2022 Groundwater Monitoring Program
Ryley Class I Waste Management Facility
Ryley, Alberta

PRESENTED TO

Clean Harbors Environmental Services, Inc.

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EXECUTIVE SUMMARY

Clean Harbors Environmental Services Inc. (Clean Harbors) retained Tetra Tech Canada Inc. (Tetra Tech) to conduct the 2022 Groundwater Monitoring and Sampling Program (GMP) at the Ryley Landfill facility (the facility). The facility is located at the southeast quarter section of Section 9, Township 50, Range 17, west of the 4th meridian, approximately 2 km north of the Village of Ryley, Alberta.

The facility operates under Alberta Environment and Protected Areas (EPA), EPEA Approval No. 10348-03-01 (as amended) (Approval). This approval was renewed on June 21, 2022, to include the NE ¼ of Section 9, Township 50, Range 17, W4M in the defined Facility area as per application 015-10348. The renewed approval remains effective until March 31, 2027. As per the renewed approval requirements, Tetra Tech prepared a revised Groundwater Monitoring Program (revised GMP) proposal on behalf of Clean Harbors that was required to be submitted to EPA by December 31, 2022. The current GMP was authorized on May 25, 2018, and has been implemented annually since then. A copy of the revised Approval, the EPA letter approving the current GMP in place (2018), and the Record of Site Condition, are presented in Appendix A.

The objectives of the 2022 GMP were to provide an assessment of the groundwater flow conditions and quality compared to historical data and guidelines, comment on the results, and provide recommendations for future groundwater monitoring as required under the current GMP in place. Annual GMP reporting for 2023 will incorporate any changes and requirements specified in the revised GMP currently in preparation as required by the revised Approval.

Tetra Tech conducted groundwater monitoring and sampling for the 2022 GMP at the facility from June 8, 2022, to June 10, 2022. The 2022 GMP included monitoring and sampling of 48 monitoring wells present at the facility plus duplicate samples.

The 2022 GMP findings are summarized as follows:

- The interpreted groundwater flow directions in surficial materials, clay shale, and deep groundwater are generally consistent with previous years.
- The natural groundwater type is sodium sulphate and natural mineralization accounts for high concentrations of sodium, sulphate, and total dissolved solids concentrations in the groundwater across the facility.
- In 2022, dissolved metal and routine parameters were generally within the historical concentration ranges and there continues to be no detection of volatile organic compound parameters analysed. In 2022, there was one PHC F2 detection below guideline at monitoring well MW19A which is not consistent with historical results, and all other concentrations of hydrocarbon parameters analyzed in groundwater samples were below the detection limit.
- Total phenol concentrations greater than laboratory detection limits have been present since 2018. In 2022, only one well installed in the lower bedrock unit (15MW35-Deep) had groundwater with concentrations of phenols above the laboratory detection limit.
- Overall, there were no indications of adverse groundwater impacts resulting from facility activities.

Based on the results from the work conducted in 2022, the following is recommended for Clean Harbors' consideration:

- The groundwater monitoring and sampling fieldwork should continue to be conducted in late May or early June to minimize the number of frozen wells and maximize groundwater availability for sampling. The parameters that were analyzed in 2022 should be continued to be analyzed in 2023.

- The geodetic elevations of 19MW37A/B and 19MW38A/B should be surveyed in 2023 to support groundwater contouring.
- The revised GMP has been submitted to Alberta EPA and is under review. The current GMP should be maintained until the revised GMP has been accepted by Alberta EPA. The exception to this is the addition of monitoring locations in the north quarter, which should be monitored and sampled according to the revised GMP and the proposed baseline groundwater monitoring program (both of these documents are currently under review by Alberta EPA).
- Continue to monitor the chloride trend at MW27B, and assess the integrity of the well and local operational activities during the 2023 event.

TABLE OF CONTENTS

LIST OF TABLES IN TEXT

APPENDIX SECTIONS

TABLES

FIGURES

APPENDICES

LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of Clean Harbors Environmental Services, Inc., and their agents. Tetra Tech Canada Inc. (Tetra Tech) does not accept any responsibility for the accuracy of any of the data, the analysis, or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than Clean Harbors Environmental Services, Inc., or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this document is subject to the Limitations on the Use of this Document attached in Appendix G or Contractual Terms and Conditions executed by both parties.

1.0 INTRODUCTION

Clean Harbors Environmental Services Inc. (Clean Harbors) retained Tetra Tech Canada Inc. (Tetra Tech) to conduct the 2022 Groundwater Monitoring and Sampling Program (GMP) at the Ryley Landfill facility (the facility). The facility monitored in 2022 is located at the southeast quarter section of Section 9, Township 50, Range 17, west of the 4th meridian, approximately 2 km north of the Village of Ryley, Alberta (Figure 1). The facility is a Class I landfill, storage, and disposal facility, licensed to accept various hazardous waste liquids and solids for disposal and/or transfer to authorized treatment or disposal facilities in accordance with the Alberta's *Environmental Protection and Enhancement Act* (EPEA).

The facility operates under Alberta Environment and Protected Areas (EPA), EPEA Approval No. 10348-03-01 (amending approval). This amending approval is effective as of June 21, 2022, and now includes the NE ¼ of Section 9, Township 50, Range 17, W4M in the defined facility area as per application 015-10348. The amending approval expires March 31, 2027. As per the renewed approval requirements, Tetra Tech submitted a revised Groundwater Monitoring Program (revised GMP) to EPA on behalf of Clean Harbors before December 31, 2022. The current GMP was authorized on May 25, 2018, and has been implemented annually since then. A copy of the Approval and the Record of Site Conditions, are presented in Appendix A.

This report provides the methods and results of the 2022 GMP, which were conducted under the current (2018) GMP.

Stan Yuha, Facility Manager at Clean Harbors, provided Tetra Tech written authorization to proceed with this work on April 27, 2022.

1.1 Objectives

The objectives of the 2022 GMP were to:

- Provide an assessment of the groundwater flow conditions and groundwater quality at the facility and compare to historical data and applicable guidelines; and
- Comment on the results and provide recommendations for future groundwater monitoring programs.

1.2 Scope of Work

The scope of work for the 2022 GMP included:

- Monitoring and sampling each groundwater monitoring well at the landfill, and submitting samples for laboratory chemical analyses of parameters as per the Approval (Table 1);
- Evaluating groundwater flow conditions and quality, and reporting any unusual findings; and
- Preparing an annual report to summarize the field activities undertaken during the year and providing and interpreting the measured groundwater levels and groundwater analytical results.

2.0 GROUNDWATER REGULATORY CONTEXT

As per Section 4.9.7(a) of the Approval, groundwater analytical results were compared to the Canadian Environmental Quality Guidelines (CEQG) for drinking water, updated in September 2022 and published by Health Canada, until 2018. The groundwater analytical results have been compared to Alberta's Tier 1 Soil and Groundwater Remediation Guidelines (Tier 1 Guidelines) for fine-grained material under agricultural land use (AEP 2022), since the revised GMP was issued in 2018. The surficial soils and bedrock material in the area is primarily fine-grained (clay till, overlaying shale bedrock) and surrounding land use is primarily agricultural with other industrial land uses to the east.

3.0 BACKGROUND INFORMATION

This section describes background information pertaining to local groundwater and surface water users, surface water drainage, geology, and hydrogeology and the existing groundwater monitoring network.

3.1 Groundwater Users

As required in Section 4.9.14(e) of the Approval, a search of water wells was conducted using the Alberta Water Well Information Database (AEP 2022). The required search radius is 1.6 km; however, to account for the distance from the centre of the facility, and spatial inaccuracies within the water well database, a 2.0 km radius was used. The search showed records of 37 active water wells as of October 2022.

Table A summarizes the number of wells according to their reported use within the search radius.

Table A: Water Well Information Database Summary

Domestic	Domestic & Industrial	Domestic & Stock	Industrial	Municipal	Observation Monitoring / Investigation	Stock	Unknown / Other
6	2	4	1	2	13	1	8

The average drilling depth of the water wells is 46.6 metres below ground level (mbgl), and the maximum depth is 140.2 mbgl. A reconnaissance report and map showing locations of the groundwater users are provided in Appendix B.

3.2 Surface Water Users

A map showing the locations of the surface water users and a table containing the water allocation details are contained in Appendix B. Surface water sampling locations surrounding the facility (dugout sites as shown on Figure 2) are sampled annually in the fall of each year. The analytical results for the surface water sampling locations will be reported under a separate cover. (Tetra Tech 2023 – not yet issued).

3.3 Surface Water Drainage

Figure 3 shows the surface water drainage and monitoring well locations at the facility. The northwest corner of the facility is a local topographic high point for surface water drainage. Ditches have been constructed around the waste cells to collect surface water and convey perimeter drainage to the retention pond, located on the east side of the facility. A ditch on the northern edge is sloped downward to the east along the north base of Cell 1 and Cell 2 to a

gravelled storage pad. It then drains water into a second ditch that conveys the surface runoff east to connect to the ditch that drains water to the retention pond. Surface water from the northwest corner also drains south through a perimeter ditch that collects water from the west base of Cell 2 and Cell 3A. At the southwest corner of Cell 3A, the ditch turns east to collect perimeter drainage along the south portion of the facility. Surface water then drains east into the same retention pond. All surface water runoff is collected, tested to ensure it meets surface water quality discharge requirements and then released to the east under Highway 854. Surface water from properties surrounding the facility is diverted to ensure it does not flow onto the facility.

3.4 Geology and Hydrogeology

Various regional studies (HCL 1999; Stein & Carlson 2005) have compiled regional geology and hydrogeology of the area. The data gathered from various reports is presented as Figure A (Wells), Figure B (Surface Water Users), and Figure C (Regional Hydrogeology) in Appendix B.

The regional information suggests that the surficial geology in the area consists of unconsolidated glacial deposits (till), of Quaternary age. The till is up to 4 m thick beneath the facility and overlies Cretaceous sedimentary bedrock. The Bearpaw Formation underlies the till and consists of marine shales, silty shales, sandstone, and bentonite beds that interfinger with sandstone. The Belly River Group lies underneath the Bearpaw Formation. The group contains the Oldman Formation and the Continental and Marine Foremost Formations. In the upper portion of the group, bedrock consists mainly of non-marine, grey to greenish grey, thick bedded, feldspathic sandstone; grey, clayey siltstone; and grey and green mudstone (Stein & Carlson 2005., Fenton, et al. 2013). Due to the similarities between the two units, and the overlapping deposition and subsequent interfingering of the layers, distinct boundaries are not well defined. Together, these formations are estimated to be up to approximately 24 m thick beneath the facility (Prior, et al. 2013). The nearest buried valley is reported to exist approximately 5 km to the north of the site, (Appendix B, Figure A).

Based on review of a hydrogeological report and map of the area east of Edmonton (Stein and Carlson 2005), the regional groundwater flow is inferred to generally mimic the surface topography in the area. This would suggest a flow towards the north to Beaverhill Lake and eventually to the North Saskatchewan River, although local flow direction may vary. Hydraulic conductivity values for the Belly River and Bearpaw Formations are reported to be approximately 0.5 m/day (5.8×10^{-6} m/s). The facility is situated in an area where natural groundwater in the bedrock contains concentrations of total dissolved solids (TDS) ranging from 1,500 mg/L to more than 8,000 mg/L. Groundwater chemistry within the till material is naturally mineralized and is sodium sulphate water type.

Geologic cross-section alignments are shown on Figure 4a and cross-sections through different portions of the facility are presented on Figures 4b to 4e. Borehole logs of the monitoring wells are presented in Appendix C.

3.5 Groundwater Monitoring Network

The 2022 GMP included 48 wells, which were monitored and/or sampled in June 2022. The locations of the existing monitoring wells are shown on Figure 3.

The lithology beneath the site was divided in four (4) hydro-stratigraphical units including Surficial Material, Upper Sandstone, Clay Shale, and Lower Bedrock.

Table B presents each well and corresponding hydro-stratigraphic unit.

Table B: Monitoring well Hydro-Stratigraphic Units

Wells	Hydro-Stratigraphic Unit
MW10, MW18B, MW19B, MW20B, MW21B, MW22B, MW29B, MW30B, MW31B, MW32B, MW33B, 15MW35C, 19MW37B, and 19MW38B	Surficial Materials
MW1C, MW8B, MW11, MW12A, MW23B, MW25B, MW26B, MW27B, MW28B, MW29A, MW30A, MW31A, MW33A,15MW35B, 19MW37A, and 19MW38A	Upper Sandstone
MW1B, MW8A, MW12B, MW18A, MW19A, MW20A, MW21A, MW22A, MW23A, MW25A, MW26A, MW27A, MW28A, MW32A, 15MW35A, and 15MW36A	Clay Shale
15MW35-Deep and 15MW36-Deep	Lower Bedrock

In addition to the wells mentioned in Table A, 15 monitoring wells were installed in 2016 in the adjacent quarter section north of the facility as part of an application to expand the facility. Baseline monitoring and sampling at these wells was conducted in 2016 and 2017 (Tetra Tech 2021); however, the wells to date have not been included in this annual GMP but will be incorporated into the GMP for 2023 as part of the revised GMP submitted to the Province in December 2022 as required under the revised Approval. In 2022, monitoring wells 16MW09A and 16MW11A were monitored for groundwater elevation only to assist with groundwater contouring and flow direction.

Monitoring wells 19MW38A and 19MW38B were decommissioned in October 2022 due to active construction in the vicinity of the wells for the new waste receiving pad. The location of replacement wells will be assessed and are included as part of the revised GMP proposal. Replacement wells are planned to be installed prior to 2023 monitoring and sampling activities and will be included in annual reporting.

4.0 FIELD WORK METHODS

This section provides details of the field work methods related to safety and groundwater monitoring and sampling.

4.1 Safety

Tetra Tech contacted Clean Harbors prior to starting fieldwork to coordinate field activities. A sign-in/sign-out form was completed daily in Clean Harbors' front office at the facility. A Tetra Tech safe work form (SWF) which identifies hazards on site and the associated hazard controls was completed before beginning the fieldwork. Tetra Tech personnel reviewed, updated if needed, and signed the SWF before starting work each day. Tetra Tech work methods WM4203 (Groundwater Sample Collection) and WM4212 (Manual Water Level Measurement) were followed.

4.2 Groundwater Monitoring and Sampling

Tetra Tech personnel followed environmental industry accepted practices to ensure that representative groundwater samples were obtained for analysis. Monitoring and sampling of the monitoring well network was conducted on June 8, 2022, and from June 9 to 10, 2022, respectively. Field staff completed the following field activities and data collection process:

- Measured and recorded static groundwater levels in each well using an interface probe;
- Purged groundwater from each monitoring well by removing three well volumes, or until the monitoring well was practically dry, using either dedicated bailers or Waterra tubing with a foot valve;

- Recorded the volume of groundwater removed from the well, and a description of the groundwater purged (colour, odour, sediment, volume etc.);
- Recorded field measured parameters including electrical conductivity (EC), pH, and temperature using a multi-meter probe;
- Allowed groundwater levels in wells to recover to sufficient levels in order to obtain representative samples; and
- Collected groundwater samples with equipment used to purge the well. Deep monitoring wells 15MW35-Deep and 15MW36-Deep were sampled using Hydrasleeves™ and were not purged before sampling.

Groundwater samples were collected in laboratory-supplied containers, field filtered, stored in coolers with ice to keep sample temperature below 10°C throughout the fieldwork, and submitted to ALS Laboratories (ALS), in Edmonton, Alberta under chain-of-custody (COC).

A total of 54 samples were submitted including:

- Forty-eight (48) groundwater samples from wells in the monitoring network that had sufficient groundwater to sample. The following monitoring well had insufficient groundwater to collect a full sample set:
  - MW26A- field measurements were not collected.
- Four duplicate sets of samples from monitoring wells 15MW35B (Dup-A), MW11 (Dup-B), MW8B (Dup-C), and MW1B (Dup-D). (Approximately 10%).
- One Trip Blank.
- One Field Blank.

Samples were analyzed for the following parameters as required by the Approval:

- Major ions (routine water chemistry), including pH, EC, and nitrate and nitrite.
- Trace metals (dissolved).
- Nutrients (total Kjeldahl nitrogen [TKN] and ammonia).
- Chemical oxygen demand (COD).
- Dissolved organic carbon (DOC).
- Benzene, toluene, ethylbenzene and xylenes (BTEX) and petroleum hydrocarbon (PHC) fractions F1 and F2.
- Total phenols.
- Volatile Organic Compounds (VOCs).

4.3 Groundwater Well Decommissioning

Tetra Tech personnel supervised the decommissioning of monitoring wells 19MW38A and 19MW38B on October 24, 2022, due to their location being in the way of landfill construction activities for the new waste receiving pad. Clean Harbors retained a driller within the Clean Harbors family of companies to remove surface casing and associated PVC pipe from the hole. Where the PVC was unable to be pulled out (19MW38A), the drillers over-drilled the wells to total depth. All PVC piping was removed without additional drilling at 19MW38B. After removal, the boreholes were backfilled with bentonite to surface. The decommissioning details are included in Table C.

Tetra Tech staff completed the following field activities and data collection process:

- Supervised the drillers during decommissioning tasks; and
- Record field notes of methods used for decommissioning and observations.

Table C: Monitoring Well Decommissioning Details

Well	Decommissioning Method	Total Depth	Backfill Material
19MW38B	PVC was pulled out of the hole	13.7 m	Bentonite
19MW38A	Hole was over drilled to well depth	3.9 m	Bentonite

5.0 RESULTS

The laboratory analytical schedule for groundwater samples collected in 2022 is provided in Table 1. Table 2 shows the dates the monitoring wells were installed and the hydro-stratigraphic units of the well groupings. Tables 3a to 3d summarize the water levels for 2022 by hydro-stratigraphic group. Tables 4a to 4d summarize the laboratory analytical results from 2014 to 2022. Groundwater analytical results were compared to the Alberta Tier 1 Guidelines for fine-textured soils under agricultural land use (AEP 2022).

The following Sections 5.1 and 5.2 provide 2022 and historical results of the physical groundwater flow conditions and the groundwater chemistry results, respectively.

5.1 Groundwater Flow Conditions

The 2022 groundwater elevations in 48 monitoring wells were compared to historic groundwater elevations from April 1991 to May 2021.

The lithology beneath the site is divided into four hydro-stratigraphic units; surficial material, upper sandstone, clay shale, and lower bedrock. The hydrographs based on the groundwater elevations measured in the monitoring wells installed in the surficial material, upper sandstone, clay shale, and lower bedrock units are shown on Figures 5a through 5g. The groundwater elevations measured in 2022 are generally consistent with historical groundwater elevations with the following observed visual trends by water bearing layer:

- Surficial Material – Groundwater elevations at monitoring wells MW18B, MW20B, and MW22B on the west side of the facility decreased relative to 2021 elevations; however, they were within historical ranges in 2022. Groundwater elevations in monitoring wells MW29B, MW30B, MW31B, and MW32B on the east side of the facility increased relative to 2021 elevations; however, they remained within historical ranges.
- Upper Sandstone – Groundwater elevations in 2022 were similar elevations measured in 2021 and were within historical ranges. An increasing visual trend was observed at MW31A and the well had the highest elevation to date in 2022.
- Clay shale – Groundwater elevations in 2022 were generally similar to historical elevations. Monitoring wells MW23A and MW27A had slight decreasing trends from 2015 to 2022. Monitoring well MW32A and 15MW36A have a slight increasing trend over the last five events. In monitoring well MW8A, the groundwater elevation increased to the highest elevation measured to date in 2022. This groundwater elevation should be confirmed in 2023.

- Lower Bedrock – Groundwater elevations in 2022 were consistent with historical ranges. Monitoring well 15MW35-Deep has been slightly decreasing since 2019.

Groundwater elevations measured during the 2022 monitoring event were contoured using Surfer Mapping System Version 16. Groundwater elevation contours were created by grouping wells within the same water bearing units, and interpolating groundwater elevation data between wells. Monitoring wells which are screened across multiple units were not used to create these contour maps. Professional judgement was applied to ensure that the information presented in the figures is reasonably applicable given site history and known hydrogeological conditions.

Figures 6a through 6d show groundwater flow directions in four geologic units beneath the site including surficial material, upper sandstone, clay shale, and lower bedrock. The 2022 groundwater flow patterns in all units beneath the site were similar to historical patterns and are discussed below.

- Figure 6a shows the 2022 groundwater elevation contour map for the clay till (surficial) unit. The screen depths range from 1.4 mbgl to 5.38 mbgl. Groundwater in this unit flows to the east, with a northeast and southeast component, based on the 2022 groundwater elevations, although historical groundwater flow has been more to the northeast. It is likely that groundwater flow through this unit is discontinuous across the facility due to the depth of the landfill cells and above and below ground infrastructure. Based on the 2022 groundwater monitoring information, an average groundwater elevation in the surficial materials was 1.56 mbgl.
- Figure 6b shows the 2022 groundwater elevation contour map for the upper sandstone unit. This unit is likely laterally continuous across the facility. Screen depths in this unit range from 1.50 mbgl to 14.77 mbgl. There appears to be a divide in groundwater flow direction in this unit near the centre of the facility. Groundwater flow direction in the eastern half of the facility is to the east with a northeast and southeast component. In the north portion of the site groundwater flow direction is to the northwest and west, and to the west in the southwestern portion of the site. There is interpreted to be little to no hydraulic gradient under Cell 3C. Changes in groundwater flow direction compared to previous years have been observed in this area, indicating that the groundwater flow, and recharge conditions may be shifting as a result of construction activities on Cell 4 and capping activities.
- Figure 6c shows the 2022 groundwater elevation contour map for the clay shale unit. This material is interpreted to be laterally continuous in wells across the facility. Screen depths range from 7.28 mbgl to 14.98 mbgl. Historically, the groundwater flow direction has been to the east under Cells 3C, 3D, and 3E, and in 2022, was interpreted to be easterly as well. On the west side of the facility, groundwater flow is to the southwest in the southwestern corner and to the north-northeast in the northwestern corner of the facility.
- Groundwater elevations are measured in monitoring wells 15MW35-Deep and 15MW36-Deep which are screened within the Belly River Formation, which is referred to as “Lower Bedrock”. Well depths in this zone range from 32.59 mbgl to 34.64 mbgl. The groundwater flow direction could not be determined in the Lower Bedrock due to only having groundwater elevations from only two monitoring wells in 2022. The elevations in 2022 were similar to elevations in 2021. The two northern wells (16MW11A and 16MW09A) were monitored during the 2022 event. The elevations were not contoured with the wells at the south portion due to potential of a discontinuous aquifer between these wells.

Calculated vertical and horizontal hydraulic gradients based on 2022 groundwater elevations are reported in Table D and Table E below, respectively.

Table D: Vertical Hydraulic Gradients

Wells	Vertical Groundwater Flow Direction
MW1B/MW1C, MW18A/MW18B, MW20A/MW20B, MW21A/MW21B, MW22A/MW22B, MW23A/MW23B, MW26A/MW26B, MW31A/MW31B, MW32A/MW32B, MW33A/MW33B, 15MW35A/15MW35B, 15MW36-Deep/MW36A, MW37A/MW37B, 19MW38A/19MW38B	Downward
MW8A/MW8B, MW12A/MW12B, MW19A/MW19B, MW25A/MW25B, MW27A/MW27B, MW28A/MW28B, MW29A/MW29B, MW30A/MW30B	Upward

No survey data is available for 19MW37A/19MW37B and 19MW38A/19MW38B and therefore, the wells were not included in the gradient calculations.

Table E: Horizontal Hydraulic Gradients

Hydro-stratigraphic Unit	Horizontal Hydraulic Gradient (m/m)
Surficial Material	0.01
Upper Sandstone	0.01 to 0.003
Clay Shale	0.01 to 0.028
Lower Bedrock	Not calculated

5.2 Groundwater Chemistry

Parameters with concentrations greater than the Tier 1 Guidelines or outside of the guideline range are shaded on Tables 4a to 4d. Laboratory certificates of analysis are presented in Appendix D. Historical chemistry results are contained in Appendix E. Concentration trend graphs are provided in Appendix F.

The groundwater results for monitoring well 15MW35A was considered anomalous when compared to past results. Tetra Tech requested a re-check of results which was completed by ALS; however, no errors were found. The data is not considered to be representative and has therefore been removed from the discussion and interpretation for this report. This well will be resampled in the spring of 2023 to confirm the results.

The three nested wells 15MW35A/B/Deep are located to the southwest of the site and are considered to represent background groundwater conditions. Groundwater from these monitoring wells generally has an average sulphate concentration of approximately 3,500 mg/L in the upper sandstone unit and concentrations from 10 mg/L to 40 mg/L in the deeper units. Chloride concentrations in the background wells increase with depth; the upper sandstone chloride concentrations averaged approximately 6 mg/L, the clay shale 38 mg/L and the deeper bedrock 1,415 mg/L. These chloride concentrations are interpreted to be naturally occurring.

As with previous years, groundwater data collected in 2022 from the site overall shows a moderate to high degree of mineralization, likely caused by concentrations of sodium, sulphate, and TDS in native soils. The parameters exceeding the Tier 1 Guidelines and other key parameters are discussed in the following Table F.

Table F: 2022 Analytical Results Summary for Select Parameters

Parameter	Tier 1 Guideline	2022 Measured Concentrations	Wells greater than Tier 1 Guideline Value in 2022	Comments
Sodium Appendix F1	200 mg/L	298 - 3,040 mg/L	All wells sampled for sodium	▪ Sodium concentrations have generally remained within historical ranges, no notable trends are observed.
Chloride Appendix F2	100 mg/L	0.59 – 1,640 mg/L	MW27B, MW32B, 15MW35-Deep, and 15MW36-Deep	▪ Chloride concentrations have remained within historical ranges at most wells. ▪ Chloride concentrations in monitoring well MW18B and MW32B show an increasing visual trend between 2014 and 2020, and 2015 and 2021 respectively. MW32B has been greater than the referenced guideline since monitoring began at this well in 2015. Concentrations at both wells decreased in 2022. ▪ Chloride concentration at MW27B increased to greater than guideline for the first time in 2021 and has shown an increasing trend since 2015. The 2020 concentration was the highest measured to date (174 mg/L). ▪ 15MW35-Deep, and 15MW36-Deep have slight visual increasing chloride concentration trends. ▪ Increasing visual trends are observed in monitoring wells MW8B and MW11; however, concentrations have remained less than the guideline.
Nitrate Appendix F3	3.0 mg/L	<0.010 – 13.5 mg/L	MW22A	▪ Visual trends show monitoring well MW22A has been consistently exceeding the guideline since 2006 and spiked to 70 mg/L in 2017; however, concentrations decreased to within historical range from 2018 to 2022. ▪ Nitrate concentrations appear to have spiked in multiple wells in 2017. Concentrations decreased to pre-2017 ranges in 2018 and have remained within the range until present.
Sulphate Appendix F4, Appendix G (Figures G1, G2, and G3)	128 – 429 mg/L (Guideline varies with hardness)	0.43 to 7,510 mg/L	All wells sampled for sulphate except MW18A, MW21A, MW23A, MW25A, MW31A MW33A, 15MW35-Deep, 15MW36A, and 15MW36-Deep	▪ Sulphate concentrations have remained within historical ranges at most wells. Most monitoring wells had a decrease in sulphate concentrations in 2022, compared to 2021 concentrations. ▪ Concentrations at well MW20B in 2022 was the highest measured to date (3,530 mg/L). ▪ Concentrations in well MW12A have increased since 2018, and in 2021 had the highest concentration measured (7,280 mg/L), since 2002. The 2022 concentration decreased to 6,770 mg/L.
TDS, Appendix F5	500 mg/L	995 – 11,400 mg/L	All wells sampled for TDS	▪ TDS concentrations have generally remained within historical ranges at most monitoring wells. ▪ Wells 15MW35-Deep, and 15MW36-Deep show stable concentration visual trends in 2022. ▪ Monitoring well MW12A had the highest TDS concentration to date in 2021 (11,200 mg/L) and decreased in 2022 to 10,600 mg/L.
pH (Laboratory), Appendix F6	6.5 – 8.5	7.99 – 8.84	MW1B, MW8A, MW18A, MW19A, MW19B, MW20A, MW21A, MW22A, MW23A, MW25A, MW26A, MW27A, MW28A, MW29A, MW30A, MW30B, MW31A, MW31B, MW33A, 15MW36A, 15MW36-Deep, 19MW37A, 19MW38A, and 19MW38B	▪ Laboratory pH values have remained within historical ranges, no notable trends are observed. Field pH values overall show a similar visual trend with some wells increasing or decreasing trends, but generally remaining within historical range.
pH (Field), Appendix F7		6.95 – 9.90	MW1B, MW19B, MW23A, MW33A, 15MW36A, and 19MW38A	
Dissolved Aluminum	0.007 – 0.050 mg/L (Guideline varies with pH)	<0.0050 – 0.332 mg/L	MW20B, MW33B, MW31A, 19MW37A, 19MW38A, MW22A, and MW23A	▪ Dissolved aluminum concentrations have generally remained within historical ranges at most wells, no notable visual trends were observed. ▪ MW20B, MW22A, and MW23A had concentrations greater than guideline for the first time in 2022.
Dissolved Iron (greater than guideline), Appendix F8	0.3 mg/L	<0.060 – 0.636 mg/L	MW33B	▪ Dissolved iron concentrations have generally remained within historical ranges. ▪ Some isolated spikes in dissolved iron concentrations have been observed; however, no increasing dissolved iron concentration visual trends are observed. ▪ 15MW36-Deep has been less than the guideline since 2016.
Dissolved Iron (detection limit greater than guideline)		<0.060 mg/L	None	

Parameter	Tier 1 Guideline	2022 Measured Concentrations	Wells greater than Tier 1 Guideline Value in 2022	Comments
Dissolved Manganese Appendix F9	0.05 mg/L	<0.010 – 0.726 mg/L	MW1B, MW1C, MW8A, MW8B, MW10, MW12B, MW18A, MW18B, MW19A, MW19B, MW20A, MW21A, MW22A, MW23B, MW25A, MW25B, MW26B, MW28B, MW29A, MW29B, MW32A, MW32B, MW33B, 15MW35B, 15MW36A, 19MW37A, 19MW37B, 18MW38B, 15MW35-Deep, and 15MW36-Deep	▪ Dissolved manganese concentrations across the facility appear to be generally stable and within historical ranges. ▪ Wells 15MW35-Deep and 15MW36-Deep have increasing concentration visual trends.
Dissolved Uranium	0.01 mg/L	0.000097 – 0.0704 mg/L	MW11, MW12B, MW20B, and 15MW35C	▪ Dissolved uranium concentration at monitoring well MW20B increased from previous concentrations and was greater than the Tier 1 guideline since 2020. ▪ MW11 and MW12B have had consistent concentrations of dissolved uranium greater than guideline, however no visual trend is observed. ▪ Monitoring well MW35C had concentrations greater than guideline in 2021 and 2022. These are the only sampling events for the well.
Ammonia Appendix F10	0.018-190 mg N/L (Guideline varies with pH and temperature)	<0.0050 – 2.16 mg-N/L	MW1B, MW8A, MW12B, MW19B, MW23A, MW25A, MW27B, MW28B, MW33A, 19MW37A, 19MW38A, 15MW36A 15MW35-Deep, and 15MW36-Deep	▪ Ammonia concentrations have generally remained within historical ranges, no notable trends are observed.

BTEX, Styrene, and PHC fraction F1 and F2 concentrations were not detected in any wells with the exception of PHC F2 concentration at MW19A. The concentration (0.64 mg/L) was greater than the detection limit, however, less than the applicable Tier 1 guidelines. Historically, PHC F2 concentrations have not been detected at this well historically but will be re-assessed following 2023 sampling results. Concentrations of VOCs were not detected at any wells.

There are no Tier 1 Guidelines for total phenols concentrations. Detectable concentrations of total phenols were observed in most wells in 2021 but decreased to less than detection limits in 2022 except for monitoring well 15MW35-Deep which had a detectable concentration in 2022. This is consistent with historical results.

There are no Tier 1 Guidelines for TKN, COD, or DOC. The table below summarizes the results of these parameters in 2022. No notable increasing visual trends have been observed for any of the parameters listed below and most results are within historical ranges.

Table G: TKN, COD, and DOC Summary

Parameter	Maximum Concentration (mg/L)	Monitoring Well	Minimum Concentration (mg/L)	Monitoring Well	Average in All Wells (mg/L)
TKN, Appendix F11	3.05	MW12B	0.31	MW22B	2.19
COD, Appendix F12	126	15MW36-Deep	16	MW20A	113
DOC, Appendix F13	47.6	MW33B	6.42	MW20A	14.5

5.3 Quality Assurance and Quality Control

To verify water sample integrity a trip blank and a field blank sample were used. A trip blank sample is prepared in a laboratory with clean sample matrix and travels in the same cooler as the sample bottles, to and from the sample sites. They are used to determine if contamination is introduced from the bottle itself or from conditions during transport. Field blanks are similar to trip blanks but are opened and handled as a regular sample. This shows any contamination from bottles, collection methods, atmosphere and chemical preservatives.

ALS commented on sample quality items in the laboratory report. Upon receiving the samples, some sample coolers exceeded the ALS recommended hold time for nitrate, nitrite and pH. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised or invalid (Appendix D).

To evaluate field sampling reproducibility, duplicate groundwater samples were collected during the sampling event in 2022. Duplicates were collected from MW35B (Dup-A), MW11 (Dup-B), MW8B (Dup-C) and MW1B (Dup-D), and submitted for laboratory analysis for the same suite of parameters as the parent samples.

The field sampling and laboratory testing reproducibility of each sample-duplicate pair was evaluated using the relative percent difference (RPD) method, involving calculation of RPD when both sample-duplicate concentrations were greater than, or equal to, five times the laboratory method detection limit (MDL), as shown in Equation 1.

Equation 1:

$$\%RPD = \left(\frac{|Sample - Duplicate|}{\overline{X}} \right) * 100$$

Where $\overline{X}$ is the calculated average concentration of the parent sample and the corresponding duplicate.

Groundwater quality parameters were considered to pass the quality assurance and quality control (QA/QC) reproducibility procedure if the RPD was less than or equal to 20%, indicating a close correlation between the sample-duplicate pair.

The RPD values were not calculated if one or both of the sample-duplicate concentrations were between the MDL and five times the MDL. In these cases, groundwater quality parameters were still considered as having passed the QA/QC reproducibility procedure if the sample-duplicate concentration difference was less than the MDL value.

The RPD calculations are summarized in Table 5a. These results indicate that all the parameters had RPD less than 20% except the following listed in Table H:

Table H: Parameters with RPD greater than 20%

MW-35B and Dup-A	MW11 and Dup-B	MW8B and Dup-C	MW1B and Dup-D
Nitrate = 24% Nitrite = 22% COD = 39%	Dissolved Barium = 26% Dissolved Selenium = 23%	Carbonate = 37%	Carbonate = 45% Fluoride = 22% Ammonia as N = 37% Nitrate and Nitrite = 22%

Greater RPD values dissolved barium and dissolved selenium may be caused by incomplete filtration. Some nutrient parameters had RPD values greater than 20% which may be a result of preservation and hold time of the sample. These results will be confirmed in the spring of 2023.

Field Blank and Trip Blank results are summarized in Table 5b. These results indicate all parameters had less than detectable limits except for the following listed in Table I.

Table I: Detection Value Exceedances

Field Blank	Trip Blank
Dissolved Barium = 0.00059 mg/L Dissolved Copper = 0.00149 mg/L Dissolved Zinc = 0.0041 mg/L	None

Detectable metal concentrations in the field blank are generally at concentrations near to the detection limits for each parameter and are not considered to be indicative of a larger quality or sample integrity issue.

Lower than neutral pH values are typical of de-ionized and de-natured water used in the field and trip blanks. This is due to the distilled water used in the field blank preparation process readily dissolving carbon dioxide from the air during distillation, sample collection, and sample analysis; because distilled water is poorly buffered, dissolution of carbon dioxide, will naturally lower the pH. The laboratory pH being less than the guideline for the field blanks does not indicate quality issues.

The 2022 QAQC results for the parameters listed above were similar to historical results. The precision and accuracy of the laboratory analytical system was considered acceptable in 2022 for utilizing all data.

5.4 Discussion

Groundwater quality at the background monitoring wells 15MW35B, and 15MW35-Deep have a high degree of natural mineralization showing elevated concentrations for sodium, sulphate, and TDS, which are greater than the Tier 1 Guidelines. All wells in the monitoring network exhibit evidence of groundwater mineralization (sodium, sulphate, TDS, and dissolved uranium). This is consistent with the chemical quality of shallow groundwater in the area (Stein et al. 2005), and the background wells.

Sulphate and TDS concentrations are greater than Tier 1 Guidelines at many of the monitoring wells on site. Elevated concentrations of TDS are primarily caused by the elevated sulphate concentrations. Sulphate is often naturally occurring in groundwater, and elevated concentrations are not suspected to be caused by on site activities. In 2022, concentrations of sulphate decreased at MW32B and MW12A and increased slightly at MW20B relative to 2021 concentrations. In 2022, concentrations of sulphate were within historical ranges at most of the wells. In 2021, at monitoring wells MW20B, and MW32B (Surficial Materials) and MW12A (Upper Sandstone) sulphate concentrations were the highest measured to date. The TDS concentration at MW20B increased to the highest to date in 2022 (5,790 mg/L). These three wells will be closely monitored in the future programs.

Chloride concentrations have overall remained stable at the site since monitoring began in 1996. Wells MW8B, MW11, MW18B, MW27B, and MW32B show increasing visual trends. Monitoring wells MW8B and MW11 are located in the northwest corner of the site and have exhibited increasing concentrations since 2013 and 2014, respectively. MW27B is located at the south end of the site and exceeded guideline for the first time in 2021 (122 mg/L) and increased in 2022 to 174 mg/L. Since 2018, the concentration at MW27B has increased by more than three times. This well is located in the south-central portion of the site and increasing chloride concentrations may be related to surface water infiltration, local operational activity or monitoring well integrity issues. Monitoring well MW18B is located near the western boundary of the site by a dugout and MW32B is located on the eastern side of the site, north of the retention pond. Both shallow wells are close to water bodies, which may lead to more variable results if there is any hydraulic connection to the surface water source. The chloride concentration in well MW18B was nearly double the highest concentration measured to date in 2020, however, it decreased to less than guideline in 2021 and decreased further in 2022 to 24.7 mg/L. Bedrock monitoring wells continue to have the highest chloride concentrations measured onsite, ranging between 1090 mg/L to 1640 mg/L in 2022, in line with historical results and natural conditions. MW32B, is located on the northeast corner of the retention pond and has the highest chloride concentration measured in non-bedrock wells on site (140 mg/L in 2021). The 2022, concentration decreased to within its historical range for the well (114 mg/L).

Since groundwater monitoring and sampling at this facility has been conducted, nitrate concentrations at MW22A, which is located south of Cell 3A and Cell 3B, has always exceeded the current referenced guideline of 3.0 mg-N/L. The elevated nitrate concentrations detected at MW22A may be associated with the land use in the area (i.e., agriculture, livestock, etc.) and could be related to the presence of a feedlot use immediately west of the facility. MW22A is located hydraulically down-gradient of Cell 3A and Cell 3B. The sudden increase in nitrate concentration at MW22A in 2017 is interpreted to be anomalous. All wells monitored in 2017 showed increased nitrate concentrations which have since decreased back to pre-2017 concentrations. All other wells onsite have nitrate concentrations less than the referenced guidelines.

Historically, pH values have been slightly greater or marginally less than the upper guideline value at the facility. It is likely that pH is naturally elevated in the area.

The dissolved iron concentrations at most shallow monitoring wells were less than the referenced guideline of 0.3 mg/L in 2022 with the exception of MW33B (0.636 mg/L). Concentrations at this well have fluctuated since 2015. Both 15MW35-Deep and 15MW36-Deep had concentrations less than guideline in 2022, which is consistent with

historical results. Dissolved manganese has only been analyzed since 2015; however, some visual trends are apparent. Several wells showed guideline exceedances in 2022 however, most are within historical ranges except 15MW35-Deep and 15MW36-Deep, which have increasing concentration trends. Both wells increased to the highest values measured to date in 2022. Manganese and iron concentrations are often greater than guideline in groundwater under suboxic or anoxic conditions and are considered to be naturally occurring.

Dissolved mercury was sampled for and submitted to ALS; however, due to laboratory error they were not analyzed. Therefore, dissolved mercury data is not included in the 2022 groundwater program results.

Dissolved uranium was reported as being in exceedance of the Guideline (0.01 mg/L) at monitoring well MW11, MW12B, MW20B, and 15MW35C in 2022. Monitoring well MW20B shows an increasing visual trend and will be closely monitored in the future. The exceedances at the other wells have remained consistent with historical data. Dissolved uranium is considered to be naturally occurring in surface waters and groundwater in Alberta within glacial till deposits (CCME 2007).

All VOC parameters analyzed to date have been less than detection or less than guideline across the site. Most PHC parameters at site have also been less than detection limits or less than guidelines historically. In 2022, monitoring well MW19A had a F2 detection of 0.64 mg/L, but it was less than the applicable guideline of 1.1 mg/L. Tetra Tech's detailed technical investigation (Tetra Tech 2016) indicated that naturally occurring hydrocarbons were present on the site. The regional geographic information describes the bedrock formations as carboniferous shale and sandstone. Bedrock in the area is documented to be late Cretaceous in age and composed of Horseshoe Canyon, Bearspaw, Belly River Group and Lea Park Formations (HCL 1999). Three of these formations are present below the site with the exception of Horseshow Canyon Formation. The lower bedrock unit consists of the Belly River Group where natural occurring hydrocarbons have been documented (Moell 2005). The concentration detected at MW19A will be re-assessed as part of the routine GMP sampling program in 2023.

All wells, except for 15MW35-Deep had total phenols concentrations less than the analytical detection limit in 2022, which confirms some detections of total phenols observed at several wells in 2021, to be considered anomalous.

6.0 CONCLUSIONS

The 2022 GMP findings are summarized as follows:

- The interpreted groundwater flow directions in surficial materials, clay shale, and deep groundwater are generally consistent with previous years.
- The natural groundwater type is sodium sulphate and natural mineralization accounts for high concentrations of sodium, sulphate, and TDS concentrations in the groundwater across the facility.
- In 2022, dissolved metal and routine parameters were generally within the historical concentration ranges and there continues to be no detection of VOC parameters analysed. In 2022, there was one PHC F2 detection below guideline at monitoring well MW19A which is not consistent with historical results, and all other concentrations of hydrocarbon parameters analysed in groundwater samples were below the detection limit.
- Total phenol concentrations greater than laboratory detection limits have been present since 2018. In 2022, only one well installed in the lower bedrock unit (15MW35-Deep) had groundwater with concentrations of phenols above the laboratory detection limit.
- Overall, there were no indications of adverse groundwater impacts resulting from facility activities.

7.0 RECOMMENDATIONS

Based on the results from the work conducted in 2022, the following is recommended for Clean Harbors' consideration:

- The groundwater monitoring and sampling fieldwork should continue to be conducted in late May or early June to minimize the number of frozen wells and maximize groundwater availability for sampling. The parameters that were analyzed in 2022 should be continued to be analyzed in 2023.
- The geodetic elevations of monitoring wells 19MW37A/B and 19MW38A/B should be surveyed in 2023 to support groundwater contouring.
- The revised GMP has been submitted to Alberta EPA and is under review. The current GMP should be maintained until the revised GMP has been accepted by Alberta EPA. The exception to this is the addition of monitoring locations in the north quarter, which should be monitored and sampled according to the revised GMP and the proposed baseline groundwater monitoring program (both of these documents are currently under review by Alberta EPA).
- Continue to monitor the chloride trend at MW27B and assess the integrity of the well and local operational activities during the 2023 event.

8.0 CLOSURE

We trust this report meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
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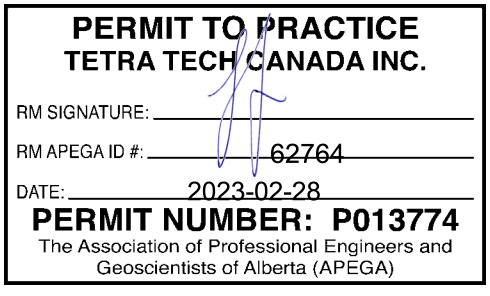

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TABLES

Table 1: 2022 Groundwater Analytical Schedule

Sample	Laboratory Analytical Parameters
48 Groundwater Monitoring Wells 4 Field Duplicates 1 Trip Blank, 1 Field Blank	pH (field and laboratory)
	Electrical Conductivity (field and laboratory)
	Routine (major ions) - total dissolved solids (TDS), alkalinity, hardness (as CaCO3), chloride, calcium, magnesium, sodium, potassium, sulphate, nitrate-N, and nitrite-N
	Dissolved Mercury
	Total Kjeldahl Nitrogen (TKN)
	Ammonia-N
	Dissolved Organic Carbon (DOC)
	Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)
	Petroleum Hydrocarbon (PHC) Fractions F1 and F2
	Total Phenols
	Volatile Organic Compounds (VOCs) - methylene chloride, vinyl chloride, trichloroethylene (TCE), and tetrachloroethylene (PCE)

Table 2: Monitoring Well Details

Groundwater Monitoring Zone	Well Identification	Date Installed	Elevations		Measured Stick-up (m)	Measured Well Depth			Screened Interval				Sand Pack Interval (mbgl)		Lithology Screened
			Surface (m AMSL)	Top of Pipe (m AMSL)		(m BTOP)	(mbgl)	(m AMSL)	Top Screen Depth (mbgl)	Bottom Screen Depth (mbgl)	Top Screen Elevation (m AMSL)	Bottom Screen Elevation (m AMSL)	Top Depth (mbgl)	Bottom Depth (mbgl)	
Surficial Materials 14 Wells	MW10	19-Feb-1991	687.44	687.96	0.43	3.86	3.43	684.10	1.93	3.43	685.51	684.01	1.63	3.43	clay till / clay shale / sandstone
	MW18B	30-Sep-1996	687.12	687.85	0.74	5.98	5.24	681.88	2.24	5.24	684.88	681.88	2.10	5.24	clay till / clay shale / sandstone
	MW19B	1-Oct-1996	686.65	687.14	0.31	4.23	3.92	682.91	0.92	3.92	685.73	682.73	0.72	3.92	clay shale / sandstone
	MW20B	1-Oct-1996	688.92	689.65	0.70	5.10	4.40	684.55	1.40	4.40	687.52	684.52	1.20	4.40	clay till / clay shale / sandstone
	MW21B	1-Oct-1998	687.54	688.55	0.89	6.09	5.20	682.46	2.20	5.20	685.35	682.35	1.90	5.20	clay till / sandstone / siltstone
	MW22B	1-Oct-1998	687.81	688.70	0.89	6.84	5.95	681.86	2.95	5.95	684.86	681.86	2.95	5.95	clay till / sandstone / clay shale
	MW29B	8-Oct-2014	688.13	688.93	0.77	5.45	4.68	683.48	3.18	4.68	684.96	683.46	2.88	4.68	sand
	MW30B	8-Oct-2014	688.52	689.31	0.82	5.44	4.62	683.87	3.12	4.62	685.41	683.91	2.82	4.62	clay till
	MW31B	8-Oct-2014	686.40	687.17	0.54	3.91	3.37	683.27	1.87	3.37	684.53	683.03	1.57	3.37	clay till / sandstone
	MW32B	8-Oct-2014	686.54	687.23	0.62	4.89	4.27	682.34	2.77	4.27	683.77	682.27	2.47	4.50	clay till / sand
	MW33B	6-Oct-2014	686.94	687.87	0.97	5.51	4.54	682.35	3.04	4.54	683.89	682.39	2.74	4.54	sand / sandstone
	19MW37B	30-Oct-2019	-	-	0.88	5.48	4.20	-	2.70	4.20	-	-	2.40	4.50	clay / sand / sandstone
	19MW38B	30-Oct-2019	-	-	0.95	5.19	4.00	-	3.50	4.00	-	-	3.20	4.00	clay / sand / sandstone
	15MW35C	28-Jul-2015	688.53	689.50	0.95	4.17	3.22	685.32	2.00	3.22	686.53	685.31	1.70	3.22	clay till
Upper Sandstone 14 Wells	MW1C	14-Jun-2011	687.64	688.61	0.92	6.43	5.51	682.18	4.01	5.51	683.63	682.13	3.70	5.51	clay shale/ sandstone
	MW8B	4-Oct-2012	686.82	687.69	0.88	5.40	4.52	682.29	3.02	4.52	683.80	682.30	1.8	4.52	clay / sand
	MW11	19-Feb-1991	687.95	688.37	0.36	6.21	5.85	682.16	4.35	5.85	683.60	682.10	4.05	5.85	clay shale / sandstone
	MW12A	19-Feb-1991	686.62	687.13	0.10	6.15	6.05	680.98	4.55	6.05	682.07	680.57	4.25	6.05	clay till / clay shale / sandstone
	MW23B	1-Oct-1998	686.48	687.38	0.90	4.47	3.57	682.90	0.57	3.57	685.90	682.90	0.37	3.57	sand / sandstone
	MW25B	13-Aug-2004	686.91	687.48	0.41	6.12	5.71	681.36	2.71	5.71	684.20	681.20	2.51	5.71	sandstone / clay shale
	MW26B	13-Aug-2004	687.14	687.63	0.45	5.94	5.49	681.69	2.49	5.49	684.65	681.65	2.19	5.49	clay shale / sandstone / siltstone
	MW27B	1-Oct-2007	686.50	687.15	0.65	6.61	5.96	680.54	2.96	5.96	683.54	680.54	2.66	5.96	sand / siltstone
	MW28B	4-Oct-2012	687.44	687.97	0.51	7.10	6.59	680.87	3.59	6.59	683.85	680.85	3.29	6.59	sand / siltstone
	MW29A	6-Oct-2014	688.06	688.89	0.84	10.22	9.38	678.67	7.88	9.38	680.18	678.68	7.38	9.38	sandstone
	MW30A	8-Oct-2014	688.57	689.37	0.76	8.89	8.13	680.48	6.13	8.13	682.44	680.44	5.83	9.00	sandstone
	MW31A	8-Oct-2014	686.38	687.12	0.61	9.74	9.13	677.39	7.13	9.13	679.25	677.25	6.83	9.13	sandstone
	MW33A	6-Oct-2014	686.92	687.93	0.89	15.67	14.78	672.26	12.78	14.78	674.14	672.14	12.48	14.78	sandstone
	15MW35B	28-Jul-2015	688.47	689.40	0.83	7.98	7.16	681.41	5.50	7.16	682.97	681.31	5.20	7.16	sandstone
Clay Shale 18 Wells	MW1B	30-Sep-1996	687.82	688.70	0.77	10.71	9.94	677.99	8.44	9.94	679.38	677.88	8.00	9.94	clay shale
	MW8A	4-Oct-2012	686.84	687.83	0.92	10.16	9.24	677.67	6.24	9.24	680.60	677.60	6.6	9.24	clay / sand / siltstone
	MW12B	30-Sep-1996	687.27	687.78	0.27	10.41	10.14	677.36	8.64	10.14	678.63	677.13	8.34	10.14	clay shale
	MW18A	1-Oct-1996	687.13	687.77	0.62	10.70	10.08	677.06	8.58	10.08	678.55	677.05	8.15	10.08	clay shale
	MW19A	1-Oct-1996	686.60	687.10	0.17	10.70	10.53	676.39	9.03	10.53	677.56	676.06	8.20	10.53	clay shale
	MW20A	1-Oct-1996	688.89	689.54	0.60	10.60	10.00	678.94	8.50	10.00	680.39	678.89	8.30	10.00	clay shale / sandstone
	MW21A	1-Oct-1998	687.60	688.30	0.61	10.66	10.05	677.64	8.55	10.05	679.05	677.55	8.25	10.05	clay shale / siltstone
	MW22A	1-Oct-1998	687.83	688.66	0.82	10.65	9.83	678.02	8.33	9.83	679.51	678.01	8.03	9.83	clay shale / sandstone / siltstone
	MW23A	1-Oct-1998	686.45	687.16	0.64	10.65	10.01	676.51	8.51	10.01	677.94	676.44	8.01	10.01	clay shale / sandstone / siltstone
	MW25A	13-Aug-2004	686.73	687.54	0.21	10.72	10.51	676.82	9.01	10.51	677.72	676.22	8.51	10.51	clay shale
	MW26A	13-Aug-2004	687.00	687.60	0.56	10.72	10.16	676.88	8.66	10.16	678.34	676.84	8.16	10.16	clay shale
	MW27A	1-Oct-2007	686.65	687.19	0.47	10.93	10.46	676.26	8.96	10.46	677.69	676.19	9.26	10.46	siltstone
	MW28A	4-Oct-2012	687.36	687.96	0.59	11.76	11.17	676.20	9.67	11.17	677.69	676.19	9.37	11.17	siltstone
	MW32A	8-Oct-2014	686.53	687.19	0.61	10.09	9.48	677.10	7.48	9.48	679.05	677.05	7.18	9.48	clay
	19MW37A	30-Oct-2019	-	-	0.89	13.36	12.00	-	9.00	12.00	-	-	4.00	13.50	clay shale
	19MW38A	30-Oct-2019	-	-	0.80	14.75	13.40	-	8.90	13.40	-	-	8.60	13.50	clay shale
	15MW35A	28-Jul-2015	688.46	689.32	0.84	14.55	13.71	674.77	11.70	13.71	676.76	674.75	11.50	13.71	clay shale
	15MW36A	28-Jul-2015	687.05	687.95	0.61	15.81	15.20	672.13	12.70	15.20	674.35	671.85	12.40	15.20	clay shale
Lower Bedrock 2 Wells	15MW35-Deep	28-Jul-2015	688.43	689.32	0.91	33.41	32.50	655.91	31.00	32.50	657.43	655.93	29.70	32.50	sandstone
	15MW36-Deep	21-Jul-2015	687.03	687.79	0.43	36.36	35.93	651.42	33.60	35.93	653.43	651.10	33.30	35.93	sandstone

Notes:
Monitoring well network re-surveyed on July 30, 2015.
m AMSL - metres above mean sea level.
mbgl - metres below ground level.
m BTOP - metres below top of pipe.

Table 3a: Groundwater Monitoring Results - Surficial Materials

Monitoring Well	UTM Coordinates		Elevations		Measured Stick-up (m)	Well Depth (mbgl)	Screened Interval		Date	Water Depth		Groundwater Elevation (mAMSL)
	Easting	Northing	Surface (mAMSL)	Top of Pipe (mAMSL)			Top Screen Depth (mbgl)	Bottom Screen Depth (mbgl)		mBTOP	mbgl	
MW9 Decommissioned July 2018	-	-	686.97	687.47	0.42	4.93	3.43	4.93	Apr-91	2.51	2.09	684.96
									Oct-91	2.73	2.31	684.74
									Apr-92	2.26	1.84	685.21
									Oct-92	3.20	2.78	684.27
									Apr-93	3.20	2.78	684.27
									Oct-93	3.12	2.70	684.35
									Apr-94	3.54	3.12	683.93
									Oct-94	2.92	2.50	684.55
									Apr-95	2.46	2.04	685.01
									Oct-95	3.06	2.64	684.41
									Apr-96	2.74	2.32	684.73
									Oct-96	2.73	2.31	684.74
									Apr-97	2.61	2.19	684.86
									Oct-97	2.65	2.23	684.82
									Apr-98	2.84	2.42	684.63
									Oct-98	2.83	2.41	684.64
									Apr-99	2.75	2.33	684.72
									Oct-99	4.00	3.58	683.47
									Apr-00	3.45	3.03	684.02
									Oct-00	2.76	2.34	684.71
									Apr-01	3.55	3.13	683.92
									Oct-01	3.10	2.68	684.37
									Apr-02	3.80	3.38	683.67
									Oct-02	3.24	2.82	684.23
									Apr-03	3.56	3.14	683.91
									Oct-03	2.87	2.45	684.60
									Apr-04	3.28	2.86	684.19
									Oct-04	2.00	1.58	685.47
									Apr-05	2.99	2.57	684.48
									Oct-05	2.64	2.22	684.83
									Apr-06	3.59	3.17	683.88
									Oct-06	2.54	2.12	684.93
									Apr-07	2.47	2.05	685.00
									Oct-07	2.41	1.99	685.06
									May-08	2.41	1.99	685.06
									May-09	2.76	2.34	684.71
									Jun-11	2.76	2.34	684.71
									May-12	2.76	2.34	684.71
									Jun-13	1.83	1.41	685.64
									May-14	2.33	1.91	685.14
									May-15	2.12	1.70	685.35
									May-16	1.92	1.50	685.55
									May-17	1.45	1.03	686.02
									Jun-18	2.28	1.86	685.19
MW10	405422	5906714	687.44	687.96	0.38 0.43	3.49	1.99	3.49	Apr-91	2.56	2.18	685.40
									Oct-91	3.04	2.66	684.92
									Apr-92	Dry	-	-
									Oct-92	Dry	-	-
									Apr-93	Dry	-	-
									Oct-93	Dry	-	-
									Apr-94	Dry	-	-
									Oct-94	2.25	1.87	685.71
									Apr-95	Dry	-	-
									Oct-95	2.30	1.92	685.66
									Apr-96	Dry	-	-
									Oct-96	2.07	1.69	685.89
									Apr-97	1.80	1.42	686.16
									Oct-97	1.90	1.52	686.06
									Apr-98	2.37	1.99	685.59
									Oct-98	2.16	1.78	685.80
									Apr-99	2.05	1.67	685.91
									Oct-99	2.25	1.87	685.71
									Apr-00	Dry	-	-
									Oct-00	2.25	1.87	685.71
									Apr-01	Dry	-	-
									Oct-01	2.33	1.95	685.63
									Apr-02	Dry	-	-
									Oct-02	2.48	2.10	685.48
									Apr-03	Dry	-	-
									Oct-03	2.22	1.84	685.74
									Apr-04	2.58	2.20	685.38
									Oct-04	2.13	1.75	685.82
									Apr-05	2.01	1.63	685.95
									Oct-05	1.76	1.38	686.20
									Apr-06	2.33	1.95	685.63
									Oct-06	1.98	1.60	685.98
									Apr-07	1.63	1.25	686.32
									Oct-07	1.78	1.40	686.18
									May-08	1.78	1.40	686.18
									May-09	2.25	1.87	685.71
									Jun-10	2.29	1.91	685.67
									Jun-11	2.25	1.87	685.71
									May-12	2.25	1.87	685.71
									Jun-13	1.85	1.47	686.11
									May-14	2.20	1.82	685.76
									May-15	1.82	1.44	686.13
									May-16	2.06	1.68	685.89
									May-17	1.31	0.93	686.64
									Jun-18	1.95	1.57	686.01
									Jun-19	1.71	1.33	686.25
									May-20	1.64	1.26	686.31
									Jun-21	1.46	1.03	686.50
									Jun-22	1.38	0.95	686.58
MW18B	404791.4	5906705.4	687.12	687.85	0.74	5.27	2.27	5.27	Oct-96	1.91	1.18	685.94
									Apr-97	2.60	1.87	685.25
									Oct-97	2.26	1.53	685.59
									Apr-98	2.80	2.07	685.05
									Oct-98	2.28	1.55	685.57
									Apr-99	2.50	1.77	685.35
									Oct-99	2.55	1.82	685.30
									Apr-00	2.93	2.20	684.92
									Oct-00	2.42	1.69	685.43
									Apr-01	2.96	2.23	684.89
									Oct-01	2.59	1.86	685.26
									Apr-02	3.10	2.37	684.75
									Oct-02	2.90	2.17	684.95
									Apr-03	3.36	2.63	684.49
									Oct-03	2.47	1.74	685.38
									Apr-04	2.85	2.12	685.00
									Oct-04	2.37	1.64	685.48
									Apr-05	2.68	1.95	685.17
									Oct-05	2.30	1.57	685.55
									Apr-06	2.68	1.95	685.17
									Oct-06	2.18	1.45	685.67
									Apr-07	2.55	1.82	685.30
									Oct-07	1.84	1.11	686.01
									May-08	1.84	1.11	686.01
									May-09	2.42	1.69	685.43
									Jun-10	2.46	1.72	685.40
									Jun-11	2.42	1.69	685.43
									May-12	2.42	1.69	685.43
									Jun-13	1.88	1.15	685.97
									May-14	1.83	1.09	686.03
									May-15	1.88	1.14	685.98
									May-16	2.05	1.32	685.80
									May-17	1.24	0.51	686.61
									Jun-18	1.53	0.79	686.33
									Jun-19	1.62	0.88	686.24
									May-20	1.15	0.41	686.71
									2-Jun-21	1.26	0.53	686.59
									Jun-22	1.86	1.125	685.99

Table 3a: Groundwater Monitoring Results - Surficial Materials

Monitoring Well	UTM Coordinates		Elevations		Measured Stick-up (m)	Well Depth (mbgl)	Screened Interval		Date	Water Depth		Groundwater Elevation (mAMSL)
	Easting	Northing	Surface (mAMSL)	Top of Pipe (mAMSL)			Top Screen Depth (mbgl)	Bottom Screen Depth (mbgl)		mBTOP	mbgl	
MW19B	404792	5906618	686.65	687.14	0.50	4.84	1.84	4.84	Oct-96	0.80	0.30	686.34
									Apr-97	1.80	1.30	685.34
									Oct-97	1.11	0.61	686.03
									Apr-98	1.81	1.31	685.33
									Oct-98	0.80	0.30	686.34
									Apr-99	1.55	1.05	685.59
									Oct-99	1.33	0.83	685.81
									Apr-00	1.96	1.46	685.18
									Oct-00	1.27	0.77	685.87
									Apr-01	Frozen		
									Oct-01	1.42	0.92	685.72
									Apr-02	1.96	1.46	685.18
									Oct-02	1.81	1.31	685.33
									Apr-03	2.22	1.72	684.92
									Oct-03	1.28	0.78	685.86
									Apr-04	1.66	1.16	685.48
									Oct-04	1.01	0.51	686.13
									Apr-05	1.34	0.84	685.80
									Oct-05	1.03	0.53	686.11
									Apr-06	1.45	0.95	685.69
									Oct-06	0.94	0.44	686.20
									Apr-07	1.01	0.51	686.13
									Oct-07	0.80	0.30	686.34
									May-08	0.80	0.30	686.34
									May-09	1.27	0.77	685.87
									Jun-10	1.42	0.93	685.71
									Jun-11	1.27	0.77	685.87
									May-12	1.27	0.77	685.87
									Jun-13	1.14	0.65	685.99
									May-14	1.08	0.59	686.05
									May-15	1.11	0.61	686.03
									May-16	1.38	0.89	685.75
									May-17	0.89	0.39	686.25
					0.35				Jun-18	1.21	0.87	685.93
									Jun-19	1.24	0.89	685.90
									May-20	0.82	0.47	686.32
					0.31				Jun-21	0.86	0.51	686.28
					0.35				Jun-22	1.14	0.79	686.00
MW20B	404789	5906514	688.92	689.65	0.71	4.40	1.40	4.40	Oct-96	3.86	3.15	685.79
									Apr-97	4.32	3.61	685.33
									Oct-97	3.52	2.81	686.13
									Apr-98	4.14	3.43	685.51
									Oct-98	3.15	2.44	686.50
									Apr-99	4.09	3.38	685.56
									Oct-99	3.69	2.98	685.96
									Apr-00	4.36	3.65	685.29
									Oct-00	3.65	2.94	686.00
									Apr-01	4.39	3.68	685.26
									Oct-01	3.79	3.08	685.86
									Apr-02	4.43	3.72	685.22
									Oct-02	4.10	3.39	685.55
									Apr-03	4.67	3.96	684.98
									Oct-03	3.73	3.02	685.92
									Apr-04	4.18	3.47	685.47
									Oct-04	3.49	2.78	686.16
									Apr-05	3.88	3.17	685.77
									Oct-05	3.40	2.69	686.25
									Apr-06	4.11	3.40	685.54
									Oct-06	3.30	2.59	686.35
									Apr-07	3.48	2.77	686.17
									Oct-07	3.28	2.57	686.37
									May-08	3.28	2.57	686.37
									May-09	3.65	2.94	686.00
									Jun-10	3.99	3.28	685.66
									Jun-11	3.65	2.94	686.00
									May-12	3.65	2.94	686.00
									Jun-13	3.82	3.11	685.84
									May-14	3.66	2.95	685.99
									May-15	3.77	3.06	685.88
									May-16	3.91	3.20	685.74
									May-17	3.38	2.67	686.28
					0.64				Jun-18	3.75	3.11	685.91
									Jun-19	3.77	3.13	685.89
									May-20	3.31	2.67	686.34
					0.70				Jun-21	3.17	2.47	686.48
									Jun-22	3.49	2.79	686.17
MW21B	404786.1	5906389.7	687.54	688.55	0.97	5.11	2.11	5.11	Oct-98	2.08	1.11	686.47
									Apr-99	2.88	1.91	685.67
									Oct-99	2.55	1.58	686.00
									Apr-00	3.24	2.27	685.31
									Oct-00	2.51	1.54	686.04
									Apr-01	3.20	2.23	685.35
									Oct-01	2.67	1.70	685.88
									Apr-02	3.41	2.44	685.14
									Oct-02	3.11	2.14	685.44
									Apr-03	3.58	2.61	684.97
									Oct-03	2.72	1.75	685.83
									Apr-04	3.25	2.28	685.30
									Oct-04	2.49	1.52	686.06
									Apr-05	2.93	1.96	685.62
									Oct-05	2.36	1.39	686.19
									Apr-06	3.06	2.09	685.49
									Oct-06	2.28	1.31	686.27
									Apr-07	2.52	1.55	686.03
									Oct-07	2.19	1.22	686.36
									May-08	2.19	1.22	686.36
									May-09	2.51	1.54	686.04
									Jun-10	2.84	1.87	685.71
									Jun-11	2.51	1.54	686.04
									May-12	2.51	1.54	686.04
									Jun-13	2.93	1.96	685.62
									May-14	3.01	2.04	685.54
									May-15	3.09	2.12	685.46
									May-16	3.28	2.31	685.27
									May-17	2.99	2.02	685.56
									Jun-18	2.94	1.97	685.60
									Jun-19	2.96	1.99	685.59
									May-20	2.47	1.50	686.08
					0.89				Jun-21	2.38	1.42	686.17
					0.96				Jun-22	2.69	1.73	685.86

Table 3a: Groundwater Monitoring Results - Surficial Materials

Monitoring Well	UTM Coordinates		Elevations		Measured Stick-up (m)	Well Depth (mbgl)	Screened Interval		Date	Water Depth		Groundwater Elevation (mAMSL)
	Easting	Northing	Surface (mAMSL)	Top of Pipe (mAMSL)			Top Screen Depth (mbgl)	Bottom Screen Depth (mbgl)		mBTOP	mbgl	
MW22B	404852.8	5906350.6	687.81	688.70	0.87	5.22	2.22	5.22	Oct-98	2.41	1.54	686.29
									Apr-99	2.99	2.12	685.71
									Oct-99	2.83	1.96	685.87
									Apr-00	3.38	2.51	685.32
									Oct-00	2.74	1.87	685.96
									Apr-01	3.34	2.47	685.36
									Oct-01	2.91	2.04	685.79
									Apr-02	3.60	2.73	685.10
									Oct-02	3.40	2.53	685.30
									Apr-03	3.74	2.87	684.96
									Oct-03	2.93	2.06	685.77
									Apr-04	3.39	2.52	685.31
									Oct-04	2.64	1.77	686.06
									Apr-05	2.99	2.12	685.71
									Oct-05	2.53	1.66	686.17
									Apr-06	3.15	2.28	685.55
									Oct-06	2.47	1.60	686.23
									Apr-07	2.52	1.65	686.18
									Oct-07	2.34	1.47	686.36
									May-08	2.34	1.47	686.36
									May-09	2.74	1.87	685.96
									Jun-10	2.58	1.71	686.12
									Jun-11	2.74	1.87	685.96
									May-12	2.74	1.87	685.96
									Jun-13	3.08	2.21	685.62
									May-14	3.14	2.27	685.56
									May-15	3.28	2.41	685.43
									May-16	3.50	2.63	685.20
									May-17	3.23	2.36	685.47
									Jun-18	3.09	2.22	685.62
									Jun-19	3.10	2.23	685.61
									May-20	2.99	2.12	685.72
					0.89				May-21	2.46	1.59	686.24
					0.87				Jun-22	2.77	1.90	685.93
MW24B Decommissioned July 2018	-	-	688.86	689.63	0.70	5.38	2.38	5.38	Oct-04	3.50	2.81	686.13
									Apr-05	3.76	3.07	685.87
									Oct-05	3.33	2.64	686.30
									Apr-06	3.95	3.26	685.68
									Oct-06	3.16	2.46	686.48
									Apr-07	3.34	2.64	686.30
									Oct-07	2.88	2.18	686.76
									May-08	2.88	2.18	686.76
									May-09	3.42	2.72	686.21
									Jun-10	3.22	2.53	686.41
									Jun-11	2.47	1.77	687.16
									May-12	2.61	1.91	687.02
									Jun-13	2.85	2.16	686.78
									May-14	3.81	3.11	685.82
									May-15	2.74	2.05	686.89
									May-16	2.55	1.86	687.08
									May-17	2.49	1.80	687.14
					0.63				Jun-18	2.68	2.05	686.96
MW29B	405411.1	5906365.2	688.13	688.93	0.78	4.67	3.17	4.67	May-15	3.97	3.19	684.95
									May-16	2.83	2.05	686.10
									May-17	2.92	2.14	686.01
									Jun-18	2.23	1.45	686.70
									Jun-19	2.91	2.13	686.02
									May-20	2.71	1.93	686.22
					0.77				May-21	3.13	2.34	685.79
					0.79				Jun-22	2.65	1.86	686.28
MW30B	405485.0	5906376.1	688.52	689.31	0.75	4.70	3.20	4.70	May-15	4.41	3.66	684.90
									May-16	3.51	2.76	685.80
									May-17	3.44	2.69	685.87
									Jun-18	3.68	2.93	685.63
									Jun-19	3.41	2.66	685.90
									May-20	3.27	2.52	686.04
					0.82				May-21	3.44	2.67	685.87
					0.77				Jun-22	3.20	2.43	686.11
MW31B	405536.5	5906465.0	686.40	687.17	0.73	3.19	1.69	3.19	May-15	2.46	1.73	684.71
									May-16	2.23	1.50	684.95
									May-17	2.10	1.37	685.07
					0.53				Jun-18	2.12	1.59	685.05
									Jun-19	1.74	1.21	685.43
									May-20	1.41	0.88	685.76
					0.54				May-21	1.89	1.33	685.29
					0.56				Jun-22	1.46	0.90	685.71
MW32B	405529.2	5906577.5	686.54	687.23	0.68	4.20	2.70	4.20	May-15	2.54	1.86	684.68
									May-16	2.33	1.65	684.90
									May-17	2.31	1.63	684.91
									Jun-18	2.37	1.69	684.86
									Jun-19	1.93	1.25	685.30
									May-20	1.59	0.91	685.64
					0.62				May-21	2.08	1.41	685.15
					0.67				Jun-22	1.57	0.90	685.66
MW33B	405513.05	5906661.242	686.94	687.87	0.90	4.61	3.11	4.61	Aug-15	1.65	0.75	686.21
									May-16	1.60	0.70	686.27
									May-17	1.40	0.50	686.47
									Jun-18	1.73	0.83	686.14
									Jun-19	1.69	0.79	686.18
									May-20	1.54	0.64	686.33
					0.97				May-21	1.57	0.58	686.29
					0.99				Jun-22	1.57	0.58	686.30
15MW34B Decommissioned July 2018	405099.2	5906742.3	687.97	688.96	0.99	4.80	3.20	4.80	Aug-15	5.79	4.80	683.17
									May-16	3.07	2.08	685.89
									May-17	2.73	1.74	686.23
									Jun-18	3.56	2.57	685.40
15MW35C	404801.2	5906265.6	688.53	689.50	0.94	3.25	2.00	3.25	Aug-15	3.82	2.88	685.68
									May-16	Dry	-	
									May-17	Dry	-	
									Jun-18	4.04	3.10	685.46
									Jun-19	3.95	3.01	685.55
									May-20	Dry	-	
									Jun-22	3.56	2.62	685.94
19MW37B	1261.99	1003.8	685.98	686.99	0.84	4.691	1.691	4.691	Jun-19	1.44	0.60	685.55
									May-20	1.42	0.58	685.57
					0.88				Jun-21	1.32	0.35	685.67
					0.97				Jun-22	1.15	0.18	685.84
19MW38B	1459.7	995.98	687.02	687.96	0.94	4.661	1.661	4.661	Jun-19	1.26	0.32	686.71
									May-20	1.97	1.03	685.99
					0.95				Jun-21	1.59	0.67	686.38
					0.92				Jun-22	1.88	0.96	686.08

Notes:
Monitoring well network re-surveyed on July 30, 2015.
mAMSL - metres above mean sea level.
mbgl - metres below ground level.
mBTOP - metres below top of pipe.
-' - no information available.

Table 3b: Groundwater Monitoring Results - Upper Sandstone

Monitoring Well	UTM Coordinates		Elevations		Measured Stick-up (m)	Well Depth (mbgl)	Screened Interval		Date	Water Depth		Groundwater Elevation (mAMSL)
	Easting	Northing	Surface (mAMSL)	Top of Pipe (mAMSL)			Top Screen Depth (mbgl)	Bottom Screen Depth (mbgl)		mBTOP	mbgl	
MW1C	404794.2	5906756.1	687.64	688.61	0.94	5.51	4.01	5.51	May-12	3.37	2.43	685.24
									Jun-13	6.20	5.26	682.41
									May-14	2.88	1.94	685.73
									May-15	2.99	2.05	685.62
									May-16	3.46	2.52	685.15
									May-17	2.49	1.55	686.12
									Jun-18	3.15	2.21	685.46
									Jun-19	3.136	2.20	685.47
									May-20	2.39	1.45	686.22
					0.92				Jun-21	2.484	1.54	686.13
					0.94				Jun-22	2.87	1.93	685.74
MW5A Decommissioned July 2018	405028.0	5906686.8	688.28	689.17	0.90	6.74	5.24	6.74	Apr-91	4.00	3.10	685.17
									Oct-91	3.73	2.83	685.44
									Apr-92	4.12	3.22	685.05
									Oct-92	4.13	3.23	685.04
									Apr-93	4.40	3.50	684.77
									Oct-93	4.68	3.78	684.49
									Apr-94	4.92	4.02	684.25
									Oct-94	4.14	3.24	685.03
									Apr-95	4.42	3.52	684.75
									Oct-95	4.25	3.35	684.92
									Apr-96	5.00	4.10	684.17
									Apr-97	3.42	2.52	685.75
									Oct-97	3.20	2.30	685.97
									Apr-98	3.63	2.73	685.54
									36069.00	3.42	2.52	685.75
									Apr-99	3.41	2.51	685.76
									Oct-99	3.56	2.66	685.61
									Apr-00	3.84	2.94	685.33
									Oct-00	3.16	2.26	686.01
									Apr-01	3.59	2.69	685.58
									Oct-01	3.51	2.61	685.66
									Apr-02	4.10	3.20	685.07
									Oct-02	4.03	3.13	685.14
									Apr-03	4.34	3.44	684.83
									Oct-03	3.68	2.78	685.49
									Apr-04	4.31	3.41	684.86
									Oct-04	3.54	2.64	685.63
									Apr-05	3.80	2.90	685.37
									Oct-05	3.29	2.39	685.88
									Apr-06	3.93	3.03	685.24
									Oct-06	4.33	3.43	684.84
									Apr-07	2.86	1.96	686.31
									Oct-07	3.85	2.95	685.32
									May-08	3.85	2.95	685.32
									May-09	3.16	2.26	686.01
									Jun-10	3.78	2.88	685.39
									Jun-11	3.16	2.26	686.01
									May-12	3.16	2.26	686.01
									Jun-13	3.85	2.95	685.32
									May-14	4.06	3.16	685.11
									May-15	2.21	1.31	686.96
									May-16	3.38	2.48	685.79
									May-17	3.03	2.13	686.14
									Jun-18	3.61	2.71	685.57
MW8B	405329.3	5906650.0	686.82	687.69	0.85	4.57	3.07	4.57	Jun-13	1.46	0.61	686.23
									May-14	2.30	1.45	685.39
									May-15	1.84	0.99	685.86
									May-16	1.56	0.71	686.13
									May-17	1.43	0.58	686.27
									Jun-18	1.76	0.91	685.93
									Jun-19	1.24	0.39	686.45
									May-20	1.30	0.45	686.39
					0.88				Jun-21	1.22	0.32	686.47
					0.90				Jun-22	1.36	0.46	686.33
MW11	405514.5	5906740.3	687.95	688.37	0.42	5.83	4.33	5.83	Apr-91	2.75	2.33	685.62
									Oct-91	3.51	3.09	684.86
									Apr-92	3.06	2.64	685.31
									Oct-92	2.96	2.54	685.41
									Apr-93	3.22	2.80	685.15
									Oct-93	2.84	2.42	685.53
									Apr-94	3.01	2.59	685.36
									Oct-94	2.52	2.10	685.85
									Apr-95	3.01	2.59	685.36
									Oct-95	2.57	2.15	685.80
									Apr-96	2.88	2.46	685.49
									Oct-96	3.10	2.68	685.27
									Apr-97	1.84	1.42	686.53
									Oct-97	2.24	1.82	686.13
									Apr-98	2.59	2.18	685.78
									Oct-98	2.42	2.00	685.95
									Apr-99	2.29	1.87	686.08
									Oct-99	2.56	2.14	685.81
									Apr-00	3.00	2.58	685.37
									Oct-00	2.41	1.99	685.96
									Apr-01	3.12	2.70	685.25
									Oct-01	2.60	2.18	685.77
									Apr-02	3.18	2.76	685.19
									Oct-02	2.87	2.45	685.50
									Apr-03	3.12	2.70	685.25
									Oct-03	2.41	1.99	685.96
									Apr-04	3.38	2.96	684.99
									Oct-04	2.24	1.82	686.13
									Apr-05	2.45	2.03	685.92
									Oct-05	2.90	2.48	685.47
									Apr-06	3.00	2.58	685.37
									Oct-06	2.53	2.11	685.84
									Apr-07	1.96	1.54	686.41
									Oct-07	1.99	1.57	686.38
									May-08	1.99	1.57	686.38
									May-09	2.41	1.99	685.96
									Jun-10	2.69	2.27	685.68
									Jun-11	2.41	1.99	685.96
									May-12	2.41	1.99	685.96
									Jun-13	2.35	1.93	686.02
									May-14	2.48	2.07	685.89
									May-15	2.31	1.89	686.06
									May-16	2.47	2.05	685.90
									May-17	1.73	1.31	686.64
					0.32				Jun-18	2.57	2.25	685.80
									Jun-19	2.26	1.94	686.11
									May-20	1.88	1.56	686.49
					0.36				Jun-21	1.77	1.38	686.60
					0.39				Jun-22	1.81	1.42	686.56

Table 3b: Groundwater Monitoring Results - Upper Sandstone

Monitoring Well	UTM Coordinates		Elevations		Measured Stick-up (m)	Well Depth (mbgl)	Screened Interval		Date	Water Depth		Groundwater Elevation (mAMSL)
	Easting	Northing	Surface (mAMSL)	Top of Pipe (mAMSL)			Top Screen Depth (mbgl)	Bottom Screen Depth (mbgl)		mBTOP	mbgl	
MW12A			686.62	687.13	0.39	5.78	4.28	5.78	Apr-91	1.06	0.67	686.07
									Oct-91	1.76	1.37	685.37
									Apr-92	1.52	1.13	685.61
									Oct-92	1.43	1.04	685.70
									Apr-93	1.71	1.32	685.42
									Oct-93	2.18	1.79	684.95
									Apr-94	2.37	1.98	684.76
									Oct-94	1.57	1.18	685.56
									Apr-95	1.79	1.40	685.34
									Oct-95	2.14	1.75	684.99
									Apr-96	2.41	2.02	684.72
									Oct-96	1.56	1.17	685.57
									Apr-97	1.33	0.94	685.80
									Oct-97	0.93	0.54	686.20
									Apr-98	1.34	0.95	685.79
									Oct-98	1.14	0.75	685.99
									Apr-99	1.29	0.90	685.84
									Oct-99	1.26	0.87	685.87
									Apr-00	1.62	1.23	685.51
									Oct-00	1.12	0.73	686.01
									Apr-01	1.59	1.20	685.54
									Oct-01	1.41	1.02	685.72
									Apr-02	1.80	1.41	685.33
									Oct-02	1.88	1.49	685.25
									Apr-03	2.13	1.74	685.00
									Oct-03	1.53	1.14	685.60
									Apr-04	1.96	1.57	685.17
									Oct-04	1.45	1.06	685.68
									Apr-05	1.45	1.06	685.68
									Oct-05	0.98	0.59	686.15
									Apr-06	1.66	1.27	685.47
									Oct-06	1.19	0.80	685.94
									Apr-07	0.93	0.54	686.20
									Oct-07	0.72	0.33	686.41
									May-08	0.72	0.33	686.41
									May-09	1.12	0.73	686.01
									Jun-10	2.06	1.67	685.07
									Jun-11	1.12	0.73	686.01
									May-12	1.12	0.73	686.01
									Jun-13	1.54	1.15	685.59
									May-14	1.69	1.30	685.44
									May-15	1.47	1.08	685.67
									May-16	1.74	1.35	685.40
									May-17	1.20	0.81	685.93
					0.34				Jun-18	2.99	2.65	684.14
									Jun-19	2.15	1.81	684.98
									May-20	1.71	1.36	685.43
					0.10				Jun-21	1.57	1.42	685.56
					0.15				Jun-22	1.76	1.61	685.37
MW14 Decommissioned July 2018			686.52	687.56	0.94	6.14	4.64	6.14	Oct-92	3.20	2.26	684.36
									Apr-93	2.78	1.84	684.78
									Oct-93	3.14	2.20	684.42
									Apr-94	3.37	2.43	684.19
									Oct-94	2.95	2.01	684.61
									Apr-95	3.12	2.18	684.44
									Oct-95	3.24	2.30	684.32
									Apr-96	3.49	2.55	684.07
									Oct-96	2.70	1.76	684.86
									Apr-97	2.45	1.51	685.11
									Oct-97	2.92	1.98	684.64
									Apr-98	2.61	1.68	684.95
									Oct-98	2.87	1.93	684.69
									Apr-99	2.57	1.63	684.99
									Oct-99	3.25	2.31	684.31
									Apr-00	3.20	2.26	684.36
									Oct-00	2.83	1.89	684.73
									Apr-01	3.48	2.54	684.08
									Oct-01	3.25	2.31	684.31
									Apr-02	3.83	2.89	683.73
									Oct-02	3.19	2.25	684.37
									Apr-03	3.29	2.35	684.27
									Oct-03	2.86	1.92	684.70
									Apr-04	2.94	2.00	684.62
									Oct-04	3.10	2.16	684.46
									Apr-05	3.03	2.09	684.53
									Oct-05	3.34	2.40	684.22
									Apr-06	3.60	2.66	683.96
									Oct-06	2.98	2.04	684.58
									Apr-07	2.76	1.82	684.80
									Oct-07	3.19	2.25	684.37
									May-08	3.19	2.25	684.37
									May-09	2.83	1.89	684.73
									Jun-10	2.07	1.13	685.49
									Jun-11	2.83	1.89	684.73
									May-12	2.83	1.89	684.73
									Jun-13	2.28	1.34	685.28
									May-14	2.18	1.25	685.38
									May-15	2.70	1.77	684.86
									May-16	1.63	0.70	685.92
									May-17	1.75	0.82	685.81
									Jun-18	2.67	1.73	684.89
MW23B	404898.2	5906361.0	686.48	687.38	0.86	4.50	1.50	4.50	Oct-98	1.21	0.35	686.17
									Oct-99	1.72	0.86	685.66
									Apr-00	2.16	1.30	685.22
									Oct-00	1.60	0.74	685.78
									Apr-01	2.27	1.41	685.11
									Oct-01	1.75	0.89	685.63
									Apr-02	2.45	1.59	684.93
									Oct-02	2.19	1.33	685.19
									Apr-03	2.60	1.74	684.78
									Oct-03	1.79	0.93	685.59
									Apr-04	2.10	1.24	685.28
									Oct-04	1.38	0.52	686.00
									Apr-05	1.76	0.90	685.62
									Oct-05	1.60	0.74	685.78
									Apr-06	3.88	3.02	683.50
									Oct-06	1.46	0.60	685.92
									Apr-07	2.25	1.39	685.13
									Oct-07	1.10	0.24	686.28
									May-08	1.10	0.24	686.28
									May-09	1.60	0.74	685.78
									Jun-10	1.65	0.80	685.72
									Jun-11	1.60	0.74	685.78
									May-12	1.60	0.74	685.78
									Jun-13	1.61	0.75	685.77
									May-14	1.58	0.72	685.80
									May-15	1.66	0.81	685.71
									May-16	1.94	1.09	685.44
									May-17	1.70	0.85	685.67
									Jun-18	1.58	0.72	685.80
									Jun-19	1.64	0.79	685.73
									May-20	1.54	0.69	685.83
					0.90				May-21	1.11	0.17	686.27
					0.94				Jun-22	1.41	0.47	685.97

Table 3b: Groundwater Monitoring Results - Upper Sandstone

Monitoring Well	UTM Coordinates		Elevations		Measured Stick-up (m)	Well Depth (mbgl)	Screened Interval		Date	Water Depth		Groundwater Elevation (mAMSL)
	Easting	Northing	Surface (mAMSL)	Top of Pipe (mAMSL)			Top Screen Depth (mbgl)	Bottom Screen Depth (mbgl)		mBTOP	mbgl	
MW25B	404968.9	5906383.6	686.91	687.48	0.59	5.51	2.51	5.51	Oct-04	1.32	0.73	686.16
									Apr-05	1.78	1.19	685.70
									Oct-05	1.27	0.68	686.21
									Apr-06	1.95	1.36	685.53
									Oct-06	1.37	0.78	686.11
									Apr-07	1.17	0.58	686.31
									Oct-07	0.86	0.27	686.62
									May-08	0.86	0.27	686.62
									May-09	1.56	0.97	685.92
									Jun-10	1.53	0.94	685.96
									Jun-11	1.16	0.57	686.32
									May-12	1.17	0.58	686.31
									Jun-13	1.46	0.87	686.03
									May-14	1.36	0.77	686.13
									May-15	1.65	1.06	685.83
									May-16	1.90	1.31	685.58
									May-17	1.68	1.09	685.80
					0.36				Jun-18	1.63	1.27	685.85
									Jun-19	1.67	1.31	685.82
									May-20	1.52	1.16	685.97
					0.41				May-21	1.17	0.75	686.32
					0.42				Jun-22	1.43	1.01	686.05
MW26B	405056.1	5906389.5	687.14	687.63	0.49	5.56	2.56	5.56	Oct-04	1.63	1.14	686.00
									Apr-05	2.11	1.62	685.52
									Oct-05	1.63	1.14	686.00
									Apr-06	2.27	1.78	685.36
									Oct-06	1.64	1.16	685.99
									Apr-07	1.54	1.06	686.09
									Oct-07	0.99	0.51	686.64
									May-08	0.99	0.51	686.64
									May-09	1.77	1.28	685.86
									Jun-10	1.74	1.25	685.89
									Jun-11	1.32	0.83	686.31
									May-12	1.27	0.79	686.36
									Jun-13	1.47	0.99	686.16
									May-14	0.67	0.18	686.96
									May-15	1.68	1.20	685.94
									May-16	1.99	1.51	685.64
									May-17	1.64	1.16	685.98
					0.42				Jun-18	1.83	1.41	685.80
									Jun-19	1.81	1.39	685.81
									May-20	2.57	2.15	685.06
					0.45				May-21	1.29	0.73	686.34
					0.56				Jun-22	1.52	0.96	686.11
MW27B	405212.0	5906397.2	686.50	687.15	0.63	5.98	2.98	5.98	Oct-07	0.90	0.27	686.25
									May-08	0.90	0.27	686.25
									May-09	1.88	1.25	685.26
									Jun-10	1.62	0.99	685.53
									Jun-11	1.08	0.45	686.07
									May-12	0.36	-0.27	686.79
									Jun-13	2.77	2.14	684.38
									May-14	0.68	0.05	686.47
									May-15	1.00	0.37	686.15
									May-16	1.17	0.54	685.98
									May-17	0.96	0.33	686.19
									Jun-18	1.29	0.66	685.86
									Jun-19	1.10	0.47	686.05
									May-20	0.88	0.25	686.27
					0.65				May-21	0.99	0.35	686.16
					0.64				Jun-22	0.91	0.27	686.24
MW28B	405317.2	5906379.9	687.44	687.97	0.52	6.57	3.57	6.57	Jun-13	2.77	2.25	685.20
									May-14	2.59	2.07	685.38
									May-15	2.39	1.87	685.58
									May-16	2.13	1.61	685.84
									May-17	1.85	1.33	686.13
									Jun-18	2.07	1.55	685.91
									Jun-19	1.91	1.40	686.06
									May-20	1.64	1.12	686.33
					0.51				May-21	2.04	1.52	685.94
					0.52				Jun-22	1.75	1.23	686.22
MW29A	405409.4	5906365.0	688.06	688.89	0.82	9.42	7.92	9.42	May-15	3.96	3.14	684.93
									May-16	2.91	2.09	685.98
									May-17	2.88	2.06	686.01
					0.87				Jun-18	2.19	1.32	686.70
									Jun-19	2.83	1.96	686.06
									May-20	2.65	1.78	686.23
					0.84				May-21	3.15	2.36	685.74
					0.79				Jun-22	2.59	1.80	686.30
MW30A	405483.7	5906375.1	688.57	689.37	0.76	8.15	6.15	8.15	May-15	4.51	3.75	684.87
									May-16	3.42	2.66	685.95
									May-17	3.48	2.72	685.90
									Jun-18	2.73	1.97	686.65
									Jun-19	3.41	2.65	685.96
									May-20	3.24	2.48	686.13
					0.76				May-21	3.69	2.91	685.68
					0.78				Jun-22	3.20	2.42	686.17
MW31A	405537.6	5906464.6	686.38	687.12	0.69	9.07	7.07	9.07	May-15	2.05	1.37	685.07
									May-16	2.80	2.11	684.32
									May-17	2.41	1.73	684.71
					0.48				Jun-18	2.40	1.92	684.72
									Jun-19	2.40	1.92	684.73
									May-20	2.26	1.78	684.86
					0.61				May-21	2.23	1.69	684.89
					0.54				Jun-22	1.99	1.45	685.13
MW33A	405513.1	5906661.2	686.92	687.93	0.92	13.20	11.20	13.20	May-15	2.41	1.49	685.52
									May-16	2.30	1.39	685.63
									May-17	2.11	1.20	685.82
									Jun-18	2.17	1.25	685.77
									Jun-19	2.11	1.20	685.82
									May-20	2.56	1.65	685.37
					0.89				May-21	2.45	1.51	685.49
					0.94				Jun-22	2.05	1.11	685.88
15MW35B	404801.2	5906265.6	688.47	689.40	0.81	7.17	5.50	7.17	Aug-15	6.34	5.53	683.06
									May-16	4.78	3.97	684.62
									May-17	4.45	3.64	684.95
									Jun-18	4.02	3.21	685.38
									Jun-19	3.92	3.11	685.47
									May-20	4.01	3.20	685.39
					0.83				Jun-21	3.27	2.46	686.13
					0.81				Jun-22	3.48	2.67	685.92
19MW37A	1260.72	1003.78	686	686.94	0.9	13.419	10.419	13.419	Jun-19	2.465	1.57	684.48
									May-20	1.194	0.29	685.75
					0.89				Jun-21	1.132	0.24	685.81
					0.91				Jun-22	1.25	0.34	685.69
19MW38A	1456.1	995.81	687.09	687.97	0.87	14.773	11.773	14.773	Jun-19	1.338	0.47	686.63
									May-20	1.872	1.00	686.10
					0.80				Jun-21	1.604	0.73	686.37
					0.89				Jun-22	1.91	1.91	686.06

Notes:
Monitoring well network re-surveyed on July 30, 2015.
mAMSL - metres above mean sea level.
mbgl - metres below ground level.
mBTOP - metres below top of pipe.
-' - no information available.

Table 3c: Groundwater Monitoring Results - Clay Shale

Monitoring Well	UTM Coordinates		Elevations		Measured Stick-up (m)	Well Depth (mbgl)	Screened Interval		Date	Water Depth		Groundwater Elevation (mAMSL)
	Easting	Northing	Surface (mAMSL)	Top of Pipe (mAMSL)			Top Screen Depth (mbgl)	Bottom Screen Depth (mbgl)		mBTOP	mbgl	
MW1B	404796.9	5906757.0	687.82	688.70	0.87	9.86	8.36	9.86	Oct-96	4.99	4.13	683.71
									Apr-97	3.58	2.72	685.12
									Oct-97	3.60	2.74	685.10
									Apr-98	4.49	3.63	684.21
									Oct-98	3.68	2.82	685.02
									Apr-99	3.96	3.10	684.74
									Oct-99	3.64	2.78	685.06
									Apr-00	4.25	3.39	684.45
									Oct-00	3.68	2.82	685.02
									Apr-01	4.18	3.31	684.53
									Oct-01	3.84	2.98	684.86
									Apr-02	3.93	3.07	684.77
									Oct-02	4.15	3.29	684.55
									Apr-03	4.32	3.46	684.38
									Oct-03	3.81	2.95	684.89
									Apr-04	4.12	3.26	684.58
									Oct-04	3.69	2.83	685.01
									Apr-05	3.92	3.06	684.78
									Oct-05	3.34	2.48	685.36
									Apr-06	3.86	3.00	684.84
									Oct-06	3.69	2.83	685.01
									Apr-07	3.79	2.93	684.91
									Oct-07	3.97	3.11	684.73
									May-08	3.97	3.11	684.73
									May-09	3.68	2.82	685.02
									Jun-10	4.16	3.30	684.54
									Jun-11	3.68	2.82	685.02
									May-12	3.68	2.82	685.02
									Jun-13	3.72	2.86	684.98
									May-14	3.80	2.94	684.90
									May-15	3.65	2.78	685.06
									May-16	3.87	3.00	684.83
									May-17	3.53	2.66	685.17
									Jun-18	3.63	2.76	685.07
									Jun-19	4.00	3.13	684.70
									May-20	3.30	2.43	685.40
					0.77				Jun-21	3.22	2.39	685.48
					0.83				Jun-22	3.74	2.91	684.96
MW5B Decommissioned July 2018	-	-	688.25	689.10	0.83	9.69	8.19	9.69	Oct-96	10.55	9.72	678.55
									Apr-97	7.96	7.13	681.14
									Oct-97	7.13	6.30	681.97
									Apr-98	6.72	5.89	682.38
									Oct-98	7.05	6.22	682.05
									Apr-99	6.87	6.04	682.23
									Oct-99	7.45	6.62	681.65
									Apr-00	7.17	6.34	681.93
									Oct-00	8.28	7.45	680.82
									Apr-01	7.21	6.38	681.89
									Oct-01	8.07	7.24	681.03
									Apr-02	7.55	6.72	681.55
									Oct-02	8.36	7.53	680.74
									Apr-03	8.16	7.33	680.94
									Oct-03	8.04	7.21	681.06
									Apr-04	8.21	7.38	680.89
									Oct-04	7.71	6.88	681.39
									Apr-05	6.57	5.74	682.53
									Oct-05	6.69	5.86	682.41
									Apr-06	7.05	6.22	682.05
									Oct-06	7.25	6.42	681.85
									Apr-07	8.44	7.61	680.66
									Oct-07	10.50	9.67	678.60
									May-08	10.50	9.67	678.60
									May-09	8.28	7.45	680.82
									Jun-10	1.70	0.87	687.39
									Jun-11	8.28	7.45	680.82
									May-12	8.28	7.45	680.82
									Jun-13	3.23	2.40	685.87
									May-14	4.03	3.20	685.07
									May-15	4.83	4.00	684.27
									May-16	5.62	4.79	683.48
									May-17	4.76	3.93	684.34
					0.88				Jun-18	4.79	3.91	684.31
MW8A	405329.3	5906650.0	686.84	687.83	0.98	10.28	7.28	10.28	Jun-13	1.43	0.45	686.39
									May-14	2.05	1.07	685.78
									May-15	1.87	0.89	685.96
									May-16	1.76	0.78	686.06
									May-17	1.54	0.56	686.29
									Jun-18	1.92	0.94	685.90
									Jun-19	1.39	0.41	686.44
									May-20	2.94	1.96	684.88
					0.92				Jun-21	2.68	1.63	685.14
					1.05				Jun-22	0.51	-0.54	687.32
MW12B	404902.3	5906756.3	687.27	687.78	0.20	10.49	8.99	10.49	Oct-96	9.11	8.91	678.67
									Apr-97	2.56	2.36	685.22
									Oct-97	2.14	1.94	685.64
									Apr-98	2.59	2.39	685.19
									Oct-98	2.37	2.17	685.41
									Apr-99	2.64	2.44	685.14
									Oct-99	2.53	2.33	685.25
									Apr-00	2.89	2.69	684.89
									Oct-00	2.65	2.45	685.13
									Apr-01	2.86	2.66	684.92
									Oct-01	2.65	2.45	685.13
									Apr-02	3.03	2.83	684.75
									Oct-02	3.03	2.83	684.75
									Apr-03	3.35	3.15	684.43
									Oct-03	2.74	2.54	685.04
									Apr-04	3.11	2.91	684.67
									Oct-04	2.74	2.54	685.04
									Apr-05	2.72	2.52	685.06
									Oct-05	2.25	2.05	685.53
									Apr-06	2.78	2.58	685.00
									Oct-06	2.41	2.21	685.37
									Apr-07	2.75	2.55	685.03
									Oct-07	2.01	1.81	685.77
									May-08	2.01	1.81	685.77
									May-09	2.65	2.45	685.13
									Jun-10	2.65	2.45	685.12
									Jun-11	2.65	2.45	685.13
									May-12	2.65	2.45	685.13
									Jun-13	2.22	2.02	685.56
									May-14	2.38	2.18	685.40
									May-15	2.21	2.01	685.57
									May-16	2.53	2.33	685.24
									May-17	1.99	1.79	685.79
									Jun-18	1.88	1.61	685.90
					0.27				Jun-19	2.79	2.52	684.99
									May-20	2.41	2.14	685.37
									Jun-21	2.11	1.84	685.66
					0.24				Jun-22	2.30	2.03	685.48

Table 3c: Groundwater Monitoring Results - Clay Shale

Monitoring Well	UTM Coordinates		Elevations		Measured Stick-up (m)	Well Depth (mbgl	Screened Interval		Date	Water Depth		Groundwater Elevation (mAMSL)
	Easting	Northing	Surface (mAMSL)	Top of Pipe (mAMSL)			Top Screen Depth (mbgl)	Bottom Screen Depth (mbgl)		mBTOP	mbgl	
MW18A	404791.4	5906705.4	687.13	687.77	0.64	10.08	8.58	10.08	Oct-96	4.98	4.34	682.79
									Apr-97	1.68	1.04	686.09
									Oct-97	2.04	1.40	685.73
									Apr-98	2.09	1.45	685.68
									Oct-98	2.90	2.26	684.87
									Apr-99	2.12	1.48	685.65
									Oct-99	2.23	1.59	685.54
									Apr-00	2.44	1.80	685.33
									Oct-00	2.46	1.82	685.31
									Apr-01	2.47	1.83	685.30
									Oct-01	2.71	2.07	685.06
									Apr-02	2.53	1.89	685.24
									Oct-02	2.77	2.13	685.00
									Apr-03	2.78	2.14	684.99
									Oct-03	2.64	2.00	685.13
									Apr-04	2.41	1.77	685.36
									Oct-04	2.31	1.67	685.46
									Apr-05	2.22	1.58	685.55
									Oct-05	2.04	1.40	685.73
									Apr-06	2.13	1.49	685.64
									Oct-06	2.05	1.41	685.72
									Apr-07	1.94	1.30	685.83
									Oct-07	2.02	1.38	685.75
									May-08	2.02	1.38	685.75
									May-09	2.46	1.82	685.31
									Jun-10	2.60	1.96	685.16
									Jun-11	2.46	1.82	685.31
									May-12	2.46	1.82	685.31
									Jun-13	2.15	1.51	685.62
									May-14	2.13	1.49	685.63
									May-15	2.04	1.40	685.73
									May-16	2.20	1.56	685.57
									May-17	1.92	1.28	685.84
									Jun-18	2.08	1.44	685.69
									Jun-19	2.23	1.59	685.53
									May-20	1.73	1.09	686.03
					0.62				Jun-21	1.71	1.15	686.06
					0.56				Jun-22	2.12	1.56	685.65
MW19A	404792.3	5906618.5	686.60	687.10	0.46	10.26	8.76	10.26	Oct-96	2.31	1.85	684.79
									Apr-97	5.40	4.95	681.69
									Oct-97	6.57	6.11	680.53
									Apr-98	4.81	4.35	682.29
									Oct-98	0.77	0.32	686.32
									Apr-99	1.56	1.10	685.54
									Oct-99	1.26	0.81	685.83
									Apr-00	5.87	5.41	681.23
									Oct-00	5.62	5.16	681.48
									Apr-01	Frozen	-	-
									Oct-01	1.36	0.90	685.74
									Apr-02	Frozen	-	-
									Oct-02	1.70	1.24	685.40
									Apr-03	5.51	5.05	681.59
									Oct-03	1.51	1.06	685.58
									Apr-04	1.59	1.13	685.51
									Oct-04	1.08	0.62	686.02
									Apr-05	1.35	0.89	685.75
									Oct-05	1.00	0.54	686.10
									Apr-06	1.52	1.07	685.57
									Oct-06	0.88	0.42	686.22
									Apr-07	1.01	0.56	686.08
									Oct-07	0.86	0.40	686.24
									May-08	0.86	0.40	686.24
									May-09	5.62	5.16	681.48
									Jun-10	1.38	0.93	685.71
									Jun-11	5.62	5.16	681.48
									May-12	5.62	5.16	681.48
									Jun-13	1.19	0.73	685.91
									May-14	1.09	0.64	686.00
									May-15	1.05	0.60	686.04
									May-16	1.34	0.88	685.76
									May-17	0.81	0.35	686.29
									Jun-18	0.99	0.73	686.11
					0.26				Jun-19	1.131	0.87	685.96
									May-20	0.729	0.47	686.37
					0.17				Jun-21	0.756	0.56	686.34
					0.20				Jun-22	1.03	0.83	686.07
MW20A	404788.5	5906514.3	688.89	689.54	0.60	10.00	8.50	10.00	Oct-96	9.34	8.74	680.20
									Apr-97	4.32	3.72	685.22
									Oct-97	3.42	2.82	686.12
									Apr-98	4.02	3.42	685.52
									Oct-98	3.40	2.80	686.14
									Apr-99	3.77	3.17	685.77
									Oct-99	3.47	2.87	686.07
									Apr-00	4.27	3.67	685.27
									Oct-00	3.63	3.03	685.91
									Apr-01	4.21	3.61	685.33
									Oct-01	3.67	3.07	685.87
									Apr-02	4.22	3.62	685.32
									Oct-02	4.03	3.43	685.51
									Apr-03	4.51	3.91	685.03
									Oct-03	3.63	3.03	685.91
									Apr-04	4.21	3.61	685.33
									Oct-04	3.42	2.82	686.12
									Apr-05	3.80	3.20	685.74
									Oct-05	3.31	2.71	686.23
									Apr-06	3.92	3.32	685.62
									Oct-06	3.59	2.99	685.95
									Apr-07	3.50	2.90	686.04
									Oct-07	3.03	2.43	686.51
									May-08	3.03	2.43	686.51
									May-09	3.63	3.03	685.91
									Jun-10	4.19	3.59	685.35
									Jun-11	3.63	3.03	685.91
									May-12	3.63	3.03	685.91
									Jun-13	3.87	3.27	685.67
									May-14	3.79	3.19	685.75
									May-15	2.66	2.06	686.87
									May-16	3.99	3.39	685.55
									May-17	3.72	3.12	685.82
									Jun-18	3.94	3.34	685.60
									Jun-19	3.715	3.12	685.82
									May-20	3.28	2.68	686.26
									Jun-21	3.441	2.84	686.10
									Jun-22	3.7	3.10	685.84

Table 3c: Groundwater Monitoring Results - Clay Shale

Monitoring Well	UTM Coordinates		Elevations		Measured Stick-up (m)	Well Depth (mbgl)	Screened Interval		Date	Water Depth		Groundwater Elevation (mAMSL)
	Easting	Northing	Surface (mAMSL)	Top of Pipe (mAMSL)			Top Screen Depth (mbgl)	Bottom Screen Depth (mbgl)		mBTOP	mbgl	
MW21A	404786.1	5906389.7	687.60	688.30	0.69	9.98	8.48	9.98	Oct-98	4.76	4.07	683.54
									Apr-99	4.37	3.68	683.93
									Oct-99	5.30	4.61	683.00
									Apr-00	4.58	3.89	683.72
									Oct-00	5.91	5.22	682.39
									Apr-01	4.93	4.24	683.37
									Oct-01	6.34	5.65	681.96
									Apr-02	5.55	4.86	682.75
									Oct-02	6.90	6.21	681.40
									Apr-03	6.73	6.04	681.57
									Oct-03	7.46	6.77	680.84
									Apr-04	6.82	6.13	681.48
									Oct-04	7.02	6.33	681.28
									Apr-05	5.28	4.59	683.02
									Oct-05	6.46	5.77	681.84
									Apr-06	7.42	6.73	680.88
									Oct-06	6.68	5.99	681.62
									Apr-07	6.20	5.51	682.10
									Oct-07	7.02	6.33	681.28
									May-08	7.02	6.33	681.28
									May-09	5.91	5.22	682.39
									Jun-10	4.54	3.85	683.77
									Jun-11	5.91	5.22	682.39
									May-12	5.91	5.22	682.39
									Jun-13	4.62	3.93	683.68
									May-14	5.01	4.32	683.29
									May-15	5.00	4.31	683.31
									May-16	4.21	3.52	684.09
									May-17	4.98	4.29	683.33
									Jun-18	4.05	3.36	684.25
									Jun-19	5.26	4.57	683.05
									May-20	5.02	4.33	683.29
					0.61				Jun-21	4.11	3.42	684.19
					0.69				Jun-22	4.60	3.91	683.70
MW22A	404852.8	5906350.6	687.83	688.66	0.84	9.82	8.32	9.82	Oct-98	9.69	8.85	678.97
									Apr-99	3.23	2.39	685.43
									Oct-99	3.11	2.27	685.55
									Apr-00	3.64	2.80	685.02
									Oct-00	3.63	2.79	685.03
									Apr-01	3.80	2.96	684.86
									Oct-01	4.09	3.25	684.57
									Apr-02	4.24	3.40	684.42
									Oct-02	5.02	4.18	683.64
									Apr-03	5.11	4.27	683.55
									Oct-03	5.35	4.51	683.31
									Apr-04	5.27	4.43	683.39
									Oct-04	5.00	4.16	683.66
									Apr-05	4.38	3.54	684.28
									Oct-05	4.03	3.19	684.63
									Apr-06	5.05	4.21	683.61
									Oct-06	4.85	4.01	683.81
									Apr-07	5.98	5.14	682.68
									Oct-07	5.58	4.74	683.08
									May-08	5.58	4.74	683.08
									May-09	3.63	2.79	685.03
									Jun-10	4.27	3.43	684.40
									Jun-11	3.63	2.79	685.03
									May-12	3.63	2.79	685.03
									Jun-13	4.31	3.47	684.35
									May-14	4.69	3.85	683.97
									May-15	4.76	3.92	683.90
									May-16	5.06	4.22	683.60
									May-17	5.03	4.19	683.63
									Jun-18	4.84	4.00	683.82
									Jun-19	5.22	4.38	683.44
									May-20	5.17	4.33	683.50
					0.82				May-21	4.30	3.50	684.37
					0.80				Jun-22	4.81	4.01	683.85
MW23A	404898.6	5906361.7	686.45	687.16	0.67	9.99	8.49	9.99	Oct-98	6.13	5.46	681.03
									Apr-99	2.89	2.22	684.27
									Oct-99	3.72	3.05	683.44
									Apr-00	3.19	2.52	683.97
									Oct-00	3.16	2.49	684.00
									Apr-01	3.11	2.44	684.05
									Oct-01	3.63	2.96	683.53
									Apr-02	3.07	2.40	684.09
									Oct-02	3.63	2.96	683.53
									Apr-03	3.06	2.39	684.10
									Oct-03	3.57	2.90	683.59
									Apr-04	2.49	1.82	684.67
									Oct-04	2.58	1.91	684.58
									Apr-05	2.03	1.36	685.13
									Oct-05	2.10	1.43	685.06
									Apr-06	2.47	1.80	684.69
									Oct-06	2.28	1.61	684.88
									Apr-07	2.53	1.86	684.63
									Oct-07	1.99	1.32	685.17
									May-08	1.99	1.32	685.17
									May-09	3.16	2.49	684.00
									Jun-10	1.51	0.84	685.65
									Jun-11	3.16	2.49	684.00
									May-12	3.16	2.49	684.00
									Jun-13	1.01	0.34	686.15
									May-14	0.89	0.22	686.28
									May-15	1.01	0.34	686.15
									May-16	1.03	0.36	686.13
									May-17	0.98	0.31	686.18
									Jun-18	1.11	0.44	686.05
									Jun-19	1.19	0.52	685.97
									May-20	1.15	0.48	686.01
					0.64				May-21	1.21	0.55	685.95
					0.66				Jun-22	1.23	0.57	685.93
MW24A Decommissioned July 2018	-	-	688.88	689.68	0.70	9.80	8.30	9.80	Oct-04	3.69	2.99	685.98
									Apr-05	3.91	3.21	685.76
									Oct-05	3.57	2.87	686.10
									Apr-06	4.01	3.31	685.67
									Oct-06	3.36	2.66	686.31
									Apr-07	3.34	2.64	686.33
									Oct-07	3.01	2.31	686.66
									May-08	3.01	2.31	686.66
									May-09	4.06	3.36	685.61
									Jun-10	3.72	3.02	685.96
									Jun-11	2.97	2.27	686.70
									May-12	3.18	2.48	686.50
									Jun-13	3.50	2.80	686.18
									May-14	3.53	2.83	686.14
									May-15	3.33	2.63	686.34
									May-16	3.59	2.89	686.09
									May-17	3.21	2.51	686.47
									Jun-18	3.57	2.87	686.11

Table 3c: Groundwater Monitoring Results - Clay Shale

Monitoring Well	UTM Coordinates		Elevations		Measured Stick-up (m)	Well Depth (mbgl)	Screened Interval		Date	Water Depth		Groundwater Elevation (mAMSL)
	Easting	Northing	Surface (mAMSL)	Top of Pipe (mAMSL)			Top Screen Depth (mbgl)	Bottom Screen Depth (mbgl)		mBTOP	mbgl	
MW25A	404967.5	5906383.0	686.73	687.54	0.82	9.90	8.40	9.90	Oct-04	3.09	2.27	684.45
									Apr-05	1.94	1.12	685.60
									Oct-05	1.75	0.93	685.79
									Apr-06	1.79	0.97	685.75
									Oct-06	2.02	1.20	685.51
									Apr-07	1.53	0.71	686.00
									Oct-07	1.44	0.62	686.09
									May-08	1.44	0.62	686.09
									May-09	1.45	0.63	686.09
									Jun-10	1.71	0.89	685.83
									Jun-11	1.39	0.57	686.15
									May-12	0.86	0.04	686.68
									Jun-13	1.19	0.37	686.35
									May-14	1.08	0.26	686.46
									May-15	1.15	0.33	686.39
									May-16	1.32	0.50	686.22
									May-17	1.25	0.43	686.29
					0.59				Jun-18	1.37	0.78	686.17
									Jun-19	1.44	0.85	686.10
					0.49				May-20	1.14	0.65	686.40
									May-21	1.42	0.89	686.12
					0.53				Jun-22	1.42	0.89	686.12
MW26A	405056.1	5906388.1	687.00	687.60	0.56	10.17	8.67	10.17	Oct-04	3.76	3.21	683.83
									Apr-05	2.96	2.40	684.64
									Oct-05	3.25	2.69	684.35
									Apr-06	3.43	2.87	684.17
									Oct-06	3.62	3.07	683.98
									Apr-07	5.27	4.71	682.33
									Oct-07	3.35	2.80	684.25
									May-08	3.35	2.80	684.25
									May-09	2.03	1.48	685.56
									Jun-10	2.18	1.63	685.41
									Jun-11	1.85	1.29	685.75
									May-12	1.81	1.25	685.79
									Jun-13	1.81	1.26	685.78
									May-14	1.89	1.34	685.70
									May-15	1.83	1.28	685.76
									May-16	2.09	1.53	685.51
									May-17	2.04	1.48	685.56
					0.49				Jun-18	2.11	1.62	685.48
									Jun-19	2.27	1.78	685.32
									May-20	2.03	1.54	685.57
					0.56				May-21	1.75	1.25	685.84
					0.50				Jun-22	1.80	1.30	685.80
MW27A	405212.0	5906397.2	686.65	687.19	0.53	10.44	8.94	10.44	Oct-07	2.27	1.74	684.92
									May-08	2.27	1.74	684.92
									May-09	1.64	1.11	685.55
									Jun-10	2.06	1.53	685.13
									Jun-11	1.69	1.16	685.50
									May-12	1.03	0.50	686.16
									Jun-13	1.60	1.07	685.59
									May-14	0.32	-0.21	686.87
									May-15	0.33	-0.20	686.86
									May-16	0.43	-0.10	686.76
									May-17	0.50	-0.03	686.69
					0.48				Jun-18	0.57	0.09	686.62
									Jun-19	0.69	0.21	686.50
									May-20	0.42	-0.06	686.77
					0.47				May-21	0.37	-0.15	686.82
					0.52				Jun-22	0.49	-0.03	686.70
MW28A	405317.2	5906379.9	687.36	687.96	0.59	11.18	9.68	11.18	Jun-13	2.57	1.98	685.39
									May-14	2.39	1.80	685.57
									May-15	2.18	1.59	685.78
									May-16	2.24	1.65	685.71
									May-17	2.01	1.42	685.95
									Jun-18	2.04	1.45	685.92
									Jun-19	2.07	1.48	685.89
									May-20	1.89	1.30	686.07
									May-21	1.98	1.39	685.98
									Jun-22	1.97	1.38	685.99
MW32A	405527.8	5906577.5	686.53	687.19	0.65	9.47	7.47	9.47	May-15	2.62	1.97	684.58
									May-16	2.32	1.67	684.87
									May-17	2.25	1.60	684.95
									Jun-18	2.30	1.65	684.90
									Jun-19	1.91	1.26	685.28
									May-20	1.53	0.88	685.66
					0.61				May-21	2.14	1.47	685.05
					0.67				Jun-22	1.54	0.87	685.65
15MW34A Decommissioned July 2018	405098.2	5906742.6	687.98	689.02	1.05	11.94	10.20	11.94	Aug-15	5.42	4.38	683.59
									May-16	3.63	2.59	685.38
									May-17	3.40	2.35	685.62
					0.94				Jun-18	3.66	2.72	685.35
15MW35A	404801.2	5906265.6	688.46	689.32	0.85	13.71	11.70	13.71	Aug-15	11.68	10.83	677.64
									May-16	7.71	6.86	681.61
									May-17	7.55	6.70	681.77
									Jun-18	7.85	7.00	681.47
									Jun-19	7.69	6.84	681.62
									May-20	8.50	7.65	680.82
									Jun-21	8.99	8.14	680.33
									Jun-22	8.98	8.13	680.34
15MW36A	405551.7	5906435.9	687.05	687.95	0.85	14.98	12.70	14.98	Aug-15	4.05	3.20	683.89
									May-16	3.98	3.13	683.97
									May-17	3.16	2.31	684.78
					0.55				Jun-18	3.08	2.53	684.87
									Jun-19	2.84	2.29	685.11
									May-20	2.60	2.05	685.34
									Jun-21	2.57	2.02	685.38
					0.51				Jun-22	2.41	1.86	685.54

Notes:
Monitoring well network re-surveyed on July 30, 2015.
mAMSL - metres above mean sea level.
mbgl - metres below ground level.
mBTOP - metres below top of pipe.
-' - no information available.
negative water level = water level above ground level.

