1	---	---	17	1100	1200	1250	150	1186.5	43.6
	Dissolved Organic Carbon	6	0.62	0.54	46.4%	0.059	0.89	Y	---			---	---	---	---	17	5	6.80	9.0	4.00	6.77	1.04
MW-07	Chloride	8	0.87	0.39	61.4%	0.11	0.92	Y	---			250	0	---	---	18	8.07	12.3	18	9.93	12.7	2.31
	Sulphate	0	0.00	1.00	0.0%	0.058	0.01	Y	---			500	1	---	---	18	622	1020	1270	648	1027.2	142
	Iron	4	0.37	0.71	28.9%	0.037	0.28	Y	---			0.3	1	---	---	18	< 0.005	11.9	14	14.0	10.7	4.14
	Manganese	-2	-0.12	0.90	9.8%	-0.0047	-0.25	Y	---			0.02	1	0.12	1	18	1.21	1.87	2.3	1.09	1.87	0.23
	Sodium	4	0.37	0.71	28.9%	2.39	0.91	Y	---			200	1	---	---	18	189	262	320	131	259.7	28.2
	Fluoride	5	0.50	0.62	38.2%	0.0031	4.26	Y	---			---	---	1.5	0	18	0.042	0.092	0.135	0.093	0.090	0.027
	Total Dissolved Solids (Calculated)	-2	-0.12	0.90	9.8%	-9.69	-0.48	Y	---			500	1	---	---	18	1330	1985	2400	1070	1988.3	229
	Dissolved Organic Carbon	6	0.62	0.54	46.4%	0.085	1.37	Y	---			---	---	---	---	18	5	6.00	11.5	6.50	6.49	1.36
MW-08	Chloride	9	1.00	0.32	68.1%	0.040	2.64	Y	---			250	0	---	---	17	0.86	1.60	4	3.14	1.94	0.86
	Sulphate	18	2.10	0.04	96.5%	8.30	2.37	Y	---			500	0	---	---	17	300	333	387	87.0	337.4	28.2
	Iron	16	1.86	0.06	93.7%	0.21	2.88	Y	---			0.3	1	---	---	16	< 0.06	6.97	10.4	10.3	6.19	2.70
	Manganese	20	2.35	0.02	98.1%	0.0091	1.99	Y	---			0.02	1	0.12	1	16	0.384	0.45	0.551	0.17	0.45	0.041
	Sodium	18	2.10	0.04	96.5%	2.51	2.15	Y	---			200	0	---	---	16	98.0	118	137	39.0	118.9	11.3
	Fluoride	7	0.75	0.45	54.6%	0.0014	1.43	Y	---			---	---	1.5	0	17	0.08	0.10	0.13	0.050	0.10	0.017
	Total Dissolved Solids (Calculated)	25	2.99	0.00	99.7%	21.4	2.23	Y	---			500	1	---	---	17	862	927	1050	188	936.6	61.4
	Dissolved Organic Carbon	8	0.87	0.39	61.4%	0.10	1.85	Y	---			---	---	---	---	17	4.8	5.70	10.3	5.50	6.01	1.32
MW-09	Chloride	1	0.00	1.00	0.0%	0.0035	0.07	Y	---			250	0	---	---	17	4	5.39	7	3.00	5.50	0.74
	Sulphate	0	0.00	1.00	0.0%	-0.11	-0.03	Y	---			500	0	---	---	17	312	325	350	38.0	326.9	11.6
	Iron	8	0.87	0.39	61.4%	0.012	0.62	Y	---			0.3	1	---	---	17	< 0.06	1.89	2.05	1.99	1.68	0.50
	Manganese	-12	-1.36	0.17	82.6%	-0.0067	-0.82	Y	---			0.02	1	0.12	1	17	0.714	0.80	0.872	0.16	0.80	0.044
	Sodium	-8	-0.87	0.39	61.4%	-1.87	-0.79	Y	---			200	1	---	---	17	212	231	251	39.0	233.0	9.90
	Fluoride	8	0.87	0.39	61.4%	0.0061	2.93	Y	---			---	---	1.5	0	17	< 0.050	0.22	0.29	0.24	0.21	0.058
	Total Dissolved Solids (Calculated)	-1	0.00	1.00	0.0%	-1.10	-0.11	Y	---			500	1	---	---	17	944	1000	1030	86.0	994.1	26.7
	Dissolved Organic Carbon	0	0.00	1.00	0.0%	0.022	0.35	Y	---			---	---	---	---	17	5	6.00	9	4.00	6.47	1.09

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Table 6-1
Statistical Analysis