Table 3d: Groundwater Monitoring Results - Lower Bedrock

Monitoring Well	UTM Coordinates		Elevations		Measured Stick-up (m)	Well Depth (mbgl	Screened Interval		Date	Water Depth		Groundwater Elevation (mAMSL)
	Easting	Northing	Surface (mAMSL)	Top of Pipe (mAMSL)			Top Screen Depth (mbgl)	Bottom Screen Depth (mbgl)		mBTOP	mbgl	
15MW35-Deep	404801.4	5906263.8	688.43	689.32	0.85	32.59	31.00	32.59	Aug-15	7.04	6.19	682.28
									May-16	6.88	6.03	682.44
									May-17	6.64	5.79	682.68
									Jun-18	6.51	5.66	682.81
									Jun-19	6.421	5.57	682.90
									May-20	7.54	6.69	681.78
					0.91				Jun-21	8.99	8.16	680.33
					0.83				Jun-22	7.34	6.51	681.98
15MW36-Deep	405551.7	5906435.9	687.03	687.79	0.74	34.64	33.6	34.64	Aug-15	22.77	22.03	665.02
									May-16	5.92	5.18	681.87
									May-17	5.78	5.04	682.01
					0.44				Jun-18	5.21	4.77	682.57
									Jun-19	4.93	4.49	682.86
									May-20	4.71	4.27	683.07
					0.43				Jun-21	4.64	4.20	683.15
					0.44				Jun-22	5.77	5.33	682.02
16MW09A	405586	5907524	685.16	686.20	0.89	37.96	35.73	36.73	Jun-22	6.56	6.12	681.23
16MW11A	404816	5907540	685.96	686.89	0.91	38.09	35.88	36.88	Jun-22	5.01	4.57	682.78

Notes:
Monitoring well network re-surveyed on July 30, 2015.
mAMSL - metres above mean sea level.
mbgl - metres below ground level.
mBTOP - metres below top of pipe.
-' - no information available.

Table 4a: Field and Groundwater Analytical Results Summary - Surficial Material Wells

Parameter Group		Field	Routine																		Nutrients				
Parameter		pH	Electrical Conductivity	Temperature	pH	Electrical Conductivity	Total Dissolved Solids	Hardness	Alkalinity, total (as CaCO3)	Bicarbonate	Carbonate	Hydroxide	Calcium	Magnesium	Potassium	Sodium	Chloride	Fluoride	Sulphate	Ionic Balance	Ammonia-N	Nitrate (N)	Nitrite (N)	Nitrate and Nitrate (N)	Total Kjeldahl Nitrogen
Unit		pH Units			pH Units	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	-	mg/L	mg/L	mg/L	mg/L	mg/L
		6.5-8.5	1000	-	6.5-8.5	1000	500	-	-	-	-	-	-	-	-	200	100	1	128-429	-	0.018-190	3	0.02-0.20	100	-
Monitoring Well	**Date**																								
MW10	30-May-2014	8.3	**4920**	4.2	8.12	**4600**	**3500**	-	-	600	<0.50	-	68	35	4.0	**990**	26	-	**2100**	-	0.17	0.079	-	-	0.68
	28-May-2015	8.3	**4980**	7.5	7.79	**4700**	**3400**	520	490	590	<0.50	<0.50	140	44	4.5	**910**	**140**	-	**1900**	0.95	0.23	0.014	<0.010	0.014	0.68
	8-Jun-2016	8.06	**4420**	9.8	8.26	**4500**	**3000**	280	500	620	<0.50	<0.50	60	31	4.4	**840**	60	-	**1700**	0.9	0.16	0.04	0.01	0.05	0.57
	7-Jun-2017	8.0	**4260**	10.3	8.11	**4100**	**3000**	310	520	630	<0.50	<0.5	71	32	4.2	**870**	59	-	**1600**	2.0	0.052	3.0	<0.16	-	0.49
	26-Jun-2018	7.70	**4530**	8.5	8.27	**4100**	**3000**	300	530	650	<1.0	<1.0	68	32	4.0	**910**	55	-	**1600**	1.3	0.06	0.13	<0.010	0.13	0.49
	12-Jun-2019	7.38	**4240**	11.2	8.14	**4300**	**3000**	280	540	660	<1.0	<1.0	73	24	4.2	**940**	65	-	**1600**	1.1	0.3	0.057	<0.010	0.057	0.58
	29-May-2020	7.67	**2950**	5.5	8.14	**4300**	**3100**	280	540	660	<1.0	<1.0	70	26	3.7	**960**	74	-	**1600**	0.51	0.17	0.11	<0.01	0.11	0.61
	4-Jun-2021	7.55	**4020**	9.3	8.34	**3800**	**3160**	280	538	648	<5.0	<5.0	68.1	26.6	3.93	**911**	68.1	0.57	**1760**	92.1	0.210	<0.10	<0.050	<0.11	0.72
	9-Jun-2022	6.95	**4990**	9.6	8.39	**4100**	**3100**	282	598	708	10.3	<1.0	69.8	26.1	3.91	**903**	62.5	0.491	**1650**	93.6	0.152	<0.10	<0.050	<0.112	0.52
MW18B	30-May-2014	7.6	**2920**	8.9	8.27	**2900**	**2300**	-	-	350	<0.50	-	120	33	3.7	**510**	14	-	**1400**	-	0.09	0.2	-	-	0.68
	28-May-2015	8.0	**3800**	5.9	7.79	**3600**	**2800**	670	330	410	<0.50	<0.50	190	47	4.6	**670**	17	-	**1700**	1.0	0.14	0.13	0.011	0.14	1.5
	8-Jun-2016	**6.00**	**4240**	8.3	7.96	**3400**	**2600**	630	320	390	<0.50	<0.50	180	45	4.5	**570**	22	-	**1500**	0.96	0.10	0.089	0.015	0.10	0.32
	7-Jun-2017	7.4	**3160**	8.0	8.05	**3000**	**2200**	660	620	760	<0.50	<0.5	180	48	4.4	**530**	29	-	**1100**	1.8	0.17	0.36	0.037	-	0.87
	26-Jun-2018	7.4	**3500**	8.7	7.89	**3300**	**2400**	740	650	800	<1.0	<1.0	210	55	4.7	**560**	44	-	**1100**	1.9	0.072	0.17	<0.010	0.17	1.1
	12-Jun-2019	7.25	**2840**	11.2	7.96	**2800**	**1900**	620	530	650	<1.0	<1.0	180	42	4.1	**420**	53	-	**910**	0.32	0.25	0.13	<0.010	0.13	0.74
	4-Jun-2020	7.06	**2950**	8.7	7.68	**2900**	**2000**	720	750	910	<1.0	<1.0	200	54	4.2	**460**	**130**	-	**720**	1.2	0.17	0.15	<0.010	0.15	0.94
	4-Jun-2021	7.21	**2640**	9.7	8.03	**2390**	**1920**	601	571	696	<5.0	<5.0	167	44.7	3.36	**399**	74.6	0.252	**892**	91.8	0.164	0.093	<0.020	0.093	0.92
	10-Jun-2022	7.60	**2120**	7.3	8.29	**1760**	**1300**	347	328	401	<1.0	<1.0	96.5	25.7	2.79	**298**	24.7	0.237	**627**	98.5	0.0424	0.052	<0.010	0.052	0.62
MW19B	30-May-2014	7.5	**8080**	8.3	8.33	**6000**	**4700**	-	-	1100	5.0	-	29	20	6.7	**1500**	2.6	-	**2600**	-	0.76	<0.010	-	-	1.1
	28-May-2015	8.4	**6260**	6.5	8.26	**5900**	**4500**	150	900	1100	<0.50	<0.50	32	17	7.4	**1500**	3.1	-	**2400**	0.98	**0.76**	<0.010	<0.010	<0.010	1.1
	8-Jun-2016	8.09	**7170**	-	8.43	**5700**	**4100**	150	860	1000	13	<0.50	31	17	7.6	**1300**	3.1	-	**2200**	0.96	**0.73**	0.015	0.013	0.028	1.1
	7-Jun-2017	8.2	**6430**	7.0	8.5	**5800**	**4100**	150	910	1100	22	<0.5	29	18	7.5	**1400**	2.7	-	**2000**	3.6	**0.84**	<0.044	**0.11**	-	1.0
	26-Jun-2018	8.2	**6100**	8.0	8.3	**5800**	**4300**	150	910	1100	<1.0	<1.0	30	17	7.7	**1400**	2.8	-	**2200**	0.54	0.63	0.038	0.012	0.049	1.1
	12-Jun-2019	8.23	**6010**	12.3	8.46	**5900**	**3600**	130	900	1000	33.0	<1.0	26	17	7.3	**930**	3.3	-	**2100**	18	**0.63**	0.026	0.011	0.036	1.1
	4-Jun-2020	8.48	**6440**	7.6	8.3	**6300**	**4800**	170	920	1100	4.8	<1.0	33	21	7.8	**1600**	5	-	**2500**	2.9	**0.81**	0.024	0.01	0.034	0.94
	4-Jun-2021	8.44	**6040**	9.9	**8.69**	**5790**	**4940**	160	910	1020	42.8	<5.0	27.5	22.1	8.5	**1630**	3.8	0.15	**2700**	99.9	**0.74**	<0.10	<0.050	<0.11	0.87
	10-Jun-2022	**8.58**	**7310**	10.3	**8.76**	**6000**	**4840**	123	1060	1180	55.4	<1.0	17.4	19.4	7.39	**1540**	3.65	0.136	**2590**	92.7	**0.745**	<0.10	*<0.050*	<0.112	1.08
MW20B	30-May-2014	7.9	**5320**	7.9	8.02	**4900**	**3800**	-	-	950	<0.50	-	130	47	9.4	**1000**	1.3	-	**2200**	-	0.058	0.27	-	-	3.0
	28-May-2015	7.9	**5030**	5.5	8.04	**4700**	**3600**	450	810	990	<0.50	<0.50	120	39	9.0	**1000**	1.5	-	**1900**	0.98	<0.050	0.17	<0.010	0.17	3.7
	8-Jun-2016	7.64	**4970**	7.3	8.04	**4700**	**3500**	430	880	1100	<0.50	<0.50	110	37	9.0	**1000**	1.4	-	**1800**	0.96	<0.050	0.14	<0.010	0.14	0.29
	7-Jun-2017	7.6	**5180**	6.2	8.17	**5000**	**3700**	570	790	960	<0.50	<0.5	140	50	9.8	**1100**	1.1	-	**1900**	4.5	0.035	0.86	*<0.033*	-	0.74
	26-Jun-2018	7.3	**5300**	5.0	8.10	**4800**	**3500**	480	820	1000	<1.0	<1.0	120	42	9.3	**1100**	<1.0	-	**1800**	1.2	<0.015	0.079	<0.010	0.079	0.32
	12-Jun-2019	7.51	**4810**	8.5	8.10	**4700**	**3300**	440	850	1000	<1.0	<1.0	120	36	8.7	**1100**	1.2	-	**1600**	5.6	0.051	0.14	0.011	0.15	0.61
	4-Jun-2020	7.56	**5860**	5.6	7.90	**5700**	**4600**	770	710	870	<1.0	<1.0	200	65	10	**1300**	2.2	-	**2600**	1.6	0.035	0.33	<0.010	0.33	1.0
	3-Jun-2021	7.67	**6370**	7.9	8.03	**5680**	**6020**	1460	619	755	<5.0	<5.0	364	135	15.7	**1610**	<2.5	0.34	**3520**	116	<0.050	0.69	<0.050	0.69	0.8
FALSE	10-Jun-2022	7.54	**8050**	6.8	7.99	**6370**	**5790**	1240	730	891	<1.0	<1.0	306	117	12.5	**1330**	<2.5	0.41	**3530**	94.2	<0.0050	1.02	<0.050	1.02	1.8
MW21B	30-May-2014	8.0	**2870**	6.6	8.21	**2700**	**1800**	-	-	1000	<0.50	-	17	5.6	4	**610**	1.5	-	**650**	-	<0.050	<0.010	-	-	0.34
	28-May-2015	8.3	**2820**	6.9	8.16	**2700**	**1800**	61	860	1000	<0.50	<0.50	16	4.9	4.2	**630**	1.6	-	**570**	0.99	<0.050	0.11	<0.010	0.11	0.28
	8-Jun-2016	7.89	**2840**	6.5	8.25	**2600**	**1700**	61	850	1000	<0.50	<0.50	16	5.0	3.9	**630**	1.1	-	**530**	1.0	<0.050	0.11	<0.010	0.11	<0.05
	7-Jun-2017	7.8	**2780**	6.5	8.39	**2600**	**1800**	64	860	1000	9.2	<0.5	17	5.3	4.1	**640**	1.1	-	**570**	0.56	0.016	0.19	*<0.033*	-	0.31
	26-Jun-2018	-	-	-	8.29	**2900**	**1900**	72	870	1100	<1.0	<1.0	19	6.1	4.2	**680**	1.3	-	**650**	0.26	<0.015	0.1	<0.010	0.1	0.31
	17-Jun-2019	7.86	**2870**	7.3	8.44	**2900**	**1900**	74	840	970	26.0	<1.0	20	5.9	4	**670**	1.7	-	**660**	0.046	0.034	0.12	<0.010	0.12	0.32
	5-Jun-2020	7.67	**3010**	6.1	8.36	**2900**	**1900**	83	780	940	9.4	<1.0	22	6.8	4.3	**730**	2.0	-	**720**	4.3	<0.015	0.096	<0.010	0.096	0.31
	3-Jun-2021	7.91	**2830**	7.3	**8.54**	**2700**	**2120**	92.1	822	961	20.6	<5.0	24.3	7.63	5.1	**808**	<2.5	0.35	**776**	114	<0.050	0.14	<0.050	0.14	0.27
	10-Jun-2022	7.70	**3580**	10.3	8.47	**2940**	**2110**	79.8	957	1130	18.4	<1.0	20.7	6.83	4.16	**680**	<1.0	0.415	**806**	87.2	0.0192	0.063	<0.020	0.063	0.40
MW22B	30-May-2014	7.7	**8560**	6.4	8.07	**8100**	**6800**	-	-	1200	<0.50	-	110	51	8.5	**2100**	1.3	-	**3900**	-	<0.050	0.11	-	-	0.36
	28-May-2015	7.8	**8250**	8.4	7.86	**8200**	**6600**	520	1000	1200	<0.50	<0.50	120	55	10	**1900**	1.8	-	**3900**	0.92	<0.050	0.16	<0.010	0.16	0.52
	8-Jun-2016	7.57	**8780**	9.7	7.97	**8200**	**6600**	510	1000	1300	<0.50	<0.50	110	55	10	**2000**	1.4	-	**3900**	0.95	<0.050	<0.010	<0.010	<0.020	0.27
	7-Jun-2017	7.5	**7870**	7.8	8.23	**8000**	**6000**	490	1000	1200	<0.50	<0.5	110	54	9.8	**2000**	1.9	-	**3300**	4.0	0.04	0.38	*<0.16*	-	0.32
	26-Jun-2018	7.03	**8750**	6.7	7.98	**8000**	**6300**	480	1000	1200	<1.0	<1.0	110	53	9.4	**1900**	1.7	-	**3600**	0.19	<0.015	0.039	<0.010	0.039	0.26
	17-Jun-2019	7.6	**8040**	10.3	8.27	**8000**	**6100**	480	1000	1200	<1.0	<1.0	110	51	9.3	**2000**	2.7	-	**3300**	3.8	0.031	0.094	<0.010	0.094	0.49
	5-Jun-2020	7.54	**8180**	7.9	8.11	**8100**	**6400**	530	960	1200	<1.0	<1.0	120	57	9.4	**2100**	2.7	-	**3600**	3.2	0.021	0.096	<0.010	0.096	0.38
	3-Jun-2021	7.22	**7420**	9.3	8.26	**6660**	**6680**	487	990	1210	<5.0	<5.0	107	53.4	9.45	**1920**	<5.0	0.3	**4000**	90.7	0.055	<0.20	<0.10	<0.22	0.32
	10-Jun-2022	7.34	**9550**	8.1	8.24	**7730**	**6550**	512	1180	1440	<1.0	<1.0	112	56.5	9.23	**1910**	<2.5	0.27	**3730**	92.7	<0.0050	<0.10	<0.050	<0.112	0.31
MW29B	28-May-2015	7.4	**8670**	7.1	7.62	**8200**	**7200**	2300	470	570	<0.50	<0.50	520	260	12	**1400**	5.7	-	**4700**	1.0	0.72	0.39	0.027	0.42	4.5
	8-Jun-2016	7.21	**8800**	7.7	7.85	**8400**	**7700**	2400	420	520	<0.50	<0.50	560	230	11	**1600**	5.2	-	**5100**	1.0	1.1	0.11	0.025	0.13	0.96
	7-Jun-2017	7.2	**9230**	6.0	7.90	**8500**	**7400**	2300	450	550	0<0.5	<0.50	530	240	11	**1600**	6.0	-	**4700**	4.6	1.4	<0.22	*<0.16*	-	1.8
	26-Jun-2018	6.90	**8620**	9.0	7.76	**8600**	**7800**	2400	460	560	<1.0	<1.0	530	260	12	**1700**	6.3	-	**5000**	3.5	1.2	0.13	0.032	0.17	1.9
	17-Jun-2019	7.20	**8700**	9.1	7.88	**8900**	**7600**	2200	470	570	<1.0	<1.0	440	260	10	**1700**	8.2	-	**4900**	1.7	0.91	<0.010	0.079	0.079	1.5
	4-Jun-2020	7.18	**8840**	7.8	7.34	**8700**	**7900**	2200	470	570	<1.0	<1.0	440	260	11	**1900**	8.6	-	**5000**	4.3	0.81	0.53	0.059	0.59	1.1
	2-Jun-2021	7.30	**8570**	7.9	7.86	**7630**	**8460**	2230	471	575	<5.0	<5.0	445	272	11.7	**1780**	8.4	0.31	**5660**	95.9	0.512	0.54	<0.10	0.54	1.01
	10-Jun-2022	7.79	**4960**	10.3	8.19	**8130**	**7860**	2100	560	683	<1.0	<1.0	439	245	11	**1530**	8.05	0.266	**5260**	90.1	0.946	<0.20	<0.10	<0.224	1.81
MW30B	28-May-2015	8.1	**2830**	6.5	8.06	**2700**	**1900**	110	550	670	<0.50	<0.50	29	9.1	3.3	**680**	1.4	-	**830**	1.1	0.16	1.3	<0.010	1.3	0.49
	8-Jun-2016	8.19	**2650**	7.4	8.44	**2600**	**1800**	100	520	610	8.0	<0.50	26	9.5	3.2	**610**	1.5	-	**830**	1.0	<0.050	0.12	0.012	0.13	0.40
	7-Jun-2017	7.9	**2680**	5.6	8.32	**2500**	**1700**	97	560	680	<0.50	<0.5	24	8.9	2.9	**560**	1.8	-	**750**	0.76	<0.015	1.5	*<0.033*	-	0.6
	26-Jun-2018	7.28	**2500**	8.7	8.27	**2500**	**1700**	87	580	710	<1.0	<1.0	22	8.0	2.6	**610**	<1.0	-	**720**	3.4	<0.015	0.4	<0.010	0.4	0.62
	17-Jun-2019	7.88	**2470**	8.4	8.26	**2500**	**1600**	88	570	700	<1.0	<1.0	22	8.1	2.6	**570**	1.9	-	**690**	1.4	0.056	0.45	<0.010	0.45	0.62
	29-May-2020	7.67	**2530**	5.9	8.22	**2500**	**1600**	91	540	660	<1.0	<1.0	23	8.2	2.4	**580**	2	-	**700**	2.9	<0.015	0.63	0.017	0.65	0.68
	2-Jun-2021	7.58	**2890**	7.9	8.38	**2230**	**1730**	89	579	692	7.2	<5.0	21.2	8.75	2.87	**599**	<2.5	0.76	**747**	103	<0.050	0.71	<0.050	0.71	0.41
	10-Jun-2022	7.70	**2890**	7.5	**8.56**	**2340**	**1700**	88.6	724	841	21	<1.0	21.2	8.66	2.51	**513**	0.59	0.838	**688**	83.7	<0.0050	0.838	0.012	0.85	0.56
MW31B	28-May-2015	8.4	**2530**	8.0	8.29	**2400**	**1600**	55	570	690	<0.50	<0.50	15	4.3	3.7	**550**	1.1	-	**670**	0.99	**0.59**	0.046	<0.010	0.046	2.2
	8-Jun-2016	8.33	**2500**	9.4	**8.56**	**2500**	**1700**	59	520	610	13.0	<0.50	15	5.4	3.6	**590**	1.4	-	**750**	1.0	0.13	<0.010	<0.010	<0.020	0.38
	7-Jun-2017	8.1	**2660**	8.1	8.4	**2500**	**1700**	59	530	640	5.2	<0.50	14	5.6	3.3	**570**	1.4	-	**780**	1.7	0.034	0.8	*<0.033*	-	0.51
	26-Jun-2018	7.55	**2720**	9.5	8.39	**2700**	**1900**	61	530	630	7.2	<1.0	15	5.7	3.4	**660**	<1.0	-	**850**	2.6	<0.015	0.14	<0.010	0.14	0.4
	17-Jun-2019	8.15	**2710**	10.3	8.45	**2800**	**1800**	68	520	610	12	<1.0	17	6.4	3.5	**630**	2.0	-	**850**	1.2	0.02	0.15	<0.010	0.15	0.51
	5-Jun-2020	7.78	**2750**	7.6	8.29	**2700**	**1900**	73	480	580	<1.0	<1.0	18	7	3.6	**650**	1.6	-	**900**	2.6	0.015	0.17	<0.010	0.17	0.46
	3-Jun-2021	7.92	**2570**	9.8	**8.6**	**2300**	**1900**	71.6	523	607	15.4	<5.0	17.3	6.89	3.63	**638**	<2.5	0.47	**916**	99	<0.050	0.23	<0.050	0.23	0.3
	10-Jun-2022	8.08	**2280**	8.4	**8.59**	**2700**	**1900**	75	642	739	21.7	<1.0	17.9	7.37	3.56	**597**	<1.0	0.52	**871**	89	0.0306	0.145	<0.020	0.145	0.43
MW32B	28-May-2015	7.7	**12,550**	7.6	7.73	**12,000**	**10,000**	930	1100	1300	<0.50	<0.50	210	100	18	**2800**	**110**	-	**6300**	0.91	1.3	<0.050	<0.050	<0.050	3.5
	8-Jun-2016	7.69	**13,260**	9.1	7.97	**13,000**	**11,000**	1100	1100	1300	<0.50	<0.50	230	120	17	**3200**	**120**	-	**6800**	0.97	1.5	<0.050	<0.050	<0.020	2.6
	7-Jun-2017	7.4	**13,010**	6.8	7.98	**12,000**	**9800**	950	1000	1300	<0.50	<0.50	210	100	15	**3000**	**120**	-	**5700**	1.9	1.5	<0.22	<0.16	-	2.3
	26-Jun-2018	7.48	**8330**	9.6	7.82	**12,000**	**11,000**	1000	1000	1300	<1.0	<1.0	220	110	16	**3200**	**130**	-	**6400**	1.1	1.1	0.14	0.073	0.22	2.0
	12-Jun-2019	7.5	**12010**	11.7	7.98	**12,000**	**9,700**	930	1000	1200	<1.0	<1.0	220	92	<30	**2900**	**130**	-	**5700**	0.83	1.3	<0.10	<0.10	<0.14	2.3
	29-May-2020	7.03	**12,220**	8.5	7.92	**12,000**	**8700**	940	930	1100	<1.0	<1.0	220	96	14	**3200**	**140**	-	**4500**	14	1.5	0.17	0.11	0.28	2.4
	4-Jun-2021	7.07	**12,000**	7.6	8.1	**10,800**	**12300**	1120	981	1200	<5.0	<5.0	245	123	16	**3440**	**146**	<0.40	**7720**	93.4	0.931	0.66	<0.20	0.66	2.69
	10-Jun-2022	7.54	**3,780**	8.8	8.18	**11,100**	**9940**	895	984	1200	<1.0	<1.0	205	93.1	13.9	**2750**	**114**	0.302	**6140**	91.4	1.57	0.343	<0.10	0.343	1.99
MW33B	28-May-2015	7.5	**5180**	6.0	7.89	**5000**	**3700**	340	850	1000	<0.50	<0.50	91	26	6.9	**1200**	21	-	**1900**	1.0	0.83	<0.010	<0.010	<0.010	5.3
	8-Jun-2016	7.48	**5340**	6.9	8.15	**5400**	**4000**	440	920	1100	<0.50	<0.50	110	38	6.9	**1300**	20	-	**2000**	1.0	0.78	<0.050	<0.050	<0.020	2.6
	7-Jun-2017	-	-	-	7.99	**5600**	**4100**	490	1000	1200	<0.50	<0.50	130	42	6.1	**1200**	21	-	**2100**	0.82	**0.6**	0.68	0.2	0.21	2.7
	26-Jun-2018	7.88	**5650**	11.6	7.82	**5500**	**4200**	460	1000	1300	<1.0	<1.0	120	39	6.4	**1300**	22	-	**2100**	1.3	0.44	0.097	0.056	0.15	2.3
	12-Jun-2019	7.36	**5420**	13	7.96	**5600**	**4000**	490	1000	1200	<1.0	<1.0	130	40	6.6	**1300**	23	-	**1900**	2.4	0.58	0.011	0.023	0.034	2.4
	4-Jun-2020	7.35	**5850**	7.6	7.85	**5800**	**4400**	470	1000	1200	<1.0	<1.0	120	40	6.0	**1400**	23	-	**2200**	4.1	0.82	0.017	0.015	0.032	1.9
	4-Jun-2021	7.27	**5250**	8.1	8.17	**4850**	**4350**	446	948	1160	<5.0	<5.0	114	39.1	6.4	**1300**	18.5	0.36	**2300**	97.4	0.678	0.1	<0.050	<0.11	2.55
	10-Jun-2022	7.23	**6440**	7.5	8.22	**5330**	**4230**	428	1150	1410	<1.0	<1.0	111	36.6	6.11	**1170**	16.8	0.224	**2130**	88	0.793	0.25	0.095	0.345	2.49
19MW37B	15-Nov-2019	7.58	**2050**	2.2	7.74	**1900**	**1200**	350	850	1000	<1.0	<1.0	79	36	11	**320**	3.6	-	220	1.6	0.64	<0.010	<0.010	<0.014	3.5
	4-Jun-2020	7.25	**1921**	8.2	7.94	**1900**	**1200**	310	820	1000	<1.0	<1.0	73	30	9.3	**370**	3.3	-	230	2.9	0.69	0.011	<0.010	<0.014	0.99
	4-Jun-2021	7.14	**1881**	7.5	8.19	**1750**	**1270**	222	831	1010	<5.0	<5.0	54.8	20.8	7.65	**434**	2.5	0.23	250	108	0.818	<0.020	<0.010	<0.022	1.11
	9-Jun-2022	7.41	**2360**	8.6	8.3	**1920**	**1380**	196	1010	1220	3.4	<1.0	49.5	17.6	7.06	**397**	2.6	0.175	272	82.6	0.901	<0.020	0.02	<0.050	1.51
19MW38B	15-Nov-2019	7.86	**4430**	1.8	8.23	**4300**	**2800**	160	1400	1700	<1.0	<1.0	32	20	11	**980**	2.9	-	**960**	1.8	0.4	<0.010	<0.010	<0.014	6.4
	4-Jun-2020	7.86	**4440**	5.2	8.27	**4300**	**2900**	150	1300	1600	<1.0	<1.0	25	21	9.9	**1100**	3.4	-	**900**	6.7	0.26	0.032	0.035	0.067	0.9
	4-Jun-2021	7.70	**3650**	9.7	**8.69**	**3560**	**2730**	109	1440	1630	58.8	<5.0	17.3	16.1	8.38	**951**	<2.5	0.68	**875**	93.3	0.164	0.22	<0.050	0.22	0.59
	9-Jun-2022	7.51	**5930**	9.5	**8.63**	**5060**	**3970**	228	1600	1840	55.2	<1.0	32.9	35.4	12.6	**1310**	5.99	0.51	**1580**	95.1	0.203	0.125	0.081	0.206	1.06
15MW35C	3-Jun-2021	7.82	**8160**	9.3	8.49	**7650**	**7600**	628	830	968	22.1	<5.0	137	69.5	11.2	**2190**	<5.0	0.46	**4690**	94.5	<0.050	1.81	<0.10	1.81	0.36
	9-Jun-2022	7.92	**9850**	9.0	8.48	**8320**	**6910**	557	905	1060	23.5	<1.0	118	63.7	9.89	**1880**	14.6	0.638	**4250**	87.1	<0.0050	1.36	<0.10	1.36	0.91

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use.

[2] Alberta Environment and Parks (AEP). Environmental Quality Guidelines for Alberta Surface Waters. March 2018. Table 1 Surface water quality guidelines for the protection of freshwater aquatic life (PAL). Most conservative values applied (chronic or acute).

[3] Guideline varies with hardness.

[4] Guideline varies with pH and temperature.

[5] Guideline varies with chloride.

[6] Guideline varies with pH.

"-" No applicable guideline or not analyzed.

BOLD - Greater than Tier 1 Guideline.

Italic - Detection limit greater than Tier 1 guideline.

Table 4a: Field and Groundwater Analytical Results Summary - Surficial Material Wells

Parameter Group		Hydrocarbons							Organics		
Parameter		Benzene	Toluene	Ethylbenzene	Xylenes	Styrene	F1-BTEX	F2 (C10-C16)	Total Phenols	Chemical Oxygen Demand	Dissolved Organic Carbon
Unit		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		0.005	0.024	0.0016	0.02	0.072	2.2	1.1	-	-	-
Monitoring Well	Date										
MW10	30-May-2014	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	33	9.6
	28-May-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	35	11
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	32	9.7
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	24	8
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.002	28	8.6
	12-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	31	17
	29-May-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.1	<0.10	<0.0015	34	9
	4-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	<0.0010	36	10.8
	9-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	29	11.2
MW18B	30-May-2014	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	27	7.3
	28-May-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	64	9.2
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	30	8.2
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	24	11
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.002	49	12
	12-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	0.0032	29	9.9
	4-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	36	15
	4-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	0.0013	43	14.5
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	22	10.2
MW19B	30-May-2014	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	28	5
	28-May-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	17	5.7
	8-Jun-2016	<0.00040	<0.00060	<0.00040	<0.00080	-	<0.10	<0.10	-	17	6.0
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	17	6.3
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.002	34	6.1
	12-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	33	5.3
	4-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	18	6.6
	4-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	0.0021	26	7.5
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	26	7.8
MW20B	30-May-2014	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	96	7.2
	28-May-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	120	6.4
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	15	4.3
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	81	6
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.002	32	6
	12-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	32	5.8
	4-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	27	12
	3-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	0.0015	95	23.7
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	85	33
MW21B	30-May-2014	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	31	3.8
	28-May-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	20	4.2
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	20	4.4
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	20	6.1
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.002	27	6.5
	17-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	30	5.9
	5-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00080	<0.00050	<0.10	<0.10	<0.0015	23	6.2
	3-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	<0.0010	29	6.8
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	24	7.1
MW22B	30-May-2014	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	15	5.3
	28-May-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	51	5.7
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	18	4.7
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	20	6.6
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.002	23	5.9
	17-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	44	6.7
	5-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00080	<0.00050	<0.10	<0.10	<0.0015	16	6.1
	3-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	<0.0010	47	5.9
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	22	6.9
MW29B	28-May-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	150	17
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	41	15
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	45	18
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.002	76	14
	17-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	56	17
	4-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	34	15
	2-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	<0.0010	49	14.5
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	46	16.2
MW30B	28-May-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	110	8.4
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	44	9.1
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	38	10
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.002	55	8
	17-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	32	9.6
	29-May-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	29	8.4
	2-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	0.001	24	8.4
	10-Jun-2022	<0.00050	<0.0005	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	28	9.66
MW31B	28-May-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	0.12	<0.10	-	140	9
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	28	8.2
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	30	8.8
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.002	24	7.7
	17-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	31	10
	5-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00080	<0.00050	<0.10	<0.10	<0.0015	33	7.5
	3-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	<0.0010	24	8.2
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	26	9.66
MW32B	28-May-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	210	18
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	78	15
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	74	17
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	0.0024	85	15
	12-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	0.0027	51	15
	29-May-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	68	13
	4-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	0.0011	81	15.5
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	67	15.4
MW33B	28-May-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	280	45
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	140	44
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	150	49
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	0.0021	120	48
	12-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	0.0035	150	59
	4-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	116	48
	4-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	0.0014	129	45.4
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	117	47.6
19MW37B	15-Nov-2019	<0.00040	<0.00040	<0.00040	<0.00089	-	<0.10	<0.10	<0.0015	189	7.5
	4-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	19	8.4
	4-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	0.0086	38	9.5
	9-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	26	9.34
19MW38B	15-Nov-2019	<0.00040	<0.00040	<0.00040	<0.00089	-	<0.10	<0.10	0.0015	696	16
	4-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	31	13
	4-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	<0.0010	45	13.4
	9-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	35	15.6
MW35C	3-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	0.0029	29	10.4
	9-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	33	12.2

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use.

[2] Alberta Environment and Parks (AEP). Environmental Quality Guidelines for Alberta Surface Waters. March 2018. Table 1 Surface water quality guidelines for the protection of freshwater aquatic life (PAL). Most conservative values applied (chronic or acute).

[3] Guideline varies with hardness.

[4] Guideline varies with pH and temperature.

[5] Guideline varies with chloride.

[6] Guideline varies with pH.

"-" No applicable guideline or not analyzed.

BOLD - Greater than Tier 1 Guideline.

Italic - Detection limit greater than Tier 1 guideline.

Table 4a: Field and Groundwater Analytical Results Summary - Surficial Material Wells

Parameter Group		Dissolved Metals																				
	Parameter	Aluminum	Antimony	Arsenic	Barium	Boron	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silver	Thallium	Tin	Uranium	Zinc
	Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		0.0007-0.05	0.006	0.005	1	1.0	0.00004-0.00037	0.05	-	0.007	0.3	0.001-0.007	0.05	0.000005	-	0.007-0.17	-	0.002	0.0001	-	-	0.01	0.03
Monitoring Well	Date																					
MW10	30-May-2014	-	<0.00060	-	0.016	-	<0.000025	0.0014	-	**0.17**	<0.060	**0.009**	-	<0.0000050	-	**0.0078**	-	-	-	-	-	-	**0.11**
	28-May-2015	<0.0030	<0.00060	0.00049	0.087	0.11	0.000049	<0.0010	-	**0.0079**	**8.3**	<0.00020	**1.8**	<0.0000050	-	**1.5**	-	0.0003	<0.00010	-	-	0.0048	0.0038
	8-Jun-2016	0.0091	<0.00060	0.0006	0.023	0.12	0.000023	0.0021	-	0.0035	<0.060	<0.00020	**0.094**	0.0000034	-	0.059	-	0.00052	<0.00010	-	-	0.0093	0.0065
	7-Jun-2017	<0.0030	<0.00060	0.00042	0.023	0.13	0.000021	0.0018	-	0.0033	<0.060	<0.00020	**0.076**	<0.0000020	-	0.033	-	0.00053	<0.00010	-	-	0.0086	<0.0030
	26-Jun-2018	0.0068	<0.00060	0.00059	0.018	0.11	<0.000020	0.0059	-	0.002	<0.06	<0.00020	<0.004	0.000005	-	0.02	-	0.0006	<0.00010	-	-	0.0099	<0.0030
	12-Jun-2019	<0.0030	<0.00060	0.00072	0.01	0.14	<0.000020	<0.0010	0.00034	0.0015	<0.060	<0.00020	**0.088**	<0.0000020	0.0012	0.0095	<0.10	<0.00020	<0.00010	<0.00020	<0.0010	0.0027	0.0031
	29-May-2020	<0.0030	<0.00060	0.00061	0.013	0.11	<0.000020	0.0014	0.00066	0.0014	<0.060	<0.00020	**0.28**	<0.0000019	0.0014	0.011	<0.1	0.00041	<0.0001	<0.0002	<0.001	0.0054	<0.0030
	4-Jun-2021	0.0039	<0.00020	0.00068	0.013	0.121	<0.000010	0.00065	0.00044	0.00168	<0.020	<0.00010	**0.0914**	<0.0000050	0.0013	0.0111	<0.10	0.00019	<0.000020	0.000038	<0.00020	0.00514	0.018
	9-Jun-2022	0.0094	<0.00050	0.00081	0.0166	0.128	<0.000025	<0.0025	<0.00050	0.00364	<0.15	<0.00025	**0.0775**	-	0.00110	0.0096	<0.25	0.000261	<0.000050	<0.000050	<0.00050	0.00516	<0.0050
MW18B	30-May-2014	-	<0.00060	-	0.017	-	<0.000025	<0.0010	-	0.0012	<0.060	<0.00020	-	<0.0000050	-	0.0035	-	-	-	-	-	-	<0.0030
	28-May-2015	0.0034	<0.00060	0.0004	0.012	0.071	<0.000020	<0.0010	-	0.0007	<0.060	<0.00020	**0.15**	<0.0000050	-	0.0039	-	<0.00020	<0.00010	-	-	0.0011	<0.0030
	8-Jun-2016	**0.11**	<0.00060	0.00041	0.014	0.075	<0.000020	<0.0010	-	0.0013	0.25	0.00037	0.046	**0.0000068**	-	0.0044	-	<0.00020	<0.00010	-	-	0.00091	0.0047
	7-Jun-2017	0.0062	<0.00060	0.00037	0.016	0.062	<0.000020	<0.0010	-	0.00064	<0.060	<0.00020	**0.15**	<0.0000020	-	0.004	-	<0.00020	<0.00010	-	-	0.0044	<0.0030
	26-Jun-2018	0.004	<0.00060	0.00037	0.015	0.069	<0.000020	<0.0010	-	0.0012	<0.06	<0.00020	**0.057**	0.0000035	-	0.0037	-	<0.0002	<0.00010	-	-	0.0042	<0.0030
	12-Jun-2019	<0.0030	<0.00060	0.00037	0.016	0.058	<0.000020	<0.0010	<0.00030	0.0016	<0.060	<0.00020	**0.085**	<0.0000020	0.00055	0.0035	<0.10	<0.00020	<0.00010	<0.00020	<0.0010	0.0039	<0.0030
	4-Jun-2020	<0.0030	<0.00060	0.00035	0.015	0.05	<0.000020	<0.0010	<0.00030	0.0038	<0.060	<0.00020	**0.11**	<0.0000019	0.00042	0.005	<0.1	<0.00020	<0.00010	<0.0002	<0.001	0.0068	<0.0030
	4-Jun-2021	0.0026	<0.00020	0.00033	0.0133	0.054	0.000012	<0.00020	<0.00020	0.00208	<0.020	<0.00010	**0.055**	<0.0000050	0.00036	0.0036	<0.10	0.00012	<0.000020	<0.000020	<0.00020	0.00607	0.0179
	10-Jun-2022	0.0015	<0.00010	0.00038	0.0206	0.048	0.0000087	<0.00050	0.00029	0.00202	<0.030	<0.000050	**0.0574**	-	0.000658	0.00318	<0.050	0.000162	<0.000010	<0.000010	<0.00010	0.00228	0.0013
MW19B	30-May-2014	-	<0.0060	-	<0.10	-	<0.000050	<0.010	-	<0.0020	*<0.60*	<0.0020	-	<0.0000050	-	<0.0050	-	-	-	-	-	-	<0.030
	28-May-2015	<0.030	<0.0060	0.0021	0.027	0.47	<0.00020	<0.010	-	<0.0020	**0.36**	<0.0020	**0.21**	<0.0000050	-	<0.0050	-	<0.0020	*<0.0010*	-	-	<0.0010	<0.030
	8-Jun-2016	<0.0030	<0.00060	0.0025	0.029	0.48	<0.000020	0.0010	-	0.00023	0.21	<0.00020	**0.21**	<0.0000020	-	0.0025	-	<0.00020	<0.00010	-	-	0.00021	<0.0030
	7-Jun-2017	0.0034	<0.00060	0.0017	<0.10	0.52	<0.000020	<0.0010	-	<0.00020	*<0.6*	<0.00020	**0.19**	<0.0000020	-	<0.00050	-	<0.00020	<0.00010	-	-	0.00024	<0.0030
	26-Jun-2018	<0.003	<0.00060	0.0017	<0.1	0.49	<0.000020	<0.0010	-	<0.0002	*<0.6*	<0.00020	**0.17**	<0.0000020	-	0.00082	-	<0.0002	<0.00010	-	-	0.00027	<0.0030
	12-Jun-2019	<0.0030	<0.00060	0.0023	0.024	0.53	<0.000020	<0.0010	<0.00030	<0.00020	*<0.060*	<0.00020	**0.088**	<0.0000020	0.0017	<0.00050	<0.10	<0.00020	<0.00010	<0.00020	<0.0010	0.00025	<0.0030
	4-Jun-2020	0.0036	<0.00060	0.0021	0.036	0.48	<0.000020	<0.0010	<0.00030	0.00032	0.29	<0.00020	**0.16**	<0.0000019	0.0012	0.00068	<0.1	<0.00020	<0.00010	<0.0002	<0.001	0.00022	<0.003
	4-Jun-2021	<0.0050	<0.00050	0.00261	0.0206	0.498	<0.000025	<0.00050	<0.00050	<0.0010	<0.050	<0.00025	**0.0887**	<0.0000050	0.00172	<0.0025	<0.25	<0.00025	<0.000050	<0.000050	<0.00050	0.000431	<0.0050
	10-Jun-2022	0.0056	<0.00050	0.00361	0.0156	0.471	<0.000025	<0.0025	<0.00050	<0.0010	<0.15	<0.00025	**0.0302**	-	0.00178	<0.0025	<0.25	<0.00025	<0.000050	<0.000050	<0.00050	0.000396	<0.0050
MW20B	30-May-2014	-	<0.00060	-	0.022	-	<0.000025	0.0036	-	0.002	0.24	0.00036	-	<0.0000050	-	0.0023	-	-	-	-	-	-	0.0045
	28-May-2015	0.0035	<0.00060	0.00032	0.014	0.33	<0.000020	0.0029	-	0.0013	<0.060	<0.00020	<0.0040	<0.0000050	-	0.0011	-	**0.0031**	<0.00010	-	-	0.0033	<0.0030
	8-Jun-2016	<0.0030	<0.00060	0.00030	<0.10	0.38	<0.000020	0.0035	-	0.00053	*<0.60*	<0.00020	<0.040	0.0000026	-	0.0016	-	<0.00020	<0.00010	-	-	0.0013	<0.0030
	7-Jun-2017	0.0041	<0.00060	0.00032	<0.10	0.35	<0.000020	0.0011	-	0.00059	*<0.60*	<0.00020	<0.040	<0.0000020	-	0.00067	-	**0.013**	<0.00010	-	-	0.0050	<0.0030
	26-Jun-2018	<0.003	<0.00060	0.00027	0.016	0.34	<0.000020	0.0016	-	0.00073	<0.06	<0.00020	<0.004	<0.0000020	-	0.0015	-	0.00073	<0.00010	-	-	0.0034	<0.0030
	12-Jun-2019	0.013	<0.00060	0.0003	0.015	0.38	<0.000020	0.002	<0.00030	0.00093	<0.060	<0.00020	<0.0040	<0.0000020	0.00071	0.001	<0.10	<0.00020	<0.00010	<0.00020	<0.0010	0.0017	<0.0030
	4-Jun-2020	<0.0030	<0.00060	0.00030	0.014	0.26	<0.000020	0.0012	<0.00030	0.004	0.1	<0.00020	<0.0040	<0.0000019	0.00068	0.0010	<0.1	**0.03**	<0.00010	<0.0002	<0.001	**0.011**	<0.0030
	3-Jun-2021	<0.0050	<0.00050	0.00081	0.0181	0.289	<0.000025	0.0015	<0.00050	0.0027	<0.050	<0.00025	<0.00050	<0.0000050	0.00069	<0.0025	<0.25	**0.0973**	<0.000050	<0.000050	<0.00050	**0.0596**	0.0225
	10-Jun-2022	**0.0556**	<0.00050	0.00084	0.0151	0.216	<0.000025	<0.0025	<0.00050	0.00286	<0.15	<0.00025	<0.025	-	0.000662	<0.0025	<0.25	**0.0932**	<0.000050	<0.000050	<0.00050	**0.0704**	<0.0050
MW21B	30-May-2014	-	<0.00060	-	<0.010	-	0.000042	<0.0010	-	0.0014	0.071	<0.00020	-	<0.0000050	-	0.0015	-	-	-	-	-	-	0.0030
	28-May-2015	0.0042	<0.00060	0.00053	<0.010	0.22	<0.000020	<0.0010	-	0.0008	<0.060	<0.00020	<0.004	<0.0000050	-	0.0013	-	<0.00020	<0.00010	-	-	0.0016	<0.0030
	8-Jun-2016	<0.0030	<0.00060	0.00064	<0.010	0.25	<0.000020	<0.0010	-	0.00066	<0.060	<0.00020	<0.0040	<0.0000020	-	0.0013	-	<0.00020	<0.00010	-	-	0.0017	<0.0030
	7-Jun-2017	0.0035	<0.00060	0.00064	<0.010	0.23	<0.000020	<0.0010	-	0.00033	<0.060	0.00034	0.0041	<0.0000020	-	0.00086	-	<0.00020	<0.00010	-	-	0.0017	<0.0030
	26-Jun-2018	<0.003	<0.00060	0.00066	<0.01	0.23	<0.000020	<0.0010	-	0.00072	<0.06	<0.00020	<0.004	<0.0000020	-	0.0012	-	<0.0002	<0.00010	-	-	0.0019	<0.0030
	17-Jun-2019	0.028	<0.00060	0.00057	<0.010	0.22	<0.000020	<0.0010	<0.00030	0.0015	0.084	<0.00020	0.0079	<0.0000020	0.0014	0.0022	<0.10	<0.00020	<0.00010	<0.00020	<0.0010	0.0019	<0.0030
	5-Jun-2020	0.003	<0.00060	0.00048	<0.010	0.23	<0.000020	<0.0010	<0.00030	0.00095	<0.060	<0.00020	<0.0040	<0.0000019	0.0012	0.0022	<0.1	<0.00020	<0.00010	<0.0002	<0.001	0.0019	<0.0030
	3-Jun-2021	0.0051	<0.00050	0.00081	0.0107	0.267	<0.000025	<0.00050	<0.00050	<0.0010	<0.050	<0.00025	0.00162	<0.0000050	0.00135	<0.0025	<0.25	<0.00025	<0.000050	<0.000050	<0.00050	0.00213	0.0248
	10-Jun-2022	0.0134	<0.00020	0.00086	0.00878	0.209	0.0000165	<0.0010	<0.00020	0.00073	<0.060	<0.00010	<0.010	-	0.000971	0.00128	<0.10	0.000131	<0.000020	<0.000020	<0.00020	0.00191	<0.0020
MW22B	30-May-2014	-	<0.0060	-	<0.010	-	0.00018	<0.010	-	<0.0020	0.075	<0.0020	-	<0.0000050	-	<0.0050	-	-	-	-	-	-	<0.030
	28-May-2015	<0.030	<0.0060	<0.0020	<0.10	0.25	<0.00020	<0.010	-	<0.0020	*<0.60*	<0.0020	<0.040	<0.0000050	-	<0.0050	-	<0.0020	*<0.0010*	-	-	0.0073	<0.030
	8-Jun-2016	<0.0030	<0.00060	0.00035	<0.10	0.25	<0.000020	0.0015	-	0.0012	*<0.60*	<0.00020	<0.040	<0.0000020	-	0.0020	-	0.00036	<0.00010	-	-	0.0079	<0.0030
	7-Jun-2017	0.0037	<0.00060	0.00027	<0.10	0.25	<0.000020	<0.0010	-	0.00037	*<0.60*	<0.00020	<0.040	<0.0000020	-	0.0013	-	0.00028	<0.00010	-	-	0.0079	<0.0030
	26-Jun-2018	<0.003	<0.00060	0.00024	<0.10	0.24	0.000021	<0.0010	-	0.00072	*<0.60*	<0.00020	<0.04	<0.0000020	-	0.0016	-	0.00037	<0.00010	-	-	0.0072	<0.0030
	17-Jun-2019	**0.074**	<0.00060	0.00050	<0.10	0.25	<0.000020	0.0011	<0.00030	0.0021	*<0.60*	0.00024	<0.040	<0.0000020	0.00084	0.0041	<1.0	0.00035	<0.00010	<0.00020	<0.0010	0.0071	0.0032
	5-Jun-2020	<0.0030	<0.00060	0.00025	<0.01	0.21	<0.000020	0.0012	<0.00030	0.0017	<0.060	<0.00020	<0.0040	<0.0000019	0.00078	0.0026	<0.1	0.00056	<0.00010	<0.0002	<0.001	0.0099	<0.0030
	3-Jun-2021	<0.010	<0.0010	<0.0010	0.0062	0.26	<0.00005	<0.0010	<0.0010	<0.0020	<0.10	<0.00050	<0.0010	<0.0000050	0.00087	<0.0050	<0.50	<0.00050	<0.00010	<0.00010	<0.0010	0.00764	0.021
	10-Jun-2022	0.0085	<0.00050	<0.00050	0.00649	0.243	<0.000025	<0.0025	<0.00050	0.00153	<0.15	<0.00025	<0.025	-	0.000585	0.00256	<0.25	0.000437	<0.000050	<0.000050	<0.00050	0.00984	<0.0050
MW29B	28-May-2015	0.0041	0.0017	**0.0077**	<0.10	<0.20	0.00017	<0.0010	-	0.0019	*<0.60*	<0.00020	**0.77**	<0.0000050	-	0.048	-	0.001	<0.00010	-	-	**0.019**	0.014
	8-Jun-2016	0.022	<0.00060	0.00054	0.019	0.20	0.000082	0.0014	-	0.0019	**0.54**	<0.00020	**0.85**	0.0000043	-	0.0099	-	<0.00020	<0.00010	-	-	0.0042	0.0051
	7-Jun-2017	0.01	<0.00060	0.00031	<0.10	0.21	0.00006	<0.0010	-	0.00098	*<0.60*	<0.00020	**0.88**	<0.0000020	-	0.0075	-	<0.00020	<0.00010	-	-	0.0061	<0.0030
	26-Jun-2018	0.0049	<0.00060	0.00035	<0.1	<0.2	0.000057	<0.0010	-	0.0009	*<0.6*	<0.00020	**0.96**	0.0000036	-	0.0075	-	0.0002	<0.00010	-	-	0.0049	<0.0030
	17-Jun-2019	<0.0030	<0.00060	<0.00020	<0.10	0.2	0.000058	<0.0010	0.0032	0.0014	*<0.60*	<0.00020	**0.80**	<0.0000020	0.0003	0.0055	<1.0	<0.00020	<0.00010	<0.00020	<0.0010	0.0042	<0.0030
	4-Jun-2020	<0.0030	<0.00060	0.00037	0.01	0.19	0.000046	<0.0010	0.003	0.00055	<0.060	<0.00020	**0.81**	<0.0000019	0.00030	0.0053	<0.1	<0.00020	<0.00010	<0.0002	<0.001	0.005	<0.0030
	2-Jun-2021	0.011	<0.0010	<0.0010	0.0116	0.22	<0.000050	<0.0010	0.0026	<0.0020	<0.10	<0.00050	**0.69**	<0.000005	<0.00050	0.0077	<0.50	<0.00050	<0.00010	<0.00010	<0.0010	0.00634	0.018
	10-Jun-2022	<0.0050	<0.00050	<0.00050	0.012	0.216	0.0000402	<0.0025	**0.00324**	0.00122	<0.15	<0.00025	**0.726**	-	0.000345	0.00598	<0.25	<0.00025	<0.000050	<0.000050	<0.00050	0.00542	<0.0050
MW30B	28-May-2015	<0.030	<0.0060	0.0024	0.022	0.11	*<0.00020*	<0.010	-	0.0035	<0.060	<0.0020	**0.068**	<0.0000050	-	0.0053	-	<0.0020	*<0.0010*	-	-	0.0053	<0.030
	8-Jun-2016	0.011	<0.00060	0.0010	0.022	0.14	<0.000020	0.0012	-	0.0024	<0.060	<0.00020	<0.0040	<0.0000020	-	0.0023	-	0.00024	<0.00010	-	-	0.0032	0.0064
	7-Jun-2017	0.0039	<0.00060	0.00068	0.024	0.12	<0.000020	<0.0010	-	0.00083	<0.060	<0.00020	<0.004	<0.0000020	-	0.001	-	0.00046	<0.00010	-	-	0.0038	<0.0030
	26-Jun-2018	<0.003	<0.00060	0.00068	0.019	0.12	<0.000020	<0.0010	-	0.00091	<0.06	<0.00020	<0.004	0.0000033	-	0.00098	-	0.0006	<0.00010	-	-	0.0024	<0.0030
	17-Jun-2019	**0.18**	<0.00060	0.00084	0.021	0.12	<0.000020	<0.0010	<0.00030	0.0014	0.13	<0.00020	0.0057	<0.0000020	0.00087	0.0029	<0.10	0.00058	<0.00010	<0.00020	<0.0010	0.003	<0.0030
	29-May-2020	0.025	<0.00060	0.00096	0.018	0.11	<0.000020	<0.0010	<0.00030	0.00084	<0.30	<0.00020	<0.0040	<0.0000019	0.00094	0.00071	<0.1	0.00062	<0.00010	<0.0002	<0.001	0.0040	<0.0030
	2-Jun-2021	0.0032	0.00011	0.00075	0.0209	0.078	0.0000054	0.00014	<0.00010	0.00166	<0.010	<0.000050	0.00015	<0.000005	0.000643	0.00078	<0.050	0.00107	<0.000010	<0.000010	0.00011	0.0043	0.0195
	10-Jun-2022	0.0341	<0.00020	0.00077	0.0177	0.133	<0.000010	<0.0010	<0.00020	0.00137	<0.060	<0.00010	<0.010	-	0.000761	0.00185	<0.10	0.0016	<0.000020	<0.000020	<0.00020	0.00449	<0.0020
MW31B	28-May-2015	**0.70**	0.00095	**0.0094**	0.024	0.16	<0.000020	<0.0010	-	0.0022	**0.75**	0.00048	**0.061**	<0.0000050	-	0.0086	-	0.00064	<0.00010	-	-	0.0034	<0.0030
	8-Jun-2016	**0.084**	<0.00060	0.0017	0.023	0.20	<0.000020	<0.0010	-	0.0022	0.26	<0.00020	0.041	0.0000027	-	0.0033	-	<0.00020	<0.00010	-	-	0.00099	0.0078
	7-Jun-2017	0.011	<0.00060	0.0011	0.022	0.17	<0.000020	<0.0010	-	0.00027	<0.060	<0.00020	0.017	<0.0000020	-	0.00081	-	<0.00020	<0.00010	-	-	0.0012	<0.0030
	26-Jun-2018	0.0038	<0.00060	0.0011	0.018	0.18	<0.000020	<0.0010	-	0.00064	<0.06	<0.00020	0.01	0.0000035	-	0.0008	-	<0.0002	<0.00010	-	-	0.0008	<0.0030
	17-Jun-2019	**0.12**	<0.00060	0.0011	0.019	0.17	<0.000020	<0.0010	<0.00030	0.0017	0.22	<0.00020	0.015	<0.0000020	0.0014	0.0011	<0.10	<0.00020	<0.00010	<0.00020	<0.0010	0.00098	<0.0030
	5-Jun-2020	0.0032	<0.00060	0.00099	0.018	0.18	<0.000020	<0.0010	<0.00030	0.00082	<0.060	<0.00020	<0.0040	<0.0000019	0.0011	0.00067	<0.1	<0.00020	<0.00010	<0.0002	<0.001	0.0011	<0.0030
	3-Jun-2021	<0.0050	<0.00050	0.0012	0.0179	0.218	<0.000025	<0.00050	<0.00050	0.0016	<0.050	<0.00025	0.0028	<0.0000050	0.00103	<0.0025	<0.25	<0.00025	<0.000050	<0.000050	<0.00050	0.000809	0.02
	10-Jun-2022	0.0438	<0.00020	0.0013	0.0178	0.198	<0.000010	<0.0010	0.0002	0.00114	<0.060	<0.00010	<0.010	-	0.00111	0.00162	<0.10	0.000127	<0.000020	<0.000020	<0.00020	0.00121	<0.0020
MW32B	28-May-2015	0.0045	0.0016	**0.012**	<0.10	0.40	0.00011	<0.0010	-	0.0012	*<0.60*	<0.00020	**0.68**	<0.0000050	-	0.031	-	0.00079	<0.00010	-	-	0.0027	0.0055
	8-Jun-2016	0.0038	<0.00060	0.0016	<0.10	0.48	**0.00046**	<0.0010	-	0.0036	*<0.60*	<0.00020	**0.85**	<0.0000020	-	0.013	-	0.00046	<0.00010	-	-	0.00085	0.0040
	7-Jun-2017	0.016	<0.00060	0.00085	<0.10	0.46	0.000083	<0.0010	-	0.0022	*<0.60*	<0.00020	**0.67**	<0.0000020	-	0.0066	-	<0.00020	<0.00010	-	-	0.00084	<0.0030
	26-Jun-2018	**0.27**	<0.00060	0.0011	<0.10	0.48	0.00014	<0.0010	-	0.001	*<0.6*	<0.00020	**0.57**	0.0000037	-	0.0089	-	0.00028	<0.00010	-	-	0.0006	<0.0030
	12-Jun-2019	<0.0030	<0.00060	0.00081	<1.0	0.46	0.000028	<0.0010	0.0018	0.00023	*<0.60*	<0.00020	**0.52**	<0.0000020	0.001	0.0037	<10	0.00063	<0.00010	<0.00020	<0.0010	0.00045	<0.0030
	29-May-2020	<0.0030	<0.00060	0.00068	0.014	0.39	<0.000020	<0.0010	0.0023	0.00029	0.22	<0.00020	**0.6**	<0.0000019	0.0008	0.005	<0.1	<0.00020	<0.00010	<0.0002	<0.001	0.00049	<0.0030
	4-Jun-2021	0.0082	<0.00050	0.00069	0.0147	0.429	0.000034	<0.00050	0.00282	0.0025	<0.050	<0.00025	**0.679**	<0.0000050	0.0008	0.0052	<0.25	<0.00025	<0.000050	<0.000050	<0.00050	0.000499	0.0212
	10-Jun-2022	<0.010	<0.0010	<0.0010	0.0144	0.5	<0.000050	<0.0050	0.0022	0.00279	<0.30	<0.00050	**0.557**	-	0.000897	<0.0050	<0.50	<0.00050	<0.00010	<0.00010	<0.0010	0.000576	<0.010
MW33B	28-May-2015	0.0056	0.0013	**0.0065**	0.038	0.23	<0.000020	<0.0010	-	0.00037	<0.060	<0.00020	**0.19**	<0.0000050	-	0.015	-	0.00064	<0.00010	-	-	0.0021	<0.0030
	8-Jun-2016	**0.060**	<0.00060	0.0013	0.031	0.28	<0.000020	0.0020	-	0.0027	**0.35**	0.00024	**0.24**	**0.00023**	-	0.0096	-	0.00038	<0.00010	-	-	0.00016	0.0056
	7-Jun-2017	0.0049	<0.00060	0.0014	<0.10	0.25	0.000044	<0.0010	-	0.0028	*<0.6*	<0.00020	**0.25**	**0.0000076**	-	0.011	-	0.00043	<0.00010	-	-	0.00026	<0.0030
	26-Jun-2018	**0.073**	<0.00060	0.0021	0.025	0.27	0.00002	<0.0010	-	0.0012	<0.06	<0.00020	**0.23**	**0.0000053**	-	0.01	-	0.00048	<0.00010	-	-	0.00014	<0.0030
	12-Jun-2019	**0.19**	<0.00060	0.0013	0.028	0.29	0.00002	<0.0010	0.0013	0.00038	**1.6**	0.00039	**0.22**	<0.0000020	0.00044	0.009	<0.10	0.0006	<0.00010	<0.00020	<0.0010	<0.00010	<0.0030
	4-Jun-2020	**0.1**	<0.00060	0.0012	0.022	0.25	<0.000020	<0.0010	0.0014	0.00041	**0.66**	0.00022	**0.23**	<0.0000019	0.00031	0.0099	<0.1	0.00046	<0.00010	<0.0002	<0.001	<0.00010	<0.0030
	4-Jun-2021	<0.0050	<0.00050	0.00106	0.0218	0.362	<0.000025	<0.00050	0.00129	<0.0010	<0.050	<0.00025	**0.181**	<0.0000050	0.00164	0.0083	<0.25	0.00037	<0.000050	<0.000050	<0.00050	0.000076	<0.0050
	10-Jun-2022	**0.25**	<0.00050	0.00145	0.0282	0.386	<0.000025	<0.0025	0.00186	<0.0010	**0.636**	<0.00025	**0.233**	-	0.000863	0.0109	<0.25	0.000369	<0.000050	<0.00005	<0.00050	0.000158	<0.0050
19MW37B	15-Nov-2019	<0.0030	<0.00060	0.001	0.027	0.11	<0.000020	<0.0010	0.0012	0.00021	**0.096**	0.00026	**0.27**	<0.0000020	0.00054	0.0017	<0.10	<0.00020	<0.00010	<0.00020	<0.0010	0.0012	<0.0030
	4-Jun-2020	<0.0030	<0.00060	0.00051	0.023	0.12	<0.000020	<0.0010	0.001	0.0033	<0.060	<0.00020	**0.26**	<0.0000019	0.00046	0.0012	<0.1	<0.00020	<0.00010	<0.0002	<0.001	0.0019	<0.0030
	4-Jun-2021	<0.0010	<0.00010	0.0006	0.0177	0.16	<0.0000050	<0.00010	0.00043	0.00052	0.011	<0.000050	**0.145**	<0.0000050	0.00227	0.00064	<0.050	0.000109	<0.000010	<0.000010	0.0003	0.000285	<0.0010
	9-Jun-2022	<0.0010	<0.00010	0.00081	0.0236	0.175	<0.0000050	<0.00050	0.0005	0.00106	0.06	<0.000050	**0.154**	-	0.000179	0.00082	<0.050	0.000056	<0.000010	<0.000010	0.00015	0.000154	<0.0010
19MW38B	15-Nov-2019	0.04	<0.00060	0.0028	0.028	0.31	<0.000020	<0.0010	0.0017	0.0014	**0.17**	<0.00020	**0.15**	<0.0000020	0.0045	0.0062	<0.10	0.00044	<0.00010	<0.00020	<0.0010	0.008	<0.0030
	4-Jun-2020	0.02	<0.00060	0.0017	0.023	0.23	<0.000020	<0.0010	0.00072	0.0016	<0.060	<0.00020	**0.15**	<0.0000019	0.0021	0.0041	<0.1	0.00021	<0.00010	<0.0002	<0.001	0.0086	<0.0030
	4-Jun-2021	0.01	<0.00020	0.00139	0.0196	0.28	<0.000010	<0.00020	0.00066	0.00276	<0.020	0.00017	**0.111**	<0.0000050	0.00147	0.0027	<0.10	0.00016	<0.000020	<0.000020	0.0004	0.00413	0.0226
	9-Jun-2022	0.0091	<0.00020	0.00131	0.0219	0.25	<0.000010	<0.0010	0.00084	0.00145	<0.060	0.000134	**0.172**	-	0.000829	0.00264	<0.10	0.000194	<0.000020	<0.000020	<0.00020	0.00763	0.003
MW35C	3-Jun-2021	<0.010	<0.0010	<0.0010	0.0211	0.17	<0.000050	<0.0010	<0.0010	0.0021	<0.10	<0.00050	<0.0010	<0.0000050	0.0013	<0.0050	<0.50	**0.010**	<0.00010	<0.00010	<0.0010	**0.0330**	<0.010
	9-Jun-2022	0.0195	<0.00050	0.00085	0.0201	0.151	<0.000025	<0.0025	<0.00050	0.00332	<0.15	<0.00025	<0.025	-	0.00168	0.00272	<0.25	**0.00965**	<0.000050	<0.000050	<0.00050	**0.0346**	<0.0050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use.

[2] Alberta Environment and Parks (AEP). Environmental Quality Guidelines for Alberta Surface Waters. March 2018. Table 1 Surface water quality guidelines for the protection of freshwater aquatic life (PAL). Most conservative values applied (chronic or acute).

[3] Guideline varies with hardness.

[4] Guideline varies with pH and temperature.

[5] Guideline varies with chloride.

[6] Guideline varies with pH.

"-" No applicable guideline or not analyzed.

BOLD - Greater than Tier 1 Guideline.

Italic - Detection limit greater than Tier 1 guideline.

TETRA TECH

Table 4a: Field and Groundwater Analytical Results Summary - Surficial Material Wells

Parameter Group		Volatile Organic Compounds (VOCs)																
Parameter		Carbon tetrachloride	Chlorobenzene	Chloroform	Dibromochlorormethane	1,2-Dichlorobenzene	1,4-Dichlorobenzene	1,1-Dichloroethene	Methyl t-Butyl Ether (MTBE)	Methylene Chloride	Methyl Methacrylate	Tetrachloroethene	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene	1,3,5-Trichlorobenzene	Trichloroethene	Trihalomethanes	Vinyl chloride
Unit		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		0.002	0.0013	0.08	0.1	0.0007	0.001	0.014	0.015	0.05	0.47	0.01	0.008	0.015	0.014	0.005	0.1	0.002
Monitoring Well	**Date**																	
MW10	30-May-2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	28-May-2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-	-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	12-Jun-2019	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	29-May-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010		<0.0010		<0.0010
	9-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050
MW18B	30-May-2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	28-May-2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-	-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	12-Jun-2019	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010		<0.0010		<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050
MW19B	30-May-2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	28-May-2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-	-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	12-Jun-2019	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010		<0.0010		<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050
MW20B	30-May-2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	28-May-2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-	-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	12-Jun-2019	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	3-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010		<0.0010		<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050
MW21B	30-May-2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	28-May-2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-	-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	17-Jun-2019	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	5-Jun-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	3-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010		<0.0010		<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050
MW22B	30-May-2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	28-May-2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-	-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	17-Jun-2019	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	5-Jun-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	3-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010		<0.0010		<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050
MW29B	28-May-2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-	-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	17-Jun-2019	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	2-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	10-Jun-2022	-	-	-	-	-	-	<0.00050	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
MW30B	28-May-2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-	-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	17-Jun-2019	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	29-May-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	2-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050
MW31B	28-May-2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-	-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	17-Jun-2019	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	5-Jun-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	3-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010		<0.0010		<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050
MW32B	28-May-2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-	-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	12-Jun-2019	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	29-May-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010		<0.0010		<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050
MW33B	28-May-2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-	-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	12-Jun-2019	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010		<0.0010		<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050
19MW37B	15-Nov-2019	-	-	-	-	-	-	-	-	-	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	4-Jun-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010		<0.0010		<0.0010
	9-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050
19MW38B	15-Nov-2019	-	-	-	-	-	-	-	-	-	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	4-Jun-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010		<0.0010		<0.0010
	9-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050
MW35C	3-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010		<0.0010		<0.0010
	9-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050

Notes:
[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use.
[2] Alberta Environment and Parks (AEP). Environmental Quality Guidelines for Alberta Surface Waters. March 2018. Table 1 Surface water quality guidelines for the protection of freshwater aquatic life (PAL). Most conservative values applied (chronic or acute).
[3] Guideline varies with hardness.
[4] Guideline varies with pH and temperature.
[5] Guideline varies with chloride.
[6] Guideline varies with pH.
"-" No applicable guideline or not analyzed.
BOLD - Greater than Tier 1 Guideline.
Italic - Detection limit greater than Tier 1 guideline.

Table 4b: Field and Groundwater Analytical Results Summary - Upper Sandstone Wells

Parameter Group		Field			Routine																	Nutrients				
Parameter		pH	Electrical Conductivity	Temperature	pH	Electrical Conductivity	Total Dissolved Solids	Hardness	Bicarbonate	Carbonate	Hydroxide	Calcium	Magnesium	Potassium	Sodium	Chloride	Fluoride	Sulphate	Anions Total	Cations Total	Ionic Balance	Ammonia-N	Nitrate (N)	Nitrite (N)	Nitrate and Nitrite (N)	Total Kjeldahl Nitrogen
Unit		pH Units			pH Units	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	-	mg/L	mg/L	mg/L	mg/L	mg/L
		6.5-8.5	1000	-	6.5-8.5	1000	500	-	-	-	-	-	-	-	200	100	1	128-429	-	-	-	0.018-190	3	0.02-0.20	100	-
Monitoring Well	Date																									
MW1C	30-May-2014	8.0	**6100**	6.7	8.08	**5900**	**4800**	-	770	<0.50	-	130	33	4.8	**1300**	1.1	-	**3000**	-	-	-	0.57	0.093	-	-	1.2
	28-May-2015	8.2	**6420**	6.6	7.98	**6100**	**4800**	490	750	<0.50	<0.50	140	34	6.6	**1400**	1.7	-	**2900**	-	-	0.99	0.60	0.080	<0.010	0.080	1.2
	8-Jun-2016	**6.43**	**7540**	8.1	8.18	**6100**	**4700**	510	710	<0.50	<0.50	140	36	6.9	**1300**	1.4	-	**2800**	-	-	0.96	0.46	0.22	0.018	0.23	0.58
	7-Jun-2017	7.6	**7270**	9.7	8.23	**6100**	**4600**	530	760	<0.5	<0.5	150	38	7.1	**1400**	<1.0	-	**2600**	-	-	3.8	0.7	0.41	**0.28**	-	1.1
	26-Jun-2018	8.0	**6980**	6.1	8.1	**6100**	**4700**	510	760	<1.0	<1.0	140	37	6.7	**1400**	<1.0	-	**2700**	-	-	0.72	0.56	0.15	<0.010	0.15	1.1
	12-Jun-2019	7.6	**5990**	9.9	8.14	**6100**	**4400**	480	760	<1.0	<1.0	140	33	6.4	**1300**	1.8	-	**2500**	64	67	2.4	0.63	0.19	**0.027**	0.22	0.94
	5-Jun-2020	7.24	**5940**	7.0	8.25	**5900**	**4500**	480	700	<1.0	<1.0	140	34	6.5	**1400**	2.1	-	**2600**	67	70	2.1	0.39	0.38	**0.042**	0.42	0.91
	4-Jun-2021	7.36	**5590**	7.9	8.25	**5180**	**4480**	411	684	<5.0	<5.0	117	28.8	5.81	**1220**	<2.5	0.24	**2770**	-	-	89.2	0.416	0.22	**<0.050**	0.22	1.11
	10-Jun-2022	7.74	**6680**	8.2	8.35	**5470**	**4460**	440	800	8.3	<1.0	125	31.1	5.88	**1230**	<2.5	0.227	**2640**	68.4	62.5	91.4	0.603	0.1	*<0.050*	<0.112	1.09
MW8B	30-May-2014	7.6	**8960**	4.0	8.37	**8500**	**7600**	-	1100	18	-	110	62	5.4	**2300**	23	-	**4500**	-	-	-	0.57	0.074	-	-	1.4
	28-May-2015	8.0	**9280**	6.6	7.95	**8700**	**7100**	460	1100	<0.50	<0.50	90	56	6.2	**2200**	26	-	**4200**	-	-	1.0	0.69	0.12	<0.010	0.12	1.6
	8-Jun-2016	7.73	**8940**	6.8	8.19	**8700**	**6600**	460	1100	<0.50	<0.50	97	54	6.7	**2000**	28	-	**3900**	-	-	0.97	0.62	0.10	<0.050	0.10	1.3
	7-Jun-2017	7.8	**9250**	5.8	8.17	**8800**	**6800**	480	1100	<0.50	<0.5	97	57	6.7	**2100**	30	-	**3900**	-	-	0.098	0.38	1.5	<0.16	0.35	1.3
	26-Jun-2018	7.50	**8880**	7.8	8.16	**8400**	**6700**	430	1200	<1.0	<1.0	88	52	6.8	**2100**	38	-	**3800**	-	-	0.79	0.49	0.17	0.03	0.2	1.4
	12-Jun-2019	7.72	**8010**	14	8.14	**8100**	**6000**	380	1200	<1.0	<1.0	86	41	<30	**2000**	43	-	**3200**	89	94	2.8	0.59	0.11	<0.10	<0.14	1.4
	29-May-2020	7.62	**7730**	10.2	8.3	**8000**	**5600**	350	1200	<1.0	<1.0	74	40	5.1	**2000**	62	-	**2800**	80	94	7.8	0.48	0.11	0.034	0.15	1.6
	4-Jun-2021	7.6	**7250**	14.1	8.41	**6810**	**6060**	338	1300	15.2	<5.0	68.6	40.4	5.55	**1890**	53.4	0.81	**3350**	-	-	95.7	0.403	0.2	<0.050	0.2	1.35
	10-Jun-2022	7.60	**2120**	7.3	8.43	**7210**	**5840**	320	1470	20.6	<1.0	65.8	37.8	5.32	**1760**	51.2	0.676	**3140**	91.6	83.1	90.7	0.422	0.164	0.097	0.261	1.39
MW11	30-May-2014	7.5	**10,020**	6.2	8.19	**9500**	**8800**	-	840	<0.50	-	240	130	7.6	**2300**	14	-	**5600**	-	-	-	0.14	0.27	-	-	1.7
	28-May-2015	7.8	**10,140**	6.4	7.79	**9500**	**8200**	980	900	<0.50	<0.50	210	110	8.4	**2200**	20	-	**5100**	-	-	0.96	0.17	0.19	<0.010	0.19	1.7
	8-Jun-2016	7.61	**9900**	8.6	8.03	**9600**	**7800**	1100	930	<0.50	<0.50	230	120	9.1	**2100**	32	-	**4800**	-	-	0.97	0.15	0.23	0.015	0.25	0.81
	7-Jun-2017	7.7	**9710**	7.4	7.88	**9100**	**7500**	980	1000	<0.50	<0.5	200	120	8.0	**2100**	37	-	**4500**	-	-	0.26	0.086	0.71	<0.16	-	1.5
	26-Jun-2018	7.5	**10,350**	7.9	8.01	**9800**	**7800**	1100	1000	<1.0	<1.0	240	130	8.7	**2300**	36	-	**4600**	-	-	3.8	0.063	0.33	<0.01	0.33	1.7
	12-Jun-2019	7.28	**8,860**	9.6	7.99	**8500**	**6500**	860	910	<1.0	<1.0	190	92	<30	**2000**	31	-	**3700**	92	110	6.5	0.11	0.26	<0.10	0.26	1.2
	29-May-2020	7.18	**9260**	9.3	8.05	**9400**	**7000**	1100	960	<1.0	<1.0	230	120	8.4	**2300**	53	-	**3800**	96	120	11	0.22	0.074	<0.050	0.075	1.1
	4-Jun-2021	7.74	**8740**	10.1	8.15	**8320**	**7910**	963	992	<5.0	<5.0	201	112	7.65	**2190**	48.3	0.53	**4860**	-	-	96.5	0.237	0.24	<0.050	0.24	1.38
	9-Jun-2022	7.51	**10450**	12.3	8.2	**8660**	**7550**	913	1100	<1.0	<1.0	194	104	7.49	**1930**	54.1	0.48	**4670**	117	102	87.2	<0.0050	0.134	<0.050	0.134	1.48
MW12A	30-May-2014	7.8	**11,380**	8.7	8.25	**11,000**	**10,000**	-	900	<0.50	-	150	86	10	**3000**	1.9	-	**6700**	-	-	-	0.26	0.11	-	-	0.89
	28-May-2015	7.6	**11,130**	5.7	7.75	**11,000**	**8900**	580	900	<0.50	<0.50	120	64	10	**2600**	2.2	-	**5600**	-	-	0.96	0.38	0.082	**0.05**	0.13	1.3
	8-Jun-2016	**6.15**	**15,400**	-	8.00	**11,000**	**9600**	710	880	<0.50	<0.50	150	82	11	**2600**	1.6	-	**6300**	-	-	0.89	0.21	0.082	**0.04**	0.12	0.45
	7-Jun-2017	7.5	**11,640**	7.7	8.02	**11,000**	**9200**	770	950	<0.50	<0.5	160	90	10	**2800**	1.3	-	**5600**	-	-	2.1	0.067	0.87	*<0.16*	0.20	0.7
	26-Jun-2018	7.8	**11,280**	9.6	8.02	**10,000**	**8200**	630	960	<1.0	<1.0	130	74	11	**2600**	1.7	-	**4900**	-	-	3.9	0.11	0.18	**0.054**	0.23	0.8
	12-Jun-2019	7.57	**12,340**	8.4	8.02	**13,000**	**9900**	840	980	<1.0	<1.0	170	100	<30	**3100**	2.5	-	**6100**	140	150	2.8	0.15	<0.20	*<0.20*	<0.28	0.73
	4-Jun-2020	7.52	**12,980**	6.3	7.97	**13,000**	**11,000**	860	920	<1.0	<1.0	160	110	11	**3500**	2.2	-	**7000**	160	170	2.9	0.11	0.1	0.035	0.14	0.53
	4-Jun-2021	7.49	**11,780**	8.1	8.37	**10,600**	**11,200**	840	963	10.6	<5.0	155	110	11.2	**3160**	<5.0	0.26	**7280**	-	-	92.1	0.179	<0.20	<0.10	<0.22	0.68
	10-Jun-2022	7.09	**14,330**	6.8	8.42	**11,400**	**10,600**	815	1060	16.8	<1.0	155	104	10.8	**3040**	<5.0	<0.20	**6770**	159	149	93.7	0.213	<0.20	<0.10	<0.224	1.09
MW23B	30-May-2014	7.5	**9800**	9.9	8.06	**9600**	**8400**	-	1100	<0.50	-	170	64	11	**2400**	2.2	-	**5200**	-	-	-	0.18	0.36	-	-	0.56
	28-May-2015	7.8	**9750**	9.8	7.76	**9700**	**7900**	670	1000	<0.50	<0.50	170	62	13	**2300**	2.6	-	**4900**	-	-	0.94	0.42	0.072	0.015	0.087	0.76
	8-Jun-2016	7.45	**10170**	10.3	7.89	**9900**	**8000**	670	1100	<0.50	<0.50	170	63	12	**2400**	1.9	-	**4900**	-	-	0.98	<0.050	0.32	<0.010	0.32	0.46
	7-Jun-2017	7.3	**9700**	9.3	8.05	**10,000**	**7900**	690	1100	<0.50	<0.5	170	66	12	**2400**	3.7	-	**4700**	-	-	1.3	0.39	0.85	*<0.16*	-	0.67
	26-Jun-2018	7.7	**10,680**	8.0	7.95	**10,000**	**8000**	710	1100	<1.0	<1.0	170	68	12	**2400**	3.2	-	**4800**	-	-	1.2	0.33	0.068	<0.01	0.068	0.71
	17-Jun-2019	7.41	**9,970**	9.9	8.09	**10,000**	**7600**	650	1100	<1.0	<1.0	160	63	11	**2300**	4.4	-	**4600**	110	110	0.8	0.25	0.21	0.022	0.23	0.63
	5-Jun-2020	7.3	**10020**	8.3	8.04	**9,900**	**8300**	730	980	<1.0	<1.0	180	67	12	**2500**	4.2	-	**5000**	120	120	0.89	0.38	0.24	0.026	0.26	0.54
	3-Jun-2021	7.3	**9550**	14.9	8.29	**8,410**	**8530**	772	1030	<5.0	<5.0	189	72.8	12.4	**2450**	<5.0	<0.20	**5300**	-	-	96.20	0.415	<0.20	<0.10	<0.22	0.6
	10-Jun-2022	7.39	**11500**	9.9	8.22	**9290**	**8210**	712	1080	<1.0	<1.0	175	66.9	11.5	**2380**	<5.0	<0.20	**5020**	122	118	96.7	0.412	0.298	<0.10	0.298	0.71
MW25B	30-May-2014	7.4	**9910**	7.2	8.12	**9400**	**8300**	-	1100	<0.50	-	190	54	11	**2300**	1.9	-	**5200**	-	-	-	0.59	0.42	-	-	0.84
	28-May-2015	7.8	**10,020**	8.2	7.85	**9500**	**7600**	690	1000	<0.50	<0.50	190	53	12	**2200**	2.2	-	**4600**	-	-	0.97	0.29	0.77	0.016	0.78	0.86
	8-Jun-2016	7.56	**9510**	8.6	8.09	**9500**	**7300**	680	970	<0.50	<0.50	190	51	12	**2100**	2.5	-	**4500**	-	-	0.95	0.58	0.62	0.019	0.64	1.2
	7-Jun-2017	7.4	**9720**	7.5	8.14	**9500**	**7100**	700	1000	<0.5	<0.5	190	54	12	**2300**	2.3	-	**4100**	-	-	6.0	0.44	2.5	<0.16	-	0.87
	26-Jun-2018	7.7	**9200**	7.6	7.85	**9600**	**7800**	710	1000	<1.0	<1.0	200	54	13	**2400**	2.3	-	**4600**	-	-	2.2	<0.015	0.6	**0.05**	0.65	0.55
	17-Jun-2019	7.52	**9250**	11.5	8.17	**9500**	**7500**	680	1000	<1.0	<1.0	190	52	12	**2400**	2.7	-	**4400**	110	120	4.1	0.15	0.8	0.018	0.82	0.52
	5-Jun-2020	7.2	**9430**	11.8	8.14	**9400**	**7600**	680	960	<1.0	<1.0	190	51	11	**2300**	2.5	-	**4500**	110	110	1.8	0.07	0.97	<0.010	0.97	0.48
	3-Jun-2021	7.3	**9090**	9.6	8.18	**7720**	**8150**	718	970	<5.0	<5.0	198	54.2	11.7	**2340**	<5.0	<0.20	**5060**	-	-	96	0.122	0.93	<0.10	0.93	0.37
	10-Jun-2022	7.58	**11060**	9.6	8.16	**8920**	**7780**	656	1080	<1.0	<1.0	180	50.2	10.6	**2080**	<2.5	0.133	**4900**	120	104	86.7	0.477	0.625	0.06	0.685	0.81
MW26B	30-May-2014	7.7	**5280**	5.8	8.09	**6100**	**4900**	-	960	<0.50	n/a	73	36	5.0	**1400**	1.7	-	**3000**	-	-	-	0.52	0.052	-	-	0.89
	28-May-2015	7.5	**7450**	9.1	7.93	**7100**	**5600**	490	1000	<0.50	<0.50	100	56	8.3	**1600**	3.5	-	**3300**	-	-	0.95	0.43	0.23	0.039	0.27	0.86
	8-Jun-2016	7.63	**6450**	8.9	8.15	**7400**	**5600**	500	990	<0.50	<0.50	110	58	7.7	**1600**	3.9	-	**3400**	-	-	0.91	0.43	0.19	0.036	0.23	0.73
	7-Jun-2017	7.4	**7810**	5.9	8.19	**7600**	**5700**	570	1000	<0.5	<0.5	120	66	7.5	**1800**	4.5	-	**3200**	-	-	3.1	0.66	0.42	<0.16	-	0.99
	26-Jun-2018	6.85	**6850**	6.7	8.12	**7400**	**5800**	560	1100	<1.0	<1.0	120	67	8.0	**1800**	5.6	-	**3300**	-	-	3.7	0.49	0.09	0.012	0.1	1.1
	17-Jun-2019	7.52	**7786**	11.5	8.19	**7700**	**5800**	540	1000	<1.0	<1.0	110	64	7.5	**1800**	6	-	**3400**	87	88	0.58	0.6	0.048	0.027	0.074	0.98
	5-Jun-2020	7.08	**7650**	7.00	8.16	**7500**	**5700**	580	960	<1.0	<1.0	120	65	7.4	**1800**	5.6	-	**3300**	84	91	4.0	0.58	0.18	**0.10**	0.29	0.96
	3-Jun-2021	7.27	**7250**	12.20	8.35	**6650**	**6430**	585	973	6.6	<5.0	121	68.8	7.87	**1800**	5.6	0.32	**3940**	-	-	91.7	0.50	0.24	**<0.10**	0.24	0.98
	10-Jun-2022	7.08	**8970**	11	8.35	**7240**	**6040**	572	1130	9.1	<1.0	116	68.5	7.42	**1680**	5.41	0.338	**3570**	93.3	84.7	90.8	0.487	0.214	<0.050	0.214	0.90
MW27B	30-May-2014	7.5	**11,560**	9.8	8.14	**11,000**	**10,000**	-	1700	<0.50	-	130	110	9.2	**2800**	40	-	**6100**	-	-	-	0.51	0.29	-	-	1.5
	28-May-2015	8.1	**11,530**	9.1	7.97	**11,000**	**9000**	740	1700	<0.50	<0.50	130	100	11	**2700**	35	-	**5100**	-	-	0.99	0.15	1.1	0.01	1.1	1.0
	8-Jun-2016	7.74	**11,530**	7.8	8.19	**11,000**	**9100**	770	1600	<0.50	<0.50	140	100	11	**2700**	42	-	**5300**	-	-	0.97	0.42	0.91	0.014	0.92	0.55
	7-Jun-2017	7.6	**11,410**	8.3	8.10	**12,000**	**9400**	860	1900	<0.50	<0.5	140	130	11	**3100**	51	-	**5100**	-	-	4.4	0.67	1.5	**0.21**	-	1.4
	26-Jun-2018	7.40	**12,540**	6.9	7.96	**12,000**	**9700**	830	1800	<1.0	<1.0	150	110	11	**3100**	49	-	**5400**	-	-	2.5	0.16	1.0	<0.01	1.0	1.1
	17-Jun-2019	7.60	**11,470**	11.2	8.22	**12,000**	**9600**	820	1800	<1.0	<1.0	140	120	10	**3000**	74	-	**5300**	140	150	2.1	0.20	<0.010	0.029	0.029	0.99
	4-Jun-2020	7.40	**11,570**	8.3	8.12	**12,000**	**9900**	830	1600	<1.0	<1.0	140	110	10	**3200**	94	-	**5500**	140	160	4.8	0.17	1.4	0.022	1.5	0.85
	2-Jun-2021	7.70	**10,660**	11.7	8.23	**10,400**	**10300**	845	1750	<5.0	<5.0	142	119	10.3	**3080**	122	0.62	**6010**	-	-	96.1	0.40	0.99	<0.10	0.99	0.81
	10-Jun-2022	8.46	**3,290**	9.8	8.35	**11,200**	**10,100**	793	2010	13.8	<1.0	133	112	9.88	**2740**	**174**	0.507	**5860**	160	135	84.4	**0.713**	0.384	<0.10	0.384	1.22
MW28B	30-May-2014	7.4	**12,780**	6.5	8.08	**12,000**	**11,000**	-	1100	<0.50	-	230	89	11	**3200**	37	-	**6900**	-	-	-	1.6	0.075	-	-	2.5
	28-May-2015	7.8	**13,020**	7.2	7.90	**12,000**	**10,000**	940	1100	<0.50	<0.50	220	95	13	**3000**	35	-	**6500**	-	-	0.95	1.2	0.24	0.094	0.34	2.0
	8-Jun-2016	7.58	**12,860**	7.8	8.14	**13,000**	**10,000**	920	1000	<0.50	<0.50	210	93	13	**2800**	33	-	**6700**	-	-	0.91	1.4	0.31	0.038	0.35	2.1
	7-Jun-2017	7.5	**12,890**	6.2	8.08	**12,000**	**9700**	960	1100	<0.50	<0.50	220	100	12	**3200**	30	-	**5700**	-	-	7.3	1.6	<0.22	**0.38**	-	2.1
	26-Jun-2018	7.30	**13,570**	7.4	7.86	**13,000**	**11,000**	1000	1000	<1.0	<1.0	230	110	12	**3300**	28	-	**6500**	-	-	3.5	1.1	0.39	0.043	0.43	1.7
	17-Jun-2019	7.46	**12,490**	9.5	8.11	**13,000**	**11,000**	1100	1000	<1.0	<1.0	240	120	13	**3600**	27	-	**6200**	150	180	9.8	1.1	<0.010	0.038	0.038	2
	4-Jun-2020	7.45	**12,830**	7.1	8.1	**13,000**	**11,000**	1000	960	<1.0	<1.0	240	100	12	**3500**	27	-	**6600**	150	170	5.3	1.5	0.36	0.026	0.39	1.9
	2-Jun-2021	7.58	**11,280**	8.5	8.1	**11,300**	**12,200**	1040	995	<5.0	<5.0	235	109	12	**3360**	25.4	0.23	**7990**	-	-	91.2	1.4	0.27	<0.10	0.27	2.6
	10-Jun-2022	8.36	**3,900**	9.3	8.27	**12,000**	**11,400**	981	1130	<1.0	<1.0	223	103	11	**2970**	24.3	<0.20	**7510**	176	149	84.6	**1.61**	<0.20	<0.10	<0.224	2.11
MW29A	4-Jun-2015	8.5	**4740**	6.7	8.28	**4900**	**3600**	220	680	<0.50	<0.50	72	9.9	7.4	**1200**	7.3	-	**2000**	-	-	1.0	**4.3**	0.054	**0.084**	0.14	16
	8-Jun-2016	8.15	**3440**	7.0	8.41	**3400**	**2400**	100	710	7.7	<0.50	33	5.1	4.1	**810**	3.3	-	**1200**	-	-	1.0	**1.2**	0.063	0.014	0.077	1.3
	7-Jun-2017	8.1	**3740**	6.5	8.34	**3400**	**2400**	100	760	3.0	<0.50	32	5.2	4.1	**810**	3.6	-	**1100**	-	-	2	**1.4**	0.33	**1.1**	-	1.6
	26-Jun-2018	7.48	**3440**	8.4	8.33	**3400**	**2400**	95	770	4.2	<1.0	30	4.8	3.8	**850**	3.2	-	**1100**	-	-	3.6	0.9	0.32	0.026	0.35	1.3
	17-Jun-2019	8.06	**3760**	8.8	8.45	**3500**	**2300**	100	740	16	<1.0	32	5.1	3.7	**810**	3.5	-	**1100**	36	37	2.7	**1.1**	0.18	**0.089**	0.27	1.7
	4-Jun-2020	7.89	**3560**	6.8	8.13	**3500**	**2400**	120	760	<1.0	<1.0	37	7.3	3.9	**840**	3.6	-	**1200**	37	39	2.8	1.1	0.24	**0.08**	0.32	1.5
	2-Jun-2021	7.61	**3260**	9.1	8.37	**3190**	**2560**	127	745	7.9	<5.0	37.4	8.06	4.01	**833**	2.8	0.4	**1300**	-	-	98.2	1.16	0.26	**<0.050**	0.26	1.32
	10-Jun-2022	7.11	**10180**	8.7	**8.58**	**3480**	**2670**	156	831	25.3	<1.0	44.8	10.7	3.9	**777**	3.04	0.478	**1370**	43.1	37.1	86.1	1.22	0.147	<0.05	0.147	1.6
MW30A	4-Jun-2015	8.5	**2400**	7.5	8.34	**2300**	**1500**	48	770	3.5	<0.50	16	2.2	2.9	**540**	5.3	-	**510**	-	-	1.0	**0.78**	0.013	<0.033	0.023	2.6
	8-Jun-2016	8.29	**2320**	8.7	8.37	**2200**	**1500**	36	780	5.3	<0.50	12	1.6	2.4	**540**	3.0	-	**510**	-	-	1.0	0.42	0.16	**0.046**	0.21	1.1
	7-Jun-2017	8.2	**2020**	7.0	**8.57**	**1900**	**1200**	28	770	17	<0.5	8.9	1.4	2.2	**460**	1.3	-	**360**	-	-	0.27	0.46	0.19	**0.081**	-	0.8
	26-Jun-2018	7.98	**1932**	8.4	8.44	**1900**	**1200**	25	770	12	<1.0	7.9	1.3	2.1	**450**	1.5	-	**350**	-	-	0.61	0.39	0.1	<0.01	0.1	0.75
	17-Jun-2019	8.19	**2180**	10.1	**8.53**	**2000**	**1200**	26	740	23	<1.0	8.3	1.4	2	**430**	1.3	-	**350**	20	19	2.4	0.40	0.086	0.01	0.096	0.76
	29-May-2020	8.08	**1994**	6.9	8.4	**2000**	**1200**	27	730	7.9	<1.0	8.8	1.3	1.8	**420**	2.2	-	**360**	20	19	2.2	0.40	0.088	**0.023**	0.11	0.79
	2-Jun-2021	7.87	**1817**	7.1	**8.54**	**1750**	**1280**	24.2	744	15.7	<5.0	7.14	1.55	2.3	**504**	0.71	0.57	**380**	-	-	109	0.41	0.131	**0.012**	0.143	0.53
	10-Jun-2022	8.09	**2280**	8.4	**8.68**	**1870**	**1310**	27.8	860	30.1	<1.0	8.64	1.5	2.11	**438**	0.82	0.635	**381**	23.1	19.7	85.3	0.41	0.151	0.016	0.167	0.82
MW31A	4-Jun-2015	**8.6**	**1980**	10.5	**8.57**	**1900**	**1100**	32	920	22	<0.50	7.8	3.1	3.2	**420**	12	-	**220**	-	-	0.94	**1.1**	0.017	0.013	0.03	5.2
	8-Jun-2016	**8.53**	**1720**	9.5	**8.53**	**1800**	**1000**	11	940	18	<0.50	4.5	<2.0	<3.0	**430**	6.7	-	120	-	-	1.0	**1.1**	2.0	0.028	2.0	1.0
	7-Jun-2017	-	-	-	**8.57**	**1700**	**1100**	15	1000	23	<0.50	4.9 *	0.52 *	1.9 *	**470**	5.2	-	76	-	-	3.2	**1.2**	**14**	**0.077**	3.2	7.4
	26-Jun-2018	8.03	**1796**	13.8	8.48	**1700**	**1100**	15	1100	19	<1.0	4.9	0.51	1.6	**440**	11	-	67	-	-	2.0	0.52	1.5	<0.01	1.5	1.9
	17-Jun-2019	8.46	**1702**	10.5	**8.66**	**1800**	**1000**	10	990	57	<1.0	3.5	0.35	1.5	**410**	8.5	-	58	20	18	3.9	**0.61**	1.9	<0.010	1.9	3
	5-Jun-2020	8.13	**1728**	8.7	8.46	**1800**	**1100**	13	1000	16	<1.0	4.4	0.43	1.6	**470**	4.9	-	51	19	21	4.7	0.47	1.8	<0.010	1.8	1.0
	3-Jun-2021	8.21	**1610**	10.6	**8.55**	**1470**	**1070**	12.4	1110	20.8	<5.0	4.28	0.42	1.6	**451**	3.22	0.957	39	-	-	99.8	0.338	1.87	**0.087**	1.96	1.1
	10-Jun-2022	7.82	**2090**	9.7	**8.71**	**1710**	**1180**	14.4	1290	44	<1.0	4.9	0.53	1.65	**428**	3.23	1.1	43.4	23.7	19	80.2	0.354	0.314	0.047	0.361	0.73
MW33A	28-May-2015	**8.6**	**2540**	6.9	8.32	**3300**	**2400**	130	1100	2.6	<0.50	35	10	5.8	**930**	28	-	**860**	-	-	1.2	**1.3**	<0.010	<0.010	<0.010	8.0
	8-Jun-2016	**8.66**	**2010**	7.0	**8.52**	**2100**	**1200**	24	990	16	<0.50	7.4	1.4	2.2	**480**	27	-	**230**	-	-	0.96	**0.89**	<0.010	<0.010	<0.020	2.6
	7-Jun-2017	-	-	-	**8.52**	**1800**	**1100**	15	990	18	<0.50	4.7	0.7	1.4	**390**	24	-	**130**	-	-	7.7	**0.79**	<0.044	<0.033	<0.010	2.4
	26-Jun-2018	**8.97**	**2370**	10.9	**8.57**	**1800**	**1100**	19	1100	30	<1.0	6.4	0.81	2	**460**	28	-	75	-	-	0.47	**0.70**	0.021	<0.01	0.021	1.5
	12-Jun-2019	**8.54**	**1859**	9.6	**8.72**	**1800**	**1000**	11	960	60	<1.0	3.6	0.41	1.5	**410**	24	-	51	20	18	3.2	**1.40**	<0.010	<0.010	<0.014	9.2
	4-Jun-2020	**8.81**	**1768**	8.1	8.45	**1800**	**1100**	12	1000	15	<1.0	4	0.52	1.5	**450**	24	-	59	19	20	2.5	**0.58**	<0.010	<0.010	<0.014	1.1
	4-Jun-2021	**8.71**	**1527**	8.9	8.76	**1410**	**937**	10.9	841	34.3	<5.0	3.59	0.48	1.62	**413**	18.4	**1.88**	49.7	-	-	110	**0.412**	0.091	<0.010	0.091	2.72
	10-Jun-2022	**8.62**	**2080**	7.8	**8.78**	**1780**	**1200**	11.7	1230	52.3	<1.0	3.87	0.499	1.49	**445**	21.2	**2.03**	35.6	23.2	19.7	84.9	**0.735**	<0.020	0.012	<0.050	1.73
15MW35B	8-Jun-2016	7.83	**8080**	7.6	8.16	**7700**	**6000**	300	790	<0.50	<0.50	99	14	7.8	**1800**	5.2	-	**3700**	-	-	0.95	**1.9**	0.42	<0.010	0.42	2.7
	7-Jun-2017	7.8	**7270**	8.0	8.22	**7600**	**5700**	300	780	<0.50	<0.50	98	14	8.6	**1800**	6.8	-	**3300**	-	-	2.3	**2.0**	2.5	*<0.16*	-	2.5
	26-Jun-2018	7.05	**8530**	7.1	8.12	**7700**	**6000**	330	830	<1.0	<1.0	110	15	8.4	**2000**	6.3	-	**3500**	-	-	2.8	1.3	0.76	<0.01	0.76	2.0
	17-Jun-2019	7.7	**7970**	9.9	8.27	**7800**	**6100**	360	820	<1.0	<1.0	120	16	9.1	**2100**	6.3	-	**3400**	85	100	8	1.2	1.6	0.019	1.6	1.7
	5-Jun-2020	7.7	**7410**	7.5	8.21	**7800**	**6100**	340	780	<1.0	<1.0	110	15	7.8	**2000**	6.6	-	**3600**	88	93	2.7	1.1	1.5	0.026	1.5	1.5
	2-Jun-2021	7.6	**7250**	11.4	8.2	**7010**	**6520**	327	886	<5.0	<5.0	107	14.5	8.06	**1970**	5.7	0.21	**3970**	-	-	95.0	1.48	1.06	<0.10	1.06	1.47
	9-Jun-2022	7.45	**8930**	11.2	8.17	**7530**	**5940**	308	886	<1.0	<1.0	100	14.1	7.16	**1720**	6.1	0.299	**3630**	90.4	81.2	89.8	1.29	1.04	0.195	1.24	2.1
19MW37A	15-Nov-2019	8.10	**3240**	1.0	8.06	**3000**	**2100**	130	1100	<1.0	<1.0	32	12	5.5	**770**	8.0	-	**730**	33	37	5.5	0.69	0.029	<0.010	0.029	1.3
	4-Jun-2020	8.14	**3900**	6.5	8.38	**3800**	**2600**	100	850	8.2	<1.0	26	9.1	4.9	**960**	6.3	-	**1200**	40	44	5.4	**1.3**	<0.010	<0.010	<0.014	1.5
	4-Jun-2021	8.21	**3630**	9.0	8.66	**3520**	**2690**	61.8	873	30.4	<5.0	16.6	4.95	3.25	**840**	5.1	0.8	**1360**	-	-	86.6	**1.37**	<0.10	<0.050	<0.11	1.45
	9-Jun-2022	8.04	**4230**	10.9	**8.75**	**3730**	**2680**	60.3	966	43.7	<1.0	17.6	3.97	3.25	**843**	5.1	0.589	**1260**	43.7	38.1	87.2	**1.39**	<0.10	<0.050	<0.112	2.02
19MW38A	15-Nov-2019	7.99	**4450**	2.0	8.42	**4000**	**2800**	130	1400	25	<1.0	31	13	9.9	**1000**	8.8	-	**980**	45	47	2.8	**1.8**	<0.010	<0.010	<0.014	46
	4-Jun-2020	8.34	**2680**	5.1	8.5	**2600**	**1700**	42	1100	21	<1.0	12	3	3.6	**700**	13	-	**420**	28	32	6.4	**0.95**	<0.010	0.012	<0.014	1.7
	4-Jun-2021	**8.51**	**2230**	7.5	**8.77**	**2170**	**1470**	23.1	1110	46.2	<5.0	6.88	1.43	2.19	**542**	13	1.3	**314**	-	-	90.5	**0.869**	0.085	<0.010	0.085	1.72
	9-Jun-2022	**8.51**	**2530**	8.7	**8.78**	**2260**	**1520**	21.7	1230	51.5	<1.0	6.64	1.24	2.12	**528**	12.6	**1.19**	**274**	28.1	23.5	83.6	**1.11**	<0.040	<0.020	<0.050	1.76

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use .

[2] Alberta Environment and Parks (AEP). Environmental Quality Guidelines for Alberta Surface Waters. March 2018. Table 1 Surface water quality guidelines for the protection of freshwater aquatic life (PAL). Most conservative values applied (chronic or acute).

[3] Guideline varies with hardness.

[4] Guideline varies with pH and temperature.

[5] Guideline varies with chloride.

[6] Guideline varies with pH.

"-" No applicable guideline or not analyzed.

BOLD - Greater than Tier 1 Guideline.

Italic - Detection limit greater than Tier 1 guideline.

* - laboratory filtered.

TETRA TECH

Table 4b: Field and Groundwater Analytical Results Summary - Upper Sandstone Wells

Parameter Group		Hydrocarbons							Organics		
Parameter		Benzene	Toluene	Ethylbenzene	Xylenes	Styrene	F1-BTEX	F2 (C10-C16)	Total Phenols	Chemical Oxygen Demand	Dissolved Organic Carbon
Unit		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		0.005	0.024	0.0016	0.02	0.072	2.2	1.1	-	-	-
Monitoring Well	Date										
MW1C	30-May-2014	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	39	9.6
	28-May-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	42	11
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	51	11
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.0008	-	<0.10	<0.10	-	28	10
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.0005	<0.10	<0.10	<0.002	30	11
	12-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	48	12
	5-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	36	9.9
	4-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	0.0028	35	12.4
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	30	12.9
MW8B	30-May-2014	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	39	13
	28-May-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	48	14
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	47	15
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	44	16
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.0005	<0.10	<0.10	0.002	44	15
	12-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	0.0025	51	17
	29-May-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	52	17
	4-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	0.005	63	19.8
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	50	19.9
MW11	30-May-2014	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	96	29
	28-May-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	100	34
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	100	36
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	84	31
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.0005	<0.10	<0.10	0.0024	98	36
	12-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	86	32
	29-May-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	91	27
	4-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	<0.0010	92	36.1
	9-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	82	34.6
MW12A	30-May-2014	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	41	15
	28-May-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	68	16
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	48	17
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	40	16
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.0005	<0.10	<0.10	0.002	53	17
	12-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	44	18
	4-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	41	15
	4-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	0.0016	43	17
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	38	17.6
MW23B	30-May-2014	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	47	5.8
	28-May-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	23	7.4
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	22	5.5
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	22	9.5
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.0005	<0.10	<0.10	<0.002	28	6.6
	17-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	32	7.7
	5-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00080	<0.00050	<0.10	<0.10	<0.0015	75	7.8
	3-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	<0.0010	20	7.6
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	32	8.46
MW25B	30-May-2014	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	35	9
	28-May-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	29	9.9
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	30	10
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.0008	-	<0.10	<0.10	-	27	12
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.0005	<0.10	<0.10	<0.002	27	10
	17-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	32	11
	5-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00080	<0.00050	<0.10	<0.10	<0.0015	26	10
	3-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	0.0017	23	9.3
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	32	10.8
MW26B	30-May-2014	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	49	7.3
	28-May-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	24	9.0
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	35	10
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	28	12
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.0005	<0.10	<0.10	<0.002	29	9.6
	17-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	0.0015	44	12
	5-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00080	<0.00050	<0.10	<0.10	<0.0015	34	10
	3-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	0.0019	23	10.2
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	34	11.7
MW27B	30-May-2014	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	64	13
	28-May-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	35	13
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	37	15
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	43	18
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.0005	<0.10	<0.10	0.0024	43	13
	17-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	37	16
	4-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	33	14
	2-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	0.0054	35	12.6
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	41	14.5
MW28B	30-May-2014	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	61	15
	28-May-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	45	16
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	48	17
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	35	17
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.0005	<0.10	<0.10	<0.002	37	14
	17-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	45	15
	4-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	41	14
	2-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	0.0035	39	12.1
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	38	14.3
MW29A	4-Jun-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	1100	13
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	55	8.3
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	25	9.1
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.0005	<0.10	<0.10	<0.0020	22	7.7
	17-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	58	9.1
	4-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	22	8.1
	2-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	<0.0010	26	8.8
	10-Jun-2022	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.10	<0.0010	34	9.52
MW30A	4-Jun-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	130	15
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	43	9.9
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	23	7.8
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.0005	<0.10	<0.10	<0.0020	57	7.1
	17-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	24	8.7
	29-May-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	0.15	<0.0015	22	7.3
	2-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	<0.0010	28	8.3
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	27	8.4
MW31A	4-Jun-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	560	19
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	380	17
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	300	-
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.0005	<0.10	<0.10	<0.0020	140	11
	17-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	270	18
	5-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00080	<0.00050	<0.10	<0.10	<0.0015	89	9.5
	3-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	0.0049	38	10.8
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	38	11.1
MW33A	28-May-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	460	39
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	140	33
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	130	25
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.0005	<0.10	<0.10	<0.0020	110	26
	12-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	0.0051	730	23
	4-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	0.0051	67	27
	4-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	0.0022	146	24
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	112	29.5
15MW35B	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	37	8.2
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	66	12
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.0005	<0.10	<0.10	<0.0020	33	10
	17-Jun-2019	<0.00040	0.0004	<0.00040	<0.00089	<0.00050	<0.10	<0.10	0.0038	37	10
	5-Jun-2020	<0.00040	0.0004	<0.00040	<0.00080	<0.00050	<0.10	<0.10	<0.0015	28	8.9
	2-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	0.0037	28	8.3
	9-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	37	10.3
19MW37A	15-Nov-2019	<0.00040	<0.00040	<0.00040	<0.00089	-	<0.10	<0.10	0.0025	62	10
	4-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	41	11
	4-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	0.0127	39	10.9
	9-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	33	12.6
19MW38A	15-Nov-2019	<0.00040	<0.00040	<0.00040	<0.00089	-	<0.10	<0.10	0.0037	3540	16
	4-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	45	16
	4-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	0.0025	80	18.6
	9-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	68	20.8

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Divis

[2] Alberta Environment and Parks (AEP). Environmental Quality Guidelines for Alberta Surface Waters. March 2018. Table 1 Surface water quality guideline

[3] Guideline varies with hardness.
[4] Guideline varies with pH and temperature.
[5] Guideline varies with chloride.
[6] Guideline varies with pH.
"-" No applicable guideline or not analyzed.
BOLD - Greater than Tier 1 Guideline.
Italic - Detection limit greater than Tier 1 guideline.
* - laboratory filtered.

Table 4b: Field and Groundwater Analytical Results Summary - Upper Sandstone Wells

Parameter Group		Dissolved Metals																					
	Parameter	Aluminum	Antimony	Arsenic	Barium	Boron	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silver	Thallium	Tin	Uranium	Zinc
	Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		0.007-0.05	0.006	0.005	1	1.0	0.00004-0.00037	0.05	-	0.007	0.3	0.001-0.007	0.05	0.000005	-	0.007-0.17	-	0.002	0.0001	-	-	0.01	0.03
Monitoring Well	Date																						
MW1C	30-May-2014	-	<0.0060	-	<0.10	-	<0.000050	<0.010	-	<0.0020	*<0.60*	<0.0020	-	<0.0000050	-	<0.0050	-	-	-	-	-	-	<0.030
	28-May-2015	<0.030	<0.0060	<0.0020	0.025	0.24	<0.00020	<0.010	-	<0.0020	<0.060	<0.0020	**0.27**	<0.0000050	-	<0.0050	-	<0.0020	*<0.0010*	-	-	<0.0010	<0.030
	8-Jun-2016	0.0079	<0.00060	0.0011	0.023	0.24	0.000036	<0.0010	-	0.00070	<0.060	<0.00020	**0.28**	<0.0000020	-	0.0021	-	<0.00020	<0.00010	-	-	0.00036	0.0037
	7-Jun-2017	0.0069	<0.00061	0.00068	<0.1	0.24	<0.00002	<0.0010	-	0.00039	*<0.60*	<0.0002	**0.28**	<0.000002	-	0.0013	-	<0.00020	<0.00010	-	-	0.00022	<0.003
	26-Jun-2018	<0.0030	<0.00062	0.00068	<0.10	0.24	<0.000020	<0.0010	-	0.00043	*<0.60*	<0.00020	**0.27**	<0.0000020	-	0.0016	-	<0.00020	<0.00010	-	-	0.00018	<0.0030
	12-Jun-2019	0.0056	<0.00060	0.00077	0.02	0.25	<0.000020	<0.0010	0.00067	0.0008	<0.060	<0.00020	**0.21**	<0.0000020	0.00086	0.0012	<0.10	<0.00020	<0.00010	<0.00020	<0.0010	0.00012	<0.0030
	5-Jun-2020	0.012	<0.00060	0.0005	0.015	0.24	<0.000020	<0.0010	0.00064	0.00040	0.07	<0.00020	**0.21**	<0.0000019	0.00047	0.0012	<0.1	<0.00020	<0.00010	<0.0002	<0.001	0.00013	<0.0030
	4-Jun-2021	<0.0050	<0.00050	0.00052	0.0144	0.238	<0.000025	<0.00050	0.00068	<0.0010	<0.050	<0.00025	**0.168**	<0.0000050	0.00052	<0.0025	<0.25	<0.00025	<0.000050	<0.000050	<0.00050	0.000099	0.0204
	10-Jun-2022	0.0057	<0.00050	0.0006	0.0215	0.261	<0.000025	<0.0025	0.0005	0.00102	<0.15	<0.00025	**0.186**	-	0.000528	<0.0025	<0.25	<0.00025	<0.000050	<0.000050	<0.00050	0.00013	<0.005
MW8B	30-May-2014	-	<0.00068	-	<0.10	-	<0.000050	<0.010	-	0.0031	*<0.60*	<0.0020	-	<0.0000050	-	0.006	-	-	-	-	-	-	<0.030
	28-May-2015	<0.030	<0.00069	0.0021	<0.10	0.41	<0.00020	<0.010	-	<0.0020	*<0.60*	<0.0020	**0.18**	<0.0000050	-	<0.0050	-	<0.0020	<0.0010	-	-	0.0022	<0.030
	8-Jun-2016	0.0050	<0.00070	0.0015	0.013	0.41	0.00003	<0.0010	-	0.00034	<0.060	<0.00020	**0.18**	<0.0000020	-	0.0035	-	<0.00020	<0.00010	-	-	0.0024	<0.0030
	7-Jun-2017	**0.060**	<0.00071	0.0013	<0.10	0.40	<0.000020	<0.0010	-	0.00039	*<0.60*	<0.00020	**0.180**	<0.0000020	-	0.0027	-	0.00025	<0.00010	-	-	0.0022	<0.0030
	26-Jun-2018	0.0045	<0.00072	0.0012	<0.10	0.41	0.000021	<0.0010	-	0.001	*<0.60*	<0.00020	**0.15**	0.0000041	-	0.0029	-	<0.00020	<0.00010	-	-	0.0018	<0.0030
	12-Jun-2019	0.0047	<0.00060	0.0014	<1.0	0.48	<0.000020	<0.0010	0.00077	0.00087	*<0.60*	<0.00020	**0.13**	<0.0000020	0.0014	0.0027	<10	<0.00020	<0.00010	<0.00020	<0.0010	0.0022	<0.0030
	29-May-2020	<0.0030	<0.00060	0.0011	0.01	0.35	<0.000020	<0.0010	0.00079	0.00063	0.077	<0.00020	**0.13**	<0.0000019	0.0013	0.0042	<0.1	<0.00020	<0.00010	<0.0002	<0.001	0.0025	<0.0030
	4-Jun-2021	0.0102	<0.00050	0.00153	0.0119	0.425	<0.000025	<0.00050	0.00093	0.0011	<0.050	<0.00025	**0.119**	<0.0000050	0.00147	0.0045	<0.25	<0.00025	<0.000050	<0.000050	<0.00050	0.00293	0.0182
	10-Jun-2022	0.0055	<0.00050	0.00156	0.013	0.39	<0.000025	<0.0025	0.0008	0.00357	<0.15	<0.00025	**0.128**	-	0.00152	0.00464	<0.25	<0.00025	<0.000050	<0.000050	<0.00050	0.00291	<0.0050
MW11	30-May-2014	-	<0.00073	-	<0.10	-	<0.000050	<0.010	-	0.0024	*<0.60*	<0.0020	-	<0.0000050	-	0.006	-	-	-	-	-	-	<0.030
	28-May-2015	<0.030	<0.00074	<0.0020	<0.010	0.19	<0.00020	<0.010	-	<0.0020	<0.060	<0.0020	0.015	<0.0000050	-	0.0058	-	<0.0020	*<0.0010*	-	-	**0.024**	<0.030
	8-Jun-2016	0.0060	<0.00075	0.0011	<0.010	0.20	0.000024	0.0011	-	0.0025	<0.060	<0.00020	0.0081	0.0000022	-	0.0060	-	0.0011	<0.00010	-	-	**0.030**	0.0077
	7-Jun-2017	<0.0030	<0.00076	0.0011	<0.10	<0.20	0.000029	<0.0010	-	0.0025	*<0.60*	<0.00020	<0.040	<0.0000020	-	0.0055	-	0.00079	<0.00010	-	-	**0.030**	0.0044
	26-Jun-2018	0.0055	<0.00077	0.0011	<0.10	0.21	<0.000020	0.0011	-	0.0026	*<0.60*	<0.00020	<0.040	<0.0000020	-	0.0056	-	0.00095	<0.00010	-	-	**0.030**	<0.0030
	12-Jun-2019	0.012	<0.00060	0.00085	<1.0	0.25	<0.000020	<0.0010	<0.00030	0.0023	*<0.60*	<0.00020	<0.040	<0.0000020	0.00099	0.0042	<10	0.00044	<0.00010	<0.00020	<0.0010	**0.020**	0.0046
	29-May-2020	<0.0030	<0.00060	0.0011	<0.010	0.2	<0.000020	<0.0010	<0.00030	0.002	<0.060	<0.00020	**0.015**	<0.0000019	0.00099	0.005	<0.1	0.00027	<0.00010	<0.0002	<0.001	**0.031**	0.0034
	4-Jun-2021	<0.0050	<0.00050	0.00108	0.0062	0.202	<0.000025	<0.00050	<0.00050	0.0017	<0.050	<0.00025	**0.0115**	<0.0000050	0.00114	0.0053	<0.25	0.00053	<0.000050	<0.000050	<0.00050	**0.026**	0.0198
	9-Jun-2022	0.0084	<0.00050	0.00096	0.00847	0.172	3.18E-05	<0.0025	<0.00050	0.00372	<0.15	<0.00025	<0.025	-	0.00105	0.00559	<0.25	0.000675	<0.000050	<0.000050	<0.00050	**0.031**	<0.0050
MW12A	30-May-2014	-	<0.00078	-	<0.10	-	<0.000050	<0.010	-	<0.0020	*<0.60*	<0.0020	-	<0.0000050	-	<0.0050	-	-	-	-	-	-	<0.030
	28-May-2015	**0.19**	<0.012	<0.0040	<0.010	0.44	<0.00040	<0.020	-	<0.0040	0.75	<0.0040	**0.087**	<0.0000050	-	<0.010	-	<0.0040	*<0.0020*	-	-	<0.0020	*<0.060*
	8-Jun-2016	0.0087	<0.00060	0.00097	<0.010	0.42	0.000042	<0.0010	-	0.0028	<0.060	0.00022	**0.055**	<0.0000020	-	0.0035	-	0.00023	<0.00010	-	-	0.0021	0.010
	7-Jun-2017	<0.0030	<0.00061	0.00078	<0.10	0.46	0.000022	<0.0010	-	0.00074	*<0.60*	<0.00020	<0.040	<0.0000020	-	0.007	-	<0.00020	<0.00010	-	-	0.0023	0.0042
	26-Jun-2018	<0.0030	<0.00062	0.00054	<0.10	0.44	<0.000020	<0.0010	-	0.0019	*<0.60*	<0.00020	<0.040	<0.0000020	-	0.0034	-	<0.00020	<0.00010	-	-	0.0013	0.0050
	12-Jun-2019	0.022	<0.00060	0.0007	<1.0	0.47	<0.000020	<0.0010	0.00033	0.0015	*<0.60*	<0.00020	0.044	<0.0000020	0.00037	0.0031	<10	0.00026	<0.00010	<0.00020	<0.0010	0.0034	0.0075
	4-Jun-2020	<0.0030	<0.00060	0.0007	<0.010	0.37	<0.000020	<0.0010	0.00033	0.0013	0.16	<0.00020	0.017	<0.0000019	0.00028	0.0033	<0.1	0.00027	<0.00010	<0.0002	<0.001	0.0043	0.0064
	4-Jun-2021	<0.0050	<0.00050	0.0005	0.00754	0.418	<0.000025	<0.00050	<0.00050	0.0022	<0.050	<0.00025	0.019	<0.0000050	0.00033	0.0032	<0.25	<0.00025	<0.000050	<0.000050	<0.00050	0.00357	0.0214
	10-Jun-2022	0.0436	<0.0010	<0.0010	0.00958	0.39	<0.000050	<0.0050	<0.0010	0.00339	<0.30	<0.00050	<0.050	-	<0.00050	<0.0050	<0.50	<0.00050	<0.00010	<0.00010	<0.0010	0.00354	<0.010
MW23B	30-May-2014	-	<0.00068	-	<0.10	-	0.00005	<0.010	-	<0.0020	*<0.60*	<0.0020	-	<0.0000050	-	<0.0050	-	-	-	-	-	-	<0.030
	28-May-2015	<0.030	<0.00069	<0.0020	<0.10	0.35	<0.00020	<0.010	-	<0.0020	*<0.60*	<0.0020	**0.14**	<0.0000050	-	<0.0050	-	<0.0020	*<0.0010*	-	-	0.0023	<0.030
	8-Jun-2016	0.0081	<0.00070	0.00024	<0.10	0.40	0.00028	<0.0010	-	0.0013	*<0.60*	<0.00020	**0.065**	<0.0000020	-	0.0028	-	<0.00020	<0.00010	-	-	0.0020	0.0039
	7-Jun-2017	<0.0030	<0.00071	0.0003	<0.10	0.36	0.000047	<0.0010	-	<0.00020	*<0.60*	<0.00020	**0.12**	<0.0000020	-	0.0012	-	<0.00020	<0.00010	-	-	0.0035	<0.0030
	26-Jun-2018	<0.003	<0.00072	0.00022	<0.10	0.35	0.000035	<0.0010	-	0.0003	*<0.60*	<0.0002	**0.12**	<0.0000020	-	0.0013	-	<0.00020	<0.00010	-	-	0.0032	<0.0030
	17-Jun-2019	<0.0030	<0.00060	0.00023	<0.10	0.32	0.000094	<0.0010	0.0004	0.0008	*<0.60*	<0.00020	**0.11**	<0.0000020	0.00031	0.0019	<1.0	<0.00020	<0.00010	<0.00020	<0.0010	0.0029	<0.0030
	5-Jun-2020	<0.0030	<0.00060	0.00033	<0.010	0.33	0.000078	<0.0010	0.00041	0.00021	<0.060	<0.00020	**0.14**	<0.0000019	0.00038	0.011	<0.1	<0.00020	<0.00010	<0.0002	<0.001	0.0025	<0.0030
	3-Jun-2021	<0.010	<0.0010	<0.0010	0.0064	0.35	0.000125	<0.0010	<0.0010	<0.0020	<0.10	<0.00050	**0.126**	<0.0000050	<0.00050	<0.0050	<0.50	<0.00050	<0.00010	<0.00010	<0.0010	0.00302	0.02
	10-Jun-2022	0.0156	<0.00050	<0.00050	0.00765	0.388	3.71E-05	<0.0025	<0.00050	<0.0010	<0.15	<0.00025	**0.121**	-	0.000276	0.00265	<0.25	<0.00025	<0.000050	<0.000050	<0.00050	0.00228	<0.0050
MW25B	30-May-2014	-	<0.00073	-	<0.10	-	0.00021	<0.010	-	<0.0020	*<0.60*	<0.0020	-	<0.0000050	-	<0.0050	-	-	-	-	-	-	<0.030
	28-May-2015	<0.030	<0.00074	<0.0020	<0.10	0.46	<0.00020	<0.010	-	<0.0020	*<0.60*	<0.0020	**0.17**	<0.0000050	-	<0.0050	-	<0.0020	*<0.0010*	-	-	<0.0010	<0.030
	8-Jun-2016	0.0084	<0.00075	0.00055	0.011	0.46	<0.000020	0.0016	-	0.00081	<0.060	<0.00020	**0.18**	<0.0000020	-	0.0031	-	<0.00020	<0.00010	-	-	0.00033	<0.0030
	7-Jun-2017	0.0053	<0.00076	0.00047	<0.10	0.47	<0.00002	<0.0010	-	0.00041	*<0.60*	<0.0002	**0.21**	<0.0000020	-	0.0028	-	<0.00020	<0.00010	-	-	0.00028	<0.0030
	26-Jun-2018	<0.003	<0.00077	0.00041	<0.10	0.48	<0.00002	<0.0010	-	0.00096	*<0.60*	<0.0002	**0.18**	<0.0000020	-	0.0025	-	<0.00020	<0.00010	-	-	0.00027	<0.0030
	17-Jun-2019	<0.0030	<0.00060	0.00039	<0.10	0.5	0.000026	<0.0010	0.00062	0.0016	*<0.60*	<0.00020	**0.19**	<0.0000020	0.001	0.0042	<1.0	<0.00020	<0.00010	<0.00020	<0.0010	0.00029	0.0036
	5-Jun-2020	<0.0030	<0.00060	0.00038	0.017	0.44	<0.000020	<0.0010	0.00043	0.0019	<0.060	<0.00020	**0.19**	<0.0000019	0.0007	0.0026	<0.1	<0.00020	<0.00010	<0.0002	<0.001	0.00023	<0.0030
	3-Jun-2021	<0.010	<0.0010	<0.0010	0.011	0.48	<0.000050	<0.0010	<0.0010	<0.0020	<0.10	<0.00050	**0.184**	<0.0000050	0.0006	<0.0050	<0.50	<0.00050	<0.00010	<0.00010	<0.0010	0.00024	0.02
	10-Jun-2022	0.0112	<0.00050	0.00063	0.0109	0.438	2.54E-05	<0.0025	0.00064	0.0012	<0.15	<0.00025	**0.17**	-	0.000838	0.00379	<0.25	<0.00025	<0.000050	<0.000050	<0.00050	0.000271	<0.0050
MW26B	30-May-2014	-	<0.00078	-	0.010	-	<0.000050	<0.010	-	<0.0020	<0.060	<0.0020	-	<0.0000050	-	<0.0050	-	-	-	-	-	-	<0.030
	28-May-2015	<0.030	<0.00079	<0.0020	<0.10	0.30	<0.00020	<0.010	-	<0.0020	*<0.60*	<0.0020	**0.20**	<0.0000050	-	<0.0050	-	<0.0020	*<0.0010*	-	-	0.0010	<0.030
	8-Jun-2016	0.0095	<0.00080	0.00081	0.010	0.32	<0.000020	0.0017	-	0.0014	<0.060	<0.00020	**0.20**	0.0000040	-	0.0029	-	<0.00020	<0.00010	-	-	0.0012	0.0084
	7-Jun-2017	0.0072	<0.00081	0.00077	<0.10	0.29	<0.00002	<0.0010	-	0.00039	*<0.60*	<0.0002	**0.22**	<0.0000020	-	0.0013	-	<0.0002	<0.0001	-	-	0.00082	<0.0030
	26-Jun-2018	<0.003	<0.00082	0.00056	<0.10	0.3	<0.00002	<0.0010	-	0.00071	*<0.60*	<0.0002	**0.20**	0.0000026	-	0.0019	-	0.00020	<0.00010	-	-	0.00094	<0.0030
	17-Jun-2019	<0.0030	<0.00060	0.00052	<0.10	0.31	<0.000020	<0.0010	0.00071	0.00084	*<0.60*	<0.00020	**0.22**	<0.0000020	0.00094	0.0017	<1.0	<0.00020	<0.00010	<0.00020	<0.0010	0.00095	<0.0030
	5-Jun-2020	<0.0030	<0.00060	0.00052	<0.010	0.3	<0.000020	<0.0010	0.00059	0.00037	<0.060	<0.00020	**0.21**	<0.0000019	0.00068	0.0012	<0.1	<0.00020	<0.00010	<0.0002	<0.001	0.00086	<0.0030
	3-Jun-2021	<0.010	<0.0010	<0.0010	0.0081	0.31	<0.000050	<0.0010	<0.0010	<0.0020	<0.10	<0.00050	**0.184**	<0.0000050	0.00095	<0.0050	<0.50	<0.00050	<0.00010	<0.00010	<0.0010	0.00095	0.019
	10-Jun-2022	0.0137	<0.00050	0.00052	0.00849	0.362	<0.000025	<0.0025	0.00071	0.00122	<0.15	<0.00025	**0.195**	-	0.000827	0.00296	<0.25	0.000257	<0.000050	<0.000050	<0.00050	0.00123	<0.0050
MW27B	30-May-2014	-	*<0.012*	-	<0.10	-	<0.0001	<0.020	-	<0.0040	*<0.60*	<0.0040	-	<0.0000050	-	<0.010	-	-	-	-	-	-	*<0.060*
	28-May-2015	*<0.060*	*<0.012*	<0.0040	<0.10	0.42	*<0.00040*	<0.020	-	<0.0040	*<0.60*	<0.0040	**0.052**	<0.0000050	-	<0.010	-	*<0.0040*	*<0.0020*	-	-	0.0021	*<0.060*
	8-Jun-2016	0.0056	<0.00060	0.0020	<0.010	0.43	0.00004	0.0011	-	0.0010	<0.060	<0.00020	**0.052**	<0.0000020	-	0.0077	-	0.00039	<0.00010	-	-	0.0025	0.0048
	7-Jun-2017	0.01	<0.00060	0.0019	<0.10	0.46	0.000022	<0.0010	-	<0.00020	*<0.60*	<0.00020	**0.062**	<0.0000020	-	0.0051	-	0.00020	<0.00010	-	-	0.0034	<0.0030
	26-Jun-2018	0.0031	<0.00060	0.0018	<0.10	0.45	0.000027	<0.0010	-	0.00067	*<0.60*	<0.00020	**0.053**	0.0000035	-	0.0050	-	0.00033	<0.00010	-	-	0.0021	<0.0030
	17-Jun-2019	0.0093	<0.00060	0.0017	<0.10	0.45	0.000026	<0.0010	0.0011	0.00051	*<0.60*	<0.00020	**0.051**	<0.0000020	0.0016	0.0048	<1.0	<0.00020	<0.00010	<0.00020	<0.0010	0.0024	<0.0030
	4-Jun-2020	<0.0030	<0.00060	0.0017	<0.010	0.39	0.000028	<0.0010	0.0012	0.00041	<0.060	<0.00020	**0.056**	<0.0000019	0.0016	0.0050	<0.1	<0.00020	<0.00010	<0.0002	<0.001	0.0023	<0.0030
	2-Jun-2021	<0.010	<0.0010	0.0017	0.0091	0.39	<0.000050	<0.0010	0.0012	<0.0020	<0.10	<0.00050	0.0475	<0.000005	0.00144	<0.0050	<0.50	<0.00050	<0.00010	<0.00010	<0.0010	0.00209	0.023
	10-Jun-2022	0.0104	<0.0010	0.00189	0.00922	0.52	<0.000050	<0.0050	0.0012	<0.0020	<0.30	<0.00050	<0.050	-	0.00143	0.00638	<0.50	<0.00050	<0.00010	<0.00010	<0.0010	0.0027	<0.010
MW28B	30-May-2014	-	*<0.012*	-	<0.10	-	<0.00010	<0.020	-	<0.0040	*<0.60*	<0.0040	-	<0.0000050	-	<0.010	-	-	-	-	-	-	*<0.060*
	28-May-2015	<0.060	*<0.012*	<0.0040	<0.10	0.44	<0.00040	<0.020	-	<0.0040	*<0.60*	<0.0040	**0.27**	<0.0000050	-	<0.010	-	*<0.0040*	*<0.0020*	-	-	<0.0020	*<0.060*
	8-Jun-2016	0.011	<0.00060	0.00044	0.010	0.45	0.000034	0.0012	-	0.0015	<0.060	<0.00020	**0.25**	<0.0000020	-	0.0049	-	<0.00020	<0.00010	-	-	0.00062	0.0052
	7-Jun-2017	0.0039	<0.00060	0.0004	<0.10	0.44	0.000022	<0.0010	-	0.00033	*<0.60*	<0.00020	**0.25**	<0.0000020	-	0.0038	-	<0.00020	<0.0001	-	-	0.00054	<0.0030
	26-Jun-2018	<0.003	<0.00060	0.00038	<0.10	0.44	0.000024	<0.0010	-	0.00064	*<0.60*	<0.00020	**0.25**	0.0000022	-	0.0034	-	<0.00020	<0.0001	-	-	0.00047	<0.0030
	17-Jun-2019	<0.0030	<0.00060	0.0003	<0.10	0.52	0.000027	<0.0010	0.0013	0.0014	*<0.60*	<0.00020	**0.25**	<0.0000020	0.00054	0.0032	<1.0	<0.00020	<0.00010	<0.00020	<0.0010	0.00045	<0.0030
	4-Jun-2020	<0.0030	<0.00060	0.00026	0.014	0.39	<0.000020	<0.0010	0.0014	0.0013	<0.060	<0.00020	**0.31**	<0.0000019	0.00059	0.0032	<0.1	<0.00020	<0.00010	<0.0002	<0.001	0.00056	<0.0030
	2-Jun-2021	<0.010	<0.0010	<0.0010	0.0092	0.46	<0.000050	<0.0010	0.0011	<0.0020	<0.10	<0.00050	**0.24**	<0.000005	0.0006	<0.0050	<0.50	<0.00050	<0.00010	<0.00010	<0.0010	0.00048	0.019
	10-Jun-2022	<0.010	<0.0010	<0.0010	0.00829	0.451	<0.000050	<0.0050	0.00119	<0.0020	<0.30	<0.00050	**0.234**	-	0.000608	<0.0050	<0.50	<0.00050	<0.00010	<0.00010	<0.0010	0.000474	<0.010
MW29A	4-Jun-2015	0.0048	0.0012	0.0030	0.021	0.50	<0.000020	<0.0010	-	0.0012	<0.060	<0.00020	**0.081**	<0.0000050	-	0.0036	-	0.00039	<0.00010	-	-	0.0093	<0.0030
	8-Jun-2016	0.0067	<0.00060	0.0011	0.015	0.75	<0.000020	<0.0010	-	0.0020	<0.060	<0.00020	**0.064**	<0.0000020	-	0.0020	-	0.00022	<0.00010	-	-	0.0006	<0.0030
	7-Jun-2017	0.0079	**0.23**	0.00093	0.018	0.74	<0.000020	<0.0010	-	0.00093	<0.060	<0.00020	**0.06**	<0.000002	-	0.0014	-	0.00027	<0.00010	-	-	0.00055	<0.0030
	26-Jun-2018	0.0042	<0.0006	0.00076	0.014	0.72	<0.000020	<0.0010	-	0.00098	<0.060	<0.00020	**0.051**	0.0000028	-	0.0011	-	0.00023	<0.00010	-	-	0.00043	<0.0030
	17-Jun-2019	0.012	<0.00060	0.00072	0.014	0.72	<0.000020	<0.0010	0.00034	0.0031	<0.060	<0.00020	**0.05**	<0.0000020	0.0015	0.0013	<0.10	<0.00020	<0.00010	<0.00020	<0.0010	0.00047	0.0032
	4-Jun-2020	0.0057	<0.00060	0.00071	0.014	0.71	<0.000020	<0.0010	<0.00030	0.0049	<0.060	<0.00020	**0.059**	<0.0000019	0.0018	0.0013	<0.1	<0.00020	<0.00010	<0.0002	<0.001	0.00066	<0.0030
	2-Jun-2021	0.0086	<0.00050	0.00065	0.0139	0.735	<0.000025	<0.00050	<0.00050	<0.0010	<0.050	<0.00025	**0.057**	<0.000005	0.00125	<0.0025	<0.25	<0.00025	<0.000050	<0.000050	<0.00050	0.000593	0.02
	10-Jun-2022	0.0303	<0.0002	0.0007	0.0134	0.653	<0.00001	<0.001	0.0003	0.00134	<0.06	<0.0001	**0.0581**	-	0.00169	0.0024	<0.1	0.000107	<0.00002	<0.00002	<0.0002	0.000981	<0.002
MW30A	4-Jun-2015	**1.0**	0.00080	0.0037	0.028	0.43	0.000040	0.0016	-	0.0056	**0.44**	0.00077	**0.081**	<0.0000050	-	0.013	-	0.0012	<0.00010	-	-	0.0063	0.0034
	8-Jun-2016	**3.8**	<0.00060	0.0030	0.025	0.52	0.000026	0.0045	-	**0.0075**	**0.63**	0.00054	**0.059**	<0.0000020	-	0.010	-	0.00064	<0.00010	-	-	0.0035	0.0037
	7-Jun-2017	0.011	<0.00060	0.00089	0.015	0.40	<0.000020	<0.0010	-	0.00034	<0.06	<0.00020	0.018	<0.0000020	-	0.0023	-	<0.00020	<0.00010	-	-	0.00018	<0.0030
	26-Jun-2018	0.0059	<0.00060	0.00077	0.013	0.38	<0.000020	<0.0010	-	0.00057	<0.06	<0.00020	0.016	0.0000025	-	0.00065	-	<0.00020	<0.00010	-	-	0.00017	<0.0030
	17-Jun-2019	<0.0030	<0.00060	0.00059	0.011	0.39	<0.000020	<0.0010	<0.00030	0.00065	<0.060	<0.00020	0.015	<0.0000020	0.0008	0.00074	<0.10	<0.00020	<0.00010	<0.00020	<0.0010	0.00011	<0.0030
	29-May-2020	<0.0030	<0.00060	0.00066	0.012	0.37	<0.000020	<0.0010	<0.00030	0.0005	<0.060	<0.00020	0.015	<0.0000019	0.00081	<0.00050	<0.1	<0.00020	<0.00010	<0.0002	<0.001	<0.00010	<0.0030
	2-Jun-2021	0.005	<0.00010	0.0008	0.0133	0.236	8.9E-06	<0.00010	0.00018	0.00166	0.061	<0.000050	0.0184	<0.000005	0.00073	0.00066	0.098	0.00012	<0.000010	<0.000010	<0.00010	0.000106	0.0196
	10-Jun-2022	0.0061	<0.00010	0.00093	0.0125	0.348	<0.0000050	<0.00050	0.0002	0.00132	<0.030	<0.000050	0.0162	-	0.000858	0.0018	0.089	0.000115	0.000018	0.000011	<0.00010	0.000106	<0.0010
MW31A	4-Jun-2015	**1.5**	0.0013	**0.0069**	0.097	0.58	0.000048	0.0017	-	**0.0093**	**9.0**	**0.0021**	0.068	**0.000008**	-	0.020	-	0.0013	<0.00010	-	-	0.0095	0.0051
	8-Jun-2016	**0.31**	<0.00060	0.00088	<0.10	0.66	<0.000020	<0.0010	-	0.00093	*<0.60*	0.00043	<0.040	**0.000043**	-	0.0026	-	<0.00020	<0.00010	-	-	0.00054	<0.0030
	7-Jun-2017	**0.55 ***	0.00077 *	0.0042 *	0.085 *	0.74 *	0.000025 *	<0.0010 *	-	0.0046 *	0.18 *	0.00043 *	0.036 *	<0.0000020 *	-	**0.012 ***	-	0.00078 *	<0.00010 *	-	-	0.0041 *	<0.0030 *
	26-Jun-2018	**0.097**	0.00065	0.0035	0.05	0.76	<0.000020	<0.0010	-	0.0021	0.074	<0.0002	<0.004	**0.0000051**	-	0.0033	-	0.00051	<0.00010	-	-	0.0039	<0.0030
	17-Jun-2019	0.024	0.00073	**0.0051**	0.051	0.75	0.000026	<0.0010	0.0005	0.002	0.06	<0.00020	0.027	-	0.023	0.0056	0.12	0.00054	<0.00010	<0.00020	<0.0010	0.0032	<0.0030
	5-Jun-2020	**0.074**	<0.00060	0.0028	0.054	0.8	<0.000020	<0.0010	0.00031	0.0010	<0.060	<0.00020	0.021	<0.0000019	0.011	0.0031	<0.1	0.00024	<0.00010	<0.0002	<0.001	0.0029	<0.0030
	3-Jun-2021	**0.0703**	0.00065	0.00336	0.0678	0.781	1.06E-05	<0.0001	0.00048	0.0027	0.035	0.000082	0.0298	<0.0000050	0.01	0.0038	0.068	0.000309	<0.000010	<0.000010	0.00026	0.00239	0.0216
	10-Jun-2022	**0.106**	0.00046	0.00331	0.0457	0.699	6.7E-06	<0.00050	0.00042	0.00179	0.047	0.000065	0.0266	-	0.00778	0.00412	0.073	0.000271	<0.000010	0.000012	<0.00010	0.0024	<0.0010
MW33A	28-May-2015	0.0044	0.00076	**0.0089**	0.070	0.50	<0.000020	<0.0010	-	0.0017	<0.060	<0.00020	**0.13**	<0.0000050	-	0.016	-	0.00058	<0.00010	-	-	0.0096	<0.0030
	8-Jun-2016	**0.66**	<0.00060	0.0042	0.080	0.71	<0.000020	<0.0010	-	**0.028**	**0.60**	0.00094	**0.058**	*<0.0000060*	-	0.0083	-	<0.00020	<0.00010	-	-	0.0035	<0.0030
	7-Jun-2017	0.005	<0.00060	0.0018	0.053	0.68	<0.000020	<0.0010	-	<0.00020	<0.060	<0.00020	0.027	<0.0000020	-	0.0022	-	<0.00020	<0.0001	-	-	0.0012	<0.0030
	26-Jun-2018	**0.22**	<0.00060	**0.0056**	0.11	0.82	<0.000020	<0.0010	-	0.0012	**1.2**	0.00073	**0.081**	**0.000016**	-	0.009	-	0.00028	<0.00010	-	-	0.0013	0.0040
	12-Jun-2019	**0.081**	<0.00060	0.0011	0.059	0.87	<0.000020	<0.0010	0.0003	0.00087	**0.34**	<0.00020	**0.037**	<0.0000020	0.021	0.00074	0.16	<0.00020	<0.00010	<0.00020	<0.0010	0.00054	<0.0030
	4-Jun-2020	0.0083	<0.00060	0.00088	0.024	0.75	<0.000020	<0.0010	0.00039	0.0019	<0.060	<0.00020	**0.069**	<0.0000019	0.0026	0.0027	<0.1	<0.00020	<0.00010	<0.0002	<0.001	0.00096	<0.0030
	4-Jun-2021	0.0332	0.0003	0.00276	0.0862	0.636	5.1E-06	<0.00010	0.00053	0.00053	0.028	0.000085	0.0249	<0.0000050	0.0205	0.00234	0.109	0.000142	<0.000010	<0.000010	0.00013	0.000829	0.0197
	10-Jun-2022	0.0016	<0.00010	0.00316	0.08	0.702	1.36E-05	<0.00050	0.00028	<0.00020	0.094	<0.000050	0.0342	-	0.0267	0.00122	0.218	0.000201	<0.000010	<0.000010	0.00024	0.00127	<0.0010
15MW35B	8-Jun-2016	0.012	0.00069	0.0019	<0.10	0.70	<0.000020	<0.0010	-	0.0018	*<0.60*	<0.00020	**0.066**	<0.0000020	-	0.0041	-	0.00082	<0.00010	-	-	0.0023	<0.0030
	7-Jun-2017	0.0035	<0.00060	0.0014	<0.10	0.71	0.000022	<0.0010	-	0.0032	*<0.60*	<0.00020	**0.074**	<0.0000020	-	0.0036	-	0.00053	<0.00010	-	-	0.0015	<0.0030
	26-Jun-2018	0.0047	<0.00060	0.0011	<0.10	0.82	<0.000020	<0.0010	-	0.0016	*<0.60*	<0.00020	0.049	0.0000027	-	0.0028	-	0.00034	<0.00010	-	-	0.0010	<0.0030
	17-Jun-2019	0.0032	<0.00060	0.0011	<0.10	0.84	0.000065	<0.0010	0.00037	0.0026	*<0.60*	<0.00020	0.049	<0.0000020	0.0031	0.0033	<1.0	0.00049	<0.00010	<0.00020	<0.0010	0.0010	<0.0030
	5-Jun-2020	0.0032	<0.00060	0.0011	<0.10	0.84	0.000065	<0.0010	0.00037	0.0026	*<0.60*	<0.00020	0.049	<0.0000020	0.0031	0.0033	<1.0	0.00049	<0.00010	<0.00020	<0.0010	0.0010	<0.0030
	2-Jun-2021	0.0063	<0.00050	0.0008	0.0232	0.709	<0.000025	<0.00050	<0.00050	0.0018	*<0.050*	<0.00025	**0.0641**	<0.000005	0.00211	<0.0025	<0.25	<0.00025	<0.000050	<0.000050	<0.00050	0.0008	0.0196
	9-Jun-2022	0.0228	<0.00050	0.00074	0.0233	0.693	<0.000025	<0.0025	<0.00050	0.00385	<0.15	<0.00025	**0.0814**	-	0.00199	0.00297	<0.25	<0.00025	<0.000050	<0.000050	<0.00050	0.000924	<0.0050
19MW37A	15-Nov-2019	**0.90**	<0.00060	0.0019	0.018	0.60	0.000051	0.0011	0.0027	0.0029	**3.8**	**0.0042**	**0.43**	<0.0000020	0.00061	0.0061	0.16	<0.00020	<0.00010	<0.00020	0.0010	0.0033	0.014
	4-Jun-2020	0.01	<0.00060	0.0006	<0.010	0.69	<0.000020	<0.0010	0.00069	0.0005	<0.060	<0.00020	**0.28**	<0.0000019	0.0013	0.0017	<0.1	<0.0002	<0.0001	<0.0002	0.0020	0.0055	0.0033
	4-Jun-2021	0.003	<0.00020	0.00046	0.00713	0.65	<0.000010	<0.00020	0.00045	0.00133	<0.020	<0.00010	**0.221**	<0.0000050	0.00115	0.0012	<0.10	<0.00010	<0.000020	<0.000020	0.0004	0.003	0.0166
	9-Jun-2022	**0.204**	<0.00020	0.00056	0.00833	0.714	<0.000010	<0.0010	0.00052	0.00139	0.103	<0.00010	**0.216**	-	0.00146	0.00138	<0.10	0.00011	<0.000020	<0.000020	<0.00020	0.00248	<0.0020
19MW38A	15-Nov-2019	**0.11**	0.00075	0.0049	0.022	0.52	<0.000020	<0.0010	0.00074	0.00058	**0.15**	<0.00020	**0.12**	<0.0000020	0.015	0.0055	<0.10	0.00052	<0.00010	<0.00020	<0.0010	0.0094	<0.0030
	4-Jun-2020	0.02	<0.00060	0.0049	0.017	0.76	<0.000020	<0.0010	0.0011	0.0016	<0.060	<0.00020	**0.032**	<0.0000019	0.0097	0.005	<0.1	0.0004	<0.00010	<0.0002	<0.001	0.0035	<0.0030
	4-Jun-2021	0.05	<0.00020	0.00226	0.0148	0.69	<0.000010	<0.00020	0.00033	0.00199	0.032	<0.00010	**0.019**	<0.0000050	0.00576	0.0019	<0.10	0.00026	<0.000020	<0.000020	<0.00020	0.00156	0.0039
	9-Jun-2022	**0.0113**	<0.00020	0.00292	0.0142	0.709	1.06E-05	<0.0010	0.00033	0.00118	<0.060	<0.00010	0.0157	-	0.00577	0.00212	<0.10	0.000416	<0.000020	<0.000020	0.00025	0.00123	<0.0020

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use .

[2] Alberta Environment and Parks (AEP). Environmental Quality Guidelines for Alberta Surface Waters. March 2018. Table 1 Surface water quality guidelines for the protection of freshwater aquatic life (PAL). Most conservative values applied (chronic or acute).

[3] Guideline varies with hardness.
[4] Guideline varies with pH and temperature.
[5] Guideline varies with chloride.
[6] Guideline varies with pH.
"-" No applicable guideline or not analyzed.
BOLD - Greater than Tier 1 Guideline.
Italic - Detection limit greater than Tier 1 guideline.
* - laboratory filtered.

Table 4b: Field and Groundwater Analytical Results Summary - Upper Sandstone Wells

		Volatile Organic Compounds (VOCs)																	
	Parameter	Carbon tetrachloride	Chlorobenzene	Chloroform	Dibromochloromethane	1,2-Dichlorobenzene	1,4-Dichlorobenzene	1,2-Dichloroethane	1,1-Dichloroethene	Methyl t-Butyl Ether (MTBE)	Methylene Chloride	Methyl Methacrylate	Tetrachloroethene	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene	1,3,5-Trichlorobenzene	Trichloroethene	Trihalomethanes	Vinyl chloride
	Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		0.002	0.0013	0.08	0.1	0.0007	0.001	0.005	0.014	0.015	0.05	0.47	0.01	0.008	0.015	0.014	0.005	0.1	0.002
Monitoring Well	Date																		
MW1C	30-May-2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	28-May-2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-	-	-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	12-Jun-2019	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	5-Jun-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
MW8B	30-May-2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	28-May-2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-	-	-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	12-Jun-2019	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	29-May-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
MW11	30-May-2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	28-May-2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-	-	-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	12-Jun-2019	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	29-May-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	9-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
MW12A	30-May-2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	28-May-2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-	-	-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	12-Jun-2019	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
MW23B	30-May-2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	28-May-2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-	-	-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	17-Jun-2019	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	5-Jun-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	3-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
MW25B	30-May-2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	28-May-2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-	-	-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	17-Jun-2019	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	5-Jun-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	3-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
MW26B	30-May-2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	28-May-2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-	-	-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	17-Jun-2019	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	5-Jun-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	3-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
MW27B	30-May-2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	28-May-2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-	-	-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	17-Jun-2019	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	2-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
MW28B	30-May-2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	28-May-2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-	-	-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	17-Jun-2019	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	2-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
MW29A	4-Jun-2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-	-	-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	17-Jun-2019	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	10-Jun-2022	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	-	<0.00050	<0.00050										
MW30A	4-Jun-2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-	-	-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	17-Jun-2019	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	29-May-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	2-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
MW31A	4-Jun-2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-	-	-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	17-Jun-2019	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	5-Jun-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	3-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
MW33A	28-May-2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-	-	-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	12-Jun-2019	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
15MW35B	8-Jun-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-	-	-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	17-Jun-2019	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	5-Jun-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	2-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	9-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
19MW37A	15-Nov-2019	-	-	-	-	-	-	<0.00050	-	-	-	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	4-Jun-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	9-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
19MW38A	15-Nov-2019	-	-	-	-	-	-	<0.00050	-	-	-	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	4-Jun-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	9-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land u

[2] Alberta Environment and Parks (AEP). Environmental Quality Guidelines for Alberta Surface Waters. March 2018. Table 1 Surface water quality guidelines for the protection of freshwater aquatic life (PAL). Most conservative values applied

[3] Guideline varies with hardness.
[4] Guideline varies with pH and temperature.
[5] Guideline varies with chloride.
[6] Guideline varies with pH.
"-" No applicable guideline or not analyzed.
BOLD - Greater than Tier 1 Guideline.
Italic - Detection limit greater than Tier 1 guideline.
* - laboratory filtered.

Table 4c: Field and Groundwater Analytical Results Summary - Clay Shale Wells

Parameter Group		Field			Routine																Nutrients				
Parameter		pH	Electrical Conductivity	Temperature	pH	Electrical Conductivity	Total Dissolved Solids	Hardness	Alkalinity, total (as CaCO3)	Bicarbonate	Carbonate	Hydroxide	Calcium	Magnesium	Potassium	Sodium	Chloride	Fluoride	Sulphate	Ionic Balance	Ammonia-N	Nitrate (N)	Nitrite (N)	Nitrate and Nitrate (N)	Total Kjeldahl Nitrogen
Unit		pH Units			pH Units	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	-	mg/L	mg/L	mg/L	mg/L	mg/L
		6.5-8.5	1000	-	6.5-8.5	1000	500	-	-	-	-	-	-	-	-	200	100	1	128-429	-	0.018-190	3	0.02-0.20	100	-
Monitoring Well	Date																								
MW1B	6-Jun-2014	**9.9**	**2950**	7.5	8.05	**2800**	**2000**	-	-	1100	<0.50	-		1.7	2.5	**740**	5.1	-	**680**	-	<0.050	**3.7**	-	-	2.2*
	28-May-2015	8.4	**3050**	8.3	8.24	**2900**	**2000**	37	880	1100	<0.50	<0.50	12	1.6	2.4	**740**	6.1	-	**680**	1.0	0.26	0.89	0.016	0.91	1.6
	8-Jun-2016	**6.33**	**3670**	-	8.44	**2700**	**1800**	30	900	1100	13	<0.50	10	1.3	2.1	**680**	6.1	-	**540**	1.0	0.36	1.1	0.019	1.1	0.96
	7-Jun-2017	-	-	-	**8.54**	**2900**	**1800**	35	890	1000	21	<0.50	12	1.6	2.2	**670**	6.2	-	**610**	1.9	-	**13**	<0.033	2.8	-
	26-Jun-2018	-	-	-	8.29	**2500**	**1600**	27	940	1100	<1.0	<1.0	9.1	1.1	2.2	**620**	9.6	-	**390**	0.52	**0.2**	**3.3**	0.037	3.3	3.2
	12-Jun-2019	8.1	**2360**	10.3	**8.54**	**2300**	**1500**	23	960	1100	43	<1.0	7.9	0.91	2	**570**	5.9	-	**300**	0.31	0.30	0.79	**0.069**	0.86	4
	5-Jun-2020	7.91	**2480**	8.4	8.43	**2500**	**1600**	30	870	1000	16	<1.0	10	1.3	2.2	**630**	6.2	-	**430**	3.2	0.30	0.8	0.025	0.82	2.9
	4-Jun-2021	8.06	**2110**	10.7	**8.65**	**2210**	**1520**	22.5	943	1080	32.3	<5.0	7.48	0.94	1.9	**558**	5.2	**1.07**	**383**	91.9	0.32	0.278	0.043	0.32	1.1
	10-Jun-2022	**8.65**	**2520**	9.5	**8.62**	**2080**	**1430**	19.6	1120	1290	35.5	<1.0	6.53	0.804	1.84	**509**	5.45	**1.03**	**210**	83.7	**0.304**	0.593	0.048	0.641	0.88
MW8A	30-May-2014	8.5	**2560**	5.4	**8.67**	**2400**	**1600**	-	-	1300	49	-	7.7	1.7	2.2	**610**	8.0	-	**300**	-	**0.89**	<0.010	-	-	1.5
	28-May-2015	8.5	**2910**	6.0	8.32	**2700**	**1800**	25	1100	1300	3.0	<0.50	7.6	1.5	2.1	**670**	7.6	-	**450**	0.97	**0.96**	<0.010	0.012	0.012	1.6
	8-Jun-2016	**8.51**	**2510**	8.7	8.49	**2400**	**1500**	25	1000	1200	25	<0.50	7.8	1.3	2.3	**600**	7.4	-	**290**	1.0	**0.81**	<0.010	<0.010	<0.020	1.1
	7-Jun-2017	8.5	**2670**	8.4	8.49	**2500**	**1700**	26	1100	1300	21	<0.50	8.3	1.3	2.4	**630**	7.1	-	**360**	2.2	**0.63**	<0.044	<0.033	<0.010	1.3
	26-Jun-2018	7.84	**2630**	6.9	8.48	**2400**	**1600**	22	1100	1300	27	<1.0	7.1	1.0	2.0	**650**	7.3	-	**270**	1.4	0.72	<0.020	<0.010	<0.020	1.4
	12-Jun-2019	8.15	**2820**	12.2	8.44	**2800**	**1900**	31	1100	1300	34	<1.0	10	1.4	2.3	**680**	7.5	-	**550**	5.1	**0.76**	0.029	0.027	0.056	1.3
	29-May-2020	8.21	**2480**	9.5	8.48	**2400**	**1500**	22	1000	1200	24	<1.0	7.3	0.93	1.7	**630**	7.7	-	**230**	3.9	**0.83**	0.044	0.016	0.06	1.5
	4-Jun-2021	8.47	**2240**	10.9	**8.79**	**2190**	**1500**	20.8	1120	1260	54.5	<5.0	6.72	0.97	1.85	**570**	6.09	**1.17**	**246**	91	**0.726**	0.022	<0.010	0.022	1.28
	10-Jun-2022	8.14	**2750**	13.7	**8.68**	**2270**	**1560**	20.3	1210	1390	45.6	<1.0	6.55	0.965	1.82	**564**	5.86	**1.18**	**223**	86.2	**0.782**	<0.040	<0.020	<0.050	1.28
MW12B	30-May-2014	7.3	**11,870**	6.9	8.17	**11,000**	**11,000**	-	-	870	<0.50	-	380	78	11	**3400**	6.2	-	**6800**	-	2.1	0.2	-	-	3.3
	28-May-2015	7.7	**11,500**	7.5	7.71	**11,000**	**9700**	890	700	850	<0.50	<0.50	260	60	10	**2800**	5.6	-	**6100**	0.98	**2.2**	0.12	0.038	0.16	3.4
	8-Jun-2016	**6.28**	**13,830**	-	8.00	**11,000**	**8900**	900	670	820	<0.50	<0.50	270	54	11	**2500**	6.0	-	**5600**	0.99	2.1	0.19	0.053	0.25	2.8
	7-Jun-2017	7.4	**11,500**	6.3	7.87	**11,000**	**8600**	950	710	860	<0.50	<0.50	280	63	9.3	**2600**	4.6	-	**5300**	3.2	1.7	<0.22	<0.16	<0.050	2.8
	26-Jun-2018	8.2	**11,720**	5.8	8.01	**11,000**	**8200**	780	670	820	<1.0	<1.0	230	47	9.3	**2500**	4.7	-	**4900**	4.5	**1.1**	0.64	0.012	0.65	2.1
	12-Jun-2019	7.32	**12,410**	8.3	7.96	**13,000**	**10000**	1200	800	970	<1.0	<1.0	360	69	<30	**2900**	7.9	-	**6100**	2.5	2.3	0.71	<0.20	0.71	3.3
	4-Jun-2020	7.36	**10,710**	5.6	7.93	**11,000**	**8,500**	830	660	810	<1.0	<1.0	240	59	8.5	**2700**	4.6	-	**5100**	5.7	1.8	0.19	0.028	0.22	1.9
	4-Jun-2021	7.75	**10,130**	11.3	8.16	**8,890**	**9,060**	625	649	792	<5.0	<5.0	201	30	8.83	**2610**	<5.0	0.24	**5810**	94.2	**1.94**	1.78	**0.86**	2.64	7.11
	10-Jun-2022	7.84	**11,410**	18.5	8.16	**9230**	**8300**	542	831	1010	<1.0	<1.0	176	25	8.06	**2370**	<5.0	<0.20	**5180**	91.2	**2.16**	2.69	**0.348**	3.04	3.05
MW18A	30-May-2014	8.4	**15,820**	6.4	**8.61**	**1500**	**920**	-	-	970	38	-	3	<2.0	<3.0	**390**	7.3	-	2.4	-	**0.62**	<0.010	-	-	1.1
	28-May-2015	**8.8**	**1640**	6.6	8.39	**1500**	**880**	8.1	840	1000	8.9	<0.50	2.7	0.30	1.3	**360**	7.2	-	1.4	0.95	**0.64**	<0.010	<0.010	<0.010	0.98
	8-Jun-2016	6.75	**1920**	8.3	8.44	**1500**	**870**	8.9	800	950	9.5	<0.50	3.0	0.34	1.5	**380**	7.4	-	6.9	1.0	0.66	0.011	<0.010	<0.020	0.90
	7-Jun-2017	8.5	**1520**	8.7	8.50	**1500**	**910**	8.4	850	1000	17	<0.50	2.9	0.31	1.4	**380**	7.3	-	2.1	0.86	**0.72**	<0.044	<0.033	-	0.94
	26-Jun-2018	8.2	**1719**	6.1	8.45	**1500**	**910**	8.3	850	1000	14	<1.0	2.8	0.30	1.4	**380**	7.5	-	<1.0	1.1	0.59	<0.020	<0.010	<0.020	0.92
	12-Jun-2019	**8.53**	**1592**	9.4	8.49	**1500**	**880**	8.3	840	990	19	<1.0	2.9	0.25	1.4	**360**	7.3	-	1.6	3.1	**0.60**	<0.010	<0.010	<0.014	0.92
	4-Jun-2020	**8.53**	**1547**	6.3	8.40	**1500**	**870**	8.9	780	930	9.6	<1.0	3	0.37	1.4	**390**	7.6	-	<1.0	4.2	**0.63**	<0.010	<0.010	<0.014	1.0
	4-Jun-2021	**8.60**	**1398**	7.8	**8.70**	**1380**	**957**	9	869	994	32.5	<5.0	3	0.36	1.44	**423**	6.38	**1.79**	<0.30	106	**0.63**	<0.020	<0.010	<0.022	0.9
	10-Jun-2022	8.15	**1760**	7.9	**8.65**	**1460**	**995**	8.66	948	1090	33.4	<1.0	2.86	0.37	1.42	**392**	6.57	**1.57**	0.59	90.1	0.601	<0.020	<0.010	<0.050	0.95
MW19A	30-May-2014	8.2	**6350**	8.7	8.09	**7900**	**6700**	-	-	1200	<0.50	-	90	42	8.9	**2200**	8.8	-	**3700**	-	**0.98**	0.15	-	-	1.4
	28-May-2015	7.7	**7870**	6.3	7.99	**7500**	**6000**	310	950	1200	<0.50	<0.50	62	37	9.4	**1900**	8.9	-	**3400**	0.96	0.43	0.023	0.015	0.038	0.80
	8-Jun-2016	7.97	**8510**	-	8.25	**6900**	**5200**	270	880	1100	<0.50	<0.50	55	32	8.9	**1500**	6.7	-	**3000**	0.91	**0.49**	<0.050	<0.050	<0.020	0.96
	7-Jun-2017	7.6	**6000**	7.7	8.31	**6900**	**5200**	270	970	1200	<0.50	<0.50	57	32	8.6	**1700**	7.4	-	**2800**	2.2	0.76	0.16	**0.28**	-	1.1
	26-Jun-2018	8.1	**7390**	12.0	8.22	**7000**	**5300**	250	980	1200	<1.0	<1.0	63	21	7.4	**1700**	8.2	-	**2900**	0.51	**1.2**	0.022	<0.010	0.022	1.5
	12-Jun-2019	7.92	**7270**	11.1	8.24	**7500**	**5200**	250	980	1200	<1.0	<1.0	64	23	<30	**1700**	9.4	-	**2800**	0.96	0.87	<0.10	**0.11**	<0.14	1.2
	4-Jun-2020	7.91	**6680**	8.0	7.97	**6600**	**5000**	220	920	1100	<1.0	<1.0	56	19	6.5	**1700**	15	-	**2600**	3.9	1.2	0.011	<0.010	<0.014	1.8
	4-Jun-2021	7.53	**6680**	11.1	8.41	**6810**	**5960**	303	1020	1210	16.4	<5.0	67.6	32.5	9.29	**1970**	10.6	0.39	**3250**	104	0.935	0.69	<0.10	0.69	1.6
	10-Jun-2022	7.74	**8060**	9.3	**8.59**	**6560**	**5340**	228	1140	1310	38.8	<1.0	50.8	24.5	7.01	**1590**	10.3	0.405	**2950**	87.6	1.04	<0.10	<0.050	<0.112	1.54
MW20A	30-May-2014	8.0	**3500**	7.8	8.05	**3300**	**2300**	-	-	1300	<0.50	-	19	2.7	3.3	**800**	6.9	-	**800**	-	0.33	1.8	-	-	1
	28-May-2015	8.2	**3310**	7.9	8.03	**3100**	**2100**	54	1000	1200	<0.50	<0.50	18	2.4	3.5	**750**	8.3	-	**680**	0.96	0.23	**6.6**	0.061	6.7	0.93
	8-Jun-2016	**8.6**	**3570**	8.1	8.15	**3300**	**2200**	58	1100	1300	<0.50	<0.50	19	2.5	3.3	**830**	7.0	-	**740**	1.0	**0.53**	**3.1**	0.041	3.1	1.2
	7-Jun-2017	7.8	**3000**	6.9	8.34	**3200**	**2100**	54	1000	1200	5.5	<0.50	18	2.4	2.9	**780**	7.9	-	**660**	0.38	0.30	**21**	**0.28**	4.9	1.0
	26-Jun-2018	7.8	**3120**	6.5	8.08	**3400**	**2300**	64	1000	1300	<1.0	<1.0	21	2.8	3.4	**850**	8.1	-	**820**	0.042	0.28	2.8	0.036	2.8	1.0
	12-Jun-2019	7.6	**2610**	9.8	8.28	**3400**	**2200**	65	1000	1300	<1.0	<1.0	21	2.7	3.4	**820**	7.1	-	**740**	0.7	0.17	3	0.057	3.1	1.0
	4-Jun-2020	7.52	**3770**	9.1	8.17	**3700**	**2600**	100	920	1100	<1.0	<1.0	32	5.2	3.7	**960**	6.4	-	**1000**	4.50	0.4	1.8	0.023	1.8	0.7
	3-Jun-2021	7.53	**3560**	9.3	**8.57**	**3310**	**2790**	102	984	1140	27.8	<5.0	32.8	4.91	4.84	**1080**	4.8	0.33	**1070**	117.00	0.418	0.8	<0.050	0.76	0.5
	10-Jun-2022	7.66	**4550**	7.6	**8.52**	**3650**	**2750**	102	1110	1300	27.2	<1.0	31.3	5.8	4.02	**887**	4.91	0.393	**1130**	88.9	0.581	0.668	<0.050	0.668	0.87
MW21A	6-Jun-2014	**9.9**	**2120**	8.3	8.18	**2000**	**1200**	-	-	1300	<0.50	-	4.4	0.47	1.8	**470**	9.3	-	90	-	**0.068**	2.3	-	-	1.4
	4-Jun-2015	8.3	**2110**	8.4	8.19	**2000**	**1200**	13	1100	1300	<0.50	<0.50	4.4	0.44	1.9	**490**	9.4	-	72	0.92	0.12	1.2	0.012	1.2	1.7
	8-Jun-2016	7.88	**2140**	7.9	8.29	**2000**	**1200**	14	1100	1300	<0.50	<0.50	4.7	0.45	1.7	**490**	8.7	-	71	0.93	0.12	1.3	0.023	1.3	0.81
	7-Jun-2017	7.9	**2030**	7.5	8.41	**2000**	**1200**	12	1100	1300	11	<0.50	4.3	0.40	1.5	**480**	11	-	65	4.4	0.071	**4.1**	0.064	0.96	0.96
	26-Jun-2018	7.9	**2240**	7.8	8.35	**2000**	**1300**	12	1100	1300	8	<1.0	4.3	0.40	1.7	**530**	11	-	63	0.25	0.039	0.62	<0.010	0.62	0.92
	17-Jun-2019	7.93	**2140**	13.6	**8.51**	**2100**	**1200**	12	1100	1200	47	<1.0	4.3	0.42	1.6	**470**	11	-	66	5.0	0.097	0.98	<0.010	0.98	0.73
	5-Jun-2020	7.88	**1994**	7.7	8.41	**2000**	**1200**	13	1000	1200	11	<1.0	4.6	0.47	1.7	**540**	10	-	68	4.1	0.063	1.4	<0.010	1.4	0.47
	3-Jun-2021	7.73	**1857**	9.9	**8.63**	**1790**	**1330**	15.6	1110	1290	33.8	<5.0	5.24	0.6	2.14	**605**	8.2	0.76	39.1	114.0	0.389	0.36	<0.050	0.36	2.58
	10-Jun-2022	7.52	**2260**	8.4	**8.61**	**1940**	**1320**	12.5	1180	1360	34.2	<1.0	4.22	0.472	1.74	**509**	9.13	0.897	61.7	88.9	0.0966	0.14	<0.020	0.14	0.49
MW22A	6-Jun-2014	**9.9**	**5640**	7.4	7.83	**5300**	**4100**	-	-	940	<0.50	-	36	3.7	4.1	**1300**	11	-	**2200**	-	<0.050	**16**	-	-	1.2
	4-Jun-2015	-	-	-	8.08	**5300**	**3800**	100	790	960	<0.50	<0.50	36	3.6	4.7	**1200**	12	-	**2000**	0.93	**0.11**	**16**	0.011	16	0.99
	8-Jun-2016	7.76	**5600**	10.0	8.09	**5300**	**3800**	100	790	960	<0.50	<0.50	35	3.4	4.1	**1200**	11	-	**2000**	0.93	<0.050	**17**	<0.010	17	0.070
	7-Jun-2017	7.6	**5290**	9	8.33	**5200**	**3800**	110	780	950	2.4	<0.50	36	3.6	4.6	**1300**	13	-	**1900**	1.2	0.15	**70**	<0.033	-	1
	26-Jun-2018	7.74	**5710**	7.2	8.08	**5300**	**3800**	100	770	940	<1.0	<1.0	36	3.3	4.3	**1300**	13	-	**1900**	1.1	0.049	**14**	<0.010	14	0.88
	17-Jun-2019	7.82	**5532**	10	8.33	**5300**	**3700**	100	770	920	8.9	<1.0	35	4	4.2	**1300**	12	-	**1800**	2.2	0.074	**18**	0.019	18	0.9
	5-Jun-2020	7.51	**5360**	9.1	8.24	**5300**	**3800**	120	730	890	<1.0	<1.0	40	4.0	4.4	**1300**	13	-	**1900**	3.5	0.24	**17**	0.033	17	0.63
	3-Jun-2021	7.85	**4840**	11.5	8.45	**4380**	**3880**	106	778	921	14	<5.0	36.3	3.8	4.3	**1300**	10.7	0.31	**2000**	101	0.084	**12.9**	<0.050	12.9	1.4
	10-Jun-2022	7.65	**6090**	10.7	**8.57**	**4980**	**3900**	105	852	986	26.8	<1.0	35.7	3.77	4.21	**1280**	10.7	0.34	**1980**	97.3	0.14	**13.5**	<0.050	13.5	0.76
MW23A	30-May-2014	8.5	**2250**	7.9	8.48	**2200**	**1400**	-	-	1300	28	-	5.4	0.63	1.8	**570**	17	-	110	-	**0.60**	<0.010	-	-	1.5
	4-Jun-2015	**8.8**	**2240**	8.9	8.44	**2100**	**1300**	12	1100	1300	17	<0.50	4.1	0.48	2.2	**500**	20	-	90	0.90	**0.76**	<0.010	<0.010	<0.010	1.4
	8-Jun-2016	**8.65**	**2240**	8.6	**8.53**	**2100**	**1300**	12	1100	1300	26	<0.50	4.1	0.49	2.0	**560**	18	-	85	1.0	**0.76**	<0.010	<0.010	<0.020	1.5
	7-Jun-2017	**8.8**	**2310**	8.5	**8.75**	**2100**	**1300**	13	1100	1300	54	<0.50	4.4	0.47	2.0	**570**	21	-	77	0.52	**0.93**	<0.044	<0.033	-	1.6
	26-Jun-2018	**8.6**	**2380**	6.8	**8.51**	**2200**	**1300**	12	1100	1300	31	<1.0	4.1	0.49	2.0	**560**	20	-	88	0.13	**0.79**	<0.020	<0.010	<0.020	1.5
	17-Jun-2019	**8.1**	**2410**	11.6	**8.70**	**2200**	**1300**	12	1100	1200	85	<1.0	4	0.54	1.8	**560**	19	-	85	0.59	**0.79**	<0.010	<0.010	<0.014	1.3
	5-Jun-2020	**8.74**	**2170**	7.8	**8.63**	**2200**	**1400**	10	1000	1200	42	<1.0	3.2	0.54	1.9	**590**	19	-	120	5.3	**0.84**	<0.010	<0.010	<0.014	0.83
	3-Jun-2021	**9.01**	**2020**	9.9	**8.95**	**1860**	**1360**	8.7	1120	1220	74.4	<5.0	2.7	0.5	1.85	**562**	16.7	**1.13**	102	98.4	**0.829**	0.1	<0.050	<0.11	1.38
	10-Jun-2022	**8.76**	**2500**	10.1	**8.81**	**2060**	**1440**	10.6	1280	1430	63.8	<1.0	3.32	0.561	1.87	**537**	16	**1.41**	83.9	85.2	**0.87**	<0.040	<0.020	<0.050	1.3
MW25A	6-Jun-2014	**10**	**2220**	7.1	8.28	**2000**	**1200**	-	-	1400	<0.50	-	4.7	0.49	1.9	**480**	8	-	14	-	**0.42**	0.97	-	-	1.1
	4-Jun-2015	**8.6**	**2190**	8.3	8.39	**2100**	**1200**	13	1200	1400	11	<0.50	4.6	0.44	2.3	**490**	9.2	-	13	0.91	**0.41**	0.85	**0.21**	1.1	1.1
	8-Jun-2016	8.39	**2130**	9.4	8.45	**2100**	**1300**	15	1200	1400	19	<0.50	5.1	0.47	1.8	**540**	8.4	-	4.3	1.0	**0.62**	0.18	0.029	0.21	1.2
	7-Jun-2017	8.4	**2050**	8.2	**8.55**	**2000**	**1200**	13	1200	1400	28	<0.50	4.5	0.42	1.7	**490**	8.9	-	3.1	4.6	**0.55**	2	**0.27**	0.53	1.2
	26-Jun-2018	8.5	**2320**	6.5	**8.51**	**2100**	**1300**	14	1200	1400	30	<1.0	4.7	0.45	1.8	**550**	9.4	-	<1.0	0.22	**0.76**	<0.020	<0.010	<0.020	1.2
	17-Jun-2019	8.17	**2120**	10.8	**8.58**	**2100**	**1300**	13	1200	1300	68	<1.0	4.6	0.45	1.7	**540**	8.7	-	<1.0	0.54	**0.71**	<0.010	0.081	0.081	1
	5-Jun-2020	8.32	**2080**	8.6	**8.51**	**2100**	**1300**	14	1100	1300	28	<1.0	4.9	0.49	2	**570**	9.3	-	2.2	5.1	**0.66**	0.52	0.10	0.62	1.2
	3-Jun-2021	8.49	**1920**	10.4	**8.77**	**1760**	**1400**	17.1	1230	1390	52.7	<5.0	5.83	0.61	2.15	**641**	7.8	0.925	1.5	114	**0.786**	0.123	0.01	0.134	0.9
	10-Jun-2022	8.42	**2460**	10.2	**8.77**	**2040**	**1400**	14.8	1410	1600	60.8	<1.0	5.03	0.536	1.76	**520**	8.24	**1.21**	0.43	80.7	**0.841**	<0.020	<0.010	<0.050	1.22
MW26A	6-Jun-2014	**9.9**	**2910**	6.7	8.45	**2700**	**1800**	-	-	1000	15	-	9.5	1.4	2.4	**680**	5.9	-	**610**	-	<0.050	1.6	-	-	0.78
	4-Jun-2015	-	-	-	8.38	**2700**	**1700**	28	900	1100	8.6	<0.50	9.1	1.2	2.7	**650**	5.3	-	**520**	1.0	<0.050	0.94	<0.010	0.94	1.7
	8-Jun-2016	-	-	-	**8.53**	**2600**	**1700**	26	910	1100	23	<0.50	8.7	1.1	2.5	**640**	5.0	-	**490**	1.0	<0.050	1.0	**0.075**	1.1	1.2
	7-Jun-2017	-	-	-	**8.56**	**2600**	**1700**	26	900	1100	23	<0.50	8.5 *	1.2 *	2.4 *	**670** *	5.4	-	**510**	1	<0.015	**5.7**	<0.033	1.3	0.77
	26-Jun-2018	**8.6**	**2960**	7.0	**8.51**	**2700**	**1700**	29	910	1100	24	<1.0	9.5	1.2	2.4	**640**	5.9	-	**510**	0.78	<0.015	0.92	<0.010	0.92	1.8
	17-Jun-2019	**8.43**	**2850**	18.7	-	-	-	-	-	-	-	-	8.2	1	2.3	**650**	-	-	-	-	0.021	-	-	-	0.75
	5-Jun-2020	-	**-**	-	**8.51**	**2600**	**1700**	27	850	990	24	<1.0	9.2	1.1	2.3	**670**	6	-	**510**	3.2	0.028	1.5	<0.010	1.5	1.6
	3-Jun-2021	Insufficient volume			**8.72**	**2290**	**1910**	34.9	909	1030	38	<5.0	11.6	1.4	3.02	**811**	4.6	0.77	**527**	123	<0.050	1.63	<0.050	1.63	0.36
	10-Jun-2022	Insufficient volume			**8.76**	**2490**	**1760**	25.8	1080	1220	50.8	<1	8.5	1.1	2.23	**586**	4.4	**1.03**	**484**	81.8	<0.0050	1.36	<0.020	1.36	0.65
MW27A	30-May-2014	8.3	**2890**	7.0	**8.52**	**2800**	**2000**	-	-	920	27	-	9.0	1.2	2.1	**730**	6.2	-	**770**	-	**0.97**	0.11	-	-	1.2
	4-Jun-2015	**8.9**	**2880**	10.3	8.38	**2900**	**1900**	26	780	930	7.5	<0.50	8.5	1.1	2.5	**690**	5.2	-	**730**	0.99	**0.63**	0.046	**0.17**	0.22	1.2
	8-Jun-2016	**8.62**	**2860**	6.2	**8.57**	**2800**	**1800**	25	730	850	21	<0.50	8.5	1.0	2.2	**620**	5.0	-	**710**	0.94	**0.86**	0.21	**0.071**	0.28	0.76
	7-Jun-2017	8.5	**2810**	8.2	**8.60**	**2900**	**1900**	26	800	920	26	<0.50	8.7	1	2.3	**700**	6.9	-	**720**	0.027	**0.86**	0.47	**0.28**	-	1.2
	26-Jun-2018	7.96	**3120**	6.5	8.41	**2800**	**1900**	25	790	950	11	<1.0	8.4	1	2.2	**740**	5.1	-	**700**	3.6	0.61	0.26	<0.010	0.26	1.1
	17-Jun-2019	8.48	**3050**	11.8	**8.59**	**2900**	**1900**	25	790	860	49	<1.0	8.4	0.97	2.1	**700**	5.5	-	**660**	1.8	**0.66**	0.33	0.029	0.36	0.85
	4-Jun-2020	8.4	**2930**	6.2	8.47	**2800**	**1900**	26	790	930	16	<1.0	8.9	0.96	2.4	**750**	5.7	-	**680**	4.7	**0.81**	0.31	0.032	0.34	0.85
	2-Jun-2021	8.12	**2670**	9.5	**8.62**	**2560**	**1980**	21.1	788	908	26	<5.0	6.68	1.07	2.46	**739**	4.6	0.84	**753**	103	**0.796**	0.32	<0.050	0.32	0.81
	10-Jun-2022	7.55	**6550**	11.5	**8.74**	**2730**	**1950**	25.6	949	1070	44.2	<1.0	8.64	0.991	2.12	**622**	4.45	0.922	**714**	81.5	0.821	0.212	0.116	0.328	1.18
MW28A	30-May-2014	8.4	**3630**	6.2	8.46	**3400**	**2500**	-	-	830	19	-	13	1.4	2.5	**850**	5.3	-	**1200**	-	**1.3**	0.027	-	-	1.6
	4-Jun-2015	8.4	**3590**	8.5	8.34	**3400**	**2400**	38	710	850	3.4	<0.50	13	1.3	3.1	**870**	5.0	-	**1100**	1.1	**1.1**	<0.010	0.012	0.012	1.6
	8-Jun-2016	**8.51**	**3380**	7.7	**8.54**	**3300**	**2200**	35	660	780	16	<0.50	12	1.1	2.6	**800**	5.2	-	**1000**	1.0	**1.2**	0.066	0.030	0.096	1.7
	7-Jun-2017	8.5	**3490**	6.7	8.47	**3300**	**2300**	36	720	850	13	<0.50	13	1.2	2.7	**810**	5.0	-	**1000**	0.99	**1.4**	0.044	<0.033	-	1.6
	26-Jun-2018	7.94	**3380**	8.6	8.43	**3300**	**2300**	35	720	850	15	<1.0	12	1.2	2.5	**860**	4.7	-	**1000**	3.6	1.1	0.047	0.037	0.084	1.5
	17-Jun-2019	8.47	**3620**	11.2	**8.57**	**3400**	**2200**	36	710	800	34	<1.0	12	1.1	2.5	**810**	5.2	-	**960**	2.4	**1.3**	0.041	0.046	0.087	1.7
	4-Jun-2020	8.27	**3390**	8.9	8.38	**3300**	**2500**	38	660	790	6.4	<1.0	13	1.3	2.6	**850**	4.8	-	**1200**	0.65	**1.2**	0.13	0.017	0.15	1.3
	2-Jun-2021	7.95	**3130**	8.9	8.57	**2980**	**2340**	37	695	807	20.3	<5.0	12.8	1.23	2.62	**813**	3.7	0.67	**1090**	98.7	**1.24**	<0.10	<0.050	<0.11	1.31
	10-Jun-2022	7.41	**14000**	9.7	**8.71**	**3190**	**2290**	35.3	840	948	37.8	<1.0	12.1	1.23	2.49	**739**	3.58	0.813	**1000**	87.3	1.11	0.075	<0.020	0.075	1.58
MW32A	4-Jun-2015	8.2	**8660**	7.6	8.16	**8200**	**6700**	370	790	960	<0.50	<0.50	120	15	11	**2000**	8.9	-	**4100**	0.92	**3.5**	<0.010	0.013	0.013	6.8
	8-Jun-2016	7.79	**7910**	8.2	8.25	**8100**	**6500**	360	800	980	<0.50	<0.50	120	15	8.4	**2000**	3.1	-	**3900**	1.0	**2.9**	<0.050	<0.050	<0.020	3.2
	7-Jun-2017	7.6	**8490**	7.3	8.12	**8000**	**6100**	350	850	1000	<0.50	<0.50	120	15	7.7	**2000**	3.2	-	**3400**	4.4	**3.2**	<0.22	**0.71**	-	3.2
	26-Jun-2018	7.51	**13,260**	11.7	8.00	**8100**	**6300**	360	840	1000	<1.0	<1.0	120	16	8.0	**2100**	2.8	-	**3500**	4.5	**2.8**	0.058	0.017	0.075	3.2
	12-Jun-2019	7.65	**8,100**	11.5	8.04	**8200**	**5900**	300	820	1000	<1.0	<1.0	120	<20	<30	**1900**	3.7	-	**3300**	2.8	**2.9**	<0.20	<0.20	<0.28	3.2
	29-May-2020	7.74	**8100**	8.1	8.12	**8000**	**5800**	320	670	810	<1.0	<1.0	110	12	6.5	**2000**	4.1	-	**3200**	7.6	**3.0**	0.11	**0.26**	0.37	3.1
	4-Jun-2021	7.86	**7480**	8.6	8.49	**6950**	**6420**	304	678	792	17.2	<5.0	102	11.9	6.89	**1900**	3.7	0.31	**3990**	92	**2.4**	0.34	**<0.050**	0.34	2.86
	10-Jun-2022	7.20	**9260**	9.5	8.28	**7530**	**6170**	308	798	973	<1.0	<1.0	102	13	6.97	**1860**	3.12	0.254	**3680**	94.3	2.86	<0.10	<0.050	<0.112	2.75
15MW35A **	8-Jun-2016	-	-	-	**8.60**	**1500**	**930**	11	780	900	26	<0.50	3.8	0.36	2.2	**370**	36	-	41	0.95	**0.83**	<0.010	<0.010	<0.020	12
	7-Jun-2017	-	-	-	**8.61**	**1600**	**950**	10	830	960	23	<0.50	3.6	0.34	3.1	**390**	36	-	21	2.4	-	<0.044	<0.033	<0.010	-
	26-Jun-2018	-	-	-	8.44	**1600**	**990**	10	860	1000	16	<1.0	3.6	0.32	2.2	**410**	40	-	17	1.2	**0.33**	<0.020	<0.010	<0.020	7
	17-Jun-2019	**8.6**	**1992**	12.5	-	**-**	**-**	-	-	-	-	-	-	-	-	**-**	-	-	-	-	**0.68**	-	-	-	3.7
	5-Jun-2020	**-**	**-**	-	8.47	**1700**	**1000**	9.7	820	960	18	<1.0	3.4	0.3	1.9	**450**	40	-	16	5.6	**0.37**	<0.010	<0.010	<0.014	3.4
	3-Jun-2021	Insufficient volume			**8.64**	**1510**	**1010**	9.1	886	1020	27.6	<5.0	3.15	0.31	2.36	**417**	38.7	**1.49**	11.8	96.6	**0.437**	<0.020	<0.010	<0.022	3.97
	9-Jun-2022	7.41	9720	8.7	**1.91**	**11000**	**4840**	10.2	<2	<1.0	<1.0	<1.0	3.38	0.435	1.94	**482**	38.8	**1.79**	**4270**	37.3	0.584	<0.20	<0.10	<0.224	-
15MW36A	8-Jun-2016	**8.87**	**1590**	9.1	**8.66**	**1600**	**900**	12	830	970	25	<0.50	3.9	0.41	1.4	**390**	7.4	-	<1.0	1.0	**0.60**	<0.010	<0.010	<0.020	1.3
	7-Jun-2017	**8.8**	**1630**	6.5	**8.52**	**1600**	**930**	9.5	880	1000	18	<0.50	3.3	0.32	1.3	**380**	7.1	-	2.9	2.7	**0.52**	<0.044	<0.033	<0.010	1.2
	26-Jun-2018	**8.57**	**1609**	9.2	**8.52**	**1600**	**960**	9.3	900	1000	24	<1.0	3.2	0.33	1.4	**410**	7.1	-	<1.0	0.69	**0.63**	<0.020	<0.010	<0.020	1.0
	12-Jun-2019	**8.73**	**1680**	9.9	**8.71**	**1600**	**930**	9	890	960	58	<1.0	3.2	0.23	1.5	**380**	8.9	-	1.8	3	**0.69**	0.018	<0.010	0.018	1.0
	5-Jun-2020	**8.6**	**1574**	7.8	**8.55**	**1600**	**960**	11	840	980	26	<1.0	3.6	0.42	1.4	**440**	8.2	-	<1.0	6.2	**0.6**	<0.010	<0.010	<0.014	1.4
	3-Jun-2021	**8.81**	**1497**	8.1	**8.78**	**1410**	**972**	8.9	913	1030	40	<5.0	2.97	0.36	1.42	**411**	6.42	**1.61**	0.49	98.1	**0.622**	0.06	<0.010	0.06	1.0
	10-Jun-2022	**8.93**	**14980**	7.4	**8.84**	**1550**	**1050**	8.98	1050	1170	53.2	<1.0	2.96	0.386	1.34	**377**	7.9	**2**	2.63	78	**0.716**	<0.020	0.012	<0.050	1.26

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use .

[2] Alberta Environment and Parks (AEP). Environmental Quality Guidelines for Alberta Surface Waters. March 2018. Table 1 Surface water quality guidelines for the protection of freshwater aquatic life (PAL). Most conservative values applied (chronic or acute).

[3] Guideline varies with hardness.

[4] Guideline varies with pH and temperature.

[5] Guideline varies with chloride.

[6] Guideline varies with pH.

"-" No applicable guideline or not analyzed.

BOLD - Greater than Tier 1 Guideline.

Italic - Detection limit greater than Tier 1 guideline.

* - laboratory filtered.

** - Data is unreliable for 2022.

Table 4c: Field and Groundwater Analytical Results Summary - Clay Shale Wells

Parameter Group		Hydrocarbons							Organics		
Parameter		Benzene	Toluene	Ethylbenzene	Xylenes	Styrene	F1-BTEX	F2 (C10-C16)	Total Phenols	Chemical Oxygen Demand	Dissolved Organic Carbon
Unit		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		0.005	0.024	0.0016	0.02	0.072	2.2	1.1	-	-	-
Monitoring Well	Date										
MW1B	6-Jun-2014	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	98	9.9
	28-May-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	120	10
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	47	8.8
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.27	-	-	11
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0020	130	9.3
	12-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	250	8.5
	5-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	135	12
	4-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	<0.0010	42	8.6
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	36	8.48
MW8A	30-May-2014	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	68	9
	28-May-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	71	10
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	36	11
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	40	12
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0020	51	12
	12-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	46	14
	29-May-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	34	12
	4-Jun-2021	0.00092	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	<0.0010	51	13.3
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	36	15.5
MW12B	30-May-2014	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	71	21
	28-May-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	61	22
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	71	24
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	52	21
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0020	53	19
	12-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	80	35
	4-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	52	21
	4-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	<0.0010	237	22.2
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	39	18
MW18A	30-May-2014	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	29	5.2
	28-May-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	28	6.9
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	27	6.9
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	26	7.2
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0020	35	7.4
	12-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	37	9.7
	4-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	26	6.6
	4-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	<0.0010	31	10.6
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	24	9.53
MW19A	30-May-2014	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	20	6
	28-May-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	25	7.5
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	19	7.1
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	27	7.1
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0020	23	8.0
	12-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	23	8.3
	4-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	20	8.6
	4-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	0.0025	32	10
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	0.64	<0.0010	24	8.74
MW20A	30-May-2014	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	66	4.4
	28-May-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	28	5.7
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	19	4.3
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	35	6.4
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0020	26	5.4
	12-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	38	6.9
	4-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	<10	5.3
	3-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	<0.0010	10	6.4
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	16	6.42
MW21A	6-Jun-2014	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	96	7
	4-Jun-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	74	8.4
	8-Jun-2016	<0.00040	0.00074	<0.00040	<0.00080	-	<0.10	<0.10	-	28	7.1
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	43	9.2
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	0.0023	49	9.1
	17-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	39	10
	5-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00080	<0.00050	<0.10	<0.10	<0.0015	32	8.5
	3-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	<0.0010	74	8.9
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	36	10.6
MW22A	6-Jun-2014	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	92	5.1
	4-Jun-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	49	7.0
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	21	5.4
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	36	6.7
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	0.002	67	6.8
	17-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	43	6.4
	5-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00080	<0.00050	<0.10	<0.10	<0.0015	33	6.1
	3-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	<0.0010	47	6.3
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	17	6.67
MW23A	30-May-2014	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	81	16
	4-Jun-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	55	16
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	55	16
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	57	21
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	0.0021	67	17
	17-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	59	19
	5-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00080	<0.00050	<0.10	<0.10	<0.0015	73	14
	3-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	<0.0010	45	14.9
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	55	17.4
MW25A	6-Jun-2014	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	32	7.9
	4-Jun-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	35	8.1
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	29	7.9
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	25	9.6
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	0.0023	29	8.7
	17-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	32	10
	5-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00080	<0.00050	<0.10	<0.10	0.0023	23	8.8
	3-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	<0.0010	22	8.8
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	28	11.2
MW26A	6-Jun-2014	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	29	7.8
	4-Jun-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.26	-	-	9.3
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	51	10
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	26	-
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	0.002	120	9.4
	17-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	39	-
	5-Jun-2020	-	-	-	-	-	-	-	<0.0015	66	8.9
	3-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	0.0039	25	11.5
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	59	11.2
MW27A	30-May-2014	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	43	11
	4-Jun-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	34	11
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	39	11
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	30	14
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0020	32	11
	17-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	40	13
	4-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	31	12
	2-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	0.0059	34	11.1
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	52	13.1
MW28A	30-May-2014	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	42	9.6
	4-Jun-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	39	8.5
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	31	10
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	28	12
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0020	31	9.0
	17-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	39	11.0
	4-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	18	9.1
	2-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	0.003	28	10.7
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	35	10.4
MW32A	4-Jun-2015	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	410	12
	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	26	7.9
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	19	7.2
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0020	39	7.6
	12-Jun-2019	<0.00040	0.0011	0.00043	0.0026	<0.00050	<0.10	<0.10	<0.0015	39	7.8
	29-May-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	0.28	<0.0015	26	8.9
	4-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	0.0015	34	10.7
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	32	11.2
15MW35A	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.27	-	1100	15
	7-Jun-2017	0.00049	<0.00040	<0.00040	<0.00080	-	<0.10	<0.27	-	-	-
	26-Jun-2018	0.0030	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	-	0.0026	310	-
	17-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	0.0035	140	-
	5-Jun-2020	-	-	-	-	-	-	-	<0.0015	-	18
	3-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	<0.0010	118	18.6
	9-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	-	164	20
15MW36A	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	55	13
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	42	14
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0020	44	13
	12-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	57	10
	5-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00080	<0.00050	<0.10	<0.10	<0.0015	47	13
	3-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	<0.0010	42	12.8
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	44	17.3

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use .

[2] Alberta Environment and Parks (AEP). Environmental Quality Guidelines for Alberta Surface Waters. March 2018. Table 1 Surface water quality guidelines for the protection of freshwater aquatic life (PAL). Most conservative values applied (chronic or acute).

[3] Guideline varies with hardness .

[4] Guideline varies with pH and temperature .

[5] Guideline varies with chloride .

[6] Guideline varies with pH .

"-" No applicable guideline or not analyzed .

BOLD - Greater than Tier 1 Guideline .

Italic - Detection limit greater than Tier 1 guideline .

* - laboratory filtered .

** - Data is unreliable for 2022 .

Table 4c: Field and Groundwater Analytical Results Summary - Clay Shale Wells

Parameter Group		Dissolved Metals																					Parame
Parameter		Aluminum	Antimony	Arsenic	Barium	Boron	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silver	Thallium	Tin	Uranium	Zinc
Unit		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		0.007-0.05	0.006	0.005	1	1.0	0.00004-0.00037	0.05	-	0.007	0.3	0.001-0.007	0.05	0.000005	-	0.007-0.17	-	0.002	0.0001	-	-	0.01	0.03
Monitoring Well	Date																						
MW1B	6-Jun-2014	-	<0.00060	-	0.039	-	<0.000025	0.0034	-	0.0057	**0.64**	0.00056	-	**0.00003**	-	0.0068	-	-	-	-	-	-	0.0034
	28-May-2015	0.0044	<0.00060	0.0012	0.017	0.63	0.000029	<0.0010	-	0.0020	<0.060	<0.00020	**0.10**	<0.0000050	-	0.0038	-	<0.00020	<0.00010	-	-	0.0019	<0.0030
	8-Jun-2016	**0.061**	<0.00060	0.0015	0.021	0.62	0.000029	<0.0010	-	0.0035	<0.060	<0.00020	**0.057**	<0.0000020	-	0.0060	-	0.00058	<0.00010	-	-	0.0022	<0.0030
	7-Jun-2017	**0.059**	<0.00060	0.00098	0.024	0.64	0.000022	<0.0010	-	0.0018	<0.060	<0.00020	**0.095**	<0.0000020	-	0.0056	-	0.00035	<0.00010	-	-	0.0020	<0.0030
	26-Jun-2018	0.003	<0.00060	0.0012	0.03	0.72	<0.00002	<0.0010	-	0.0021	<0.06	<0.00020	0.027	0.0000021	-	0.0044	-	0.00023	<0.00010	-	-	0.0018	<0.0030
	12-Jun-2019	0.034	<0.00060	0.00092	0.036	0.73	<0.000020	<0.0010	0.00037	0.00075	<0.060	<0.00020	**0.075**	<0.0000020	0.0069	0.0037	<0.10	0.00021	<0.00010	<0.00020	<0.0010	0.0016	<0.0030
	5-Jun-2020	**0.25**	<0.00060	0.0013	0.049	0.72	0.000027	<0.0010	0.00069	0.0065	**0.62**	0.00063	**0.10**	**0.000132**	0.0052	0.0048	<0.1	<0.00020	<0.00010	<0.0002	<0.001	0.0015	<0.0030
	4-Jun-2021	**0.0366**	<0.00020	0.00099	0.0356	0.588	0.000021	<0.00020	<0.00020	0.00234	**0.025**	<0.00010	**0.05**	<0.0000050	0.00477	0.0038	<0.10	<0.00010	<0.000020	<0.000020	<0.00020	0.00124	0.0209
	10-Jun-2022	0.0022	0.00045	0.00124	0.0376	0.627	3.66E-05	<0.0010	0.0005	0.00079	<0.060	<0.00010	**0.128**	-	0.00605	0.00593	<0.10	0.000189	<0.000020	<0.000020	<0.00020	0.00147	<0.0020
MW8A	30-May-2014	-	<0.00060	-	0.041	-	<0.000025	<0.0010	-	0.00047	**0.31**	<0.00020	-	<0.0000050	-	0.0023	-	-	-	-	-	-	0.007
	28-May-2015	0.0043	<0.00060	0.0014	0.025	0.68	<0.000020	<0.0010	-	0.00064	<0.060	<0.00020	0.017	<0.0000050	-	0.0020	-	<0.00020	<0.00010	-	-	0.00071	<0.0030
	8-Jun-2016	0.0093	<0.00060	0.0021	0.045	0.72	<0.000020	<0.0010	-	0.00042	<0.060	<0.00020	0.015	<0.0000020	-	0.0023	-	<0.00020	<0.00010	-	-	0.00092	<0.0030
	7-Jun-2017	0.0088	<0.00060	0.0019	0.049	0.77	<0.000020	<0.0010	-	<0.00020	<0.060	<0.00020	0.025	<0.0000020	-	0.0011	-	<0.00020	<0.00010	-	-	0.00074	<0.0030
	26-Jun-2018	0.0079	<0.00060	0.0027	0.044	0.73	<0.00002	<0.0010	-	0.00055	<0.06	<0.00020	0.042	0.0000025	-	0.0012	-	<0.00020	<0.00010	-	-	0.00056	<0.0030
	12-Jun-2019	0.0050	<0.00060	0.0032	0.05	0.76	<0.000020	<0.0010	0.00036	0.00097	<0.060	<0.00020	**0.10**	<0.0000020	0.0071	0.001	0.15	<0.00020	<0.00010	<0.00020	<0.0010	0.00055	<0.0030
	29-May-2020	0.0041	<0.00060	0.0039	0.040	0.67	<0.000020	<0.0010	0.00037	0.00058	<0.060	<0.00020	**0.08**	<0.0000019	0.0089	0.0008	<0.1	<0.00020	<0.00010	<0.0002	<0.001	0.00050	<0.0030
	4-Jun-2021	0.0170	<0.00020	0.00435	0.046	0.635	<0.000010	<0.00020	0.0003	0.00056	<0.020	<0.00010	**0.09**	<0.0000050	0.00772	<0.0010	0.16	<0.00010	<0.000020	<0.000020	<0.00020	0.00045	0.0164
	10-Jun-2022	0.0066	<0.00020	**0.0051**	0.0515	0.588	<0.000010	<0.0010	0.0003	<0.00040	<0.060	<0.00010	**0.0809**	-	0.00819	<0.0010	0.172	<0.00010	<0.000020	<0.000020	<0.00020	0.000502	<0.0020
MW12B	30-May-2014	-	<0.0060	-	<0.10	-	<0.000050	<0.010	-	<0.0020	*<0.60*	<0.0020	-	<0.0000050	-	<0.0050	-	-	-	-	-	-	<0.030
	28-May-2015	*<0.060*	*<0.012*	<0.0040	<0.10	0.56	<0.00040	<0.020	-	<0.0040	*<0.60*	<0.0040	**0.43**	<0.0000050	-	<0.010	-	<0.0040	*<0.0020*	-	-	**0.019**	*<0.060*
	8-Jun-2016	<0.0030	<0.00060	0.00088	<0.010	0.57	0.000027	<0.0010	-	0.0023	0.13	0.00021	**0.36**	<0.0000020	-	0.0030	-	0.00029	<0.00010	-	-	**0.021**	0.0061
	7-Jun-2017	0.0037	<0.00060	0.00067	<0.10	0.55	<0.000020	<0.0010	-	0.0015	*<0.6*	<0.00020	**0.42**	<0.0000020	-	0.0012	-	<0.00020	<0.00010	-	-	**0.025**	<0.0030
	26-Jun-2018	<0.003	<0.00060	0.00066	<0.10	0.59	<0.00002	<0.0010	-	0.0027	*<0.6*	<0.00020	**0.3**	<0.000002	-	0.0022	-	0.00022	<0.00010	-	-	**0.018**	<0.0030
	12-Jun-2019	<0.0030	<0.00060	0.00086	<1.0	0.6	<0.000020	<0.0010	0.00043	0.0041	*<0.60*	<0.00020	**0.39**	<0.0000020	0.00078	0.0032	<10	0.00037	<0.00010	<0.00020	<0.0010	**0.048**	0.0033
	4-Jun-2020	<0.0030	<0.00060	0.00075	<0.010	0.45	<0.000020	<0.0010	0.00032	0.0018	0.081	<0.00020	**0.31**	<0.0000019	0.00079	0.0012	<0.1	0.00024	<0.00010	<0.0002	<0.001	**0.050**	<0.0030
	4-Jun-2021	0.216	<0.00050	0.00068	0.02	0.62	<0.000025	<0.00050	<0.00050	0.0024	0.196	<0.00025	**0.146**	<0.0000050	0.00152	0.0059	<0.25	<0.00025	<0.000050	<0.000050	<0.00050	**0.0186**	0.019
	10-Jun-2022	<0.0050	<0.00050	0.00064	0.016	0.548	<0.000025	<0.0025	<0.00050	0.00255	<0.15	<0.00025	**0.113**	-	0.00132	0.0039	<0.25	<0.00025	<0.000050	<0.000050	<0.00050	**0.0184**	<0.0050
MW18A	30-May-2014	-	<0.00060	-	<0.10	-	<0.000025	<0.0010	-	0.00057	*<0.60*	0.00033	-	<0.0000050	-	0.0044	-	-	-	-	-	-	0.0033
	28-May-2015	0.0046	<0.00060	0.0010	0.089	0.78	<0.000020	<0.0010	-	0.00025	<0.060	<0.00020	0.045	<0.0000050	-	0.0039	-	<0.00020	<0.00010	-	-	0.00026	<0.0030
	8-Jun-2016	0.029	<0.00060	0.00092	0.091	0.81	<0.000020	<0.0010	-	0.00023	0.11	<0.00020	**0.059**	<0.0000020	-	0.0035	-	<0.00020	<0.00010	-	-	0.00013	<0.0030
	7-Jun-2017	0.0045	<0.00060	0.001	0.1	0.83	<0.000020	<0.0010	-	0.00038	<0.060	<0.00020	0.040	<0.0000020	-	0.0024	-	<0.00020	<0.00010	-	-	0.00026	<0.0030
	26-Jun-2018	0.0074	<0.00060	0.0013	0.1	0.83	<0.00002	<0.0010	-	<0.00020	<0.06	<0.00020	0.049	<0.000002	-	0.0025	-	<0.00020	<0.00010	-	-	0.00029	<0.0030
	12-Jun-2019	<0.0030	<0.00060	0.001	0.1	0.85	<0.000020	<0.0010	<0.00030	0.00066	<0.060	<0.00020	0.034	<0.0000020	0.0041	0.0021	<0.10	<0.00020	<0.00010	<0.00020	<0.0010	0.0003	<0.0030
	4-Jun-2020	<0.0030	<0.00060	0.0013	0.08	0.81	<0.000020	<0.0010	<0.0003	0.0039	<0.060	<0.00020	0.049	<0.0000019	0.0078	0.0022	<0.1	<0.00020	<0.00010	<0.0002	<0.001	0.0001	<0.0030
	4-Jun-2021	0.003	<0.00010	0.0014	0.10	0.779	<0.0000050	<0.00010	0.00013	<0.00020	0.027	<0.000050	0.0368	<0.0000050	0.00522	0.00113	0.093	<0.000050	<0.000010	<0.000010	<0.00010	0.000194	0.019
	10-Jun-2022	0.0024	0.00024	0.00173	0.0954	0.67	5.1E-06	<0.00050	0.00012	0.00114	0.064	0.000666	0.0376	-	0.0056	0.00193	0.062	<0.000050	<0.000010	<0.000010	<0.00010	0.000097	0.0014
MW19A	30-May-2014	-	<0.0060	-	<0.10	-	**0.000055**	<0.010	-	<0.0020	*<0.60*	<0.0020	-	<0.0000050	-	<0.0050	-	-	-	-	-	-	<0.030
	28-May-2015	<0.030	<0.0060	<0.0020	<0.010	0.40	<0.00020	<0.010	-	<0.0020	<0.060	<0.0020	**0.39**	<0.0000050	-	<0.0050	-	<0.0020	*<0.0010*	-	-	0.005	<0.030
	8-Jun-2016	0.0072	<0.00060	0.00065	<0.010	0.41	0.000039	<0.0010	-	0.0014	<0.060	<0.00020	**0.36**	<0.0000020	-	0.0028	-	<0.00020	<0.00010	-	-	0.006	0.0082
	7-Jun-2017	<0.0030	<0.00060	0.00054	<0.10	0.43	<0.000020	<0.0010	-	0.00041	*<0.60*	<0.00020	**0.40**	<0.0000020	-	0.0017	-	<0.00020	<0.00010	-	-	0.006	<0.0030
	26-Jun-2018	<0.003	<0.00060	0.00056	<0.10	0.47	<0.00002	<0.0010	-	0.00022	*<0.6*	<0.00020	**0.71**	<0.000002	-	0.0029	-	<0.00020	<0.00010	-	-	0.006	<0.0030
	12-Jun-2019	<0.0030	<0.00060	0.00056	<1.0	0.45	<0.000020	<0.0010	0.00042	0.00078	*<0.60*	<0.00020	**0.4**	<0.0000020	0.0023	0.0015	<10	<0.00020	<0.00010	<0.00020	<0.0010	0.007	<0.0030
	4-Jun-2020	<0.0030	<0.00060	0.00091	0.026	0.41	<0.000020	<0.0010	0.0011	0.0011	0.12	<0.00020	**0.53**	<0.0000019	0.0036	0.0037	<0.1	<0.00020	<0.00010	<0.0002	<0.001	0.0075	<0.0030
	4-Jun-2021	0.002	0.00057	0.00082	0.0167	0.411	<0.0000050	<0.00010	0.00049	<0.00020	<0.010	<0.000050	**0.30**	<0.0000050	0.0028	0.00276	<0.050	0.000098	<0.000010	0.000014	<0.00010	0.0082	0.0181
	10-Jun-2022	<0.0050	<0.00050	0.00109	0.015	0.402	<0.000025	<0.0025	<0.00050	<0.0010	<0.15	<0.00025	**0.271**	-	0.00532	0.0034	<0.25	<0.00025	<0.000050	<0.000050	<0.00050	0.00606	<0.0050
MW20A	30-May-2014	-	<0.00060	-	0.025	-	<0.000025	0.0019	-	0.0036	**0.44**	0.0003	-	<0.0000050	-	0.0031	-	-	-	-	-	-	0.0036
	28-May-2015	0.0052	<0.00060	0.00037	0.015	0.80	<0.000020	<0.0010	-	0.00075	<0.060	<0.00020	0.026	<0.0000050	-	0.0015	-	<0.00020	<0.00010	-	-	0.0015	<0.0030
	8-Jun-2016	0.0040	<0.00060	0.00051	0.018	0.92	<0.000020	<0.0010	-	0.00038	<0.060	<0.00020	0.026	<0.0000020	-	0.0011	-	0.0014	<0.00010	-	-	0.0016	<0.0030
	7-Jun-2017	0.0078	<0.00060	0.00040	0.027	0.79	<0.000020	<0.0010	-	0.00031	<0.060	<0.00020	0.031	<0.0000020	-	0.0014	-	<0.00020	<0.00010	-	-	0.0015	<0.0030
	26-Jun-2018	0.0040	<0.00060	0.00040	0.022	0.88	<0.00002	<0.0010	-	0.00088	<0.06	<0.00020	0.016	0.000002	-	0.0012	-	<0.00020	<0.00010	-	-	0.0015	<0.0030
	12-Jun-2019	0.020	<0.00060	0.00042	0.023	0.88	<0.000020	<0.0010	<0.00030	0.00076	<0.060	<0.00020	0.011	<0.0000020	0.0014	0.001	<0.10	<0.00020	<0.00010	<0.00020	<0.0010	0.0016	<0.0030
	4-Jun-2020	<0.0030	<0.00060	0.00033	0.020	0.69	<0.000020	<0.0010	<0.0003	0.00030	<0.060	<0.00020	**0.089**	<0.0000019	0.0016	0.0010	<0.1	<0.00020	<0.00010	<0.0002	<0.001	0.0017	<0.0030
	3-Jun-2021	<0.0050	<0.00050	<0.00050	0.028	0.87	<0.000025	<0.00050	<0.00050	0.00140	<0.050	<0.00025	**0.0185**	<0.0000050	0.00135	<0.0025	<0.25	<0.00025	<0.000050	<0.000050	<0.00050	0.00189	0.0279
	10-Jun-2022	0.0048	<0.00020	0.00039	0.0219	0.625	<0.000010	<0.0010	<0.00020	0.00124	<0.060	<0.00010	**0.0864**	-	0.00124	0.00228	<0.10	<0.00010	<0.000020	<0.000020	<0.00020	0.00163	<0.0020
MW21A	6-Jun-2014	-	<0.00060	-	0.073	-	0.000034	0.0014	-	0.0015	0.22	0.00024	-	**0.0000058**	-	0.0027	-	-	-	-	-	-	<0.0030
	4-Jun-2015	0.0058	<0.00060	0.00093	0.062	0.83	**0.000067**	<0.0010	-	0.0012	<0.060	<0.00020	<0.0040	<0.0000050	-	0.0029	-	0.00022	<0.00010	-	-	0.0034	<0.0030
	8-Jun-2016	0.0047	<0.00060	0.0010	0.073	0.93	**0.000079**	<0.0010	-	0.0025	<0.060	<0.00020	<0.0040	<0.0000020	-	0.0031	-	<0.00020	<0.00010	-	-	0.0033	<0.0030
	7-Jun-2017	0.0043	<0.00060	0.0011	0.096	0.82	**0.000099**	<0.0010	-	0.0016	<0.060	<0.00020	0.0047	<0.0000020	-	0.0028	-	0.00020	<0.00010	-	-	0.0036	<0.0030
	26-Jun-2018	<0.003	<0.00060	0.0012	0.081	0.90	**0.00012**	<0.0010	-	0.0021	<0.06	<0.00020	0.0048	-	-	0.0031	-	0.00025	<0.00010	-	-	0.0035	<0.0030
	17-Jun-2019	**0.058**	0.00065	0.0011	0.09	0.85	**0.00014**	<0.0010	<0.00030	0.005	0.13	0.00041	0.014	<0.0000020	0.0052	0.0027	<0.10	<0.00020	<0.00010	<0.00020	<0.0010	0.0033	0.01
	5-Jun-2020	0.0038	<0.00060	0.00078	0.070	0.89	**0.00027**	<0.0010	<0.0003	0.0020	<0.060	<0.00020	0.0073	<0.0000019	0.0055	0.0027	<0.1	0.00023	<0.00010	<0.0002	<0.001	0.0036	<0.0030
	3-Jun-2021	0.0289	<0.00050	0.00273	0.117	0.935	**0.000209**	<0.00050	0.0015	0.0033	<0.050	<0.00025	**0.228**	<0.0000050	0.00652	0.0047	<0.25	<0.00025	<0.000050	<0.000050	<0.00050	0.0044	0.029
	10-Jun-2022	0.0164	0.00034	0.00187	0.0864	0.731	0.000141	<0.00050	0.0006	0.00202	<0.030	<0.000050	**0.092**	-	0.00476	0.00333	<0.050	0.000363	<0.000010	<0.000010	0.00013	0.00327	<0.0010
MW22A	6-Jun-2014	-	<0.00060	-	0.014	-	**0.000059**	<0.0010	-	0.00084	0.065	<0.00020	-	<0.0000050	-	0.0024	-	-	-	-	-	-	<0.0030
	4-Jun-2015	<0.030	<0.0060	<0.0020	<0.010	0.82	*<0.00020*	<0.010	-	<0.0020	<0.060	<0.0020	0.018	<0.0000050	-	<0.0050	-	<0.0020	*<0.0010*	-	-	0.004	<0.030
	8-Jun-2016	0.0047	<0.00060	0.00033	<0.10	0.85	0.000026	<0.0010	-	0.0024	*<0.60*	<0.00020	<0.040	<0.0000020	-	0.0051	-	<0.00020	<0.00010	-	-	0.0042	0.0033
	7-Jun-2017	0.0058	<0.00060	0.0003	<0.10	0.9	0.000058	<0.0010	-	0.002	*<0.60*	<0.00020	<0.040	<0.0000020	-	0.0023	-	<0.00020	<0.00010	-	-	0.0041	<0.0030
	26-Jun-2018	<0.003	<0.00060	0.00028	<0.10	0.84	0.000047	<0.0010	-	0.0012	*<0.6*	<0.00020	<0.04	-	-	0.0022	-	<0.00020	<0.00010	-	-	0.0041	<0.0030
	17-Jun-2019	0.004	<0.00060	<0.00020	<0.10	0.88	**0.00017**	0.0014	<0.00030	0.002	*<0.60*	<0.00020	<0.040	<0.0000020	0.0051	0.0034	<1.0	<0.00020	<0.00010	<0.00020	<0.0010	0.0041	<0.0030
	5-Jun-2020	<0.0030	<0.00060	0.00029	<0.010	0.86	**0.00034**	<0.0010	<0.0003	0.0009	<0.060	<0.00020	0.035	<0.0000019	0.0051	0.0032	<0.1	0.00026	<0.00010	<0.0002	<0.001	0.0044	0.0032
	3-Jun-2021	0.0087	<0.00050	<0.00050	0.00976	0.815	**0.000193**	0.00055	<0.00050	0.0022	<0.050	<0.00025	0.00599	<0.0000050	0.00519	0.0026	<0.25	<0.00025	<0.000050	<0.000050	<0.00050	0.00394	0.0197
	10-Jun-2022	**0.198**	<0.00050	<0.00050	0.0103	0.872	0.000175	<0.0025	<0.00050	0.0014	0.151	<0.00025	**0.0662**	-	0.00453	0.00328	<0.25	<0.00025	<0.000050	<0.000050	<0.00050	0.00395	<0.0050
MW23A	30-May-2014	-	0.00082	-	0.040	-	**0.000075**	<0.0010	-	0.0028	**0.38**	0.00088	-	<0.0000050	-	**0.0097**	-	-	-	-	-	-	0.0031
	4-Jun-2015	0.0043	<0.00060	**0.0065**	0.038	0.77	<0.000020	<0.0010	-	0.00042	<0.060	<0.00020	0.0071	<0.0000050	-	0.0032	-	<0.00020	<0.00010	-	-	0.0032	<0.0030
	8-Jun-2016	0.0049	<0.00060	**0.0058**	0.050	0.88	<0.000020	<0.0010	-	0.00049	<0.060	<0.00020	0.0079	<0.0000020	-	0.0031	-	<0.00020	<0.00010	-	-	0.0027	<0.0030
	7-Jun-2017	0.010	0.0013	0.009	0.063	0.85	<0.000020	<0.0010	-	<0.00020	<0.060	<0.00020	0.0064	<0.0000020	-	**0.0095**	-	<0.00020	<0.00010	-	-	0.0049	<0.0030
	26-Jun-2018	<0.003	<0.00060	**0.0056**	0.058	0.87	0.000026	<0.0010	-	0.00029	<0.06	<0.00020	0.0084	<0.000002	-	0.0022	-	<0.00020	<0.00010	-	-	0.0024	<0.0030
	17-Jun-2019	0.016	<0.00060	**0.0057**	0.061	0.82	<0.000020	<0.0010	<0.00030	0.0006	<0.060	<0.00020	0.008	<0.0000020	0.0039	0.0032	0.14	<0.00020	<0.00010	<0.00020	<0.0010	0.0017	<0.0030
	5-Jun-2020	0.0054	<0.00060	**0.0064**	0.055	0.86	<0.000020	<0.001	<0.0003	0.00038	<0.06	<0.0002	0.005	<0.0000019	0.0034	0.0016	0.13	**0.0031**	<0.00010	<0.0002	<0.001	0.0018	<0.0030
	3-Jun-2021	0.0247	<0.00050	**0.0047**	0.0495	0.801	<0.000025	<0.00050	<0.00050	<0.0010	<0.050	<0.00025	0.00219	<0.0000050	0.00335	<0.0025	<0.25	0.00058	<0.000050	<0.000050	<0.00050	0.00138	0.0202
	10-Jun-2022	**0.332**	0.00042	**0.00867**	0.0634	0.799	4.44E-05	<0.0010	<0.00020	0.00059	0.169	0.000196	<0.010	-	0.00316	0.00233	0.165	0.000105	<0.000020	<0.000020	<0.00020	0.00141	<0.0020
MW25A	6-Jun-2014	-	0.00078	-	0.081	-	<0.000025	<0.0010	-	0.0009	<0.060	<0.00020	-	<0.0000050	-	0.0025	-	-	-	-	-	-	<0.0030
	4-Jun-2015	0.0051	0.0011	0.0021	0.081	0.81	0.000022	<0.0010	-	0.0009	<0.060	<0.00020	**0.051**	<0.0000050	-	0.0032	-	0.00041	<0.00010	-	-	0.0015	<0.0030
	8-Jun-2016	0.0046	<0.00060	0.0019	0.088	0.94	<0.000020	<0.0010	-	0.00045	<0.060	<0.00020	**0.10**	<0.0000020	-	0.0023	-	<0.00020	<0.00010	-	-	0.00074	<0.0030
	7-Jun-2017	0.0043	0.00064	0.0023	0.100	0.83	<0.000020	<0.0010	-	<0.00020	<0.060	<0.00020	**0.07**	<0.0000020	-	0.0022	-	<0.00020	<0.00010	-	-	0.0012	<0.0030
	26-Jun-2018	0.0034	<0.00060	0.0024	0.083	0.89	<0.00002	<0.0010	-	<0.00020	0.069	<0.00020	**0.13**	<0.000002	-	0.0015	-	<0.00020	<0.00010	-	-	0.00036	<0.0030
	17-Jun-2019	0.012	<0.00060	0.0023	0.098	0.85	<0.000020	<0.0010	<0.00030	0.002	<0.060	0.0002	**0.063**	<0.0000020	0.0063	0.0021	0.12	<0.00020	<0.00010	<0.00020	<0.0010	0.001	<0.0030
	5-Jun-2020	<0.0030	0.00076	0.002	0.099	0.89	<0.000020	<0.0010	0.00032	0.0055	<0.060	<0.00020	**0.051**	<0.0000019	0.0039	0.0023	<0.1	<0.00020	<0.00010	<0.0002	<0.001	0.0018	0.0033
	3-Jun-2021	<0.0050	<0.00050	0.00288	0.1	0.97	<0.000025	<0.00050	<0.00050	0.0011	<0.050	<0.00025	**0.112**	<0.0000050	0.00674	<0.0025	<0.25	<0.00025	<0.000050	<0.000050	<0.00050	0.0005	<0.0050
	10-Jun-2022	0.0032	<0.00020	0.00321	0.0832	0.764	<0.000010	<0.0010	0.0003	0.00057	<0.060	<0.00010	**0.0696**	-	0.00806	0.00216	0.161	<0.00010	<0.000020	<0.000020	<0.00020	0.0005	<0.0020
MW26A	6-Jun-2014	-	<0.00060	-	0.045	-	0.000034	0.0012	-	0.0018	0.15	0.0012	-	<0.0000050	-	0.0024	-	-	-	-	-	-	0.013
	4-Jun-2015	0.0049	<0.00060	0.0021	0.033	0.74	<0.000020	<0.0010	-	0.0015	<0.060	<0.00020	0.0098	<0.0000050	-	0.0017	-	<0.00020	<0.00010	-	-	0.00063	<0.0030
	8-Jun-2016	**0.15**	<0.00060	0.0024	0.047	0.85	<0.000020	<0.0010	-	0.0058	0.084	0.00083	<0.0040	<0.0000020	-	0.0039	-	<0.00020	<0.00010	-	-	0.00065	<0.0030
	7-Jun-2017	0.0099 *	<0.00060 *	0.0023 *	0.054 *	0.81 *	<0.000020 *	<0.0010 *	-	0.004 *	<0.060 *	*<0.060* *	<0.0040 *	-	-	**8.5 ***	-	0.0019 *	-	-	-	0.00063 *	0.0032 *
	26-Jun-2018	0.0038	<0.00060	0.0021	0.053	0.80	<0.00002	<0.0010	-	0.0034	<0.06	<0.00020	0.005	0.000003	-	0.0020	-	<0.00020	<0.00010	-	-	0.00069	<0.0030
	17-Jun-2019	0.0073	<0.00060	0.002	0.048	0.80	<0.000020	<0.0010	<0.00030	0.0043	<0.060	<0.00020	0.0077	-	0.0021	0.0016	0.13	<0.00020	<0.00010	<0.00020	<0.0010	0.00059	<0.0030
	5-Jun-2020	0.0084	<0.00060	0.0018	0.054	0.83	<0.000020	<0.0010	<0.0003	0.0038	<0.060	<0.00020	<0.0040	<0.0000019	0.0016	0.00073	0.1	<0.00020	<0.00010	<0.0002	<0.001	0.00062	<0.0030
	3-Jun-2021	0.0147	<0.00050	0.0026	0.0808	0.95	0.000039	<0.00050	<0.00050	0.0055	<0.050	<0.00025	0.00997	<0.0000050	0.00236	0.0026	<0.25	<0.00025	<0.000050	<0.000050	<0.00050	0.000662	0.0284
	10-Jun-2022	0.0205	<0.00020	0.00269	0.0541	0.759	2.38E-05	<0.0010	0.00027	**0.00944**	<0.060	<0.00010	<0.010	-	0.00185	0.00406	<0.10	0.000103	<0.000020	<0.000020	0.00031	0.000573	<0.0020
MW27A	30-May-2014	-	<0.00060	-	0.025	-	<0.000025	0.0031	-	0.0019	**0.46**	0.00077	-	<0.0000050	-	0.003	-	-	-	-	-	-	0.0049
	4-Jun-2015	0.0043	<0.00060	0.0024	0.011	0.77	<0.000020	<0.0010	-	0.00053	<0.060	<0.00020	0.013	<0.0000050	-	0.0012	-	<0.00020	<0.00010	-	-	0.00055	<0.0030
	8-Jun-2016	**0.073**	<0.00060	0.0028	0.014	0.75	<0.000020	<0.0010	-	0.00098	<0.060	<0.00020	0.011	0.0000021	-	0.0033	-	<0.00020	<0.00010	-	-	0.00065	<0.0030
	7-Jun-2017	0.029	<0.00060	0.0030	0.016	0.83	<0.000020	<0.0010	-	0.0003	<0.060	<0.00020	0.012	<0.0000020	-	0.0014	-	<0.00020	<0.00010	-	-	0.00057	<0.0030
	26-Jun-2018	0.006	<0.00060	0.0027	0.014	0.82	<0.00002	<0.0010	-	0.00047	<0.06	<0.00020	0.011	0.0000023	-	0.00073	-	<0.00020	<0.00010	-	-	0.00055	<0.0030
	17-Jun-2019	0.0036	<0.00060	0.0023	0.013	0.81	<0.000020	<0.0010	<0.00030	0.00024	<0.060	<0.00020	0.011	<0.0000020	0.0012	<0.00050	0.19	<0.00020	<0.00010	<0.00020	<0.0010	0.00054	<0.0030
	4-Jun-2020	0.022	<0.00060	0.0025	0.014	0.79	<0.000020	<0.0010	<0.0003	0.00059	<0.060	<0.00020	0.012	<0.0000019	0.0012	0.00054	0.15	<0.00020	<0.00010	<0.0002	<0.001	0.00058	<0.0030
	2-Jun-2021	0.0211	<0.0001	0.00277	0.015	0.451	<0.000005	<0.00010	0.00012	0.00104	0.014	<0.000050	0.012	<0.000005	0.000967	0.00056	0.198	0.000076	<0.000010	<0.000010	<0.00010	0.000444	0.0191
	10-Jun-2022	0.0086	<0.00020	0.00284	0.0137	0.753	<0.000010	<0.0010	<0.00020	0.00125	<0.060	<0.00010	0.0111	-	0.00126	0.00146	0.174	<0.00010	<0.000020	<0.000020	<0.00020	0.000592	<0.0020
MW28A	30-May-2014	-	<0.00060	-	0.015	-	<0.000025	<0.0010	-	0.0021	0.29	0.00022	-	<0.0000050	-	0.0024	-	-	-	-	-	-	0.0039
	4-Jun-2015	0.0046	<0.00060	0.0010	<0.010	0.74	<0.000020	<0.0010	-	0.00044	<0.060	<0.00020	0.029	<0.0000050	-	0.0014	-	<0.00020	<0.00010	-	-	0.00056	<0.0030
	8-Jun-2016	0.012	<0.00060	0.00084	<0.010	0.77	<0.000020	<0.0010	-	0.00085	<0.060	<0.00020	<0.0040	<0.0000020	-	0.0018	-	<0.00020	<0.00010	-	-	0.00031	<0.0030
	7-Jun-2017	0.005	<0.00060	0.00053	<0.010	0.82	<0.000020	<0.0010	-	<0.00020	<0.060	<0.00020	0.019	<0.0000020	-	0.00082	-	<0.00020	<0.00010	-	-	0.00025	<0.0030
	26-Jun-2018	<0.003	<0.00060	0.00085	<0.010	0.80	<0.00002	<0.0010	-	0.00041	<0.06	<0.00020	0.023	<0.000002	-	0.00079	-	<0.00020	<0.00010	-	-	0.00051	<0.0030
	17-Jun-2019	0.013	<0.00060	0.00064	0.011	0.80	<0.000020	<0.0010	<0.00030	0.00098	<0.060	-	-	-	-	-		-	-			-	-
	4-Jun-2020	0.014	<0.00060	0.00073	<0.010	0.78	<0.000020	<0.0010	<0.0003	0.0005	<0.060	<0.00020	0.027	<0.0000019	0.0018	-	<0.1	<0.00020	<0.00010	<0.0002	<0.001	0.00039	<0.003
	2-Jun-2021	0.0051	<0.00020	0.00076	0.00868	0.71	<0.000010	<0.00020	<0.00020	0.00051	<0.020	<0.00010	0.0231	<0.000005	0.00175	<0.0010	0.13	<0.00010	<0.000020	<0.00002	<0.00020	0.000388	0.018
	10-Jun-2022	0.0025	<0.00020	0.0008	0.00811	0.71	<0.000010	<0.0010	<0.00020	0.00085	<0.060	<0.00010	0.0202	-	0.00144	0.00123	0.109	<0.00010	<0.000020	<0.000020	<0.00020	0.000354	<0.0020
MW32A	4-Jun-2015	<0.030	<0.0060	0.0041	<0.10	0.85	<0.00020	<0.010	-	<0.0020	*<0.60*	<0.0020	**0.15**	<0.0000050	-	0.011	-	<0.0020	*<0.0010*	-	-	0.0080	<0.030
	8-Jun-2016	0.029	<0.00060	0.00051	0.015	**1.2**	<0.000020	0.0015	-	0.0031	0.12	<0.00020	**0.12**	0.0000023	-	0.0032	-	<0.00020	<0.00010	-	-	0.00016	0.015
	7-Jun-2017	0.008	<0.00060	0.00037	<0.10	**1.2**	0.000021	<0.0010	-	0.00073	*<0.60*	<0.00020	**0.14**	<0.0000020	-	0.0016	-	<0.00020	<0.00010	-	-	0.00014	<0.0030
	26-Jun-2018	0.008	<0.00060	0.00035	<0.10	**1.2**	0.000021	<0.0010	-	0.0082	*<0.6*	<0.00020	**0.12**	0.0000032	-	0.0026	-	<0.00020	<0.00010	-	-	0.00013	0.0091
	12-Jun-2019	<0.0030	<0.00060	0.00039	<1.0	**1.1**	<0.000020	<0.0010	0.00047	0.0016	*<0.60*	<0.00020	**0.11**	<0.0000020	0.00064	0.0011	<10	0.00025	<0.00010	<0.00020	<0.0010	0.00011	<0.0030
	29-May-2020	<0.0030	<0.00060	0.00061	0.021	0.94	0.000027	<0.0010	0.00052	0.0012	<0.060	<0.00020	**0.16**	<0.0000019	0.0012	0.0018	<0.1	<0.00020	<0.00010	<0.0002	<0.001	0.00042	<0.0030
	4-Jun-2021	0.0051	<0.00050	0.0005	0.0139	0.916	<0.000025	<0.00050	<0.00050	0.0011	<0.050	<0.00025	**0.151**	<0.0000050	0.00112	<0.0025	<0.25	<0.00025	<0.000050	<0.000050	<0.00050	0.0003	0.0182
	10-Jun-2022	0.0146	<0.00050	0.00067	0.0146	0.966	<0.000025	<0.0025	<0.00050	<0.0010	<0.15	<0.00025	**0.152**	-	0.000986	<0.0025	<0.25	<0.00025	<0.000050	<0.000050	<0.00050	0.000287	<0.0050
15MW35A	8-Jun-2016	**0.092**	<0.00060	0.0035	0.080	0.75	<0.000020	<0.0010	-	0.0011	0.11	<0.00020	0.012	*<0.000020*	-	0.0053	-	<0.00020	<0.00010	-	-	0.0013	0.0035
	7-Jun-2017	**0.055**	<0.00060	0.0023	0.130	0.74	<0.000020	<0.0010	-	0.00065	<0.060	<0.00020	0.013	<0.0000020	-	0.0034	-	<0.00020	<0.00010	-	-	0.00095	<0.0030
	26-Jun-2018	**0.12**	<0.00060	0.0015	0.084	0.79	<0.00002	<0.0010	-	0.0022	0.28	<0.00020	0.028	-	-	0.0016	-	<0.00020	<0.00010	-	-	0.00073	<0.0030
	17-Jun-2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	5-Jun-2020	0.0076	<0.00060	0.0011	0.078	0.82	<0.000020	<0.0010	0.00042	0.0025	0.069	<0.00020	0.017	<0.0000019	0.015	0.0017	0.23	0.00026	<0.00010	<0.0002	<0.001	0.00076	<0.0030
	3-Jun-2021	0.0049	0.00046	0.00163	0.0732	0.762	5.6E-06	0.00014	0.00063	0.00478	0.058	0.000145	0.0198	<0.0000050	0.0152	0.00212	0.2	0.0001	<0.000010	<0.000010	0.00045	0.000734	0.0079
	9-Jun-2022	0.45	<0.0010	0.00134	0.0956	0.777	<0.000050	<0.0050	<0.0010	**0.0143**	**0.602**	0.000826	<0.050	-	0.0147	<0.0050	<0.50	<0.00050	<0.00010	<0.00010	<0.0010	0.000743	<0.010
15MW36A	8-Jun-2016	0.015	<0.00060	0.0012	0.031	0.82	<0.000020	<0.0010	-	0.0026	<0.060	<0.00020	0.022	**0.000017**	-	0.0019	-	0.00023	<0.00010	-	-	0.00037	0.0033
	7-Jun-2017	0.0093	<0.00060	0.00075	0.034	0.79	<0.000020	<0.0010	-	<0.00020	<0.060	<0.00020	0.032	<0.0000020	-	0.00085	-	<0.00020	<0.00010	-	-	0.00026	<0.0030
	26-Jun-2018	0.0071	<0.00060	0.001	0.033	0.84	<0.00002	<0.0010	-	0.00041	<0.06	<0.00020	0.039	0.0000026	-	0.0012	-	<0.00020	<0.00010	-	-	0.00058	<0.0030
	12-Jun-2019	0.047	<0.00060	0.00069	0.046	0.87	<0.000020	<0.0010	0.0004	0.00099	0.076	<0.00020	0.033	<0.0000020	0.0081	0.00067	0.15	<0.00020	<0.00010	<0.00020	<0.0010	0.00018	<0.0030
	5-Jun-2020	0.0043	<0.00060	0.00095	0.044	0.81	<0.000020	<0.0010	0.00050	<0.00020	0.10	<0.00020	**0.23**	<0.0000019	0.017	0.0022	0.26	<0.00020	<0.00010	<0.0002	<0.001	0.0011	<0.0030
	3-Jun-2021	0.0066	<0.00010	0.00085	0.058	0.771	7.5E-06	<0.00010	0.00033	0.00172	0.02	0.000066	**0.19**	<0.0000050	0.00983	0.0008	0.248	0.000058	<0.000010	<0.000010	0.00015	0.000233	0.0211
	10-Jun-2022	0.0228	<0.00010	0.00107	0.0639	0.701	1.15E-05	<0.00050	0.00033	0.00058	0.052	0.000131	**0.17**	-	0.0114	0.00144	0.229	0.000056	<0.000010	<0.000010	<0.00010	0.000237	<0.0010