Project #: 317085-44533-22100		Mann-Kendall Analysis[1]								Visual Trend Analysis		Guideline Exceedances				Basic Analysis						
Monitoring Station	Parameter	S-Stat (-)	Z-Stat (-)	P Value of Two Tailed Test (-)	Inferred Confidence Level (of Trend Present in Data Set) (%)	Slope (units/yr)	Normalized Slope (%/yr)	Meets Trend Assumptions?	Statistically Significant Mann-Kendall Trend	Probable Visual Trend?	Visual Trend Classification	Canadian Drinking Water Quality Guidelines 2020 - AO (units)	Reporting Period Values Greater Than Guideline	Canadian Drinking Water Quality Guidelines 2020 - MAC (units)	Reporting Period Values Greater Than Guideline	Count	Min (units)	Median (units)	Max (units)	Range (units)	Average (units)	Standard Deviation (units)
MW-10	Chloride	1	0.00	1.00	0.0%	0.0014	0.20	Y	---			250	0	---	---	17	0.53	0.73	3	2.47	1.08	0.72
	Sulphate	-7	-0.75	0.45	54.6%	-2.35	-1.09	Y	---			500	0	---	---	17	190	215	230	40.0	215.1	11.8
	Iron	-2	-0.12	0.90	9.8%	-0.021	-0.34	Y	---			0.3	1	---	---	17	< 0.06	5.98	7.08	7.02	5.56	1.59
	Manganese	-16	-1.86	0.06	93.7%	-0.0062	-0.91	Y	---			0.02	1	0.12	1	17	0.566	0.67	0.735	0.17	0.67	0.040
	Sodium	-1	0.00	1.00	0.0%	-0.098	-0.09	Y	---			200	0	---	---	17	105	114	124	19.0	114.1	5.36
	Fluoride	14	1.61	0.11	89.2%	0.0060	4.52	Y	---			---	---	1.5	0	17	< 0.050	0.13	0.2	0.15	0.14	0.042
	Total Dissolved Solids (Calculated)	0	0.00	1.00	0.0%	0.00	0.00	Y	---			500	1	---	---	17	752	814	847	95.0	809.5	26.7
	Dissolved Organic Carbon	-2	-0.12	0.90	9.8%	-0.015	-0.25	Y	---			---	---	---	---	17	4.7	5.90	6.9	2.20	5.75	0.73
MW-11	Chloride	0	0.00	1.00	0.0%	0.012	0.12	Y	---			250	0	---	---	17	8	10.0	16	8.00	10.6	2.40
	Sulphate	2	0.12	0.90	9.8%	0.18	0.08	Y	---			500	0	---	---	17	170	210	228	58.0	207.5	14.5
	Iron	-6	-0.62	0.54	46.4%	-0.030	-0.42	Y	---			0.3	1	---	---	17	< 0.06	7.00	8.12	8.06	6.75	1.77
	Manganese	-18	-2.10	0.04	96.5%	-0.0093	-1.50	Y	---			0.02	1	0.12	1	17	0.591	0.63	0.697	0.11	0.64	0.033
	Sodium	2	0.12	0.90	9.8%	0.095	0.10	Y	---			200	0	---	---	17	85	92.0	102	17.0	92.6	4.56
	Fluoride	11	1.25	0.21	78.8%	0.0041	3.90	Y	---			---	---	1.5	0	17	< 0.050	0.10	0.14	0.090	0.099	0.028
	Total Dissolved Solids (Calculated)	4	0.37	0.71	28.9%	2.94	0.36	Y	---			500	1	---	---	17	746	813	861	115	816.2	26.4
	Dissolved Organic Carbon	4	0.37	0.71	28.9%	0.053	0.81	Y	---			---	---	---	---	17	5.5	6.70	15	9.50	7.06	2.16
MW-12	Chloride	-18	-2.10	0.04	96.5%	-0.22	-3.34	Y	---			250	0	---	---	17	5	6.53	8	3.00	6.62	0.86
	Sulphate	-24	-2.85	0.00	99.6%	-1.68	-3.87	Y	---			500	0	---	---	17	32	43.5	52.5	20.5	42.7	5.22
	Iron	17	1.99	0.05	95.4%	0.051	1.22	Y	---			0.3	1	---	---	17	< 0.06	4.00	5.22	5.16	3.73	1.08
	Manganese	0	0.00	1.00	0.0%	-0.00019	-0.04	Y	---			0.02	1	0.12	1	17	0.365	0.44	0.493	0.13	0.44	0.029
	Sodium	-4	-0.37	0.71	28.9%	-0.23	-0.23	Y	---			200	0	---	---	18	95.4	100	113	17.6	102.9	6.43
	Fluoride	9	1.00	0.32	68.1%	0.0030	3.50	Y	---			---	---	1.5	0	17	0.063	0.083	0.13	0.067	0.086	0.021
	Total Dissolved Solids (Calculated)	-6	-0.62	0.54	46.4%	-1.20	-0.20	Y	---			500	1	---	---	17	562	606	651	89.0	605.1	20.5
	Dissolved Organic Carbon	-2	-0.12	0.90	9.8%	-0.042	-0.60	Y	---			---	---	---	---	17	6	7.00	13.5	7.50	7.52	1.85
MW-13	Chloride	-18	-2.10	0.04	96.5%	-0.057	-2.63	Y	---			250	0	---	---	17	1.81	2.09	4	2.19	2.42	0.69
	Sulphate	-12	-1.36	0.17	82.6%	-0.24	-2.31	Y	---			500	0	---	---	17	9	10.1	13	4.00	10.2	1.22
	Iron	15	1.75	0.08	91.9%	0.024	1.82	Y	---			0.3	1	---	---	17	< 0.06	1.30	1.45	1.39	1.19	0.33
	Manganese	-10	-1.11	0.27	73.4%	-0.0016	-0.69	Y	---			0.02	1	0.12	1	17	0.227	0.25	0.281	0.054	0.25	0.014
	Sodium	-3	-0.25	0.80	19.7%	-0.28	-0.26	Y	---			200	0	---	---	17	101	108	119	18.0	108.2	5.13
	Fluoride	0	0.00	1.00	0.0%	0.000077	0.06	Y	---			---	---	1.5	0	17	0.119	0.15	0.2	0.081	0.15	0.026
	Total Dissolved Solids (Calculated)	0	0.00	1.00	0.0%	0.030	0.01	Y	---			500	0	---	---	17	425	454	470	45.0	449.9	12.4
	Dissolved Organic Carbon	0	0.00	1.00	0.0%	-0.0041	-0.08	Y	---			---	---	---	---	17	4	5.00	7.6	3.60	5.05	0.88