Notes:
[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use .
[2] Alberta Environment and Parks (AEP). Environmental Quality Guidelines for Alberta Surface Waters. March 2018. Table 1 Surface water quality guidelines for the protection of freshwater aquatic life (PAL). Most conservative values applied (chronic or acute).
[3] Guideline varies with hardness.
[4] Guideline varies with pH and temperature.
[5] Guideline varies with chloride.
[6] Guideline varies with pH.
"-" No applicable guideline or not analyzed.
BOLD - Greater than Tier 1 Guideline.
Italic - Detection limit greater than Tier 1 guideline.
* - laboratory filtered.
** - Data is unreliable for 2022.

TETRA TECH

Table 4c: Field and Groundwater Analytical Results Summary - Clay Shale Wells

eter Group		Volatile Organic Compounds (VOCs)																	
Parameter		Carbon tetrachloride	Chlorobenzene	Chloroform	Dibromomethane	1,2-Dichlorobenzene	1,4-Dichlorobenzene	1,2-Dichloroethane	1,1-Dichloroethene	Methyl t-Butyl Ether (MTBE)	Methylene Chloride	Methyl Methacrylate	Tetrachloroethene	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene	1,3,5-Trichlorobenzene	Trichloroethene	Trihalomethanes	Vinyl chloride
Unit		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		0.002	0.0013	0.08	0.1	0.0007	0.001	0.005	0.014	0.015	0.05	0.47	0.01	0.008	0.015	0.014	0.005	0.1	0.002
Monitoring Well	Date																		
MW1B	6-Jun-2014	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	28-May-2015	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-		-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	12-Jun-2019	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	5-Jun-2020	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
MW8A	30-May-2014	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	28-May-2015	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-		-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	12-Jun-2019	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	29-May-2020	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
MW12B	30-May-2014	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	28-May-2015	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-		-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	12-Jun-2019	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2020	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
MW18A	30-May-2014	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	28-May-2015	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-		-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	12-Jun-2019	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2020	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
MW19A	30-May-2014	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	28-May-2015	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-		-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	12-Jun-2019	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2020	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
MW20A	30-May-2014	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	28-May-2015	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-		-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	12-Jun-2019	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2020	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	3-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
MW21A	6-Jun-2014	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4-Jun-2015	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-		-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	17-Jun-2019	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	5-Jun-2020	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	3-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
MW22A	6-Jun-2014	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4-Jun-2015	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-		-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	17-Jun-2019	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	5-Jun-2020	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	3-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
MW23A	30-May-2014	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4-Jun-2015	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-		-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	17-Jun-2019	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	5-Jun-2020	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	3-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
MW25A	6-Jun-2014	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4-Jun-2015	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-		-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	17-Jun-2019	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	5-Jun-2020	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	3-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	9-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
MW26A	6-Jun-2014	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4-Jun-2015	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-		-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	17-Jun-2019	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	5-Jun-2020	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
MW27A	30-May-2014	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4-Jun-2015	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-		-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	17-Jun-2019	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2020	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	2-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
MW28A	30-May-2014	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4-Jun-2015	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-		-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	17-Jun-2019	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2020	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	2-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
MW32A	4-Jun-2015	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8-Jun-2016	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-		-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	12-Jun-2019	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	29-May-2020	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	4-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
15MW35A	8-Jun-2016	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-		-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	17-Jun-2019	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	5-Jun-2020	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	9-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
15MW36A	8-Jun-2016	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-		-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	12-Jun-2019	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	5-Jun-2020	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	3-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use .

[2] Alberta Environment and Parks (AEP). Environmental Quality Guidelines for Alberta Surface Waters. March 2018. Table 1 Surface water quality guidelines for the protection of freshwater aquatic life (PAL). Most conservative values applied (chronic or acute).

[3] Guideline varies with hardness .

[4] Guideline varies with pH and temperature .

[5] Guideline varies with chloride .

[6] Guideline varies with pH .

"-" No applicable guideline or not analyzed .

BOLD - Greater than Tier 1 Guideline .

Italic - Detection limit greater than Tier 1 guideline .

* - laboratory filtered .

** - Data is unreliable for 2022 .

Table 4d: Field and Groundwater Analytical Results Summary - Lower Bedrock Wells

Parameter Group		Field			Routine																Nutrients				
Parameter		pH	Electrical Conductivity	Temperature	pH	Electrical Conductivity	Total Dissolved Solids	Hardness	Alkalinity, total (as CaCO3)	Bicarbonate	Carbonate	Hydroxide	Calcium	Magnesium	Potassium	Sodium	Chloride	Fluoride	Sulphate	Ionic Balance	Ammonia-N	Nitrate (N)	Nitrite (N)	Nitrate and Nitrate (N)	Total Kjeldahl Nitrogen
Unit		pH Units			pH Units	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	-	mg/L	mg/L	mg/L	mg/L	mg/L
		6.5-8.5	1000	-	6.5-8.5	1000	500	-	-	-	-	-	-	-	-	200	100	1	128-429	-	0.018-190	3	0.02-0.20	100	-
Monitoring Well	**Date**																								
15MW35-Deep	8-Jun-2016	8.22	**4900**	8.9	8.19	**4700**	**2400**	53	460	560	<0.50	<0.50	18	2.1	3.3	**970**	**1100**	-	25	1.0	**1.1**	0.25	<0.010	0.25	2.2
	7-Jun-2017	8.10	**3920**	10.0	8.13	**5300**	**2800**	58	410	500	<0.50	<0.50	20	2.1	3.8	**1100**	**1400**	-	13	2.3	**1.2**	<0.22	<0.16	<0.050	2.5
	26-Jun-2018	7.66	-	13.2	8.14	**5100**	**2800**	59	450	540	<1.0	<1.0	20	2.0	3.7	**1100**	**1400**	-	25	1.7	1.0	<0.02	<0.010	<0.020	2.2
	17-Jun-2019	7.9	**5390**	10.4	8.29	**5300**	**3000**	60	430	530	<1.0	<1.0	21	2.0	3.6	**1300**	**1400**	-	27	9.5	**1.1**	<0.010	<0.010	<0.014	1.8
	5-Jun-2020	7.64	**5270**	9.8	8.11	**5600**	**3000**	69	360	440	<1.0	<1.0	24	2.4	3.9	**1200**	**1500**	-	23	2.7	1.5	<0.010	<0.010	<0.014	2.0
	3-Jun-2021	7.79	**5080**	15.7	8.46	**4760**	**3090**	69.4	430	505	9.5	<5.0	23.7	2.5	4.35	**1290**	**1480**	0.56	31.8	113	1.1	<0.10	<0.050	<0.11	1.6
	9-Jun-2022	7.90	**8960**	10	8.33	**5690**	**3060**	68.3	411	492	4.4	<1.0	23.2	2.52	3.67	**1090**	**1640**	0.683	22.1	89.1	**1.48**	<0.10	<0.050	<0.112	1.9
15MW36-Deep	8-Jun-2016	**8.52**	**3830**	7.7	**8.51**	**3600**	**2000**	52	550	650	13	<0.50	17	2.4	5.4	**800**	**770**	-	46	1.1	**0.92**	0.018	0.043	0.061	1.9
	7-Jun-2017	8.0	**4840**	10.3	8.33	**4800**	**2600**	53	770	940	3.1	<0.50	18	2.1	3.9	**1100**	**1100**	-	11	2.3	**1.3**	<0.044	<0.033	<0.010	2.6
	26-Jun-2018	7.38	**4900**	10.9	8.19	**4700**	**2600**	53	780	960	<1.0	<1.0	18	2.0	3.7	**1100**	**1000**	-	10	2.6	1.3	<0.02	<0.010	<0.020	2.8
	12-Jun-2019	8.05	**5280**	12.3	8.39	**4800**	**2500**	52	770	900	16.0	<1.0	18	1.9	3.7	**1100**	**980**	-	11	4.7	**1.3**	<0.010	<0.010	<0.014	2.1
	5-Jun-2020	7.78	**4760**	11.4	8.32	**4800**	**2700**	57	750	910	3.8	<1.0	19	2.1	3.6	**1100**	**1100**	-	12	3.0	**1.3**	<0.010	<0.010	<0.014	1.9
	3-Jun-2021	7.9	**4430**	12.6	**8.63**	**4110**	**2930**	64.6	799	918	28.2	<5.0	21.6	2.6	4.61	**1310**	**1100**	0.38	11.2	124.0	**1.05**	<0.10	<0.050	<0.11	1.9
	10-Jun-2022	8.19	**5600**	10.8	**8.67**	**4690**	**2710**	51.7	939	1060	41.4	<1.0	17.3	2.07	3.43	**974**	**1090**	0.55	7.87	87.7	**1.18**	<0.10	<0.050	<0.112	2.6

Notes:

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[2] Alberta Environment and Parks (AEP). Environmental Quality Guidelines for Alberta Surface Waters. March 2018. Table 1 Surface water quality guidelines for the protection of freshwater aquatic life (PAL). Most conservative values applied (chronic or acute) .

[3] Guideline varies with hardness.

[4] Guideline varies with pH and temperature.

[5] Guideline varies with chloride.

[6] Guideline varies with pH.

"-" No applicable guideline or not analyzed.

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Italic - Detection limit greater than Tier 1 guideline.

Table 4d: Field and Groundwater Analytical Results Summary - Lower Bedrock Wells

Parameter Group		Hydrocarbons							Organics		
Parameter		Benzene	Toluene	Ethylbenzene	Xylenes	Styrene	F1-BTEX	F2 (C10-C16)	Total Phenols	Chemical Oxygen Demand	Dissolved Organic Carbon
Unit		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		0.005	0.024	0.0016	0.02	0.072	2.2	1.1	-	-	-
Monitoring Well	**Date**										
15MW35-Deep	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	110	18
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	130	-
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	0.0033	100	19
	17-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	0.015	110	19
	5-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	<0.0015	144	29
	3-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	0.0014	88	19.4
	9-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	0.0107	98	14.9
15MW36-Deep	8-Jun-2016	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	99	12
	7-Jun-2017	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	140	-
	26-Jun-2018	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	0.010	130	35
	12-Jun-2019	<0.00040	<0.00040	<0.00040	<0.00089	<0.00050	<0.10	<0.10	0.010	140	33
	5-Jun-2020	<0.00040	<0.00040	<0.00040	<0.00080	<0.00050	<0.10	<0.10	<0.0015	144	33
	3-Jun-2021	<0.00050	<0.00050	<0.00050	<0.00071	<0.00050	<0.10	<0.10	0.005	121	31.4
	10-Jun-2022	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.10	<0.0010	126	37.7

Notes:

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[3] Guideline varies with hardness.

[4] Guideline varies with pH and temperature.

[5] Guideline varies with chloride.

[6] Guideline varies with pH.

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Table 4d: Field and Groundwater Analytical Results Summary - Lower Bedrock Wells

Parameter Group		Dissolved Metals																				
Parameter		Aluminum	Antimony	Arsenic	Barium	Boron	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Phosphorus	Selenium	Silver	Thallium	Tin	Uranium	Zinc
Unit		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		0.007-0.05	0.006	0.005	1	1.0	0.00004-0.00037	0.05	-	0.007	0.3	0.001-0.007	0.05	0.000005	-	0.007-0.17	-	0.002	0.0001	-	-	0.01	0.03
Monitoring Well	**Date**																						
15MW35-Deep	8-Jun-2016	0.017	<0.00060	0.0018	0.27	0.69	0.000040	<0.0010	-	0.00094	<0.060	<0.00020	0.048	0.0000020	-	0.0038	-	0.00020	<0.00010	-	-	0.0023	<0.0030
	7-Jun-2017	0.0031	<0.00060	0.00081	0.41	0.75	<0.000020	<0.0010	-	0.00048	<0.060	<0.00020	**0.053**	<0.0000020	-	0.0013	-	<0.00020	<0.00010	-	-	0.00064	**0.16**
	26-Jun-2018	0.0034	<0.00060	0.00089	0.38	0.81	<0.000020	<0.0010	-	0.00079	<0.060	<0.00020	**0.061**	<0.0000020	-	0.0017	-	0.0003	<0.00010	-	-	0.00075	**0.48**
	17-Jun-2019	0.0044	<0.00060	0.00092	0.39	0.75	0.00004	<0.0010	0.00051	0.00034	<0.060	<0.00020	**0.082**	<0.0000020	0.018	0.0017	<0.10	<0.00020	<0.00010	<0.00020	<0.0010	0.00078	**0.03**
	5-Jun-2020	0.0054	<0.00060	0.00087	0.42	0.78	<0.000020	<0.0010	0.0005	<0.00020	<0.060	<0.00020	**0.12**	<0.0000019	0.018	0.0018	<0.1	<0.00020	<0.00010	<0.0002	<0.001	0.00081	<0.0030
	3-Jun-2021	0.006	<0.00050	0.00082	0.469	0.823	<0.000025	<0.00050	0.00051	<0.0010	<0.050	<0.00025	**0.106**	<0.0000050	0.0216	<0.0025	<0.25	<0.00025	<0.000050	<0.000050	0.0005	0.00107	0.022
	9-Jun-2022	0.0073	<0.00050	0.00102	0.629	0.682	<0.000025	<0.0025	0.0009	<0.0010	<0.15	<0.00025	**0.665**	-	0.0191	0.00302	<0.25	<0.00025	<0.000050	<0.000050	<0.00050	0.000637	<0.0050
15MW36-Deep	8-Jun-2016	**0.19**	0.0030	**0.0088**	0.23	0.71	0.000070	<0.0010	-	**0.011**	**0.41**	0.00094	0.030	**0.00019**	-	0.0086	-	0.00096	<0.00010	-	-	0.0066	0.0068
	7-Jun-2017	0.0069	<0.00060	0.0024	0.32	0.97	<0.000020	<0.0010	-	0.0006	<0.060	<0.00020	**0.071**	<0.0000020	-	0.0046	-	0.00030	<0.00010	-	-	0.0016	**0.10**
	26-Jun-2018	0.0039	<0.00060	0.0025	0.32	1.00	<0.000020	<0.0010	-	0.00085	<0.060	<0.00020	**0.072**	<0.0000020	-	0.0050	-	0.00064	<0.00010	-	-	0.0016	**0.11**
	12-Jun-2019	0.0059	<0.00060	0.002	0.34	1.00	<0.000020	<0.0010	0.001	0.00029	<0.060	<0.00020	**0.13**	<0.0000020	0.013	0.0046	<0.10	<0.00020	<0.00010	<0.00020	0.0025	0.0015	**0.01**
	5-Jun-2020	0.0034	<0.00060	0.0019	0.37	1.0	<0.000020	<0.0010	0.0014	<0.00020	0.23	<0.00020	**0.58**	<0.0000019	0.015	0.0052	<0.1	<0.00020	<0.00010	<0.0002	0.0014	0.0016	<0.0030
	3-Jun-2021	0.0096	<0.00050	0.0016	0.481	1.2	<0.000025	<0.00050	0.0008	0.0016	0.126	<0.00025	**0.466**	<0.0000050	0.0198	0.0036	<0.25	0.00034	<0.000050	<0.000050	0.00115	0.00209	0.005
	10-Jun-2022	0.0212	<0.00050	0.00198	0.461	**0.806**	<0.000025	<0.0025	0.00169	<0.0010	<0.15	<0.00025	**0.703**	-	0.0173	0.0074	<0.25	<0.00025	<0.000050	<0.00005	0.00138	0.00138	0.0127

Notes:

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[3] Guideline varies with hardness.

[4] Guideline varies with pH and temperature.

[5] Guideline varies with chloride.

[6] Guideline varies with pH.

"-" No applicable guideline or not analyzed.

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Italic - Detection limit greater than Tier 1 guideline.

Table 4d: Field and Groundwater Analytical Results Summary - Lower Bedrock Wells

Parameter Group		Volatile Organic Compounds (VOCs)																	
Parameter		Carbon tetrachloride	Chlorobenzene	Chloroform	Dibromochloromethane	1,2-Dichlorobenzene	1,4-Dichlorobenzene	1,2-Dichloroethane	1,1-Dichloroethene	Methyl t-Butyl Ether (MTBE)	Methylene Chloride	Methyl Methacrylate	Tetrachloroethene	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene	1,3,5-Trichlorobenzene	Trichloroethene	Trihalomethanes	Vinyl chloride
Unit		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		0.002	0.0013	0.08	0.1	0.0007	0.001	0.005	0.014	0.015	0.05	0.47	0.01	0.008	0.015	0.014	0.005	0.1	0.002
Monitoring Well	**Date**																		
15MW35-Deep	8-Jun-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-	-	-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	17-Jun-2019	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	5-Jun-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	3-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	9-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050
15MW36-Deep	8-Jun-2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7-Jun-2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Jun-2018	-	-	-	-	-	-	-	-	-	<0.0020	-	<0.00050	-	-	-	<0.00050	-	<0.00050
	12-Jun-2019	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	5-Jun-2020	<0.00050	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0013	<0.00050
	3-Jun-2021	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	-	<0.0010
	10-Jun-2022	<0.00020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	-	<0.00050	<0.00050	<0.00050	-	<0.00050	-	<0.00050

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[5] Guideline varies with chloride.

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Italic - Detection limit greater than Tier 1 guideline.

Table 5a: Quality Assurance / Quality Control - Field Duplicates

QAQC Type			DUPLICATES											
Field ID			MW-35B	Dup-A	RPD (%)	MW-11	Dup-B	RPD (%)	MW-8B	Dup-C	RPD (%)	MW-1B	Dup-D	RPD (%)
Sample Date			9-Jun-2022	9-Jun-2022		10-Jun-2022	10-Jun-2022		10-Jun-2022	10-Jun-2022		10-Jun-2022	10-Jun-2022	
Laboratory Report Number			EO2204142	EO2204142		EO2204142	EO2204142		EO2204142	EO2204142		EO2204142	EO2204142	
Laboratory Sample ID			EO2204142-041	EO2204142-049		EO2204142-006	EO2204142-050		EO2204142-004	EO2204142-051		EO2204142-001	EO2204142-052	
Parameter	**Unit**	**RDL**												
Routine														
pH	pH Units	0.1	8.17	8.18	0.1	8.2	8.19	0.1	8.43	8.5	0.8	8.62	8.79	2
Electrical Conductivity (EC)	µS/cm	2	7530	7280	3	8660	8690	0	7210	7100	2	2080	2060	1
Total Dissolved Solids (TDS)	mg/L	1	5940	5990	1	7550	7810	3	5840	5830	0.2	1430	1430	0
Hardness as $CaCO_3$	mg/L	0.5	308	296	4	913	945	3	320	334	4	19.6	21	7
Alkalinity (total as $CaCO_3$)	mg/L	2	726	715	1.5	900	828	8	1240	1220	2	1120	1130	1
Bicarbonate	mg/L	1	886	872	2	1100	1010	9	1470	1430	3	1290	1260	2
Carbonate	mg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	20.6	30.1	**37**	35.5	56	**45**
Hydroxide	mg/L	1	<1.0	<1.0	-	<1.0	<1.0	-	<1.0	<1.0	-	<1.0	<1.0	-
Calcium	mg/L	0.05	100	95	5	194	197	2	65.8	66.6	1	6.53	6.96	6
Magnesium	mg/L	0.005	14.1	14.3	1	104	110	6	37.8	40.8	8	0.804	0.875	8
Potassium	mg/L	0.05	7.16	7.23	1	7.49	7.85	5	5.32	5.54	4	1.84	1.96	6
Sodium	mg/L	0.05	1720	1780	3	1930	2050	6	1760	1760	0	509	513	1
Chloride	mg/L	0.5	6.1	5.68	7	54.1	54.1	0	51.2	50.8	-	5.45	5.1	7
Fluoride	mg/L	0.02	0.30	0.28	7	0.48	0.449	7	0.68	0.78	14	1.03	1.28	**22**
Sulphate	mg/L	0.3	3630	3630	0	4670	4840	4	3140	3140	0	210	202	4
Nutrients														
Ammonia as N	mg/L	0.005	1.29	1.43	10	<0.0050	0.020	-	0.422	<0.0050	-	0.304	0.443	**37**
Nitrate (as NO_3-N)	mg/L	0.02	1.04	0.816	**24**	0.134	<0.20	-	0.164	<0.20	-	0.593	0.49	19
Nitrite (as NO_2-N)	mg/L	0.01	0.195	0.177	-	<0.050	<0.10	-	0.097	<0.10	-	0.048	0.024	-
Nitrate and Nitrite (as N)	mg/L	0.05	1.24	0.993	**22**	0.134	<0.224	-	0.261	<0.224	-	0.641	0.514	**22**
Total Kjeldahl Nitrogen (TKN)	mg/L	0.2	2.1	1.74	19	1.48	1.53	3	1.39	1.18	16	0.88	1.9	-
Demand Parameters														
Chemical Oxygen Demand (COD)	mg/L	10	37	25	**39**	82	80	2	50	43	-	36	73	-
Carbon														
Dissolved Organic Carbon (DOC)	mg/L	0.5	10.3	10.8	5	34.6	37.1	7	19.9	23.8	18	8.48	9.54	12
Dissolved Metals														
Aluminum	mg/L	0.001	0.0228	<0.0050	-	0.0084	<0.0050	-	0.0055	0.0066	-	0.0022	0.0019	-
Antimony	mg/L	0.0001	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	0.00045	0.00025	-
Arsenic	mg/L	0.0001	0.00074	0.0007	6	0.00096	0.00111	-	0.00156	0.00148	-	0.00124	0.00149	18
Barium	mg/L	0.0001	0.0233	0.0211	10	0.00847	0.00655	**26**	0.013	0.0114	13	0.0376	0.0459	20
Beryllium	mg/L	0.00002	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00010	<0.00010	-	<0.00004	<0.00002	-
Bismuth	mg/L	0.00005	<0.00025	<0.00025	-	<0.00025	<0.00025	-	<0.00025	<0.00025	-	<0.0001	<0.00005	-
Boron	mg/L	0.01	0.693	0.729	5	0.172	0.195	13	0.39	0.372	5	0.627	0.592	6
Cadmium	mg/L	0.000005	<0.000025	<0.000025	-	0.0000318	<0.000025	-	<0.000025	<0.000025	-	0.0000366	0.0000416	-
Cesium	mg/L	0.00001	0.000103	0.000108	-	0.000094	0.000087	-	0.000077	0.00007	-	0.00004	0.000043	**7**
Chromium	mg/L	0.0005	<0.0025	<0.0025	-	<0.0025	<0.0025	-	<0.0025	<0.0025	-	<0.001	<0.0005	-
Cobalt	mg/L	0.0001	<0.00050	<0.00050	-	<0.00050	<0.00050	-	0.0008	0.00085	-	0.0005	0.00053	-
Copper	mg/L	0.0002	0.00385	0.0013	-	0.00372	0.00209	-	0.00357	0.00217	-	0.00079	0.00175	-
Iron	mg/L	0.03	<0.15	<0.15	-	<0.15	<0.15	-	<0.15	<0.15	-	<0.06	<0.03	-
Lead	mg/L	0.00005	<0.00025	<0.00025	-	<0.00025	<0.00025	-	<0.00025	<0.00025	-	<0.0001	<0.00005	-
Lithium	mg/L	0.001	0.546	0.514	6	0.515	0.582	12	0.28	0.275	2	0.115	0.119	3
Manganese	mg/L	0.005	0.0814	0.0808	1	<0.025	<0.025	-	0.128	0.13	2	0.128	0.134	5
Mercury	mg/L													
Molybdenum	mg/L	0.00005	0.00199	0.0019	5	0.00105	0.00106	1	0.00152	0.00149	2	0.00605	0.00603	0
Nickel	mg/L	0.0005	0.00297	0.00258	14	0.00559	0.00548	2	0.00464	0.00497	7	0.00593	0.00672	-
Phosphorus	mg/L	0.05	<0.25	<0.25	-	<0.25	<0.25	-	<0.25	<0.25	-	<0.1	<0.05	-
Rubidium	mg/L	0.0002	0.012	0.0125	4	0.0122	0.012	2	0.0066	0.00651	2	0.00312	0.00361	15
Selenium	mg/L	0.00005	<0.00025	<0.00025	-	0.000675	0.000538	**23**	<0.00025	<0.00025	-	0.000189	0.000207	9
Silicon	mg/L	0.05	3.54	3.52	1	5.31	5.24	1	4.88	4.84	1	3.12	3.29	5
Silver	mg/L	0.00001	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.00005	-	<0.00002	<0.00001	-
Strontium	mg/L	0.0002	2.27	2.41	6	3.65	3.76	3	1.58	1.58	0	0.149	0.156	5
Sulphur	mg/L	0.5	1260	1250	1	1680	1700	1	1120	1080	4	73	70.3	4
Tellurium	mg/L	0.0002	<0.0010	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-
Thallium	mg/L	0.00001	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-	<0.000050	<0.000050	-
Thorium	mg/L	0.0001	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Tin	mg/L	0.0001	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Titanium	mg/L	0.0003	<0.00150	<0.00150	-	<0.0015	<0.0015	-	<0.0015	<0.0015	-	<0.0015	<0.0015	-
Tungsten	mg/L	0.0001	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Uranium	mg/L	0.00001	0.000924	0.000974	5	0.0309	0.0314	2	0.00291	0.00308	6	0.001470	0.0014	5
Vanadium	mg/L	0.0005	<0.0025	<0.0025	-	<0.0025	<0.0025	-	<0.0025	<0.0025	-	<0.001	0.00063	-
Zinc	mg/L	0.001	<0.0050	<0.0050	-	<0.0050	<0.005	-	<0.0050	<0.0050	-	<0.002	0.0012	-
Zirconium	mg/L	0.0003	<0.0015	<0.0015	-	<0.0015	<0.0015	-	<0.0015	<0.00150	-	0.00102	0.00099	3
Hydrocarbons														
Benzene	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Toluene	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Ethylbenzene	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Xylene (o)	mg/L	0.0003	<0.00030	<0.00030	-	<0.00030	<0.00030	-	<0.00030	<0.00030	-	<0.00030	<0.00030	-
Xylenes (m & p)	mg/L	0.0004	<0.00040	<0.00040	-	<0.00040	<0.00040	-	<0.00040	<0.00040	-	<0.00040	<0.00040	-
Xylenes Total	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
F1 (C_6-C_{10})	mg/L	0.1	<0.10	<0.10	-	<0.10	<0.10	-	<0.10	<0.10	-	<0.10	<0.10	-
F1 (C_6-C_{10}) - BTEX	mg/L	0.1	<0.10	<0.10	-	<0.10	<0.10	-	<0.10	<0.10	-	<0.10	<0.10	-
F2 (C_{10}-C_{16})	mg/L	0.1	<0.10	<0.10	-	<0.10	<0.10	-	<0.10	<0.10	-	<0.10	<0.10	-
Phenols														
Phenols	mg/L	0.001	<0.0010	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-

Notes:
RDL - Reportable detection limit.
RPD - Relative percent difference calculated as (abs(C1-C2)/average(C1+C2))*100.
"-" Indicates RPD not calculated. RPDs have only been considered where a concentration is greater than 5 times the RDL.
N/A - Not applicable.
BOLD - RPD value greater than 20%.

Table 5a: Quality Assurance / Quality Control - Field Duplicates

		QAQC Type	DUPLICATES											
		Field ID	MW-35B	Dup-A	RPD (%)	MW-11	Dup-B	RPD (%)	MW-8B	Dup-C	RPD (%)	MW-1B	Dup-D	RPD (%)
		Sample Date	9-Jun-2022	9-Jun-2022		10-Jun-2022	10-Jun-2022		10-Jun-2022	10-Jun-2022		10-Jun-2022	10-Jun-2022	
		Laboratory Report Number	EO2204142	EO2204142		EO2204142	EO2204142		EO2204142	EO2204142		EO2204142	EO2204142	
		Laboratory Sample ID	EO2204142-041	EO2204142-049		EO2204142-006	EO2204142-050		EO2204142-004	EO2204142-051		EO2204142-001	EO2204142-052	
Parameter	**Unit**	**RDL**												
Volatile Organic Compounds (VOCs)														
Benzene	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Bromobenzene	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Bromochloromethane	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Bromodichloromethane	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Bromoform	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Bromomethane	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
n-Butylbenzene	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
sec-Butylbenzene	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
tert-Butylbenzene	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Carbon tetrachloride	mg/L	0.0002	<0.00020	<0.00020	-	<0.00020	<0.00020	-	<0.00020	<0.00020	-	<0.00020	<0.00020	-
Chlorobenzene	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Chloroethane	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Chloroform	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Chloromethane	mg/L	0.002	<0.0020	<0.0020	-	<0.0020	<0.0020	-	<0.0020	<0.0020	-	<0.0020	<0.0020	-
2-Chlorotoluene	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
4-Chlorotoluene	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Dibromochloromethane	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
1,2-Dibromo-3-chloropropane	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
1,2-Dibromoethane	mg/L	0.0002	<0.00020	<0.00020	-	<0.00020	<0.00020	-	<0.00020	<0.00020	-	<0.00020	<0.00020	-
Dibromomethane	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
1,2-Dichlorobenzene	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
1,3-Dichlorobenzene	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
1,4-Dichlorobenzene	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
1,1-Dichloroethane	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
1,2-Dichloroethane	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
1,1-Dichloroethene	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
1,2-Dichloroethene (cis)	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
1,2-Dichloroethene (trans)	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Dichlorodifluoromethane	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
1,2-Dichloropropane	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
1,3-Dichloropropane	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
2,2-Dichloropropane	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
1,1-Dichloropropene	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
1,3-Dichloropropene [cis]	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
1,3-Dichloropropene [trans]	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Ethylbenzene	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Hexachlorobutadiene	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
p-Isopropyltoluene	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Methyl t-Butyl Ether (MTBE)	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Methylene Chloride	mg/L	0.001	<0.0010	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-	<0.0010	<0.0010	-
iso-Propylbenzene (cumene)	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
n-Propylbenzene	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Styrene	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
1,1,1,2-Tetrachloroethane	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
1,1,2,2-Tetrachloroethane	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Tetrachloroethene	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Toluene	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
1,2,3-Trichlorobenzene	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
1,2,4-Trichlorobenzene	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
1,1,1-Trichloroethane	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
1,1,2-Trichloroethane	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Trichloroethene	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Trichlorofluoromethane	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
1,2,3-Trichloropropane	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
1,2,4-Trimethylbenzene	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
1,3,5-Trimethylbenzene	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Vinyl chloride	mg/L	0.0005	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-	<0.00050	<0.00050	-
Xylene (o)	mg/L	0.0003	<0.00030	<0.00030	-	<0.00030	<0.00030	-	<0.00030	<0.00030	-	<0.00030	<0.00030	-
Xylenes (m & p)	mg/L	0.0004	<0.00040	<0.00040	-	<0.00040	<0.00040	-	<0.00040	<0.00040	-	<0.00040	<0.00040	-

Notes:
RDL - Reportable detection limit.
RPD - Relative percent difference calculated as (abs(C1-C2)/average(C1+C2))*100.
"-" Indicates RPD not calculated. RPDs have only been considered where a concentration is greater than 5 times the RDL.
N/A - Not applicable.
BOLD - RPD value greater than 20%.

Table 5b: Quality Assurance / Quality Control - Blanks

		QAQC Type	BLANKS	
		Field ID	FIELD BLANK	TRIP BLANK
		Sample Date	10-Jun-2022	10-Jun-2022
		Laboratory Report Number	EO2204142	EO2204142
		Laboratory Sample ID	EO2204142-053	EO2204142-054
Parameter	**Unit**	**RDL**		
Routine				
pH	pH Units	0.1	**5.5**	**5.39**
Electrical Conductivity (EC)	µS/cm	2	<2.0	<2.0
Total Dissolved Solids (TDS)	mg/L	1	<1.0	<1.0
Hardness as $CaCO_3$	mg/L	0.5	<0.50	<0.50
Alkalinity (total as $CaCO_3$)	mg/L	2	<2.0	<2.0
Bicarbonate	mg/L	1	<1.0	<1.0
Carbonate	mg/L	1	<1.0	<1.0
Hydroxide	mg/L	1	<1.0	<1.0
Calcium	mg/L	0.05	<0.050	<0.050
Magnesium	mg/L	0.005	<0.0050	<0.0050
Potassium	mg/L	0.05	<0.050	<0.050
Sodium	mg/L	0.05	0.076	<0.050
Chloride	mg/L	0.5	<0.50	<0.50
Fluoride	mg/L	0.02	<0.020	<0.020
Sulphate	mg/L	0.3	<0.30	<0.30
Nutrients				
Ammonia as N	mg/L	0.005	<0.0050	<0.0050
Nitrate (as NO_3-N)	mg/L	0.02	<0.020	<0.020
Nitrite (as NO_2-N)	mg/L	0.01	<0.010	<0.010
Nitrate and Nitrate (as N)	mg/L	0.05	<0.050	<0.050
Total Kjeldahl Nitrogen (TKN)	mg/L	0.2	<0.20	<0.20
Demand Parameters				
Chemical Oxygen Demand (COD)	mg/L	10	<10	<10
Carbon				
Dissolved Organic Carbon (DOC)	mg/L	0.5	<0.50	<0.50
Dissolved Metals				
Aluminum	mg/L	0.001	<0.0010	<0.0010
Antimony	mg/L	0.0001	<0.00010	<0.00010
Arsenic	mg/L	0.0001	<0.00010	<0.00010
Barium	mg/L	0.0001	**0.00059**	<0.00010
Beryllium	mg/L	0.00002	<0.000020	<0.000020
Bismuth	mg/L	0.00005	<0.000050	<0.000050
Boron	mg/L	0.01	<0.010	<0.010
Cadmium	mg/L	0.000005	<0.0000050	<0.0000050
Cesium	mg/L	0.00001	<0.000010	<0.000010
Chromium	mg/L	0.0005	<0.00050	<0.00050
Cobalt	mg/L	0.0001	<0.00010	<0.00010
Copper	mg/L	0.0002	**0.00149**	<0.00020
Iron	mg/L	0.03	<0.030	<0.030
Lead	mg/L	0.00005	<0.000050	<0.000050
Lithium	mg/L	0.001	<0.0010	<0.0010
Manganese	mg/L	0.005	<0.0050	<0.0050
Mercury	mg/L			
Molybdenum	mg/L	0.00005	<0.000050	<0.000050
Nickel	mg/L	0.0005	<0.00050	<0.00050
Phosphorus	mg/L	0.05	<0.050	<0.050
Rubidium	mg/L	0.0002	<0.00020	<0.00020
Selenium	mg/L	0.00005	<0.000050	<0.000050
Silicon	mg/L	0.05	<0.050	<0.050
Silver	mg/L	0.00001	<0.000010	<0.000010
Strontium	mg/L	0.0002	<0.00020	<0.00020
Sulphur	mg/L	0.5	<0.50	<0.50
Tellurium	mg/L	0.0002	<0.00020	<0.00020
Thallium	mg/L	0.00001	<0.000010	<0.000010
Thorium	mg/L	0.0001	<0.00010	<0.00010
Tin	mg/L	0.0001	0.0004	0.0004
Titanium	mg/L	0.0003	<0.00030	<0.00030
Tungsten	mg/L	0.0001	<0.00010	<0.00010
Uranium	mg/L	0.00001	<0.000010	<0.000010
Vanadium	mg/L	0.0005	<0.00050	<0.00050
Zinc	mg/L	0.001	**0.0012**	<0.0010
Zirconium	mg/L	0.0003	<0.00030	<0.00030
Hydrocarbons				
Benzene	mg/L	0.0005	<0.00050	<0.00050
Toluene	mg/L	0.0005	<0.00050	<0.00050
Ethylbenzene	mg/L	0.0005	<0.00050	<0.00050
Xylene (o)	mg/L	0.0003	<0.00030	<0.00030
Xylenes (m & p)	mg/L	0.0004	<0.00040	<0.00040
Xylenes Total	mg/L	0.0005	<0.00050	<0.00050
F1 (C_6-C_{10})	mg/L	0.1	<0.10	<0.10
F1 (C_6-C_{10}) - BTEX	mg/L	0.1	<0.10	<0.10
F2 (C_{10}-C_{16})	mg/L	0.1	<0.10	<0.10
Phenols				
Phenols	mg/L	0.001	**0.0041**	<0.0010

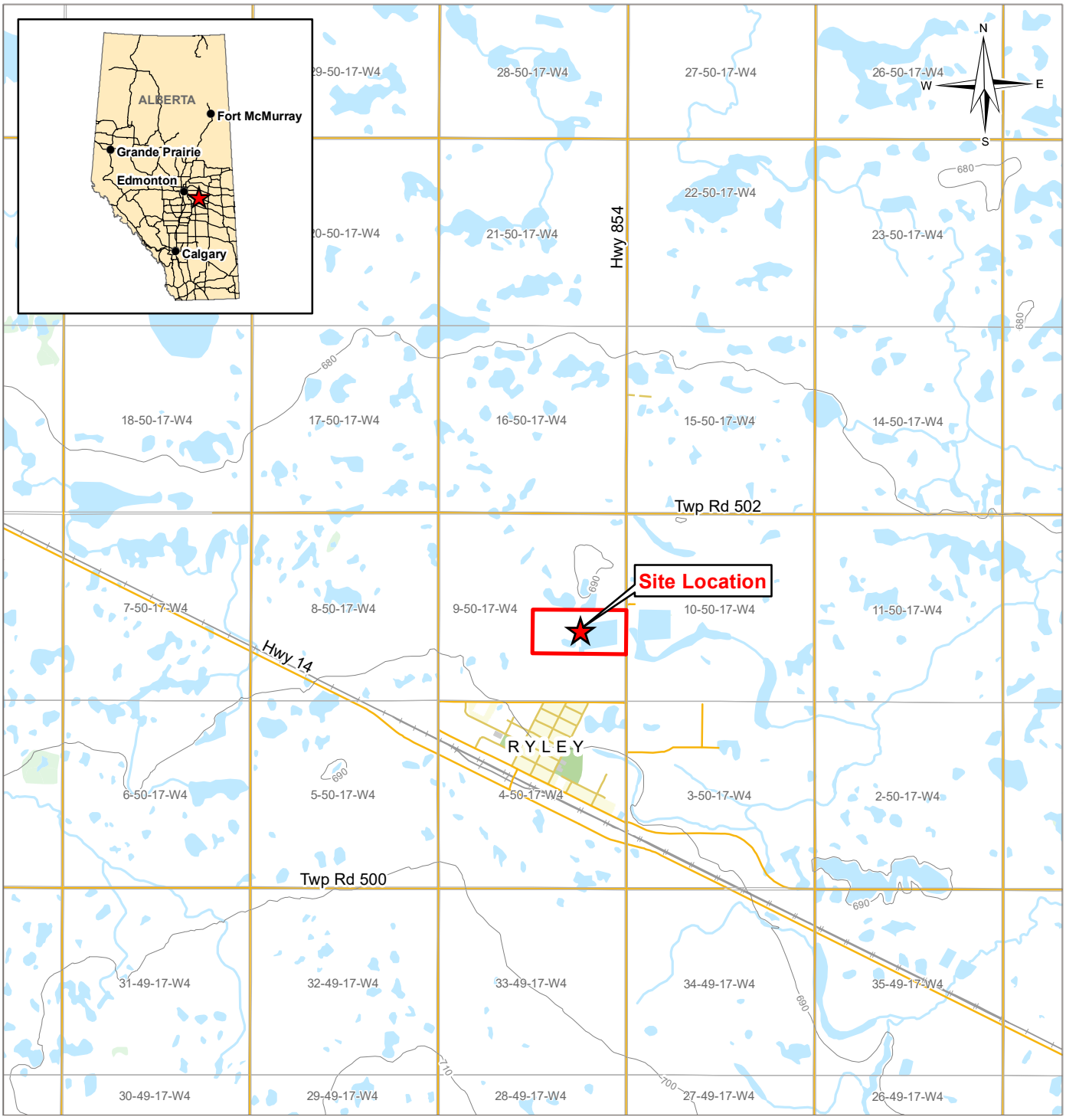
Notes:
RDL - Reportable detection limit.
N/A - Not applicable.
BOLD - Detect value.

Table 5b: Quality Assurance / Quality Control - Blanks

		QAQC Type	BLANKS	
		Field ID	FIELD BLANK	TRIP BLANK
		Sample Date	10-Jun-2022	10-Jun-2022
		Laboratory Report Number	EO2204142	EO2204142
		Laboratory Sample ID	EO2204142-053	EO2204142-054
Parameter	**Unit**	**RDL**		
Volatile Organic Compounds (VOCs)				
Benzene	mg/L	0.0005	<0.00050	<0.00050
Bromobenzene	mg/L	0.0005	<0.00050	<0.00050
Bromochloromethane	mg/L	0.0005	<0.00050	<0.00050
Bromodichloromethane	mg/L	0.0005	<0.00050	<0.00050
Bromoform	mg/L	0.0005	<0.00050	<0.00050
Bromomethane	mg/L	0.0005	<0.00050	<0.00050
n-Butylbenzene	mg/L	0.0005	<0.00050	<0.00050
sec-Butylbenzene	mg/L	0.0005	<0.00050	<0.00050
tert-Butylbenzene	mg/L	0.0005	<0.00050	<0.00050
Carbon tetrachloride	mg/L	0.0002	<0.00020	<0.00020
Chlorobenzene	mg/L	0.0005	<0.00050	<0.00050
Chloroethane	mg/L	0.0005	<0.00050	<0.00050
Chloroform	mg/L	0.0005	<0.00050	<0.00050
Chloromethane	mg/L	0.002	<0.0020	<0.0020
2-Chlorotoluene	mg/L	0.0005	<0.00050	<0.00050
4-Chlorotoluene	mg/L	0.0005	<0.00050	<0.00050
Dibromochloromethane	mg/L	0.0005	<0.00050	<0.00050
1,2-Dibromo-3-chloropropane	mg/L	0.0005	<0.00050	<0.00050
1,2-Dibromoethane	mg/L	0.0002	<0.00020	<0.00020
Dibromomethane	mg/L	0.0005	<0.00050	<0.00050
1,2-Dichlorobenzene	mg/L	0.0005	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	0.0005	<0.00050	<0.00050
1,4-Dichlorobenzene	mg/L	0.0005	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	0.0005	<0.00050	<0.00050
1,2-Dichloroethane	mg/L	0.0005	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.0005	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	0.0005	<0.00050	<0.00050
1,2-Dichloroethene (trans)	mg/L	0.0005	<0.00050	<0.00050
Dichlorodifluoromethane	mg/L	0.0005	<0.00050	<0.00050
1,2-Dichloropropane	mg/L	0.0005	<0.00050	<0.00050
1,3-Dichloropropane	mg/L	0.0005	<0.00050	<0.00050
2,2-Dichloropropane	mg/L	0.0005	<0.00050	<0.00050
1,1-Dichloropropene	mg/L	0.0005	<0.00050	<0.00050
1,3-Dichloropropene [cis]	mg/L	0.0005	<0.00050	<0.00050
1,3-Dichloropropene [trans]	mg/L	0.0005	<0.00050	<0.00050
Ethylbenzene	mg/L	0.0005	<0.00050	<0.00050
Hexachlorobutadiene	mg/L	0.0005	<0.00050	<0.00050
p-Isopropyltoluene	mg/L	0.0005	<0.00050	<0.00050
Methyl t-Butyl Ether (MTBE)	mg/L	0.0005	<0.00050	<0.00050
Methylene Chloride	mg/L	0.001	<0.0010	<0.0010
iso-Propylbenzene (cumene)	mg/L	0.0005	<0.00050	<0.00050
n-Propylbenzene	mg/L	0.0005	<0.00050	<0.00050
Styrene	mg/L	0.0005	<0.00050	<0.00050
1,1,1,2-Tetrachloroethane	mg/L	0.0005	<0.00050	<0.00050
1,1,2,2-Tetrachloroethane	mg/L	0.0005	<0.00050	<0.00050
Tetrachloroethene	mg/L	0.0005	<0.00050	<0.00050
Toluene	mg/L	0.0005	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.0005	<0.00050	<0.00050
1,2,4-Trichlorobenzene	mg/L	0.0005	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	0.0005	<0.00050	<0.00050
1,1,2-Trichloroethane	mg/L	0.0005	<0.00050	<0.00050
Trichloroethene	mg/L	0.0005	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	0.0005	<0.00050	<0.00050
1,2,3-Trichloropropane	mg/L	0.0005	<0.00050	<0.00050
1,2,4-Trimethylbenzene	mg/L	0.0005	<0.00050	<0.00050
1,3,5-Trimethylbenzene	mg/L	0.0005	<0.00050	<0.00050
Vinyl chloride	mg/L	0.0005	<0.00050	<0.00050
Xylene (o)	mg/L	0.0003	<0.00030	<0.00030
Xylenes (m & p)	mg/L	0.0004	<0.00040	<0.00040

Notes:
RDL - Reportable detection limit.
N/A - Not applicable.
BOLD - Detect value.

FIGURES



LEGEND

- Site Location
- Site Outline
- Main Road
- Local Road
- Resource/Recreational Road
- Railway
- Building
- Park
- Residential Area
- Contour (10 m)
- Watercourse
- Waterbody
- Wooded Area

NOTES
Base data source: CanVec 1:50,000.

STATUS
ISSUED FOR USE

2022 GROUNDWATER MONITORING PROGRAM RYLEY, ALBERTA

Site Location Plan

PROJECTION	DATUM	CLIENT
UTM Zone 12	NAD83	CleanHarbors

Scale: 1:50,000
1 0.5 0 1
Kilometres

FILE NO. SWOP04591-01_Figure01_SiteLocation.mxd

OFFICE	DWN	CKD	APVD	REV
Tt-EDM	MRV	SL	MS	0

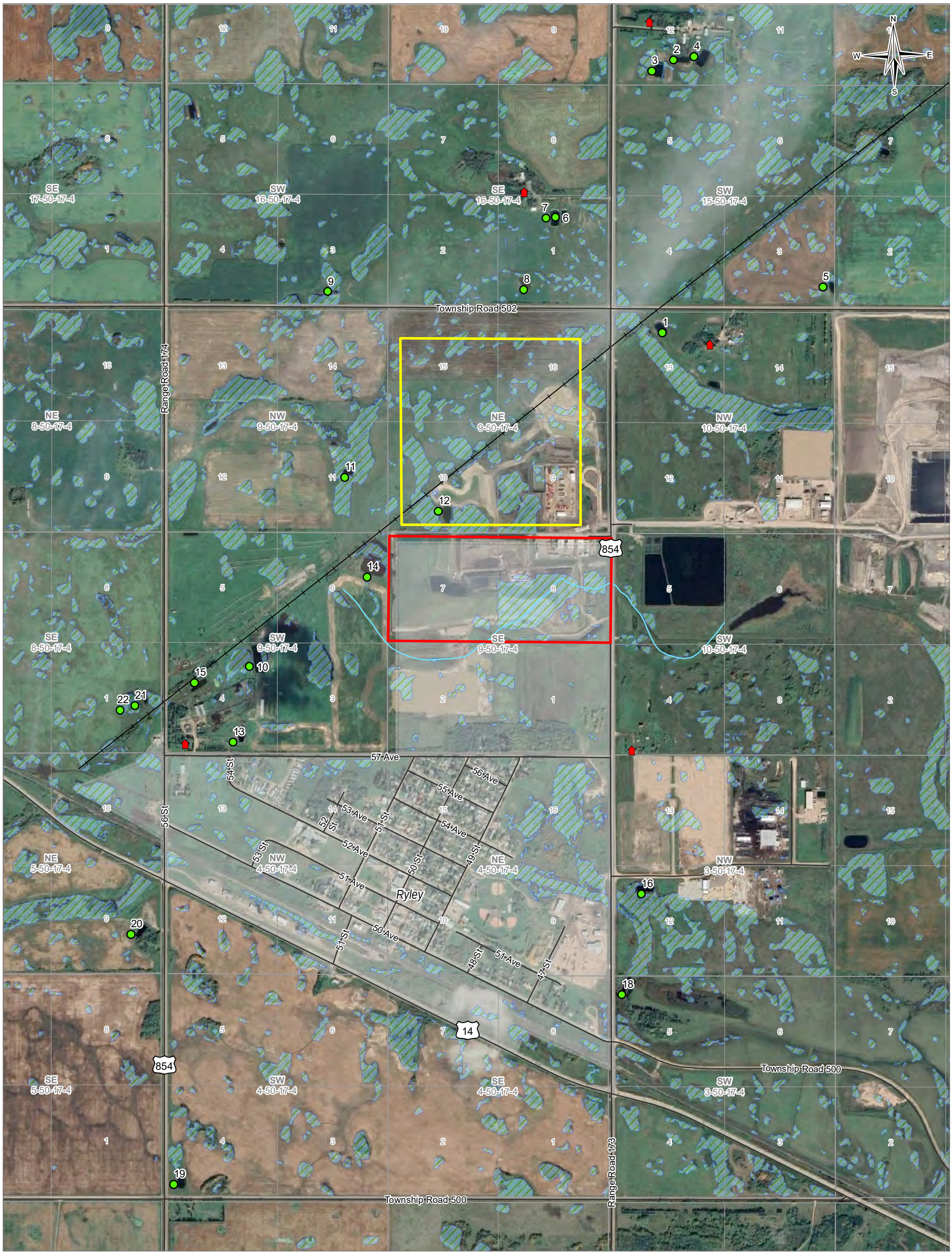
DATE	PROJECT NO.
February 27, 2023	SWM.SWOP04591-01

TETRA TECH

Figure 1

Q:\Edmonton\GIS\SOLID_WASTE\SWOP\SWOP04591-01\Maps\SWOP04591-01_Figure01_SiteLocation.mxd modified 2023-02-27 by Darren.Schouls

Q:\Edmonton\GIS\SOLID_WASTE\SWOP\SWOP04591-01\Maps\SWOP04591-01_Figure02_ProposedExpansion.mxd modified 2023-02-27 by Darren.Schouls



LEGEND

- Rural Residence
- Water Sample Location
- Site Outline
- Proposed Expansion Boundary
- Road
- Historical Railway Bed (Approximate Centreline)
- Bible Creek (Approximate Centreline)
- Potential Wetland
- Town Boundary

NOTES
Base data source: CanVec 1:50,000 & ESRD
Imagery provided by Google Earth; Maxar (2019)

STATUS
ISSUED FOR USE

2022 GROUNDWATER MONITORING PROGRAM RYLEY, ALBERTA

Site Plan Showing Site and Proposed Expansion Boundaries

PROJECTION	DATUM	CLIENT
UTM Zone 12	NAD83	CleanHarbors

Scale: 1:13,500
200 100 0 200
Metres

TETRA TECH

FILE NO. SWOP04591-01_Figure02_ProposedExpansion.mxd

OFFICE	DWN	CKD	APVD	REV
Tt-EDM	MRV	SL	MS	0

DATE	PROJECT NO.
February 27, 2023	SWM.SWOP04591-01

Figure 2

PROPERTY LINE
MW1B
MW1C
MW12B
MW12A
19MW37A
19MW37B
19MW38A
19MW38B
MW11
MW10
GRAVELLED STORAGE PAD
MW18A
MW18B
CELL 1
CELL 2
CELL 4
ACCESS RAMP
MW8B
MW8A
MW33B
MW33A
CELL 2 LEACHATE TANK
CELL 1 LEACHATE TANK
MW19A
MW19B
EL. 686.84
MW32B
MW32A
PROPERTY LINE
PROPERTY LINE
EL. 685.90
CELL 3D
CELL 3E
RETENTION POND
MW20A
MW20B
CELL 3A
CELL 3B
CELL 3C
CELL 3A LEACHATE PIPES
RUN-ON DIVERSION DITCH CENTRELINE
MW31B
MW31A
87.2 m
15MW36A
15MW36DEEP
EL. 685.86
EL. 685.96
EL. 686.09
MW27B
MW27A
MW28B
MW28A
MW26B
MW26A
MW25B
MW25A
MW21A
MW21B
EL. 686.29
EL. 685.95
ACCESS ROAD
CELL 3D LEACHATE TANK
EL. 686.48
EL. 683.34
CELL 3B LEACHATE TANK
CELL 3C LEACHATE TANK
MW29B
MW29A
MW30B
MW30A
MW23A
MW23B
MW22A
MW22B
EL. 685.00
EL. 683.81
RUN-ON DIVERSION DITCH
RUN-OFF CONTROL DITCH
15MW35C
15MW35B
15MW35A
15MW35DEEP

LEGEND:

- MONITORING WELL LOCATION
- SURFICIAL MATERIALS
- UPPER SANDSTONE
- CLAY SHALE
- LOWER BEDROCK
- TOPOGRAPHIC CONTOURS
- SURFACE WATER DRAINAGE DIRECTION

0 100 m

Scale: 1: 2 500

CLIENT

Clean Harbors

TETRA TECH

2022 GROUNDWATER MONITORING PROGRAM RYLEY, ALBERTA

Monitoring Well Location Plan and Surface Water Drainage

PROJECT NO.	DWN	CKD	REV
SWM.SWOP04591-01	MM/DBD	MS	0

OFFICE: Tt-EDM

DATE: November 21, 2022

Figure 3

Q:\Edmonton\Drafting\00_MASTER PROJECT BASE PLANS\Clean Harbors Ryley\PROJECTS\SWM.SWOP04591-01_Groundwater Monitoring 2022\Acad\SWM.SWOP04591-01_Figure03_MWLocs.dwg [FIGURE 3] November 21, 2022 - 3:31:44 pm (BY: VERBURG, MEGAN)

PROPERTY LINE

GRAVELLED STORAGE PAD

CELL 2

CELL 1

PROPOSED CELL 4

ACCESS RAMP

CELL 2 LEACHATE TANK

CELL 1 LEACHATE TANK

EL. 686.84

PROPERTY LINE

CELL 3A

CELL 3B

CELL 3C

CELL 3D

CELL 3E

RETENTION POND

PROPERTY LINE

EL. 685.90

CELL 3A LEACHATE PIPES

RUN-ON DIVERSION DITCH CENTRELINE

87.2 m

EL. 685.96

EL. 685.86

EL. 686.09

EL. 686.29

EL. 685.95

CELL 3B LEACHATE TANK

CELL 3C LEACHATE TANK

ACCESS ROAD

CELL 3D LEACHATE TANK

EL. 686.48

EL. 683.34

EL. 685.00

EL. 683.81

RUN-ON DIVERSION DITCH

RUN-OFF CONTROL DITCH

MW1B
MW1C
MW12B
MW12A
19MW37A
19MW37B
19MW38A
19MW38B
MW11
MW10
MW18A
MW18B
MW8B
MW8A
MW33B
MW33A
MW19A
MW19B
MW32B
MW32A
MW20A
MW20B
MW31B
MW31A
15MW36A
15MW36DEEP
MW21A
MW21B
MW25B
MW25A
MW26B
MW26A
MW27B
MW27A
MW28B
MW28A
MW29B
MW29A
MW30B
MW30A
MW23A
MW23B
MW22A
MW22B
15MW35C
15MW35B
15MW35A
15MW35DEEP

LEGEND:

- MONITORING WELL LOCATION
- TOPOGRAPHIC CONTOURS
- SURFICIAL MATERIALS
- UPPER SANDSTONE
- CLAY SHALE
- LOWER BEDROCK
- CROSS-SECTION LOCATION

0 100 m

Scale: 1: 2 500

CLIENT

Clean Harbors

TETRA TECH

2022 GROUNDWATER MONITORING PROGRAM RYLEY, ALBERTA

Cross-Section Location

PROJECT NO.	DWN	CKD	REV
SWM.SWOP04591-01	MM/DBD	MS	0

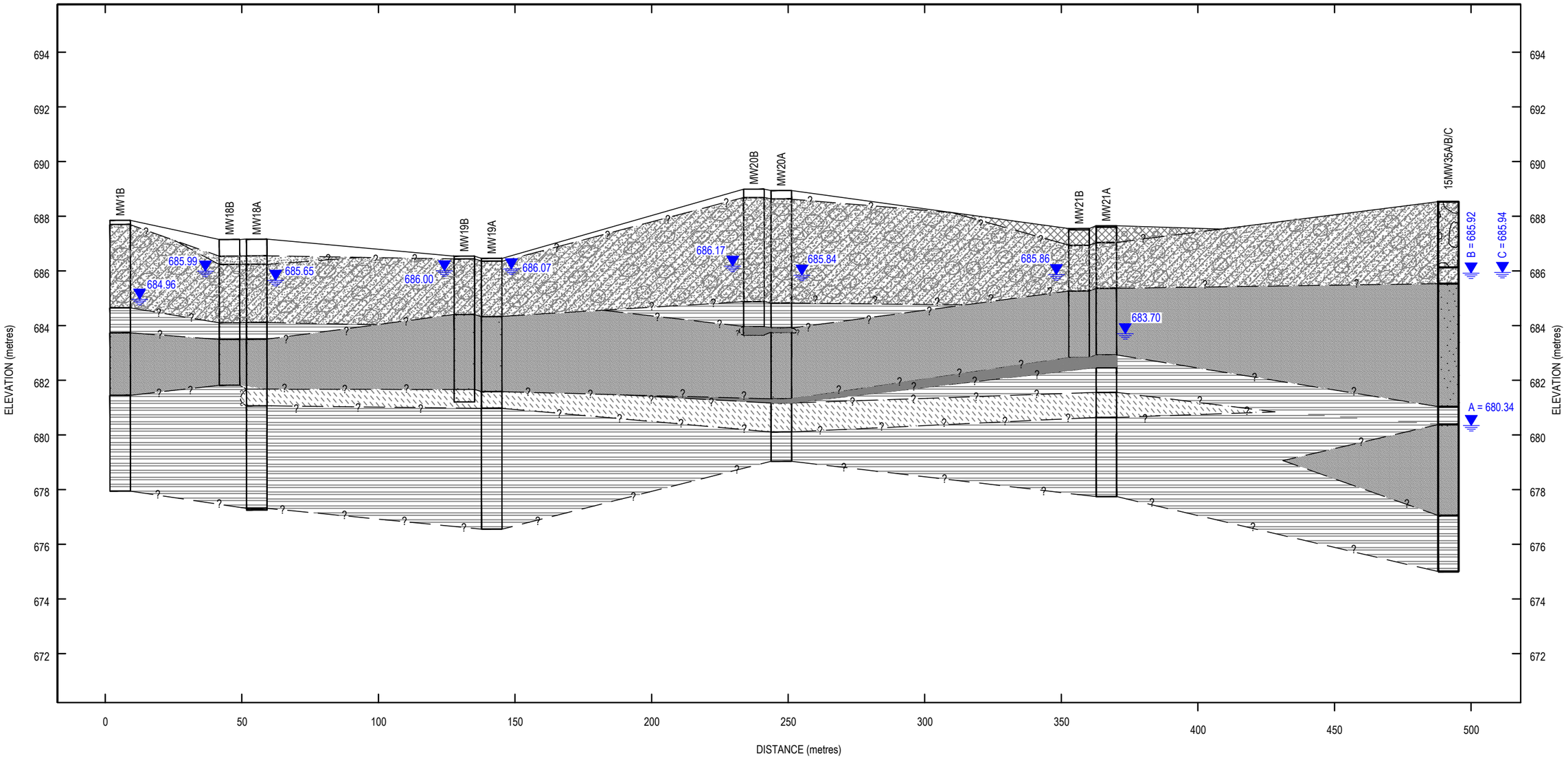
OFFICE	DATE
Tt-EDM	November 21, 2022

Figure 4a

Q:\Edmonton\Drafting\00_MASTER PROJECT BASE PLANS\Clean Harbors Ryley\PROJECTS\SWM.SWOP04591-01_Groundwater Monitoring 2022\Acad\SWM.SWOP04591-01_SWOP04591-01_Figure04a_CSLoc.dwg [FIGURE 4A] November 21, 2022 - 3:38:36 pm (BY: VERBURG, MEGAN)

A (NORTH)

A' (SOUTH)



SCALE AS SHOWN
10 X VERTICAL EXAGGERATION

LEGEND:

- TOPSOIL
- SAND
- SHALE
- SAND AND SHALE STONE
- CLAY
- GRAVEL
- SANDSTONE
- FILL
- SILT
- TILL
- SILTSTONE
- XXX.XX - GROUNDWATER ELEVATIONS IN METRES ABOVE SEA LEVEL (MASL) (COLLECTED IN JUNE 2022)
- ?——?——? — - INFERRED

CLIENT

Clean Harbors

TETRA TECH

2022 GROUNDWATER MONITORING PROGRAM RYLEY, ALBERTA

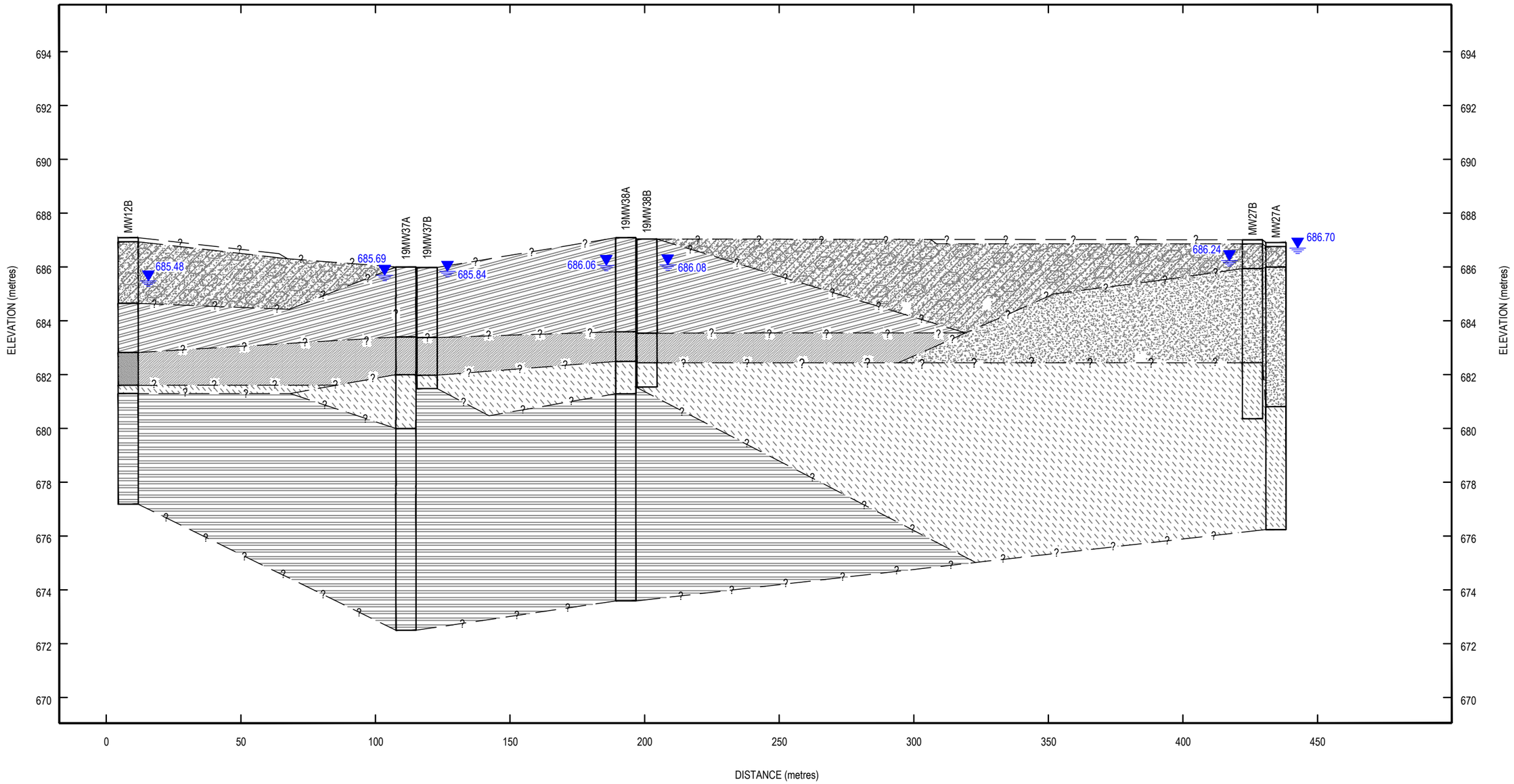
Cross-Section A-A'

PROJECT NO.	DWN	CKD	REV
SWM.SWOP04591-01	MM/DBD	MS	0
OFFICE: Tt-EDM	DATE: October 20, 2022		

Figure 4b

B (NORTH-WEST)

B' (SOUTH-EAST)



SCALE AS SHOWN
10 X VERTICAL EXAGGERATION

LEGEND:

- TOPSOIL
- SAND
- SHALE
- SAND AND SHALE STONE
- CLAY
- GRAVEL
- SANDSTONE
- FILL
- SILT
- TILL
- SILTSTONE
- XXX.XX - GROUNDWATER ELEVATIONS IN METRES ABOVE SEA LEVEL (MASL) (COLLECTED IN JUNE 2022)
- ? —— ? —— ? — - INFERRED

CLIENT: CleanHarbors

TETRA TECH

2022 GROUNDWATER MONITORING PROGRAM
RYLEY, ALBERTA

Cross-Section B-B'

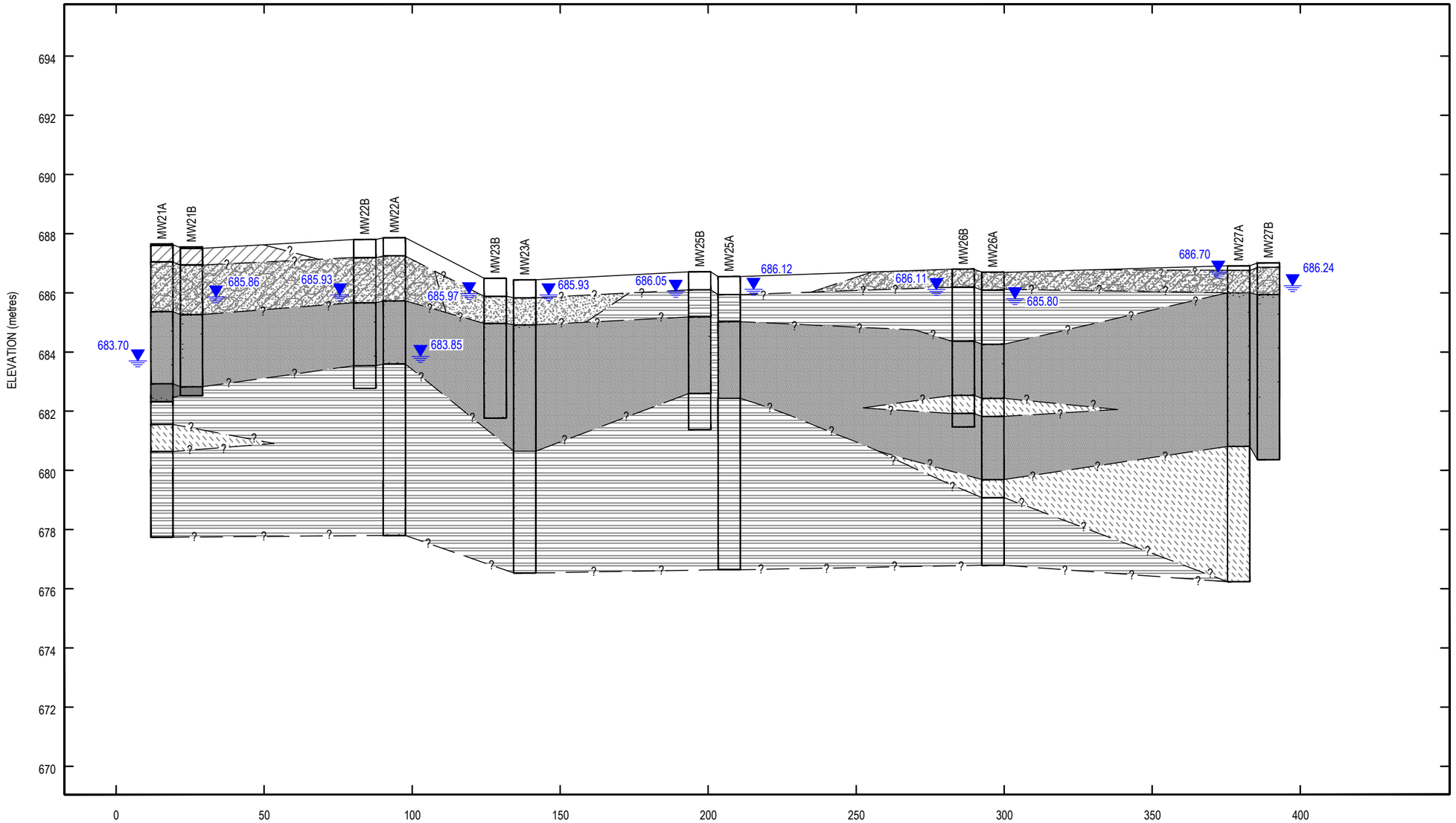
PROJECT NO.	DWN	CKD	REV
SWM.SWOP04591-01	MM/DBD	MS	0

OFFICE: Tt-EDM
DATE: October 20, 2022

Figure 4c

C (WEST)

C' (EAST)



SCALE AS SHOWN
10 X VERTICAL EXAGGERATION

LEGEND:

- TOPSOIL
- SAND
- SHALE
- SAND AND SHALE STONE
- CLAY
- GRAVEL
- SANDSTONE
- FILL
- SILT
- TILL
- SILTSTONE
- xxx.xx - GROUNDWATER ELEVATIONS IN METRES ABOVE SEA LEVEL (MASL) (COLLECTED IN JUNE 2022)
- ? —— ? —— ? — - INFERRED

CLIENT: Clean Harbors

TETRA TECH

2022 GROUNDWATER MONITORING PROGRAM
RYLEY, ALBERTA

Cross-Section C-C'

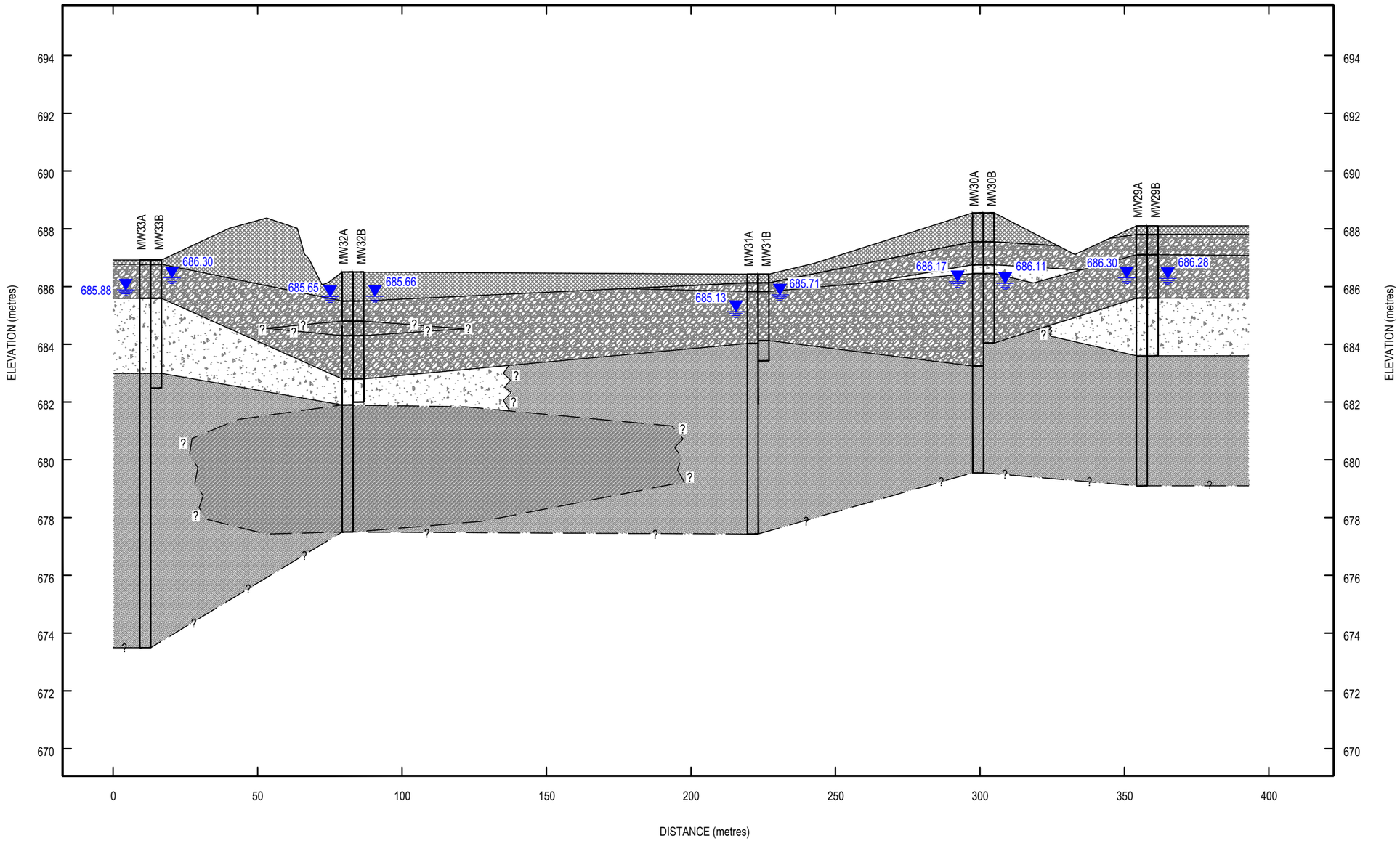
PROJECT NO.	DWN	CKD	REV
SWM.SWOP04591-01	MM/DBD	MS	0

OFFICE: Tt-EDM
DATE: October 20, 2022

Figure 4d

D (NORTH)

D' (SOUTH)



SCALE AS SHOWN
10 X VERTICAL EXAGGERATION

LEGEND:

- FILL
- CLAY
- TILL
- SAND
- SANDSTONE
- XXX.XX - GROUNDWATER ELEVATIONS IN METRES ABOVE SEA LEVEL (MASL) (COLLECTED IN JUNE 2022)
- — ? — ? — ? — - INFERRED

CLIENT

Clean Harbors

TETRA TECH

2022 GROUNDWATER MONITORING PROGRAM RYLEY, ALBERTA

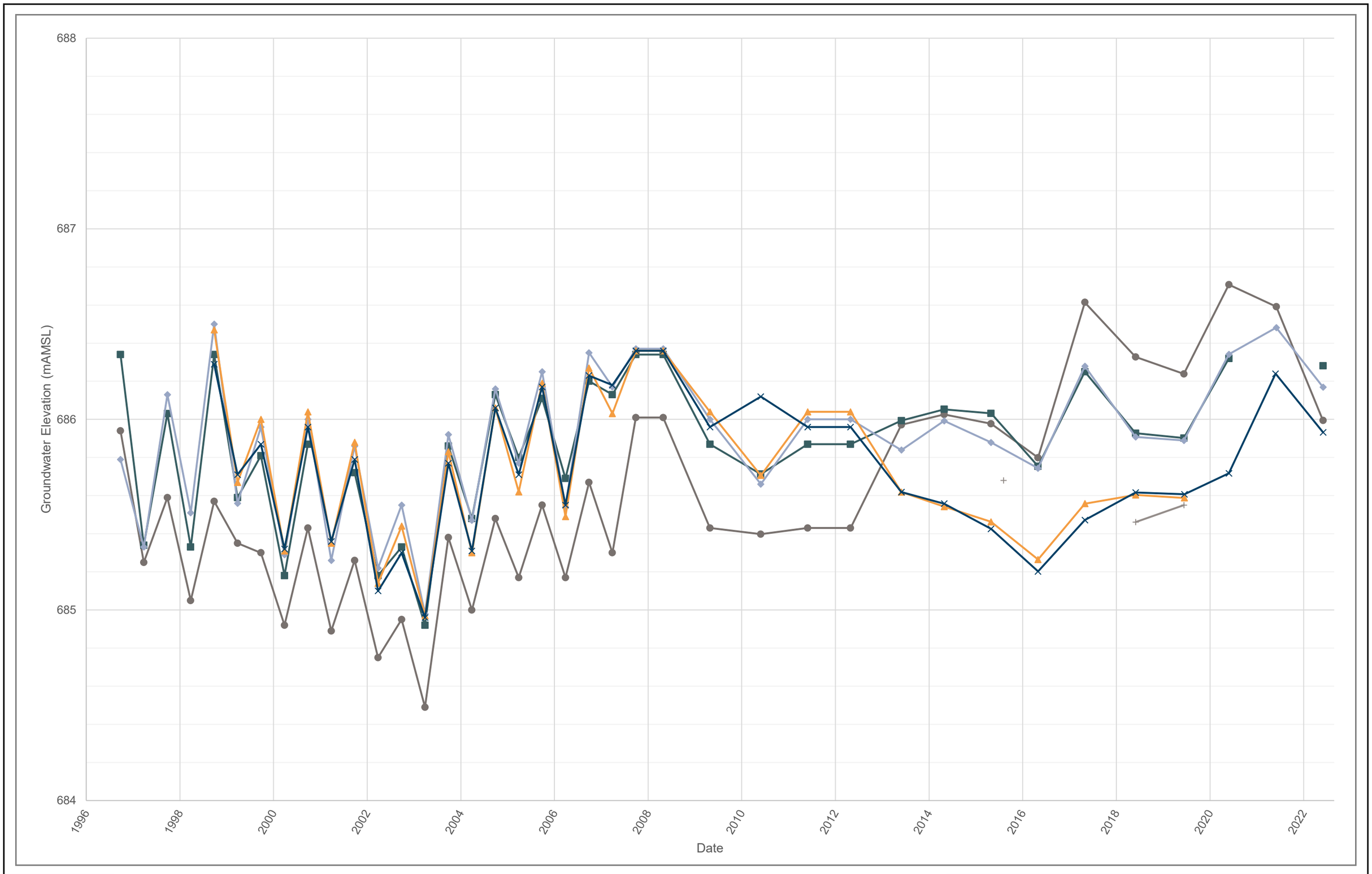
Cross-Section D-D'

PROJECT NO.	DWN	CKD	REV
SWM.SWOP04591-01	MM/DBD	MS	0

OFFICE: Tt-EDM

DATE: October 20, 2022

Figure 4e



LEGEND

MW18B MW19B MW20B MW21B MW22B 15MW35C

CLIENT

CleanHarbors

TETRA TECH

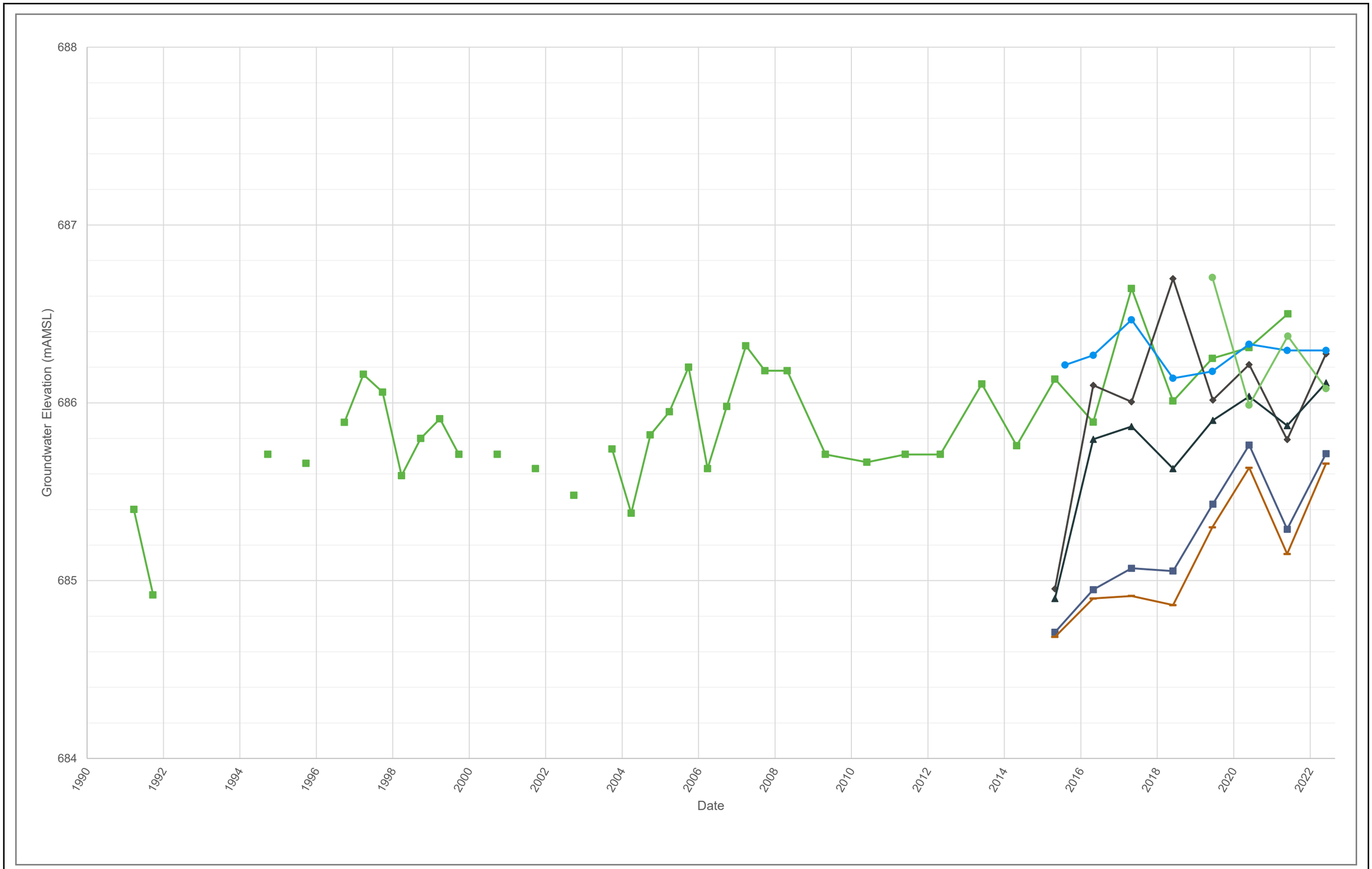
2022 GROUNDWATER MONITORING PROGRAM RYLEY, AB

Surficial Materials West - Hydrograph

PROJECT NO.	DWN	CKD	APVD	REV
SWM.SWOP04591-01	MS	CF	AS	001

OFFICE	DATE	STATUS
Tt - EBA - CAL	October, 2022	Issued for Review

Figure 5a



LEGEND

MW10 MW29B MW30B MW31B MW32B MW33B 19MW38B

CLIENT

CleanHarbors

TETRA TECH

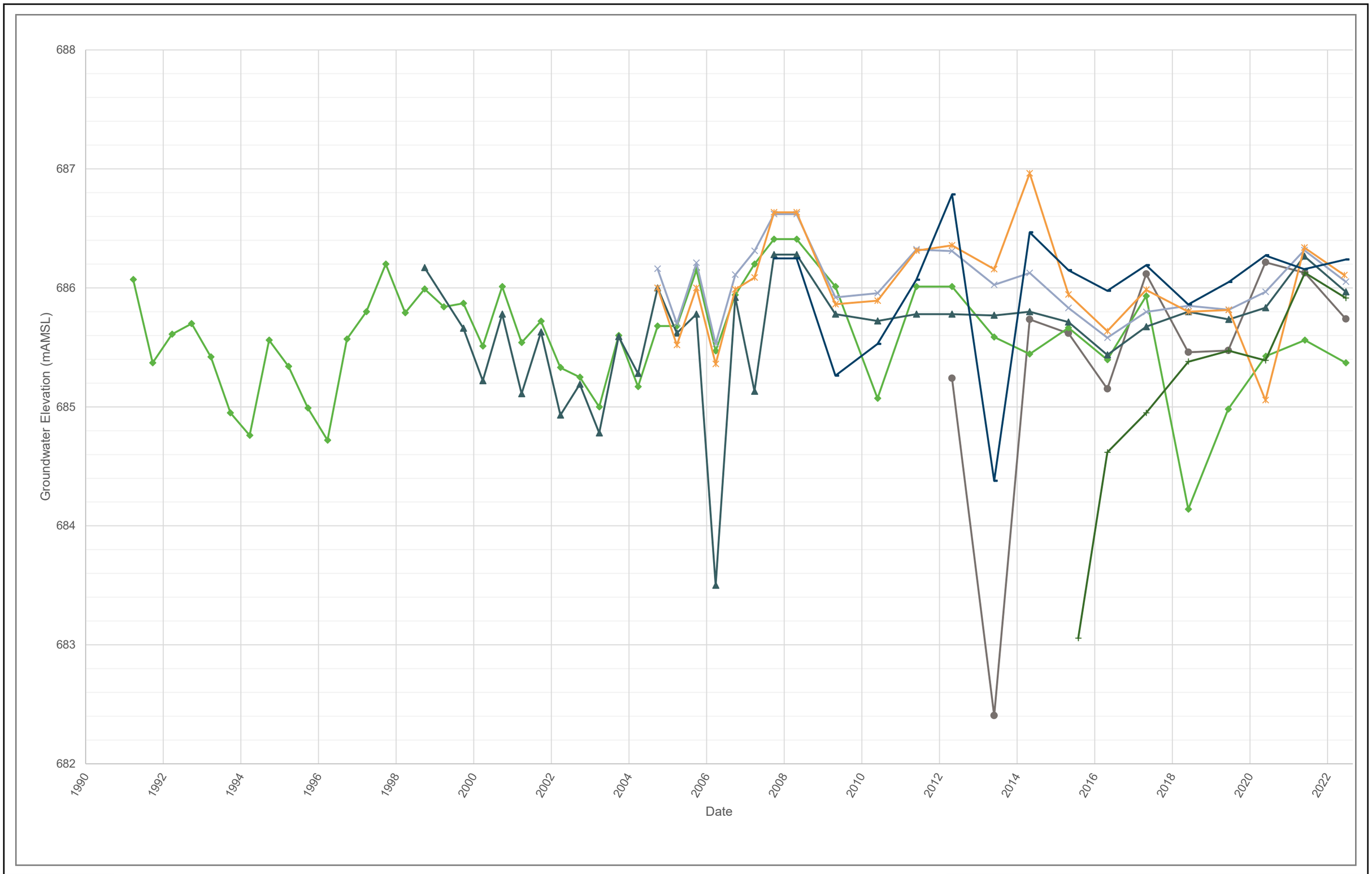
2022 GROUNDWATER MONITORING PROGRAM RYLEY, AB

Surficial Materials East - Hydrograph

PROJECT NO.	DWN	CKD	APVD	REV
SWM.SWOP04591-01	MS	CF	AS	001

OFFICE	DATE	STATUS
Tt - EBA - CAL	October, 2022	Issued for Review

Figure 5b



LEGEND

MW1C MW12A MW23B MW25B MW26B MW27B 15MW35B

CLIENT

CleanHarbors

2022 GROUNDWATER MONITORING PROGRAM RYLEY, AB

Upper Sandstone West - Hydrograph

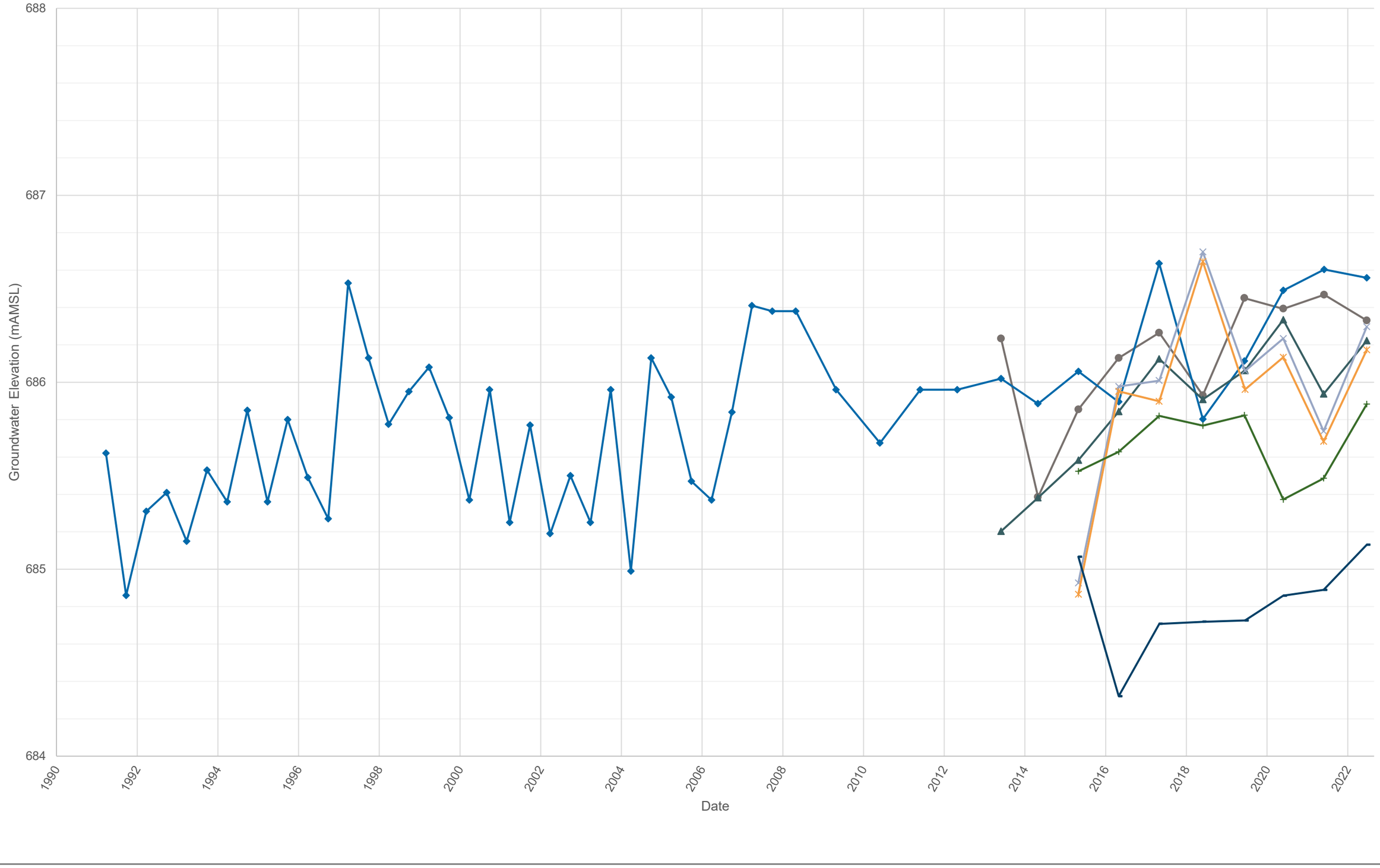
TETRA TECH

PROJECT NO.	DWN	CKD	APVD	REV
SWM.SWOP04591-01	MS	CF	AS	001

OFFICE	DATE	STATUS
Tt - EBA - CAL	October, 2022	Issued for Review

Figure 5c

704-SWM.SWOP04591-01 Clean Harbors AB 2022 GW Monitoring Program - 001 - All Documents (sharepoint.com)Figure Sheet4



LEGEND

MW8B MW11 MW28B MW29A MW30A MW31A MW33A

CLIENT

CleanHarbors

TETRA TECH

2022 GROUNDWATER MONITORING PROGRAM RYLEY, AB

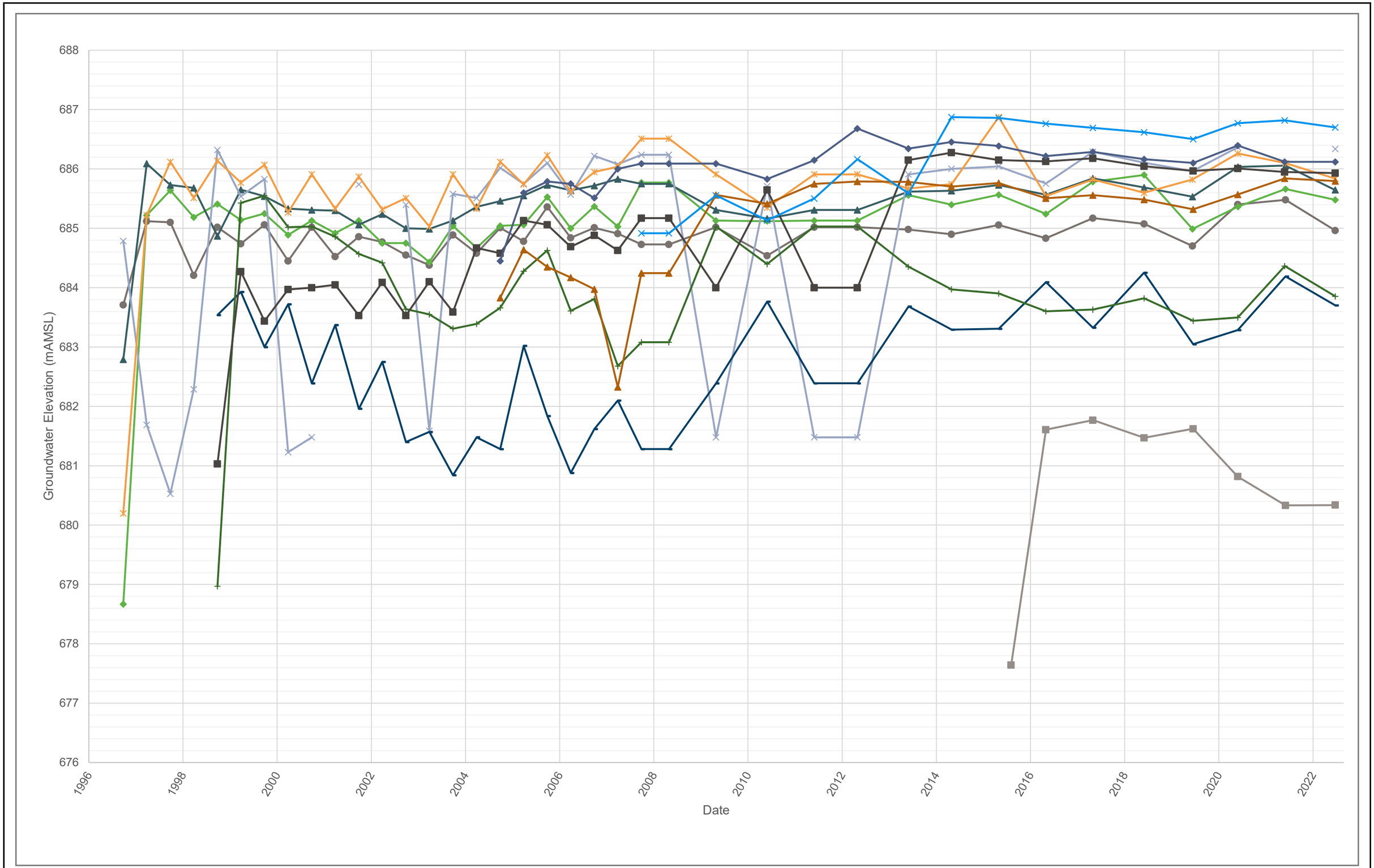
Upper Sandstone East - Hydrograph

PROJECT NO.	DWN	CKD	APVD	REV
SWM.SWOP04591-01	MS	CF	AS	001

OFFICE	DATE	STATUS
Tt - EBA - CAL	October, 2022	Issued for Review

Figure 5d

704-SWM.SWOP04591-01 Clean Harbors AB 2022 GW Monitoring Program - 001 - All Documents (sharepoint.com)Figure Sheet4



LEGEND

MW1B, MW12B, MW18A, MW19A, MW20A, MW21A, MW22A, MW23A, MW25A, MW26A, MW27A, 15MW35A

CLIENT

CleanHarbors

TETRA TECH

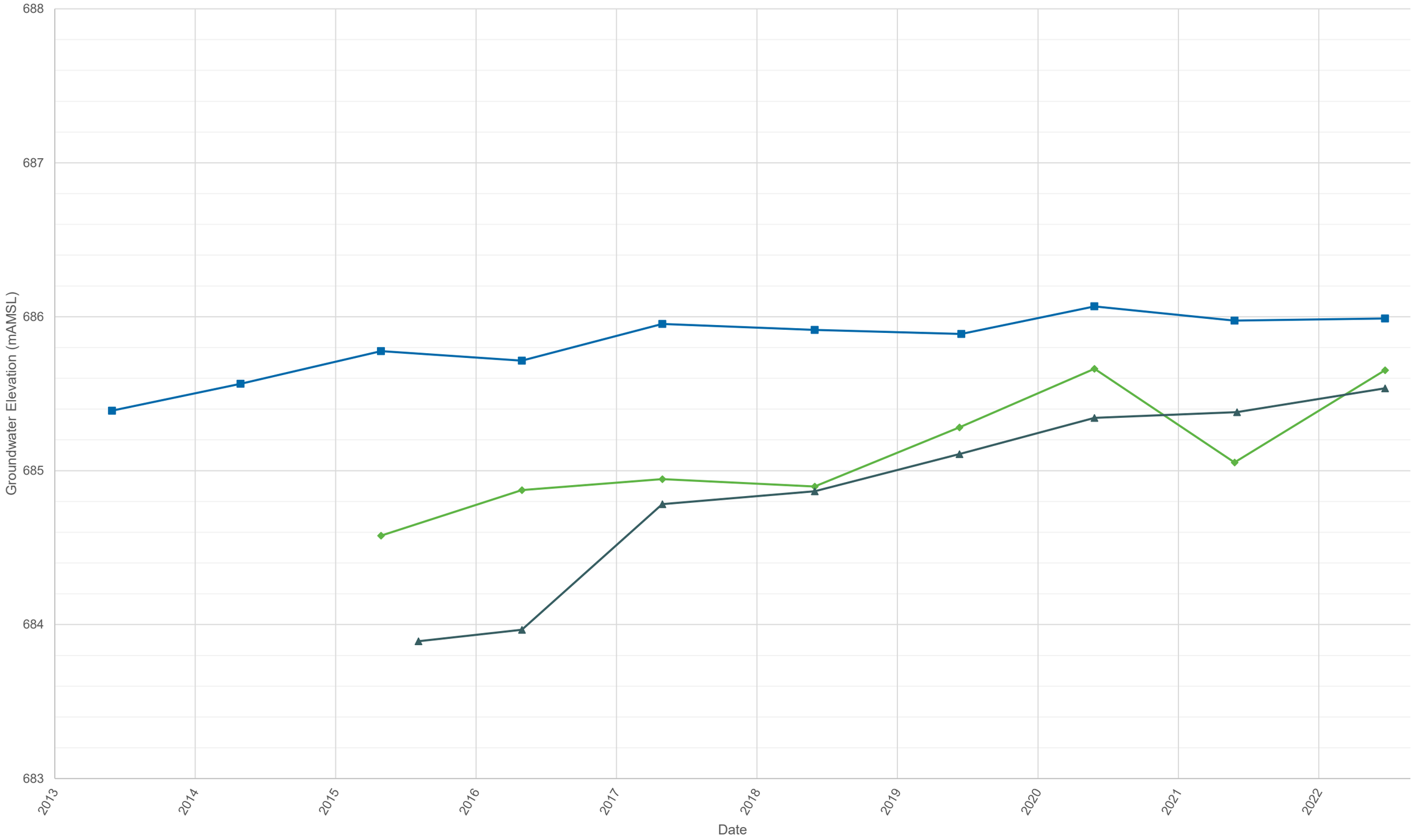
2022 GROUNDWATER MONITORING PROGRAM RYLEY, AB

Clay Shale West - Hydrograph

PROJECT NO.	DWN	CKD	APVD	REV
SWM.SWOP04591-01	MS	CF	AS	001

OFFICE	DATE	STATUS
Tt - EBA - CAL	October, 2022	Issued for Review

Figure 5e



LEGEND

MW8A MW28A MW32A 15MW36A

CLIENT

CleanHarbors

TETRA TECH

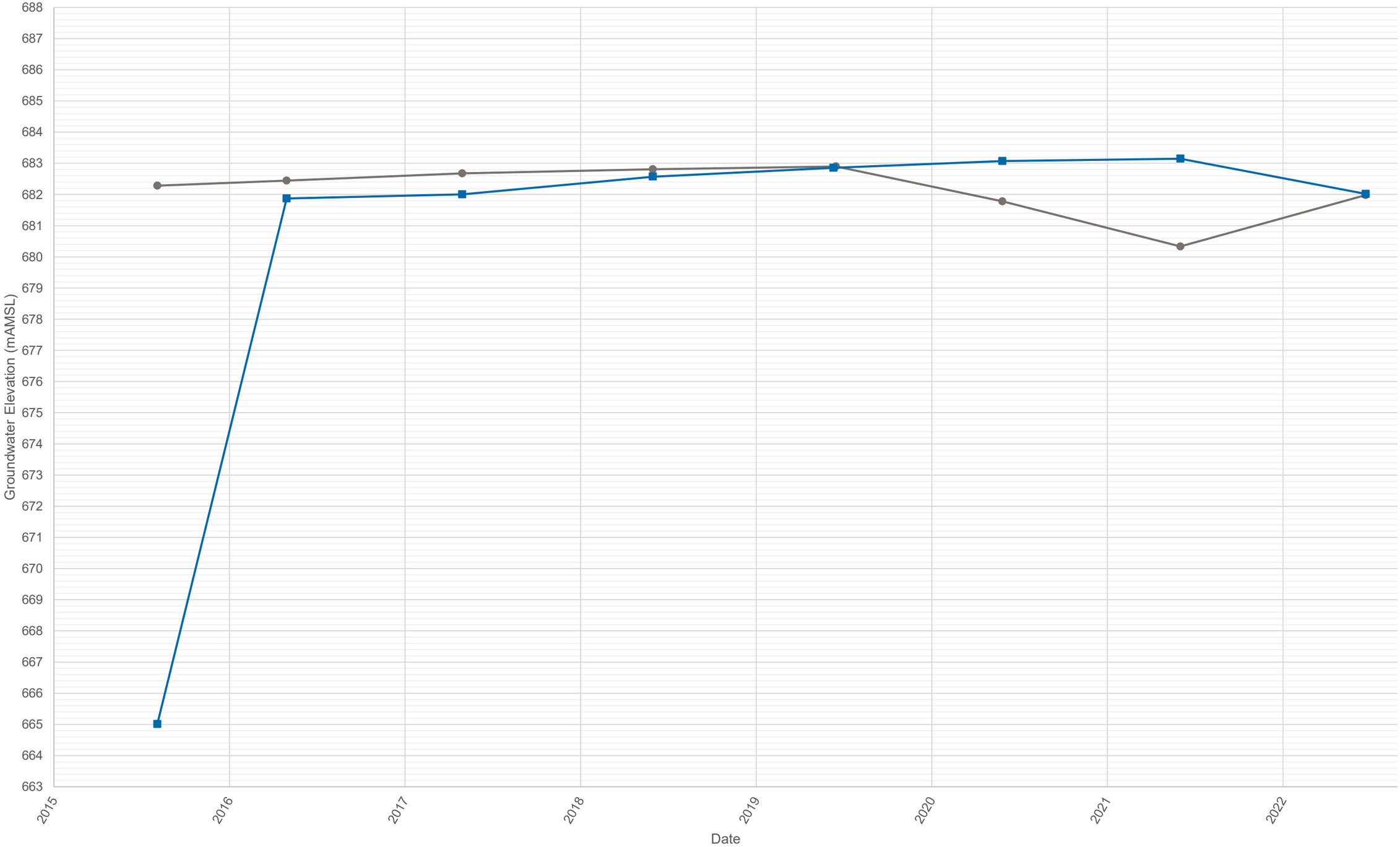
2022 GROUNDWATER MONITORING PROGRAM RYLEY, AB

Clay Shale East - Hydrograph

PROJECT NO.	DWN	CKD	APVD	REV
SWM.SWOP04591-01	MS	CF	AS	001

OFFICE	DATE	STATUS
Tt - EBA - CAL	October, 2022	Issued for Review

Figure 5f



LEGEND

15MW35-Deep

15MW36-Deep

CLIENT

CleanHarbors

TETRA TECH

2022 GROUNDWATER MONITORING PROGRAM RYLEY, AB

Lower Bedrock - Hydrograph

PROJECT NO.	DWN	CKD	APVD	REV
SWM.SWOP04591-01	MS	CF	AS	001

OFFICE	DATE	STATUS
Tt - EBA - CAL	October, 2022	Issued for Review

Figure 5g

704-SWM.SWOP04591-01 Clean Harbors AB 2022 GW Monitoring Program - 001 - All Documents (sharepoint.com)Figure Sheet4

Q:\Edmonton\GIS\SOLID_WASTE\SWOP\SWOP04591-01\Maps\SWOP04591-01_Figure06a_Surficial.mxd modified 2023-02-27 by Darren.Schouls

LEGEND

- Monitoring Well
- 68X.XX Groundwater Elevation (masl)
- Groundwater Elevation Contour (0.2 m)
- Inferred Groundwater Flow Direction

NOTES
Base data source: Imagery provided by Google Earth; Maxar (2019)

STATUS
ISSUED FOR USE

Scale: 1:4,000
80 40 0 80
Metres

PROJECTION	DATUM
UTM Zone 12	NAD83

FILE NO.
SWOP04591-01_Figure06a_Surficial.mxd

CLIENT Clean Harbors

TETRA TECH

2022 GROUNDWATER MONITORING PROGRAM RYLEY, ALBERTA

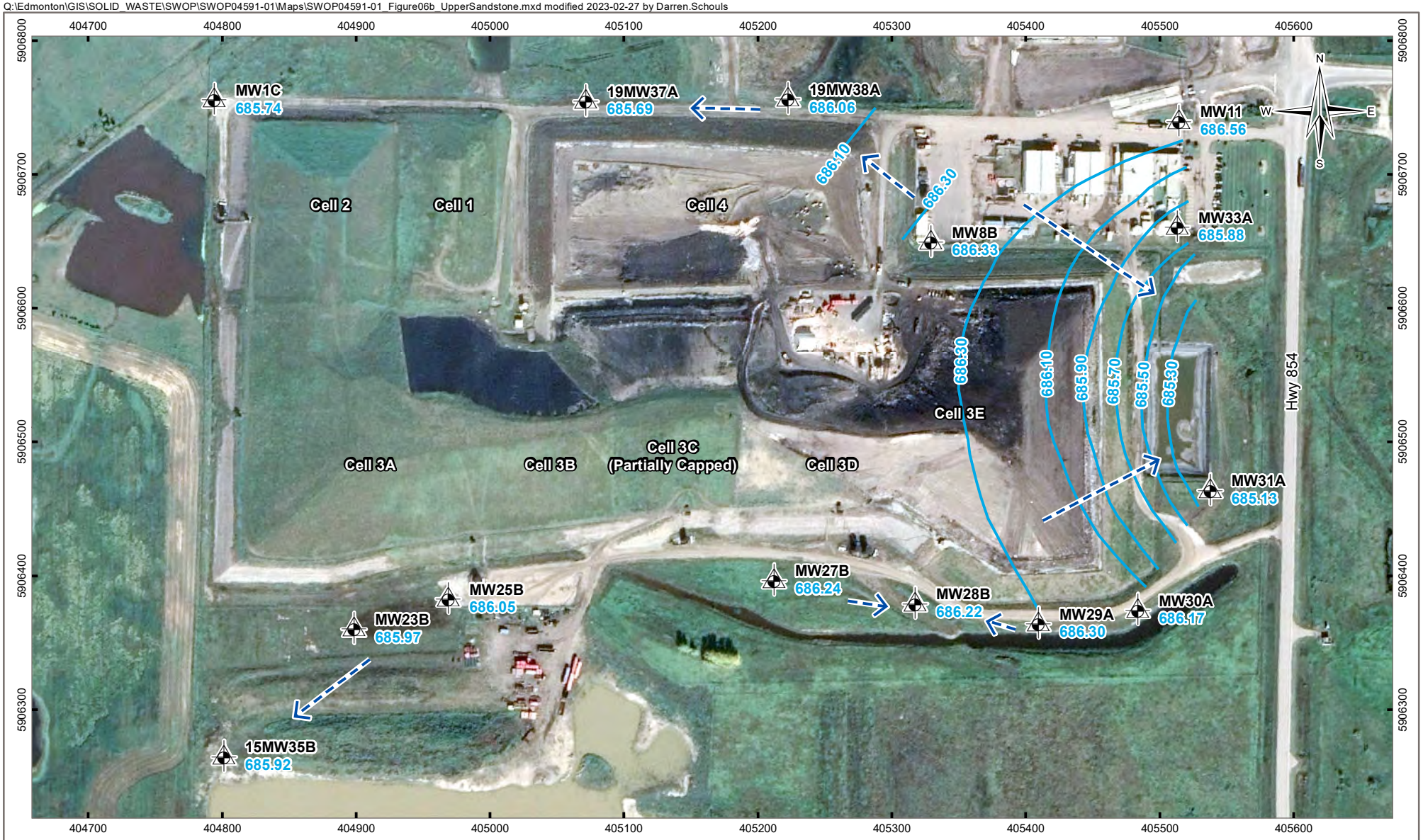
Groundwater Elevation Contours Surficial Materials - June 22nd, 2022

OFFICE	DWN	CKD	APVD	REV
Tt-EDM	MRV	SL	MS	0

DATE	PROJECT NO.
February 27, 2023	SWM.SWOP04591-01

Figure 6a

Q:\Edmonton\GIS\SOLID_WASTE\SWOP\SWOP04591-01\Maps\SWOP04591-01_Figure06b_UpperSandstone.mxd modified 2023-02-27 by Darren.Schouls



LEGEND

- Monitoring Well
- 68X.XX Groundwater Elevation (masl)
- Groundwater Elevation Contour
- Inferred Groundwater Flow Direction

NOTES
Base data source: Imagery provided by Google Earth; Maxar (2019)

STATUS
ISSUED FOR USE

Scale: 1:4,000
80 40 0 80
Metres

PROJECTION	DATUM
UTM Zone 12	NAD83

FILE NO.
SWOP04591-01_Figure06b_UpperSandstone.mxd

CLIENT CleanHarbors

TETRA TECH

2022 GROUNDWATER MONITORING PROGRAM RYLEY, ALBERTA

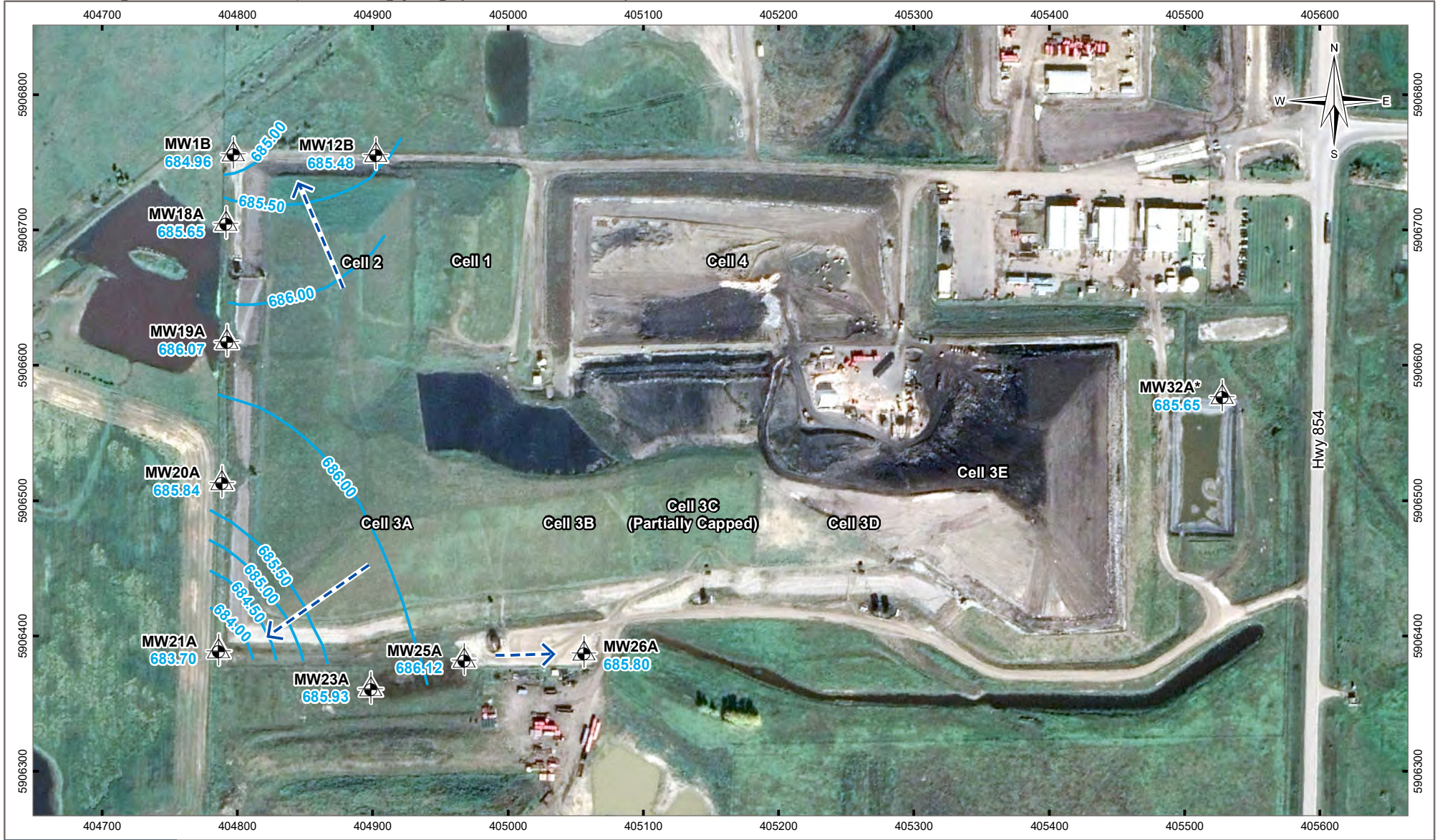
Groundwater Elevation Contours Upper Sandstone - June 22nd, 2022

OFFICE	DWN	CKD	APVD	REV
Tt-EDM	MRV	SL	MS	0

DATE	PROJECT NO.
February 27, 2023	SWM.SWOP04591-01

Figure 6b

Q:\Edmonton\GIS\SOLID_WASTE\SWOP\SWOP04591-01\Maps\SWOP04591-01_Figure06c_ClayShale.mxd modified 2023-02-27 by Darren.Schouls



LEGEND

- Monitoring Well
- 68X.XX Groundwater Elevation (masl)
- Groundwater Elevation Contour (0.5 m)
- Inferred Groundwater Flow Direction

NOTES
Base data source: Imagery provided by Google Earth; Maxar (2019)

* Well was excluded from groundwater contouring

STATUS
ISSUED FOR USE

Scale: 1:4,000
80 40 0 80
Metres

PROJECTION	DATUM
UTM Zone 12	NAD83

FILE NO.
SWOP04591-01_Figure06c_ClayShale.mxd

CLIENT CleanHarbors

TETRA TECH

2022 GROUNDWATER MONITORING PROGRAM RYLEY, ALBERTA

Groundwater Elevation Contours Clay Shale - June 22nd, 2022

OFFICE	DWN	CKD	APVD	REV
Tt-EDM	MRV	SL	MS	0

DATE	PROJECT NO.
February 27, 2023	SWM.SWOP04591-01

Figure 6c

LEGEND

Monitoring Well

68X.XX Groundwater Elevation (masl)

NOTES
Base data source: Imagery provided by Google Earth; Maxar (2019)

STATUS
ISSUED FOR USE

2022 GROUNDWATER MONITORING PROGRAM RYLEY, ALBERTA

Groundwater Elevation Lower Bedrock - June 22nd, 2022

PROJECTION	DATUM	CLIENT
UTM Zone 12	NAD83	CleanHarbors

Scale: 1:8,000

150 75 0 150

Metres

TETRA TECH

FILE NO. SWOP04591-01_Figure06d_LowerBedrock.mxd

OFFICE	DWN	CKD	APVD	REV
Tt-EDM	MRV	SL	MS	0

DATE February 27, 2023

PROJECT NO. SWM.SWOP04401-01

Figure 6d

Q:\Edmonton\GIS\SOLID_WASTE\SWOP\SWOP04591-01\Maps\SWOP04591-01_Figure06d_LowerBedrock.mxd modified 2023-02-27 by Darren.Schouls

APPENDIX A

REGULATORY APPROVAL - ALBERTA ENVIRONMENT AND RECORD OF SITE CONDITION

Alberta Environment and Parks

AMENDING APPROVAL

PROVINCE OF ALBERTA

ENVIRONMENTAL PROTECTION AND ENHANCEMENT ACT
R.S.A. 2000, c.E-12, as amended.

APPROVAL NO. 10348-03-01

APPLICATION NO. 015-10348

EFFECTIVE DATE: June 21, 2022

EXPIRY DATE: March 31, 2027

APPROVAL HOLDER: Clean Harbors Canada, Inc.

Pursuant to Division 2, of Part 2, of the *Environmental Protection and Enhancement Act*, R.S.A.2000, c.E-12, as amended, the approval for the following activity:

> construction, operation and reclamation of Ryley Industrial Waste Management Facility, consisting of a Class I and Class II Industrial Landfill and a Hazardous Waste/Recyclable Storage and Processing Facility

is amended as per the attached terms and conditions.

Designated Director under the Act

Mohammad Habib, P. Eng.

Date Signed June 21, 2022

TERMS AND CONDITIONS ATTACHED TO APPROVAL

1. *Environmental Protection and Enhancement Act* Approval No. 10348-03-00 is hereby amended by this Amending Approval.

2. Parts 1, 2, 3, 4, 5, 6, 7 and 8 are deleted, and the following are substituted:

PART 1: DEFINITIONS

SECTION 1.1: DEFINITIONS

1.1.1 All definitions from the Act and the regulations apply except where expressly defined in this approval.

1.1.2 In all PARTS of this approval:

(a) "Act" means the *Environmental Protection and Enhancement Act*, R.S.A. 2000, c.E-12, as amended;

(b) “action leakage rate” means the leakage rate that would occur through the primary liner, based on two holes per hectare, each with a diameter of 2 mm and that is calculated to be 790L/ha/day;

(c) “active landfill area” means the portion of the landfill that has received or is receiving waste for disposal, where final cover has not been placed, and includes areas that are being used for interim management of waste prior to disposition;

(d) “active landfill life” means the period of landfill life during which waste is received for disposal at the landfill, beginning with the initial receipt of waste and ending with the start of final landfill closure activities;

(e) “AER” means Alberta Energy Regulator;

(f) “affected lands” means lands which have received substances released from the facility;

(g) “air effluent stream” means any substance in a gaseous medium released by or from a facility;

(h) “APEGA” means the Association of Professional Engineers and Geoscientists of Alberta;

(i) “application” means the written submissions from the approval holder to the Director in respect of application No. 014-10348 and any subsequent applications where amendments are issued for this approval;

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(j) "application No. 005-10348" means the written submissions from the approval holder to the Director in respect of renewal application No. 005-10348;

(k) “application No. 008-10348” means the written submissions from the approval holder to the Director in respect of amendment application No. 008-10348;

(l) "application No. 012-10348" means the written submissions from the approval holder to the Director in respect of amendment application No. 012-10348;

(m) “as-built plans” means survey plans, signed and stamped by a professional registered with APEGA, that document variances from design or construction plans that were either approved or authorized according to the terms and conditions of this approval;

(n) “BTEX” means benzene, toluene, ethylbenzene and xylene;

(o) “CAO” means Chief Administrative Officer;

(p) “central waste receiving and stabilization area” means the central waste receiving and stabilization area as described in application No. 015-10348;

(q) “COD” means Chemical Oxygen Demand;

(r) “composite liner” means a liner that meets the specifications in 3.1.2(b) of this approval;

(s) "container" means any portable device in which a substance is kept, including but not limited to the following:

(i) drums, barrels and pails which have a capacity greater than 18 litres but less than 210 litres,

(ii) 320 litre overpack drums, and

(iii) 1000 litre tote tanks or sacks;

(t) “cover” means soil or other approved material that is used to cover compacted wastes in a landfill cell;

(u) “day”, when referring to sampling, means any sampling period of 24 consecutive hours;

(v) "decommissioning" means the dismantling and decontamination of the facility undertaken subsequent to the termination or abandonment of any

TERMS AND CONDITIONS ATTACHED TO APPROVAL

activity or any part of any activity regulated under the Act, excluding the landfill cells and those infrastructure components and facilities that are required for the landfill post-closure;

(w) "decontamination" means the treatment or removal of substances from the facility and affected lands;

(x) "Director" means an employee of the Government of Alberta designated as a Director under the Act;

(y) “dismantling” means the removal of buildings, structures, process and pollution abatement equipment, vessels, storage facilities, material handling facilities, railways, roadways, pipelines and any other installations that are being or have been used or held for or in connection with the facility;

(z) “DOC” means Dissolved Organic Carbon;

(aa) “domestic wastewater” means wastewater that is the composite of liquid and water-carried wastes associated with the use of water for drinking, cooking, cleaning, washing, hygiene, sanitation or other domestic purposes, together with any infiltration and inflow wastewater, that is released into a wastewater collection system;

(bb) “domestic wastewater system” means the parts of the facility that collect, store, or treat domestic wastewater from the facility;

(cc) "existing landfill cells" means Cell 1, Cell 2, Cell 3A, Cell 3B, and Cell 3C as described in application No. 005-10348;

(dd) “facility” means all buildings, structures, process and pollution abatement equipment, vessels, storage facilities, material handling facilities, roadways, railways, pipelines and other installations, the Class I and Class II industrial landfill and the HWRSP Facility, and includes the land, located on the SE ¼ and NE ¼ of Section 9, Township 50, Range 17, West of the 4th Meridian, that is being or has been used or held for or in connection with the Ryley Industrial Waste Management Facility;

(ee) “facility developed area” means the areas of the facility used for the storage, treatment, processing, transport, or handling of raw material, intermediate product, by-product, finished product, process chemicals, or waste material, and includes the active landfill area;

(ff) “final cover” means a designed system, natural or man-made, that is placed on the surface of a landfill or landfill cell that has reached its maximum designated waste elevation to control transmission of moisture and landfill gas, and conforms to the end use plan;

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(gg) "final landfill closure" means the period of time when waste is no longer placed in the defined portion of a landfill and activities are undertaken to complete the final cover system and decommission components and facilities that are no longer required, and includes the construction of any additional components or monitoring systems that are necessary for post-closure;

(hh) "free liquids" means the liquids as determined by the US EPA SW-846 Test Method 9095B: Paint Filter Liquids Test, as specified in Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, US EPA Publication No. SW-846, as amended;

(ii) "fugitive emissions" means emissions of substances to the atmosphere other than ozone depleting substances, originating from a facility source other than a flue, vent, or stack but does not include sources which may occur due to breaks or ruptures in process equipment;

(jj) "GCL" means geosynthetic clay liner that is made of a thin layer of bentonite either bonded to a geomembrane or fixed between two sheets of geotextile;

(kk) "geomembrane" means a sheet of manufactured synthetic material designed to control migration of liquid and gas;

(ll) "grab sample" means an individual sample collected in less than 30 minutes and which is representative of the substance sampled;

(mm) "groundwater" means groundwater as defined in the *Water Act,* R.S.A. 2000, c.W-3, as amended;

(nn) "groundwater monitoring well" means a well drilled at a site to measure groundwater levels and collect groundwater samples for the purpose of physical, chemical, or biological analysis to determine the concentration of groundwater constituents;

(oo) "H_2S" means hydrogen sulphide;

(pp) "HDPE" means High Density Polyethylene;

(qq) "HWRSP Facility" means the Hazardous Waste/Recyclable Storage and Processing Facility as described in the application for storage, processing and transfer of hazardous wastes and hazardous recyclables and which includes the Maintenance Shop, and is an integral part of the facility;

(rr) "hydraulic conductivity" means the ease with which water can be transported through a material;

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(ss) "hydrocarbon" means a chemical compound that consists entirely of hydrogen and carbon;

(tt) "ISO/IEC 17025" means the international standard, developed and published by International Organization for Standardization (ISO), specifying management and technical requirements for laboratories;

(uu) "incompatible waste" means waste materials which could cause dangerous reactions from direct contact with one another;

(vv) "industrial wastewater" means the composite of liquid wastes and water-carried wastes, any portion of which results from any industrial process carried on at the HWRSP Facility;

(ww) "landfill" means the Class I and Class II industrial landfill as described in the application and which includes the waste receiving area(s) and waste stabilization area(s), and is an integral part of the facility;

(xx) "landfill cell" means a designed area of a landfill comprised of an excavation or earthen structure in which waste is enclosed;

(yy) "landfill cell closure" means the construction of a final cover for landfill cell including placement of previously conserved top soil and upper subsoil and re-vegetation as required for the intended future use of the landfill;

(zz) "landfill gas" means a mixture of gases generated by the microbial decomposition of and chemical reactions between wastes in a landfill;

(aaa) "lateral expansion" means an expansion of landfill cell boundaries beyond the approved area;

(bbb) "laydown area" means the laydown area as described in application No. 015-10348;

(ccc) "leachate" means a liquid that has been in contact with waste in the landfill cell and has undergone chemical or physical changes;

(ddd) "leachate collection system" means a system that gathers leachate so that it may be removed from a landfill, and includes a permeable drainage material, a network of perforated pipes and sumps or manholes from where leachate can be removed;

(eee) "leak detection liquid" means any liquid collected within the leak detection system;

(fff) "leak detection system" means a system that gathers liquid between a primary liner and a secondary liner system, and consists of a permeable

drainage material, a network of perforated pipes and sumps or manholes from where the liquid can be removed;

(ggg) "liner" means a continuous layer of synthetic material or compacted natural clay placed beneath and at the sides of a landfill cell that is compatible with the waste and restricts the migration of leachate, or landfill gas, or both;

(hhh) "local environmental authority" means the Department of Environment and Parks, in the Province of Alberta, or the agency that has the equivalent responsibilities for any jurisdiction outside the Province;

(iii) "major ions" means the following:

Calcium	Carbonate
Magnesium	Bicarbonate
Sodium	Chloride
Potassium	Sulfate

(jjj) "maximum acceptable leachate head" means the maximum depth of leachate above the lowest part of the primary liner, not including the sumps or leachate collection pipe trenches, and is:

(i) 1.0 m in each of the existing landfill cells, and

(ii) 0.3 m in each of the new landfill cells

during active landfill life, landfill cell closure, final landfill closure, and post-closure;

(kkk) "maximum designated waste elevation" means the maximum elevation of waste in metres above sea level that can be disposed of at the landfill prior to construction of final cover, and is 714 metres;

(lll) "metals" means the following:

Aluminum, dissolved	Chromium, dissolved (hexavalent)	Nickel, dissolved
Antimony, dissolved	Cobalt, dissolved	Selenium, dissolved
Arsenic, dissolved	Copper, dissolved	Silver, dissolved
Barium, dissolved	Lead, dissolved	Thallium, dissolved
Boron, dissolved	Manganese, dissolved	Tin, dissolved
Cadmium, dissolved	Mercury, total	Uranium, dissolved
Chromium, total	Molybdenum, dissolved	Zinc, dissolved

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(mmm) "monitoring system" means all equipment used for sampling, conditioning, analyzing or recording data in respect of any parameter listed or referred to in this approval, including equipment used for continuous monitoring;

(nnn) "month" means calendar month;

(ooo) “municipal solid waste” means solid waste resulting from or incidental to municipal, community, commercial, institutional and recreation activities, and includes garbage, rubbish, ashes, street cleanings, abandoned automobiles and all other solid wastes except hazardous waste, industrial solid waste, oilfield waste and biomedical wastes;

(ppp) “NAPS” means the National Air Pollution Surveillance program;

(qqq) "new landfill cells" means Cell 3D as described in application No. 005-10348, Cell 3E as described in application No. 012-10348, Cell 4 as described in application No. 014-10348, and Cell 5 as described in application No. 015-10348;

(rrr) "new surface water detention pond" means the surface water detention pond(s) as described in application No. 012-10348 or No. 015-10348;

(sss) “NORM” means Naturally Occurring Radioactive Materials;

(ttt) “NORM waste” means any waste material with concentrations of NORM above the limits specified in Tables 5.1, 5.2, or 5.3 of the *Canadian Guidelines for the Management of Naturally Occurring Radioactive Materials (NORM)*, Health Canada, 2011, as amended;

(uuu) “nutrients” means the following:

Ammonia nitrogen	Nitrite nitrogen
Total Kjeldahl nitrogen	Total phosphorus
Nitrate nitrogen	Dissolved phosphorus

(vvv) "old surface water detention pond" means the surface water detention pond as described in application No. 005-10348;

(www) “Petroleum Hydrocarbons Fractions F1 and F2” means the specific hydrocarbon fraction measured by the analytical methods described in the *Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil - Tier 1 Method,* published by the Canadian Council of Ministers of the Environment, 2001, as amended;

(xxx) “PM” means particulate matter;

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(yyy) "PM_{10}" means particulate matter less than 10 microns in diameter;

(zzz) "points of compliance" means the location or locations of the groundwater monitoring wells where measurements of groundwater quality are taken to assess landfill and waste treatment performance;

(aaaa) "post-closure" means the period of time after completion of the final landfill closure;

(bbbb) "ppm" means concentration in parts per million;

(cccc) "primary liner" means the uppermost geomembrane liner;

(dddd) "QA/QC" means quality assurance and quality control;

(eeee) "quarter year" means a time period of three consecutive months designated as January, February and March; or April, May and June; or July, August and September; or October, November and December;

(ffff) "regulations" means the regulations enacted pursuant to the Act, as amended;

(gggg) "representative grab" means a sample consisting of equal volume portions of water collected from at least four sites between 0.20 to 0.30 metres below the water surface within a pond;

(hhhh) "runoff" means any rainwater or melt water that drains as surface flow from the facility developed areas, excluding leachate;

(iiii) "runoff control system" means the parts of the facility that collect, store or treat runoff from the facility, and includes but is not limited to runoff collection ditches, surface water detention ponds and tank farm bermed area;

(jjjj) "run-on" means any rainwater or melt water that drains as surface flow toward the active landfill area;

(kkkk) "run-on control system" means the parts of the facility that divert run-on away from the active landfill area;

(llll) "scrubber exhaust stack" means the exhaust stack through which the air effluent streams that are:

(i) collected from the exhaust vents of the Drum Processing Building or Staging Building or both, and

(ii) treated with the caustic scrubber and activated carbon filter

TERMS AND CONDITIONS ATTACHED TO APPROVAL

are released to the atmosphere as described in the application;

(mmmm) "secondary liner" means the lowermost geomembrane liner;

(nnnn) "soil" means mineral or organic earthen materials that can, have, or are being altered by weathering, biological processes, or human activity;

(oooo) "SOP" means Standard Operating Procedures;

(pppp) "storm event" means a 1 in 25 year, 24 hour duration rainfall event at Ryley, Alberta;

(qqqq) "tank" means a stationary device, designed to contain an accumulation of a substance, which is constructed primarily of non-earthen materials that provide structural support including wood, concrete, steel, and plastic;

(rrrr) "TDGR" means the *Transportation of Dangerous Goods Regulations* (SOR/2001-286) made under the *Transportation of Dangerous Goods Act*, 1992 (Canada), as amended;

(ssss) "TDS" means Total Dissolved Solids;

(tttt) "TNMOCs" means total non-methane organic compounds;

(uuuu) "topsoil" means the uppermost layer of soil and consists of:

(i) the A-horizons and all organic horizons as defined in *The Canadian System of Soil Classification* (Third Edition), Agriculture and Agri-Food Canada, Publication 1646, 1998, as amended, and

(ii) the soil ordinarily moved during tillage;

(vvvv) "total metals" means the following:

Antimony	Cobalt	Selenium
Arsenic	Copper	Silver
Barium	Iron	Thallium
Beryllium	Lead	Tin
Boron	Manganese	Uranium
Cadmium	Mercury	Vanadium
Chromium	Nickel	Zinc

(wwww) "TSP" means total suspended particulate matter;

(xxxx) "TSS" means Total Suspended Solids;

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(yyyy) "upper subsoil" means the layer of soil directly below the topsoil layer that consists of the B-horizons as defined in *The Canadian System of Soil Classification,* (Third Edition), Agriculture and Agri-Food Canada, Publication 1646, 1998, as amended;

(zzzz) "VOCs" means volatile organic compounds;

(aaaaa) "volume estimate" means a technical evaluation based on the sources contributing to the release including but not limited to pump capabilities, water meters, and batch release volumes;

(bbbbb) "waste stabilization area" means the portion of the landfill that is used for waste stabilization or solidification or both, as described in application No. 008-10348 or No. 015-10348;

(ccccc) "waste storage area" means the areas designated for storage of containers for waste or hazardous recyclable or both, or for storage of tanks for waste or hazardous recyclable or both, or for storage of both, as described in application No. 005-10348;

(ddddd) "week" means any consecutive 7-day period;

(eeeee) "working face" means that portion of the active landfill area where waste is currently being deposited, spread and compacted; and

(fffff) "year" means calendar year.

PART 2: GENERAL

SECTION 2.1: REPORTING

2.1.1 The approval holder shall immediately report to the Director by telephone any contravention of the terms and conditions of this approval at 1-780-422-4505.

2.1.2 The approval holder shall submit a written report to the Director within 7 days of the reporting pursuant to 2.1.1.

2.1.3 The approval holder shall immediately notify the Director in writing if any of the following events occurs:

(a) the approval holder is served with a petition into bankruptcy;

(b) the approval holder files an assignment in bankruptcy or Notice of Intent to make a proposal;

(c) a receiver or receiver-manager is appointed;

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(d) an application for protection from creditors is filed for the benefit of the approval holder under any creditor protection legislation; or

(e) any of the assets which are the subject matter of this approval are seized for any reason.

2.1.4 If the approval holder monitors for any substances or parameters which are the subject of operational limits as set out in this approval more frequently than is required and uses procedures authorized in this approval, then the approval holder shall provide the results of such monitoring as an addendum to the reports required by this approval.

2.1.5 The approval holder shall submit all monthly reports required by this approval to be compiled or submitted to the Director on or before the end of the month following the month in which the information was collected, unless otherwise specified in this approval.

2.1.6 The approval holder shall submit all annual reports required by this approval to be compiled or submitted to the Director on or before March 31 of the year following the year in which the information was collected, unless otherwise specified in this approval.

SECTION 2.2: RECORD KEEPING

2.2.1 The approval holder shall:

(a) record; and

(b) retain

all the following information in respect of any sampling conducted or analyses performed in accordance with this approval for a minimum of ten years, unless otherwise authorized in writing by the Director:

(i) the place, date and time of sampling,

(ii) sample type,

(iii) the dates the analyses were performed,

(iv) the analytical techniques, methods or procedures used in the analyses,

(v) the names of the persons who collected and analysed each sample, and

(vi) the results of the analyses.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

2.2.2 The approval holder shall keep and maintain an Operating Record of the landfill as per 4.6.34(a) until the end of the landfill post-closure.

2.2.3 The Operating Record referred to in 2.2.2 shall include, at a minimum, all of the following information:

(a) the information required in section 7.3(c) of the *Standards for Landfills in Alberta*, as amended;

(b) the name and contact information of all persons who discover any contravention;

(c) the names and contact information of all persons who take any remedial actions arising from the contravention of the Act, the regulations, or this approval; and

(d) a description of the remedial measures taken in respect of a contravention of the Act, the regulations, or this approval.

2.2.4 The approval holder shall submit a copy of the most recent Operating Record to the Director upon written request from the Director within the timeline specified in writing by the Director.

SECTION 2.3: ANALYTICAL REQUIREMENTS

2.3.1 With respect to any sample required to be taken pursuant to this approval, the approval holder shall ensure that:

(a) collection;

(b) preservation;

(c) storage;

(d) handling; and

(e) analysis

shall be conducted in accordance with the following unless otherwise authorized in writing by the Director:

(i) for air:

(A) the *Alberta Stack Sampling Code*, Alberta Environment, 1995, as amended,

(B) the *Methods Manual for Chemical Analysis of Atmospheric Pollutants*, Alberta Environment, 1993, as amended, and

(C) the *Air Monitoring Directive*, Alberta Environment, 1989, as amended;

(ii) for industrial wastewater, industrial runoff, groundwater and domestic wastewater:

(A) the *Standard Methods for the Examination of Water and Wastewater*, published jointly by the American Public Health Association, American Water Works Association, and the Water Environment Federation, 1998, as amended;

(iii) for whole effluent toxicity tests:

(A) the *Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout*, Environment Canada, Environmental Protection Series 1/RM/13, December 2000, as amended,

(B) the *Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Daphnia Magna*, Environment Canada, Environmental Protection Series 1/RM/14, December 2000, as amended,

(C) the *Biological Test Method: Growth Inhibition Test Using the Freshwater Alga Selenastrum capricornutum*, Environment Canada, Environmental Protection Series, November 1992, as amended,

(D) the *Biological Test Method: Test of Reproduction and Survival Using the Cladoceran Ceriodaphnia dubia*, Environment Canada, Environmental Protection Series 1/RM/21, February 1992, as amended,

(E) the *Biological Test Method: Test of Larval Growth and Survival Using Fathead Minnows*, Environment Canada, Environmental Protection Series 1/RM/22, February 1992, as amended, and

(F) the *Biological Test Method: Toxicity Test Using Luminescent Bacteria (Photobacterium phosphoreum)*, Environment Canada, Environmental Protection Series, 1/RM/24, November 1992, as amended;

(iv) for soil:

(A) the *Soil Monitoring Directive,* Alberta Environment, May 2009, as amended, and

(B) the *Soil Quality Criteria Relative to Disturbance and Reclamation*, Alberta Agriculture, March 1987, as amended; and

(v) for waste:

(A) the *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, USEPA, SW-846, September 1986, as amended,

(B) the *Methods Manual for Chemical Analysis of Water and Wastes*, Alberta Environmental Centre, Vegreville, Alberta, 1996, AECV96-M1, as amended,

(C) the *Toxicity Characteristic Leaching Procedure (TCLP)* USEPA Regulation 40 CFR261, Appendix II, Method No. 1311, as amended, or

(D) the *Standard Methods for the Examination of Water and Wastewater*, American Public Health Association, American Water Works Association, and the Water Environment Federation, 2010, as amended.

2.3.2 The approval holder shall analyse all samples that are required to be obtained by this approval in a laboratory accredited pursuant to ISO/IEC 17025, as amended, for the specific parameter(s) to be analysed, unless otherwise authorized in writing by the Director.

2.3.3 The term sample used in 2.3.2 does not include samples directed to continuous monitoring equipment, unless specifically required in writing by the Director.

2.3.4 The approval holder shall comply with the terms and conditions of any written authorization issued by the Director under 2.3.2.

SECTION 2.4: OTHER

2.4.1 The terms and conditions of this approval are severable. If any term or condition of this approval or the application of any term or condition is held invalid, the application of such term or condition to other circumstances and the remainder of this approval shall not be affected thereby.

2.4.2 Any conflict between the *Standards for Landfills in Alberta*, as amended, and the terms and conditions of this approval shall be resolved in favour of this approval.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

2.4.3 *Environmental Protection and Enhancement Act* Approval No. 10348-02-00, as amended, is cancelled.

2.4.4 All tanks shall conform to the *Guidelines for Secondary Containment for Above Ground Storage Tanks,* Alberta Environmental Protection, 1997, as amended, unless otherwise authorized in writing by the Director.

2.4.5 All above ground storage tanks containing liquid hydrocarbons or organic compounds shall conform to the *Environmental Guidelines for Controlling Emissions of Volatile Organic Compounds from Aboveground Storage Tanks*, Canadian Council of Ministers of the Environment, PN 1180, 1995, as amended.

PART 3: CONSTRUCTION

SECTION 3.1: LANDFILL

3.1.1 The approval holder shall not commence construction of:

(a) Cell 4, unless and until updated financial security of the facility has been provided to the Director to include Cell 4; and

(b) Cell 5, unless and until updated financial security of the facility has been provided to the Director to include Cell 5.

3.1.2 The approval holder shall construct each new Class I industrial landfill cell in such a way that each new Class I landfill cell shall consist of the following components, at a minimum, unless otherwise authorized in writing by the Director:

(a) a minimum of 0.45 metre thick cover of clean sand or soil placed over top of the uppermost drainage layer;

(b) a composite liner that consists of, at a minimum:

(i) a geo-composite drainage layer placed in direct contact with an underlying 80 mil HDPE geomembrane liner as a primary liner;

(ii) a geo-composite drainage layer placed in direct contact with an underlying 80 mil HDPE geomembrane liner as a secondary liner; and

(iii) a GCL liner placed in direct contact with an underlying clay liner that has:

(A) a minimum thickness of 1.0 metre at all points, measured perpendicular to the slope, and

(B) been compacted to achieve an in-place hydraulic conductivity of 1×10^{-9} m/s or less;

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(c) a leachate collection system that:

(i) is placed over the primary liner;

(ii) is capable of maintaining the maximum acceptable leachate head; and

(iii) consists of:

(A) a geo-composite drainage layer with a transmissivity of at least 1×10^{-4} m^2/s placed over top of the primary liner,

(B) a network of perforated leachate collection pipes, and

(C) a leachate collection sump placed over the primary liner;

(d) a leak detection system that:

(i) is installed over the secondary liner;

(ii) is capable of detecting the leakage through the primary liner; and

(iii) consists of:

(A) a geo-composite drainage layer with a transmissivity of at least 1×10^{-4} m^2/s placed over top of the secondary liner,

(B) a network of perforated leak detection liquid collection pipes, and

(C) a leak detection liquid collection sump placed over the secondary liner;

(e) a final cover:

(i) that meets the requirements in section 6.1(c) of the *Standards for Landfills in Alberta*, as amended; or

(ii) as specified in the Landfill Cell Closure Plan submitted by the approval holder and authorized in writing by the Director pursuant to 7.1.1 and 7.1.4;

(f) a run-on control system capable of preventing flow onto the active landfill area from at least the peak discharge from a 1 in 25 year, 24 hour duration storm event at the facility; and

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(g) a runoff control system capable of collecting and controlling at least the runoff volume resulting from a 1 in 25 year, 24 hour duration storm event at the facility.

3.1.3 For any new landfill cell(s) to be constructed below the native ground surface in the NE 09-050-17-W4M area of the facility, the approval holder shall construct the cell(s) in the following manner:

(a) shallow groundwater shall be dewatered and managed to ensure that construction specifications for the composite liner system referred to in 3.1.2 shall not be compromised;

(b) measures of groundwater dewatering and management during construction shall be documented, and the document shall be maintained as part of the documentation for construction of the composite liner system;

(c) the integrity of the composite liner system shall be verified and maintained to function as designed, and the verification shall be documented; and

(d) the documentation referred to in (b) and (c) above shall be submitted as part of the summary report required in 3.1.9.

3.1.4 The composite liner for the landfill shall be constructed on a foundation or base such that there shall be no failure of the liners due to settlement, compression, or uplift.

3.1.5 The approval holder shall submit to the Director the following plans and specifications for the proposed construction of each of the items listed in 3.1.2, signed and stamped by a professional registered with APEGA at least three (3) months prior to construction:

(a) a Detailed Construction Plan and Specifications prepared as per 3.1.2;

(b) a Construction Quality Assurance Plan; and

(c) a Construction Quality Control Plan.

3.1.6 If the Detailed Construction Plan and Specifications in 3.1.5 is found deficient by the Director, the approval holder shall correct all deficiencies as outlined in writing by the Director within the timeline specified in writing by the Director.

3.1.7 The approval holder shall implement the Detailed Construction Plan and Specifications in 3.1.5 as authorized in writing by the Director.

3.1.8 During construction of any of the items listed in 3.1.2, the approval holder shall not deviate from the Detailed Construction Plan and Specifications as authorized in writing by the Director in 3.1.7, unless the following conditions are met:

(a) the deviation results in a minor adjustment to the Detailed Construction Plan and Specifications in order to suit field conditions encountered; and

(b) the deviation will result in an equivalent or better design performance of the landfill.

3.1.9 The approval holder shall submit to the Director a summary report of the Construction Quality Assurance and Construction Quality Control results signed and stamped by a professional registered with APEGA.

3.1.10 The summary report in 3.1.9 shall contain the following information, at a minimum:

(a) confirmation that the landfill has been constructed according to:

(i) the Construction Quality Assurance Plan,

(ii) the Construction Quality Control Plan, and

(iii) the Detailed Construction Plan and Specifications as authorized in writing by the Director in 3.1.7, subject to the deviations as per 3.1.8;

(b) description of any minor deviations as per 3.1.8;

(c) confirmation by the professional registered with APEGA, that deviations as per 3.1.8 will result in an equivalent or better design performance of the landfill;

(d) “as-built” plans;

(e) photo-documentation of important stages of construction including any repair work or remediation activities to establish or maintain liner integrity;

(f) documentation required in 3.1.3; and

(g) any other information as required in writing by the Director.

3.1.11 The approval holder shall notify the Director in writing at least fourteen (14) days prior to commencing operations of any new landfill cell.

3.1.12 The approval holder shall construct the new surface water detention pond(s) in the:

(a) SE 09-050-17-W4M area of the facility as described in application No. 012-10348; and

(b) NE 09-050-17-W4M area of the facility as described in application No. 015-10348 with a clay liner that has:

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(i) a minimum thickness of 1.0 metre at all points, measured perpendicular to the slope, and

(ii) been compacted to achieve an in-place hydraulic conductivity of 1 x 10^{-9} m/s or less;

unless otherwise authorized in writing by the Director.

3.1.13 The approval holder shall construct the laydown area in the NE 09-050-17-W4M area of the facility as described in application No. 015-10348, unless otherwise authorized in writing by the Director.

3.1.14 The approval holder shall manage landfill progression in such a manner as to minimize off-site visual impacts of the landfill, as described in the Landfill Cell Closure Plan submitted by the approval holder and authorized in writing by the Director pursuant to 7.1.1 and 7.1.4.

SECTION 3.2: WASTE RECEIVING AND STABILIZATION AREAS

3.2.1 The approval holder shall construct the waste receiving area(s) in the SE 09-050-17-W4M area of the facility as described in the application, unless otherwise authorized in writing by the Director.

3.2.2 The approval holder shall construct the waste stabilization area(s) in the SE 09-050-17-W4M area of the facility in accordance with the following:

(a) application No. 008-10348; and

(b) within a Class I landfill cell;

unless otherwise authorized in writing by the Director.

3.2.3 The approval holder shall construct the central waste receiving and stabilization area in the NE 09-050-17-W4M area of the facility as described in application No. 015-10348, unless otherwise authorized in writing by the Director.

3.2.4 The approval holder shall decommission and reclaim the waste receiving and stabilization area(s) in the SE 09-050-17-W4M area of the facility upon completing:

(a) construction; and

(b) commissioning

of the central waste receiving and stabilization area in the NE 09-050-17-W4M area of the facility, unless otherwise authorized in writing by the Director.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

SECTION 3.3: SOIL CONSERVATION

3.3.1 The approval holder shall:

(a) salvage; and

(b) conserve

all topsoil for land reclamation of the landfill.

3.3.2 The approval holder shall:

(a) salvage; and

(b) conserve

all upper subsoil for land reclamation of the landfill.

3.3.3 The approval holder shall:

(a) conserve; and

(b) stockpile

all topsoil separately from the upper subsoil.

3.3.4 The approval holder shall place all:

(a) topsoil stockpiles; and

(b) upper subsoil stockpiles

at the landfill.

3.3.5 The approval holder shall stockpile all topsoil as follows:

(a) on stable foundations; and

(b) on undisturbed topsoil.

3.3.6 The approval holder shall stockpile all upper subsoil as follows:

(a) on stable foundations; and

(b) on areas where the topsoil has been removed.

3.3.7 The approval holder shall take all steps necessary to prevent any erosion (e.g., wind or water), including but not limited to, all of the following:

(a) revegetating the stockpiles; and

(b) any other steps authorized in writing by the Director.

3.3.8 The approval holder shall immediately suspend conservation of:

(a) topsoil; and

(b) upper subsoil

when:

(i) wet or frozen conditions will result in mixing, loss, degradation or compaction of topsoil or upper subsoil, or

(ii) high wind velocities, any other field conditions or facility operations will result in mixing, loss, or degradation of topsoil or upper subsoil.

3.3.9 The approval holder shall recommence conservation of:

(a) topsoil; and

(b) upper subsoil

only when conditions in 3.3.8 no longer exist.

PART 4: OPERATIONS, LIMITS, MONITORING AND REPORTING

SECTION 4.1: GENERAL

4.1.1 The approval holder shall maintain the geographical boundaries of the facility to that located within SE ¼ and NE ¼ of Section 09, Township 050, Range 17, West of the 4th Meridian, as described in the application.

4.1.2 The approval holder shall limit the waste elevation of the landfill to no more than the maximum designated waste elevation.

4.1.3 The approval holder shall restrict access to the facility to only personnel authorized by the approval holder.

4.1.4 The approval holder shall maintain a publicly available 24 hour "HOTLINE" number for a prompt response during an emergency.

4.1.5 The approval holder shall:

(a) operate; and

(b) maintain the integrity of

the following waste management facilities at the facility:

(i) the HWRSP Facility;

(ii) the Class I and Class II industrial landfill, including:

(A) Class I landfill cells,

(B) Class II landfill cell(s),

(C) waste receiving area(s), and

(D) waste stabilization area(s); and

(iii) waste storage area(s);

as described in the application.

4.1.6 In addition to 4.1.5, the approval holder shall:

(a) operate; and

(b) maintain the integrity of

the following infrastructure components at the facility:

(i) the composite liner;

(ii) the leachate collection system,

(iii) the leak detection system,

(iv) the run-on control system,

(v) the runoff control system,

(vi) the groundwater monitoring wells,

(vii) the weigh scale, and

(viii) the site access control;

as described in the application.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

FACILITY AUDIT

4.1.7 The approval holder shall cause the facility to be audited by an independent third-party environmental consultant or organization to assess compliance with the terms and conditions of this approval:

(a) at least once every three years; and

(b) commencing on or before October 1, 2018 for the first audit.

4.1.8 The approval holder shall submit the audit report required in 4.1.7 in the Annual Landfill Operations Report as required in 4.6.60(c).

4.1.9 The requirements in 4.1.7 and 4.1.8 shall not relieve the approval holder of any duty under the Act, or its associated regulations, or this approval.

FACILITY WILDLIFE MANAGEMENT PLAN

4.1.10 The approval holder shall:

(a) develop; and

(b) implement

a Facility Wildlife Management Plan at the facility to keep wildlife away from exposed waste areas within 120 days of the issuance of this approval, unless otherwise authorized in writing by the Director.

4.1.11 The approval holder shall:

(a) review the Facility Wildlife Management Plan annually; and

(b) update the Facility Wildlife Management Plan if any of the following circumstances apply:

(i) there are facility expansions or changes in site operations, or

(ii) an update is requested in writing by the Director.

4.1.12 The approval holder shall retain a copy of the most recent Facility Wildlife Management Plan at the facility.

4.1.13 The approval holder shall submit a copy of the most recent Facility Wildlife Management Plan to the Director upon written request from the Director within the timeline specified in writing by the Director.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

4.1.14 If the Facility Wildlife Management Plan submitted pursuant to 4.1.13 is found deficient by the Director, the approval holder shall correct all deficiencies identified in writing by the Director by the date specified in writing by the Director.

4.1.15 The approval hold shall implement the latest Facility Wildlife Management Plan, unless otherwise authorized in writing by the Director.

COMMUNITY COMPLAINT RESPONSE PLAN

4.1.16 The approval holder shall:

(a) develop; and

(b) implement

a Community Complaint Response Plan at the facility within 90 days of the issuance of this approval, unless otherwise authorized in writing by the Director.

4.1.17 The approval holder shall include, at a minimum, all of the following in the Community Complaint Response Plan referred to in 4.1.16:

(a) procedures and methods to be taken to respond to the complaint, which shall include but not limited to the following:

(i) recording of the complaint,

(ii) reviewing of the complaint records and other relevant information,

(iii) investigation of the complaint, and

(iv) timeline and follow-up actions for responding to the complaint based on the findings of the complaint review and investigation;

(b) the recording of the complaint referred to in (a)(i) above shall include but not limited to the following:

(i) contact information of the complainant(s) (names, phone numbers, e-mails and addresses),

(ii) detailed description of the event for which the complaint is filed,

(iii) date and time of the event occurring,

(iv) location where the event is noticed, and direction and distance of the event location relative to the facility,

(v) wind direction and speed at the facility, and

(vi) other local meteorological information at the time of the event occurring;

(c) the reviewing of the complaint referred to in (a)(ii) above shall include but not limited to the following:

(i) reviewing complaint records,

(ii) reviewing the facility operating records,

(iii) reviewing additional local meteorological data, and

(iv) timeline for reviewing the complaint;

(d) the investigation of the complaint referred to in (a)(iii) above shall include but not limited to the following:

(i) meeting complainant(s) to obtain further information related to the complaint,

(ii) visiting other local residents to collect additional information,

(iii) assessing other activities in the vicinity of the facility that may have potential for causing the event, and

(iv) timeline for the complaint investigation;

(e) the timeline and follow-up actions referred to in (a)(iv) above shall include but not limited to the following:

(i) timeline for responding to the complaint; and

(ii) follow-up actions:

(A) if the complaint is found to be related to the facility operations, the follow-up actions shall include:

(A.1) notifying the complainant(s) of the findings of the complaint review and investigation within the timeline specified in (i) above,

(A.2) taking immediate measures to correct the source(s) of the compliant,

(A.3) taking measures to prevent the issue from occurring again in future, and

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(A.4) providing a summary of the complaint review and investigation in the Annual Landfill Operations Report pursuant to 4.6.60(n); or

(B) if the complaint is found not to be related to the facility operations, the follow-up actions shall include:

(B.1) notifying the complainant(s) of the findings of the complaint review and investigation within the timeline specified in (i) above, and

(B.2) providing a summary of the complaint review and investigation in the Annual Landfill Operations Report pursuant to 4.6.60(n).

4.1.18 The approval holder shall:

(a) review the Community Complaint Response Plan annually; and

(b) update the Community Complaint Response Plan if any of the following circumstances apply:

(i) there are facility expansions or changes in site operations, or

(ii) an update is requested in writing by the Director.

4.1.19 The approval holder shall retain a copy of the most recent Community Complaint Response Plan at the facility.

4.1.20 The approval holder shall submit a copy of the most recent Community Complaint Response Plan to the Director upon written request from the Director within the timeline specified in writing by the Director.

4.1.21 If the Community Complaint Response Plan submitted pursuant to 4.1.20 is found deficient by the Director, the approval holder shall correct all deficiencies identified in writing by the Director by the date specified in writing by the Director.

4.1.22 The approval hold shall implement the latest Community Complaint Response Plan, unless otherwise authorized in writing by the Director.

PARTICIPATION IN DEVELOPMENT OF LOCAL EMERGENCY MANAGEMENT PLANS

4.1.23 The approval holder shall support the Village of Ryley and Beaver County in the development of Local Emergency Management Plans by providing assistance to the Village and County in, at a minimum, all of the following:

(a) identifying hazards at the facility;

(b) assessing degree of risk of the hazards at the facility;

(c) suggesting risk mitigation measures;

(d) offering input to development of emergency notification and emergency evacuation procedures for local residents;

(e) keeping the Village and County updated for any major new development at the facility; and

(f) advising the Village and County of the need for updating the Local Emergency Management Plans following any major new development at the facility.

FACILITY EMERGENCY MANAGEMENT PLAN

4.1.24 The approval holder shall:

(a) develop; and

(b) implement

a Facility Emergency Management Plan at the facility within 90 days of the issuance of this approval, unless otherwise authorized in writing by the Director.

4.1.25 The Facility Emergency Management Plan referred to in 4.1.24 shall include, at a minimum, all of the following:

(a) identification of hazards at the facility;

(b) assessment of degree of risk and impact of hazards at the facility;

(c) preventative measures for hazards at the facility;

(d) mitigation measures for hazards at the facility;

(e) emergency preparedness at the facility;

(f) procedures for emergency management at the facility; and

(g) emergency notification and emergency evacuation procedures for local residents.

4.1.26 The approval holder shall:

(a) review the Facility Emergency Management Plan annually; and

(b) update the Facility Emergency Management Plan if any of the following circumstances apply:

(i) there are facility expansions or changes in site operations, or

(ii) an update is requested in writing by the Director.

4.1.27 The approval holder shall retain a copy of the most recent Facility Emergency Management Plan at the facility.

4.1.28 The approval holder shall submit a copy of the most recent Facility Emergency Management Plan to the Director upon written request from the Director within the timeline specified in writing by the Director.

4.1.29 If the Facility Emergency Management Plan submitted pursuant to 4.1.28 is found deficient by the Director, the approval holder shall correct all deficiencies identified in writing by the Director by the date specified in writing by the Director.

4.1.30 The approval hold shall implement the latest Facility Emergency Management Plan, unless otherwise authorized in writing by the Director.

COMMUNITY ACCESIBLE WEBSITE

4.1.31 The approval shall:

(a) develop; and

(b) maintain

a community accessible website available to all local residents within 120 days of the issuance of this approval, unless otherwise authorized in writing by the Director.

4.1.32 The community accessible website referred to in 4.1.31 shall include, at a minimum, all of the following information:

(a) Annual Landfill Operations Reports (including the three-year compliance audit report, Annual Dugout and Water Well Sampling Program Report, and Annual Landfill Cell Closure Report, etc.);

(b) Monthly Waste Management Report, and Annual Waste Management Summary Report;

(c) Monthly Ambient Air Monitoring Report, and Annual Ambient Air Monitoring Report;

(d) Monthly Runoff and Industrial Wastewater Report, and Annual Runoff and Industrial Wastewater Report;

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(e) Annual Groundwater Monitoring Program Report;

(f) Soil Monitoring Program Report, and Soil Management Program Report;

(g) Facility Wildlife Management Plan;

(h) Community Complaint Response Plan;

(i) regulatory correspondences for incidents and complaints;

(j) correspondences made to Alberta Environment and Parks and copied CAOs at the Village of Ryley and Beaver County;

(k) Facility Emergency Management Plan, including emergency notification and emergency evacuation procedures;

(l) Village of Ryley Emergency Management Plan, including emergency notification and emergency evacuation procedures;

(m) Beaver County Emergency Management Plan, including emergency notification and emergency evacuation procedures; and

(n) any other information as requested in writing by the Director.

4.1.33 The approval holder shall:

(a) review the community accessible website annually; and

(b) update the website if any of the following circumstances apply:

(i) there are facility expansions or changes in site operations, or

(ii) an update is requested in writing by the Director.

SECTION 4.2: AIR

OPERATIONS

4.2.1 The approval holder shall not release any air effluent streams to the atmosphere except as authorized by this approval.

4.2.2 The approval holder shall only release air effluent streams to the atmosphere from the following sources:

(a) the scrubber exhaust stack;

(b) the Drum Processing Building natural gas fired air make up unit exhaust vent;

(c) the Staging Building natural gas fired air make up unit exhaust vent;

(d) the Administration Building natural gas fired furnaces exhaust vents;

(e) the Laboratory fume hood and natural gas fired air make up unit exhaust vents;

(f) the Maintenance Shop equipment and natural gas fired Radiant Heater exhaust vents;

(g) the Leachate Collection Tanks natural gas fired heaters exhaust vents;

(h) the leachate transfer lines passive gas vents; and

(i) any other source authorized in writing by the Director.

4.2.3 The approval holder shall not operate any process equipment unless and until the pollution abatement equipment associated with the corresponding process equipment is:

(a) operational; and

(b) operating.

4.2.4 The approval holder shall treat all air effluent streams from the exhaust vents of the Drum Processing or Staging or both Buildings with a caustic scrubber and an activated carbon filter before directing the air effluent streams to the scrubber exhaust stack for release to the atmosphere while:

(a) hazardous waste or hazardous recyclables or both are being processed;

(b) hazardous waste or hazardous recyclables or both are being transferred; or

(c) containers of hazardous waste or hazardous recyclables or both are open

in the Drum Processing or Staging or both Buildings.

4.2.5 The approval holder shall control fugitive emissions and any source not specified in 4.2.2 in accordance with 4.2.6 of this approval unless otherwise authorized in writing by the Director.

4.2.6 With respect to fugitive emissions and any source not specified in 4.2.2, the approval holder shall not release a substance or cause to be released a substance that causes or may cause any of the following:

(a) impairment, degradation or alteration of the quality of natural resources;

(b) material discomfort, harm or adverse effect to the well being or health of a person; or

(c) harm to property or to vegetative or animal life.

4.2.7 The approval holder shall not burn any debris by means of an open fire unless authorized in writing by the Director.

4.2.8 If the approval holder receives complaints of offensive odours, or fugitive dust, or both, beyond the facility boundaries, the approval holder shall:

(a) conduct the following to reduce the release of those odours, or fugitive dust, or both by:

(i) placing restrictions on types, or volumes, or both, of the wastes being handled or processed or deposited that are causing those odours, or fugitive dust, or both,

(ii) increasing the frequency of cover placement, or modifying waste handling activities, or performing both, at the landfill,

(iii) modifying waste handling activities at the HWRSP Facility, or

(iv) performing any combination of the above; and

(b) activate the Odour and Fugitive Dust Response Program as specified in the Landfill Operations Plan in 4.6.34(l).

LIMITS

4.2.9 The approval holder shall maintain the pH of the scrubbing liquid of the caustic scrubber referred to in 4.2.4 at 8.0 or higher.

4.2.10 The approval holder shall replace activated carbon in the activated carbon filter referred to in 4.2.4 immediately when the concentration of total petroleum hydrocarbons in the air effluent streams released from the scrubber exhaust stack to the atmosphere exceeds 25 ppm.

SOURCE MONITORING AND REPORTING

4.2.11 The approval holder shall monitor, daily at a minimum, the pH of the scrubbing liquid of the caustic scrubber referred to in 4.2.4.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

4.2.12 The approval holder shall monitor, weekly at a minimum, the air effluent streams released from the scrubber exhaust stack, using a portable total petroleum hydrocarbon analyzer while:

(a) hazardous waste or hazardous recyclables or both are being processed;

(b) hazardous waste or hazardous recyclables or both are being transferred; or

(c) containers of hazardous waste or hazardous recyclables or both are open

in the Drum Processing or Staging or both Buildings.

4.2.13 The portable total petroleum hydrocarbon analyzer referred to in 4.2.12 shall:

(a) have a detection limit of 1 ppm or lower for total petroleum hydrocarbons;

(b) be located in a straight section of the scrubber exhaust stack, a minimum of one (1) metre downstream from the last flow disturbance; and

(c) be calibrated regularly in accordance with the analyzer manufacturer's specifications.

AMBIENT AIR MONITORING AND REPORTING

4.2.14 The approval holder shall continue to implement the Ambient Air Monitoring Program as authorized in writing by the Director on June 24, 2009, unless and until otherwise authorized in writing by the Director pursuant to 4.2.21.

4.2.15 The approval holder shall submit to the Director the results of the Ambient Air Monitoring Program in 4.2.14 with the following reports:

(a) a Monthly Ambient Air Monitoring Report; and

(b) an Annual Ambient Air Monitoring Report

in accordance with the written authorization by the Director on June 24, 2009, unless and until otherwise authorized in writing by the Director pursuant to 4.2.21.

4.2.16 The approval holder shall submit:

(a) a revised Ambient Air Monitoring Program;

(b) revised reporting requirements, or

(c) both of the above

to the Director upon written request from the Director within the timeline specified in writing by the Director.

4.2.17 The approval holder shall submit an enhanced Ambient Air Quality Monitoring Program to the Director within 90 days of the issuance of this approval, unless otherwise authorized in writing by the Director.

4.2.18 The approval holder shall include, at a minimum, all of the following in the enhanced Ambient Air Quality Monitoring Program referred to in 4.2.17:

(a) three (3) intermittent ambient air quality monitoring stations:

(i) the existing Highway 854 station,

(ii) the existing Ryley School station, and

(iii) the existing Facility Site station, to be relocated as authorized in writing by the Director;

(b) the following monitoring parameters for the existing Highway 854 station:

(i) TSP,

(ii) PM_{10} (for 2 year transition from PM_{10} to TSP, starting from authorization of the enhanced Ambient Air Quality Monitoring Program by the Director),

(iii) total metals in:

(A) TSP, and

(B) PM_{10} (for 2 year transition from PM_{10} to TSP, starting from authorization of the enhanced Ambient Air Quality Monitoring Program by the Director),

if concentration of TSP or PM_{10} exceeds 50 $\mu g/m^3$,

(iv) VOCs, and

(v) TNMOCs;

(c) the following monitoring parameters for the Ryley School and Facility Site stations:

(i) TSP, and

(ii) total metals in TSP, if concentration of TSP exceeds 50 $\mu g/m^3$; and

(d) the following monitoring frequencies for the three (3) stations referred to in (a) above:

(i) for the Highway 854 station, once every six (6) days in alignment with the NAPS sampling schedule, and

(ii) for the Ryley School and Facility Site stations, linking the two (2) stations in such a way that the two (2) stations will collect air samples whenever the wind direction is oriented in a northeast to southwest direction.

4.2.19 The approval holder shall include a minimum of one (1) meteorological station in each of the Ryley School and Facility Site intermittent ambient air quality monitoring stations referred to in 4.2.18(a) that measures and records, at a minimum, all of the following parameters:

(a) wind speed; and

(b) wind direction.

4.2.20 If the revised:

(a) Ambient Air Monitoring Program;

(b) reporting requirements; or

(c) both of the above

submitted pursuant to 4.2.16 or 4.2.17 is found deficient by the Director, the approval holder shall correct all deficiencies as outlined in writing by the Director within the timeline specified in writing by the Director.

4.2.21 The approval holder shall implement the revised:

(a) Ambient Air Monitoring Program;

(b) reporting requirements; or

(c) both of the above

submitted pursuant to 4.2.16 or 4.2.17 as authorized in writing by the Director within the timeline specified in writing by the Director.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

SECTION 4.3: RUNOFF AND INDUSTRIAL WASTEWATER

OPERATIONS

4.3.1 The approval holder shall not release any substances from the facility to the surrounding watershed except as authorized by this approval.

4.3.2 The approval holder shall operate and maintain the integrity of:

(a) the run-on control system to prevent flow onto the active landfill area from at least the peak discharge from a 1 in 25 year, 24 hour duration storm event at the facility; and

(b) the runoff control system for the facility to collect and control at least the runoff volume resulting from a 1 in 25 year, 24 hour duration storm event at the facility.

4.3.3 All runoff from the facility developed area shall be directed to the runoff control system as described in:

(a) application No. 012-10348, for the SE 09-050-17-W4M area of the facility, prior to decommissioning and reclamation of the old surface water detention pond;

(b) application No. 014-10348, for the SE 09-050-17-W4M area of the facility, after decommissioning and reclamation of the old surface water detention pond; and

(c) application No. 015-10348, for the NE 09-050-17-W4M area of the facility;

unless otherwise authorized in writing by the Director.

4.3.4 Prior to decommissioning and reclamation of the old surface water detention pond and subject to 4.3.8, the approval holder shall only make or permit a release from the old surface water detention pond:

(a) at the release point as designated in application No. 012-10348, which is:

(i) located in the south east corner of the old surface water detention pond, and

(ii) referred to as sampling location A1 in 4.3.12; and

(b) through

(i) a pump and a release hose over the south berm into the drainage control ditch, east of the landfill access road, to the new surface water

detention pond in the SE 09-050-17-W4M area of the facility, under normal operating conditions; or

(ii) a pump and a release hose over the south berm directly to the culvert under Highway 854, during periods of high runoff exceeding the holding capacity of the new surface water detention pond in the SE 09-050-17-W4M area of the facility;

unless otherwise authorized in writing by the Director.

4.3.5 Subject to 4.3.8, the approval holder shall only make or permit a release from the new surface water detention pond in the SE 09-050-17-W4M area of the facility:

(a) at the release point as designated in application No. 012-10348, which is:

(i) located in the north east corner of the new surface water detention pond in the SE 09-050-17-W4M area of the facility, and

(ii) referred to as sampling location B1 in 4.3.12; and

(b) through a pump and a release hose over the east berm into the culvert under Highway 854;

unless otherwise authorized in writing by the Director.

4.3.6 Subject to 4.3.8, the approval holder shall only make or permit a release from each of the new surface water detention pond(s) in the NE 09-050-17-W4M area of the facility:

(a) through a pump and a release hose into the drainage control ditch, east of the landfill access road, to the new surface water detention pond in the SE 09-050-17-W4M area of the facility, under normal operating conditions; or

(b) through a pump and a release hose directly to the culvert under Highway 854, during periods of high runoff exceeding the holding capacity of the new surface water detention pond in the SE 09-050-17-W4M area of the facility;

unless otherwise authorized in writing by the Director.

4.3.7 The approval holder shall only dispose of industrial wastewaters, or specified runoff in TABLE 4.3-A, or both, by one or more of the following methods:

(a) to facilities holding a current Act authorization to accept such waste;

(b) to facilities approved by a local environmental authority outside of Alberta to accept such waste;

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(c) to a disposal well approved by AER;

(d) as per 4.6.52; or

(e) as otherwise authorized in writing by the Director.

TABLE 4.3-A: SPECIFIED RUNOFF

SOURCES
Runoff that exceeds any of the limits for the parameters listed in TABLE 4.3-B.
Runoff for which the results of the parameters listed in TABLE 4.3-B are unavailable at the time that the runoff must be disposed of.
Runoff from within the tank farm bermed area.

LIMITS

4.3.8 Releases of runoff:

(a) from the old surface water detention pond to the surrounding watershed;

(b) from the new surface water detention pond in the SE 09-050-17-W4M area of the facility to the surrounding watershed;

(c) from each of the new surface water detention pond(s) in the NE 09-050-17-W4M area of the facility to the surrounding watershed, or to the new surface water detention pond in the SE 09-050-17-W4M area of the facility; or

(d) from any combination of the above

shall comply with the limits specified in TABLE 4.3-B.

TABLE 4.3-B: RUNOFF LIMITS FOR SURFACE WATER DETENTION PONDS

PARAMETER	LIMITS (Maximum unless otherwise indicated)
pH	6.0 – 9.5 pH units
COD	50 mg/L
TDS	2500 mg/L
TSS	25 mg/L
Ammonia (expressed as Nitrogen)	5 mg/L
Chloride	250 mg/L
Sodium	200 mg/L
Sulphate	500 mg/L
Oil or other substances	Not present in amounts sufficient to create a visible film or sheen
96-Hour Multiple Concentration Acute Lethality Test Using Rainbow Trout (*Oncorhynchus mykiss*)	50% or greater survival

TERMS AND CONDITIONS ATTACHED TO APPROVAL

4.3.9 Releases of runoff from within the tank farm bermed area to the old or new or both surface water detention ponds shall comply with the limits specified in TABLE 4.3-C.

TABLE 4.3-C: RUNOFF LIMITS FOR TANK FARM BERMED AREA

PARAMETER	LIMITS Maximum unless otherwise indicated
pH	6.0 – 9.5 pH units
COD	50 mg/L
TSS	25 mg/L
Ammonia (expressed as Nitrogen)	5 mg/L
Oil or other substances	Not present in amounts sufficient to create a visible film or sheen

MONITORING AND REPORTING

4.3.10 The approval holder shall monitor the runoff control system as required in TABLE 4.3-D, subject to 4.3.13.

4.3.11 The approval holder shall report to the Director the results of the runoff control system monitoring as required in TABLE 4.3-D, subject to 4.3.13.

4.3.12 For the purpose of TABLE 4.3-D:

(a) sampling location A1 is defined as the old surface water detention pond release point;

(b) sampling location A2 is defined as the old surface water detention pond;

(c) sampling location B1 is defined as the release point of the new surface water detention pond in the SE 09-050-17-W4M area of the facility;

(d) sampling location B2 is defined as the new surface water detention pond in the SE 09-050-17-W4M area of the facility;

(e) sampling location C1 is defined as the release point of each of the new surface water detention pond(s) in the NE 09-050-17-W4M area of the facility;

(f) sampling location C2 is defined as each of the new surface water detention pond(s) in the NE 09-050-17-W4M area of the facility; and

(g) sampling location D is defined as the tank farm bermed area.

4.3.13 The monitoring and reporting requirements in 4.3.10 and 4.3.11 for the old surface water detention pond (sampling locations A1 and A2) shall not apply after decommissioning and reclamation of the old surface water detention pond.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

TABLE 4.3-D: RUNOFF CONTROL SYSTEM MONITORING AND REPORTING

MONITORING				REPORTING	
Parameter	**Frequency**	**Sample Type**	**Sampling Location**	**Monthly**	**Annually**
Surface Water Detention Ponds				Monthly Runoff and Industrial Wastewater Report, for each month when release occurs	Annual Runoff and Industrial Wastewater Report
Flow (m^3/day)	Daily during release	Estimate	A1, B1, C1		
pH	Once per batch release, prior to release	Representative Grab	A2, B2, C2		
COD					
TDS					
TSS					
Ammonia (expressed as nitrogen)					
Chloride					
Sodium					
Sulphate					
Oil or other substances	Daily during release	Visual			
96-hour multiple concentration acute lethality test using rainbow trout (*oncorhynchus mykiss*)	Each month when release occurs, prior to release, for the first batch release of the month	Representative Grab			
48-hour static acute lethality test using *daphnia magna*					
Tank Farm Bermed Area					
Volume (m^3)	Total batch volume released	Estimate	D		
pH	Once per batch release, prior to release to the surface water detention pond(s)	Representative Grab			
COD					
TSS					
Ammonia (expressed as nitrogen)					
Oil or other substances		Visual			

4.3.14 The monitoring and reporting required in TABLE 4.3-D for the acute lethality tests shall comply with:

(a) the *Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout*, Environment Canada, Environmental Protection Series 1/RM/13, December2000, as amended; and

(b) the *Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Daphnia Magna*, Environment Canada, Environmental Protection Series 1/RM/14, December 2000, as amended.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

4.3.15 The approval holder shall:

(a) treat any acute lethality test that deviates from the corresponding test method referred to in 4.3.14 as invalid; and

(b) repeat the test as soon as logistically possible.

4.3.16 In the event that less than 50% of the rainbow trout survived in the 100% concentration sample, the approval holder shall:

(a) implement a program immediately to identify the source of the toxicity; and

(b) submit to the Director within 90 days after the test result is available, a proposed program to reduce the toxicity of the runoff.

4.3.17 The approval holder shall submit the Monthly Runoff and Industrial Wastewater Report in TABLE 4.3-D to the Director.

4.3.18 The Monthly Runoff and Industrial Wastewater Report shall include, at a minimum, all of the following information:

(a) a monthly assessment of the monitoring results relative to the limits in TABLE 4.3-B;

(b) a monthly assessment of the monitoring results relative to the limits in TABLE 4.3-C;

(c) a monthly assessment of the performance of the:

(i) runoff control system,

(ii) pollution abatement equipment, and

(iii) monitoring equipment;

(d) a monthly summary of management and disposal of the:

(i) industrial wastewaters, and

(ii) specified runoff

as per 4.3.7;

(e) a monthly summary of management and disposal of runoff in general;

(f) a monthly summary of runoff contraventions reported pursuant to 2.1.1; and

(g) any other information as required in writing by the Director.

4.3.19 The approval holder shall submit the Annual Runoff and Industrial Wastewater Report in TABLE 4.3-D to the Director.

4.3.20 The Annual Runoff and Industrial Wastewater Report shall include, at a minimum, all of the following information:

(a) an annual summary assessment of the monitoring results relative to the limits in TABLE 4.3-B;

(b) an annual summary assessment of the monitoring results relative to the limits in TABLE 4.3-C;

(c) an annual summary assessment of the performance of the:

(i) runoff control system,

(ii) pollution abatement equipment, and

(iii) monitoring equipment;

(d) an annual summary of management and disposal of the:

(i) industrial wastewaters, and

(ii) specified runoff

as per 4.3.7;

(e) an annual summary and evaluation of management and disposal of runoff in general;

(f) an annual summary of the results pursuant to 4.3.22;

(g) an annual summary of runoff contraventions reported pursuant to 2.1.1; and

(h) any other information as required in writing by the Director.

4.3.21 The approval holder shall:

(a) collect a representative grab sample from the old surface water detention pond at least once per year, prior to decommissioning and reclamation of the pond;

(b) collect a representative grab sample from each of the new surface water detention ponds at least once per year; and

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(c) analyze the samples for all of the parameters specified in TABLE 4.3-E.

TABLE 4.3-E: ANNUAL MONITORING OF SURFACE WATER DETENTION POND

PARAMETERS			
pH	TDS; TSS	Fluoride, dissolved	Phenols
Electrical conductivity	Metals	Cyanide (weak acid dissociable)	Total chlorinated phenols
COD	Major ions	BTEX	Polychlorinated biphenyls, total
DOC	Nutrients	Petroleum Hydrocarbons Fractions F1 and F2	Total organic halogens

4.3.22 The approval holder shall submit the results of the analyses in 4.3.21 to the Director in the Annual Runoff and Industrial Wastewater Report.

SECTION 4.4: LEACHATE COLLECTION AND LEAK DETECTION

OPERATIONS

4.4.1 The approval holder shall only dispose of leachate removed from the leachate collection system by one or more of the following methods:

(a) to facilities holding a current Act authorization to accept such waste;

(b) to facilities approved by a local environmental authority outside of Alberta to accept such waste;

(c) to a disposal well approved by AER; or

(d) as per 4.6.52.

4.4.2 The approval holder shall only dispose of liquid removed from the leak detection system by one or more of the following methods:

(a) to facilities holding a current Act authorization to accept such waste;

(b) to facilities approved by a local environmental authority outside of Alberta to accept such waste;

(c) to a disposal well approved by AER; or

(d) as per 4.6.52.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

LIMITS

4.4.3 Subject to 4.4.4, the approval holder shall not exceed the maximum acceptable leachate head in any landfill cell.

4.4.4 Subsequent to a storm event, the leachate head in any landfill cell shall not exceed the maximum acceptable leachate head for more than fourteen (14) days, unless otherwise authorized in writing by the Director.

4.4.5 The volume of liquid in the leak detection system, as monitored in TABLE 4.6-D, shall not exceed the action leakage rate in any landfill cell.

MONITORING AND REPORTING

4.4.6 The approval holder shall monitor the leachate collection and leak detection systems as required in TABLE 4.6-D and for all parameters specified in TABLE 4.4-A, subject to 4.4.8 and 4.4.9.

4.4.7 The approval holder shall report to the Director the results of the leachate collection and leak detection systems monitoring as required in TABLE 4.6-D, including the results of the analyses for all parameters specified in TABLE 4.4-A, subject to 4.4.8 and 4.4.9.

TABLE 4.4-A: LEACHATE AND LEAK DETECTION LIQUID MONITORING

PARAMETERS		
pH (field and laboratory)	TDS	Nutrients
Electrical conductivity (field and laboratory)	TSS	BTEX
COD	Metals	Phenols
DOC	Major Ions	Petroleum Hydrocarbons Fractions F1 and F2

4.4.8 The requirements in 4.4.6 and 4.4.7 for monitoring and reporting the parameters in TABLE 4.4-A for leachate shall not apply if insufficient leachate is available for conducting the analyses.

4.4.9 The requirements in 4.4.6 and 4.4.7 for monitoring and reporting the parameters in TABLE 4.4-A for leak detection liquid shall not apply if insufficient leak detection liquid is available for conducting the analyses.

4.4.10 If the volume of liquid removed from the leak detection system exceeds the action leakage rate, in addition to reporting pursuant to 2.1.1, the approval holder shall submit a Response Action Plan to the Director within 30 days of the exceedance.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

SECTION 4.5: DUGOUTS AND WATER WELLS IN SURROUNDING AREA

MONITORING AND REPORTING

4.5.1 The approval holder shall:

(a) collect a representative sample from:

(i) each of the dugouts, and

(ii) each of the water wells

within an approximate 1.6 kilometre radius around the facility; and

(b) analyze the sample for the parameters listed in TABLE 4.5-A;

unless the approval holder is not granted access by the landowner.

TABLE 4.5-A: DUGOUT AND WATER WELL MONITORING

PARAMETERS		
pH (field and laboratory)	TDS	Nutrients
Electrical conductivity (field and laboratory)	TSS	BTEX
COD	Metals	Phenols
DOC	Major Ions	Petroleum Hydrocarbons Fractions F1 and F2

4.5.2 The monitoring required in 4.5.1 shall be conducted once each year in October unless otherwise authorized in writing by the Director.

4.5.3 The approval holder shall record the analytical results of the sampling information required in 4.5.1 in an Annual Dugout and Water Well Sampling Program Report.

4.5.4 The approval holder shall submit the Annual Dugout and Water Well Sampling Program Report to the Director pursuant to 4.6.60(i).

SECTION 4.6: HWRSP FACILITY AND LANDFILL

GENERAL

4.6.1 The approval holder shall not:

(a) receive;

(b) process;

(c) dispose of; or

(d) perform any combination of the above for

any of the following wastes, individually or in any combination, at the respective locations specified below:

(i) explosives (Class 1 TDGR wastes), at the facility;

(ii) radioactive wastes (Class 7 TDGR wastes), at the facility;

(iii) radioactive wastes regulated under the *Nuclear Safety and Control Act* (Canada), at the facility;

(iv) biomedical waste, at the facility;

(v) waste containing free liquids, at the landfill, excluding the waste stabilization area;

(vi) material containing ozone depleting substances, at the landfill;

(vii) municipal solid waste, at the facility;

(viii) NORM waste, at the facility;

(ix) waste generating offensive odours, at the facility, unless and until effective control measures are provided to prevent releases of offensive odours to the outside of the facility fenceline.

4.6.2 Incompatible wastes and incompatible hazardous recyclables shall be prevented from mixing.

4.6.3 The approval holder shall dispose of wastes generated at the facility only:

(a) to facilities holding a current Act authorization;

(b) to facilities approved by a local environmental authority outside of Alberta; or

(c) as otherwise authorized in writing by the Director.

HWRSP FACILITY

OPERATIONS PLAN

4.6.4 The approval holder shall:

(a) develop;

(b) keep up-to-date; and

(c) implement

an HWRSP Facility Operations Plan.

4.6.5 The approval holder shall:

(a) review the HWRSP Facility Operations Plan annually, at a minimum; and

(b) update the HWRSP Facility Operations Plan if any of the following circumstances apply:

(i) there are facility expansions or changes in site operations or equipment,

(ii) there is an applicable change to an applicable regulation, or

(iii) an update is required in writing by the Director.

4.6.6 The approval holder shall retain a copy of the most recent HWRSP Facility Operations Plan at the facility.

4.6.7 The approval holder shall submit a copy of the most recent HWRSP Facility Operations Plan to the Director upon written request from the Director within the timeline specified in writing by the Director.

4.6.8 If the HWRSP Facility Operations Plan submitted pursuant to 4.6.7 is found deficient by the Director, the approval holder shall correct all deficiencies identified in writing by the Director by the date specified in writing by the Director.

4.6.9 The approval hold shall implement the latest HWRSP Facility Operations Plan, unless otherwise authorized in writing by the Director.

OPERATIONS

4.6.10 The approval holder shall only transfer wastes and hazardous recyclables at designated transfer areas designed to contain spills and leaks.

4.6.11 The approval holder shall use the following when transferring substances to, from, and between containers, tanks, and trucks:

(a) couplings equipped with seals that are compatible with the substance transferred;

(b) the necessary precautions to prevent spills when the couplings are disconnected;

(c) emergency shut-off valves;

(d) established transfer areas and associated curbing, paving and catchment areas;

(e) drip trays to capture potential losses under coupling devices and other connections; and

(f) manual inspections of the transfer area for leaks and spills during and after waste transfer.

4.6.12 All wastes and all hazardous recyclables that are unloaded shall be immediately transferred to the waste storage area.

4.6.13 All containers and unrinsed empty containers shall be stored in the waste storage area.

4.6.14 The approval holder shall:

(a) provide and maintain an adequate aisle space between containers in the waste storage area to allow:

(i) inspection, and

(ii) unobstructed movement of personnel, fire protection equipment, spill control equipment and decontamination equipment to any area of the waste storage area; and

(b) arrange inspection aisles in the waste storage area such that the identification label on each container is readable.

4.6.15 All tanks within the tank farm area shall be equipped, at a minimum, with all of the following:

(a) sensors for detecting the level in each tank;

(b) high level alarms that activate when a tank overfill is imminent;

(c) automatic shut-off devices or sufficient free board space above the high level sensor to allow operators time to prevent overfill from occurring; and

(d) earthen dikes or equivalent secondary containment structures capable of containing 110% of the volume of the largest tank within the bermed area plus 10% of the aggregate capacity of all other tanks in the bermed area.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

4.6.16 All tanks containing hazardous waste and all tanks containing hazardous recyclables in each building shall be equipped, at a minimum, with all of the following:

(a) sensors or gauges for detecting the level in each tank;

(b) a written operating procedure to prevent tank overfill; and

(c) secondary containment structures capable of containing 110% of the volume of the largest tank within the building plus 10% of the aggregate capacity of all other tanks containing hazardous waste and hazardous recyclables in the same building.

4.6.17 Hazardous waste and hazardous recyclables stored in containers and tanks shall be stored in accordance with the *Hazardous Waste Storage Guidelines*, June 1988, Alberta Environment, as amended.

4.6.18 The approval holder shall only carry out the following activities, individually or in any combination, at the HWRSP Facility in relation to hazardous waste or hazardous recyclables or both:

(a) commingling of hazardous waste or hazardous recyclables to make maximum use of available container or tank capacity, only if the resultant mixture has the same TDGR hazard classification as any one of the individual components;

(b) phase separation by gravity settling, only without the addition of any chemicals designed to accelerate settling;

(c) dispersion of solids into liquids by natural or mechanical means, only if the resultant mixture has the same TDGR hazard classification as the original waste;

(d) physical segregation of hazardous from non-hazardous articles or components from the same container, only if no process equipment is used;

(e) washing of drums or other objects, only for the purpose of removing hazardous residue;

(f) crushing or shredding of used filters, rags, absorbent materials, or empty containers, only for the purpose of volume reduction or liquid recovery, unless otherwise authorized in writing by the Director; or

(g) treatment of hazardous waste, only as authorized in writing by the Director.

4.6.19 Notwithstanding 4.6.18(g), the approval holder shall not incinerate waste at the facility.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

LIMITS

4.6.20 The approval holder shall not store a total of more than 752,500 litres of hazardous waste or hazardous recyclables or both at the HWRSP Facility at any time.

4.6.21 In addition to the storage limits in 4.6.20, the approval holder shall not exceed the waste storage limits as specified in TABLE 4.6-A.

TABLE 4.6-A: STORAGE LIMITS FOR HAZARDOUS WASTE OR HAZARDOUS RECYCLABLES OR BOTH AT HWRSP FACILITY

Waste/Recyclable Type	Material	Maximum Quantity
Containers: Hazardous waste or hazardous recyclables or both	TDGR Classification 2, 3, 4, 5, 6, 8 or 9 waste type only	512,500 litres (consisting of 2,500 drum equivalents, each 205 litre capacity)
Bulk Tanks: Hazardous waste or hazardous recyclables or both	Waste flammable liquids, used oil, or wastewaters; or TDGR Classification 3, 5, 6, 8 or 9 waste type only	240,000 litres (consisting of a total of 135 m^3 in the tank farm area, and a total of 105 m^3 inside the buildings)

4.6.22 Containers other than 205 litre drums shall be prorated to 205 litre drum equivalents based on their nominal volumes, e.g., 10 X 20 litre pails = 1 X 205 litre drum.

4.6.23 The limits referred to in 4.6.20 and 4.6.21 shall be calculated based on the:

(a) total nominal volumes of all containers, treating all partially filled containers as if they were full; and

(b) total filled capacities of all tanks.

MONITORING AND REPORTING

4.6.24 The approval holder shall:

(a) identify;

(b) characterize; and

(c) classify

all waste streams and all hazardous recyclables, generated or received at the HWRSP Facility, not including runoff, industrial wastewater streams and air effluent streams in accordance with the:

(i) *Industrial Waste Identification and Management Options*, Alberta Environment, May 1996, as amended, and

(ii) *Alberta User Guide for Waste Managers*, Alberta Environment, August 1996, as amended.

4.6.25 The approval holder shall measure or, when not feasible to measure, estimate, the quantity of each waste and hazardous recyclable identified in 4.6.24 each year.

4.6.26 The approval holder shall keep a daily:

(a) total; and

(b) inventory

of all materials being stored at the HWRSP Facility.

4.6.27 The daily total and inventory records in 4.6.26 shall be available at the facility at all times for inspection by the Director or an inspector.

4.6.28 The approval holder shall submit a Monthly Waste Management Report to the Director.

4.6.29 The approval holder shall compile all of the information indicated in TABLE 4.6-B in the Monthly Waste Management Report which shall contain, at minimum, all of the following information:

(a) an opening waste and hazardous recyclables inventory balance in kilograms or litres by waste class or material type;

(b) the amount and type of waste and hazardous recyclables received:

(i) within the province, and

(ii) from outside the province;

(c) the amount and type of waste and hazardous recyclables:

(i) shipped for recycling or product,

(ii) shipped off-site for disposal, and

(iii) disposed on-site;

(d) any adjustments, including but not limited to, consolidation, reclassification, losses to processing, spills, volume miscalculations, or any other

TERMS AND CONDITIONS ATTACHED TO APPROVAL

TABLE 4.6-B: MONTHLY WASTE INVENTORY REPORT (BY WASTE CLASS)

COMPANY NAME: _____ APPROVAL NO.: _____
REPORT PERIOD: MONTH _____ YEAR _____

CLASS	UNIT (Kg or L)	OPENING BALANCE	+ RECEIVED IN PROVINCE	+ RECEIVED OUT OF PROVINCE	- SHIPPED *		- ON-SITE DISPOSAL	+ or - ADJUSTMENT **	CLOSING BALANCE	APPROVAL LIMIT
					RECYCLING / PRODUCT	OFF-SITE DISPOSAL				
2										
3										
4										
5										
6.1										
8										
9.1										
9.2										
9.3										
PCB										
NR										
TOTAL										XXXXX
							No. of Containers On site			XXXXX
							Total Litres in Bulk Tanks			XXXXX

Name of Company Official: _____ Title: _____ Signature: _____

Report Date: _____

* Provide a list of the recycling and disposal locations.

** Identity the amount and reason for each adjustment.
Adjustments include consolidation/reclassification, losses to processing, spills, volume miscalculations, or any other circumstances, which would affect the mass balance of the monthly inventory report.

circumstances, which would affect the mass balance of the monthly inventory report;

(e) closing balance in kilograms or litres;

(f) a summary of contraventions reported pursuant to 2.1.1 related to waste and hazardous recyclables; and

(g) any other information as required in writing by the Director.

4.6.30 The approval holder shall compile all the information required by 4.6.24 and 4.6.25 in an Annual Waste Management Summary Report:

(a) as specified in TABLE 4.6-C; and

(b) in accordance with the:

(i) *Industrial Waste Identification and Management Options*, Alberta Environment, May 1996, as amended, and

(ii) *Alberta User Guide for Waste Managers*, Alberta Environment, August 1996, as amended.

TABLE 4.6-C: ANNUAL WASTE MANAGEMENT SUMMARY

Waste or Hazardous Recyclable Name	Uniform Waste Code				Quantity (kg or L)		Stored	Recycled		Disposed	
	WC	PIN	Class	Mgmt	Hazardous	Non-hazardous	On-site	On-site	Off-site	On-site	Off-site
				TOTAL							

4.6.31 The approval holder shall submit the Annual Waste Management Summary Report to the Director.

LANDFILL

OPERATIONS PLAN

4.6.32 The approval holder shall:

(a) develop;

(b) keep up-to-date; and

(c) implement

a Landfill Operations Plan that does not contravene with the requirements of this approval.

4.6.33 The approval holder shall:

(a) review the Landfill Operations Plan annually, at a minimum; and

(b) update the Landfill Operations Plan if any of the following circumstances apply:

(i) there are facility expansions or changes in site operations or equipment,

(ii) there is an applicable change to the *Standards for Landfills in Alberta,* as amended,

(iii) an update is required in writing by the Director, or

(iv) there is an update to an applicable regulation.

4.6.34 The Landfill Operations Plan shall include, at a minimum, all of the following:

(a) SOP for keeping and maintaining an Operating Record;

(b) SOP for waste control, run-on and runoff controls, and nuisance controls;

(c) SOP for the waste stabilization area operations;

(d) SOP for the acceptance, handling and disposal of wastes, including;

(i) waste characterization and classification at source,

(ii) waste manifesting and tracking,

(iii) QA/QC waste acceptance procedures, and

(iv) waste sampling;

(e) SOP for detecting, preventing and disposal of unauthorized wastes;

(f) SOP for placing waste in a landfill cell including;

(i) working face width,

(ii) lift depth,

(iii) compaction, and

(iv) waste placement location using a grid system;

(g) SOP for managing contaminated sulphur and sulphur containing wastes;

(h) SOP for managing asbestos wastes;

(i) SOP for placing leachate, leak detection liquid, or other authorized wastes and liquids over the surface of the active landfill area for the purpose of evaporation or dust suppression;

(j) SOP for lab screening of pyrophoric wastes for water quenching;

(k) SOP for water quenching treatment of pyrophoric wastes;

(l) an Odour and Fugitive Dust Response Program, including odour from the HWRSP Facility;

(m) a Fugitive Dust and Odour Best Management Plan, including odour from the HWRSP Facility;

(n) a runoff and industrial wastewater monitoring and management program;

(o) a leachate monitoring and management program;

(p) a leak detection liquid monitoring and management program;

(q) a groundwater monitoring program;

(r) a Remediation Plan to deal with groundwater quality deterioration;

(s) a soil monitoring program;

(t) a soil management program;

(u) a landfill cell cover system;

(v) a monitoring and maintenance program for the scale house and heavy operational equipment;

(w) a health and safety program;

(x) a Facility Wildlife Management Plan, pursuant to 4.1.15;

(y) a Community Complaint Response Plan, pursuant to 4.1.22;

(z) a Facility Emergency Management Plan, pursuant to 4.1.30; and

(aa) an up-to-date plan of the landfill layout with survey records showing the location of all infrastructure components of the landfill including final cover elevations and contours.

4.6.35 The approval holder shall include, at a minimum, all of the following in the SOP referred to in 4.6.34(j) for lab screening of pyrophoric wastes to assess the suitability of using water quenching to neutralize the reactivity of the pyrophoric wastes:

(a) procedures and methods for obtaining representative pyrophoric wastes sample for lab test;

(b) procedures and methods for conducting lab screening test using representative sample of pyrophoric wastes, including:

(i) setup of lab test equipment,

(ii) test procedures,

(iii) collection of samples of off-gases from lab water quenching test,

(iv) screening parameters, including, at a minimum, odour, ammonia, H_2S, PM, total metals, VOCs, TNMOCs, and total hydrocarbons, and

(v) analytical methods for testing the screening parameters;

(c) assessment of lab test results and passing criteria for screening; and

(d) documentation and record keeping of lab screening test results.

4.6.36 The approval holder shall retain a copy of the most recent Landfill Operations Plan at the facility.

4.6.37 The approval holder shall submit to the Director the most recent Landfill Operations Plan when requested in writing by the Director within the timeline specified in writing by the Director.

4.6.38 The approval holder shall correct all deficiencies in the Landfill Operations Plan submitted pursuant to 4.6.37, as outlined in writing by the Director, within the timeline specified in writing by the Director.

4.6.39 The approval holder shall implement the latest Landfill Operations Plan, unless otherwise authorized in writing by the Director.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

OPERATIONS

4.6.40 The approval holder shall classify all materials entering the landfill in accordance with the:

(a) *Waste Control Regulation (AR 192/96)*;

(b) *Industrial Waste Identification and Management Options*, Alberta Environment, May 1996, as amended; and

(c) *Alberta User Guide for Waste Managers*, May 1995, as amended.

4.6.41 The approval holder shall obtain a detailed representative physical and chemical analysis of a waste prior to disposal of the waste into the landfill at the following times, at a minimum:

(a) the first time a waste is received from a new generator;

(b) the first time a delivery is received from a different process associated with a known waste generator;

(c) the first time a waste is received from a different location associated with a known waste generator; and

(d) when the nature or composition of the waste that was previously characterized by the generator changes.

4.6.42 The approval holder shall not dispose of hazardous waste in any Class II landfill cell.

4.6.43 The approval holder:

(a) shall only carry out waste stabilization or solidification or both within the waste stabilization area(s);

(b) shall only operate waste:

(i) receiving, and

(ii) stabilization

area(s) as descried in the application;

(c) shall not transfer waste from the waste stabilization area to the Class I landfill cell before the waste stabilization or solidification or both have been completed; and

(d) may treat pyrophoric wastes by water quenching only within the waste stabilization area, subject to passing lab screening criteria;

unless otherwise authorized in writing by the Director.

4.6.44 The approval holder shall only dispose of any liquid collected within the waste stabilization area by one or more of the following methods:

(a) to facilities holding a current Act authorization to accept such waste;

(b) to facilities approved by a local environmental authority outside of Alberta to accept such waste;

(c) to a disposal well approved by AER; or

(d) as otherwise authorized in writing by the Director.

4.6.45 The approval holder shall conduct:

(a) annually, in-house visual inspections for corrosion; and

(b) biennially, ultrasonic testing to monitor thickness

of the steel plate liner of the stabilization pits in the waste stabilization area, unless otherwise authorized in writing by the Director.

4.6.46 The approval holder shall dispose of asbestos wastes in accordance with *"Guidelines for the Disposal of Asbestos Waste",* Environmental Protection Services, Alberta Environment, 1989, as amended.

4.6.47 The approval holder shall dispose of sulphur waste in accordance with *"Guidelines for Landfill Disposal of Sulphur Wastes and Remediation of Sulphur Containing Soils"*, Alberta Environment, 2011, as amended.

4.6.48 The approval holder shall only dispose of wastes that the landfill is not authorized to dispose of:

(a) to facilities holding a current Act authorization;

(b) to facilities approved by a local environmental authority outside of Alberta; or

(c) as otherwise authorized in writing by the Director.

4.6.49 If an unauthorized waste is received at the landfill, the approval holder shall remove the waste from the landfill within seven (7) days of the receipt, unless otherwise authorized in writing by the Director.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

4.6.50 The approval holder shall restrict the working face of each landfill cell to the smallest practical area.

4.6.51 For any waste disposed of at the landfill that is subject to wind dispersal or release of offensive odours or both, the approval holder shall:

(a) wet the waste to prevent dispersal of particulate matter; and

(b) immediately apply effective cover on top of the waste to control releases of:

(i) particulate matter, and

(ii) offensive odours.

4.6.52 Notwithstanding 4.6.1(v), the approval holder may place any of the following wastes over the surface of the active landfill area for the purpose of dust suppression:

(a) specified runoff;

(b) leachate;

(c) leak detection liquid;

(d) sump waste of car wash bays or similar operations;

(e) waste from hydrovac excavation operations; or

(f) any other waste authorized by t*he Alberta User Guide for Waste Managers*, May 1995, as amended;

provided that placement of such wastes will not cause offensive odours.

4.6.53 The approval holder shall inspect the landfill, at a minimum:

(a) weekly; and

(b) immediately after each storm event to:

(i) detect evidence of deterioration of any infrastructure components, including the composite liner,

(ii) detect any malfunction or improper operation of the run-on and runoff control systems, leachate collection system, or leak detection system, and

(iii) take corrective measures to repair any damage to infrastructure components, including the composite liner.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

4.6.54 The approval holder shall:

(a) keep a record of inspections conducted pursuant to 4.6.53;

(b) have the record of inspections available for review upon written request from the Director; and

(c) immediately report any deficiencies detected by the inspection in 4.6.53 to the Director in writing along with any corrective measures taken or proposed.

4.6.55 The approval holder shall not stockpile waste exceeding the maximum designated waste elevation of the landfill for a period of more than two (2) weeks, unless otherwise authorized in writing by the Director.

4.6.56 The approval holder shall take all practical and effective measures to prevent off-site tracking of waste from vehicles and equipment leaving the facility.

4.6.57 The approval holder shall operate the laydown area in the NE 9-50-17 W4M area of the facility only as described in the application.