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Table 6-1
Statistical Analysis

Project #: 317085-44533-22100		Mann-Kendall Analysis[1]								Visual Trend Analysis		Guideline Exceedances				Basic Analysis						
Monitoring Station	Parameter	S-Stat (-)	Z-Stat (-)	P Value of Two Tailed Test (-)	Inferred Confidence Level (of Trend Present in Data Set) (%)	Slope (units/yr)	Normalized Slope (%/yr)	Meets Trend Assumptions?	Statistically Significant Mann-Kendall Trend	Probable Visual Trend?	Visual Trend Classification	Canadian Drinking Water Quality Guidelines 2020 - AO (units)	Reporting Period Values Greater Than Guideline	Canadian Drinking Water Quality Guidelines 2020 - MAC (units)	Reporting Period Values Greater Than Guideline	Count	Min (units)	Median (units)	Max (units)	Range (units)	Average (units)	Standard Deviation (units)

Notes:

1. Non-detect multiplier of 0.5 applied to sample data below reported detection limit (RDL)
2. Shading in the parameter column indicates one or more analyses returned notable results
- Analysis-specific shading is further specified below
3. Reporting period:
- Defined as all data between 01-Aug-2022 and 30-Aug-2022 (inclusive)
4. Mann-Kendall trend analysis:
- Mann-Kendall trend analysis only performed on most recent 8 data points
- Shading of trend analysis cells indicates a Mann-Kendall trend has been detected
- Statistically significant trend defined as:
-- P-value of two-tailed test less than or equal to 0.05
-- Absolute value of Sen's normalized slope is greater than 10%
-- Absolute slope criteria met for individual parameters:
- Chloride: 2.0 mg/L
- Sulphate: 2.0 mg/L
- Iron: 0.1 mg/L
- Manganese: 0.1 mg/L
- Sodium: 2.0 mg/L
- Fluoride: 0.1 mg/L
- Total Dissolved Solids (Calculated): 2.0 mg/L
- Dissolved Organic Carbon: 0.5 mg/L
- Up: Denotes statistically significant upward trend
- Down: Denotes statistically significant downward trend
- "---": Denotes no trend
5. Upper Control Limit (UCL) / Lower Control Limit (LCL) analyses:
- Control limits calculated using Shewhart method (nsigmas = 4.5)
6. Basic analysis performed with the following conditions:
- Analyses performed on all sample data
7. Guideline exceedances:
8. Legend for control limit/trend assumptions:
- Y: All conditions are met
- N: Not all conditions are met, specified as follows:
-- No valid BL: No valid baseline found at this location
-- Ins. trend data: Insufficient data available to conduct a Mann-Kendall analysis
-- Ins. >DL data: Less than 50% of control limit/trend data was above the RDL
-- MK trend present: Associated Mann-Kendall analysis identified statistical trend for parameter
-- < 1x/5x RDL: The calculated result was less than 1 time/less than 5 times the RDL
-- Non-natural: Analyte determined to be not naturally occurring at this location
-- Non-Monotonic: Trend is non-monotonic (ie. trend reversal or termination is not present)
-- Damaged: The well is damaged
9. Units:
- Chloride: mg/L
- Sulphate: mg/L
- Iron: mg/L
- Manganese: mg/L
- Sodium: mg/L
- Fluoride: mg/L
- Total Dissolved Solids (Calculated): mg/L
- Dissolved Organic Carbon: mg/L