MONITORING AND REPORTING

4.6.58 The approval holder shall monitor the landfill operations as required in TABLE 4.6-D.

4.6.59 The approval holder shall report to the Director the results of the landfill operations monitoring as required in TABLE 4.6-D.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

TABLE 4.6-D: LANDFILL OPERATIONS MONITORING AND REPORTING REQUIREMENTS

MONITORING AND REPORTING				
Parameter	**Frequency**	**Sample Type**	**Sampling Location**	**Reporting**
Quantity and type of waste received	Continuously, When operating	Measured or estimated	At entrance to landfill	Annual Landfill Operations Report
Quantity and type of material removed	Continuously, when operating	Measured or estimated	At entrance to landfill	
General location of waste deposited	Continuously, when operating	As per survey, or using grid system	At active landfill area, or survey coordinates	
Leachate head	at least: - once every three working days; - after storm event; and - immediately prior to leachate removal	Calculated	At primary leachate collection system sumps for existing landfill Cell 1	
		Measured	At primary leachate collection system sumps for all other landfill cells	
Leachate analysis, as per TABLE 4.4-A	At least once every quarter year, unless insufficient sample volume is available	Grab sample	At each primary leachate collection system sump	
Volume of leachate removed from the leachate collection system	As removed	Measured or calculated	At leachate collection system sumps	
Leak detection liquid analysis, as per TABLE 4.4-A	At least once every quarter year, unless insufficient sample volume is available	Grab sample	At each leak detection system sump	
Volume of leak detection liquid removed from the leak detection system	At least once every working day, as removed	Measured or calculated	At leak detection system sumps	
Final cover	When final cover is applied	Final cover by survey cores or test pits or both	On each completed landfill cell	

4.6.60 The Annual Landfill Operations Report required in TABLE 4.6-D shall include, at a minimum, all of the following:

(a) the name and contact information of the person responsible for the facility;

(b) a summary of all information collected as required in TABLE 4.6-D;

(c) a summary of the results of any audit conducted in accordance with 4.1.7;

(d) a summary of the operations of the waste stabilization area;

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(e) a summary of the performance of the run-on and runoff control systems, including a comparison to the limits in TABLES 4.3-B and 4.3-C;

(f) a summary of the performance of the leachate collection system, including a comparison to the maximum acceptable leachate head;

(g) a summary of the performance of the leak detection system, including a comparison to the action leakage rate limit;

(h) the Response Action Plan for the leak detection system pursuant to 4.4.10;

(i) the Annual Dugout and Water Well Sampling Program Report pursuant to 4.5.4;

(j) a summary of all revisions to the Landfill Operations Plan pursuant to 4.6.33(b);

(k) any groundwater remedial action taken pursuant to 4.6.34(r);

(l) a summary of records of landfill inspections pursuant to 4.6.53;

(m) a summary of:

  (i) operational issues encountered,

  (ii) emergencies occurred, and

  (iii) measures or actions taken;

(n) a summary of records of:

  (i) public complaints, and

  (ii) the approval holder's responses;

(o) an up-to-date financial security estimate pursuant to 5.1.2;

(p) an updated site development plan showing the status of the landfill progression at the end of the operating year, including but not limited to:

  (i) contour mapping,

  (ii) the location of active and inactive disposal areas,

  (iii) areas where a final cover has been placed, and

  (iv) the location of new landfill cell(s) constructed;

(q) the Annual Landfill Cell Closure Report pursuant to 7.1.7;

(r) a summary of contraventions reported pursuant to 2.1.1 related to landfill operations; and

(s) any other information as required in writing by the Director.

4.6.61 The approval holder shall submit the Annual Landfill Operations Report to the Director.

SECTION 4.7: DOMESTIC WASTEWATER

OPERATIONS

4.7.1 The approval holder shall not release any substances from the domestic wastewater system to the surrounding watershed except as authorized by this approval.

4.7.2 The approval holder shall direct all domestic wastewater to the domestic wastewater system.

4.7.3 The approval holder shall only dispose of substances from the domestic wastewater system:

(a) to facilities holding a current Act authorization;

(b) to facilities approved by a local environmental authority outside of Alberta; or

(c) as otherwise authorized in writing by the Director.

SECTION 4.8: WATERWORKS

Not used at this time.

SECTION 4.9: GROUNDWATER

BASELINE MONITORING AND REPORTING

4.9.1 The approval holder shall submit a proposal for a Baseline Groundwater Monitoring Program for the NE 9-50-17 W4M area of the facility on or before October 31, 2022, unless otherwise authorized in writing by the Director.

4.9.2 If the Baseline Groundwater Monitoring Program proposal submitted pursuant to 4.9.1 is found deficient by the Director, the approval holder shall correct all deficiencies as outlined in writing by the Director within the timeline specified in writing by the Director.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

4.9.3 The approval holder shall implement the Baseline Groundwater Monitoring Program referred to in 4.9.1 as authorized in writing by the Director prior to commencing operation of any new landfill cell(s) in the NE 9-50-17 W4M area of the facility, unless otherwise authorized in writing by the Director.

4.9.4 The approval holder shall submit a Baseline Groundwater Monitoring Program Report to the Director within six (6) months of completing the Baseline Groundwater Monitoring Program, unless otherwise authorized in writing by the Director.

MONITORING

4.9.5 The approval holder shall continue to implement the existing Groundwater Monitoring Program as authorized in writing by the Director, unless and until otherwise authorized in writing by the Director pursuant to 4.9.8.

4.9.6 The approval holder shall submit a revised Groundwater Monitoring Program to the Director on or before December 31, 2022, unless otherwise authorized in writing by the Director.

4.9.7 If the revised Groundwater Monitoring Program submitted pursuant to 4.9.6 is found deficient by the Director, the approval holder shall correct all deficiencies as outlined in writing by the Director within the timeline specified in writing by the Director.

4.9.8 The approval holder shall implement the revised Groundwater Monitoring Program submitted pursuant to 4.9.6 as authorized in writing by the Director within the timeline specified in writing by the Director.

4.9.9 The approval holder shall:

(a) collect a representative groundwater sample from each of the groundwater monitor wells specified in the Groundwater Monitoring Program, including the groundwater monitoring wells designated as points of compliance; and

(b) analyze each sample for the parameters listed in TABLE 4.9-A.

TABLE 4.9-A: GROUNDWATER MONITORING PROGRAM

PARAMETERS	
pH	Metals
Electrical conductivity	Major ions
COD	Nutrients
DOC	BTEX
TDS	Petroleum Hydrocarbons Fractions F1 and F2

TERMS AND CONDITIONS ATTACHED TO APPROVAL

4.9.10 The monitoring required in 4.9.9 shall be conducted at the following frequencies, unless otherwise authorized in writing by the Director:

(a) a minimum of once per year during each of the active landfill life, landfill cell closure, final landfill closure, and post-closure periods; and

(b) a minimum of four times per year following detection of leachate constituents in groundwater at levels above those specified in 4.9.11, and until the levels specified in 4.9.11 have been met.

4.9.11 The groundwater quality in the monitoring wells, designated as points of compliance in the Groundwater Monitoring Program, shall not exceed the higher of:

(a) the objectives established in the water quality objectives in the *Canadian Environmental Quality Guidelines (CEQG)* for drinking water published by the Canadian Council of Ministers of the Environment (CCME), as amended; or

(b) background groundwater chemistry as determined through a statistical analysis, as a derived alternate groundwater performance standard.

4.9.12 The approval holder shall implement the Remediation Plan as specified in the Landfill Operations Plan, when groundwater quality exceeds the groundwater performance criteria in 4.9.11.

4.9.13 The samples extracted from the groundwater monitor wells shall be collected using scientifically acceptable purging, sampling and preservation procedures so that a representative groundwater sample is obtained.

4.9.14 The approval holder shall:

(a) protect from damage; and

(b) keep locked except when being sampled

all groundwater monitoring wells unless otherwise authorized in writing by the Director.

4.9.15 If a representative groundwater sample cannot be collected because the groundwater monitoring well is damaged or is no longer capable of producing a representative groundwater sample, the approval holder shall:

(a) clean, repair or replace the groundwater monitoring well; and

(b) collect and analyse a representative groundwater sample prior to the next scheduled sampling event;

unless otherwise authorized in writing by the Director.

4.9.16 In addition to the sampling information recorded in 2.2.1, the approval holder shall record the following sampling information for all groundwater samples collected:

(a) a description of purging and sampling procedures;

(b) the static elevations above sea level, and depth below ground surface of fluid phases in the groundwater monitoring well prior to purging;

(c) the temperature of each sample at the time of sampling;

(d) the pH of each sample at the time of sampling; and

(e) the specific conductance of each sample at the time of sampling.

4.9.17 The approval holder shall carry out remediation of the groundwater in accordance with the following:

(a) *Alberta Tier 1 Soil and Groundwater Remediation Guidelines*, Alberta Environment, February 2009, as amended; and

(b) *Alberta Tier 2 Soil and Groundwater Remediation Guidelines*, Alberta Environment, February 2009, as amended.

REPORTING

4.9.18 The approval holder shall compile an Annual Groundwater Monitoring Program Report which shall include, at a minimum, all of the following information:

(a) a completed *Record of Site Condition Form*, Alberta Environment, 2009, as amended;

(b) a legal land description of the facility and a map illustrating the facility boundaries;

(c) a topographic map of the facility;

(d) a description of the industrial activity and processes;

(e) a map showing the location of all surface and groundwater users, and a listing describing surface water and water well use details, within at least a 1.6 kilometre radius of the facility;

(f) a general hydrogeological characterization of the region within a five kilometre radius of the facility;

TERMS AND CONDITIONS ATTACHED TO APPROVAL

(g) a detailed hydrogeological characterization of the facility, including an interpretation of groundwater flow patterns;

(h) cross-sections showing depth to water table, patterns of groundwater movement and hydraulic gradients at the facility;

(i) borehole logs and completion details for groundwater monitoring wells;

(j) a map showing locations of all known buried channels within at least five kilometre of the facility;

(k) a map of surface drainage within the facility and surrounding area to include nearby water bodies;

(l) a map of groundwater monitoring well locations and a table summarizing the existing groundwater monitoring program for the facility;

(m) a summary of any changes to the groundwater monitoring program made since the last groundwater monitoring report;

(n) analytical data recorded as required in 4.9.9 and 4.9.15(b);

(o) a summary of fluid elevations recorded as required in 4.9.16(b) and an interpretation of changes in fluid elevations;

(p) an interpretation of QA/QC program results;

(q) an interpretation of all the data in this report, including the following:

  (i) diagrams indicating the location and extent of any contamination,

  (ii) a description of probable sources of contamination, and

  (iii) a site map showing the location and type of current and historical potential sources of groundwater contamination;

(r) a summary and interpretation of the data collected since the groundwater monitoring program began including:

  (i) control charts which indicate trends in concentrations of parameters, and

  (ii) the migration of contaminants;

(s) a description of the following:

  (i) contaminated groundwater remediation techniques employed,

(ii) source elimination measures employed,

(iii) risk assessment studies undertaken, and

(iv) risk management studies undertaken;

(t) a proposed sampling schedule for the following year(s);

(u) a description of any contaminant remediation, risk assessment or risk management action conducted at the facility; and

(v) recommendations for:

(i) changes to the groundwater monitoring program to make it more effective, and

(ii) remediation, risk assessment or risk management of contamination identified.

4.9.19 The approval holder shall submit the Annual Groundwater Monitoring Program Report to the Director.

4.9.20 If the Annual Groundwater Monitoring Program Report is found deficient by the Director, the approval holder shall correct all deficiencies identified in writing by the Director, within the timeline specified in writing by the Director.

SECTION 4.10: SOIL

4.10.1 In addition to any other requirements specified in this approval, the approval holder shall conduct all of the following activities related to soil monitoring and soil management required by this approval in accordance with the *Soil Monitoring Directive,* Alberta Environment, 2009, as amended:

(a) designing and developing proposals for the Soil Monitoring Program;

(b) designing and developing proposals for the Soil Management Program;

(c) all other actions, including sampling, analysing, and reporting, associated with the Soil Monitoring Program; and

(d) all other actions, including sampling, analysing and reporting, associated with the Soil Management Program.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

BASELINE MONITORING AND REPORTING

4.10.2 The approval holder shall submit a proposal for a Baseline Soil Monitoring Program for the NE 9-50-17 W4M area of the facility on or before October 31, 2022, unless otherwise authorized in writing by the Director.

4.10.3 If the Baseline Soil Monitoring Program proposal submitted pursuant to 4.10.2 is found deficient by the Director, the approval holder shall correct all deficiencies as outlined in writing by the Director within the timeline specified in writing by the Director.

4.10.4 The approval holder shall implement the Baseline Soil Monitoring Program referred to in 4.10.2 as authorized in writing by the Director prior to commencing operation of any new landfill cell(s) in the NE 9-50-17 W4M area of the facility, unless otherwise authorized in writing by the Director.

4.10.5 The approval holder shall submit a Baseline Soil Monitoring Program Report to the Director within six (6) months of completing the Baseline Soil Monitoring Program, unless otherwise authorized in writing by the Director.

MONITORING AND REPORTING

4.10.6 The approval holder shall submit the Soil Monitoring Program proposal to the Director according to the following schedule:

(a) for the first soil monitoring event on or before January 31, 2019; and

(b) for the second soil monitoring event on or before January 31, 2024;

unless otherwise authorized in writing by the Director.

4.10.7 If any Soil Monitoring Program proposal is found deficient by the Director, the approval holder shall correct all deficiencies identified in writing by the Director by the date specified in writing by the Director.

4.10.8 Subject to 4.10.7, the approval holder shall implement the Soil Monitoring Program as authorized in writing by the Director.

4.10.9 If an authorization or a deficiency letter is not issued within 120 days of the applicable date required by 4.10.6, the approval holder shall implement the Soil Monitoring Program:

(a) in accordance with the program as set out in the proposal submitted by the approval holder; and

(b) within 270 days after the applicable date required by 4.10.6.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

4.10.10 The approval holder shall submit to the Director each Soil Monitoring Program Report obtained from the soil monitoring referred to in 4.10.8 and 4.10.9 according to the following schedule:

(a) for the first Soil Monitoring Program Report on or before January 31, 2020; and

(b) for the second Soil Monitoring Program Report on or before January 31, 2025;

unless otherwise authorized in writing by the Director.

4.10.11 If any Soil Monitoring Program Report is found deficient by the Director, the approval holder shall correct all deficiencies identified in writing by the Director by the date specified in writing by the Director.

SOIL MANAGEMENT PROGRAM

4.10.12 If the Soil Monitoring Program, or any other soil monitoring, reveals that there are substances present in the soil at concentrations greater than any of the applicable concentrations set out in the standards in the *Soil Monitoring Directive*, Alberta Environment, 2009, as amended, the approval holder shall develop a Soil Management Program Proposal.

4.10.13 If a Soil Management Program Proposal is required pursuant to 4.10.12, the approval holder shall submit a Soil Management Program Proposal to the Director according to the following schedule:

(a) for Soil Management Program Proposal that is triggered by the findings from the first soil monitoring event on or before the date in 4.10.10(a);

(b) for Soil Management Program Proposal that is triggered by the findings from a second soil monitoring event on or before the date in 4.10.10(b); or

(c) for any other soil monitoring event not specified in this approval within six months of completion of the soil monitoring event.

4.10.14 If any Soil Management Program Proposal is found deficient by the Director, the approval holder shall correct all deficiencies identified in writing by the Director by the date specified in writing by the Director.

4.10.15 The approval holder shall implement the Soil Management Program as authorized in writing by the Director.

4.10.16 If the approval holder is required to implement a Soil Management Program pursuant to 4.10.15, the approval holder shall submit a written Soil Management

TERMS AND CONDITIONS ATTACHED TO APPROVAL

Program Report to the Director on or before March 31 of each year following the year in which the information was collected.

4.10.17 If any Soil Management Program Report is found deficient by the Director, the approval holder shall correct all deficiencies identified by the Director by the date specified in writing by the Director.

PART 5: FINANCIAL SECURITY REQUIREMENTS

5.1.1 The approval holder shall annually review and revise the cost estimate for reclamation of the facility including decommissioning and land reclamation.

5.1.2 The annual revised cost estimate for the facility shall be submitted to the Director by March 31 of each year.

5.1.3 The approval holder shall review and revise the cost estimate for reclamation of the facility when one or more of the following occurs:

(a) the cost estimate of future conservation and reclamation of the facility changes;

(b) the extent of the operation of the facility is increased or reduced;

(c) the facility or any portion of it is conserved and reclaimed;

(d) the conservation and reclamation plan required by this approval is changed; or

(e) the activities conducted at the facility for which security is required is increased or decreased.

5.1.4 The approval holder shall submit the revised cost estimate arising from 5.1.3 to the Director within 30 days after the occurrence of any of the circumstances described in 5.1.3.

5.1.5 The approval holder shall provide additional financial security as required in writing by the Director.

5.1.6 The approval holder shall renew the financial security for the facility at least 30 days prior to the date it expires.

5.1.7 The approval holder shall maintain the financial security for the facility until returned in accordance with the Act or the regulations.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

PART 6: DECOMMISSIONING AND LAND RECLAMATION OF HWRSP FACILITY

SECTION 6.1: GENERAL

6.1.1 The approval holder shall apply for an amendment to this approval to reclaim the HWRSP Facility by submitting to the Director:

(a) a Decommissioning Plan; and

(b) a Land Reclamation Plan.

6.1.2 The approval holder shall submit the:

(a) Decommissioning Plan; and

(b) Land Reclamation Plan

referred to in 6.1.1 within six (6) months of the HWRSP Facility ceasing operation, except for repairs and maintenance, unless otherwise authorized in writing by the Director.

SECTION 6.2: DECOMMISSIONING

6.2.1 The Decommissioning Plan referred to in 6.1.1 shall include, at a minimum, all of the following:

(a) a plan for dismantling the HWRSP Facility;

(b) a comprehensive study to determine the nature, degree and extent of contamination at the HWRSP Facility and affected lands;

(c) a plan to manage all wastes at the HWRSP Facility;

(d) evaluation of remediation technologies proposed to be used at the HWRSP Facility and affected lands;

(e) a plan for decontamination of the HWRSP Facility and affected lands in accordance with the following:

(iii) for soil or groundwater, *Alberta Tier 1 Soil and Groundwater Remediation Guidelines*, Alberta Environment, February 2009, as amended,

(iv) for soil or groundwater, *Alberta Tier 2 Soil and Groundwater Remediation Guidelines*, Alberta Environment, February 2009, as amended,

(v) for drinking water, *Canadian Environmental Quality Guidelines*, Canadian Council of Ministers of the Environment, PN 1299, 1999, as amended, and

(vi) for surface water, *Surface Water Quality Guidelines for Use in Alberta*, Alberta Environment, November 1999, as amended;

(f) confirmatory testing to indicate compliance with the remediation objectives;

(g) a plan for maintaining and operating contaminant monitoring systems;

(h) a schedule for activities (a) through (g) above; and

(i) any other information as required in writing by the Director.

6.2.2 If the Decommissioning Plan is found deficient by the Director, the approval holder shall correct all deficiencies identified in writing by the Director by the date specified in writing by the Director.

SECTION 6.3: LAND RECLAMATION

6.3.1 The Land Reclamation Plan referred to in 6.1.1 shall include, at a minimum, all of the following:

(a) the final use of the reclaimed area and how equivalent land capability will be achieved;

(b) removal of infrastructure;

(c) restoration of drainage;

(d) soil replacement;

(e) erosion control;

(f) revegetation and conditioning of the HWRSP Facility including:

(i) species list, seed source and quality, seeding rates and methods,

(ii) fertilization rates and methods, and

(iii) wildlife habitat plans where applicable;

(g) reclamation schedule; and

(h) any other information as required in writing by the Director.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

6.3.2 If the Land Reclamation Plan is found deficient by the Director, the approval holder shall correct all deficiencies identified in writing by the Director by the date specified in writing by the Director.

PART 7: FINAL LANDFILL CLOSURE AND POST-CLOSURE

SECTION 7.1: LANDFILL CELL CLOSURE AND MAINTENANCE

7.1.1 The approval holder shall submit a Landfill Cell Closure Plan for individual landfill cell closure to the Director on or before September 30, 2017, unless otherwise authorized in writing by the Director.

7.1.2 The Landfill Cell Closure Plan submitted pursuant to 7.1.1 shall be signed and stamped by a professional registered with APEGA.

7.1.3 If the Landfill Cell Closure Plan submitted pursuant to 7.1.1 is found deficient by the Director, the approval holder shall correct all deficiencies as outlined in writing by the Director within the timeline specified in writing by the Director.

7.1.4 The approval holder shall implement the Landfill Cell Closure Plan submitted pursuant to 7.1.1 as authorized in writing by the Director.

7.1.5 The approval holder shall maintain the closed landfill cells to:

(a) protect and maintain the integrity of the final cover and surface water drainage systems;

(b) prevent erosion;

(c) prevent surface water ponding;

(d) remediate areas affected by subsidence and differential settlement; and

(e) prevent leachate break out.

7.1.6 If the approval holder completes landfill cell closure in a year, the approval holder shall prepare an Annual Landfill Cell Closure Report, and include, at a minimum, all of the following information in the Report:

(a) as-built plans and details on the location of landfill cells that have been closed;

(b) certified construction QA/QC procedures employed during cover construction and installation; and

(c) survey reports showing the final cover depths.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

7.1.7 The approval holder shall submit the Annual Landfill Cell Closure Report with the Annual Landfill Operations Report required in 4.6.60.

SECTION 7.2: FINAL LANDFILL CLOSURE AND POST-CLOSURE

7.2.1 The approval holder shall apply for an amendment to this approval for final landfill closure by submitting to the Director:

(a) a Detailed Final Landfill Closure Plan ; and

(b) a Landfill Post-Closure Plan.

7.2.2 The approval holder shall submit the:

(a) Detailed Final Landfill Closure Plan; and

(b) Landfill Post-Closure Plan

referred to in 7.2.1 within six (6) months of the landfill ceasing operations, unless otherwise authorized in writing by the Director.

DETAILED FINAL LANDFILL CLOSURE PLAN

7.2.3 The Detailed Final Landfill Closure Plan shall be developed in accordance with sections 6.1(b) and 6.1(c) of the *Standards for Landfills in Alberta*, as amended.

7.2.4 In addition to 7.2.3, the Detailed Final Landfill Closure Plan shall include, at a minimum, all of the following:

(a) a plan for replacement of soil;

(b) a QA/QC Program; and

(c) any deviations from the most recently submitted closure plan.

7.2.5 The Detailed Final Landfill Closure Plan shall be signed and stamped by a professional registered with APEGA.

7.2.6 If the Detailed Final Landfill Closure Plan is found deficient by the Director, the approval holder shall correct all deficiencies identified in writing by the Director by the date specified in writing by the Director.

7.2.7 The approval holder shall implement the Detailed Final Landfill Closure Plan as authorized in writing by the Director.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

LANDFILL POST-CLOSURE PLAN

7.2.8 The Landfill Post-Closure Plan shall be developed in accordance with sections 6.2 and 6.3 of the *Standards for Landfills in Alberta*, as amended.

7.2.9 In addition to 7.2.8, the Landfill Post-Closure Plan shall include, at a minimum, all of the following:

(a) the groundwater monitoring program including performance standards and points of compliance;

(b) the subsurface landfill gas monitoring program and performance standards at points of compliance;

(c) a plan for erosion control;

(d) a plan for maintaining vegetative cover; and

(e) any other information requested in writing by the Director.

7.2.10 The Landfill Post-Closure Plan shall be signed and stamped by a professional registered with APEGA.

7.2.11 If the Landfill Post-Closure Plan is found deficient by the Director, the approval holder shall correct all deficiencies identified in writing by the Director by the date specified in writing by the Director.

7.2.12 The approval holder shall implement the Landfill Post-Closure Plan as authorized in writing by the Director.

PART 8: DECOMMISSIONING AND LAND RECLAMATION OF OLD SURFACE WATER DETENTION POND

8.1.1 The approval holder shall:

(a) decommission; and

(b) reclaim

the old surface water detention pond prior to construction of Cell 4.

8.1.2 The approval holder shall submit a Decommissioning and Land Reclamation Plan for the old surface water detention pond to the Director a minimum of six (6) months prior to decommissioning and land reclamation of the pond.

TERMS AND CONDITIONS ATTACHED TO APPROVAL

8.1.3 If the Decommissioning and Land Reclamation Plan is found deficient by the Director, the approval holder shall correct all deficiencies identified in writing by the Director by the date specified in writing by the Director.

June 21, 2022
DATE SIGNED

DESIGNATED DIRECTOR UNDER THE ACT
Mohammad Habib, P. Eng.

APPENDIX B

WATER WELL AND SURFACE WATER SEARCH RESULTS

Reconnaissance Report

View in Metric

Export to Excel

Groundwater Wells

Please click the water Well ID to generate the Water Well Drilling Report.

GIC Well ID	LSD	SEC	TWP	RGE	M	DRILLING COMPANY	DATE COMPLETED	DEPTH (ft)	TYPE OF WORK	USE	CHM	LT	PT	WELL OWNER	STATIC LEVEL (ft)	TEST RATE (igpm)	SC_DIA (in)
94699	SW	3	50	17	4	UNKNOWN DRILLER		200.00	Chemistry	Domestic & Stock				MIZERA, RUDY			0.00
94700	NW	3	50	17	4	HOLLAND WATER WELLS		350.00	Existing Well-Decommissioned	Unknown		1		BEAVER COUNTY			
94700	NW	3	50	17	4	UNKNOWN DRILLER		350.00	Chemistry	Domestic				MIZERA, RUDY	150.00		0.00
94701	WH	4	50	17	4	MERV'S WATER WELL DRILLING	1986-05-01	395.00	New Well	Domestic & Industrial		13		ABRAHAM, JOE	80.00	2.50	5.50
94702	NE	4	50	17	4	UNKNOWN DRILLER		50.00	Chemistry	Municipal	2			RYLEY, VILL OF			
94703	NE	4	50	17	4	UNKNOWN DRILLER		200.00	Chemistry	Municipal	1			RYLEY, VILL OF			
94704		4	50	17	4	ALF'S DRILLING & SUPPLIES LTD.	1986-10-02	435.00	New Well	Industrial		9		ANDRUKOW FARM SALES LTD	72.00	60.00	5.56
94707	9	8	50	17	4	UNKNOWN DRILLER	1930-01-01	14.00	Federal Well Survey	Domestic & Stock				MAGNUSSEN			0.00
94708	SE	8	50	17	4	UNKNOWN DRILLER		400.00	Federal Well Survey	Domestic & Stock							0.00
94709	SE	9	50	17	4	UNKNOWN DRILLER		24.00	Chemistry	Unknown				MAGNUSSEN, E.	10.00		0.00
94710	4	9	50	17	4	UNKNOWN DRILLER		14.00	Federal Well Survey	Domestic & Stock				HOSTLUND			0.00
94711	NE	9	50	17	4	BIG QUILL DRILLING LTD.	1983-01-31	297.00	Test Hole-Decommissioned	Unknown		13		C.E. MOELL CONSULTING LTD#1	0.00	3.00	7.00
94712	NE	9	50	17	4	BIG QUILL DRILLING LTD.	1983-02-01	297.00	Test Hole-Decommissioned	Unknown		13		C.E. MOELL CONSULTING LTD#2	0.00	4.00	7.00
94713	SE	10	50	17	4	UNKNOWN DRILLER	1915-01-01	23.00	Federal Well Survey	Domestic				MASTERS, J.E.	13.00		0.00
94714	SW	10	50	17	4	UNKNOWN DRILLER		220.00	Chemistry	Domestic				GARSTAD, MARK	160.00		0.00
94715	14	10	50	17	4	UNKNOWN DRILLER	1919-01-01	300.00	Federal Well Survey	Stock				MCDONAGH, W.N.			2.00
94716	14	10	50	17	4	UNKNOWN DRILLER	1912-01-01	20.00	Federal Well Survey	Domestic				MCDONAGH, W.N.			0.00
94717	NW	10	50	17	4	ALBERTA ENVIRONMENT/EARTH SCIENCES DIVISION	1983-01-27	98.00	Piezometer	Observation		5		ALTA ENV #2143E			0.00
94718	NW	10	50	17	4	ALBERTA ENVIRONMENT/EARTH SCIENCES DIVISION	1983-01-27	139.00	Piezometer	Observation		7		ALTA ENV #2144E			0.00
94719	NE	10	50	17	4	ALBERTA ENVIRONMENT/EARTH SCIENCES DIVISION	1983-01-27	15.00	Test Hole	Other		3		ALTA ENV #2133E			0.00

Reconnaissance Report

View in Metric

Export to Excel

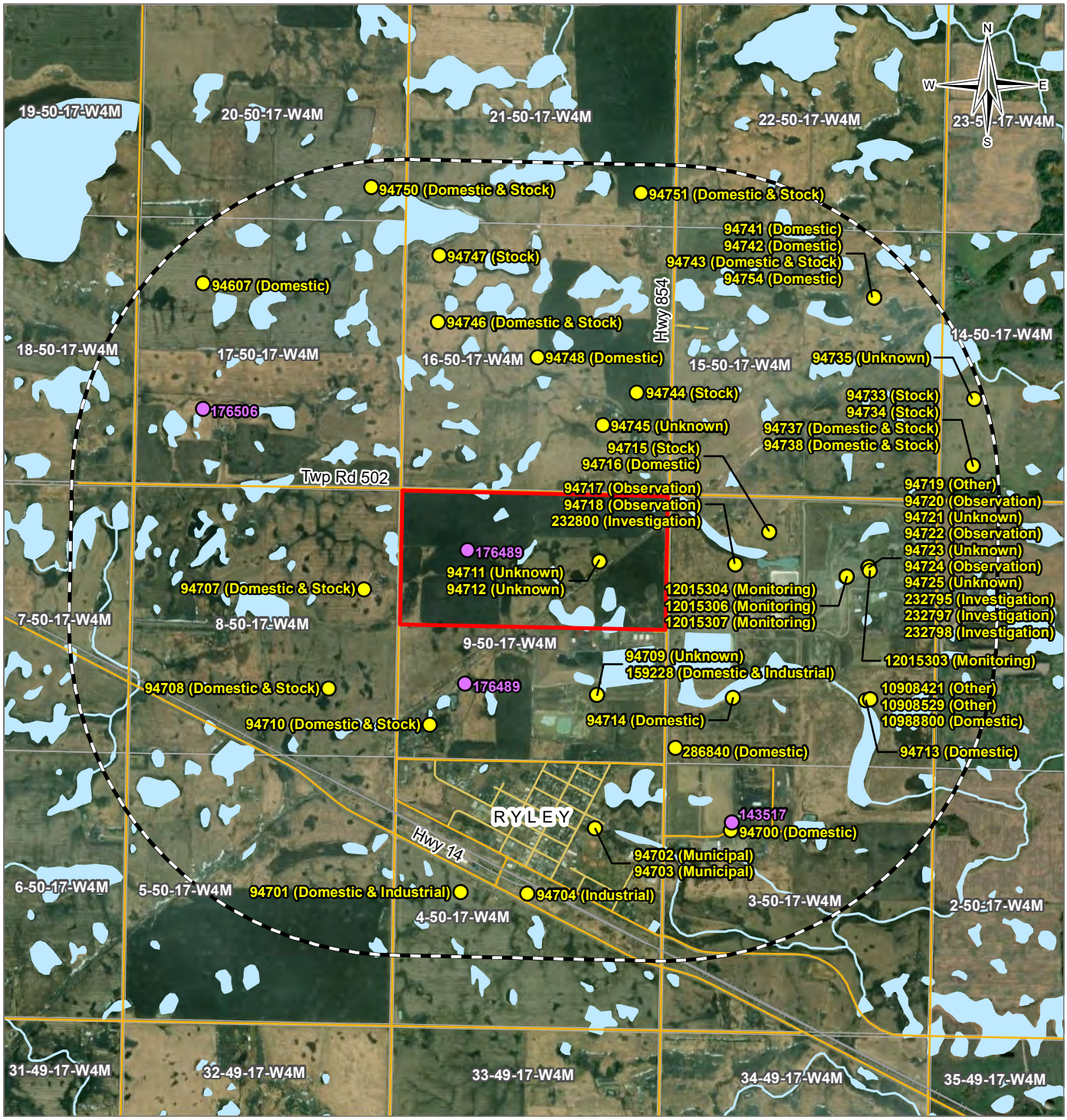
GIC Well ID	LSD	SEC	TWP	RGE	M	DRILLING COMPANY	DATE COMPLETED	DEPTH (ft)	TYPE OF WORK	USE	CHM	LT	PT	WELL OWNER	STATIC LEVEL (ft)	TEST RATE (igpm)	SC_DIA (in)
94720	NE	10	50	17	4	ALBERTA ENVIRONMENT/EARTH SCIENCES DIVISION	1983-01-26	49.00	Piezometer	Observation		4		ALTA ENV #2140E			0.00
94721	NE	10	50	17	4	ALBERTA ENVIRONMENT/EARTH SCIENCES DIVISION	1983-01-26	50.00	Test Hole	Unknown		4		ALTA ENV #2137E			0.00
94722	NE	10	50	17	4	ALBERTA ENVIRONMENT/EARTH SCIENCES DIVISION	1983-01-26	86.00	Piezometer	Observation		4		ALTA ENV #2141E			0.00
94723	NE	10	50	17	4	ALBERTA ENVIRONMENT/EARTH SCIENCES DIVISION	1983-01-31	48.00	Test Hole	Unknown		3		ALTA ENV #2139E			2.00
94724	NE	10	50	17	4	ALBERTA ENVIRONMENT/EARTH SCIENCES DIVISION	1983-01-31	83.00	Piezometer	Observation		5		ALTA ENV #2138E			2.00
94725	NE	10	50	17	4	ALBERTA ENVIRONMENT/EARTH SCIENCES DIVISION	1983-01-28	98.00	Test Hole	Unknown		6		ALTA ENV #2136E			2.00
94745	SE	16	50	17	4	UNKNOWN DRILLER	1920-01-01	25.00	Federal Well Survey	Unknown				NICHOLS			0.00
159228	SE	9	50	17	4	LAKELAND DRILLING LTD.	1991-09-07	460.00	New Well	Domestic & Industrial		11		LAIDLAW ENVIRONMENTAL SVC LTD	61.00	10.00	5.00
232795	NE	10	50	17	4	ALBERTA ENVIRONMENT/EARTH SCIENCES DIVISION	1983-01-27	300.00	Test Hole	Investigation		13		ALTA ENV #2132E			0.00
232797	NE	10	50	17	4	ALBERTA ENVIRONMENT/EARTH SCIENCES DIVISION	1983-01-27	200.00	Test Hole	Investigation		14		ALTA ENV #2134E			0.00
232798	NE	10	50	17	4	ALBERTA ENVIRONMENT/EARTH SCIENCES DIVISION	1983-01-28	200.00	Test Hole	Investigation		13		ALTA ENV #2135E			0.00
232800	NW	10	50	17	4	ALBERTA ENVIRONMENT/EARTH SCIENCES DIVISION	1983-01-27	198.00	Test Hole	Investigation		10		ALTA ENV #2142			0.00
286840	4	10	50	17	4	LOSNESS DRILLING (1975) LTD.	1997-05-14	270.00	New Well	Domestic		11	25	PEPPES, RONALD	30.50	4.00	0.00
1888429	SE	10	50	17	4	HILL DRILLING LTD.	2004-04-16	160.00	Test Hole	Other		8		C. E. MODELL & ASSOC. LTD			5.00
1888430	SE	10	50	17	4	HILL DRILLING LTD.	2004-04-15	160.00	Test Hole	Other		11		C. E. MOELLL & ASSOC. LLTD			5.00
1888439	SE	10	50	17	4	HILL DRILLING LTD.	2004-04-13	152.00	New Well	Domestic		7	19	C.E. MOELL & ASSOCIATES LTD.		0.00	5.00
1888439	SE	10	50	17	4	HILL DRILLING LTD.	2020-08-04	152.00	Existing Well-Decommissioned	Unknown				C.E. MOELL & ASSOCIATES			
1889172	9	10	50	17	4	HILL DRILLING LTD.	2013-05-21	121.00	Piezometer	Monitoring		1		BEAVER MUNICIPAL SOLUTIONS			
1889173	10	10	50	17	4	HILL DRILLING LTD.	2013-05-21	18.00	Piezometer	Monitoring		1		BEAVER MUNICIPAL SOLUTIONS			
1889174	10	10	50	17	4	HILL DRILLING LTD.	2013-05-22	33.00	Piezometer	Monitoring		1		BEAVER MUNICIPAL SOLUTIONS			

Reconnaissance Report

View in Metric

Export to Excel

GIC Well ID	LSD	SEC	TWP	RGE	M	DRILLING COMPANY	DATE COMPLETED	DEPTH (ft)	TYPE OF WORK	USE	CHM	LT	PT	WELL OWNER	STATIC LEVEL (ft)	TEST RATE (igpm)	SC_DIA (in)
1889175	10	10	50	17	4	HILL DRILLING LTD.	2013-05-22	70.00	Piezometer	Monitoring		1		BEAVER MUNICIPAL SOLUTIONS			



LEGEND

- Groundwater User (Approval ID)
- Water Well (Well ID, Well Use)
- Approximate Site
- 2 km Search Area
- Main Road
- Local Road
- Resource/Recreational Road
- Railway
- Watercourse
- Waterbody

NOTES
Base data source: CanVec 1:50,000
Imagery provided by ESRI; DigitalGlobe (2018)

STATUS
ISSUED FOR REVIEW

2022 GROUNDWATER MONITORING PROGRAM RYLEY, ALBERTA

Alberta Water Well Information Database 2.0 km Search Radius

PROJECTION	DATUM	CLIENT
UTM Zone 12	NAD83	CleanHarbors

Scale: 1:35,000
500 250 0 500
Metres

TETRA TECH

FILE NO. SWOP04591-01_AppB_GW.mxd

OFFICE	DWN	CKD	APVD	REV
Tt-EDM	BB	SL	MS	0

DATE November 8, 2022
PROJECT NO. SWM.SWOP04268-01

Appendix B

M:\SOLID_WASTE\SWOP04591-01\Maps\SWOP04591-01_AppB_GW.mxd modified 2022-11-08 by Brittney.Bietz

Appendix B: Surface Water Users

Priority	Applicant	Project	License Volume	Consumption Use	LSD	Classification	Sub Classification	Specific Classification	Diversion Type	Approval ID	Latitude	Longitude	Specific Purpose	Licenced Date
19980417001	CLAYSTONE WASTE LTD.	RYLEY/OTHER/CLAYSTONE WASTE LTD. - F26835	57,000	57,000	NW 10-050-17 W4M	Industrial	DOWNSTREAM OIL & GAS	WASTE DISPOSAL/REMEDIATION	RTOF	67670	53.30554	-112.41038	SOTHER	7/28/1998
19801231084	RUDY & GERTIE MIZERA	RYLEY/FARM UNIT/MIZERA, RUDY & GERTIE - F00143517	285	285	NW 03-050-17 W4M	Agriculture	TRADITIONAL USE	REGISTRATIONS/FARMSTEADS/OTHER FARM USE	DWB	143517	53.29107	-112.41031	REGISTRY	1/28/2002
19801231085	RUDY & GERTIE MIZERA	RYLEY/FARM UNIT/MIZERA, RUDY & GERTIE - F00143517	285	285	NW 03-050-17 W4M	Agriculture	TRADITIONAL USE	REGISTRATIONS/FARMSTEADS/OTHER FARM USE	DWB	143517	53.29107	-112.41031	REGISTRY	1/28/2002
19881223001	STIER, PAT	MAGNESON, WR, 23378	6160	4930	SW 09-050-17 W4M	Agriculture	STOCKWATERING	STOCKWATERING	DTR	28088	53.2958	-112.4361	STCKWT	9/30/1991
19910826001	LAIDLAW ENVIRONMENTAL SERVICES LTD.	LAIDLAW ENVIORNMENTAL SERVICE, WR 24753	0	0	SE 09-050-17 W4M	Management	WATER MANAGEMENT	FLOOD CONTROL OR DRAINAGE	DTR	26794	53.2958	-112.4242	FLOODCNT	3/9/1992
19981021002	CLAYSTONE WASTE LTD.	RYLEY/PARK/BRWMSC - F85381	18,000	15,000	NW 10-050-17 W4M	Commerical	RECREATION	PARKS & RECREATION/CAMPGROUNDS	RTON	72398	53.30554	-112.41038	RCRTN	10/21/1998
19901231806	LYONS, BRIAN	RYLEY/FARM UNIT/LYONS BRIAN - F00176295	279	279	SE 16-050-17 W4M	Agriculture	TRADITIONAL USE	REGISTRATIONS/FARMSTEADS/OTHER FARM USE	DWB	176295	53.31296	-112.42273	REGISTRY	3/28/2002
19701231829	LYONS, BRIAN	RYLEY/FARM UNIT/LYONS BRIAN - F00176295	28	28	SW 16-050-17 W4M	Agriculture	TRADITIONAL USE	REGISTRATIONS/FARMSTEADS/OTHER FARM USE	DWB	176295	53.31297	-112.43475	REGISTRY	3/28/2002
19901231807	LYONS, BRIAN	RYLEY/FARM UNIT/LYONS BRIAN - F00176295	56	56	SW 16-050-17 W4M	Agriculture	TRADITIONAL USE	REGISTRATIONS/FARMSTEADS/OTHER FARM USE	DWB	176295	53.31297	-112.43475	REGISTRY	3/28/2002
19901231805	LYONS, BRIAN	RYLEY/FARM UNIT/LYONS BRIAN - F00176295	419	419	SE 16-050-17 W4M	Agriculture	TRADITIONAL USE	REGISTRATIONS/FARMSTEADS/OTHER FARM USE	DWB	176295	53.31296	-112.42273	REGISTRY	3/28/2002
19601231912	LYONS, BRIAN	RYLEY/FARM UNIT/LYONS BRIAN - F00176295	419	419	SE 16-050-17 W4M	Agriculture	TRADITIONAL USE	REGISTRATIONS/FARMSTEADS/OTHER FARM USE	DWB	176295	53.31296	-112.42273	REGISTRY	3/28/2002
19601231913	LYONS, BRIAN	RYLEY/FARM UNIT/LYONS BRIAN - F00176295	28	28	SE 16-050-17 W4M	Agriculture	TRADITIONAL USE	REGISTRATIONS/FARMSTEADS/OTHER FARM USE	DWB	176295	53.31296	-112.42273	REGISTRY	3/28/2002
Notes:			**82959 (m^3/year)**	**78729 (m^3/year)**										

Active Surface Water Licences and Authorizations within 2.0 km of SE 9-50-17-W4M as of November 3, 2022

M:\SOLID_WASTE\SWOP04591-01\Maps\SWOP04591-01_AppB_SW.mxd modified 2022-11-08 by Brittney.Bietz

LEGEND

- Rural Residence
- Surface Water User
- Site Outline
- 2.0 km Search Radius
- Abandoned Railway Bed (Approximate Centreline)
- Bible Creek (Approximate Centreline)
- Bible Creek Flow Direction
- Potential Wetland
- Railway
- Main Road
- Local Road
- Resource/Recreational Road

NOTES
Base data source: CanVec (50,000)
Surface water ysers: Alberta Flow Estimation Tool for Ungauged Watersheds (AFETUW). November 4, 2022
Imagery provided by ESRI; Maxar (2017)

STATUS
ISSUED FOR REVIEW

2022 GROUNDWATER MONITORING PROGRAM
RYLEY, ALBERTA

Alberta Surface Water Users
2.0 km Search Radius

PROJECTION	DATUM	CLIENT
UTM Zone 12	NAD83	CleanHarbors

Scale: 1:21,000
300 150 0 300
Metres

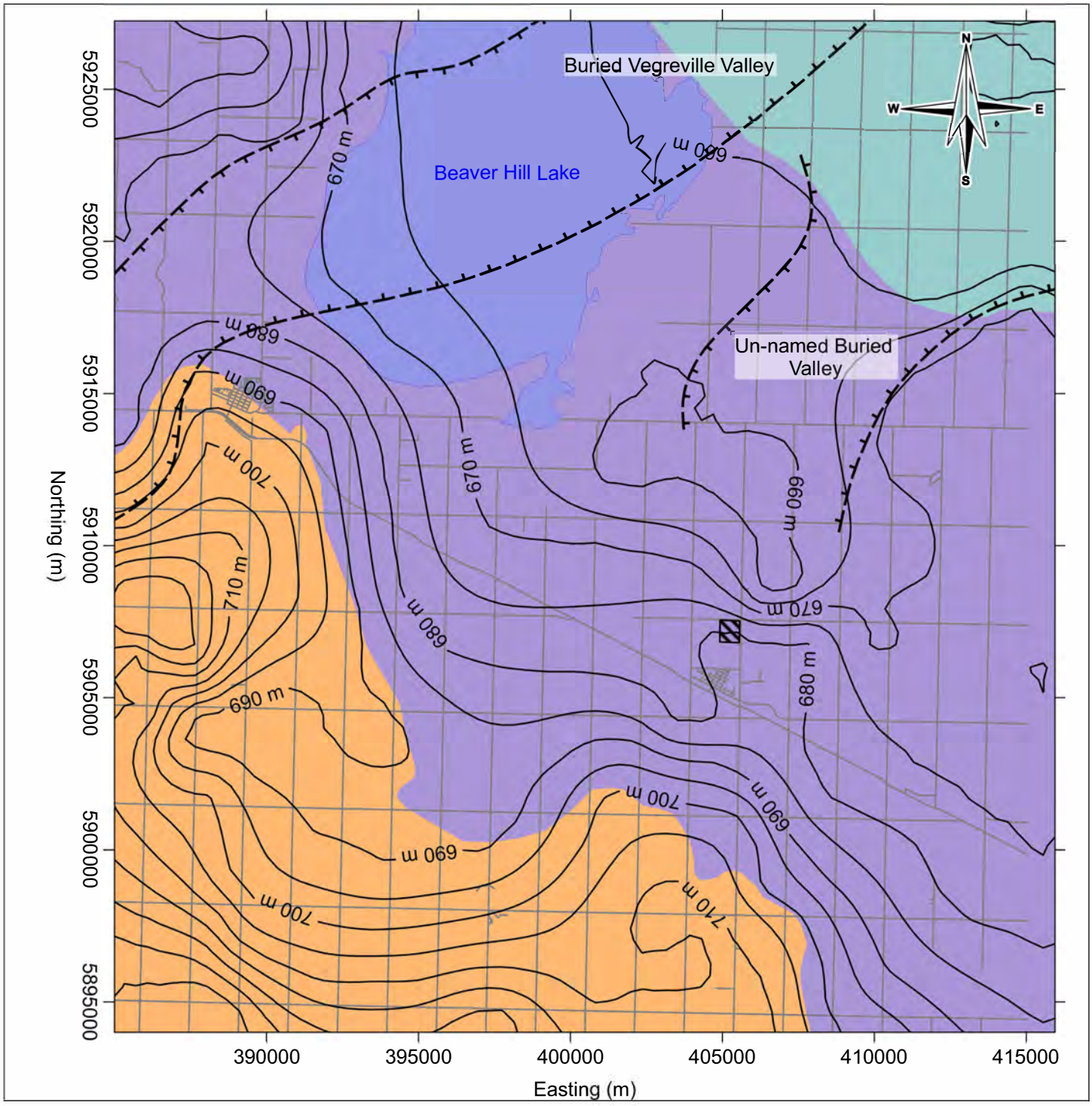
TETRA TECH

FILE NO.
SWOP04591-01_AppB_SW.mxd

OFFICE	DWN	CKD	APVD	REV
Tt-EDM	BB	SL	MS	0

DATE	PROJECT NO.
November 8, 2022	SWM.SWOP04591-01

Appendix B



LEGEND

- Buried Valley
- Bedrock Elevation Contour
- Roadway
- Water body
- Site Location

Bedrock Formation

- Lower Horseshoe Canyon
- Bearpaw
- Oldman (Belly River Group)

NOTES

Geological data obtained from:
County of Beaver No.9
Revised Regional Groundwater Assesment
HCL, 1999
NRC, CanVec+ Base Map

STATUS
Issued for Use

2022 GROUNDWATER MONITORING PROGRAM, RYLEY, AB

Regional Geology

PROJECTION	DATUM
UTM Zone 12	NAD83

0 2 4 6
Kilometres

FILE NO.
AppendixBa - Regional Geology.srf

PROJECT NO.	DWN	CKD	APVD	REV
SWM.SWOP04591-01	CF	BS	AS	0

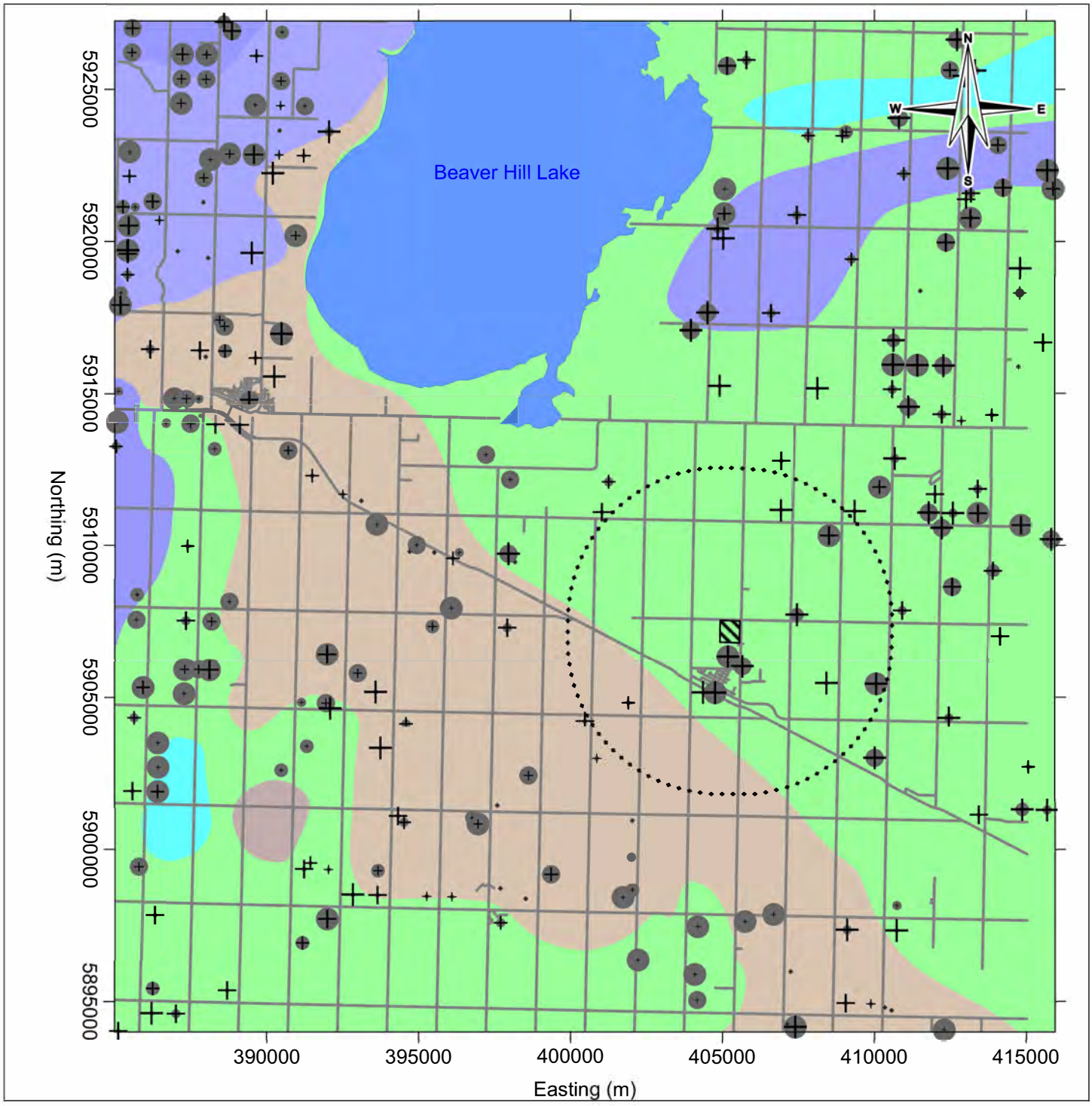
OFFICE	DATE
TtEBA-CAL	November 2022

CLIENT
CleanHarbors

TETRA TECH

Appendix B Figure A

filepath:\\tt.local\eba\Projects\CGY\78070\SWOP04268-01\Data



LEGEND

Well Depth (m)
- 184-470
- 141-184
- 105-141
- 75-105
- 19-75
- Roadway
- Water body
- Site Location
- 5 km Site Radius

Recomended Pump Rate (L/sec)
- 0.44 - 3.15
- 0.32 - 0.44
- 0.25 - 0.32
- 0.14 - 0.25
- 0.03 - 0.14

Expected Groundwater Yield (L/sec)
- < 0.1
- 0.1 - 0.4
- 0.4 - 2
- 2 - 8

NOTES

Hydrogeological data obtained from:
Hydrogeology of the Edmonton Area Southeast Segment, Alberta
R.Stein, 1982
AB Water Well Information Database June 28, 2016
NRC, CanVec+ Base Map

STATUS
Issued for Use

2022 GROUNDWATER MONITORING PROGRAM, RYLEY, AB

Regional Hydrogeology Water Wells

PROJECTION	DATUM	CLIENT
UTM Zone 12	NAD83	CleanHarbors

0 2 4 6
Kilometres

TETRA TECH

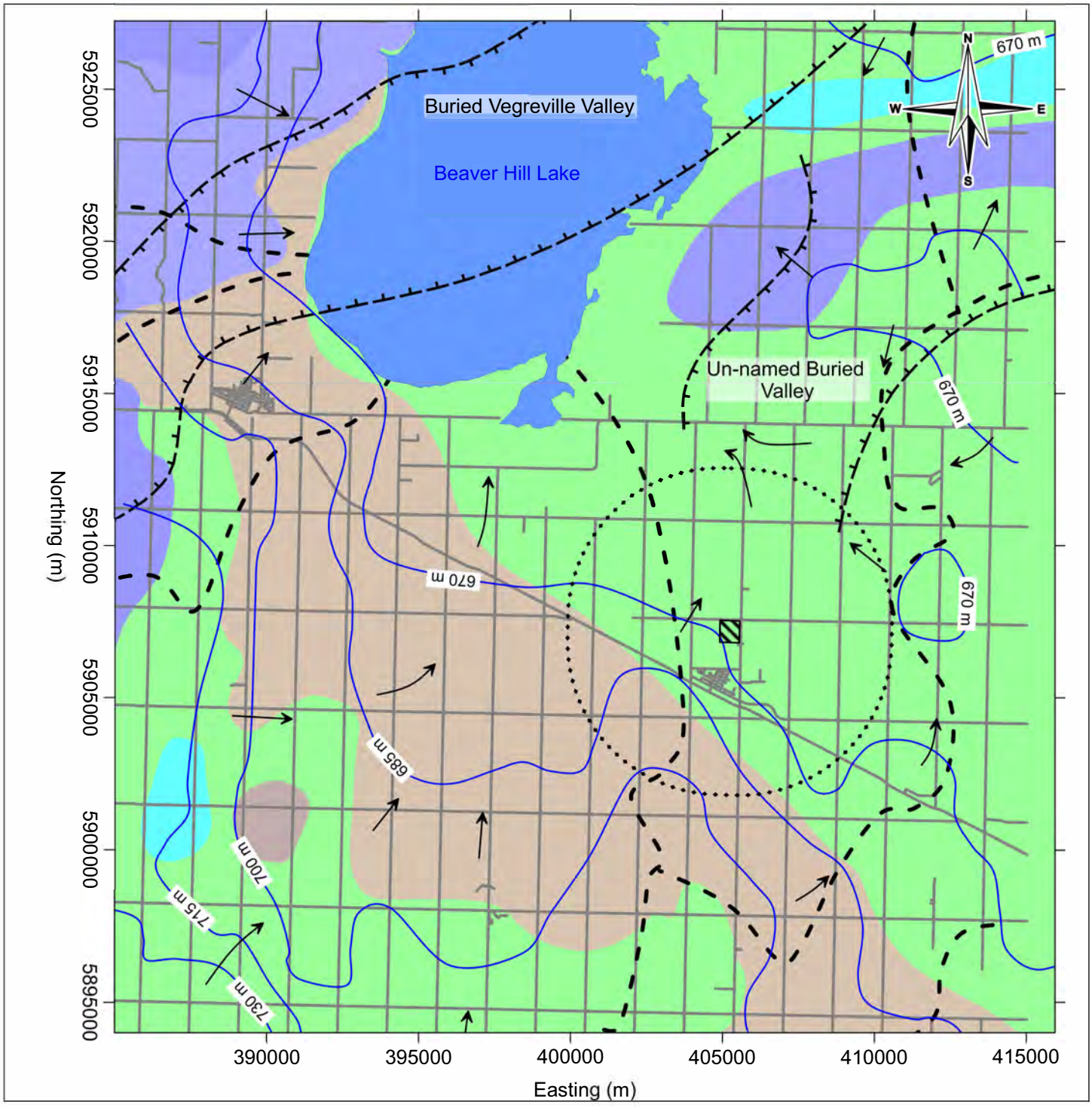
FILE NO.
AppendixBc - Regional Hydrogeology.srf

PROJECT NO.	DWN	CKD	APVD	REV
SWM.SWOP04591-01	CF	BS	AS	0

OFFICE	DATE
TtEBA-CAL	November 2022

Appendix B Figure C

filepath:\\tt.local\eba\Projects\CGY\78070\SWOP04268-01\Data



LEGEND

- Surface Water Divide
- Buried Valley
- Groundwater Flow Direction
- Groundwater Elevation
- Roadway
- Water body
- Site Location
- 5 km Site Radius

Expected Groundwater Yield (L/sec)

- < 0.1
- 0.1 - 0.4
- 0.4 - 2
- 2 - 8

NOTES

Hydrogeological data obtained from:
Hydrogeology of the Edmonton Area
Southeast Segment, Alberta
R.Stein, 1982
NRC, CanVec+ Base Map

STATUS
Issued for Use

2022 GROUNDWATER MONITORING PROGRAM, RYLEY,

Regional Hydrogeology Groundwater Flow

PROJECTION	DATUM	CLIENT
UTM Zone 12	NAD83	CleanHarbors

0 2 4 6
Kilometres

FILE NO.
AppendixBb - Regional Hydrogeology.srf

PROJECT NO.	DWN	CKD	APVD	REV
SWM.SWOP04591-01	CF	BS	AS	0

OFFICE	DATE
TtEBA-CAL	November 2022

TETRA TECH

Appendix B
Figure B

filepath:\\tt.localeba\Projects\CGY\78070\SWOP04268-01\Data

APPENDIX C

BOREHOLE LOGS

RYLEY REGIONAL LANDFILL ASSESSMENT	LAIDLAW WASTE SYSTEMS LTD.	BOREHOLE NO: 01
NE 1/4, SEC. 10-50-17-W4M	DRILL: HOLLOW STEM AUGER	PROJECT: 0105-11099
RYLEY, ALBERTA		ELEVATION: 683.67 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	TOPSOIL - silty, organics, damp, very soft, dark brown, (100mm thick)			
	SAND - trace to some silt, trace of organics, fine to medium grained, unstratified, dry, dense, medium to dark brown			683.0
1	- clayey, clay occurs in random 5mm thick layers, medium to coarse grained, moist, compact, light to medium brown		random backfill -	
	SAND AND CLAY - trace of coal crystals, moist, soft, medium to dark brown			682.0
	CLAY - some silt and fine grained sand, bentonitic, moist, very soft			
2	- silty, 1-2mm thick black laminae, damp, stiff, light brown		bentonite -	
	SANDSTONE - silty, bentonitic, weathered, fine to medium grained, matrix supported, very dense, grey		slotted section -	681.0
3			pea gravel -	
	SILTSTONE - clayey, trace of fine to medium grained, sand, damp, dense, grey			680.0
4			bentonite -	
	CLAY SHALE - silty, plated, damp, hard, dark grey to brown			679.0
5			random cuttings -	
	END OF BOREHOLE (5.3 metres) slough - none at 0 hrs. water - 3.19 metres at 6 hrs. - 2.21 metres at 10 days Piezometer installed to 3.5 metres			678.0
6				
				677.0
7				
7.5				

1 | 2 | 3

TETRA TECH EBA

LOGGED BY: RJM	COMPLETION DEPTH: 5.33 m
REVIEWED BY: RJM	COMPLETE: 92/11/13
DRAWING NO: 11099-01	Page 1 of 1

RYLEY REGIONAL LANDFILL ASSESSMENT	LAIDLAW WASTE SYSTEMS LTD.	BOREHOLE NO: 02
NE 1/4, SEC. 10-50-17-W4M	DRILL: HOLLOW STEM AUGER	PROJECT: 0105-11099
RYLEY, ALBERTA		ELEVATION: 686.17 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	1	2	3	Elevation (m)
0	TOPSOIL - silty, organics, roots, damp, very soft, dark brown						686.0
	CLAY (TILL) - silty, sandy, trace of subangular gravel, salt inclusions, unstratified, damp, very stiff, low plastic, medium brown						
1			random backfill -				685.0
2							684.0
	- moist, firm						
3	- dry to damp, very stiff, dark brown to black		bentonite -				683.0
	SANDSTONE - silty, bentonitic, weathered, fine to medium grained, dry, very dense, grey		slotted section -				
4			pea gravel -				682.0
	SILTSTONE - clayey, trace of fine to medium grained sand, clay shale stringers, damp, dense, grey						
5			bentonite -				681.0
	END OF BOREHOLE (5.3 metres) slough - none at 0 hrs. water - 3.99 metres at 4 hrs. - 3.92 metres at 10 days Piezometer installed to 4.6 metres						
6							680.0
7							679.0
7.5							

TETRA TECH EBA

LOGGED BY: RJM	COMPLETION DEPTH: 5.33 m
REVIEWED BY: RJM	COMPLETE: 92/11/13
DRAWING NO: 11099-02	Page 1 of 1

RYLEY REGIONAL LANDFILL ASSESSMENT	LAIDLAW WASTE SYSTEMS LTD.	BOREHOLE NO: 03
NE 1/4, SEC. 10-50-17-W4M	DRILL: SOLID FLIGHT AUGER	PROJECT: 0105-11099
RYLEY, ALBERTA		ELEVATION: 688.78 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	CLAY (FILL)		grout -	
1	GARBAGE		bentonite -	688.0
2	CLAY (FILL)			687.0
	GARBAGE		slotted section -	
3	CLAY (FILL)		sand filter -	686.0
	GARBAGE			
4	CLAY (TILL) - silty, sandy, gravel sizes, clay shale nodules, sandstone pockets, stiff, medium plastic, brown		random backfill -	685.0
5				684.0
6	END OF BOREHOLE (5.3 metres) slough - none at 0 hrs. water - dry at 0 hrs. - dry at 5 hrs. - dry at 10 days - dry at 25 days Well installed to 3.8 metres Note: Backfilled to 3.8 metres.			683.0
7				682.0
7.5				

1 2 3

TETRA TECH EBA

LOGGED BY: RJM	COMPLETION DEPTH: 5.33 m
REVIEWED BY: RJM	COMPLETE: 92/11/13
DRAWING NO: 11099-03	Page 1 of 1

RYLEY REGIONAL LANDFILL ASSESSMENT	LAIDLAW WASTE SYSTEMS LTD.	BOREHOLE NO: 04
NE 1/4, SEC. 10-50-17-W4M	DRILL: SOLID FLIGHT AUGER	PROJECT: 0105-11099
RYLEY, ALBERTA		ELEVATION: 688.17 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	CLAY (FILL)		grout -	688.0
1	GARBAGE		bentonite -	687.0
2				686.0
3	CLAY (FILL)		slotted section - sand filter -	685.0
4	GARBAGE			684.0
5	END OF BOREHOLE (4.7 metres) slough - none at 0 hrs. water - dry at 3 hrs. - dry at 10 days - dry at 25 days Well installed to 4.7 metres			683.0
6				682.0
7				681.0
7.5				

TETRA TECH EBA

LOGGED BY: RJM	COMPLETION DEPTH: 4.72 m
REVIEWED BY: RJM	COMPLETE: 92/11/13
DRAWING NO: 11099-04	Page 1 of 1

RYLEY REGIONAL LANDFILL ASSESSMENT	LAIDLAW WASTE SYSTEMS LTD.	BOREHOLE NO: 05
NE 1/4, SEC. 10-50-17-W4M	DRILL: SOLID FLIGHT AUGER	PROJECT: 0105-11099
RYLEY, ALBERTA		ELEVATION: 688.21 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	CLAY (FILL) - silty, sandy, sandstone inclusions, brown		grout -	688.0
1	GARBAGE			687.0
2			bentonite -	686.0
3				685.0
4				684.0
5			slotted section - sand filter -	683.0
6	SANDSTONE - silty, medium to coarse grained, very dense, grey		slough -	682.0
7	END OF BOREHOLE (6.1 metres) slough - 5.93 metres at 0 hrs. water - 5.3 metres at 2 hrs. - 5.37 metres at 10 days - 5.31 metres at 25 days Well installed to 5.93 metres			681.0
7.5				

1 2 3

TETRA TECH EBA

LOGGED BY: RJM	COMPLETION DEPTH: 6.1 m
REVIEWED BY: RJM	COMPLETE: 92/11/13
DRAWING NO: 11099-05	Page 1 of 1

RYLEY REGIONAL LANDFILL ASSESSMENT	LAIDLAW WASTE SYSTEMS LTD.	BOREHOLE NO: 06
NE 1/4, SEC. 10-50-17-W4M	DRILL: SOLID FLIGHT AUGER	PROJECT: 0105-11099
RYLEY, ALBERTA		ELEVATION: 684.47 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	CLAY (FILL) - silty, sandy, dessicated, low plastic, brown		grout -	684.0
1				
	GARBAGE - metal, cable		bentonite -	683.0
2				682.0
3			sand filter - slotted section -	681.0
4				680.0
	SANDSTONE - silty, coarse grained, dense, grey			
5	CLAY SHALE - silty, hard, high plastic, grey/brown			679.0
	END OF BOREHOLE (5.2 metres) slough - none at 0 hrs. water - 2.55 metres at 1 hr. - 2.17 metres at 10 days Well installed to 5.15 metres			
6				678.0
7				
7.5				677.0

1 2 3

TETRA TECH EBA

LOGGED BY: RJM	COMPLETION DEPTH: 5.15 m
REVIEWED BY: RJM	COMPLETE: 92/11/13
DRAWING NO: 11099-06	Page 1 of 1

RYLEY REGIONAL LANDFILL ASSESSMENT	LAIDLAW WASTE SYSTEMS LTD.	BOREHOLE NO: 08
NE 1/4, SEC. 10-50-17-W4M	DRILL: SOLID FLIGHT AUGER	PROJECT: 0105-11099
RYLEY, ALBERTA		ELEVATION: 685.53 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	TOPSOIL - organic silt, sandy, some clay, brown to black, frozen, (75mm thick)		grout -	685.0
	CLAY (TILL) - silty, sandy, occasional gravel sizes, low plastic, brown, frozen			
	- end of frost			
1			bentonite -	684.0
2	- coal pockets, moist, very stiff			
				683.0
	- sandstone and clay shale nodules, grey		slotted section -	
3	CLAY SHALE - carbonaceous, friable, very stiff, dark brown			
	SANDSTONE - silty, clayey, clay shale stringers and lenses, medium to coarse grained, moist, grey		sand filter -	682.0
4				
	END OF BOREHOLE (4.3 metres)			681.0
	slough - none at 0 hrs.			
	water - dry at 0 hrs.			
	- dry at 6 hrs.			
5	- 3.26 metres at 11 days			
	Well installed to 4.1 metres			680.0
6				
				679.0
7				
7.5				

1 | 2 | 3

TETRA TECH EBA

LOGGED BY: RJM	COMPLETION DEPTH: 4.26 m
REVIEWED BY: RJM	COMPLETE: 92/11/27
DRAWING NO: 11099-08	Page 1 of 1

RYLEY REGIONAL LANDFILL ASSESSMENT	LAIDLAW WASTE SYSTEMS LTD.	BOREHOLE NO: 09
NE 1/4, SEC. 10-50-17-W4M	DRILL: SOLID FLIGHT AUGER	PROJECT: 0105-11099
RYLEY, ALBERTA		ELEVATION: 685.77 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	TOPSOIL - organic silt, sandy, some clay, frozen, (100mm thick)		grout -	685.0
	CLAY (TILL) - silty, sandy, occasional gravel sizes, brown, frozen - end of frost			
1				
			bentonite -	684.0
2				
	CLAY SHALE - silty, reworked, very stiff, high plastic, brown to grey			683.0
3			slotted section -	
	SANDSTONE AND CLAY SHALE - interbedded, sandstone - silty, clayey, dense, grey, clay shale - silty, very stiff, high plastic, grey/brown		sand filter -	
	SANDSTONE - silty, clayey, medium to coarse grained, damp, dense, grey			682.0
4				
	END OF BOREHOLE (4.4 metres) slough - none at 0 hrs. water - dry at 0 hrs. - dry at 5 days - 3.33 metres at 11 days Well installed to 4.4 metres			681.0
5				
				680.0
6				
				679.0
7				
7.5				

TETRA TECH EBA

LOGGED BY: RJM	COMPLETION DEPTH: 4.41 m
REVIEWED BY: RJM	COMPLETE: 92/11/27
DRAWING NO: 11099-09	Page 1 of 1

RYLEY REGIONAL LANDFILL ASSESSMENT	LAIDLAW WASTE SYSTEMS LTD.	BOREHOLE NO: 10
NE 1/4, SEC. 10-50-17-W4M	DRILL: SOLID FLIGHT AUGER	PROJECT: 0105-11099
RYLEY, ALBERTA		ELEVATION: 683.96 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	TOPSOIL - (25mm thick)		grout -	
	CLAY - sandy, silty, white salt deposits, rust specks, dessicated, brown, frozen			
	- end of frost		bentonite -	
1	CLAY (TILL) - silty, sandy, gravel sizes, coal pockets, clay shale and sandstone nodules, damp, stiff, medium plastic, brown			683.0
	SANDSTONE - clayey, silty, clay shale stringers, weathered, medium to coarse grained, moist, brown to grey		slotted section -	
2				682.0
	- bentonitic, occasional clay shale stringers, dense, grey			
			sand filter -	
3				681.0
4				680.0
	END OF BOREHOLE (4.3 metres)			
	slough - none at 0 hrs.			
	water - dry at 0 hrs.			
	- dry at 4 hrs.			
	- dry at 11 days			
5	Well installed to 3.1 metres			679.0
6				678.0
7				677.0
7.5				

1 | 2 | 3

TETRA TECH EBA

LOGGED BY: RJM	COMPLETION DEPTH: 4.26 m
REVIEWED BY: RJM	COMPLETE: 92/11/27
DRAWING NO: 11099-10	Page 1 of 1

RYLEY REGIONAL LANDFILL ASSESSMENT	LAIDLAW WASTE SYSTEMS LTD.	BOREHOLE NO: 11
NE 1/4, SEC. 10-50-17-W4M	DRILL: SOLID FLIGHT AUGER	PROJECT: 0105-11099
RYLEY, ALBERTA		ELEVATION: 683.85 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	TOPSOIL - silt, sandy, frozen, (50mm thick)		grout -	
	CLAY - silty, sandy, white salt stains, dessicated, brown			
	CLAY (TILL) - silty, sandy, gravel sizes, moist, low plastic, brown			
1				683.0
	CLAY SHALE - silty, plated, very stiff, brown		bentonite -	
2				682.0
			slotted section -	
3	- blocky, high plastic, grey			681.0
			sand filter -	
4				680.0
	END OF BOREHOLE (4.3 metres) slough - none at 0 hrs. water - dry at 0 hrs. - dry at 3 hrs. - dry at 11 days Well installed to 4.2 metres			
5				679.0
6				678.0
7				677.0
7.5				

1 | 2 | 3

TETRA TECH EBA

LOGGED BY: RJM	COMPLETION DEPTH: 4.26 m
REVIEWED BY: RJM	COMPLETE: 92/11/27
DRAWING NO: 11099-11	Page 1 of 1

RYLEY REGIONAL LANDFILL ASSESSMENT	LAIDLAW WASTE SYSTEMS LTD.	BOREHOLE NO: 12
NE 1/4, SEC. 10-50-17-W4M	DRILL: SOLID FLIGHT AUGER	PROJECT: 0105-11099
RYLEY, ALBERTA		ELEVATION: 684.2 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	TOPSOIL - organic silt, sandy, frozen, (50mm thick)		grout -	684.0
	CLAY - sandy, silt, white salt stains, rust specks, dessicated, brown			
1	CLAY (TILL) - silty, sandy, gravel sizes, stiff to very stiff, low plastic			683.0
	SANDSTONE - silty, clayey, clay shale stringers, oxidized, weathered, medium to coarse grained, brown		bentonite -	
2	- grey			682.0
3	CLAY SHALE - silty, friable, damp, hard, high plastic, brown		slotted section -	681.0
	- grey/brown		sand filter -	
4				680.0
	END OF BOREHOLE (4.3 metres) slough - none at 0 hrs. water - dry at 0 hrs. - dry at 2 hrs. - 3.54 metres at 11 days Well installed to 4.32 metres			
5				679.0
6				678.0
7				677.0
7.5				

1 | 2 | 3

TETRA TECH EBA

LOGGED BY: RJM	COMPLETION DEPTH: 4.26 m
REVIEWED BY: RJM	COMPLETE: 92/11/27
DRAWING NO: 11099-12	Page 1 of 1

RYLEY REGIONAL LANDFILL ASSESSMENT	LAIDLAW WASTE SYSTEMS LTD.	BOREHOLE NO: 13
NE 1/4, SEC. 10-50-17-W4M	DRILL: SOLID FLIGHT AUGER	PROJECT: 0105-11099
RYLEY, ALBERTA		ELEVATION: 686.66 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	MOISTURE CONTENT (PLASTIC / M.C. / LIQUID)	STANDARD PENETRATION (N) / UNC. COMPRESSIVE STRENGTH (kPa) / POCKET PEN. (kPa)	MW13	Elevation (m)
0	TOPSOIL - clayey, silty, organic, peaty, black						686.0
1	CLAY (TILL) - silty, sandy, occasional gravel, damp, stiff to very stiff, low to medium plastic, medium brown		A1				685.0
2	SANDSTONE (BEDROCK) - silty, fine grained, homogeneous, damp, poorly cemented, very low strength, green grey, pale grey speckling, glauconitic, interbedded with shale horizons - clay shale horizons - silty, medium to high plastic, dark grey		A2				684.0
3	END OF BOREHOLE (2.4 metres) Notes: Stopped due to auger refusal (cemented sandstone band) Permanent Monitoring well installed to 2.4 metres						683.0
4							682.0
5							681.0
6							680.0
7							
7.5							

TETRA TECH EBA

LOGGED BY: VS/VJ	COMPLETION DEPTH: 2.4 m
REVIEWED BY:	COMPLETE: 91/02/19
DRAWING NO: 11099-12	Page 1 of 1

GEOTECHNICAL-PRE2015 ZONE12.GPJ EBA.GDT 15/7/22

RYLEY REGIONAL LANDFILL ASSESSMENT	LAIDLAW WASTE SYSTEMS LTD.	BOREHOLE NO: 14
NE 1/4, SEC. 10-50-17-W4M	DRILL: SOLID FLIGHT AUGER	PROJECT: 0105-11099
RYLEY, ALBERTA		ELEVATION: 686.52 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	Elevation (m)
0	TOPSOIL (FILL) - slightly organic, dark brown	686.0
	- clayey	
1	CLAY (TILL) - silty, sandy, stiff to very stiff, medium plastic, grey, pebbles	685.0
2	- free water	684.0
	SANDSTONE (BEDROCK) - silty, some clay, fine grained, moist, dense, light grey, occasional shaly inclusion	
3		683.0
4	- clay shale inclusions - grey to brown	682.0
5 ▼ 0 hrs.		681.0
	END OF BOREHOLE (5.4 metres) water - 5.0 metres at 0 hrs. Monitoring well installed to 5.4 metres	
6		680.0
7		
7.5		

SAMPLE TYPE | MOISTURE CONTENT | PLASTIC M.C. LIQUID (20 40 60 80) | STANDARD PENETRATION (N) (20 40 60 80) | UNC. COMPRESSIVE STRENGTH (kPa) (50 100 150 200) | POCKET PEN. (kPa) (100 200 300 400) | MW14 ▼ 0 hrs.

TETRA TECH EBA

LOGGED BY: VS/VJ	COMPLETION DEPTH: 5.4 m
REVIEWED BY:	COMPLETE: 92/07/22
DRAWING NO: 11099-12	Page 1 of 1

RYLEY - CELL 2 MONITORING WELLS	LAIDLAW ENVIRONMENTAL SERVICES LTD.	BOREHOLE NO: 01B
	DRILL: SOLID STEM AUGER	PROJECT: 0105-96-12416
RYLEY, ALBERTA		ELEVATION: 687.85 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	TOPSOIL - sandy, roots, black, (150mm thick)		Pipe stickup = 0.91 metres	
1	CLAY - silty, some oxide stains, white salt and carbonate pockets, damp, very stiff, medium plastic, grey brown			687.0
	- occasional pebbles, coal pockets, no visible white pockets, olive grey brown			
2				686.0
	- moist, stiff			
3				685.0
	CLAY SHALE - silty, some sand, friable, damp, soft, low to medium plastic, dark grey			
4				684.0
	SANDSTONE - some silt and clay, fine to medium grained, friable, uncemented, blue green grey			
	- clay shale interbeds			683.0
5 ▼				
6				682.0
	CLAY SHALE - sandstone interbeds			
7				681.0
	- siltstone layer - some silt and clay, fine to medium grained, friable, uncemented, blue green grey			
8				680.0
9				679.0
10	END OF BOREHOLE (9.9 metres)			678.0
	slough - none at 0 hrs.			
	water - dry at 0 hrs.			
	- 5.2 metres at 1 day			
11	Monitoring well installed to 9.9 metres			677.0
12				676.0

TETRA TECH EBA

LOGGED BY: SP	COMPLETION DEPTH: 9.9 m
REVIEWED BY: SP	COMPLETE: 96/09/30
DRAWING NO: 12416-04	Page 1 of 1

RYLEY - CELL 2 MONITORING WELLS	LAIDLAW ENVIRONMENTAL SERVICES LTD.	BOREHOLE NO: 05B
	DRILL: SOLID STEM AUGER	PROJECT: 0105-96-12416
RYLEY, ALBERTA		ELEVATION: 687.41 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	TOPSOIL - silty, sandy, organics, roots, moist, brown black, (150mm thick)		Pipe stickup = 0.91 metres	687.0
1	CLAY - silty, sandy, some salt inclusions, pebbles, coal pockets, oxide stains, very fine grained sand, damp, stiff, medium plastic, grey brown			686.0
2	- more silty, less sand, moist			685.0
3	- harder			684.0
4	CLAY SHALE - silty, some sand, damp, hard, high plastic, green grey with dark blue pockets			683.0
5	SANDSTONE - some clay, silt, fine to medium grained, friable, hard, low plastic, blue green grey			682.0
6	- clay shale lenses			681.0
7	SILTSTONE - pebbles, strongly cemented, dry, hard, light grey			680.0
8	CLAY SHALE - silty, some sand, damp, hard, high plastic, green grey with dark blue pockets			679.0
9	- less silt and sand, stronger, dry, dark grey			678.0
10	END OF BOREHOLE (9.8 metres) slough - none at 0 hrs. water - dry at 0 hrs. - 9.1 metres at 7 days Monitoring well installed to 9.8 metres			677.0
11				676.0
12				

TETRA TECH EBA

LOGGED BY: SP	COMPLETION DEPTH: 9.75 m
REVIEWED BY: SP	COMPLETE: 96/09/23
DRAWING NO: 12416-02	Page 1 of 1

RYLEY - CELL 2 MONITORING WELLS	LAIDLAW ENVIRONMENTAL SERVICES LTD.	BOREHOLE NO: 12B
	DRILL: SOLID STEM AUGER	PROJECT: 0105-96-12416
RYLEY, ALBERTA		ELEVATION: 687.09 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	TOPSOIL - silty, sandy, roots, black, (150mm thick)		Pipe stickup = 0.76 metres	687.0
1	CLAY (TILL) - silty, some sand, salt pockets, oxide stains, damp, very stiff, medium plastic, brown			686.0
2	- sand lense - silty, clay, fine to medium grained, firm, medium plastic, mottled brown grey - some pebbles, coal pockets, moist, stiff, green brown			685.0
3	CLAY SHALE - silty, dry to damp, hard, high plastic, dark grey			684.0
4				683.0
5	SANDSTONE - silty, some clay, fine to medium grained, friable, uncemented, damp, soft, low plastic, blue green grey - siltstone layer - strongly cemented, hard, light grey, (100mm thick) - sandier			682.0
6	SILTSTONE - strongly cemented, hard, light grey CLAY SHALE - silty, some sand, glauconitic sand layers, damp to moist, hard, medium plastic, blue green grey to brown grey			681.0
7				680.0
8				679.0
9	- brown grey			678.0
10	END OF BOREHOLE (9.9 metres) slough - none at 0 hrs. water - dry at 0 hrs. Monitoring well installed to 9.9 metres			677.0
11				676.0
12				

TETRA TECH EBA

LOGGED BY: SP	COMPLETION DEPTH: 9.9 m
REVIEWED BY: SP	COMPLETE: 96/09/30
DRAWING NO: 12416-03	Page 1 of 1

RYLEY - CELL 2 MONITORING WELLS	LAIDLAW ENVIRONMENTAL SERVICES LTD.	BOREHOLE NO: 18A
	DRILL: HOLLOW STEM AUGER	PROJECT: 0105-96-12416
RYLEY, ALBERTA		ELEVATION: 687.16 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	TOPSOIL - silty, sandy, organics, roots, soft, low plastic, grey black		Pipe stickup = 0.76 metres	687.0
1	SAND - silty, clayey, some pebbles, orange oxide stains, friable, loose, low plastic, grey brown			686.0
	CLAY (TILL) - silty, orange oxide stains, blocky, very stiff to hard, medium to high plastic, mottled grey brown			
2				685.0
3	CLAY SHALE AND SANDSTONE - interbedded, clay shale - silty, damp, hard, high plastic, mottled brown grey			684.0
4	sandstone - silty, glauconitic, fine to medium grained, friable, uncemented, damp, blue green grey			683.0
	SANDSTONE - with clay shale seams			
5				682.0
	SILTSTONE - some sand, cemented, friable, dry, light grey			
6	SANDSTONE - with clay shale seams 13-25mm thick			681.0
7	CLAY SHALE - with sandstone seams			680.0
8	- no visible sandstone seams			679.0
9	- sandstone seam			678.0
10	SILTSTONE - some clay, cemented, dry, hard, light brown			677.0
	END OF BOREHOLE (9.9 metres) slough - none at 0 hrs. water - dry at 0 hrs.			
11	Monitoring well installed to 9.9 metres			676.0
12				

TETRA TECH EBA

LOGGED BY: SP	COMPLETION DEPTH: 9.9 m
REVIEWED BY: SP	COMPLETE: 96/10/01
DRAWING NO: 12416-05	Page 1 of 1

RYLEY - CELL 2 MONITORING WELLS	LAIDLAW ENVIRONMENTAL SERVICES LTD.	BOREHOLE NO: 18B
	DRILL: SOLID STEM AUGER	PROJECT: 0105-96-12416
RYLEY, ALBERTA		ELEVATION: 687.15 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	TOPSOIL - silty, sandy, organics, roots, soft, low plastic, grey black		Pipe stickup = 0.76 metres	687.0
1	SAND - silty, clayey, some pebbles, orange oxide stains, friable, loose, low plastic, grey brown			686.0
	CLAY (TILL) - silty, orange oxide stains, blocky, very stiff to hard, medium to high plastic, mottled grey brown			
2				685.0
3				684.0
4 ▼	CLAY SHALE AND SANDSTONE - interbedded, clay shale - silty, damp, hard, high plastic, mottled brown grey sandstone - silty, glauconitic, fine to medium grained, friable, uncemented, damp, blue green grey			683.0
	SANDSTONE - with clay shale seams			
5				682.0
	END OF BOREHOLE (5.3 metres) slough - none at 0 hrs. water - 4.0 metres at 0 hrs. Monitoring well installed to 5.3 metres			
6				681.0
7				680.0
8				679.0
9				678.0
10				677.0
11				676.0
12				

TETRA TECH EBA

LOGGED BY: SP	COMPLETION DEPTH: 5.33 m
REVIEWED BY: SP	COMPLETE: 96/10/01
DRAWING NO: 12416-06	Page 1 of 1

RYLEY - CELL 2 MONITORING WELLS	LAIDLAW ENVIRONMENTAL SERVICES LTD.	BOREHOLE NO: 19A
	DRILL: HOLLOW STEM AUGER	PROJECT: 0105-96-12416
RYLEY, ALBERTA		ELEVATION: 686.46 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	CLAY (FILL) - silty, sandy, moist, soft, medium plastic, yellow brown, (100mm thick)		Pipe stickup = 0.76 metres	686.0
1	CLAY - silty, some sand pockets, salt pockets, damp, stiff, medium plastic, mottled grey brown			685.0
	- moist, softer			
2	- clay layer - oxidized, blocky, (75mm thick)			684.0
3	SANDSTONE - clayey, silty, glauconitic, fine to medium grained, poorly cemented, friable, damp, very stiff, blue green grey			683.0
	- wet			
4	- clay shale seams			682.0
5	SANDSTONE AND CLAY SHALE - interbedded			681.0
6	CLAY SHALE - silty, some sand interbeds, damp, hard, high plastic, dark grey			680.0
	- more frequent sandstone layers			
7	- no visible sandstone layers			679.0
8	- 13-25mm thick sandstone seams			678.0
9				677.0
10	END OF BOREHOLE (9.9 metres) slough - 9.6 metres at 0 hrs. water - 2.1 metres at 0 hrs. Monitoring well installed to 9.9 metres			676.0
11				675.0
12				

TETRA TECH EBA

LOGGED BY: SP	COMPLETION DEPTH: 9.9 m
REVIEWED BY: SP	COMPLETE: 96/10/01
DRAWING NO: 12416-07	Page 1 of 1

RYLEY - CELL 2 MONITORING WELLS	LAIDLAW ENVIRONMENTAL SERVICES LTD.	BOREHOLE NO: 19B
	DRILL: SOLID STEM AUGER	PROJECT: 0105-96-12416
RYLEY, ALBERTA		ELEVATION: 686.54 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	CLAY (FILL) - silty, sandy, moist, soft, medium plastic, yellow brown, (100mm thick)		Pipe stickup = 0.76 metres	686.0
1	CLAY - silty, some sand pockets, salt pockets, damp, stiff, medium plastic, mottled grey brown			685.0
	- moist, softer			
2	- clay layer - oxidized, blocky, (75mm thick)			684.0
3	SANDSTONE - clayey, silty, glauconitic, fine to medium grained, poorly cemented, friable, damp, very stiff, blue green grey			683.0
	- wet			
4	- clay shale seams			682.0
5	SANDSTONE AND CLAY SHALE - interbedded			681.0
6	END OF BOREHOLE (5.3 metres) slough - none at 0 hrs. water - 2.1 metres at 0 hrs. Monitoring well installed to 5.3 metres			680.0
7				679.0
8				678.0
9				677.0
10				676.0
11				675.0
12				

TETRA TECH EBA

LOGGED BY: SP	COMPLETION DEPTH: 5.33 m
REVIEWED BY: SP	COMPLETE: 96/10/01
DRAWING NO: 12416-08	Page 1 of 1

RYLEY - CELL 2 MONITORING WELLS	LAIDLAW ENVIRONMENTAL SERVICES LTD.	BOREHOLE NO: 20A
	DRILL: HOLLOW STEM AUGER	PROJECT: 0105-96-12416
RYLEY, ALBERTA		ELEVATION: 688.94 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	TOPSOIL - silty, sandy, organics, roots, brown black, (300mm thick)		Pipe stickup = 0.76 metres	
1	CLAY (TILL) - silty, sandy, some pebbles, abundant salt pockets, roots to 0.5 metres, dry, hard, medium plastic, grey brown			688.0
2	- 2-4mm thick white carbonate salt seams at 13mm spacing			687.0
3	- orange oxide stains, coal pockets, very stiff			686.0
4	CLAY SHALE - silty, some sand lenses, friable, damp, hard, high plastic, dark grey			685.0
5	SANDSTONE - silty, clay shale seams, medium grained, friable, uncemented, damp, blue green grey			684.0
6	CLAY SHALE AND SANDSTONE - interbedded SANDSTONE - with 25mm thick clay shale layers			683.0
7				682.0
8	SILTSTONE - clayey, very fine grained, cemented, dry, hard, light grey CLAY SHALE AND SANDSTONE - interbedded			681.0
9	CLAY SHALE - silty, some sand lenses, friable, damp, hard, high plastic, dark grey			680.0
10	END OF BOREHOLE (9.9 metres) slough - 9.7 metres at 0 hrs. water - dry at 0 hrs. Monitoring well installed to 9.9 metres			679.0
11				678.0
12				677.0

TETRA TECH EBA

LOGGED BY: SP	COMPLETION DEPTH: 9.9 m
REVIEWED BY: SP	COMPLETE: 96/10/01
DRAWING NO: 12416-09	Page 1 of 1

RYLEY - CELL 2 MONITORING WELLS	LAIDLAW ENVIRONMENTAL SERVICES LTD.	BOREHOLE NO: 20B
	DRILL: SOLID STEM AUGER	PROJECT: 0105-96-12416
RYLEY, ALBERTA		ELEVATION: 688.99 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	TOPSOIL - silty, sandy, organics, roots, brown black, (300mm thick)		Pipe stickup = 0.76 metres	
	CLAY (TILL) - silty, sandy, some pebbles, abundant salt pockets, roots to 0.5 metres, dry, hard, medium plastic, grey brown			
1				688.0
2	- 2-4mm thick white carbonate salt seams at 13mm spacing			687.0
3	- orange oxide stains, coal pockets, very stiff			686.0
4				685.0
	CLAY SHALE - silty, some sand lenses, friable, damp, hard, high plastic, dark grey			
5	SANDSTONE - silty, clay shale seams, medium grained, friable, uncemented, damp, blue green grey			684.0
	CLAY SHALE AND SANDSTONE - interbedded			
6	END OF BOREHOLE (5.3 metres) slough - none at 0 hrs. water - 5.2 metres at 0 hrs. Monitoring well installed to 5.3 metres			683.0
7				682.0
8				681.0
9				680.0
10				679.0
11				678.0
12				677.0

TETRA TECH EBA

LOGGED BY: SP	COMPLETION DEPTH: 5.33 m
REVIEWED BY: SP	COMPLETE: 96/10/01
DRAWING NO: 12416-10	Page 1 of 1

CELL 3 - CONSTRUCTION	SAFETY KLEEN INC.	BOREHOLE NO: 21A
	DRILL: SOLID STEM AUGER	PROJECT: 0105-98-12892.4
RYLEY, ALBERTA	628.02N; 1001.60E	ELEVATION: 687.65 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	TOPSOIL - silty, sandy, organics, rootlets, dark brown, (50mm thick)		Pipe stickup = 0.73 metres	687.0
	SILT AND CLAY - abundant salt deposits, friable, dry, loose, light brown			
1	CLAY (TILL) - silty, trace of sand, friable, damp to moist, very stiff, low to medium plastic, mottled brown			686.0
2				
	SANDSTONE - interbedded clay seams, silty, some 50mm angular rock, brown nodules, medium grained, uncemented, damp to moist, olive blue			685.0
3	- dry to moist, blue green			
	- free water			684.0
4				
	SILTSTONE - very fine grained, cemented, dry, hard, light grey			683.0
5	- trace of fine gravel to 5mm diameter			
	CLAY SHALE AND SANDSTONE - interbedded, medium grained, uncemented, moist, stiff, medium plastic, grey brown clay shale, blue-green sandstone			682.0
6				
	CLAY SHALE - trace of gravel to 2mm diameter, friable, damp to moist, very stiff to hard, low to medium plastic, grey			681.0
7	SILTSTONE - friable, cemented, dry, grey			
	CLAY SHALE - silty, some sand lenses and brown lenses, friable, damp, hard, low to medium plastic, grey			680.0
8	CLAY SHALE AND SILTSTONE - interbedded			
9				679.0
				678.0
10	END OF BOREHOLE (9.9 metres) slough - none at 0 hrs. water - dry at 0 hrs. Monitoring well installed to 9.9 metres			
11				677.0
				676.0
12				

TETRA TECH EBA

LOGGED BY: JSF	COMPLETION DEPTH: 9.9 m
REVIEWED BY: RJM	COMPLETE: 98/10/01
DRAWING NO: 12892-01	Page 1 of 1

CELL 3 - CONSTRUCTION	SAFETY KLEEN INC.	BOREHOLE NO: 21B
	DRILL: SOLID STEM AUGER	PROJECT: 0105-98-12892.4
RYLEY, ALBERTA	626.61N; 1001.58E	ELEVATION: 687.55 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	TOPSOIL - silty, sandy, organics, rootlets, dark brown, (50mm thick)		Pipe stickup = 1.04 metres	687.0
	SILT AND CLAY - abundant salt deposits, friable, dry, loose, light brown			
1	CLAY (TILL) - silty, trace of sand, friable, damp to moist, very stiff, low to medium plastic, mottled brown			686.0
2				
	SANDSTONE - interbedded clay seams, silty, some 50mm angular rock, brown nodules, medium grained, uncemented, damp to moist, olive blue			685.0
3	- dry to moist, blue green			
	- free water			684.0
4				
	SILTSTONE - very fine grained, cemented, dry, hard, light grey			683.0
5	- trace of fine gravel to 5mm diameter			
	END OF BOREHOLE (5.0 metres) slough - none at 0 hrs. water - dry at 0 hrs. Monitoring well installed to 4.9 metres			682.0
6				
				681.0
7				
				680.0
8				
				679.0
9				
				678.0
10				
				677.0
11				
				676.0
12				

TETRA TECH EBA

LOGGED BY: JSF	COMPLETION DEPTH: 5.02 m
REVIEWED BY: RJM	COMPLETE: 98/10/01
DRAWING NO: 12892-02	Page 1 of 1

CELL 3 - CONSTRUCTION	SAFETY KLEEN INC.	BOREHOLE NO: 22A
	DRILL: SOLID STEM AUGER	PROJECT: 0105-98-12892.4
RYLEY, ALBERTA	591.82N; 1069.20E	ELEVATION: 687.86 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	SILT AND CLAY - salt deposits, friable, damp, soft, low plastic, brown		Pipe stickup = 0.88 metres	
1	CLAY (TILL) - silty, moist, stiff, medium plastic, mottled brown - salt streaks			687.0
2	- gypsum, oxide stains			686.0
3	SANDSTONE - some clay, trace of pebbles, medium grained, uncemented, damp to moist, brown - oxide stains, very moist - interbedded clay seams, silty, brown nodules, olive green			685.0
4	- 50mm angular rock			684.0
5	CLAY SHALE - trace of very hard siltstone, friable, cemented, dry to damp, hard, medium plastic, grey - trace of sand, medium grained			683.0
6				682.0
7	- brown nodules			681.0
8				680.0
9	CLAY SHALE AND SANDSTONE - interbedded, medium grained, damp to moist, hard, low to medium plastic, grey mottled brown			679.0
	SILTSTONE - trace of gravel to 5mm diameter, cemented, dry, very hard, light grey			
10	CLAY SHALE AND SILTSTONE - interbedded			678.0
	END OF BOREHOLE (10.1 metres) slough - none at 0 hrs. water - dry at 0 hrs. Monitoring well installed to 9.8 metres			
11				677.0
12				676.0

TETRA TECH EBA

LOGGED BY: JSF	COMPLETION DEPTH: 10.05 m
REVIEWED BY: RJM	COMPLETE: 98/10/01
DRAWING NO: 12892-03	Page 1 of 1

CELL 3 - CONSTRUCTION	SAFETY KLEEN INC.	BOREHOLE NO: 22B
	DRILL: SOLID STEM AUGER	PROJECT: 0105-98-12892.4
RYLEY, ALBERTA	590.10N; 1069.07E	ELEVATION: 687.8 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	SILT AND CLAY - salt deposits, friable, damp, soft, low plastic, brown		Pipe stickup = 0.97 metres	
1	CLAY (TILL) - silty, moist, stiff, medium plastic, mottled brown - salt streaks			687.0
2	- gypsum, oxide stains			686.0
3	SANDSTONE - some clay, trace of pebbles, medium grained, uncemented, damp to moist, brown - oxide stains, very moist - interbedded clay seams, silty, brown nodules, olive green			685.0
4	- 50mm angular rock			684.0
5	CLAY SHALE - trace of very hard siltstone, friable, cemented, dry to damp, hard, medium plastic, grey			683.0
6	END OF BOREHOLE (5.0 metres) slough - none at 0 hrs. water - dry at 0 hrs. Monitoring well installed to 4.9 metres			682.0
7				681.0
8				680.0
9				679.0
10				678.0
11				677.0
12				676.0

TETRA TECH EBA

LOGGED BY: JSF	COMPLETION DEPTH: 5.02 m
REVIEWED BY: RJM	COMPLETE: 98/10/01
DRAWING NO: 12892-04	Page 1 of 1

CELL 3 - CONSTRUCTION	SAFETY KLEEN INC.	BOREHOLE NO: 23A
	DRILL: SOLID STEM AUGER	PROJECT: 0105-98-12892.4
RYLEY, ALBERTA	601.96N; 1114.83E	ELEVATION: 686.44 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	CLAY - very silty, disturbed, very moist, soft to firm, high plastic, brown		Pipe stickup = 0.72 metres	686.0
1	SAND - silty, some clay, fine grained, moist, rust colour - some clay and silt, oxide stains, moist to very moist, firm to dense			685.0
2	SANDSTONE - some clay, trace of gravel to 2mm diameter, brown nodules, uncemented, firm to very firm, olive green - free water			684.0
3	- clay shale interbedded, silty, medium grained, uncemented, friable, damp to moist, very stiff to hard, low to medium plastic, grey clay shale, olive green sandstone			683.0
4	- trace of siltstone, hard, medium plastic, brown			682.0
5				681.0
6	SILTSTONE - uncemented, dry to damp, hard, low plastic, brown			680.0
7	CLAY SHALE AND SANDSTONE - interbedded, friable, damp to moist, hard, mottled grey			679.0
8				678.0
9	CLAY SHALE AND SILTSTONE - trace of sand, damp, hard, mottled grey			677.0
10	END OF BOREHOLE (9.9 metres) slough - none at 0 hrs. water - dry at 0 hrs. Monitoring well installed to 9.9 metres			676.0
11				675.0
12				

TETRA TECH EBA

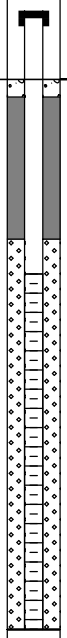
LOGGED BY: JSF	COMPLETION DEPTH: 9.9 m
REVIEWED BY: RJM	COMPLETE: 98/10/01
DRAWING NO: 12892-05	Page 1 of 1

CELL 3 - CONSTRUCTION	SAFETY KLEEN INC.	BOREHOLE NO: 23B
	DRILL: SOLID STEM AUGER	PROJECT: 0105-98-12892.4
RYLEY, ALBERTA	601.22N; 1114.44E	ELEVATION: 686.49 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	CLAY - very silty, disturbed, very moist, soft to firm, high plastic, brown		Pipe stickup = 0.59 metres	686.0
1	SAND - silty, some clay, fine grained, moist, rust colour - some clay and silt, oxide stains, moist to very moist, firm to dense			685.0
2	SANDSTONE - some clay, trace of gravel to 2mm diameter, brown nodules, uncemented, firm to very firm, olive green - free water			684.0
3	- clay shale interbedded, silty, medium grained, uncemented, friable, damp to moist, very stiff to hard, low to medium plastic, grey clay shale, olive green sandstone			683.0
4	- trace of siltstone, hard, medium plastic, brown			682.0
5	END OF BOREHOLE (4.7 metres) slough - none at 0 hrs. water - dry at 0 hrs. Monitoring well installed to 4.7 metres			681.0
6				680.0
7				679.0
8				678.0
9				677.0
10				676.0
11				675.0
12				



TETRA TECH EBA

LOGGED BY: JSF	COMPLETION DEPTH: 4.72 m
REVIEWED BY: RJM	COMPLETE: 98/10/01
DRAWING NO: 12892-06	Page 1 of 1

WELL INSTALLATION	CLEAN HARBORS INC.	BOREHOLE NO: 24A
	DRILL: SOLID STEM AUGER	PROJECT: 5100812.001
RYLEY, ALBERTA		ELEVATION: 688.68 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	GRAVEL (FILL)		Pipe stickup = 1.04 metres	
1	CLAY (TILL) - silty, trace of oxides, moist, hard, brown			688.0
2				687.0
3				686.0
4	CLAY SHALE - silty, damp, hard, grey			685.0
5				684.0
6	SANDSTONE - silty, very moist, loose, blue grey			683.0
7				682.0
8	SILTSTONE - cemented, loose, light brown grey			681.0
9	SANDSTONE - trace of clay shale			680.0
10	END OF BOREHOLE (9.91 metres) slough - none at 0 hrs. water - dry at 0 hrs. Monitoring well installed to 9.69m			679.0
11				678.0
12				677.0

TETRA TECH EBA

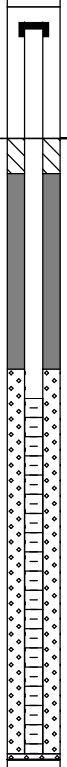
LOGGED BY: DM	COMPLETION DEPTH: 9.91 m
REVIEWED BY: PRM	COMPLETE: 04/08/13
DRAWING NO: 5100812-01	Page 1 of 1

WELL INSTALLATION	CLEAN HARBORS INC.	BOREHOLE NO: 24B
	DRILL: SOLID STEM AUGER	PROJECT: 5100812.001
RYLEY, ALBERTA		ELEVATION: 688.61 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	GRAVEL (FILL)		Pipe stickup = 1.00 metre	688.0
1	CLAY (TILL) - silty, trace of oxides, moist, hard, brown			687.0
2				686.0
3				685.0
4	CLAY SHALE - silty, damp, hard, grey			684.0
5				683.0
6	END OF BOREHOLE (5.33 metres) slough - none at 0 hrs. water - dry at 0 hrs. Monitoring well installed to 5.28m			682.0
7				681.0
8				680.0
9				679.0
10				678.0
11				677.0
12				



TETRA TECH EBA

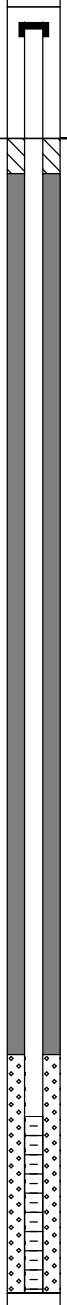
LOGGED BY: DM	COMPLETION DEPTH: 5.33 m
REVIEWED BY: PRM	COMPLETE: 04/08/13
DRAWING NO: 5100812-02	Page 1 of 1

WELL INSTALLATION	CLEAN HARBORS INC.	BOREHOLE NO: 25A
	DRILL: SOLID STEM AUGER	PROJECT: 5100812.001
RYLEY, ALBERTA		ELEVATION: 686.55 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	TOPSOIL - rootlets, moist, soft, grey		Pipe stickup = 1.00 metre	686.0
1	CLAY SHALE - silty, loose, hard, brown			685.0
2	SANDSTONE - silty, moist, loose, blue grey			684.0
3	- wet			683.0
4	CLAY SHALE - moist, loose, brown			682.0
5				681.0
6				680.0
7				679.0
8				678.0
9	- very moist, grey			677.0
10	END OF BOREHOLE (9.91 metres) slough - none at 0 hrs. water - dry at 0 hrs. Monitoring well installed to 9.91m			676.0
11				675.0
12				



TETRA TECH EBA

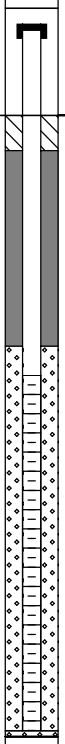
LOGGED BY: DM	COMPLETION DEPTH: 9.91 m
REVIEWED BY: PRM	COMPLETE: 04/08/13
DRAWING NO: 5100812-03	Page 1 of 1

WELL INSTALLATION	CLEAN HARBORS INC.	BOREHOLE NO: 25B
	DRILL: SOLID STEM AUGER	PROJECT: 5100812.001
RYLEY, ALBERTA		ELEVATION: 686.71 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	TOPSOIL - rootlets, moist, soft, dark		Pipe stickup = 0.79 metres	686.0
1	CLAY SHALE - silty, hard, loose, brown			685.0
2	SANDSTONE - silty, moist, loose, blue grey			684.0
3	- wet			683.0
4	CLAY SHALE - moist, loose, brown			682.0
5				681.0
6	END OF BOREHOLE (5.33 metres) slough - none at 0 hrs. water - dry at 0 hrs. Monitoring well installed to 5.28m			680.0
7				679.0
8				678.0
9				677.0
10				676.0
11				675.0
12				



TETRA TECH EBA

LOGGED BY: DM	COMPLETION DEPTH: 5.33 m
REVIEWED BY: PRM	COMPLETE: 04/08/13
DRAWING NO: 5100812-04	Page 1 of 1

WELL INSTALLATION	CLEAN HARBORS INC.	BOREHOLE NO: 26A
	DRILL: SOLID STEM AUGER	PROJECT: 5100812.001
RYLEY, ALBERTA		ELEVATION: 686.7 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	TOPSOIL - rootlets, moist, soft, grey		Pipe stickup = 0.92 metres	686.0
1	CLAY SHALE - silty, dry, loose, hard, brown			685.0
2				
3	SANDSTONE - silty, wet, loose, blue grey			684.0
4				683.0
5	SILTSTONE - cemented, loose, light brown			682.0
6	SANDSTONE - silty, moist, loose, blue grey			681.0
7				680.0
8	SILTSTONE - cemented, loose, light brown			679.0
9	CLAY SHALE - silty, hard, brown			678.0
10	END OF BOREHOLE (9.91 metres) slough - none at 0 hrs. water - dry at 0 hrs. Monitoring well installed to 10.05m			677.0
11				676.0
12				675.0

TETRA TECH EBA

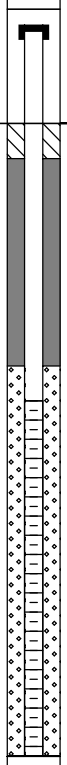
LOGGED BY: DM	COMPLETION DEPTH: 9.91 m
REVIEWED BY: PRM	COMPLETE: 04/08/13
DRAWING NO: 5100812-05	Page 1 of 1

WELL INSTALLATION	CLEAN HARBORS INC.	BOREHOLE NO: 26B
	DRILL: SOLID STEM AUGER	PROJECT: 5100812.001
RYLEY, ALBERTA		ELEVATION: 686.8 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	TOPSOIL - rootlets, moist, soft, dark		Pipe stickup = 0.85 metres	
1	CLAY SHALE - silty, dry, hard, brown			686.0
2				685.0
3	SANDSTONE - silty, wet, loose, blue grey			684.0
4				683.0
5	SILTSTONE - cemented, loose, light brown SANDSTONE - silty, moist, loose, blue grey			682.0
6	END OF BOREHOLE (5.33 metres) slough - none at 0 hrs. water - dry at 0 hrs. Monitoring well installed to 5.43m			681.0
7				680.0
8				679.0
9				678.0
10				677.0
11				676.0
12				675.0



TETRA TECH EBA

LOGGED BY: DM	COMPLETION DEPTH: 5.33 m
REVIEWED BY: PRM	COMPLETE: 04/08/13
DRAWING NO: 5100812-06	Page 1 of 1

CLEAN HARBORS 2007 GROUNDWATER MONITORING	CLEAN HARBORS CANADA INC.	BOREHOLE NO: 27A
	DRILL: SOLID STEM AUGER	PROJECT: E22101022
RYLEY, ALBERTA		ELEVATION: 686.91 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	TOPSOIL - clay, silty, dry, low plastic, black and grey, rootlets, (150mm thick) CLAY (TILL) - silty, moist, hard, medium plastic, brown, oxide staining		Pipe stickup = 0.82 metres	
1	SAND - silty, massive, medium grained, moist, loose, olive green to brown, iron oxide staining			686.0
2	- blue green			685.0
3	- wet, interbedded with siltstone - cemented, dry, hard, grey to light brown			684.0
4				683.0
5				682.0
6	SILTSTONE - cemented, dry, hard, grey to light brown			681.0
7				680.0
8				679.0
9				678.0
10				677.0
11 (0 hrs.)	END OF BOREHOLE (10.67 metres) water - 10.67 metres at 0 hrs. Monitoring well installed to 10.67 metres			676.0 (0 hrs.)
12				675.0

TETRA TECH EBA

LOGGED BY: AS	COMPLETION DEPTH: 10.67 m
REVIEWED BY: AS	COMPLETE: 07/10/01
DRAWING NO: 22101022-01	Page 1 of 1

CLEAN HARBORS 2007 GROUNDWATER MONITORING	CLEAN HARBORS CANADA INC.	BOREHOLE NO: 27B
	DRILL: SOLID STEM AUGER	PROJECT: E22101022
RYLEY, ALBERTA		ELEVATION: 687.01 m

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Elevation (m)
0	TOPSOIL - clay, silty, dry, low plastic, black and grey, rootlets, (150mm thick)		Pipe stickup = 0.80 metres	687.0
	CLAY (TILL) - silty, moist, hard, medium plastic, brown, oxide staining			
1	SAND - silty, massive, medium grained, moist, loose, olive green to brown, iron oxide staining			686.0
2	- blue green			685.0
3	- wet, interbedded with siltstone - cemented, dry, hard, grey to light brown			684.0
4				683.0
5	SILTSTONE - cemented, dry, hard, grey to light brown			682.0
6				681.0
7	END OF BOREHOLE (6.65 metres) water - 6.61 metres at 0 hrs. Monitoring well installed to 6.65 metres			680.0
8				679.0
9				678.0
10				677.0
11				676.0
12				

0 hrs.

TETRA TECH EBA

LOGGED BY: AS	COMPLETION DEPTH: 6.65 m
REVIEWED BY: AS	COMPLETE: 07/10/01
DRAWING NO: 22101022-02	Page 1 of 1

2011 GROUNDWATER MONITORING PROGRAM	CLEAN HARBOR	BOREHOLE NO: MW01C
	DRILL: SOLID STEM AUGER	PROJECT: E22101936
RYLEY, ALBERTA		

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Depth (ft)
0	TOPSOIL - moist, loose, non plastic, black, trace of roots, (300 mm thick)			0
	CLAY - silty, moist, firm, high plastic, light brown			
1	- trace of cobbles, trace of iron			5
2				
2 hrs ▼	- trace of coal			2 hrs ▼ 10
3	CLAY SHALE - moist, hard, low plastic, grey, trace of white precipitates			
4	SANDSTONE - moist, hard, low plastic, dark greenish grey			15
5				
	END OF BOREHOLE (5.33 metres) water - 2.35 metres at 2 hrs. Monitoring well installed to 5.55 metres			
6				20
7				
8				25
9				30
10				33

TETRA TECH EBA

LOGGED BY: KF/MC	COMPLETION DEPTH: 5.33 m
REVIEWED BY: MH	COMPLETE: 11/06/14
DRAWING NO: 22101936-01	Page 1 of 1

2012 GROUNDWATER WELLS INSTALLATION	CLEAN HARBORS CANADA INC.	BOREHOLE NO: MW08A
CLASS I WASTE MANAGEMENT FACILITY	DRILL: SOLID STEM AUGER	PROJECT: E22103058-01
RYLEY, ALBERTA		

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Depth (ft)
0	PAVEMENT - (100 mm thick)			0
	GRAVEL AND PEBBLE (FILL) - moist, soft, brown, (300 mm thick)			
	CLAY - some sand, moist, hard, medium plastic, black, some coal, silt inclusions			
1	- silty, brown, iron and silt inclusions			5
2	SAND - coarse grained, wet, soft, green grey			
3	- hard			10
4	SILTSTONE - some pebbles, dry, extremely weak, light grey			15
	SAND - some silt and clay, moist, hard, low plastic, grey blue			
5	- siltstone lens - dry, extremely weak, light grey			
6				20
7 ▼ 0 hrs.	- saturated, grey, water lenses			▼ 0 hrs.
	SILTSTONE - some clay, cemented, extremely weak, grey			25
8				
9	CLAY - some silt and sand, dry, hard, grey			30
10	END OF BOREHOLE (10.00 metres)			
	water - 6.91 metres at 0 hrs.			35
11	Monitoring well installed to 10.00 metres			
12				39

TETRA TECH EBA

LOGGED BY: MC	COMPLETION DEPTH: 10 m
REVIEWED BY: MH	COMPLETE: 12/10/04
DRAWING NO: 22103058-01	Page 1 of 1

2012 GROUNDWATER WELLS INSTALLATION	CLEAN HARBORS CANADA INC.	BOREHOLE NO: MW08B
CLASS I WASTE MANAGEMENT FACILITY	DRILL: SOLID STEM AUGER	PROJECT: E22103058-01
RYLEY, ALBERTA		

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Depth (ft)
0	PAVEMENT - (100 mm thick)			0
	GRAVEL AND PEBBLE (FILL) - moist, soft, red brown, (300 mm thick)			
1	CLAY - some sand, moist, hard, medium plastic, black, some coal, white silt inclusions			5
	- silty, brown, iron, silt and coal inclusions			
2				
	SAND - some silt, coarse grained, wet, green blue, some silt inclusions			
3	0 hrs.			10 0 hrs.
4				
	END OF BOREHOLE (4.50 metres)			
5	water - 2.76 metres at 0 hrs.			15
	Monitoring well installed to 4.63 metres			
6				20
7				25
8				
9				30
10				
11				35
12				39

TETRA TECH EBA

LOGGED BY: MC	COMPLETION DEPTH: 4.5 m
REVIEWED BY: MH	COMPLETE: 12/10/04
DRAWING NO: 22103058-02	Page 1 of 1

2012 GROUNDWATER WELLS INSTALLATION	CLEAN HARBORS CANADA INC.	BOREHOLE NO: MW28A
CLASS I WASTE MANAGEMENT FACILITY	DRILL: SOLID STEM AUGER	PROJECT: E22103058-01
RYLEY, ALBERTA		

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Depth (ft)
0	CLAY (TILL) - silty, moist, hard, medium plastic, light brown, iron inclusions			0
1	- some sand, loose, brown, coal inclusions			5
2	SAND - coarse grained, moist, loose, brown, iron inclusions - blue green			10
3	SILTSTONE - cemented, dry, extremely weak, grey			15
4	SAND - coarse grained, wet, hard, blue green, some clay pockets, silt inclusions			20
5	- silty, dry, grey, silty inclusions			25
6	SILTSTONE - fine grained, moist, extremely weak, grey blue to light brown, silty inclusions			30
7				
8				
9				
10 (15 min.)	- dry, grey			35
11	END OF BOREHOLE (10.50 metres) water - 9.84 metres at 15 minutes Monitoring well installed to 10.86 metres			
12				39

TETRA TECH EBA

LOGGED BY: MC	COMPLETION DEPTH: 10.5 m
REVIEWED BY: MH	COMPLETE: 12/10/04
DRAWING NO: 22103058-03	Page 1 of 1

2012 GROUNDWATER WELLS INSTALLATION	CLEAN HARBORS CANADA INC.	BOREHOLE NO: MW28B
CLASS I WASTE MANAGEMENT FACILITY	DRILL: SOLID STEM AUGER	PROJECT: E22103058-01
RYLEY, ALBERTA		

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Depth (ft)
0	CLAY (TILL) - silty, sticky, moist, hard, medium plastic, iron inclusions			0
1				
				5
2	SAND - coarse grained, wet, light brown			
	- blue			
3				10
	SILTSTONE - cemented, dry, extremely weak, grey			
	SAND - silty, moist, hard, grey, some blue lenses, silty white inclusions			
4				
				15
5	- some clay			
6 (0 hrs.)				0 hrs. 20
	END OF BOREHOLE (6.00 metres) water - 5.83 metres at 0 hrs. Monitoring well installed to 6.19 metres			
7				
				25
8				
9				30
10				
				35
11				
12				39

TETRA TECH EBA

LOGGED BY: MC	COMPLETION DEPTH: 6 m
REVIEWED BY: MH	COMPLETE: 12/10/04
DRAWING NO: 22103058-04	Page 1 of 1

2014 GROUNDWATER WELLS INSTALLATION	CLEAN HARBORS	PROJECT NO. - BOREHOLE NO.
CLASS 1 WASTE MANAGEMENT FACILITY	DRILL: SOLID STEM AUGER	ENVSWM03472-01-MW29A
RYLEY, ALBERTA		

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Depth (ft)
0	CLAY (FILL) - moist, high plastic, brown, (300 mm thick)		Pipe stickup = 0.81 metres	0
1	SAND (TILL) - fine grained, moist, loose, dark brown - reddish brown			5
2	CLAY (TILL) - sandy, moist, firm, brown, silt, iron and coal inclusions - dry, reddish brown, white precipitates			10
3	SAND - medium grained, moist, firm, brown, iron and white precipitates throughout			15
4	- bluish grey, clay seams throughout			20
5	SANDSTONE - medium grained, very firm, grey, dark grey mottles throughout			25
6				30
7				35
8				40
9	END OF BOREHOLE (9.00 metres) water - 3.28 metres at 0 hrs. Monitoring well installed to 9.41 metres			45
10				
11				
12				
13				
14				
15				49

TETRA TECH EBA

LOGGED BY: MC	COMPLETION DEPTH: 9 m
REVIEWED BY: TD	COMPLETE: 14/10/06
DRAWING NO:	Page 1 of 1

2014 GROUNDWATER WELLS INSTALLATION	CLEAN HARBORS	PROJECT NO. - BOREHOLE NO.
CLASS 1 WASTE MANAGEMENT FACILITY	DRILL: SOLID STEM AUGER	ENVSWM03472-01-MW29B
RYLEY, ALBERTA		

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Depth (ft)
0	CLAY (FILL) - moist, high plastic, brown, (300 mm thick)		Pipe stickup = 0.79 metres	0
1	SAND (TILL) - fine grained, moist, loose, dark brown - reddish brown			
	CLAY (TILL) - sandy, moist, firm, brown, silt, iron and coal inclusions			5
2	- dry, reddish brown, white precipitates			
3	SAND - medium grained, moist, firm, brown, iron and white precipitates throughout			10
4	- bluish grey, clay seams throughout			
	END OF BOREHOLE (4.50 metres) water - 3.89 metres at 0 hrs. Monitoring well installed to 4.64 metres Note: 1 m east of MW29A			15
5	- sandstone			
6				20
7				
8				25
9				
10				30
11				
12				40
13				
14				45
15				49

TETRA TECH EBA

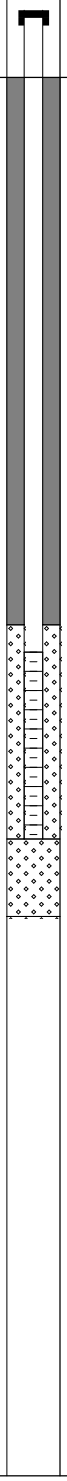
LOGGED BY: MC	COMPLETION DEPTH: 4.5 m
REVIEWED BY: TD	COMPLETE: 14/10/08
DRAWING NO:	Page 1 of 1

2014 GROUNDWATER WELLS INSTALLATION	CLEAN HARBORS	PROJECT NO. - BOREHOLE NO.
CLASS 1 WASTE MANAGEMENT FACILITY	DRILL: SOLID STEM AUGER	ENVSWM03472-01-MW30A
RYLEY, ALBERTA		

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Depth (ft)
0	CLAY (FILL) - gravelly, moist, dark brown		Pipe stickup = 0.72 metres	0
1	CLAY (TILL) - sandy, moist, firm, brown, iron, coal and silt inclusions			5
2	SAND - silty, coarse grained, moist, loose, light brown, white lenses			
	CLAY (TILL) - sandy, moist, firm, brown, iron, coal and silt inclusions			
3	- iron inclusions			10
4	- greyish blue, brown mottles			
5	SANDSTONE - dry, extremely weak, light grey			15
6	- medium grained, moist, dark grey			20
7				
8	- light brown - dry, dark grey			25
9	END OF BOREHOLE (9.00 metres) water - dry at 0 hrs. Monitoring well installed to 8.17 metres			30
10				
11				35
12				40
13				
14				45
15				49



TETRA TECH EBA

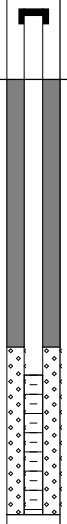
LOGGED BY: MC	COMPLETION DEPTH: 9 m
REVIEWED BY: TD	COMPLETE: 14/10/08
DRAWING NO:	Page 1 of 1

2014 GROUNDWATER WELLS INSTALLATION	CLEAN HARBORS	PROJECT NO. - BOREHOLE NO.
CLASS 1 WASTE MANAGEMENT FACILITY	DRILL: SOLID STEM AUGER	ENVSWM03472-01-MW30B
RYLEY, ALBERTA		

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Depth (ft)
0	CLAY (FILL) - gravelly, moist, dark brown		Pipe stickup = 0.76 metres	0
1	CLAY (TILL) - sandy, moist, firm, brown, iron, coal and silt inclusions			5
2	SAND - silty, coarse grained, moist, loose, light brown, white lenses			
	CLAY (TILL) - sandy, moist, firm, brown, iron, coal and silt inclusions			10
3	- iron inclusions			
4	- greyish blue, brown mottles			15
5	END OF BOREHOLE (4.50 metres) water - dry at 0 hrs. Monitoring well installed to 4.67 metres Note: 1 m east of MW30A			20
6				
7				25
8				
9				30
10				
11				35
12				
13				40
14				45
15				49



TETRA TECH EBA

LOGGED BY: MC	COMPLETION DEPTH: 4.5 m
REVIEWED BY: TD	COMPLETE: 14/10/08
DRAWING NO:	Page 1 of 1

2014 GROUNDWATER WELLS INSTALLATION	CLEAN HARBORS	PROJECT NO. - BOREHOLE NO.
CLASS 1 WASTE MANAGEMENT FACILITY	DRILL: SOLID STEM AUGER	ENVSWM03472-01-MW31A
RYLEY, ALBERTA		

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Depth (ft)
0	CLAY (FILL) - gravelly, moist, dark brown, white and orange precipitates, (300 mm thick)		Pipe stickup = 0.71 metres	0
	SAND (TILL) - fine grained, dry, brown, white and red, coal and iron inclusions			
1	CLAY (TILL) - sandy, moist, soft, grey, iron inclusions			5
2	- bluish grey, brown mottles - dry			
	SANDSTONE - medium grained, dark grey clay inclusions throughout			10
3				
4	- 200 mm thick sandstone layer - dry, light brown - moist, dark grey, light grey and brown silt, shale and sand			15
5				
6				20
7	- bluish grey, dark brown inclusions - dark grey			25
8				
9	END OF BOREHOLE (9.00 metres) water - dry at 0 hrs. Monitoring well installed to 9.02 metres			30
10				
11				35
12				40
13				
14				45
15				49

TETRA TECH EBA

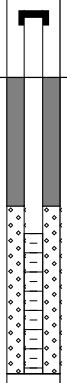
LOGGED BY: MC	COMPLETION DEPTH: 9 m
REVIEWED BY: TD	COMPLETE: 14/10/08
DRAWING NO:	Page 1 of 1

2014 GROUNDWATER WELLS INSTALLATION	CLEAN HARBORS	PROJECT NO. - BOREHOLE NO.
CLASS 1 WASTE MANAGEMENT FACILITY	DRILL: SOLID STEM AUGER	ENVSWM03472-01-MW31B
RYLEY, ALBERTA		

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Depth (ft)
0	CLAY (FILL) - gravelly, moist, dark brown, white and orange precipitates, (300 mm thick)		Pipe stickup = 0.72 metres	0
	SAND (TILL) - fine grained, dry, brown, white and red, coal and iron inclusions			
1	CLAY (TILL) - sandy, moist, soft, grey, iron inclusions			5
2	- bluish grey, brown mottles - dry			
	SANDSTONE - medium grained, dark grey clay inclusions throughout			10
3	END OF BOREHOLE (3.00 metres) water - 3.00 metres at 0 hrs. Monitoring well installed to 3.18 metres Note: 1 m west of MW31A			
4				15
5				
6				20
7				
8				25
9				
10				30
11				
12				40
13				
14				45
15				49



TETRA TECH EBA

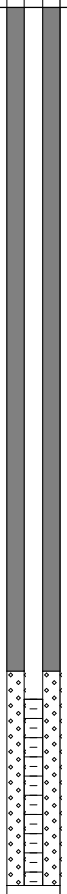
LOGGED BY: MC	COMPLETION DEPTH: 3 m
REVIEWED BY: TD	COMPLETE: 14/10/08
DRAWING NO:	Page 1 of 1

2014 GROUNDWATER WELLS INSTALLATION	CLEAN HARBORS	PROJECT NO. - BOREHOLE NO.
CLASS 1 WASTE MANAGEMENT FACILITY	DRILL: SOLID STEM AUGER	ENVSWM03472-01-MW32A
RYLEY, ALBERTA		

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Depth (ft)
0	CLAY (FILL) - sandy clay mix, bluish grey		Pipe stickup = 0.67 metres	0
1	CLAY (TILL) - sandy, moist, brown, iron inclusions			5
2	SAND - medium grained, dry, loose, light grey			
	CLAY (TILL) - sandy, moist, firm, medium plastic, dark grey			10
3	- loose, bluish grey			
4	SAND - medium grained, dry, light grey - grey, iron inclusions			15
5	CLAY - moist, firm, medium plastic, dark grey			
6	- dark brown			20
7	- sandy, soft, bluish grey, dark grey throughout			
8	- saturated			25
9	- moist			
	END OF BOREHOLE (9.00 metres) water - 8.04 metres at 0 hrs. Monitoring well installed to 9.42 metres			30
10				
11				35
12				40
13				
14				45
15				49



TETRA TECH EBA

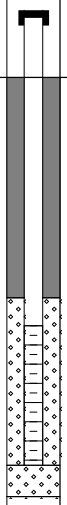
LOGGED BY: MC	COMPLETION DEPTH: 9 m
REVIEWED BY: TD	COMPLETE: 14/10/08
DRAWING NO:	Page 1 of 1

2014 GROUNDWATER WELLS INSTALLATION	CLEAN HARBORS	PROJECT NO. - BOREHOLE NO.
CLASS 1 WASTE MANAGEMENT FACILITY	DRILL: SOLID STEM AUGER	ENVSWM03472-01-MW32B
RYLEY, ALBERTA		

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Depth (ft)
0	CLAY (FILL) - sandy clay mix, bluish grey		Pipe stickup = 0.72 metres	0
1	CLAY (TILL) - sandy, moist, brown, iron inclusions			5
2	SAND - medium grained, dry, loose, light grey			10
3	CLAY (TILL) - sandy, moist, firm, medium plastic, dark grey - loose, bluish grey			15
4	SAND - medium grained, dry, light grey - grey, iron inclusions			20
5	END OF BOREHOLE (4.50 metres) water - 4.03 metres at 0 hrs. Monitoring well installed to 4.16 metres Note: 1 m east of MW32A			25
6				30
7				35
8				40
9				45
10				49
11				
12				
13				
14				
15				



TETRA TECH EBA

LOGGED BY: MC	COMPLETION DEPTH: 4.5 m
REVIEWED BY: TD	COMPLETE: 14/10/08
DRAWING NO:	Page 1 of 1

2014 GROUNDWATER WELLS INSTALLATION	CLEAN HARBORS	PROJECT NO. - BOREHOLE NO.
CLASS 1 WASTE MANAGEMENT FACILITY	DRILL: SOLID STEM AUGER	ENVSWM03472-01-MW33A
RYLEY, ALBERTA		

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Depth (ft)
0	SAND (FILL) - some pebbles and gravel, moist, loose, brown, (150 mm thick)		Pipe stickup = 0.94 metres	0
1	CLAY (TILL) - gravelly, some sand, subangular blocky, firm, medium plastic, dark grey, silt inclusions - massive, moist, very firm, high plastic, dark brown, coal, silt and iron inclusions			5
2	SAND - coarse grained, moist, loose, dark brown, iron inclusions - mottles - coarse grained, grey blue			10
3	- 200 mm thick clay layer - siltstone - saturated, silt mottled throughout			
4	SANDSTONE - fine grained, moist, grey blue, silt inclusions throughout			15
5				
6	- siltstone - saturated, water seam - grey, dark grey mottles			20
7	- moist			
8				25
9	- saturated, grey - medium grained, moist			
10	- wet - wet seam			30
11				35
12				40
13	- fractured bedrock, saturated, light grey			
14	END OF BOREHOLE (13.50 metres) water - 6.10 metres at 0 hrs. Monitoring well installed to 13.90 metres			45
15				49

TETRA TECH EBA

LOGGED BY: MC	COMPLETION DEPTH: 13.5 m
REVIEWED BY: TD	COMPLETE: 14/10/06
DRAWING NO:	Page 1 of 1

2014 GROUNDWATER WELLS INSTALLATION	CLEAN HARBORS	PROJECT NO. - BOREHOLE NO.
CLASS 1 WASTE MANAGEMENT FACILITY	DRILL: SOLID STEM AUGER	ENVSWM03472-01-MW33B
RYLEY, ALBERTA		

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

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	Depth (ft)
0	SAND (FILL) - some pebbles and gravel, moist, loose, brown, (150 mm thick)		Pipe stickup = 0.83 metres	0
1	CLAY (TILL) - gravelly, some sand, subangular blocky, firm, medium plastic, dark grey, silt inclusions - massive, moist, very firm, high plastic, dark brown, coal, silt and iron inclusions			5
2	SAND - coarse grained, moist, loose, dark brown, iron inclusions - mottles - coarse grained, grey blue			10
3	- 200 mm thick clay layer - siltstone - silt mottled throughout			15
4	SANDSTONE - fine grained, moist, grey blue, silt inclusions throughout			20
5	END OF BOREHOLE (4.50 metres) water - 0.93 metres at 0 hrs. Monitoring well installed to 4.68 metres Note: 1 m east of MW33A			25
6				30
7				35
8				40
9				45
10				49
11				
12				
13				
14				
15				

TETRA TECH EBA

LOGGED BY: MC	COMPLETION DEPTH: 4.5 m
REVIEWED BY: TD	COMPLETE: 14/10/06
DRAWING NO:	Page 1 of 1

Clean Harbors Canada Inc.

Borehole No: **15MW34A**

Project: Ryley Renewal Monitoring Well Installations	Project No: ENVSWM03011-04.003
Location: Ryley Facility	
Ryley, Alberta	

Depth (m)	Method	Soil Description	Sample Type	SPT (N)	Moisture Content (%)
0					
1	Solid stem auger	CLAY (FILL) - some silt, some fine to coarse gravel, trace of fine to medium cobbles, trace of fine boulders, damp, hard, non to low plastic, brown, coal and iron stained inclusions		12	
2		CLAY (TILL) - some silt, trace of gravel, damp, firm, medium plastic, brown, coal and iron stained inclusions		14	
		- some fine grained brown sand, low plastic, grey blue			
3		- silty, soft, medium to high plastic, brown		13	
4		- firm			
		- silty, firm to very stiff, grey			
5				71	
		SANDSTONE - silty, clayey, fine to medium grained, damp to moist, extremely weak, grey			
		- some silt, some clay, moist to wet			
6		- wet, grey blue		98	
		- silty, clayey, moist to wet, grey		/225mm	
7					
		CLAY SHALE - trace of fine grained sand, trace of fine gravel, damp, extremely weak, high plastic, grey			
8					
9					
10					
11					
		- dark greyish brown			
12		- some fine grained sand, light grey			
13					
		- no visible sand, dark grey			
14					
15		END OF BOREHOLE (15.00 metres) slough - 14.25 metres Monitoring well installed to 11.80 metres			
16					
17					
18					
19					
20					

SPT (N) ■ 20 40 60 80

▲ Pocket Pen. (kPa) ▲ 100 200 300 400

Plastic Limit — Moisture Content — Liquid Limit 20 40 60 80

● Fracture Frequency (#/m) ● 2 4 6 8

▲ RQD (%) ▲ 40 60 80 100

■ Recovery (%) ■ 40 60 80 100

>100

Depth (ft) 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64

TETRA TECH EBA

Contractor: Clean Harbors	Completion Depth: 15 m
Drilling Rig Type:	Start Date: 2015 July 21
Logged By: TH	Completion Date: 2015 July 21
Reviewed By: SS	Page 1 of 1

Clean Harbors Canada Inc.

Borehole No: **15MW34B**

Project: Ryley Renewal Monitoring Well Installations	Project No: ENVSWM03011-04.003
Location: Ryley Facility	
Ryley, Alberta	

Depth (m)	Method	Soil Description	Sample Type	Moisture Content (%)	Pocket Pen. (kPa) 100 200 300 400 / Plastic Limit Moisture Content Liquid Limit 20 40 60 80	Fracture Frequency (#/m) 2 4 6 8 / RQD (%) 40 60 80 100 / Recovery (%) 40 60 80 100	Depth (ft)
0							0
1	Solid stem auger	CLAY (FILL) - some silt, some fine to coarse gravel, trace of fine to medium cobbles, trace of fine boulders, damp, hard, non to low plastic, brown, coal and iron stained inclusions					2
		CLAY (TILL) - some silt, trace of gravel, damp, firm, medium plastic, brown, coal and iron stained inclusions					
2							4
							6
3		- gleying					8
		- sand pockets - fine grained sand, damp, very slight gleying					10
4		- soft, low to medium plastic					12
		- silty, some fine grained brown sand, medium to high plastic,					14
5		- firm to very stiff, grey					16
		SANDSTONE - silty, clayey, fine to medium grained, damp to moist, grey					
6		END OF BOREHOLE (5.00 metres)					18
		Monitoring well installed to 4.80 metres					20
7							22
							24
8							26
							28
9							30
							32
10							34
							36
11							38
							40
12							42
							44
13							46
							48
14							50
							52
15							54
							56
16							58
							60
17							62
							64
18							
19							
20							

0 hrs

0 hrs

TETRA TECH EBA

Contractor: Clean Harbors	Completion Depth: 5 m
Drilling Rig Type:	Start Date: 2015 July 21
Logged By: TH	Completion Date: 2015 July 21
Reviewed By: SS	Page 1 of 1

GEO/ROCK ZONE12.GPJ EBA.GDT 16/3/2

Clean Harbors Canada Inc.

Borehole No: **15MW35A/B/C**

Project: Ryley Renewal Monitoring Well Installations	Project No: ENVSWM03011-04.003
Location: Ryley Facility	Ground Elev: 625 m
Ryley, Alberta	

Depth (m)	Soil Description
0	CLAY (TILL) - sandy, plastic, brown
3	CLAY - trace of sand, high plastic, brown
3	SANDSTONE - weathered, fine grained, blue grey, intermittent clay shale laminations, mechanical fractures
4	- at 4.24 m, 50 mm thick siltstone bed
5	- at 4.94 m, 50 mm thick siltstone bed
8	CLAY SHALE - extremely weak, dark brown
8	- at 8.10 m, 50 mm thick coal seam
8	SANDSTONE - blue green, grey clay shale laminations
11	- at 10.80 m, increasing clay content
12	CLAY SHALE - moist, strong, dark brown, fracturing at interface
13	- at 13.27 m, 1 mm thick tan siltstone lamination
15	- at 15.10 m, minor slickensides, some fracturing, intermittent seashells
16	- at 15.40 m, dark grey
16	- at 16.00 m, 40 mm thick bentonite seam
20	

Method: Wet Rotary/HQ Coring

Sample Type: 14

Sample Number: 1, 2, 3, 4, 5, 6, 7

SPT (N): 20 40 60 80

Moisture Content (%): Plastic Limit 20 40 60 80 Moisture Content Liquid Limit

Fracture Frequency (#/m): 2 4 6 8

RQD (%): 40 60 80 100

Recovery (%): 40 60 80 100

15MW35A

15MW35B

15MW35C

Elevation (m): 625 624 623 622 621 620 619 618 617 616 615 614 613 612 611 610 609 608 607 606 605

TETRA TECH EBA

Contractor: Garritty and Baker	Completion Depth: 42.4 m
Drilling Rig Type:	Start Date: 2015 July 27
Logged By: BS	Completion Date: 2015 July 28
Reviewed By: TH	Page 1 of 3

Clean Harbors Canada Inc.

Borehole No: **15MW35A/B/C**

Project: Ryley Renewal Monitoring Well Installations	Project No: ENVSWM03011-04.003
Location: Ryley Facility	Ground Elev: 625 m
Ryley, Alberta	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)	SPT (N) 20 40 60 80 / Plastic Limit Moisture Content Liquid Limit 20 40 60 80	Fracture Frequency (#/m) 2 4 6 8 / RQD (%) 40 60 80 100 / Recovery (%) 40 60 80 100	15MW35A	15MW35B	15MW35C	Elevation (m)
20												605
21	Wet Rotary/HQ Coring	- at 21.20 m, increased fractures										604
22				8								603
23		- at 23.30 m, 100 mm thick tan siltstone bed										602
24												601
25												600
26				9								599
27												598
28		- at 27.50 m, intermittent 45-65° fractures										597
29				10								596
30												595
31		SANDSTONE - fine grained, moist, strong, grey, coal laminations										594
32				11								593
33		- from 32.65 to 32.79 m, very fine grained sand, brown bed, 5 mm thick coal seam - at 33.30 m, intermittent siltstone										592
34		- at 34.06 m, 10 mm thick coal seam										591
35		- at 34.07 m, clay shale bed - at 34.15 m, dark grey clay shale laminations		12								590
36		- at 35.30 m, increasing clay content, dark brown - at 35.40 m, 20 mm thick coal seam MUDSTONE - very fine grained, friable, extremely weak, brown to light brownish grey										589
37												588
38				13								587
39		- light brownish grey, trace of coal fragments										586
40		- at 39.40 m, 10 mm thick clay layer - silty, wet, soft, sticky, high plastic, grey										585

TETRA TECH EBA

Contractor: Garritty and Baker	Completion Depth: 42.4 m
Drilling Rig Type:	Start Date: 2015 July 27
Logged By: BS	Completion Date: 2015 July 28
Reviewed By: TH	Page 2 of 3

Clean Harbors Canada Inc.

Borehole No: **15MW35A/B/C**

Project: Ryley Renewal Monitoring Well Installations	Project No: ENVSWM03011-04.003
Location: Ryley Facility	Ground Elev: 625 m
Ryley, Alberta	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)	SPT (N) 20 40 60 80 / Plastic Limit Moisture Content Liquid Limit 20 40 60 80	Fracture Frequency (#/m) 2 4 6 8 / RQD (%) 40 60 80 100 / Recovery (%) 40 60 80 100	15MW35A	15MW35B	15MW35C	Elevation (m)
40												585
41		SANDSTONE - glauconitic, very fine grained, extremely weak, light grey, coal fragments CLAY SHALE - strong, dark brown - at 41.00 m, 10 mm thick coal seam MUDSTONE - very fine grained, brittle, grey grey		14								584
42												583
43		END OF BOREHOLE (42.40 metres) Monitoring well A installed to 12.80 metres Monitoring well B installed to 7.01 metres Monitoring well C installed to 3.05 metres										582
44												581
45												580
46												579
47												578
48												577
49												576
50												575
51												574
52												573
53												572
54												571
55												570
56												569
57												568
58												567
59												566
60												565

TETRA TECH EBA

Contractor: Garritty and Baker	Completion Depth: 42.4 m
Drilling Rig Type:	Start Date: 2015 July 27
Logged By: BS	Completion Date: 2015 July 28
Reviewed By: TH	Page 3 of 3

Clean Harbors Canada Inc.

Borehole No: **15MW35Deep**

Project: Ryley Renewal Monitoring Well Installations	Project No: ENVSWM03011-04.003
Location: Ryley Facility	Ground Elev: 625 m
Ryley, Alberta	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)
0		CLAY (TILL) - sandy, plastic, brown			14	
1						
2		CLAY - trace of sand, high plastic, brown				
3		SANDSTONE - weathered, fine grained, blue grey, intermittent clay shale laminations, mechanical fractures		1		
4						
5		- at 4.24 m, 50 mm thick siltstone bed - at 4.94 m, 50 mm thick siltstone bed				
6						
7				2		
8		CLAY SHALE - strong, dark brown - at 8.10 m, 50 mm thick coal seam				
9	Wet Rotary/HQ Coring	SANDSTONE - blue green, grey clay shale laminations				
10				3		
11		- at 10.80 m, increasing clay content				
12		CLAY SHALE - moist, strong, dark brown, fracturing at interface		4		
13						
14		- at 13.27 m, 1 mm thick tan siltstone lamination		5		
15						
16		- at 15.10 m, minor slickensides, some fracturing, intermittent seashells - at 15.40 m, dark grey - at 16.00 m, 40 mm thick bentonite seam		6		
17						
18						
19				7		
20						

SPT (N) ■ 20 40 60 80

Plastic Limit — Moisture Content — Liquid Limit

20 40 60 80

● Fracture Frequency (#/m) ● 2 4 6 8

▲ RQD (%) ▲ 40 60 80 100

■ Recovery (%) ■ 40 60 80 100

15MW35

Elevation (m): 625, 624, 623, 622, 621, 620, 619, 618, 617, 616, 615, 614, 613, 612, 611, 610, 609, 608, 607, 606, 605

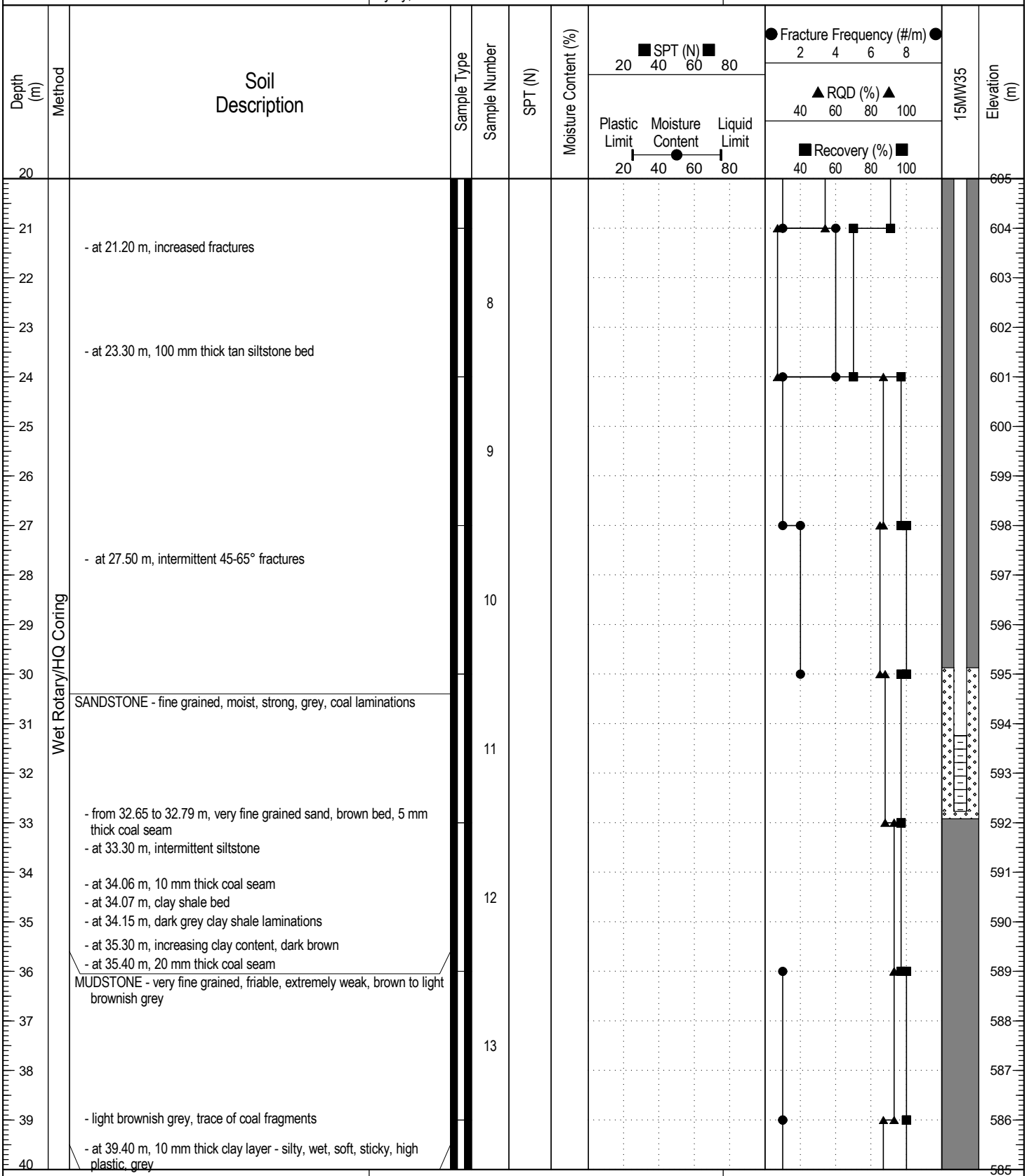
TETRA TECH EBA

Contractor: Garritty and Baker	Completion Depth: 42.4 m
Drilling Rig Type:	Start Date: 2015 July 27
Logged By: BS	Completion Date: 2015 July 28
Reviewed By: TH	Page 1 of 3

Clean Harbors Canada Inc.

Borehole No: **15MW35Deep**

Project: Ryley Renewal Monitoring Well Installations	Project No: ENVSWM03011-04.003
Location: Ryley Facility	Ground Elev: 625 m
Ryley, Alberta	



TETRA TECH EBA

Contractor: Garritty and Baker	Completion Depth: 42.4 m
Drilling Rig Type:	Start Date: 2015 July 27
Logged By: BS	Completion Date: 2015 July 28
Reviewed By: TH	Page 2 of 3

Clean Harbors Canada Inc.

Borehole No: **15MW35Deep**

Project: Ryley Renewal Monitoring Well Installations	Project No: ENVSWM03011-04.003
Location: Ryley Facility	Ground Elev: 625 m
Ryley, Alberta	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)	SPT (N) 20 40 60 80 / Plastic Limit Moisture Content Liquid Limit 20 40 60 80	Fracture Frequency (#/m) 2 4 6 8 / RQD (%) 40 60 80 100 / Recovery (%) 40 60 80 100	15MW35	Elevation (m)
40										585
41		SANDSTONE - glauconitic, very fine grained, extremely weak, light grey, coal fragments		14						584
42		CLAY SHALE - strong, dark brown - at 41.00 m, 10 mm thick coal seam MUDSTONE - very fine grained, brittle, grey grey								583
43		END OF BOREHOLE (42.40 metres) Monitoring well installed to 32.77 metres								582
44										581
45										580
46										579
47										578
48										577
49										576
50										575
51										574
52										573
53										572
54										571
55										570
56										569
57										568
58										567
59										566
60										565

TETRA TECH EBA

Contractor: Garritty and Baker	Completion Depth: 42.4 m
Drilling Rig Type:	Start Date: 2015 July 27
Logged By: BS	Completion Date: 2015 July 28
Reviewed By: TH	Page 3 of 3

Clean Harbors Canada Inc.

Borehole No: **15MW36A/Deep**

Project: Ryley Renewal Monitoring Well Installations	Project No: ENVSWM03011-04.003
Location: Ryley Facility	
Ryley, Alberta	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)
0		CLAY (TILL) - some silt, moist, plastic, brown			24	
2		SAND - clayey, moist, brown				
3		SANDSTONE - medium grained, blue grey, clay shale interbeds				
5		CLAY SHALE - moist, strong, dark grey, mechanical fractures		1		
7		SANDSTONE - medium grained, strong, light grey, laminated clay shale throughout, mechanical fractures		2		
9	Wet Rotary/HQ Coring	CLAY SHALE - moist, strong, dark grey, mechanical fractures		3		
12		- at 1.220 mm, 200 mm thick siltstone layer - very fine grained, weak, light brown, mechanical fractures				
13		- at 12.80 m, 20 mm thick seashell layer		4		
15		- at 14.70 m, 10 mm thick bentonite lens				
16				5	19	
17		- at 17.00 m, intermittent shells throughout				
18				6		
19		- at 19.00 m, periodic 45-65° fractures				
20						

SPT (N) ■ 20 40 60 80

Plastic Limit — Moisture Content — Liquid Limit 20 40 60 80

● Fracture Frequency (#/m) ● 2 4 6 8

▲ RQD (%) ▲ 40 60 80 100

■ Recovery (%) ■ 40 60 80 100

15MW36 15MW36A

Depth (ft) 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64

TETRA TECH EBA

Contractor: Garritty and Baker	Completion Depth: 38.8 m
Drilling Rig Type:	Start Date: 2015 July 21
Logged By: BS	Completion Date: 2015 July 21
Reviewed By: TH	Page 1 of 2

Clean Harbors Canada Inc.

Borehole No: **15MW36A/Deep**

Project: Ryley Renewal Monitoring Well Installations	Project No: ENVSWM03011-04.003
Location: Ryley Facility	
Ryley, Alberta	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	SPT (N)	Moisture Content (%)	SPT (N) 20 40 60 80 / Plastic Limit – Moisture Content – Liquid Limit 20 40 60 80	Fracture Frequency (#/m) 2 4 6 8 / RQD (%) 40 60 80 100 / Recovery (%) 40 60 80 100	15MW36	15MW36A	Depth (ft)
20											
21	Wet Rotary/HQ Coring	- slight slickensides		7							66 68 70
22											72
23				8							74 76
24		- at 24.13 m, 10 mm thick coal seam									78 80
25											82
26				9							84 86
27											88
28				10							90 92
29		- from 28.90 to 29.20 m, transition to siltstone - very fine grained, light grey, coal inclusions									94
30		- at 29.20 m, strong, light grey		11							96 98
31											100
		SANDSTONE - fine to medium grained, strong, grey		12							102 104
32		- at 32.23 m, clay shale laminations, 20 mm thick clay shale bed									106
33		SILTSTONE - clay shale interbeds									108
		SANDSTONE - fine grained, light grey, coal laminations									110
34		- at 33.40 m, coal laminations at 140 mm intervals									112
		- at 33.80 m, coal laminations at 500 mm intervals		13							
35		- at 34.29 m, medium grained interbeds with light brown staining									114
		- at 34.76 m, coal inclusion									116
36		- from 35.16 to 35.41 m, intermitted sandstone at 250 mm intervals - medium grained, light brown staining, coal inclusions, hydrocarbon odour									118
37		- from 35.76 to 36.06 m, 300 mm thick sandstone layer - medium grained, coal inclusions, hydrocarbon odour									120
		- at 37.00 m, fine grained, intermittent light staining		14							122
38		CLAY SHALE - strong, dark grey									124 126
39		END OF BOREHOLE (38.80 metres) Monitoring well installed to 35.36 metres Monitoring well A installed to 14.33 metres									128
40											130

TETRA TECH EBA

Contractor: Garritty and Baker	Completion Depth: 38.8 m
Drilling Rig Type:	Start Date: 2015 July 21
Logged By: BS	Completion Date: 2015 July 21
Reviewed By: TH	Page 2 of 2

GEO/ROCK ZONE12.GPJ EBA.GDT 16/3/2

Borehole No: **19MW37A**

Project: 2019 Groundwater Monitoring Program	Project No: SWM.SWOP04117-01
Location: Class I Waste Management Facility	
Ryley, Alberta	

Depth (m)	Method	Soil Description	Sample Type	Vapour readings (ppmv) 10 20 30 40	Notes and Comments	19MW37A	Depth (ft)
0							0
0	Solid stem auger	CLAY - organics, some silt, some gravel, dry, firm, non plastic, brown, frozen to 1.60 metres - no visible organics, trace gravel, medium plastic, iron inclusions					
1							2
							4
2		- some sand, no visible gravel, damp, soft, grey brown, fine to medium sand					6
							8
3		SAND - some silt, some clay, damp, soft, blue grey, medium sand					10
							12
4		SANDSTONE - silty, clayey, dry, very weak, grey, medium sandstone					14
5							16
							18
6		- clayier CLAY SHALE - trace to some sand, very wet, grey, fine sand					20
							22
7							24
8							26
							28
9							30
							32
10							34
11							36
							38
12							40
							42
13							44
14		END OF BOREHOLE (13.50 metres) slough - 4.00 metres at 0 hrs. Monitoring well installed to 12.00 metres					46
							48
15							

TETRA TECH

Contractor: Clean Harbors	Completion Depth: 13.5 m
Drilling Rig Type: Truck mounted	Start Date: 2019 October 30
Logged By: MDB	Completion Date: 2019 October 30
Reviewed By: BA	Page 1 of 1

Borehole No: **19MW37B**

Project: 2019 Groundwater Monitoring Program	Project No: SWM.SWOP04117-01
Location: Class I Waste Management Facility	
Ryley, Alberta	

Depth (m)	Method	Soil Description	Sample Type	Vapour readings (ppmv) 10 20 30 40	Notes and Comments	19MW37B	Depth (ft)
0							0
1	Solid stem auger	CLAY - organics, some silt, some gravel, dry, firm, non plastic, brown, frozen to 1.60 metres - no visible organics, trace gravel, medium plastic, iron inclusions					2
							4
2		- some sand, no visible gravel, damp, soft, grey brown, fine to medium sand					6
							8
3		SAND - some silt, some clay, damp, soft, blue grey, medium sand					10
							12
4		SANDSTONE - silty, clayey, dry, very weak, grey, medium sandstone					14
		END OF BOREHOLE (4.50 metres) Monitoring well installed to 4.20 metres					16
5							18
							20
6							22
							24
7							26
							28
8							30
							32
9							34
							36
10							38
							40
11							42
							44
12							46
							48
13							
14							
15							

Contractor: Clean Harbors	Completion Depth: 4.5 m
Drilling Rig Type: Truck mounted	Start Date: 2019 October 30
Logged By: MDB	Completion Date: 2019 October 30
Reviewed By: BA	Page 1 of 1

Borehole No: **19MW38A**

Project: 2019 Groundwater Monitoring Program	Project No: SWM.SWOP04117-01
Location: Class I Waste Management Facility	
Ryley, Alberta	

Depth (m)	Method	Soil Description	Sample Type	Vapour readings (ppmv) 10 20 30 40	Notes and Comments	19MW38A	Depth (ft)
0							0
	Solid stem auger	CLAY (FILL) - some silt, some sand, trace gravel, loose, medium plastic, brown					
		CLAY - some silt, some sand, firm, high plastic, brown, fine to medium sand					
1							2
							4
2							6
		- sandier					8
3							10
		SAND - some silt, some clay, damp, soft, blue grey, medium sand					12
4							14
		SANDSTONE - silty, clayey, dry, very weak, grey, medium sandstone					16
5							18
		CLAY SHALE - trace sand, very weak, grey, fine sand					20
6							22
7							24
							26
8		- weak, dark brown					28
9							30
							32
10							34
							36
11							38
							40
12							42
							44
13		END OF BOREHOLE (13.50 metres) Monitoring well installed to 13.40 metres					46
14							48
15							

Contractor: Clean Harbors	Completion Depth: 13.5 m
Drilling Rig Type: Truck mounted	Start Date: 2019 October 30
Logged By: MDB	Completion Date: 2019 October 30
Reviewed By: BA	Page 1 of 1

Borehole No: **19MW38B**

Project: 2019 Groundwater Monitoring Program	Project No: SWM.SWOP04117-01
Location: Class I Waste Management Facility	
Ryley, Alberta	

Depth (m)	Method	Soil Description	Sample Type	Vapour readings (ppmv) 10 20 30 40	Notes and Comments	19MW38B	Depth (ft)
0							0
0	Solid stem auger	CLAY (FILL) - some silt, some sand, trace gravel, loose, medium plastic, brown					
		CLAY - some silt, some sand, firm, high plastic, brown, fine to medium sand					
1							2
							4
2							6
		- sandier					8
3							10
		SAND - some silt, some clay, damp, soft, blue grey, medium sand					12
4							14
		SANDSTONE - silty, clayey, dry, very weak, grey, medium sandstone					
5							16
							18
6		END OF BOREHOLE (5.50 metres) Monitoring well installed to 4.00 metres					20
							22
7							24
							26
8							28
							30
9							32
							34
10							36
							38
11							40
							42
12							44
							46
13							48
14							
15							

Contractor: Clean Harbors	Completion Depth: 5.5 m
Drilling Rig Type: Truck mounted	Start Date: 2019 October 30
Logged By: MDB	Completion Date: 2019 October 30
Reviewed By: BA	Page 1 of 1

APPENDIX D

LABORATORY ANALYTICAL REPORTS

ALS Canada Ltd.

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CERTIFICATE OF ANALYSIS

Work Order	: **EO2204142**	Page	: 1 of 70
Amendment	: **1**		
Client	: **Tetra Tech Canada Inc.**	Laboratory	: Edmonton - Environmental
Contact	: Carl Forkheim	Account Manager	: Kieran Tordoff
Address	: North Building 14940 123 Ave NW Edmonton AB Canada T5V 1B4	Address	: 9450 - 17 Avenue NW Edmonton AB Canada T6N 1M9
Telephone	: 403-510-7241	Telephone	: +1 780 413 5227
Project	: 704-SWM.SWOP04401-01	Date Samples Received	: 11-Jun-2022 15:00
PO	: ----	Date Analysis Commenced	: 12-Jun-2022
C-O-C number	: ----	Issue Date	: 27-Oct-2022 09:17
Sampler	: MD		
Site	: ----		
Quote number	: ----		
No. of samples received	: 54		
No. of samples analysed	: 54		

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 US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Alex Drake	Lab Analyst	Inorganics, Edmonton, Alberta
Angeli Marzan	Lab Analyst	Inorganics, Edmonton, Alberta
Austin Wasylyshyn	Lab Analyst	Metals, Edmonton, Alberta
Christian Murera	Lab Analyst	Organics, Edmonton, Alberta
Dan Nguyen	Team Leader - Inorganics	Inorganics, Edmonton, Alberta
Dan Nguyen	Team Leader - Inorganics	Metals, Edmonton, Alberta
Geoff Berg	Lab Analyst	Organics, Edmonton, Alberta
Jing Liu	Lab Assistant	Inorganics, Edmonton, Alberta
Kari Mulroy	Lab Supervisor - Environmental	Organics, Edmonton, Alberta
Kira Sampley	Lab Analyst	Inorganics, Edmonton, Alberta
Lisa Watt	Lab Supervisor - Environmental	Inorganics, Edmonton, Alberta
Michelle Schroder	Lab Assistant	Inorganics, Edmonton, Alberta
Muzammil Ali	Lab Analyst	Inorganics, Edmonton, Alberta
Ping Yeung	Team Leader - Inorganics	Inorganics, Edmonton, Alberta
Sarah Birch	Team Leader - Volatiles	Organics, Waterloo, Ontario
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
meq/L	milliequivalents per litre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater 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.*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*
IB:INT	*Ion Balance Reviewed: Imbalance is due to interference or non-measured component.*
OWP	*Organic water sample contained visible sediment (must be included as part of analysis). Measured concentrations of organic substances in water can be biased high due to presence of sediment.*
RRV	*Reported result verified by repeat analysis.*
SFP	*Sample was filtered and preserved at the laboratory.*
TKNI	*TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.*

VOCHS	*VOC analysis was conducted for a water sample that contained > 5% headspace. Results may be biased low.*

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-1B	MW-1C	MW-8A	MW-8B	MW-10
					Client sampling date / time	10-Jun-2022 10:35	10-Jun-2022 10:45	10-Jun-2022 03:45	10-Jun-2022 03:35	09-Jun-2022 15:20
						EO2204142-001	EO2204142-002	EO2204142-003	EO2204142-004	EO2204142-005
						Result	Result	Result	Result	Result
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L		19.6	440	20.3	320	282
conductivity	----	E100	2.0	µS/cm		2080	5470	2270	7210	4100
pH	----	E108	0.10	pH units		8.62	8.35	8.68	8.43	8.39
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L		1290	800	1390	1470	708
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L		35.5	8.3	45.6	20.6	10.3
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L		1120	669	1210	1240	598
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		1430	4460	1560	5840	3100
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.304	0.603	0.782	0.422	0.152
Kjeldahl nitrogen, total [TKN]	----	E318	0.200	mg/L		0.880	1.09	1.28	1.39	0.516
chloride	16887-00-6	E235.Cl	0.50	mg/L		5.45	<2.50 DLDS	5.86 DLDS	51.2 DLDS	62.5 DLDS
fluoride	16984-48-8	E235.F	0.020	mg/L		1.03	0.227 DLDS	1.18 DLDS	0.676 DLDS	0.491 DLDS
nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		0.593	0.100 DLDS	<0.040 DLDS	0.164 DLDS	<0.100 DLDS
nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		0.048	<0.050 DLDS	<0.020 DLDS	0.097 DLDS	<0.050 DLDS
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		210	2640 DLDS	223 DLDS	3140 DLDS	1650 DLDS
nitrate + nitrite (as N)	----	EC235.N+N	0.0500	mg/L		0.641	<0.112	<0.0500	0.261	<0.112
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		8.48	12.9	15.5	19.9	11.2
Ion Balance										
anion sum	----	EC101	0.10	meq/L		27.0	68.4	29.0	91.6	48.1
cation sum	----	EC101	0.10	meq/L		22.6	62.5	25.0	83.1	45.0
ion balance (APHA)	----	EC101	0.010	%		8.87	4.51	7.41	4.86	3.33
ion balance (cations/anions)	----	EC101	0.010	%		83.7 IB:INT	91.4	86.2	90.7	93.6
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0022	0.0057	0.0066	0.0055	0.0094
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00045	<0.00050 DLDS	<0.00020 DLDS	<0.00050 DLDS	<0.00050 DLDS
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00124	0.00060	0.00510	0.00156	0.00081
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0376	0.0215	0.0515	0.0130	0.0166

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-1B	MW-1C	MW-8A	MW-8B	MW-10
					Client sampling date / time	10-Jun-2022 10:35	10-Jun-2022 10:45	10-Jun-2022 03:45	10-Jun-2022 03:35	09-Jun-2022 15:20
						EO2204142-001	EO2204142-002	EO2204142-003	EO2204142-004	EO2204142-005
						Result	Result	Result	Result	Result
Dissolved Metals										
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000040 DLDS	<0.000100 DLDS	<0.000040 DLDS	<0.000100 DLDS	<0.000100 DLDS
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000100 DLDS	<0.000250 DLDS	<0.000100 DLDS	<0.000250 DLDS	<0.000250 DLDS
boron, dissolved	7440-42-8	E421	0.010	mg/L		0.627	0.261	0.588	0.390	0.128
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000366	<0.0000250 DLDS	<0.0000100 DLDS	<0.0000250 DLDS	<0.0000250 DLDS
calcium, dissolved	7440-70-2	E421	0.050	mg/L		6.53	125	6.55	65.8	69.8
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		0.000040	<0.000050 DLDS	0.000038	0.000077	<0.000050 DLDS
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00100 DLDS	<0.00250 DLDS	<0.00100 DLDS	<0.00250 DLDS	<0.00250 DLDS
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00050	0.00050	0.00030	0.00080	<0.00050 DLDS
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00079	0.00102	<0.00040 DLDS	0.00357	0.00364
iron, dissolved	7439-89-6	E421	0.030	mg/L		<0.060 DLDS	<0.150 DLDS	<0.060 DLDS	<0.150 DLDS	<0.150 DLDS
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000100 DLDS	<0.000250 DLDS	<0.000100 DLDS	<0.000250 DLDS	<0.000250 DLDS
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.115	0.305	0.104	0.280	0.230
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		0.804	31.1	0.965	37.8	26.1
manganese, dissolved	7439-96-5	E421	0.00500	mg/L		0.128	0.186	0.0809	0.128	0.0775
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.00605	0.000528	0.00819	0.00152	0.00110
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00593	<0.00250 DLDS	<0.00100 DLDS	0.00464	0.00960
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.100 DLDS	<0.250 DLDS	0.172	<0.250 DLDS	<0.250 DLDS
potassium, dissolved	7440-09-7	E421	0.050	mg/L		1.84	5.88	1.82	5.32	3.91
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00312	0.00714	0.00303	0.00661	0.00550
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000189	<0.000250 DLDS	<0.000100 DLDS	<0.000250 DLDS	0.000261
silicon, dissolved	7440-21-3	E421	0.050	mg/L		3.12	4.61	3.91	4.88	4.66
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000020 DLDS	<0.000050 DLDS	<0.000020 DLDS	<0.000050 DLDS	<0.000050 DLDS
sodium, dissolved	7440-23-5	E421	0.050	mg/L		509	1230	564	1760	903
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.149	2.06	0.160	1.58	0.942
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		73.0	904	72.4	1120	589
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00040 DLDS	<0.00100 DLDS	<0.00040 DLDS	<0.00100 DLDS	<0.00100 DLDS
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000020 DLDS	<0.000050 DLDS	<0.000020 DLDS	<0.000050 DLDS	<0.000050 DLDS
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00020 DLDS	<0.00050 DLDS	<0.00020 DLDS	<0.00050 DLDS	<0.00050 DLDS
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00020 DLDS	<0.00050 DLDS	<0.00020 DLDS	<0.00050 DLDS	<0.00050 DLDS
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00060 DLDS	<0.00150 DLDS	<0.00060 DLDS	<0.00150 DLDS	0.00157

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-1B	MW-1C	MW-8A	MW-8B	MW-10
					Client sampling date / time	10-Jun-2022 10:35	10-Jun-2022 10:45	10-Jun-2022 03:45	10-Jun-2022 03:35	09-Jun-2022 15:20
						EO2204142-001	EO2204142-002	EO2204142-003	EO2204142-004	EO2204142-005
						Result	Result	Result	Result	Result
Dissolved Metals										
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00020 DLDS	<0.00050 DLDS	0.00028	<0.00050 DLDS	<0.00050 DLDS
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.00147	0.000130	0.000502	0.00291	0.00516
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00100 DLDS	<0.00250 DLDS	<0.00100 DLDS	<0.00250 DLDS	<0.00250 DLDS
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0020 DLDS	<0.0050 DLDS	<0.0020 DLDS	<0.0050 DLDS	<0.0050 DLDS
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		0.00102	<0.00150 DLDS	0.00142	<0.00150 DLDS	<0.00150 DLDS
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field
Aggregate Organics										
chemical oxygen demand [COD]	----	E559-L	10	mg/L		36	30	36	50	29
phenols, total (4AAP)	----	E562	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Volatile Organic Compounds										
Acetone	67-64-1	E611F	20	µg/L		<20	<20	<20	<20	<20
bromobenzene	108-86-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
bromochloromethane	74-97-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
bromomethane	74-83-9	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
butylbenzene, n-	104-51-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
butylbenzene, sec-	135-98-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
butylbenzene, tert-	98-06-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
carbon disulfide	75-15-0	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
chlorobenzene	108-90-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
chloromethane	74-87-3	E611F	2.0	µg/L		<2.0	<2.0	<2.0	<2.0	<2.0
chlorotoluene, 2-	95-49-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
chlorotoluene, 4-	106-43-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
cymene, p-	99-87-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dibromo-3-chloropropane, 1,2-	96-12-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dibromomethane	74-95-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorobenzene, 1,2-	95-50-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorobenzene, 1,3-	541-73-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorobenzene, 1,4-	106-46-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorodifluoromethane	75-71-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropane, 1,2-	78-87-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-1B	MW-1C	MW-8A	MW-8B	MW-10
					Client sampling date / time	10-Jun-2022 10:35	10-Jun-2022 10:45	10-Jun-2022 03:45	10-Jun-2022 03:35	09-Jun-2022 15:20
						EO2204142-001	EO2204142-002	EO2204142-003	EO2204142-004	EO2204142-005
						Result	Result	Result	Result	Result
Volatile Organic Compounds										
dichloropropane, 1,3-	142-28-9	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropane, 2,2-	594-20-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropylene, 1,1-	563-58-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropylene, cis+trans-1,3-	542-75-6	E611F	0.75	µg/L		<0.75	<0.75	<0.75	<0.75	<0.75
dichloropropylene, cis-1,3-	10061-01-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
hexachlorobutadiene	87-68-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
hexanone, 2-	591-78-6	E611F	20	µg/L		<20	<20	<20	<20	<20
methyl ethyl ketone [MEK]	78-93-3	E611F	20	µg/L		<20	<20	<20	<20	<20
methyl isobutyl ketone [MIBK]	108-10-1	E611F	20	µg/L		<20	<20	<20	<20	<20
propylbenzene, n-	103-65-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
tetrachloroethane, 1,1,1,2-	630-20-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
tetrachloroethane, 1,1,2,2-	79-34-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichlorobenzene, 1,2,3-	87-61-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichlorobenzene, 1,2,4-	120-82-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichloroethane, 1,1,2-	79-00-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichlorofluoromethane	75-69-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichloropropane, 1,2,3-	96-18-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Volatile Organic Compounds [Drycleaning]										
carbon tetrachloride	56-23-5	E611F	0.20	µg/L		<0.20	<0.20	<0.20	<0.20	<0.20
chloroethane	75-00-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethane, 1,1-	75-34-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethane, 1,2-	107-06-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethylene, 1,1-	75-35-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethylene, cis-1,2-	156-59-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethylene, trans-1,2-	156-60-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloromethane	75-09-2	E611F	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
dichloropropylene, trans-1,3-	10061-02-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
tetrachloroethylene	127-18-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichloroethane, 1,1,1-	71-55-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichloroethylene	79-01-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-1B	MW-1C	MW-8A	MW-8B	MW-10
					Client sampling date / time	10-Jun-2022 10:35	10-Jun-2022 10:45	10-Jun-2022 03:45	10-Jun-2022 03:35	09-Jun-2022 15:20
						EO2204142-001	EO2204142-002	EO2204142-003	EO2204142-004	EO2204142-005
						Result	Result	Result	Result	Result
Volatile Organic Compounds [Drycleaning]										
vinyl chloride	75-01-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Volatile Organic Compounds [Fuels]										
benzene	71-43-2	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
benzene	71-43-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dibromoethane, 1,2-	106-93-4	E611F	0.20	µg/L		<0.20	<0.20	<0.20	<0.20	<0.20
ethylbenzene	100-41-4	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
ethylbenzene	100-41-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
hexane, n-	110-54-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
isopropylbenzene	98-82-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
methyl-tert-butyl ether [MTBE]	1634-04-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
naphthalene	91-20-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
styrene	100-42-5	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
styrene	100-42-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
toluene	108-88-3	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
toluene	108-88-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trimethylbenzene, 1,2,4-	95-63-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trimethylbenzene, 1,3,5-	108-67-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
xylene, m+p-	179601-23-1	E611A	0.40	µg/L		<0.40	<0.40	<0.40	<0.40	<0.40
xylene, m+p-	179601-23-1	E611F	0.40	µg/L		<0.40	<0.40	<0.40	<0.40	<0.40
xylene, o-	95-47-6	E611A	0.30	µg/L		<0.30	<0.30	<0.30	<0.30	<0.30
xylene, o-	95-47-6	E611F	0.30	µg/L		<0.30	<0.30	<0.30	<0.30	<0.30
xylenes, total	1330-20-7	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
xylenes, total	1330-20-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
BTEX, total	----	E611A	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Volatile Organic Compounds [THMs]										
bromodichloromethane	75-27-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
bromoform	75-25-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	67-66-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dibromochloromethane	124-48-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	MW-1B	MW-1C	MW-8A	MW-8B	MW-10
					Client sampling date / time	10-Jun-2022 10:35	10-Jun-2022 10:45	10-Jun-2022 03:45	10-Jun-2022 03:35	09-Jun-2022 15:20
Analyte	CAS Number	Method	LOR	Unit		EO2204142-001	EO2204142-002	EO2204142-003	EO2204142-004	EO2204142-005
						Result	Result	Result	Result	Result
Hydrocarbons										
F1 (C6-C10)	----	E581.F1	100	µg/L		<100	<100	<100	<100	<100
F1-BTEX	----	EC580	25	µg/L		<100	<100	<100	<100	<100
F2 (C10-C16)	----	E601	100	µg/L		<100	<100	<100	<100	<100
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	E601	1.0	%		95.3	97.0	98.0	100	98.7
dichlorotoluene, 3,4-	97-75-0	E581.F1	1.0	%		114	117	117	107	116
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611A	1.0	%		86.7	88.5	90.5	87.7	89.4
bromofluorobenzene, 4-	460-00-4	E611F	1.0	%		78.4	79.6	82.0	82.1	81.4
difluorobenzene, 1,4-	540-36-3	E611A	1.0	%		102	105	100.0	103	106
difluorobenzene, 1,4-	540-36-3	E611F	1.0	%		95.7	96.2	95.8	95.9	93.9

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

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-11	MW-12A	MW-12B	MW-18A	MW-18B
					Client sampling date / time	09-Jun-2022 15:05	10-Jun-2022 22:10	10-Jun-2022 01:00	10-Jun-2022 10:55	10-Jun-2022 11:00
						EO2204142-006	EO2204142-007	EO2204142-008	EO2204142-009	EO2204142-010
						Result	Result	Result	Result	Result
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L		913	815	542	8.66	347
conductivity	----	E100	2.0	µS/cm		8660	11400	9230	1460	1760
pH	----	E108	0.10	pH units		8.20	8.42	8.16	8.65	8.29
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L		1100	1060	1010	1090	401
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L		<1.0	16.8	<1.0	33.4	<1.0
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L		900	894	831	948	328
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		7550	10600	8300	995	1300
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		<0.0050	0.213	2.16	0.601	0.0424
Kjeldahl nitrogen, total [TKN]	----	E318	0.200	mg/L		1.48	0.845	3.05	0.952	0.618
chloride	16887-00-6	E235.Cl	0.50	mg/L		54.1 DLDS	<5.00 DLDS	<5.00 DLDS	6.57	24.7
fluoride	16984-48-8	E235.F	0.020	mg/L		0.480 DLDS	<0.200 DLDS	<0.200 DLDS	1.57	0.237
nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		0.134 DLDS	<0.200 DLDS	2.69 DLDS	<0.020	0.052
nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		<0.050 DLDS	<0.100 DLDS	0.348 DLDS	<0.010	<0.010
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		4670 DLDS	6770 DLDS	5180 DLDS	0.59	627
nitrate + nitrite (as N)	----	EC235.N+N	0.0500	mg/L		0.134	<0.224	3.04	<0.0500	0.0520
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		34.6	17.6	18.0	9.53	10.2
Ion Balance										
anion sum	----	EC101	0.10	meq/L		117	159	125	19.2	20.3
cation sum	----	EC101	0.10	meq/L		102	149	114	17.3	20.0
ion balance (APHA)	----	EC101	0.010	%		6.85	3.25	4.60	5.20	0.744
ion balance (cations/anions)	----	EC101	0.010	%		87.2	93.7	91.2	90.1	98.5
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0084	0.0436	<0.0050 DLDS	0.0024	0.0015
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00050 DLDS	<0.00100 DLDS	<0.00050 DLDS	0.00024	<0.00010
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00096	<0.00100 DLDS	0.00064	0.00173	0.00038
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00847	0.00958	0.0160	0.0954	0.0206
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000100 DLDS	<0.000200 DLDS	<0.000100 DLDS	<0.000020	<0.000020

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-11	MW-12A	MW-12B	MW-18A	MW-18B
					Client sampling date / time	09-Jun-2022 15:05	10-Jun-2022 22:10	10-Jun-2022 01:00	10-Jun-2022 10:55	10-Jun-2022 11:00
						EO2204142-006	EO2204142-007	EO2204142-008	EO2204142-009	EO2204142-010
						Result	Result	Result	Result	Result
Dissolved Metals										
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000250 DLDS	<0.000500 DLDS	<0.000250 DLDS	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		0.172	0.390	0.548	0.670	0.048
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000318	<0.0000500 DLDS	<0.0000250 DLDS	0.0000051	0.0000087
calcium, dissolved	7440-70-2	E421	0.050	mg/L		194	155	176	2.86	96.5
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		0.000094	0.000126	0.000123	0.000013	0.000016
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00250 DLDS	<0.00500 DLDS	<0.00250 DLDS	<0.00050	<0.00050
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00050 DLDS	<0.00100 DLDS	<0.00050 DLDS	0.00012	0.00029
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00372	0.00339	0.00255	0.00114	0.00202
iron, dissolved	7439-89-6	E421	0.030	mg/L		<0.150 DLDS	<0.300 DLDS	<0.150 DLDS	0.064	<0.030
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000250 DLDS	<0.000500 DLDS	<0.000250 DLDS	0.000666	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.515	0.616	0.514	0.0708	0.0796
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		104	104	25.0	0.370	25.7
manganese, dissolved	7439-96-5	E421	0.00500	mg/L		<0.0250 DLDS	<0.0500 DLDS	0.113	0.0376	0.0574
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.00105	<0.000500 DLDS	0.00132	0.00560	0.000658
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00559	<0.00500 DLDS	0.00390	0.00193	0.00318
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.250 DLDS	<0.500 DLDS	<0.250 DLDS	0.062	<0.050
potassium, dissolved	7440-09-7	E421	0.050	mg/L		7.49	10.8	8.06	1.42	2.79
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.0122	0.0149	0.0149	0.00215	0.00472
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000675	<0.000500 DLDS	<0.000250 DLDS	<0.000050	0.000162
silicon, dissolved	7440-21-3	E421	0.050	mg/L		5.31	5.32	4.04	3.89	4.80
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000050 DLDS	<0.000100 DLDS	<0.000050 DLDS	<0.000010	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L		1930	3040	2370	392	298
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		3.65	3.57	4.12	0.0657	0.802
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		1680	2340	1790	<0.50	229
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00100 DLDS	<0.00200 DLDS	<0.00100 DLDS	<0.00020	<0.00020
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000050 DLDS	<0.000100 DLDS	<0.000050 DLDS	<0.000010	<0.000010
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00050 DLDS	<0.00100 DLDS	<0.00050 DLDS	<0.00010	<0.00010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00050 DLDS	<0.00100 DLDS	<0.00050 DLDS	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00150 DLDS	<0.00300 DLDS	<0.00150 DLDS	<0.00030	<0.00030
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00050 DLDS	<0.00100 DLDS	<0.00050 DLDS	0.00042	<0.00010

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-11	MW-12A	MW-12B	MW-18A	MW-18B
					Client sampling date / time	09-Jun-2022 15:05	10-Jun-2022 22:10	10-Jun-2022 01:00	10-Jun-2022 10:55	10-Jun-2022 11:00
						EO2204142-006	EO2204142-007	EO2204142-008	EO2204142-009	EO2204142-010
						Result	Result	Result	Result	Result
Dissolved Metals										
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.0309	0.00354	0.0184	0.000097	0.00228
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00250 DLDS	<0.00500 DLDS	<0.00250 DLDS	<0.00050	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0050 DLDS	<0.0100 DLDS	<0.0050 DLDS	0.0014	0.0013
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00150 DLDS	<0.00300 DLDS	<0.00150 DLDS	0.00058	<0.00030
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field
Aggregate Organics										
chemical oxygen demand [COD]	----	E559-L	10	mg/L		82	38	39	24	22
phenols, total (4AAP)	----	E562	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Volatile Organic Compounds										
Acetone	67-64-1	E611F	20	µg/L		<20	<20	<20	<20	<20
bromobenzene	108-86-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
bromochloromethane	74-97-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
bromomethane	74-83-9	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
butylbenzene, n-	104-51-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
butylbenzene, sec-	135-98-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
butylbenzene, tert-	98-06-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
carbon disulfide	75-15-0	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
chlorobenzene	108-90-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
chloromethane	74-87-3	E611F	2.0	µg/L		<2.0	<2.0	<2.0	<2.0	<2.0
chlorotoluene, 2-	95-49-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
chlorotoluene, 4-	106-43-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
cymene, p-	99-87-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dibromo-3-chloropropane, 1,2-	96-12-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dibromomethane	74-95-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorobenzene, 1,2-	95-50-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorobenzene, 1,3-	541-73-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorobenzene, 1,4-	106-46-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorodifluoromethane	75-71-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropane, 1,2-	78-87-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropane, 1,3-	142-28-9	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-11	MW-12A	MW-12B	MW-18A	MW-18B
					Client sampling date / time	09-Jun-2022 15:05	10-Jun-2022 22:10	10-Jun-2022 01:00	10-Jun-2022 10:55	10-Jun-2022 11:00
						EO2204142-006	EO2204142-007	EO2204142-008	EO2204142-009	EO2204142-010
						Result	Result	Result	Result	Result
Volatile Organic Compounds										
dichloropropane, 2,2-	594-20-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropylene, 1,1-	563-58-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropylene, cis+trans-1,3-	542-75-6	E611F	0.75	µg/L		<0.75	<0.75	<0.75	<0.75	<0.75
dichloropropylene, cis-1,3-	10061-01-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
hexachlorobutadiene	87-68-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
hexanone, 2-	591-78-6	E611F	20	µg/L		<20	<20	<20	<20	<20
methyl ethyl ketone [MEK]	78-93-3	E611F	20	µg/L		<20	<20	<20	<20	<20
methyl isobutyl ketone [MIBK]	108-10-1	E611F	20	µg/L		<20	<20	<20	<20	<20
propylbenzene, n-	103-65-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
tetrachloroethane, 1,1,1,2-	630-20-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
tetrachloroethane, 1,1,2,2-	79-34-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichlorobenzene, 1,2,3-	87-61-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichlorobenzene, 1,2,4-	120-82-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichloroethane, 1,1,2-	79-00-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichlorofluoromethane	75-69-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichloropropane, 1,2,3-	96-18-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Volatile Organic Compounds [Drycleaning]										
carbon tetrachloride	56-23-5	E611F	0.20	µg/L		<0.20	<0.20	<0.20	<0.20	<0.20
chloroethane	75-00-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethane, 1,1-	75-34-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethane, 1,2-	107-06-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethylene, 1,1-	75-35-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethylene, cis-1,2-	156-59-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethylene, trans-1,2-	156-60-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloromethane	75-09-2	E611F	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
dichloropropylene, trans-1,3-	10061-02-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
tetrachloroethylene	127-18-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichloroethane, 1,1,1-	71-55-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichloroethylene	79-01-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
vinyl chloride	75-01-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-11	MW-12A	MW-12B	MW-18A	MW-18B
					Client sampling date / time	09-Jun-2022 15:05	10-Jun-2022 22:10	10-Jun-2022 01:00	10-Jun-2022 10:55	10-Jun-2022 11:00
						EO2204142-006	EO2204142-007	EO2204142-008	EO2204142-009	EO2204142-010
						Result	Result	Result	Result	Result
Volatile Organic Compounds [Fuels]										
benzene	71-43-2	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
benzene	71-43-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dibromoethane, 1,2-	106-93-4	E611F	0.20	µg/L		<0.20	<0.20	<0.20	<0.20	<0.20
ethylbenzene	100-41-4	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
ethylbenzene	100-41-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
hexane, n-	110-54-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
isopropylbenzene	98-82-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
methyl-tert-butyl ether [MTBE]	1634-04-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
naphthalene	91-20-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
styrene	100-42-5	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
styrene	100-42-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
toluene	108-88-3	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
toluene	108-88-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trimethylbenzene, 1,2,4-	95-63-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trimethylbenzene, 1,3,5-	108-67-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
xylene, m+p-	179601-23-1	E611A	0.40	µg/L		<0.40	<0.40	<0.40	<0.40	<0.40
xylene, m+p-	179601-23-1	E611F	0.40	µg/L		<0.40	<0.40	<0.40	<0.40	<0.40
xylene, o-	95-47-6	E611A	0.30	µg/L		<0.30	<0.30	<0.30	<0.30	<0.30
xylene, o-	95-47-6	E611F	0.30	µg/L		<0.30	<0.30	<0.30	<0.30	<0.30
xylenes, total	1330-20-7	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
xylenes, total	1330-20-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
BTEX, total	----	E611A	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Volatile Organic Compounds [THMs]										
bromodichloromethane	75-27-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
bromoform	75-25-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	67-66-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dibromochloromethane	124-48-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Hydrocarbons										
F1 (C6-C10)	----	E581.F1	100	µg/L		<100	<100	<100	<100	<100

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-11	MW-12A	MW-12B	MW-18A	MW-18B
					Client sampling date / time	09-Jun-2022 15:05	10-Jun-2022 22:10	10-Jun-2022 01:00	10-Jun-2022 10:55	10-Jun-2022 11:00
						EO2204142-006	EO2204142-007	EO2204142-008	EO2204142-009	EO2204142-010
						Result	Result	Result	Result	Result
Hydrocarbons										
F1-BTEX	----	EC580	25	µg/L		<100	<100	<100	<100	<100
F2 (C10-C16)	----	E601	100	µg/L		<100	<100	<100	<100	<100
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	E601	1.0	%		98.7	100	100	98.9	92.8
dichlorotoluene, 3,4-	97-75-0	E581.F1	1.0	%		82.8	120	119	119	84.8
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611A	1.0	%		90.6	87.9	93.6	86.5	88.9
bromofluorobenzene, 4-	460-00-4	E611F	1.0	%		81.9	81.4	80.9	80.4	81.1
difluorobenzene, 1,4-	540-36-3	E611A	1.0	%		106	104	103	105	106
difluorobenzene, 1,4-	540-36-3	E611F	1.0	%		96.1	96.2	96.3	96.4	96.5

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

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-19A	MW-19B	MW-20A	MW-20B	MW-21A
					Client sampling date / time	10-Jun-2022 11:20	10-Jun-2022 11:25	10-Jun-2022 11:35	10-Jun-2022 11:45	10-Jun-2022 12:00
						EO2204142-011	EO2204142-012	EO2204142-013	EO2204142-014	EO2204142-015
						Result	Result	Result	Result	Result
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L		228	123	102	1240	12.5
conductivity	----	E100	2.0	µS/cm		6560	6000	3650	6370	1940
pH	----	E108	0.10	pH units		8.59	8.76	8.52	7.99	8.61
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L		1310	1180	1300	891	1360
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L		38.8	55.4	27.2	<1.0	34.2
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L		1140	1060	1110	730	1180
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		5340	4840	2750	5790	1320
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		1.04	0.745	0.581	<0.0050	0.0966
Kjeldahl nitrogen, total [TKN]	----	E318	0.200	mg/L		1.54	1.08	0.873	1.80	0.491
chloride	16887-00-6	E235.Cl	0.50	mg/L		10.3 DLDS	3.65 DLDS	4.91 DLDS	<2.50 DLDS	9.13 DLDS
fluoride	16984-48-8	E235.F	0.020	mg/L		0.405 DLDS	0.136 DLDS	0.393 DLDS	0.410 DLDS	0.897 DLDS
nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		<0.100 DLDS	<0.100 DLDS	0.668 DLDS	1.02 DLDS	0.140 DLDS
nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		<0.050 DLDS	<0.050 DLDS	<0.050 DLDS	<0.050 DLDS	<0.020 DLDS
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		2950 DLDS	2590 DLDS	1130 DLDS	3530 DLDS	61.7 DLDS
nitrate + nitrite (as N)	----	EC235.N+N	0.0500	mg/L		<0.112	<0.112	0.668	1.02	0.140
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		8.74	7.80	6.42	33.0	10.6
Ion Balance										
anion sum	----	EC101	0.10	meq/L		84.5	75.2	45.9	88.2	25.2
cation sum	----	EC101	0.10	meq/L		74.0	69.7	40.8	83.1	22.4
ion balance (APHA)	----	EC101	0.010	%		6.62	3.80	5.88	2.98	5.88
ion balance (cations/anions)	----	EC101	0.010	%		87.6	92.7	88.9	94.2	88.9
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		<0.0050 DLDS	0.0056	0.0048	0.0556	0.0164
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00050 DLDS	<0.00050 DLDS	<0.00020 DLDS	<0.00050 DLDS	0.00034
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00109	0.00361	0.00039	0.00084	0.00187
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0150	0.0156	0.0219	0.0151	0.0864
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000100 DLDS	<0.000100 DLDS	<0.000040 DLDS	<0.000100 DLDS	<0.000020

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-19A	MW-19B	MW-20A	MW-20B	MW-21A
					Client sampling date / time	10-Jun-2022 11:20	10-Jun-2022 11:25	10-Jun-2022 11:35	10-Jun-2022 11:45	10-Jun-2022 12:00
						EO2204142-011	EO2204142-012	EO2204142-013	EO2204142-014	EO2204142-015
						Result	Result	Result	Result	Result
Dissolved Metals										
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000250 DLDS	<0.000250 DLDS	<0.000100 DLDS	<0.000250 DLDS	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		0.402	0.471	0.625	0.216	0.731
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000250 DLDS	<0.0000250 DLDS	<0.0000100 DLDS	<0.0000250 DLDS	0.000141
calcium, dissolved	7440-70-2	E421	0.050	mg/L		50.8	17.4	31.3	306	4.22
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		<0.000050 DLDS	<0.000050 DLDS	0.000031	0.000079	0.000030
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00250 DLDS	<0.00250 DLDS	<0.00100 DLDS	<0.00250 DLDS	<0.00050
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00050 DLDS	<0.00050 DLDS	<0.00020 DLDS	<0.00050 DLDS	0.00060
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00100 DLDS	<0.00100 DLDS	0.00124	0.00286	0.00202
iron, dissolved	7439-89-6	E421	0.030	mg/L		<0.150 DLDS	<0.150 DLDS	<0.060 DLDS	<0.150 DLDS	<0.030
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000250 DLDS	<0.000250 DLDS	<0.000100 DLDS	<0.000250 DLDS	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.464	0.510	0.268	0.723	0.105
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		24.5	19.4	5.80	117	0.472
manganese, dissolved	7439-96-5	E421	0.00500	mg/L		0.271	0.0302	0.0864	<0.0250 DLDS	0.0920
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.00532	0.00178	0.00124	0.000662	0.00476
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00340	<0.00250 DLDS	0.00228	<0.00250 DLDS	0.00333
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.250 DLDS	<0.250 DLDS	<0.100 DLDS	<0.250 DLDS	<0.050
potassium, dissolved	7440-09-7	E421	0.050	mg/L		7.01	7.39	4.02	12.5	1.74
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00761	0.00650	0.00708	0.0121	0.00351
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000250 DLDS	<0.000250 DLDS	<0.000100 DLDS	0.0932	0.000363
silicon, dissolved	7440-21-3	E421	0.050	mg/L		4.70	4.86	3.53	7.00	3.28
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000050 DLDS	<0.000050 DLDS	<0.000020 DLDS	<0.000050 DLDS	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L		1590	1540	887	1330	509
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		1.34	0.985	0.602	4.31	0.102
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		1020	898	396	1250	21.5
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00100 DLDS	<0.00100 DLDS	<0.00040 DLDS	<0.00100 DLDS	<0.00020
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000050 DLDS	<0.000050 DLDS	<0.000020 DLDS	<0.000050 DLDS	<0.000010
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00050 DLDS	<0.00050 DLDS	<0.00020 DLDS	<0.00050 DLDS	<0.00010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00050 DLDS	<0.00050 DLDS	<0.00020 DLDS	<0.00050 DLDS	0.00013
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00150 DLDS	<0.00150 DLDS	<0.00060 DLDS	0.00226	0.00045
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00050 DLDS	0.00074	<0.00020 DLDS	<0.00050 DLDS	<0.00010

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-19A	MW-19B	MW-20A	MW-20B	MW-21A
					Client sampling date / time	10-Jun-2022 11:20	10-Jun-2022 11:25	10-Jun-2022 11:35	10-Jun-2022 11:45	10-Jun-2022 12:00
						EO2204142-011	EO2204142-012	EO2204142-013	EO2204142-014	EO2204142-015
						Result	Result	Result	Result	Result
Dissolved Metals										
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.00606	0.000396	0.00163	0.0704	0.00327
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00250 DLDS	<0.00250 DLDS	<0.00100 DLDS	<0.00250 DLDS	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0050 DLDS	<0.0050 DLDS	<0.0020 DLDS	<0.0050 DLDS	<0.0010
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00150 DLDS	<0.00150 DLDS	0.00063	<0.00150 DLDS	0.00202
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field
Aggregate Organics										
chemical oxygen demand [COD]	----	E559-L	10	mg/L		24	26	16	85	36
phenols, total (4AAP)	----	E562	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Volatile Organic Compounds										
Acetone	67-64-1	E611F	20	µg/L		<20	<20	<20	<20	<20
bromobenzene	108-86-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
bromochloromethane	74-97-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
bromomethane	74-83-9	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
butylbenzene, n-	104-51-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
butylbenzene, sec-	135-98-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
butylbenzene, tert-	98-06-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
carbon disulfide	75-15-0	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
chlorobenzene	108-90-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
chloromethane	74-87-3	E611F	2.0	µg/L		<2.0	<2.0	<2.0	<2.0	<2.0
chlorotoluene, 2-	95-49-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
chlorotoluene, 4-	106-43-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
cymene, p-	99-87-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dibromo-3-chloropropane, 1,2-	96-12-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dibromomethane	74-95-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorobenzene, 1,2-	95-50-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorobenzene, 1,3-	541-73-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorobenzene, 1,4-	106-46-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorodifluoromethane	75-71-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropane, 1,2-	78-87-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropane, 1,3-	142-28-9	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-19A	MW-19B	MW-20A	MW-20B	MW-21A
					Client sampling date / time	10-Jun-2022 11:20	10-Jun-2022 11:25	10-Jun-2022 11:35	10-Jun-2022 11:45	10-Jun-2022 12:00
						EO2204142-011	EO2204142-012	EO2204142-013	EO2204142-014	EO2204142-015
						Result	Result	Result	Result	Result
Volatile Organic Compounds										
dichloropropane, 2,2-	594-20-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropylene, 1,1-	563-58-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropylene, cis+trans-1,3-	542-75-6	E611F	0.75	µg/L		<0.75	<0.75	<0.75	<0.75	<0.75
dichloropropylene, cis-1,3-	10061-01-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
hexachlorobutadiene	87-68-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
hexanone, 2-	591-78-6	E611F	20	µg/L		<20	<20	<20	<20	<20
methyl ethyl ketone [MEK]	78-93-3	E611F	20	µg/L		<20	<20	<20	<20	<20
methyl isobutyl ketone [MIBK]	108-10-1	E611F	20	µg/L		<20	<20	<20	<20	<20
propylbenzene, n-	103-65-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
tetrachloroethane, 1,1,1,2-	630-20-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
tetrachloroethane, 1,1,2,2-	79-34-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichlorobenzene, 1,2,3-	87-61-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichlorobenzene, 1,2,4-	120-82-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichloroethane, 1,1,2-	79-00-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichlorofluoromethane	75-69-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichloropropane, 1,2,3-	96-18-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Volatile Organic Compounds [Drycleaning]										
carbon tetrachloride	56-23-5	E611F	0.20	µg/L		<0.20	<0.20	<0.20	<0.20	<0.20
chloroethane	75-00-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethane, 1,1-	75-34-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethane, 1,2-	107-06-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethylene, 1,1-	75-35-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethylene, cis-1,2-	156-59-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethylene, trans-1,2-	156-60-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloromethane	75-09-2	E611F	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
dichloropropylene, trans-1,3-	10061-02-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
tetrachloroethylene	127-18-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichloroethane, 1,1,1-	71-55-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichloroethylene	79-01-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
vinyl chloride	75-01-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-19A	MW-19B	MW-20A	MW-20B	MW-21A
					Client sampling date / time	10-Jun-2022 11:20	10-Jun-2022 11:25	10-Jun-2022 11:35	10-Jun-2022 11:45	10-Jun-2022 12:00
						EO2204142-011	EO2204142-012	EO2204142-013	EO2204142-014	EO2204142-015
						Result	Result	Result	Result	Result
Volatile Organic Compounds [Fuels]										
benzene	71-43-2	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
benzene	71-43-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dibromoethane, 1,2-	106-93-4	E611F	0.20	µg/L		<0.20	<0.20	<0.20	<0.20	<0.20
ethylbenzene	100-41-4	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
ethylbenzene	100-41-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
hexane, n-	110-54-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
isopropylbenzene	98-82-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
methyl-tert-butyl ether [MTBE]	1634-04-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
naphthalene	91-20-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
styrene	100-42-5	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
styrene	100-42-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
toluene	108-88-3	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
toluene	108-88-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trimethylbenzene, 1,2,4-	95-63-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trimethylbenzene, 1,3,5-	108-67-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
xylene, m+p-	179601-23-1	E611A	0.40	µg/L		<0.40	<0.40	<0.40	<0.40	<0.40
xylene, m+p-	179601-23-1	E611F	0.40	µg/L		<0.40	<0.40	<0.40	<0.40	<0.40
xylene, o-	95-47-6	E611A	0.30	µg/L		<0.30	<0.30	<0.30	<0.30	<0.30
xylene, o-	95-47-6	E611F	0.30	µg/L		<0.30	<0.30	<0.30	<0.30	<0.30
xylenes, total	1330-20-7	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
xylenes, total	1330-20-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
BTEX, total	----	E611A	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Volatile Organic Compounds [THMs]										
bromodichloromethane	75-27-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
bromoform	75-25-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	67-66-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dibromochloromethane	124-48-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Hydrocarbons										
F1 (C6-C10)	----	E581.F1	100	µg/L		<100	<100	<100	<100	<100

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	MW-19A	MW-19B	MW-20A	MW-20B	MW-21A
					Client sampling date / time	10-Jun-2022 11:20	10-Jun-2022 11:25	10-Jun-2022 11:35	10-Jun-2022 11:45	10-Jun-2022 12:00
Analyte	CAS Number	Method	LOR	Unit		EO2204142-011	EO2204142-012	EO2204142-013	EO2204142-014	EO2204142-015
						Result	Result	Result	Result	Result
Hydrocarbons										
F1-BTEX	----	EC580	25	µg/L		<100	<100	<100	<100	<100
F2 (C10-C16)	----	E601	100	µg/L		640	<100	<100	<100	<100
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	E601	1.0	%		93.6	91.9	92.3	94.6	93.6
dichlorotoluene, 3,4-	97-75-0	E581.F1	1.0	%		77.9	117	99.9	116	112
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611A	1.0	%		92.3	94.6	91.6	90.7	88.0
bromofluorobenzene, 4-	460-00-4	E611F	1.0	%		80.8	78.3	80.3	81.0	80.0
difluorobenzene, 1,4-	540-36-3	E611A	1.0	%		92.8	106	94.2	102	91.4
difluorobenzene, 1,4-	540-36-3	E611F	1.0	%		96.4	96.1	96.4	96.4	96.4

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

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-21B	MW-22A	MW-22B	MW-23A	MW-23B
					Client sampling date / time	10-Jun-2022 12:10	10-Jun-2022 12:45	10-Jun-2022 12:25	10-Jun-2022 12:55	10-Jun-2022 13:05
						EO2204142-016	EO2204142-017	EO2204142-018	EO2204142-019	EO2204142-020
						Result	Result	Result	Result	Result
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L		79.8	105	512	10.6	712
conductivity	----	E100	2.0	µS/cm		2940	4980	7730	2060	9290
pH	----	E108	0.10	pH units		8.47	8.57	8.24	8.81	8.22
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L		1130	986	1440	1430	1080
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L		18.4	26.8	<1.0	63.8	<1.0
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L		957	852	1180	1280	885
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		2110	3900	6550	1440	8210
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.0192	0.140	<0.0050	0.870	0.412
Kjeldahl nitrogen, total [TKN]	----	E318	0.200	mg/L		0.404	0.758 TKNI	0.306	1.30	0.710
chloride	16887-00-6	E235.Cl	0.50	mg/L		<1.00 DLDS	10.7 DLDS	<2.50 DLDS	16.0 DLDS	<5.00 DLDS
fluoride	16984-48-8	E235.F	0.020	mg/L		0.415 DLDS	0.340 DLDS	0.272 DLDS	1.41 DLDS	<0.200 DLDS
nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		0.063 DLDS	13.5 DLDS	<0.100 DLDS	<0.040 DLDS	0.298 DLDS
nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		<0.020 DLDS	<0.050 DLDS	<0.050 DLDS	<0.020 DLDS	<0.100 DLDS
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		806 DLDS	1980 DLDS	3730 DLDS	83.9 DLDS	5020 DLDS
nitrate + nitrite (as N)	----	EC235.N+N	0.0500	mg/L		0.0630	13.5	<0.112	<0.0500	0.298
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		7.10	6.67	6.90	17.4	8.46
Ion Balance										
anion sum	----	EC101	0.10	meq/L		35.9	59.5	101	27.8	122
cation sum	----	EC101	0.10	meq/L		31.3	57.9	93.6	23.7	118
ion balance (APHA)	----	EC101	0.010	%		6.84	1.36	3.80	7.96	1.67
ion balance (cations/anions)	----	EC101	0.010	%		87.2	97.3	92.7	85.2	96.7
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0134	0.198	0.0085	0.332	0.0156
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00020 DLDS	<0.00050 DLDS	<0.00050 DLDS	0.00042	<0.00050 DLDS
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00086	<0.00050 DLDS	<0.00050 DLDS	0.00867	<0.00050 DLDS
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00878	0.0103	0.00649	0.0634	0.00765
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000040 DLDS	<0.000100 DLDS	<0.000100 DLDS	<0.000040 DLDS	<0.000100 DLDS

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-21B	MW-22A	MW-22B	MW-23A	MW-23B
					Client sampling date / time	10-Jun-2022 12:10	10-Jun-2022 12:45	10-Jun-2022 12:25	10-Jun-2022 12:55	10-Jun-2022 13:05
						EO2204142-016	EO2204142-017	EO2204142-018	EO2204142-019	EO2204142-020
						Result	Result	Result	Result	Result
Dissolved Metals										
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000100 DLDS	<0.000250 DLDS	<0.000250 DLDS	<0.000100 DLDS	<0.000250 DLDS
boron, dissolved	7440-42-8	E421	0.010	mg/L		0.209	0.872	0.243	0.799	0.388
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000165	0.000175	<0.0000250 DLDS	0.0000444	0.0000371
calcium, dissolved	7440-70-2	E421	0.050	mg/L		20.7	35.7	112	3.32	175
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		0.000042	0.000126	0.000082	0.000045	0.000129
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00100 DLDS	<0.00250 DLDS	<0.00250 DLDS	<0.00100 DLDS	<0.00250 DLDS
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00020 DLDS	<0.00050 DLDS	<0.00050 DLDS	<0.00020 DLDS	<0.00050 DLDS
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00073	0.00140	0.00153	0.00059	<0.00100 DLDS
iron, dissolved	7439-89-6	E421	0.030	mg/L		<0.060 DLDS	0.151	<0.150 DLDS	0.169	<0.150 DLDS
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000100 DLDS	<0.000250 DLDS	<0.000250 DLDS	0.000196	<0.000250 DLDS
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.255	0.312	0.763	0.118	0.905
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		6.83	3.77	56.5	0.561	66.9
manganese, dissolved	7439-96-5	E421	0.00500	mg/L		<0.0100 DLDS	0.0662	<0.0250 DLDS	<0.0100 DLDS	0.121
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000971	0.00453	0.000585	0.00316	0.000276
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00128	0.00328	0.00256	0.00233	0.00265
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.100 DLDS	<0.250 DLDS	<0.250 DLDS	0.165	<0.250 DLDS
potassium, dissolved	7440-09-7	E421	0.050	mg/L		4.16	4.21	9.23	1.87	11.5
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00623	0.00847	0.0126	0.00376	0.0172
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000131	<0.000250 DLDS	0.000437	0.000105	<0.000250 DLDS
silicon, dissolved	7440-21-3	E421	0.050	mg/L		4.19	3.42	5.15	5.04	5.71
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000020 DLDS	<0.000050 DLDS	<0.000050 DLDS	<0.000020 DLDS	<0.000050 DLDS
sodium, dissolved	7440-23-5	E421	0.050	mg/L		680	1280	1910	537	2380
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.353	0.850	2.31	0.110	3.84
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		276	700	1330	29.9	1800
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00040 DLDS	<0.00100 DLDS	<0.00100 DLDS	<0.00040 DLDS	<0.00100 DLDS
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000020 DLDS	<0.000050 DLDS	<0.000050 DLDS	<0.000020 DLDS	<0.000050 DLDS
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00020 DLDS	<0.00050 DLDS	<0.00050 DLDS	<0.00020 DLDS	<0.00050 DLDS
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00020 DLDS	<0.00050 DLDS	<0.00050 DLDS	<0.00020 DLDS	<0.00050 DLDS
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00060 DLDS	0.00584	<0.00150 DLDS	0.00912	<0.00150 DLDS
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00020 DLDS	<0.00050 DLDS	<0.00050 DLDS	0.00092	<0.00050 DLDS

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-21B	MW-22A	MW-22B	MW-23A	MW-23B
					Client sampling date / time	10-Jun-2022 12:10	10-Jun-2022 12:45	10-Jun-2022 12:25	10-Jun-2022 12:55	10-Jun-2022 13:05
						EO2204142-016	EO2204142-017	EO2204142-018	EO2204142-019	EO2204142-020
						Result	Result	Result	Result	Result
Dissolved Metals										
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.00191	0.00395	0.00984	0.00141	0.00228
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00100 DLDS	<0.00250 DLDS	<0.00250 DLDS	0.00136	<0.00250 DLDS
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0020 DLDS	<0.0050 DLDS	<0.0050 DLDS	<0.0020 DLDS	<0.0050 DLDS
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00060 DLDS	0.00263	<0.00150 DLDS	0.00213	<0.00150 DLDS
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field
Aggregate Organics										
chemical oxygen demand [COD]	----	E559-L	10	mg/L		24	17	22	55	32
phenols, total (4AAP)	----	E562	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Volatile Organic Compounds										
Acetone	67-64-1	E611F	20	µg/L		<20 VOCHS	<20	<20 VOCHS	<20	<20
bromobenzene	108-86-1	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
bromochloromethane	74-97-5	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
bromomethane	74-83-9	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
butylbenzene, n-	104-51-8	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
butylbenzene, sec-	135-98-8	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
butylbenzene, tert-	98-06-6	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
carbon disulfide	75-15-0	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
chlorobenzene	108-90-7	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
chloromethane	74-87-3	E611F	2.0	µg/L		<2.0 VOCHS	<2.0	<2.0 VOCHS	<2.0	<2.0
chlorotoluene, 2-	95-49-8	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
chlorotoluene, 4-	106-43-4	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
cymene, p-	99-87-6	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
dibromo-3-chloropropane, 1,2-	96-12-8	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
dibromomethane	74-95-3	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
dichlorobenzene, 1,2-	95-50-1	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
dichlorobenzene, 1,3-	541-73-1	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
dichlorobenzene, 1,4-	106-46-7	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
dichlorodifluoromethane	75-71-8	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
dichloropropane, 1,2-	78-87-5	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
dichloropropane, 1,3-	142-28-9	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-21B	MW-22A	MW-22B	MW-23A	MW-23B
					Client sampling date / time	10-Jun-2022 12:10	10-Jun-2022 12:45	10-Jun-2022 12:25	10-Jun-2022 12:55	10-Jun-2022 13:05
						EO2204142-016	EO2204142-017	EO2204142-018	EO2204142-019	EO2204142-020
						Result	Result	Result	Result	Result
Volatile Organic Compounds										
dichloropropane, 2,2-	594-20-7	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
dichloropropylene, 1,1-	563-58-6	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
dichloropropylene, cis+trans-1,3-	542-75-6	E611F	0.75	µg/L		<0.75 VOCHS	<0.75	<0.75 VOCHS	<0.75	<0.75
dichloropropylene, cis-1,3-	10061-01-5	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
hexachlorobutadiene	87-68-3	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
hexanone, 2-	591-78-6	E611F	20	µg/L		<20 VOCHS	<20	<20 VOCHS	<20	<20
methyl ethyl ketone [MEK]	78-93-3	E611F	20	µg/L		<20 VOCHS	<20	<20 VOCHS	<20	<20
methyl isobutyl ketone [MIBK]	108-10-1	E611F	20	µg/L		<20 VOCHS	<20	<20 VOCHS	<20	<20
propylbenzene, n-	103-65-1	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
tetrachloroethane, 1,1,1,2-	630-20-6	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
tetrachloroethane, 1,1,2,2-	79-34-5	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
trichlorobenzene, 1,2,3-	87-61-6	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
trichlorobenzene, 1,2,4-	120-82-1	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
trichloroethane, 1,1,2-	79-00-5	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
trichlorofluoromethane	75-69-4	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
trichloropropane, 1,2,3-	96-18-4	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
Volatile Organic Compounds [Drycleaning]										
carbon tetrachloride	56-23-5	E611F	0.20	µg/L		<0.20 VOCHS	<0.20	<0.20 VOCHS	<0.20	<0.20
chloroethane	75-00-3	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
dichloroethane, 1,1-	75-34-3	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
dichloroethane, 1,2-	107-06-2	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
dichloroethylene, 1,1-	75-35-4	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
dichloroethylene, cis-1,2-	156-59-2	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
dichloroethylene, trans-1,2-	156-60-5	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
dichloromethane	75-09-2	E611F	1.0	µg/L		<1.0 VOCHS	<1.0	<1.0 VOCHS	<1.0	<1.0
dichloropropylene, trans-1,3-	10061-02-6	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
tetrachloroethylene	127-18-4	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
trichloroethane, 1,1,1-	71-55-6	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
trichloroethylene	79-01-6	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
vinyl chloride	75-01-4	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-21B	MW-22A	MW-22B	MW-23A	MW-23B
					Client sampling date / time	10-Jun-2022 12:10	10-Jun-2022 12:45	10-Jun-2022 12:25	10-Jun-2022 12:55	10-Jun-2022 13:05
						EO2204142-016	EO2204142-017	EO2204142-018	EO2204142-019	EO2204142-020
						Result	Result	Result	Result	Result
Volatile Organic Compounds [Fuels]										
benzene	71-43-2	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
benzene	71-43-2	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
dibromoethane, 1,2-	106-93-4	E611F	0.20	µg/L		<0.20 VOCHS	<0.20	<0.20 VOCHS	<0.20	<0.20
ethylbenzene	100-41-4	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
ethylbenzene	100-41-4	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
hexane, n-	110-54-3	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
isopropylbenzene	98-82-8	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
methyl-tert-butyl ether [MTBE]	1634-04-4	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
naphthalene	91-20-3	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
styrene	100-42-5	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
styrene	100-42-5	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
toluene	108-88-3	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
toluene	108-88-3	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
trimethylbenzene, 1,2,4-	95-63-6	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
trimethylbenzene, 1,3,5-	108-67-8	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
xylene, m+p-	179601-23-1	E611A	0.40	µg/L		<0.40	<0.40	<0.40	<0.40	<0.40
xylene, m+p-	179601-23-1	E611F	0.40	µg/L		<0.40 VOCHS	<0.40	<0.40 VOCHS	<0.40	<0.40
xylene, o-	95-47-6	E611A	0.30	µg/L		<0.30	<0.30	<0.30	<0.30	<0.30
xylene, o-	95-47-6	E611F	0.30	µg/L		<0.30 VOCHS	<0.30	<0.30 VOCHS	<0.30	<0.30
xylenes, total	1330-20-7	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
xylenes, total	1330-20-7	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
BTEX, total	----	E611A	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Volatile Organic Compounds [THMs]										
bromodichloromethane	75-27-4	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
bromoform	75-25-2	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
chloroform	67-66-3	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
dibromochloromethane	124-48-1	E611F	0.50	µg/L		<0.50 VOCHS	<0.50	<0.50 VOCHS	<0.50	<0.50
Hydrocarbons										
F1 (C6-C10)	----	E581.F1	100	µg/L		<100	<100	<100	<100	<100

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-21B	MW-22A	MW-22B	MW-23A	MW-23B
					Client sampling date / time	10-Jun-2022 12:10	10-Jun-2022 12:45	10-Jun-2022 12:25	10-Jun-2022 12:55	10-Jun-2022 13:05
						EO2204142-016	EO2204142-017	EO2204142-018	EO2204142-019	EO2204142-020
						Result	Result	Result	Result	Result
Hydrocarbons										
F1-BTEX	----	EC580	25	µg/L		<100	<100	<100	<100	<100
F2 (C10-C16)	----	E601	100	µg/L		<100	<100	<100	<100	<100
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	E601	1.0	%		93.1	92.8	96.8	100	100
dichlorotoluene, 3,4-	97-75-0	E581.F1	1.0	%		120	78.0	103	95.5	118
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611A	1.0	%		88.3	88.4	85.0	89.3	93.7
bromofluorobenzene, 4-	460-00-4	E611F	1.0	%		87.7 VOCHS	79.5	88.5 VOCHS	81.2	79.7
difluorobenzene, 1,4-	540-36-3	E611A	1.0	%		90.5	102	101	106	103
difluorobenzene, 1,4-	540-36-3	E611F	1.0	%		99.2 VOCHS	97.0	98.7 VOCHS	96.5	96.2

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

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-25A	MW-25B	MW-26A	MW-26B	MW-27A
					Client sampling date / time	10-Jun-2022 13:15	10-Jun-2022 13:25	10-Jun-2022 13:35	10-Jun-2022 13:45	10-Jun-2022 13:45
						EO2204142-021	EO2204142-022	EO2204142-023	EO2204142-024	EO2204142-025
						Result	Result	Result	Result	Result
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L		14.8	656	25.8	572	25.6
conductivity	----	E100	2.0	µS/cm		2040	8920	2490	7240	2730
pH	----	E108	0.10	pH units		8.77	8.16	8.76	8.35	8.74
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L		1600	1080	1220	1130	1070
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L		60.8	<1.0	50.8	9.1	44.2
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L		1410	890	1080	940	949
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		1400	7780	1760	6040	1950
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.841	0.477	<0.0050	0.487	0.821
Kjeldahl nitrogen, total [TKN]	----	E318	0.200	mg/L		1.22	0.813	0.645	0.903	1.18
chloride	16887-00-6	E235.Cl	0.50	mg/L		8.24	<2.50 DLDS	4.40 DLDS	5.41 DLDS	4.45 DLDS
fluoride	16984-48-8	E235.F	0.020	mg/L		1.21	0.133 DLDS	1.03 DLDS	0.338 DLDS	0.922 DLDS
nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		<0.020	0.625 DLDS	1.36 DLDS	0.214 DLDS	0.212 DLDS
nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		<0.010	0.060 DLDS	<0.020 DLDS	<0.050 DLDS	0.116 DLDS
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		0.43	4900 DLDS	484 DLDS	3570 DLDS	714 DLDS
nitrate + nitrite (as N)	----	EC235.N+N	0.0500	mg/L		<0.0500	0.685	1.36	0.214	0.328
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		11.2	10.8	11.2 SFP	11.7	13.1
Ion Balance										
anion sum	----	EC101	0.10	meq/L		28.5	120	31.9	93.3	34.0
cation sum	----	EC101	0.10	meq/L		23.0	104	26.1	84.7	27.7
ion balance (APHA)	----	EC101	0.010	%		10.7	7.14	10.0	4.83	10.2
ion balance (cations/anions)	----	EC101	0.010	%		80.7 IB:INT	86.7	81.8 IB:INT	90.8	81.5 IB:INT
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0032	0.0112	0.0205	0.0137	0.0086
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00020 DLDS	<0.00050 DLDS	<0.00020 DLDS	<0.00050 DLDS	<0.00020 DLDS
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00321	0.00063	0.00269	0.00052	0.00284
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0832	0.0109	0.0541	0.00849	0.0137
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000040 DLDS	<0.000100 DLDS	<0.000040 DLDS	<0.000100 DLDS	<0.000040 DLDS

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-25A	MW-25B	MW-26A	MW-26B	MW-27A
					Client sampling date / time	10-Jun-2022 13:15	10-Jun-2022 13:25	10-Jun-2022 13:35	10-Jun-2022 13:45	10-Jun-2022 13:45
						EO2204142-021	EO2204142-022	EO2204142-023	EO2204142-024	EO2204142-025
						Result	Result	Result	Result	Result
Dissolved Metals										
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000100 DLDS	<0.000250 DLDS	<0.000100 DLDS	<0.000250 DLDS	<0.000100 DLDS
boron, dissolved	7440-42-8	E421	0.010	mg/L		0.764	0.438	0.759	0.362	0.753
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000100 DLDS	0.0000254	0.0000238	<0.0000250 DLDS	<0.0000100 DLDS
calcium, dissolved	7440-70-2	E421	0.050	mg/L		5.03	180	8.50	116	8.64
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		<0.000020 DLDS	0.000102	0.000022	<0.000050 DLDS	0.000031
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00100 DLDS	<0.00250 DLDS	<0.00100 DLDS	<0.00250 DLDS	<0.00100 DLDS
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00030	0.00064	0.00027	0.00071	<0.00020 DLDS
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00057	0.00120	0.00944	0.00122	0.00125
iron, dissolved	7439-89-6	E421	0.030	mg/L		<0.060 DLDS	<0.150 DLDS	<0.060 DLDS	<0.150 DLDS	<0.060 DLDS
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000100 DLDS	<0.000250 DLDS	<0.000100 DLDS	<0.000250 DLDS	<0.000100 DLDS
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.102	0.677	0.139	0.426	0.138
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		0.536	50.2	1.10	68.5	0.991
manganese, dissolved	7439-96-5	E421	0.00500	mg/L		0.0696	0.170	<0.0100 DLDS	0.195	0.0111
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.00806	0.000838	0.00185	0.000827	0.00126
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00216	0.00379	0.00406	0.00296	0.00146
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		0.161	<0.250 DLDS	<0.100 DLDS	<0.250 DLDS	0.174
potassium, dissolved	7440-09-7	E421	0.050	mg/L		1.76	10.6	2.23	7.42	2.12
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00312	0.0146	0.00297	0.00896	0.00398
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000100 DLDS	<0.000250 DLDS	0.000103	0.000257	<0.000100 DLDS
silicon, dissolved	7440-21-3	E421	0.050	mg/L		3.63	4.63	4.13	5.11	3.98
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000020 DLDS	<0.000050 DLDS	<0.000020 DLDS	<0.000050 DLDS	<0.000020 DLDS
sodium, dissolved	7440-23-5	E421	0.050	mg/L		520	2080	586	1680	622
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.114	4.03	0.190	2.36	0.200
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		<1.00 DLDS	1680	167	1280	238
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00040 DLDS	<0.00100 DLDS	<0.00040 DLDS	<0.00100 DLDS	<0.00040 DLDS
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000020 DLDS	<0.000050 DLDS	<0.000020 DLDS	<0.000050 DLDS	<0.000020 DLDS
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00020 DLDS	0.00065	<0.00020 DLDS	<0.00050 DLDS	<0.00020 DLDS
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00020 DLDS	<0.00050 DLDS	0.00031	<0.00050 DLDS	<0.00020 DLDS
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00060 DLDS	<0.00150 DLDS	0.00068	<0.00150 DLDS	<0.00060 DLDS
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		0.00028	<0.00050 DLDS	0.00023	<0.00050 DLDS	0.00032

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-25A	MW-25B	MW-26A	MW-26B	MW-27A
					Client sampling date / time	10-Jun-2022 13:15	10-Jun-2022 13:25	10-Jun-2022 13:35	10-Jun-2022 13:45	10-Jun-2022 13:45
						EO2204142-021	EO2204142-022	EO2204142-023	EO2204142-024	EO2204142-025
						Result	Result	Result	Result	Result
Dissolved Metals										
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000500	0.000271	0.000573	0.00123	0.000592
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00100 DLDS	<0.00250 DLDS	<0.00100 DLDS	<0.00250 DLDS	<0.00100 DLDS
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0020 DLDS	<0.0050 DLDS	<0.0020 DLDS	<0.0050 DLDS	<0.0020 DLDS
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		0.00256	<0.00150 DLDS	0.00098	<0.00150 DLDS	<0.00060 DLDS
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field
Aggregate Organics										
chemical oxygen demand [COD]	----	E559-L	10	mg/L		28	32	59	34	52
phenols, total (4AAP)	----	E562	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Volatile Organic Compounds										
Acetone	67-64-1	E611F	20	µg/L		<20	<20	<20	<20	<20
bromobenzene	108-86-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
bromochloromethane	74-97-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
bromomethane	74-83-9	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
butylbenzene, n-	104-51-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
butylbenzene, sec-	135-98-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
butylbenzene, tert-	98-06-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
carbon disulfide	75-15-0	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
chlorobenzene	108-90-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
chloromethane	74-87-3	E611F	2.0	µg/L		<2.0	<2.0	<2.0	<2.0	<2.0
chlorotoluene, 2-	95-49-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
chlorotoluene, 4-	106-43-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
cymene, p-	99-87-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dibromo-3-chloropropane, 1,2-	96-12-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dibromomethane	74-95-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorobenzene, 1,2-	95-50-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorobenzene, 1,3-	541-73-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorobenzene, 1,4-	106-46-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorodifluoromethane	75-71-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropane, 1,2-	78-87-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropane, 1,3-	142-28-9	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-25A	MW-25B	MW-26A	MW-26B	MW-27A
					Client sampling date / time	10-Jun-2022 13:15	10-Jun-2022 13:25	10-Jun-2022 13:35	10-Jun-2022 13:45	10-Jun-2022 13:45
						EO2204142-021	EO2204142-022	EO2204142-023	EO2204142-024	EO2204142-025
						Result	Result	Result	Result	Result
Volatile Organic Compounds										
dichloropropane, 2,2-	594-20-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropylene, 1,1-	563-58-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropylene, cis+trans-1,3-	542-75-6	E611F	0.75	µg/L		<0.75	<0.75	<0.75	<0.75	<0.75
dichloropropylene, cis-1,3-	10061-01-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
hexachlorobutadiene	87-68-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
hexanone, 2-	591-78-6	E611F	20	µg/L		<20	<20	<20	<20	<20
methyl ethyl ketone [MEK]	78-93-3	E611F	20	µg/L		<20	<20	<20	<20	<20
methyl isobutyl ketone [MIBK]	108-10-1	E611F	20	µg/L		<20	<20	<20	<20	<20
propylbenzene, n-	103-65-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
tetrachloroethane, 1,1,1,2-	630-20-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
tetrachloroethane, 1,1,2,2-	79-34-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichlorobenzene, 1,2,3-	87-61-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichlorobenzene, 1,2,4-	120-82-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichloroethane, 1,1,2-	79-00-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichlorofluoromethane	75-69-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichloropropane, 1,2,3-	96-18-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Volatile Organic Compounds [Drycleaning]										
carbon tetrachloride	56-23-5	E611F	0.20	µg/L		<0.20	<0.20	<0.20	<0.20	<0.20
chloroethane	75-00-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethane, 1,1-	75-34-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethane, 1,2-	107-06-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethylene, 1,1-	75-35-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethylene, cis-1,2-	156-59-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethylene, trans-1,2-	156-60-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloromethane	75-09-2	E611F	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
dichloropropylene, trans-1,3-	10061-02-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
tetrachloroethylene	127-18-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichloroethane, 1,1,1-	71-55-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichloroethylene	79-01-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
vinyl chloride	75-01-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-25A	MW-25B	MW-26A	MW-26B	MW-27A
					Client sampling date / time	10-Jun-2022 13:15	10-Jun-2022 13:25	10-Jun-2022 13:35	10-Jun-2022 13:45	10-Jun-2022 13:45
						EO2204142-021	EO2204142-022	EO2204142-023	EO2204142-024	EO2204142-025
						Result	Result	Result	Result	Result
Volatile Organic Compounds [Fuels]										
benzene	71-43-2	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
benzene	71-43-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dibromoethane, 1,2-	106-93-4	E611F	0.20	µg/L		<0.20	<0.20	<0.20	<0.20	<0.20
ethylbenzene	100-41-4	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
ethylbenzene	100-41-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
hexane, n-	110-54-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
isopropylbenzene	98-82-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
methyl-tert-butyl ether [MTBE]	1634-04-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
naphthalene	91-20-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
styrene	100-42-5	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
styrene	100-42-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
toluene	108-88-3	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
toluene	108-88-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trimethylbenzene, 1,2,4-	95-63-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trimethylbenzene, 1,3,5-	108-67-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
xylene, m+p-	179601-23-1	E611A	0.40	µg/L		<0.40	<0.40	<0.40	<0.40	<0.40
xylene, m+p-	179601-23-1	E611F	0.40	µg/L		<0.40	<0.40	<0.40	<0.40	<0.40
xylene, o-	95-47-6	E611A	0.30	µg/L		<0.30	<0.30	<0.30	<0.30	<0.30
xylene, o-	95-47-6	E611F	0.30	µg/L		<0.30	<0.30	<0.30	<0.30	<0.30
xylenes, total	1330-20-7	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
xylenes, total	1330-20-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
BTEX, total	----	E611A	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Volatile Organic Compounds [THMs]										
bromodichloromethane	75-27-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
bromoform	75-25-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	67-66-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dibromochloromethane	124-48-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Hydrocarbons										
F1 (C6-C10)	----	E581.F1	100	µg/L		<100	<100	<100	<100	<100

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-25A	MW-25B	MW-26A	MW-26B	MW-27A
					Client sampling date / time	10-Jun-2022 13:15	10-Jun-2022 13:25	10-Jun-2022 13:35	10-Jun-2022 13:45	10-Jun-2022 13:45
						EO2204142-021	EO2204142-022	EO2204142-023	EO2204142-024	EO2204142-025
						Result	Result	Result	Result	Result
Hydrocarbons										
F1-BTEX	----	EC580	25	µg/L		<100	<100	<100	<100	<100
F2 (C10-C16)	----	E601	100	µg/L		<100	<100	<100	<100	<100
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	E601	1.0	%		101	100	101	101	104
dichlorotoluene, 3,4-	97-75-0	E581.F1	1.0	%		99.0	111	116	117	112
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611A	1.0	%		85.6	84.2	85.1	84.9	83.4
bromofluorobenzene, 4-	460-00-4	E611F	1.0	%		77.0	77.0	76.1	78.2	75.5
difluorobenzene, 1,4-	540-36-3	E611A	1.0	%		101	108	102	102	109
difluorobenzene, 1,4-	540-36-3	E611F	1.0	%		92.5	92.5	92.6	92.2	92.1

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

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-27B	MW-28A	MW-28B	MW-29B	MW-29A
					Client sampling date / time	10-Jun-2022 13:55	10-Jun-2022 14:05	10-Jun-2022 14:15	10-Jun-2022 14:25	10-Jun-2022 14:35
						EO2204142-026	EO2204142-027	EO2204142-028	EO2204142-029	EO2204142-030
						Result	Result	Result	Result	Result
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L		793	35.3	981	2100	156
conductivity	----	E100	2.0	µS/cm		11200	3190	12000	8130	3480
pH	----	E108	0.10	pH units		8.35	8.71	8.27	8.19	8.58
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L		2010	948	1130	683	831
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L		13.8	37.8	<1.0	<1.0	25.3
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L		1670	840	924	560	723
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		10100	2290	11400	7860	2670
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.713	1.11	1.61	0.946	1.22
Kjeldahl nitrogen, total [TKN]	----	E318	0.200	mg/L		1.22	1.58	2.11	1.81	1.60
chloride	16887-00-6	E235.Cl	0.50	mg/L		174 DLDS	3.58 DLDS	24.3 DLDS	8.05 DLDS	3.04 DLDS
fluoride	16984-48-8	E235.F	0.020	mg/L		0.507 DLDS	0.813 DLDS	<0.200 DLDS	0.266 DLDS	0.478 DLDS
nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		0.384 DLDS	0.075 DLDS	<0.200 DLDS	<0.200 DLDS	0.147 DLDS
nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		<0.100 DLDS	<0.020 DLDS	<0.100 DLDS	<0.100 DLDS	<0.050 DLDS
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		5860 DLDS	1000 DLDS	7510 DLDS	5260 DLDS	1370 DLDS
nitrate + nitrite (as N)	----	EC235.N+N	0.0500	mg/L		0.384	0.0750	<0.224	<0.224	0.147
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		14.5	10.4	14.3	16.2	9.52
Ion Balance										
anion sum	----	EC101	0.10	meq/L		160	37.8	176	121	43.1
cation sum	----	EC101	0.10	meq/L		135	33.0	149	109	37.1
ion balance (APHA)	----	EC101	0.010	%		8.47	6.78	8.31	5.22	7.48
ion balance (cations/anions)	----	EC101	0.010	%		84.4 IB:INT	87.3	84.6 IB:INT	90.1	86.1
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0104	0.0025	<0.0100 DLDS	<0.0050 DLDS	0.0303
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00100 DLDS	<0.00020 DLDS	<0.00100 DLDS	<0.00050 DLDS	<0.00020 DLDS
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00189	0.00080	<0.00100 DLDS	<0.00050 DLDS	0.00070
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.00922	0.00811	0.00829	0.0120	0.0134
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000200 DLDS	<0.000040 DLDS	<0.000200 DLDS	<0.000100 DLDS	<0.000040 DLDS

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-27B	MW-28A	MW-28B	MW-29B	MW-29A
					Client sampling date / time	10-Jun-2022 13:55	10-Jun-2022 14:05	10-Jun-2022 14:15	10-Jun-2022 14:25	10-Jun-2022 14:35
						EO2204142-026	EO2204142-027	EO2204142-028	EO2204142-029	EO2204142-030
						Result	Result	Result	Result	Result
Dissolved Metals										
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000500 DLDS	<0.000100 DLDS	<0.000500 DLDS	<0.000250 DLDS	<0.000100 DLDS
boron, dissolved	7440-42-8	E421	0.010	mg/L		0.520	0.710	0.451	0.216	0.653
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000500 DLDS	<0.0000100 DLDS	<0.0000500 DLDS	0.0000402	<0.0000100 DLDS
calcium, dissolved	7440-70-2	E421	0.050	mg/L		133	12.1	223	439	44.8
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		<0.000100 DLDS	0.000058	0.000104	0.000063	0.000040
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00500 DLDS	<0.00100 DLDS	<0.00500 DLDS	<0.00250 DLDS	<0.00100 DLDS
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00120	<0.00020 DLDS	0.00119	0.00324	0.00030
copper, dissolved	7440-50-8	E421	0.00020	mg/L		<0.00200 DLDS	0.00085	<0.00200 DLDS	0.00122	0.00134
iron, dissolved	7439-89-6	E421	0.030	mg/L		<0.300 DLDS	<0.060 DLDS	<0.300 DLDS	<0.150 DLDS	<0.060 DLDS
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000500 DLDS	<0.000100 DLDS	<0.000500 DLDS	<0.000250 DLDS	<0.000100 DLDS
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.588	0.148	0.658	0.679	0.250
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		112	1.23	103	245	10.7
manganese, dissolved	7439-96-5	E421	0.00500	mg/L		<0.0500 DLDS	0.0202	0.234	0.726	0.0581
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.00143	0.00144	0.000608	0.000345	0.00169
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00638	0.00123	<0.00500 DLDS	0.00598	0.00240
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.500 DLDS	0.109	<0.500 DLDS	<0.250 DLDS	<0.100 DLDS
potassium, dissolved	7440-09-7	E421	0.050	mg/L		9.88	2.49	11.0	11.0	3.90
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00968	0.00486	0.0138	0.0177	0.00704
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000500 DLDS	<0.000100 DLDS	<0.000500 DLDS	<0.000250 DLDS	0.000107
silicon, dissolved	7440-21-3	E421	0.050	mg/L		4.88	4.14	4.99	5.70	4.02
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000100 DLDS	<0.000020 DLDS	<0.000100 DLDS	<0.000050 DLDS	<0.000020 DLDS
sodium, dissolved	7440-23-5	E421	0.050	mg/L		2740	739	2970	1530	777
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		4.02	0.282	5.44	7.74	0.840
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		1950	356	2460	1930	465
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00200 DLDS	<0.00040 DLDS	<0.00200 DLDS	<0.00100 DLDS	<0.00040 DLDS
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000100 DLDS	<0.000020 DLDS	<0.000100 DLDS	<0.000050 DLDS	<0.000020 DLDS
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00100 DLDS	<0.00020 DLDS	<0.00100 DLDS	<0.00050 DLDS	<0.00020 DLDS
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00100 DLDS	<0.00020 DLDS	<0.00100 DLDS	<0.00050 DLDS	<0.00020 DLDS
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00300 DLDS	<0.00060 DLDS	<0.00300 DLDS	<0.00150 DLDS	0.00109
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00100 DLDS	0.00028	<0.00100 DLDS	<0.00050 DLDS	<0.00020 DLDS

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-27B	MW-28A	MW-28B	MW-29B	MW-29A
					Client sampling date / time	10-Jun-2022 13:55	10-Jun-2022 14:05	10-Jun-2022 14:15	10-Jun-2022 14:25	10-Jun-2022 14:35
						EO2204142-026	EO2204142-027	EO2204142-028	EO2204142-029	EO2204142-030
						Result	Result	Result	Result	Result
Dissolved Metals										
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.00270	0.000354	0.000474	0.00542	0.000981
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00500 DLDS	<0.00100 DLDS	<0.00500 DLDS	<0.00250 DLDS	<0.00100 DLDS
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0100 DLDS	<0.0020 DLDS	<0.0100 DLDS	<0.0050 DLDS	<0.0020 DLDS
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		0.00373	<0.00060 DLDS	<0.00300 DLDS	<0.00150 DLDS	<0.00060 DLDS
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field
Aggregate Organics										
chemical oxygen demand [COD]	----	E559-L	10	mg/L		41	35	38	46	34
phenols, total (4AAP)	----	E562	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Volatile Organic Compounds										
Acetone	67-64-1	E611F	20	µg/L		<20	<20	<20	<20	<20
bromobenzene	108-86-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
bromochloromethane	74-97-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
bromomethane	74-83-9	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
butylbenzene, n-	104-51-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
butylbenzene, sec-	135-98-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
butylbenzene, tert-	98-06-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
carbon disulfide	75-15-0	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
chlorobenzene	108-90-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
chloromethane	74-87-3	E611F	2.0	µg/L		<2.0	<2.0	<2.0	<2.0	<2.0
chlorotoluene, 2-	95-49-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
chlorotoluene, 4-	106-43-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
cymene, p-	99-87-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dibromo-3-chloropropane, 1,2-	96-12-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dibromomethane	74-95-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorobenzene, 1,2-	95-50-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorobenzene, 1,3-	541-73-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorobenzene, 1,4-	106-46-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorodifluoromethane	75-71-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropane, 1,2-	78-87-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropane, 1,3-	142-28-9	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-27B	MW-28A	MW-28B	MW-29B	MW-29A
					Client sampling date / time	10-Jun-2022 13:55	10-Jun-2022 14:05	10-Jun-2022 14:15	10-Jun-2022 14:25	10-Jun-2022 14:35
						EO2204142-026	EO2204142-027	EO2204142-028	EO2204142-029	EO2204142-030
						Result	Result	Result	Result	Result
Volatile Organic Compounds										
dichloropropane, 2,2-	594-20-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropylene, 1,1-	563-58-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropylene, cis+trans-1,3-	542-75-6	E611F	0.75	µg/L		<0.75	<0.75	<0.75	<0.75	<0.75
dichloropropylene, cis-1,3-	10061-01-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
hexachlorobutadiene	87-68-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
hexanone, 2-	591-78-6	E611F	20	µg/L		<20	<20	<20	<20	<20
methyl ethyl ketone [MEK]	78-93-3	E611F	20	µg/L		<20	<20	<20	<20	<20
methyl isobutyl ketone [MIBK]	108-10-1	E611F	20	µg/L		<20	<20	<20	<20	<20
propylbenzene, n-	103-65-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
tetrachloroethane, 1,1,1,2-	630-20-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
tetrachloroethane, 1,1,2,2-	79-34-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichlorobenzene, 1,2,3-	87-61-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichlorobenzene, 1,2,4-	120-82-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichloroethane, 1,1,2-	79-00-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichlorofluoromethane	75-69-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichloropropane, 1,2,3-	96-18-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Volatile Organic Compounds [Drycleaning]										
carbon tetrachloride	56-23-5	E611F	0.20	µg/L		<0.20	<0.20	<0.20	<0.20	<0.20
chloroethane	75-00-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethane, 1,1-	75-34-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethane, 1,2-	107-06-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethylene, 1,1-	75-35-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethylene, cis-1,2-	156-59-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethylene, trans-1,2-	156-60-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloromethane	75-09-2	E611F	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
dichloropropylene, trans-1,3-	10061-02-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
tetrachloroethylene	127-18-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichloroethane, 1,1,1-	71-55-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichloroethylene	79-01-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
vinyl chloride	75-01-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-27B	MW-28A	MW-28B	MW-29B	MW-29A
					Client sampling date / time	10-Jun-2022 13:55	10-Jun-2022 14:05	10-Jun-2022 14:15	10-Jun-2022 14:25	10-Jun-2022 14:35
						EO2204142-026	EO2204142-027	EO2204142-028	EO2204142-029	EO2204142-030
						Result	Result	Result	Result	Result
Volatile Organic Compounds [Fuels]										
benzene	71-43-2	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
benzene	71-43-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dibromoethane, 1,2-	106-93-4	E611F	0.20	µg/L		<0.20	<0.20	<0.20	<0.20	<0.20
ethylbenzene	100-41-4	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
ethylbenzene	100-41-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
hexane, n-	110-54-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
isopropylbenzene	98-82-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
methyl-tert-butyl ether [MTBE]	1634-04-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
naphthalene	91-20-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
styrene	100-42-5	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
styrene	100-42-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
toluene	108-88-3	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
toluene	108-88-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trimethylbenzene, 1,2,4-	95-63-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trimethylbenzene, 1,3,5-	108-67-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
xylene, m+p-	179601-23-1	E611A	0.40	µg/L		<0.40	<0.40	<0.40	<0.40	<0.40
xylene, m+p-	179601-23-1	E611F	0.40	µg/L		<0.40	<0.40	<0.40	<0.40	<0.40
xylene, o-	95-47-6	E611A	0.30	µg/L		<0.30	<0.30	<0.30	<0.30	<0.30
xylene, o-	95-47-6	E611F	0.30	µg/L		<0.30	<0.30	<0.30	<0.30	<0.30
xylenes, total	1330-20-7	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
xylenes, total	1330-20-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
BTEX, total	----	E611A	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Volatile Organic Compounds [THMs]										
bromodichloromethane	75-27-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
bromoform	75-25-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	67-66-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dibromochloromethane	124-48-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Hydrocarbons										
F1 (C6-C10)	----	E581.F1	100	µg/L		<100	<100	<100	<100	<100

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	MW-27B	MW-28A	MW-28B	MW-29B	MW-29A
					Client sampling date / time	10-Jun-2022 13:55	10-Jun-2022 14:05	10-Jun-2022 14:15	10-Jun-2022 14:25	10-Jun-2022 14:35
Analyte	CAS Number	Method	LOR	Unit		EO2204142-026	EO2204142-027	EO2204142-028	EO2204142-029	EO2204142-030
						Result	Result	Result	Result	Result
Hydrocarbons										
F1-BTEX	----	EC580	25	µg/L		<100	<100	<100	<100	<100
F2 (C10-C16)	----	E601	100	µg/L		<100	<100	<100	<100	<100
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	E601	1.0	%		100	104	101	100	100
dichlorotoluene, 3,4-	97-75-0	E581.F1	1.0	%		120	105	116	116	87.6
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611A	1.0	%		80.2	104	80.4	84.4	81.9
bromofluorobenzene, 4-	460-00-4	E611F	1.0	%		75.5	74.8	74.5	74.1	74.1
difluorobenzene, 1,4-	540-36-3	E611A	1.0	%		108	109	106	102	105
difluorobenzene, 1,4-	540-36-3	E611F	1.0	%		91.9	92.0	91.8	91.8	91.8

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

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-30A	MW-30B	MW-31A	MW-31B	MW-32A
					Client sampling date / time	10-Jun-2022 14:45	10-Jun-2022 15:15	10-Jun-2022 15:15	10-Jun-2022 15:25	10-Jun-2022 15:40
						EO2204142-031	EO2204142-032	EO2204142-033	EO2204142-034	EO2204142-035
						Result	Result	Result	Result	Result
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L		27.8	88.6	14.4	75.0	308
conductivity	----	E100	2.0	µS/cm		1870	2340	1710	2700	7530
pH	----	E108	0.10	pH units		8.68	8.56	8.71	8.59	8.28
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L		860	841	1290	739	973
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L		30.1	21.0	44.0	21.7	<1.0
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L		755	724	1130	642	798
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		1310	1700	1180	1900	6170
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.410	<0.0050	0.354	0.0306	2.86
Kjeldahl nitrogen, total [TKN]	----	E318	0.200	mg/L		0.823	0.557	0.726	0.426	2.75
chloride	16887-00-6	E235.Cl	0.50	mg/L		0.82	0.59	3.23	<1.00 DLDS	3.12 DLDS
fluoride	16984-48-8	E235.F	0.020	mg/L		0.635	0.838	1.10	0.520 DLDS	0.254 DLDS
nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		0.151	0.838	0.314	0.145 DLDS	<0.100 DLDS
nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		0.016	0.012	0.047	<0.020 DLDS	<0.050 DLDS
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		381	688	43.4	871 DLDS	3680 DLDS
nitrate + nitrite (as N)	----	EC235.N+N	0.0500	mg/L		0.167	0.850	0.361	0.145	<0.112
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		8.40	9.66	11.1	9.66	11.2
Ion Balance										
anion sum	----	EC101	0.10	meq/L		23.1	28.9	23.7	31.0	92.7
cation sum	----	EC101	0.10	meq/L		19.7	24.2	19.0	27.6	87.4
ion balance (APHA)	----	EC101	0.010	%		7.94	8.85	11.0	5.80	2.94
ion balance (cations/anions)	----	EC101	0.010	%		85.3	83.7 IB:INT	80.2 IB:INT	89.0	94.3
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0061	0.0341	0.106	0.0438	0.0146
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00020 DLDS	0.00046	<0.00020 DLDS	<0.00050 DLDS
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00093	0.00077	0.00331	0.00130	0.00067
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0125	0.0177	0.0457	0.0178	0.0146
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000040 DLDS	<0.000020	<0.000040 DLDS	<0.000100 DLDS

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-30A	MW-30B	MW-31A	MW-31B	MW-32A
					Client sampling date / time	10-Jun-2022 14:45	10-Jun-2022 15:15	10-Jun-2022 15:15	10-Jun-2022 15:25	10-Jun-2022 15:40
						EO2204142-031	EO2204142-032	EO2204142-033	EO2204142-034	EO2204142-035
						Result	Result	Result	Result	Result
Dissolved Metals										
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000100 DLDS	<0.000050	<0.000100 DLDS	<0.000250 DLDS
boron, dissolved	7440-42-8	E421	0.010	mg/L		0.348	0.133	0.699	0.198	0.966
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	<0.0000100 DLDS	0.0000067	<0.0000100 DLDS	<0.0000250 DLDS
calcium, dissolved	7440-70-2	E421	0.050	mg/L		8.64	21.2	4.90	17.9	102
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		0.000020	<0.000020 DLDS	0.000014	<0.000020 DLDS	0.000124
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00100 DLDS	<0.00050	<0.00100 DLDS	<0.00250 DLDS
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00020	<0.00020 DLDS	0.00042	0.00020	<0.00050 DLDS
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00132	0.00137	0.00179	0.00114	<0.00100 DLDS
iron, dissolved	7439-89-6	E421	0.030	mg/L		<0.030	<0.060 DLDS	0.047	<0.060 DLDS	<0.150 DLDS
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000100 DLDS	0.000065	<0.000100 DLDS	<0.000250 DLDS
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.165	0.232	0.0937	0.179	0.437
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		1.50	8.66	0.530	7.37	13.0
manganese, dissolved	7439-96-5	E421	0.00500	mg/L		0.0162	<0.0100 DLDS	0.0266	<0.0100 DLDS	0.152
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000858	0.000761	0.00778	0.00111	0.000986
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00180	0.00185	0.00412	0.00162	<0.00250 DLDS
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		0.089	<0.100 DLDS	0.073	<0.100 DLDS	<0.250 DLDS
potassium, dissolved	7440-09-7	E421	0.050	mg/L		2.11	2.51	1.65	3.56	6.97
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00322	0.00303	0.00271	0.00267	0.0128
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000115	0.00160	0.000271	0.000127	<0.000250 DLDS
silicon, dissolved	7440-21-3	E421	0.050	mg/L		3.98	5.33	2.82	3.89	5.09
silver, dissolved	7440-22-4	E421	0.000010	mg/L		0.000018	<0.000020 DLDS	<0.000010	<0.000020 DLDS	<0.000050 DLDS
sodium, dissolved	7440-23-5	E421	0.050	mg/L		438	513	428	597	1860
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.146	0.305	0.0764	0.301	2.56
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		130	241	14.7	322	1440
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00040 DLDS	<0.00020	<0.00040 DLDS	<0.00100 DLDS
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		0.000011	<0.000020 DLDS	0.000012	<0.000020 DLDS	<0.000050 DLDS
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00020 DLDS	<0.00010	<0.00020 DLDS	<0.00050 DLDS
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00020 DLDS	<0.00010	<0.00020 DLDS	<0.00050 DLDS
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	0.00084	0.00149	0.00061	<0.00150 DLDS
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		0.00022	<0.00020 DLDS	<0.00010	<0.00020 DLDS	<0.00050 DLDS

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-30A	MW-30B	MW-31A	MW-31B	MW-32A
					Client sampling date / time	10-Jun-2022 14:45	10-Jun-2022 15:15	10-Jun-2022 15:15	10-Jun-2022 15:25	10-Jun-2022 15:40
						EO2204142-031	EO2204142-032	EO2204142-033	EO2204142-034	EO2204142-035
						Result	Result	Result	Result	Result
Dissolved Metals										
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000106	0.00449	0.00240	0.00121	0.000287
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00100 DLDS	0.00054	<0.00100 DLDS	<0.00250 DLDS
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	<0.0020 DLDS	<0.0010	<0.0020 DLDS	<0.0050 DLDS
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00060 DLDS	0.00130	<0.00060 DLDS	<0.00150 DLDS
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field
Aggregate Organics										
chemical oxygen demand [COD]	----	E559-L	10	mg/L		27	28	38	26	32
phenols, total (4AAP)	----	E562	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Volatile Organic Compounds										
Acetone	67-64-1	E611F	20	µg/L		<20	<20	<20	<20	<20
bromobenzene	108-86-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
bromochloromethane	74-97-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
bromomethane	74-83-9	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
butylbenzene, n-	104-51-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
butylbenzene, sec-	135-98-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
butylbenzene, tert-	98-06-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
carbon disulfide	75-15-0	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
chlorobenzene	108-90-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
chloromethane	74-87-3	E611F	2.0	µg/L		<2.0	<2.0	<2.0	<2.0	<2.0
chlorotoluene, 2-	95-49-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
chlorotoluene, 4-	106-43-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
cymene, p-	99-87-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dibromo-3-chloropropane, 1,2-	96-12-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dibromomethane	74-95-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorobenzene, 1,2-	95-50-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorobenzene, 1,3-	541-73-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorobenzene, 1,4-	106-46-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichlorodifluoromethane	75-71-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropane, 1,2-	78-87-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropane, 1,3-	142-28-9	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-30A	MW-30B	MW-31A	MW-31B	MW-32A
					Client sampling date / time	10-Jun-2022 14:45	10-Jun-2022 15:15	10-Jun-2022 15:15	10-Jun-2022 15:25	10-Jun-2022 15:40
						EO2204142-031	EO2204142-032	EO2204142-033	EO2204142-034	EO2204142-035
						Result	Result	Result	Result	Result
Volatile Organic Compounds										
dichloropropane, 2,2-	594-20-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropylene, 1,1-	563-58-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloropropylene, cis+trans-1,3-	542-75-6	E611F	0.75	µg/L		<0.75	<0.75	<0.75	<0.75	<0.75
dichloropropylene, cis-1,3-	10061-01-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
hexachlorobutadiene	87-68-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
hexanone, 2-	591-78-6	E611F	20	µg/L		<20	<20	<20	<20	<20
methyl ethyl ketone [MEK]	78-93-3	E611F	20	µg/L		<20	<20	<20	<20	<20
methyl isobutyl ketone [MIBK]	108-10-1	E611F	20	µg/L		<20	<20	<20	<20	<20
propylbenzene, n-	103-65-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
tetrachloroethane, 1,1,1,2-	630-20-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
tetrachloroethane, 1,1,2,2-	79-34-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichlorobenzene, 1,2,3-	87-61-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichlorobenzene, 1,2,4-	120-82-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichloroethane, 1,1,2-	79-00-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichlorofluoromethane	75-69-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichloropropane, 1,2,3-	96-18-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Volatile Organic Compounds [Drycleaning]										
carbon tetrachloride	56-23-5	E611F	0.20	µg/L		<0.20	<0.20	<0.20	<0.20	<0.20
chloroethane	75-00-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethane, 1,1-	75-34-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethane, 1,2-	107-06-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethylene, 1,1-	75-35-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethylene, cis-1,2-	156-59-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloroethylene, trans-1,2-	156-60-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dichloromethane	75-09-2	E611F	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
dichloropropylene, trans-1,3-	10061-02-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
tetrachloroethylene	127-18-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichloroethane, 1,1,1-	71-55-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trichloroethylene	79-01-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
vinyl chloride	75-01-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-30A	MW-30B	MW-31A	MW-31B	MW-32A
					Client sampling date / time	10-Jun-2022 14:45	10-Jun-2022 15:15	10-Jun-2022 15:15	10-Jun-2022 15:25	10-Jun-2022 15:40
						EO2204142-031	EO2204142-032	EO2204142-033	EO2204142-034	EO2204142-035
						Result	Result	Result	Result	Result
Volatile Organic Compounds [Fuels]										
benzene	71-43-2	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
benzene	71-43-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dibromoethane, 1,2-	106-93-4	E611F	0.20	µg/L		<0.20	<0.20	<0.20	<0.20	<0.20
ethylbenzene	100-41-4	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
ethylbenzene	100-41-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
hexane, n-	110-54-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
isopropylbenzene	98-82-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
methyl-tert-butyl ether [MTBE]	1634-04-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
naphthalene	91-20-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
styrene	100-42-5	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
styrene	100-42-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
toluene	108-88-3	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
toluene	108-88-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trimethylbenzene, 1,2,4-	95-63-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
trimethylbenzene, 1,3,5-	108-67-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
xylene, m+p-	179601-23-1	E611A	0.40	µg/L		<0.40	<0.40	<0.40	<0.40	<0.40
xylene, m+p-	179601-23-1	E611F	0.40	µg/L		<0.40	<0.40	<0.40	<0.40	<0.40
xylene, o-	95-47-6	E611A	0.30	µg/L		<0.30	<0.30	<0.30	<0.30	<0.30
xylene, o-	95-47-6	E611F	0.30	µg/L		<0.30	<0.30	<0.30	<0.30	<0.30
xylenes, total	1330-20-7	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
xylenes, total	1330-20-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
BTEX, total	----	E611A	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Volatile Organic Compounds [THMs]										
bromodichloromethane	75-27-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
bromoform	75-25-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
chloroform	67-66-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
dibromochloromethane	124-48-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Hydrocarbons										
F1 (C6-C10)	----	E581.F1	100	µg/L		<100	<100	<100	<100	<100

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-30A	MW-30B	MW-31A	MW-31B	MW-32A
					Client sampling date / time	10-Jun-2022 14:45	10-Jun-2022 15:15	10-Jun-2022 15:15	10-Jun-2022 15:25	10-Jun-2022 15:40
						EO2204142-031	EO2204142-032	EO2204142-033	EO2204142-034	EO2204142-035
						Result	Result	Result	Result	Result
Hydrocarbons										
F1-BTEX	----	EC580	25	µg/L		<100	<100	<100	<100	<100
F2 (C10-C16)	----	E601	100	µg/L		<100	<100	<100	<100	<100
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	E601	1.0	%		101	101	103	101	103
dichlorotoluene, 3,4-	97-75-0	E581.F1	1.0	%		124	128	124	83.8	116
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611A	1.0	%		84.8	85.8	82.0	80.3	83.0
bromofluorobenzene, 4-	460-00-4	E611F	1.0	%		74.2	74.2	73.4	73.1	73.0
difluorobenzene, 1,4-	540-36-3	E611A	1.0	%		102	101	104	105	104
difluorobenzene, 1,4-	540-36-3	E611F	1.0	%		91.9	91.8	91.7	91.6	91.3

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

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-32B	MW-33A	MW-33B	MW-35-Deep	MW-35A
					Client sampling date / time	10-Jun-2022 03:50	10-Jun-2022 15:00	10-Jun-2022 15:00	09-Jun-2022 12:30	09-Jun-2022 11:30
						EO2204142-036	EO2204142-037	EO2204142-038	EO2204142-039	EO2204142-040
						Result	Result	Result	Result	Result
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L		895	11.7	428	68.3	10.2
conductivity	----	E100	2.0	µS/cm		11100	1780	5330	5690	11000
pH	----	E108	0.10	pH units		8.18	8.78	8.22	8.33	1.91
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L		1200	1230	1410	492	<1.0
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L		<1.0	52.3	<1.0	4.4	<1.0
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L		984	1090	1150	411	<2.0
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		9940	1200	4230	3060	4840
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		1.57	0.735	0.793	1.48	0.584
Kjeldahl nitrogen, total [TKN]	----	E318	0.200	mg/L		1.99	1.73	2.49	1.85	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		114 DLDS	21.2	16.8 DLDS	1640 DLDS	38.8 DLDS, RRV
fluoride	16984-48-8	E235.F	0.020	mg/L		0.302 DLDS	2.03	0.224 DLDS	0.683 DLDS	1.79 DLDS
nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		0.343 DLDS	<0.020	0.250 DLDS	<0.100 DLDS	<0.200 DLDS
nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		<0.100 DLDS	0.012	0.095 DLDS	<0.050 DLDS	<0.100 DLDS
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		6140 DLDS	35.6	2130 DLDS	22.1 DLDS	4270 DLDS, RRV
nitrate + nitrite (as N)	----	EC235.N+N	0.0500	mg/L		0.343	<0.0500	0.345	<0.112	<0.224
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		15.4	29.5	47.6	14.9	20.0 SFP
Ion Balance										
anion sum	----	EC101	0.10	meq/L		151	23.2	67.8	55.0	90.1
cation sum	----	EC101	0.10	meq/L		138	19.7	59.7	49.0 IB:INT	33.6 IB:INT
ion balance (APHA)	----	EC101	0.010	%		4.50	8.16	6.35	5.77	45.7
ion balance (cations/anions)	----	EC101	0.010	%		91.4	84.9 IB:INT	88.0	89.1	37.3 IB:INT
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		<0.0100 DLDS	0.0016	0.250	0.0073	0.450
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00100 DLDS	<0.00010	<0.00050 DLDS	<0.00050 DLDS	<0.00100 DLDS
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		<0.00100 DLDS	0.00316	0.00145	0.00102	0.00134
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0144	0.0800	0.0282	0.629	0.0956
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000200 DLDS	<0.000020	<0.000100 DLDS	<0.000100 DLDS	<0.000200 DLDS

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-32B	MW-33A	MW-33B	MW-35-Deep	MW-35A
					Client sampling date / time	10-Jun-2022 03:50	10-Jun-2022 15:00	10-Jun-2022 15:00	09-Jun-2022 12:30	09-Jun-2022 11:30
						EO2204142-036	EO2204142-037	EO2204142-038	EO2204142-039	EO2204142-040
						Result	Result	Result	Result	Result
Dissolved Metals										
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000500 DLDS	<0.000050	<0.000250 DLDS	<0.000250 DLDS	<0.000500 DLDS
boron, dissolved	7440-42-8	E421	0.010	mg/L		0.500	0.702	0.386	0.682	0.777
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000500 DLDS	0.0000136	<0.0000250 DLDS	<0.0000250 DLDS	<0.0000500 DLDS
calcium, dissolved	7440-70-2	E421	0.050	mg/L		205	3.87	111	23.2	3.38 RRV
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		<0.000100 DLDS	0.000021	0.000060	<0.000050 DLDS	0.000129
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00500 DLDS	<0.00050	<0.00250 DLDS	<0.00250 DLDS	<0.00500 DLDS
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00220	0.00028	0.00186	0.00090	<0.00100 DLDS
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00279	<0.00020	<0.00100 DLDS	<0.00100 DLDS	0.0143
iron, dissolved	7439-89-6	E421	0.030	mg/L		<0.300 DLDS	0.094	0.636	<0.150 DLDS	0.602
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000500 DLDS	<0.000050	<0.000250 DLDS	<0.000250 DLDS	0.000826
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.542	0.0874	0.374	0.205	0.0788
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		93.1	0.499	36.6	2.52	0.435 RRV
manganese, dissolved	7439-96-5	E421	0.00500	mg/L		0.557	0.0342	0.233	0.665	<0.0500 DLDS
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000897	0.0267	0.000863	0.0191	0.0147
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		<0.00500 DLDS	0.00122	0.0109	0.00302	<0.00500 DLDS
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.500 DLDS	0.218	<0.250 DLDS	<0.250 DLDS	<0.500 DLDS
potassium, dissolved	7440-09-7	E421	0.050	mg/L		13.9	1.49	6.11	3.67	1.94 RRV
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.0124	0.00247	0.00825	0.00578	0.00341
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000500 DLDS	0.000201	0.000369	<0.000250 DLDS	<0.000500 DLDS
silicon, dissolved	7440-21-3	E421	0.050	mg/L		4.69	3.98	6.29	3.82	5.54
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000100 DLDS	<0.000010	<0.000050 DLDS	<0.000050 DLDS	<0.000100 DLDS
sodium, dissolved	7440-23-5	E421	0.050	mg/L		2750	445	1170	1090	482
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		4.56	0.0841	2.00	0.615	0.0791
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		2170	11.2	732	5.40	6.42 RRV
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00200 DLDS	<0.00020	<0.00100 DLDS	<0.00100 DLDS	<0.00200 DLDS
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000100 DLDS	<0.000010	<0.000050 DLDS	<0.000050 DLDS	<0.000100 DLDS
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00100 DLDS	<0.00010	<0.00050 DLDS	<0.00050 DLDS	<0.00100 DLDS
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00100 DLDS	0.00024	<0.00050 DLDS	<0.00050 DLDS	<0.00100 DLDS
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00300 DLDS	0.00033	0.00681	<0.00150 DLDS	0.0131
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00100 DLDS	0.00050	<0.00050 DLDS	<0.00050 DLDS	0.00186

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-32B	MW-33A	MW-33B	MW-35-Deep	MW-35A
					Client sampling date / time	10-Jun-2022 03:50	10-Jun-2022 15:00	10-Jun-2022 15:00	09-Jun-2022 12:30	09-Jun-2022 11:30
						EO2204142-036	EO2204142-037	EO2204142-038	EO2204142-039	EO2204142-040
						Result	Result	Result	Result	Result
Dissolved Metals										
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000576	0.00127	0.000158	0.000637	0.000743
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00500 DLDS	0.00071	<0.00250 DLDS	<0.00250 DLDS	<0.00500 DLDS
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0100 DLDS	<0.0010	<0.0050 DLDS	<0.0050 DLDS	<0.0100 DLDS
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00300 DLDS	0.00133	0.00176	<0.00150 DLDS	<0.00300 DLDS
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field
Aggregate Organics										
chemical oxygen demand [COD]	----	E559-L	10	mg/L		67	112	117	98 DLM	164
phenols, total (4AAP)	----	E562	0.0010	mg/L		<0.0010	<0.0010	<0.0010	0.0107	----
Volatile Organic Compounds										
Acetone	67-64-1	E611F	20	µg/L		<20 OWP	<20	<20	<20	<20 OWP
bromobenzene	108-86-1	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
bromochloromethane	74-97-5	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
bromomethane	74-83-9	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
butylbenzene, n-	104-51-8	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
butylbenzene, sec-	135-98-8	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
butylbenzene, tert-	98-06-6	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
carbon disulfide	75-15-0	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
chlorobenzene	108-90-7	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
chloromethane	74-87-3	E611F	2.0	µg/L		<2.0 OWP	<2.0	<2.0	<2.0	<2.0 OWP
chlorotoluene, 2-	95-49-8	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
chlorotoluene, 4-	106-43-4	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
cymene, p-	99-87-6	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
dibromo-3-chloropropane, 1,2-	96-12-8	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
dibromomethane	74-95-3	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
dichlorobenzene, 1,2-	95-50-1	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
dichlorobenzene, 1,3-	541-73-1	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
dichlorobenzene, 1,4-	106-46-7	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
dichlorodifluoromethane	75-71-8	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
dichloropropane, 1,2-	78-87-5	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
dichloropropane, 1,3-	142-28-9	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-32B	MW-33A	MW-33B	MW-35-Deep	MW-35A
					Client sampling date / time	10-Jun-2022 03:50	10-Jun-2022 15:00	10-Jun-2022 15:00	09-Jun-2022 12:30	09-Jun-2022 11:30
						EO2204142-036	EO2204142-037	EO2204142-038	EO2204142-039	EO2204142-040
						Result	Result	Result	Result	Result
Volatile Organic Compounds										
dichloropropane, 2,2-	594-20-7	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
dichloropropylene, 1,1-	563-58-6	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
dichloropropylene, cis+trans-1,3-	542-75-6	E611F	0.75	µg/L		<0.75 OWP	<0.75	<0.75	<0.75	<0.75 OWP
dichloropropylene, cis-1,3-	10061-01-5	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
hexachlorobutadiene	87-68-3	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
hexanone, 2-	591-78-6	E611F	20	µg/L		<20 OWP	<20	<20	<20	<20 OWP
methyl ethyl ketone [MEK]	78-93-3	E611F	20	µg/L		<20 OWP	<20	<20	<20	<20 OWP
methyl isobutyl ketone [MIBK]	108-10-1	E611F	20	µg/L		<20 OWP	<20	<20	<20	<20 OWP
propylbenzene, n-	103-65-1	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
tetrachloroethane, 1,1,1,2-	630-20-6	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
tetrachloroethane, 1,1,2,2-	79-34-5	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
trichlorobenzene, 1,2,3-	87-61-6	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
trichlorobenzene, 1,2,4-	120-82-1	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
trichloroethane, 1,1,2-	79-00-5	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
trichlorofluoromethane	75-69-4	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
trichloropropane, 1,2,3-	96-18-4	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
Volatile Organic Compounds [Drycleaning]										
carbon tetrachloride	56-23-5	E611F	0.20	µg/L		<0.20 OWP	<0.20	<0.20	<0.20	<0.20 OWP
chloroethane	75-00-3	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
dichloroethane, 1,1-	75-34-3	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
dichloroethane, 1,2-	107-06-2	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
dichloroethylene, 1,1-	75-35-4	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
dichloroethylene, cis-1,2-	156-59-2	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
dichloroethylene, trans-1,2-	156-60-5	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
dichloromethane	75-09-2	E611F	1.0	µg/L		<1.0 OWP	<1.0	<1.0	<1.0	<1.0 OWP
dichloropropylene, trans-1,3-	10061-02-6	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
tetrachloroethylene	127-18-4	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
trichloroethane, 1,1,1-	71-55-6	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
trichloroethylene	79-01-6	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
vinyl chloride	75-01-4	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-32B	MW-33A	MW-33B	MW-35-Deep	MW-35A
					Client sampling date / time	10-Jun-2022 03:50	10-Jun-2022 15:00	10-Jun-2022 15:00	09-Jun-2022 12:30	09-Jun-2022 11:30
						EO2204142-036	EO2204142-037	EO2204142-038	EO2204142-039	EO2204142-040
						Result	Result	Result	Result	Result
Volatile Organic Compounds [Fuels]										
benzene	71-43-2	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
benzene	71-43-2	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
dibromoethane, 1,2-	106-93-4	E611F	0.20	µg/L		<0.20 OWP	<0.20	<0.20	<0.20	<0.20 OWP
ethylbenzene	100-41-4	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
ethylbenzene	100-41-4	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
hexane, n-	110-54-3	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
isopropylbenzene	98-82-8	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
methyl-tert-butyl ether [MTBE]	1634-04-4	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
naphthalene	91-20-3	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
styrene	100-42-5	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
styrene	100-42-5	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
toluene	108-88-3	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
toluene	108-88-3	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
trimethylbenzene, 1,2,4-	95-63-6	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
trimethylbenzene, 1,3,5-	108-67-8	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
xylene, m+p-	179601-23-1	E611A	0.40	µg/L		<0.40	<0.40	<0.40	<0.40	<0.40
xylene, m+p-	179601-23-1	E611F	0.40	µg/L		<0.40 OWP	<0.40	<0.40	<0.40	<0.40 OWP
xylene, o-	95-47-6	E611A	0.30	µg/L		<0.30	<0.30	<0.30	<0.30	<0.30
xylene, o-	95-47-6	E611F	0.30	µg/L		<0.30 OWP	<0.30	<0.30	<0.30	<0.30 OWP
xylenes, total	1330-20-7	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
xylenes, total	1330-20-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
BTEX, total	----	E611A	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Volatile Organic Compounds [THMs]										
bromodichloromethane	75-27-4	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
bromoform	75-25-2	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
chloroform	67-66-3	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
dibromochloromethane	124-48-1	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50 OWP
Hydrocarbons										
F1 (C6-C10)	----	E581.F1	100	µg/L		<100	<100	<100	<100	<100

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-32B	MW-33A	MW-33B	MW-35-Deep	MW-35A
					Client sampling date / time	10-Jun-2022 03:50	10-Jun-2022 15:00	10-Jun-2022 15:00	09-Jun-2022 12:30	09-Jun-2022 11:30
						EO2204142-036	EO2204142-037	EO2204142-038	EO2204142-039	EO2204142-040
						Result	Result	Result	Result	Result
Hydrocarbons										
F1-BTEX	----	EC580	25	µg/L		<100	<100	<100	<100	<100
F2 (C10-C16)	----	E601	100	µg/L		<100	<100	<100	<100	<100
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	E601	1.0	%		101	101	101	99.4	103
dichlorotoluene, 3,4-	97-75-0	E581.F1	1.0	%		78.2	128	116	106	113
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611A	1.0	%		85.3	82.3	82.9	81.5	81.3
bromofluorobenzene, 4-	460-00-4	E611F	1.0	%		73.5	73.4	73.1	73.2	72.6
difluorobenzene, 1,4-	540-36-3	E611A	1.0	%		103	97.4	107	106	103
difluorobenzene, 1,4-	540-36-3	E611F	1.0	%		91.6	91.4	91.4	91.4	91.3

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

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-35B	MW-35C	MW-36 Deep	MW-36A	MW-37A
					Client sampling date / time	09-Jun-2022 12:10	09-Jun-2022 11:45	10-Jun-2022 15:00	10-Jun-2022 14:50	09-Jun-2022 09:40
						EO2204142-041	EO2204142-042	EO2204142-043	EO2204142-044	EO2204142-045
						Result	Result	Result	Result	Result
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L		308	557	51.7	8.98	60.3
conductivity	----	E100	2.0	µS/cm		7530	8320	4690	1550 RRV	3730
pH	----	E108	0.10	pH units		8.17	8.48	8.67	8.84 RRV	8.75
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L		886	1060	1060	1170 RRV	966
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L		<1.0	23.5	41.4	53.2 RRV	43.7
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0 RRV	<1.0
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L		726	905	939	1050 RRV	864
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		5940	6910	2710	1050	2680
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		1.29	<0.0050	1.18	0.716	1.39
Kjeldahl nitrogen, total [TKN]	----	E318	0.200	mg/L		2.10	0.907	2.63	1.26	2.02
chloride	16887-00-6	E235.Cl	0.50	mg/L		6.10 DLDS	14.6 DLDS	1090 DLDS	7.90 RRV	5.10 DLDS
fluoride	16984-48-8	E235.F	0.020	mg/L		0.299 DLDS	0.638 DLDS	0.550 DLDS	2.00	0.589 DLDS
nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		1.04 DLDS	1.36 DLDS	<0.100 DLDS	<0.020	<0.100 DLDS
nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		0.195 DLDS	<0.100 DLDS	<0.050 DLDS	0.012	<0.050 DLDS
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		3630 DLDS	4250 DLDS	7.87 DLDS	2.63 RRV	1260 DLDS
nitrate + nitrite (as N)	----	EC235.N+N	0.0500	mg/L		1.24	1.36	<0.112	<0.0500	<0.112
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		10.3	12.2	37.7	17.3	12.6
Ion Balance										
anion sum	----	EC101	0.10	meq/L		90.4	107	49.7	21.4	43.7
cation sum	----	EC101	0.10	meq/L		81.2	93.2	43.6	16.7 IB:INT	38.1
ion balance (APHA)	----	EC101	0.010	%		5.36	6.89	6.54	12.3	6.84
ion balance (cations/anions)	----	EC101	0.010	%		89.8	87.1	87.7	78.0 IB:INT	87.2
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0228	0.0195	0.0212	0.0228	0.204
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00050 DLDS	<0.00050 DLDS	<0.00050 DLDS	<0.00010	<0.00020 DLDS
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00074	0.00085	0.00198	0.00107	0.00056
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0233	0.0201	0.461	0.0639	0.00833
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000100 DLDS	<0.000100 DLDS	<0.000100 DLDS	<0.000020	<0.000040 DLDS

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-35B	MW-35C	MW-36 Deep	MW-36A	MW-37A
					Client sampling date / time	09-Jun-2022 12:10	09-Jun-2022 11:45	10-Jun-2022 15:00	10-Jun-2022 14:50	09-Jun-2022 09:40
						EO2204142-041	EO2204142-042	EO2204142-043	EO2204142-044	EO2204142-045
						Result	Result	Result	Result	Result
Dissolved Metals										
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000250 DLDS	<0.000250 DLDS	<0.000250 DLDS	<0.000050	<0.000100 DLDS
boron, dissolved	7440-42-8	E421	0.010	mg/L		0.693	0.151	0.806	0.701	0.714
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000250 DLDS	<0.0000250 DLDS	<0.0000250 DLDS	0.0000115	<0.0000100 DLDS
calcium, dissolved	7440-70-2	E421	0.050	mg/L		100	118	17.3	2.96 RRV	17.6
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		0.000103	<0.000050 DLDS	<0.000050 DLDS	<0.000010	0.000062
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00250 DLDS	<0.00250 DLDS	<0.00250 DLDS	<0.00050	<0.00100 DLDS
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00050 DLDS	<0.00050 DLDS	0.00169	0.00033	0.00052
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00385	0.00332	<0.00100 DLDS	0.00058	0.00139
iron, dissolved	7439-89-6	E421	0.030	mg/L		<0.150 DLDS	<0.150 DLDS	<0.150 DLDS	0.052	0.103
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000250 DLDS	<0.000250 DLDS	<0.000250 DLDS	0.000131	<0.000100 DLDS
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.546	0.691	0.201	0.0801	0.216
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		14.1	63.7	2.07	0.386 RRV	3.97
manganese, dissolved	7439-96-5	E421	0.00500	mg/L		0.0814	<0.0250 DLDS	0.703	0.170	0.216
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.00199	0.00168	0.0173	0.0114	0.00146
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00297	0.00272	0.00740	0.00144	0.00138
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.250 DLDS	<0.250 DLDS	<0.250 DLDS	0.229	<0.100 DLDS
potassium, dissolved	7440-09-7	E421	0.050	mg/L		7.16	9.89	3.43	1.34 RRV	3.25
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.0120	0.00929	0.00537	0.00188	0.00569
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000250 DLDS	0.00965	<0.000250 DLDS	0.000056	0.000110
silicon, dissolved	7440-21-3	E421	0.050	mg/L		3.54	4.84	4.18	3.82	4.75
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000050 DLDS	<0.000050 DLDS	<0.000050 DLDS	<0.000010	<0.000020 DLDS
sodium, dissolved	7440-23-5	E421	0.050	mg/L		1720	1880	974	377 RRV	843
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		2.27	2.38	0.457	0.0575	0.366
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		1260	1490	4.79	<0.50	431
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00100 DLDS	<0.00100 DLDS	<0.00100 DLDS	<0.00020	<0.00040 DLDS
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000050 DLDS	<0.000050 DLDS	<0.000050 DLDS	<0.000010	<0.000020 DLDS
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00050 DLDS	<0.00050 DLDS	<0.00050 DLDS	<0.00010	<0.00020 DLDS
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00050 DLDS	<0.00050 DLDS	0.00138	<0.00010	<0.00020 DLDS
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00150 DLDS	<0.00150 DLDS	<0.00150 DLDS	0.00131	0.00404
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00050 DLDS	<0.00050 DLDS	<0.00050 DLDS	0.00052	<0.00020 DLDS

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-35B	MW-35C	MW-36 Deep	MW-36A	MW-37A
					Client sampling date / time	09-Jun-2022 12:10	09-Jun-2022 11:45	10-Jun-2022 15:00	10-Jun-2022 14:50	09-Jun-2022 09:40
						EO2204142-041	EO2204142-042	EO2204142-043	EO2204142-044	EO2204142-045
						Result	Result	Result	Result	Result
Dissolved Metals										
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000924	0.0346	0.00138	0.000237	0.00248
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00250 DLDS	<0.00250 DLDS	<0.00250 DLDS	<0.00050	<0.00100 DLDS
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0050 DLDS	<0.0050 DLDS	0.0127	<0.0010	<0.0020 DLDS
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00150 DLDS	<0.00150 DLDS	<0.00150 DLDS	0.00063	0.00060
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field
Aggregate Organics										
chemical oxygen demand [COD]	----	E559-L	10	mg/L		37	33	126 DLM	44	33
phenols, total (4AAP)	----	E562	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Volatile Organic Compounds										
Acetone	67-64-1	E611F	20	µg/L		<20 OWP	<20 OWP	<20	<20	<20
bromobenzene	108-86-1	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
bromochloromethane	74-97-5	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
bromomethane	74-83-9	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
butylbenzene, n-	104-51-8	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
butylbenzene, sec-	135-98-8	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
butylbenzene, tert-	98-06-6	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
carbon disulfide	75-15-0	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
chlorobenzene	108-90-7	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
chloromethane	74-87-3	E611F	2.0	µg/L		<2.0 OWP	<2.0 OWP	<2.0	<2.0	<2.0
chlorotoluene, 2-	95-49-8	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
chlorotoluene, 4-	106-43-4	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
cymene, p-	99-87-6	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
dibromo-3-chloropropane, 1,2-	96-12-8	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
dibromomethane	74-95-3	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
dichlorobenzene, 1,2-	95-50-1	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
dichlorobenzene, 1,3-	541-73-1	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
dichlorobenzene, 1,4-	106-46-7	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
dichlorodifluoromethane	75-71-8	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
dichloropropane, 1,2-	78-87-5	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
dichloropropane, 1,3-	142-28-9	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-35B	MW-35C	MW-36 Deep	MW-36A	MW-37A
					Client sampling date / time	09-Jun-2022 12:10	09-Jun-2022 11:45	10-Jun-2022 15:00	10-Jun-2022 14:50	09-Jun-2022 09:40
						EO2204142-041	EO2204142-042	EO2204142-043	EO2204142-044	EO2204142-045
						Result	Result	Result	Result	Result
Volatile Organic Compounds										
dichloropropane, 2,2-	594-20-7	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
dichloropropylene, 1,1-	563-58-6	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
dichloropropylene, cis+trans-1,3-	542-75-6	E611F	0.75	µg/L		<0.75 OWP	<0.75 OWP	<0.75	<0.75	<0.75
dichloropropylene, cis-1,3-	10061-01-5	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
hexachlorobutadiene	87-68-3	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
hexanone, 2-	591-78-6	E611F	20	µg/L		<20 OWP	<20 OWP	<20	<20	<20
methyl ethyl ketone [MEK]	78-93-3	E611F	20	µg/L		<20 OWP	<20 OWP	<20	<20	<20
methyl isobutyl ketone [MIBK]	108-10-1	E611F	20	µg/L		<20 OWP	<20 OWP	<20	<20	<20
propylbenzene, n-	103-65-1	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
tetrachloroethane, 1,1,1,2-	630-20-6	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
tetrachloroethane, 1,1,2,2-	79-34-5	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
trichlorobenzene, 1,2,3-	87-61-6	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
trichlorobenzene, 1,2,4-	120-82-1	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
trichloroethane, 1,1,2-	79-00-5	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
trichlorofluoromethane	75-69-4	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
trichloropropane, 1,2,3-	96-18-4	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
Volatile Organic Compounds [Drycleaning]										
carbon tetrachloride	56-23-5	E611F	0.20	µg/L		<0.20 OWP	<0.20 OWP	<0.20	<0.20	<0.20
chloroethane	75-00-3	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
dichloroethane, 1,1-	75-34-3	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
dichloroethane, 1,2-	107-06-2	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
dichloroethylene, 1,1-	75-35-4	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
dichloroethylene, cis-1,2-	156-59-2	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
dichloroethylene, trans-1,2-	156-60-5	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
dichloromethane	75-09-2	E611F	1.0	µg/L		<1.0 OWP	<1.0 OWP	<1.0	<1.0	<1.0
dichloropropylene, trans-1,3-	10061-02-6	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
tetrachloroethylene	127-18-4	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
trichloroethane, 1,1,1-	71-55-6	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
trichloroethylene	79-01-6	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
vinyl chloride	75-01-4	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-35B	MW-35C	MW-36 Deep	MW-36A	MW-37A
					Client sampling date / time	09-Jun-2022 12:10	09-Jun-2022 11:45	10-Jun-2022 15:00	10-Jun-2022 14:50	09-Jun-2022 09:40
						EO2204142-041	EO2204142-042	EO2204142-043	EO2204142-044	EO2204142-045
						Result	Result	Result	Result	Result
Volatile Organic Compounds [Fuels]										
benzene	71-43-2	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
benzene	71-43-2	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
dibromoethane, 1,2-	106-93-4	E611F	0.20	µg/L		<0.20 OWP	<0.20 OWP	<0.20	<0.20	<0.20
ethylbenzene	100-41-4	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
ethylbenzene	100-41-4	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
hexane, n-	110-54-3	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
isopropylbenzene	98-82-8	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
methyl-tert-butyl ether [MTBE]	1634-04-4	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
naphthalene	91-20-3	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
styrene	100-42-5	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
styrene	100-42-5	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
toluene	108-88-3	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
toluene	108-88-3	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
trimethylbenzene, 1,2,4-	95-63-6	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
trimethylbenzene, 1,3,5-	108-67-8	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
xylene, m+p-	179601-23-1	E611A	0.40	µg/L		<0.40	<0.40	<0.40	<0.40	<0.40
xylene, m+p-	179601-23-1	E611F	0.40	µg/L		<0.40 OWP	<0.40 OWP	<0.40	<0.40	<0.40
xylene, o-	95-47-6	E611A	0.30	µg/L		<0.30	<0.30	<0.30	<0.30	<0.30
xylene, o-	95-47-6	E611F	0.30	µg/L		<0.30 OWP	<0.30 OWP	<0.30	<0.30	<0.30
xylenes, total	1330-20-7	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
xylenes, total	1330-20-7	E611F	0.50	µg/L		<0.50 OWP	<0.50	<0.50	<0.50	<0.50
BTEX, total	----	E611A	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Volatile Organic Compounds [THMs]										
bromodichloromethane	75-27-4	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
bromoform	75-25-2	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
chloroform	67-66-3	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
dibromochloromethane	124-48-1	E611F	0.50	µg/L		<0.50 OWP	<0.50 OWP	<0.50	<0.50	<0.50
Hydrocarbons										
F1 (C6-C10)	----	E581.F1	100	µg/L		<100	<100	<100	<100	<100

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	MW-35B	MW-35C	MW-36 Deep	MW-36A	MW-37A
					Client sampling date / time	09-Jun-2022 12:10	09-Jun-2022 11:45	10-Jun-2022 15:00	10-Jun-2022 14:50	09-Jun-2022 09:40
Analyte	CAS Number	Method	LOR	Unit		EO2204142-041	EO2204142-042	EO2204142-043	EO2204142-044	EO2204142-045
						Result	Result	Result	Result	Result
Hydrocarbons										
F1-BTEX	----	EC580	25	µg/L		<100	<100	<100	<100	<100
F2 (C10-C16)	----	E601	100	µg/L		<100	<100	<100	<100	<100
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	E601	1.0	%		94.7	103	106	104	105
dichlorotoluene, 3,4-	97-75-0	E581.F1	1.0	%		81.4	78.2	72.0	72.4	73.9
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611A	1.0	%		111	98.7	108	102	102
bromofluorobenzene, 4-	460-00-4	E611F	1.0	%		87.1	87.8	87.6	86.3	90.1
difluorobenzene, 1,4-	540-36-3	E611A	1.0	%		98.4	93.4	98.7	98.3	98.0
difluorobenzene, 1,4-	540-36-3	E611F	1.0	%		98.1	98.2	98.0	97.8	97.6

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

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-37B	MW-38A	MW-38B	DUP-A	DUP-B
					Client sampling date / time	09-Jun-2022 09:05	09-Jun-2022 16:25	09-Jun-2022 16:35	09-Jun-2022 11:30	10-Jun-2022 03:05
						EO2204142-046	EO2204142-047	EO2204142-048	EO2204142-049	EO2204142-050
						Result	Result	Result	Result	Result
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L		196	21.7	228	296	945
conductivity	----	E100	2.0	µS/cm		1920	2260	5060	7280	8690
pH	----	E108	0.10	pH units		8.30	8.78	8.63	8.18	8.19
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L		1220	1230	1840	872	1010
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L		3.4	51.5	55.2	<1.0	<1.0
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L		1010	1100	1600	715	828
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		1380	1520	3970	5990	7810
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.901	1.11	0.203	1.43	0.0202
Kjeldahl nitrogen, total [TKN]	----	E318	0.200	mg/L		1.51	1.76	1.06	1.74	1.53
chloride	16887-00-6	E235.Cl	0.50	mg/L		2.60	12.6 DLDS	5.99 DLDS	5.68 DLDS	54.1 DLDS
fluoride	16984-48-8	E235.F	0.020	mg/L		0.175	1.19 DLDS	0.510 DLDS	0.279 DLDS	0.449 DLDS
nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		<0.020	<0.040 DLDS	0.125 DLDS	0.816 DLDS	<0.200 DLDS
nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		0.020	<0.020 DLDS	0.081 DLDS	0.177 DLDS	<0.100 DLDS
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		272	274 DLDS	1580 DLDS	3630 DLDS	4840 DLDS
nitrate + nitrite (as N)	----	EC235.N+N	0.0500	mg/L		<0.0500	<0.0500	0.206	0.993	<0.224
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		9.34	20.8	15.6	10.8	37.1
Ion Balance										
anion sum	----	EC101	0.10	meq/L		25.9	28.1	65.1	90.1	119
cation sum	----	EC101	0.10	meq/L		21.4	23.5	61.9	83.6	108
ion balance (APHA)	----	EC101	0.010	%		9.51	8.91	2.52	3.74	4.84
ion balance (cations/anions)	----	EC101	0.010	%		82.6 IB:INT	83.6 IB:INT	95.1	92.8	90.8
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		<0.0010	0.0113	0.0091	<0.0050 DLDS	<0.0050 DLDS
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00010	<0.00020 DLDS	<0.00020 DLDS	<0.00050 DLDS	<0.00050 DLDS
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00081	0.00292	0.00131	0.00070	0.00111
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0236	0.0142	0.0219	0.0211	0.00655
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000040 DLDS	<0.000040 DLDS	<0.000100 DLDS	<0.000100 DLDS

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-37B	MW-38A	MW-38B	DUP-A	DUP-B
					Client sampling date / time	09-Jun-2022 09:05	09-Jun-2022 16:25	09-Jun-2022 16:35	09-Jun-2022 11:30	10-Jun-2022 03:05
						EO2204142-046	EO2204142-047	EO2204142-048	EO2204142-049	EO2204142-050
						Result	Result	Result	Result	Result
Dissolved Metals										
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000100 DLDS	<0.000100 DLDS	<0.000250 DLDS	<0.000250 DLDS
boron, dissolved	7440-42-8	E421	0.010	mg/L		0.175	0.709	0.250	0.729	0.195
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000050	0.0000106	<0.0000100 DLDS	<0.0000250 DLDS	<0.0000250 DLDS
calcium, dissolved	7440-70-2	E421	0.050	mg/L		49.5	6.64	32.9	95.0	197
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		0.000051	0.000023	<0.000020 DLDS	0.000108	0.000087
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00100 DLDS	<0.00100 DLDS	<0.00250 DLDS	<0.00250 DLDS
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00050	0.00033	0.00084	<0.00050 DLDS	<0.00050 DLDS
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00106	0.00118	0.00145	0.00130	0.00209
iron, dissolved	7439-89-6	E421	0.030	mg/L		0.060	<0.060 DLDS	<0.060 DLDS	<0.150 DLDS	<0.150 DLDS
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000100 DLDS	0.000134	<0.000250 DLDS	<0.000250 DLDS
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.170	0.115	0.172	0.514	0.582
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		17.6	1.24	35.4	14.3	110
manganese, dissolved	7439-96-5	E421	0.00500	mg/L		0.154	0.0157	0.172	0.0808	<0.0250 DLDS
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.000179	0.00577	0.000829	0.00190	0.00106
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00082	0.00212	0.00264	0.00258	0.00548
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.050	<0.100 DLDS	<0.100 DLDS	<0.250 DLDS	<0.250 DLDS
potassium, dissolved	7440-09-7	E421	0.050	mg/L		7.06	2.12	12.6	7.23	7.85
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00758	0.00333	0.00384	0.0125	0.0120
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000056	0.000416	0.000194	<0.000250 DLDS	0.000538
silicon, dissolved	7440-21-3	E421	0.050	mg/L		5.44	4.18	5.17	3.52	5.24
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000020 DLDS	<0.000020 DLDS	<0.000050 DLDS	<0.000050 DLDS
sodium, dissolved	7440-23-5	E421	0.050	mg/L		397	528	1310	1780	2050
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.611	0.124	0.596	2.41	3.76
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		91.7	93.0	555	1250	1700
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00040 DLDS	<0.00040 DLDS	<0.00100 DLDS	<0.00100 DLDS
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000020 DLDS	<0.000020 DLDS	<0.000050 DLDS	<0.000050 DLDS
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00020 DLDS	<0.00020 DLDS	<0.00050 DLDS	<0.00050 DLDS
tin, dissolved	7440-31-5	E421	0.00010	mg/L		0.00015	0.00025	<0.00020 DLDS	<0.00050 DLDS	<0.00050 DLDS
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00060 DLDS	<0.00060 DLDS	<0.00150 DLDS	<0.00150 DLDS
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	0.00028	<0.00020 DLDS	<0.00050 DLDS	<0.00050 DLDS

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-37B	MW-38A	MW-38B	DUP-A	DUP-B
					Client sampling date / time	09-Jun-2022 09:05	09-Jun-2022 16:25	09-Jun-2022 16:35	09-Jun-2022 11:30	10-Jun-2022 03:05
						EO2204142-046	EO2204142-047	EO2204142-048	EO2204142-049	EO2204142-050
						Result	Result	Result	Result	Result
Dissolved Metals										
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.000154	0.00123	0.00763	0.000974	0.0314
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	0.00200	<0.00100 DLDS	<0.00250 DLDS	<0.00250 DLDS
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0010	<0.0020 DLDS	0.0030	<0.0050 DLDS	<0.0050 DLDS
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		0.00035	0.00068	0.00220	<0.00150 DLDS	<0.00150 DLDS
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field
Aggregate Organics										
chemical oxygen demand [COD]	----	E559-L	10	mg/L		26	68	35	25	80
phenols, total (4AAP)	----	E562	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Volatile Organic Compounds										
Acetone	67-64-1	E611F	20	µg/L		<20	<20	<20	<20 OWP	<20
bromobenzene	108-86-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
bromochloromethane	74-97-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
bromomethane	74-83-9	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
butylbenzene, n-	104-51-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
butylbenzene, sec-	135-98-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
butylbenzene, tert-	98-06-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
carbon disulfide	75-15-0	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
chlorobenzene	108-90-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
chloromethane	74-87-3	E611F	2.0	µg/L		<2.0	<2.0	<2.0	<2.0 OWP	<2.0
chlorotoluene, 2-	95-49-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
chlorotoluene, 4-	106-43-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
cymene, p-	99-87-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
dibromo-3-chloropropane, 1,2-	96-12-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
dibromomethane	74-95-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
dichlorobenzene, 1,2-	95-50-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
dichlorobenzene, 1,3-	541-73-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
dichlorobenzene, 1,4-	106-46-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
dichlorodifluoromethane	75-71-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
dichloropropane, 1,2-	78-87-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
dichloropropane, 1,3-	142-28-9	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-37B	MW-38A	MW-38B	DUP-A	DUP-B
					Client sampling date / time	09-Jun-2022 09:05	09-Jun-2022 16:25	09-Jun-2022 16:35	09-Jun-2022 11:30	10-Jun-2022 03:05
						EO2204142-046	EO2204142-047	EO2204142-048	EO2204142-049	EO2204142-050
						Result	Result	Result	Result	Result
Volatile Organic Compounds										
dichloropropane, 2,2-	594-20-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
dichloropropylene, 1,1-	563-58-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
dichloropropylene, cis+trans-1,3-	542-75-6	E611F	0.75	µg/L		<0.75	<0.75	<0.75	<0.75 OWP	<0.75
dichloropropylene, cis-1,3-	10061-01-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
hexachlorobutadiene	87-68-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
hexanone, 2-	591-78-6	E611F	20	µg/L		<20	<20	<20	<20 OWP	<20
methyl ethyl ketone [MEK]	78-93-3	E611F	20	µg/L		<20	<20	<20	<20 OWP	<20
methyl isobutyl ketone [MIBK]	108-10-1	E611F	20	µg/L		<20	<20	<20	<20 OWP	<20
propylbenzene, n-	103-65-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
tetrachloroethane, 1,1,1,2-	630-20-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
tetrachloroethane, 1,1,2,2-	79-34-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
trichlorobenzene, 1,2,3-	87-61-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
trichlorobenzene, 1,2,4-	120-82-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
trichloroethane, 1,1,2-	79-00-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
trichlorofluoromethane	75-69-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
trichloropropane, 1,2,3-	96-18-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
Volatile Organic Compounds [Drycleaning]										
carbon tetrachloride	56-23-5	E611F	0.20	µg/L		<0.20	<0.20	<0.20	<0.20 OWP	<0.20
chloroethane	75-00-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
dichloroethane, 1,1-	75-34-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
dichloroethane, 1,2-	107-06-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
dichloroethylene, 1,1-	75-35-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
dichloroethylene, cis-1,2-	156-59-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
dichloroethylene, trans-1,2-	156-60-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
dichloromethane	75-09-2	E611F	1.0	µg/L		<1.0	<1.0	<1.0	<1.0 OWP	<1.0
dichloropropylene, trans-1,3-	10061-02-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
tetrachloroethylene	127-18-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
trichloroethane, 1,1,1-	71-55-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
trichloroethylene	79-01-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
vinyl chloride	75-01-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-37B	MW-38A	MW-38B	DUP-A	DUP-B
					Client sampling date / time	09-Jun-2022 09:05	09-Jun-2022 16:25	09-Jun-2022 16:35	09-Jun-2022 11:30	10-Jun-2022 03:05
						EO2204142-046	EO2204142-047	EO2204142-048	EO2204142-049	EO2204142-050
						Result	Result	Result	Result	Result
Volatile Organic Compounds [Fuels]										
benzene	71-43-2	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
benzene	71-43-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
dibromoethane, 1,2-	106-93-4	E611F	0.20	µg/L		<0.20	<0.20	<0.20	<0.20 OWP	<0.20
ethylbenzene	100-41-4	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
ethylbenzene	100-41-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
hexane, n-	110-54-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
isopropylbenzene	98-82-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
methyl-tert-butyl ether [MTBE]	1634-04-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
naphthalene	91-20-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
styrene	100-42-5	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
styrene	100-42-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
toluene	108-88-3	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
toluene	108-88-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
trimethylbenzene, 1,2,4-	95-63-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
trimethylbenzene, 1,3,5-	108-67-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
xylene, m+p-	179601-23-1	E611A	0.40	µg/L		<0.40	<0.40	<0.40	<0.40	<0.40
xylene, m+p-	179601-23-1	E611F	0.40	µg/L		<0.40	<0.40	<0.40	<0.40 OWP	<0.40
xylene, o-	95-47-6	E611A	0.30	µg/L		<0.30	<0.30	<0.30	<0.30	<0.30
xylene, o-	95-47-6	E611F	0.30	µg/L		<0.30	<0.30	<0.30	<0.30 OWP	<0.30
xylenes, total	1330-20-7	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
xylenes, total	1330-20-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
BTEX, total	----	E611A	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Volatile Organic Compounds [THMs]										
bromodichloromethane	75-27-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
bromoform	75-25-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
chloroform	67-66-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
dibromochloromethane	124-48-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50 OWP	<0.50
Hydrocarbons										
F1 (C6-C10)	----	E581.F1	100	µg/L		<100	<100	<100	<100	<100

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	MW-37B	MW-38A	MW-38B	DUP-A	DUP-B
					Client sampling date / time	09-Jun-2022 09:05	09-Jun-2022 16:25	09-Jun-2022 16:35	09-Jun-2022 11:30	10-Jun-2022 03:05
						EO2204142-046	EO2204142-047	EO2204142-048	EO2204142-049	EO2204142-050
						Result	Result	Result	Result	Result
Hydrocarbons										
F1-BTEX	----	EC580	25	µg/L		<100	<100	<100	<100	<100
F2 (C10-C16)	----	E601	100	µg/L		<100	<100	<100	<100	<100
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	E601	1.0	%		102	103	104	103	103
dichlorotoluene, 3,4-	97-75-0	E581.F1	1.0	%		83.6	94.1	77.2	78.6	86.7
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611A	1.0	%		109	103	107	95.9	105
bromofluorobenzene, 4-	460-00-4	E611F	1.0	%		85.3	88.5	86.7	86.3	85.9
difluorobenzene, 1,4-	540-36-3	E611A	1.0	%		99.8	99.2	101	97.9	98.8
difluorobenzene, 1,4-	540-36-3	E611F	1.0	%		98.3	97.1	97.4	97.8	97.4

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

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	DUP-C	DUP-D	Field Blank	Trip Blank	----
					Client sampling date / time	10-Jun-2022 03:35	10-Jun-2022 10:35	10-Jun-2022	10-Jun-2022 15:00	----
						EO2204142-051	EO2204142-052	EO2204142-053	EO2204142-054	--------
						Result	Result	Result	Result	----
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L		334	21.0	<0.50	<0.50	----
conductivity	----	E100	2.0	µS/cm		7100	2060	<2.0	<2.0	----
pH	----	E108	0.10	pH units		8.50	8.79	5.50	5.39	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L		1430	1260	<1.0	<1.0	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L		30.1	56.0	<1.0	<1.0	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L		1220	1130	<2.0	<2.0	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		5830	1430	<1.0	<1.0	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		<0.0050	0.443	<0.0050	<0.0050	----
Kjeldahl nitrogen, total [TKN]	----	E318	0.200	mg/L		1.18	1.90	<0.200	<0.200	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		50.8 DLDS	5.10 DLDS	<0.50	<0.50	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.778 DLDS	1.28 DLDS	<0.020	<0.020	----
nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		<0.200 DLDS	0.490 DLDS	<0.020	<0.020	----
nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		<0.100 DLDS	0.024 DLDS	<0.010	<0.010	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		3140 DLDS	202 DLDS	<0.30	<0.30	----
nitrate + nitrite (as N)	----	EC235.N+N	0.0500	mg/L		<0.224	0.514	<0.0500	<0.0500	----
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L		23.8 SFP	9.54	<0.50	<0.50	----
Ion Balance										
anion sum	----	EC101	0.10	meq/L		91.2	27.0	<0.10	<0.10	----
cation sum	----	EC101	0.10	meq/L		83.4	22.8	<0.10	<0.10	----
ion balance (APHA)	----	EC101	0.010	%		4.47	8.43	<0.010	<0.010	----
ion balance (cations/anions)	----	EC101	0.010	%		91.4	84.4 IB:INT	100	100	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0066	0.0019	<0.0010	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		<0.00050 DLDS	0.00025	<0.00010	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00148	0.00149	<0.00010	<0.00010	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0114	0.0459	0.00059 RRV	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000100 DLDS	<0.000020	<0.000020	<0.000020	----

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	DUP-C	DUP-D	Field Blank	Trip Blank	----
					Client sampling date / time	10-Jun-2022 03:35	10-Jun-2022 10:35	10-Jun-2022	10-Jun-2022 15:00	----
						EO2204142-051	EO2204142-052	EO2204142-053	EO2204142-054	--------
						Result	Result	Result	Result	----
Dissolved Metals										
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000250 DLDS	<0.000050	<0.000050	<0.000050	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		0.372	0.592	<0.010	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		<0.0000250 DLDS	0.0000416	<0.0000050	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		66.6	6.96	<0.050	<0.050	----
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		0.000070	0.000043	<0.000010	<0.000010	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00250 DLDS	<0.00050	<0.00050	<0.00050	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00085	0.00053	<0.00010	<0.00010	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.00217	0.00175	0.00149 RRV	<0.00020	----
iron, dissolved	7439-89-6	E421	0.030	mg/L		<0.150 DLDS	<0.030	<0.030	<0.030	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000250 DLDS	<0.000050	<0.000050	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.275	0.119	<0.0010	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		40.8	0.875	<0.0050	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.00500	mg/L		0.130	0.134	<0.00500	<0.00500	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.00149	0.00603	<0.000050	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00497	0.00672	<0.00050	<0.00050	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		<0.250 DLDS	<0.050	<0.050	<0.050	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L		5.54	1.96	<0.050	<0.050	----
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00651	0.00361	<0.00020	<0.00020	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		<0.000250 DLDS	0.000207	<0.000050	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		4.84	3.29	<0.050	<0.050	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000050 DLDS	<0.000010	<0.000010	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		1760	513	0.076 RRV	<0.050	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		1.58	0.156	<0.00020	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		1080	70.3	<0.50	<0.50	----
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00100 DLDS	<0.00020	<0.00020	<0.00020	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000050 DLDS	0.000019	<0.000010	<0.000010	----
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00050 DLDS	<0.00010	<0.00010	<0.00010	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00050 DLDS	<0.00010	0.00040 RRV	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00150 DLDS	<0.00030	<0.00030	<0.00030	----
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00050 DLDS	<0.00010	<0.00010	<0.00010	----

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	DUP-C	DUP-D	Field Blank	Trip Blank	----
					Client sampling date / time	10-Jun-2022 03:35	10-Jun-2022 10:35	10-Jun-2022	10-Jun-2022 15:00	----
						EO2204142-051	EO2204142-052	EO2204142-053	EO2204142-054	--------
						Result	Result	Result	Result	----
Dissolved Metals										
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.00308	0.00140	<0.000010	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00250 DLDS	0.00063	<0.00050	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		<0.0050 DLDS	0.0012	0.0012 RRV	<0.0010	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00150 DLDS	0.00099	<0.00030	<0.00030	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	----
Aggregate Organics										
chemical oxygen demand [COD]	----	E559-L	10	mg/L		43	73	<10	<10	----
phenols, total (4AAP)	----	E562	0.0010	mg/L		<0.0010	<0.0010	0.0041 RRV	<0.0010	----
Volatile Organic Compounds										
Acetone	67-64-1	E611F	20	µg/L		<20	<20	33	<20	----
bromobenzene	108-86-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
bromochloromethane	74-97-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
bromomethane	74-83-9	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
butylbenzene, n-	104-51-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
butylbenzene, sec-	135-98-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
butylbenzene, tert-	98-06-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
carbon disulfide	75-15-0	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
chlorobenzene	108-90-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
chloromethane	74-87-3	E611F	2.0	µg/L		<2.0	<2.0	<2.0	<2.0	----
chlorotoluene, 2-	95-49-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
chlorotoluene, 4-	106-43-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
cymene, p-	99-87-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
dibromo-3-chloropropane, 1,2-	96-12-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
dibromomethane	74-95-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
dichlorobenzene, 1,2-	95-50-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
dichlorobenzene, 1,3-	541-73-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
dichlorobenzene, 1,4-	106-46-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
dichlorodifluoromethane	75-71-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
dichloropropane, 1,2-	78-87-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
dichloropropane, 1,3-	142-28-9	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID: DUP-C	DUP-D	Field Blank	Trip Blank	----
					Client sampling date / time: 10-Jun-2022 03:35	10-Jun-2022 10:35	10-Jun-2022	10-Jun-2022 15:00	----
					EO2204142-051	EO2204142-052	EO2204142-053	EO2204142-054	--------
					Result	Result	Result	Result	----
Volatile Organic Compounds									
dichloropropane, 2,2-	594-20-7	E611F	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	----
dichloropropylene, 1,1-	563-58-6	E611F	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	----
dichloropropylene, cis+trans-1,3-	542-75-6	E611F	0.75	µg/L	<0.75	<0.75	<0.75	<0.75	----
dichloropropylene, cis-1,3-	10061-01-5	E611F	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	----
hexachlorobutadiene	87-68-3	E611F	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	----
hexanone, 2-	591-78-6	E611F	20	µg/L	<20	<20	<20	<20	----
methyl ethyl ketone [MEK]	78-93-3	E611F	20	µg/L	<20	<20	<20	<20	----
methyl isobutyl ketone [MIBK]	108-10-1	E611F	20	µg/L	<20	<20	<20	<20	----
propylbenzene, n-	103-65-1	E611F	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611F	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611F	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	----
trichlorobenzene, 1,2,3-	87-61-6	E611F	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	----
trichlorobenzene, 1,2,4-	120-82-1	E611F	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	----
trichloroethane, 1,1,2-	79-00-5	E611F	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	----
trichlorofluoromethane	75-69-4	E611F	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	----
trichloropropane, 1,2,3-	96-18-4	E611F	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	----
Volatile Organic Compounds [Drycleaning]									
carbon tetrachloride	56-23-5	E611F	0.20	µg/L	<0.20	<0.20	<0.20	<0.20	----
chloroethane	75-00-3	E611F	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	----
dichloroethane, 1,1-	75-34-3	E611F	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	----
dichloroethane, 1,2-	107-06-2	E611F	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	----
dichloroethylene, 1,1-	75-35-4	E611F	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	----
dichloroethylene, cis-1,2-	156-59-2	E611F	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	----
dichloroethylene, trans-1,2-	156-60-5	E611F	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	----
dichloromethane	75-09-2	E611F	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
dichloropropylene, trans-1,3-	10061-02-6	E611F	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	----
tetrachloroethylene	127-18-4	E611F	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	----
trichloroethane, 1,1,1-	71-55-6	E611F	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	----
trichloroethylene	79-01-6	E611F	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	----
vinyl chloride	75-01-4	E611F	0.50	µg/L	<0.50	<0.50	<0.50	<0.50	----

Analytical Results

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

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	DUP-C	DUP-D	Field Blank	Trip Blank	----
					Client sampling date / time	10-Jun-2022 03:35	10-Jun-2022 10:35	10-Jun-2022	10-Jun-2022 15:00	----
						EO2204142-051	EO2204142-052	EO2204142-053	EO2204142-054	--------
						Result	Result	Result	Result	----
Volatile Organic Compounds [Fuels]										
benzene	71-43-2	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
benzene	71-43-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
dibromoethane, 1,2-	106-93-4	E611F	0.20	µg/L		<0.20	<0.20	<0.20	<0.20	----
ethylbenzene	100-41-4	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
ethylbenzene	100-41-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
hexane, n-	110-54-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
isopropylbenzene	98-82-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
naphthalene	91-20-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
styrene	100-42-5	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
styrene	100-42-5	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
toluene	108-88-3	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
toluene	108-88-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
trimethylbenzene, 1,2,4-	95-63-6	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
trimethylbenzene, 1,3,5-	108-67-8	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
xylene, m+p-	179601-23-1	E611A	0.40	µg/L		<0.40	<0.40	<0.40	<0.40	----
xylene, m+p-	179601-23-1	E611F	0.40	µg/L		<0.40	<0.40	<0.40	<0.40	----
xylene, o-	95-47-6	E611A	0.30	µg/L		<0.30	<0.30	<0.30	<0.30	----
xylene, o-	95-47-6	E611F	0.30	µg/L		<0.30	<0.30	<0.30	<0.30	----
xylenes, total	1330-20-7	E611A	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
xylenes, total	1330-20-7	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
BTEX, total	----	E611A	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	----
Volatile Organic Compounds [THMs]										
bromodichloromethane	75-27-4	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
bromoform	75-25-2	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
chloroform	67-66-3	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
dibromochloromethane	124-48-1	E611F	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	----
Hydrocarbons										
F1 (C6-C10)	----	E581.F1	100	µg/L		<100	<100	<100	<100	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	DUP-C	DUP-D	Field Blank	Trip Blank	----
					Client sampling date / time	10-Jun-2022 03:35	10-Jun-2022 10:35	10-Jun-2022	10-Jun-2022 15:00	----
Analyte	CAS Number	Method	LOR	Unit		EO2204142-051	EO2204142-052	EO2204142-053	EO2204142-054	--------
						Result	Result	Result	Result	----
Hydrocarbons										
F1-BTEX	----	EC580	25	µg/L		<100	<100	<100	<100	----
F2 (C10-C16)	----	E601	100	µg/L		<100	<100	<100	<100	----
Hydrocarbons Surrogates										
bromobenzotrifluoride, 2- (F2-F4 surr)	392-83-6	E601	1.0	%		103	102	104	105	----
dichlorotoluene, 3,4-	97-75-0	E581.F1	1.0	%		77.6	72.0	73.0	98.0	----
Volatile Organic Compounds Surrogates										
bromofluorobenzene, 4-	460-00-4	E611A	1.0	%		104	108	94.6	101	----
bromofluorobenzene, 4-	460-00-4	E611F	1.0	%		86.2	88.1	86.0	84.7	----
difluorobenzene, 1,4-	540-36-3	E611A	1.0	%		98.0	96.8	96.5	97.0	----
difluorobenzene, 1,4-	540-36-3	E611F	1.0	%		97.6	97.4	97.5	97.3	----

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

ALS Canada Ltd.

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **EO2204142**	Page	: 1 of 135
Amendment	: 1		
Client	: **Tetra Tech Canada Inc.**	Laboratory	: Edmonton - Environmental
Contact	: Carl Forkheim	Account Manager	: Kieran Tordoff
Address	: North Building 14940 123 Ave NW Edmonton AB Canada T5V 1B4	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N 1M9
Telephone	: 403-510-7241	Telephone	: +1 780 413 5227
Project	: 704-SWM.SWOP04401-01	Date Samples Received	: 11-Jun-2022 15:00
PO	: ----	Issue Date	: 27-Oct-2022 09:20
C-O-C number	: ----		
Sampler	: MD		
Site	: ----		
Quote number	: ----		
No. of samples received	: 54		
No. of samples analysed	: 54		

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

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- Matrix Spike outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Laboratory Control Sample (LCS) Recoveries								
Volatile Organic Compounds	QC-527259-002	----	hexanone, 2-	591-78-6	E611F	51.8 % LCS-L	70.0-130%	Recovery less than lower control limit
Volatile Organic Compounds	QC-527259-002	----	methyl isobutyl ketone [MIBK]	108-10-1	E611F	66.7 % LCS-L	70.0-130%	Recovery less than lower control limit

Result Qualifiers

Qualifier	Description
LCS-L	*Lab Control Sample recovery was below ALS DQO. Reference Material and/or Matrix Spike results were acceptable. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.*

Matrix Spike (MS) Recoveries								
Dissolved Metals	EO2204142-002	MW-1C	molybdenum, dissolved	7439-98-7	E421	137 % MES	70.0-130%	Recovery greater than upper data quality objective
Dissolved Metals	EO2204142-002	MW-1C	silicon, dissolved	7440-21-3	E421	134 % MES	70.0-130%	Recovery greater than upper data quality objective
Dissolved Metals	EO2204142-002	MW-1C	tin, dissolved	7440-31-5	E421	138 % MES	70.0-130%	Recovery greater than upper data quality objective
Dissolved Metals	EO2204142-002	MW-1C	titanium, dissolved	7440-32-6	E421	131 % MES	70.0-130%	Recovery greater than upper data quality objective
Volatile Organic Compounds	EO2204142-021	MW-25A	hexanone, 2-	591-78-6	E611F	54.2 % MES	60.0-140%	Recovery less than lower data quality objective

Result Qualifiers

Qualifier	Description
MES	*Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).*

Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-12A	E559-L	10-Jun-2022	----	----	----		14-Jun-2022	28 days	4 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-18A	E559-L	10-Jun-2022	----	----	----		14-Jun-2022	28 days	4 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-18B	E559-L	10-Jun-2022	----	----	----		14-Jun-2022	28 days	4 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-1B	E559-L	10-Jun-2022	----	----	----		14-Jun-2022	28 days	4 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-1C	E559-L	10-Jun-2022	----	----	----		14-Jun-2022	28 days	4 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-8A	E559-L	10-Jun-2022	----	----	----		14-Jun-2022	28 days	4 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-8B	E559-L	10-Jun-2022	----	----	----		14-Jun-2022	28 days	4 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid)										
DUP-B	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid)										
DUP-C	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid)										
DUP-D	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid)										
Field Blank	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid)										
MW-10	E559-L	09-Jun-2022	----	----	----		14-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid)										
MW-11	E559-L	09-Jun-2022	----	----	----		14-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid)										
MW-12B	E559-L	10-Jun-2022	----	----	----		14-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid)										
MW-19A	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid)										
MW-19B	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-20A	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-20B	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-21A	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-21B	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-22A	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-22B	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-23A	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-23B	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-25A	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-25B	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-26B	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-27A	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-27B	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-28A	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-28B	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-29A	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-29B	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-30A	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-30B	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-31A	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-31B	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-32A	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-32B	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-33A	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-33B	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-36 Deep	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) MW-36A	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid)										
Trip Blank	E559-L	10-Jun-2022	----	----	----		15-Jun-2022	28 days	5 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid)										
DUP-A	E559-L	09-Jun-2022	----	----	----		15-Jun-2022	28 days	6 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid)										
MW-35B	E559-L	09-Jun-2022	----	----	----		15-Jun-2022	28 days	6 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid)										
MW-35C	E559-L	09-Jun-2022	----	----	----		15-Jun-2022	28 days	6 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid)										
MW-35-Deep	E559-L	09-Jun-2022	----	----	----		15-Jun-2022	28 days	6 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid)										
MW-37A	E559-L	09-Jun-2022	----	----	----		15-Jun-2022	28 days	6 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid)										
MW-37B	E559-L	09-Jun-2022	----	----	----		15-Jun-2022	28 days	6 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid)										
MW-38A	E559-L	09-Jun-2022	----	----	----		15-Jun-2022	28 days	6 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid)										
MW-38B	E559-L	09-Jun-2022	----	----	----		15-Jun-2022	28 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid)										
MW-26A	E559-L	10-Jun-2022	----	----	----		18-Jun-2022	28 days	8 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid)										
MW-35A	E559-L	09-Jun-2022	----	----	----		18-Jun-2022	28 days	9 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-12A	E562	10-Jun-2022	21-Jun-2022	----	----		21-Jun-2022	28 days	11 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-18A	E562	10-Jun-2022	21-Jun-2022	----	----		21-Jun-2022	28 days	11 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-18B	E562	10-Jun-2022	21-Jun-2022	----	----		21-Jun-2022	28 days	11 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-19A	E562	10-Jun-2022	21-Jun-2022	----	----		21-Jun-2022	28 days	11 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-19B	E562	10-Jun-2022	21-Jun-2022	----	----		21-Jun-2022	28 days	11 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-1B	E562	10-Jun-2022	21-Jun-2022	----	----		21-Jun-2022	28 days	11 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-1C	E562	10-Jun-2022	21-Jun-2022	----	----		21-Jun-2022	28 days	11 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-20A	E562	10-Jun-2022	21-Jun-2022	----	----		21-Jun-2022	28 days	11 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-20B	E562	10-Jun-2022	21-Jun-2022	----	----		21-Jun-2022	28 days	11 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-21A	E562	10-Jun-2022	21-Jun-2022	----	----		21-Jun-2022	28 days	11 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-21B	E562	10-Jun-2022	21-Jun-2022	----	----		21-Jun-2022	28 days	11 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-22A	E562	10-Jun-2022	21-Jun-2022	----	----		21-Jun-2022	28 days	11 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-22B	E562	10-Jun-2022	21-Jun-2022	----	----		21-Jun-2022	28 days	11 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-23A	E562	10-Jun-2022	21-Jun-2022	----	----		21-Jun-2022	28 days	11 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-23B	E562	10-Jun-2022	21-Jun-2022	----	----		21-Jun-2022	28 days	11 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-25A	E562	10-Jun-2022	21-Jun-2022	----	----		21-Jun-2022	28 days	11 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-25B	E562	10-Jun-2022	21-Jun-2022	----	----		21-Jun-2022	28 days	11 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-26A	E562	10-Jun-2022	21-Jun-2022	----	----		21-Jun-2022	28 days	11 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-26B	E562	10-Jun-2022	21-Jun-2022	----	----		21-Jun-2022	28 days	11 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
DUP-D	E562	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-10	E562	09-Jun-2022	21-Jun-2022	----	----		21-Jun-2022	28 days	12 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-11	E562	09-Jun-2022	21-Jun-2022	----	----		21-Jun-2022	28 days	12 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-12B	E562	10-Jun-2022	21-Jun-2022	----	----		21-Jun-2022	28 days	12 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-27A	E562	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-27B	E562	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-28A	E562	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-28B	E562	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-29A	E562	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-29B	E562	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-30A	E562	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-30B	E562	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-31A	E562	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-31B	E562	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-32A	E562	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-33A	E562	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-33B	E562	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-36 Deep	E562	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-36A	E562	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-8A	E562	10-Jun-2022	21-Jun-2022	----	----		21-Jun-2022	28 days	12 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-8B	E562	10-Jun-2022	21-Jun-2022	----	----		21-Jun-2022	28 days	12 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
Trip Blank	E562	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
DUP-A	E562	09-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	13 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
DUP-B	E562	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	13 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
DUP-C	E562	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	13 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
Field Blank	E562	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	13 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-32B	E562	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	13 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-35B	E562	09-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	13 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-35C	E562	09-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	13 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-35-Deep	E562	09-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	13 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-37A	E562	09-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	13 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-37B	E562	09-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	13 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-38A	E562	09-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	13 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
MW-38B	E562	09-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
DUP-D	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
MW-12A	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
MW-18A	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
MW-18B	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
MW-19A	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
MW-19B	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
MW-1B	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
MW-1C	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-20A	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-20B	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-21A	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-21B	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-22A	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-22B	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-23A	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-23B	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-25A	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-25B	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-26A	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-26B	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-27A	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-27B	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-28A	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-28B	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-29A	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-29B	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-30A	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-30B	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-31A	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-31B	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-32A	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-33A	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-33B	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-36 Deep	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-36A	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Trip Blank	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	13 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
DUP-A	E298	09-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	14 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
DUP-B	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	14 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
DUP-C	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	14 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Field Blank	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	14 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
MW-10	E298	09-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	14 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
MW-11	E298	09-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	14 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
MW-12B	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	14 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
MW-32B	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	14 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-35A	E298	09-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	14 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-35B	E298	09-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	14 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-35C	E298	09-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	14 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-35-Deep	E298	09-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	14 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-37A	E298	09-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	14 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-37B	E298	09-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	14 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-38A	E298	09-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	14 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-38B	E298	09-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	14 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MW-8A	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	14 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
MW-8B	E298	10-Jun-2022	23-Jun-2022	----	----		23-Jun-2022	28 days	14 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
DUP-D	E235.Cl	10-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
MW-12A	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
MW-18A	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
MW-18B	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
MW-19A	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
MW-19B	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
MW-1B	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
MW-1C	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-20A	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-20B	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-21A	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-21B	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-22A	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-22B	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-23A	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-23B	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-25A	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-25B	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-26A	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-26B	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-27A	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-27B	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-28A	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-28B	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-29A	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-29B	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-30A	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-30B	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-31A	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-31B	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-32A	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-33A	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-33B	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-36 Deep	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-36A	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE Trip Blank	E235.Cl	10-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE DUP-A	E235.Cl	09-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE DUP-B	E235.Cl	10-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE DUP-C	E235.Cl	10-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE Field Blank	E235.Cl	10-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-10	E235.Cl	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-11	E235.Cl	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-12B	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-32B	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-35A	E235.Cl	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-35B	E235.Cl	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-35C	E235.Cl	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-35-Deep	E235.Cl	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-37A	E235.Cl	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-37B	E235.Cl	09-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-38A	E235.Cl	09-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-38B	E235.Cl	09-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-8A	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE MW-8B	E235.Cl	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE DUP-D	E235.F	10-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-12A	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-18A	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-18B	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-19A	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-19B	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-1B	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-1C	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-20A	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-20B	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-21A	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-21B	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-22A	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-22B	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-23A	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-23B	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-25A	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-25B	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-26A	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-26B	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-27A	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-27B	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-28A	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-28B	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-29A	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-29B	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-30A	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-30B	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-31A	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-31B	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-32A	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-33A	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-33B	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-36 Deep	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-36A	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Trip Blank	E235.F	10-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
DUP-A	E235.F	09-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
DUP-B	E235.F	10-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
DUP-C	E235.F	10-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Field Blank	E235.F	10-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
MW-10	E235.F	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
MW-11	E235.F	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
MW-12B	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
MW-32B	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-35A	E235.F	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-35B	E235.F	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-35C	E235.F	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-35-Deep	E235.F	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-37A	E235.F	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-37B	E235.F	09-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-38A	E235.F	09-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-38B	E235.F	09-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-8A	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE MW-8B	E235.F	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE DUP-D	E235.NO3	10-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-12A	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-18A	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-18B	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-19A	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-19B	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-1B	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-1C	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-20A	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-20B	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-21A	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-21B	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-22A	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-22B	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-23A	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-23B	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-25A	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-25B	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-26A	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-26B	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-27A	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-27B	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-28A	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-28B	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-29A	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-29B	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-30A	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-30B	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-31A	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-31B	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-32A	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-33A	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-33B	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-36 Deep	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-36A	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC										
HDPE Trip Blank	E235.NO3	10-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE DUP-A	E235.NO3	09-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrate in Water by IC										
HDPE DUP-B	E235.NO3	10-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrate in Water by IC										
HDPE DUP-C	E235.NO3	10-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrate in Water by IC										
HDPE Field Blank	E235.NO3	10-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-10	E235.NO3	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-11	E235.NO3	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-12B	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-32B	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-35A	E235.NO3	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-35B	E235.NO3	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-35C	E235.NO3	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-35-Deep	E235.NO3	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-37A	E235.NO3	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-37B	E235.NO3	09-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-38A	E235.NO3	09-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-38B	E235.NO3	09-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-8A	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC										
HDPE MW-8B	E235.NO3	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrite in Water by IC										
HDPE DUP-D	E235.NO2	10-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-12A	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-18A	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-18B	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-19A	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-19B	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-1B	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-1C	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-20A	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-20B	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-21A	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-21B	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-22A	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-22B	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-23A	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-23B	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-25A	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-25B	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-26A	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-26B	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-27A	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-27B	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-28A	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-28B	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-29A	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-29B	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-30A	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-30B	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-31A	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-31B	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-32A	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-33A	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-33B	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-36 Deep	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-36A	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC										
HDPE Trip Blank	E235.NO2	10-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE DUP-A	E235.NO2	09-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrite in Water by IC										
HDPE DUP-B	E235.NO2	10-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrite in Water by IC										
HDPE DUP-C	E235.NO2	10-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrite in Water by IC										
HDPE Field Blank	E235.NO2	10-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-10	E235.NO2	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-11	E235.NO2	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-12B	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-32B	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-35A	E235.NO2	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-35B	E235.NO2	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-35C	E235.NO2	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-35-Deep	E235.NO2	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-37A	E235.NO2	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-37B	E235.NO2	09-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-38A	E235.NO2	09-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-38B	E235.NO2	09-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-8A	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC										
HDPE MW-8B	E235.NO2	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	3 days	4 days	× EHT
Anions and Nutrients : Sulfate in Water by IC										
HDPE DUP-D	E235.SO4	10-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-12A	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-18A	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-18B	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-19A	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-19B	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-1B	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-1C	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-20A	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-20B	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-21A	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-21B	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-22A	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-22B	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-23A	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-23B	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-25A	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-25B	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-26A	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-26B	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-27A	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-27B	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-28A	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-28B	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-29A	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-29B	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-30A	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-30B	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-31A	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-31B	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-32A	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-33A	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-33B	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-36 Deep	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-36A	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
Trip Blank	E235.SO4	10-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
DUP-A	E235.SO4	09-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
DUP-B	E235.SO4	10-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
DUP-C	E235.SO4	10-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
Field Blank	E235.SO4	10-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
MW-10	E235.SO4	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
MW-11	E235.SO4	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
MW-12B	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
MW-32B	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-35A	E235.SO4	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-35B	E235.SO4	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-35C	E235.SO4	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-35-Deep	E235.SO4	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-37A	E235.SO4	09-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-37B	E235.SO4	09-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-38A	E235.SO4	09-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-38B	E235.SO4	09-Jun-2022	13-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MW-8A	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
MW-8B	E235.SO4	10-Jun-2022	12-Jun-2022	----	----		13-Jun-2022	28 days	4 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
MW-12A	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
MW-12B	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
MW-18A	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
MW-18B	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
MW-19A	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
MW-19B	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
MW-1B	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
MW-1C	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW-20A	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW-20B	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW-21A	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW-21B	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW-22A	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW-22B	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW-23A	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW-23B	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW-25A	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW-25B	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW-26A	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW-26B	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW-27A	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW-27B	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW-28A	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW-28B	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW-29A	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW-29B	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW-30A	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW-30B	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW-31A	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW-31B	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW-32A	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW-32B	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW-33A	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW-33B	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MW-8A	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
MW-8B	E318	10-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	25 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
DUP-B	E318	10-Jun-2022	06-Jul-2022	----	----		06-Jul-2022	28 days	26 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
DUP-C	E318	10-Jun-2022	06-Jul-2022	----	----		06-Jul-2022	28 days	26 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
DUP-D	E318	10-Jun-2022	06-Jul-2022	----	----		06-Jul-2022	28 days	26 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
MW-10	E318	09-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	26 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
MW-11	E318	09-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	26 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
MW-35-Deep	E318	09-Jun-2022	05-Jul-2022	----	----		05-Jul-2022	28 days	26 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
MW-36 Deep	E318	10-Jun-2022	06-Jul-2022	----	----		06-Jul-2022	28 days	26 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
MW-36A	E318	10-Jun-2022	06-Jul-2022	----	----		06-Jul-2022	28 days	26 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
Trip Blank	E318	10-Jun-2022	06-Jul-2022	----	----		06-Jul-2022	28 days	26 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
DUP-A	E318	09-Jun-2022	06-Jul-2022	----	----		06-Jul-2022	28 days	27 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
Field Blank	E318	10-Jun-2022	06-Jul-2022	----	----		06-Jul-2022	28 days	27 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
MW-35B	E318	09-Jun-2022	06-Jul-2022	----	----		06-Jul-2022	28 days	27 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
MW-35C	E318	09-Jun-2022	06-Jul-2022	----	----		06-Jul-2022	28 days	27 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
MW-37A	E318	09-Jun-2022	06-Jul-2022	----	----		06-Jul-2022	28 days	27 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
MW-37B	E318	09-Jun-2022	06-Jul-2022	----	----		06-Jul-2022	28 days	27 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
MW-38A	E318	09-Jun-2022	06-Jul-2022	----	----		06-Jul-2022	28 days	27 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
MW-38B	E318	09-Jun-2022	06-Jul-2022	----	----		06-Jul-2022	28 days	27 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-12A	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) DUP-B	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) DUP-C	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) DUP-D	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) Field Blank	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-12B	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-18A	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-18B	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-19A	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-19B	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-1B	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-1C	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-20A	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-20B	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-21A	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-21B	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-22A	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-22B	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-23A	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-23B	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-25A	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-25B	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-26A	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-26B	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-27A	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-27B	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-28A	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-28B	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-29A	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-29B	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-30A	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-30B	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-31A	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-31B	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-32A	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-32B	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-33A	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-33B	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-36 Deep	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-36A	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-8A	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-8B	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) Trip Blank	E421	10-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) DUP-A	E421	09-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-10	E421	09-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	9 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-11	E421	09-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-35A	E421	09-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-35B	E421	09-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-35C	E421	09-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-35-Deep	E421	09-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-37A	E421	09-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-37B	E421	09-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-38A	E421	09-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MW-38B	E421	09-Jun-2022	18-Jun-2022	----	----		18-Jun-2022	180 days	9 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-12A	E581.F1	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-18A	E581.F1	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-18B	E581.F1	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-19A	E581.F1	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-19B	E581.F1	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-1B	E581.F1	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-1C	E581.F1	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-20A	E581.F1	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-20B	E581.F1	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-21A	E581.F1	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-21B	E581.F1	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-22A	E581.F1	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-22B	E581.F1	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-23A	E581.F1	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-23B	E581.F1	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-8A	E581.F1	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-8B	E581.F1	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-10	E581.F1	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-11	E581.F1	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-12B	E581.F1	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-25A	E581.F1	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-25B	E581.F1	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-26A	E581.F1	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-26B	E581.F1	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-27A	E581.F1	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-27B	E581.F1	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-28A	E581.F1	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-28B	E581.F1	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-29A	E581.F1	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-29B	E581.F1	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-30A	E581.F1	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-30B	E581.F1	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-31A	E581.F1	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-31B	E581.F1	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-32A	E581.F1	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-32B	E581.F1	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-33A	E581.F1	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-33B	E581.F1	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) DUP-B	E581.F1	10-Jun-2022	17-Jun-2022	----	----		18-Jun-2022	14 days	8 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) DUP-C	E581.F1	10-Jun-2022	17-Jun-2022	----	----		18-Jun-2022	14 days	8 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) DUP-D	E581.F1	10-Jun-2022	17-Jun-2022	----	----		18-Jun-2022	14 days	8 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) Field Blank	E581.F1	10-Jun-2022	17-Jun-2022	----	----		18-Jun-2022	14 days	8 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-35A	E581.F1	09-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	8 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-35-Deep	E581.F1	09-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	8 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-36 Deep	E581.F1	10-Jun-2022	17-Jun-2022	----	----		18-Jun-2022	14 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-36A	E581.F1	10-Jun-2022	17-Jun-2022	----	----		18-Jun-2022	14 days	8 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) Trip Blank	E581.F1	10-Jun-2022	17-Jun-2022	----	----		18-Jun-2022	14 days	8 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) DUP-A	E581.F1	09-Jun-2022	17-Jun-2022	----	----		18-Jun-2022	14 days	9 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-35B	E581.F1	09-Jun-2022	17-Jun-2022	----	----		18-Jun-2022	14 days	9 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-35C	E581.F1	09-Jun-2022	17-Jun-2022	----	----		18-Jun-2022	14 days	9 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-37A	E581.F1	09-Jun-2022	17-Jun-2022	----	----		18-Jun-2022	14 days	9 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-37B	E581.F1	09-Jun-2022	17-Jun-2022	----	----		18-Jun-2022	14 days	9 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-38A	E581.F1	09-Jun-2022	17-Jun-2022	----	----		18-Jun-2022	14 days	9 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) MW-38B	E581.F1	09-Jun-2022	17-Jun-2022	----	----		18-Jun-2022	14 days	9 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-12A	E601	10-Jun-2022	15-Jun-2022	14 days	5 days	✓	16-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-18A	E601	10-Jun-2022	15-Jun-2022	14 days	5 days	✓	16-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-18B	E601	10-Jun-2022	15-Jun-2022	14 days	5 days	✓	16-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-19A	E601	10-Jun-2022	15-Jun-2022	14 days	5 days	✓	16-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-19B	E601	10-Jun-2022	15-Jun-2022	14 days	5 days	✓	16-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-1B	E601	10-Jun-2022	15-Jun-2022	14 days	5 days	✓	16-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-1C	E601	10-Jun-2022	15-Jun-2022	14 days	5 days	✓	16-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-20A	E601	10-Jun-2022	15-Jun-2022	14 days	5 days	✓	16-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-20B	E601	10-Jun-2022	15-Jun-2022	14 days	5 days	✓	16-Jun-2022	40 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-21A	E601	10-Jun-2022	15-Jun-2022	14 days	5 days	✓	16-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-21B	E601	10-Jun-2022	15-Jun-2022	14 days	5 days	✓	16-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-22A	E601	10-Jun-2022	15-Jun-2022	14 days	5 days	✓	16-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-22B	E601	10-Jun-2022	15-Jun-2022	14 days	5 days	✓	16-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-8A	E601	10-Jun-2022	15-Jun-2022	14 days	5 days	✓	16-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-8B	E601	10-Jun-2022	15-Jun-2022	14 days	5 days	✓	16-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) DUP-B	E601	10-Jun-2022	16-Jun-2022	14 days	6 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) DUP-C	E601	10-Jun-2022	16-Jun-2022	14 days	6 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) DUP-D	E601	10-Jun-2022	16-Jun-2022	14 days	6 days	✓	17-Jun-2022	40 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
Field Blank	E601	10-Jun-2022	16-Jun-2022	14 days	6 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
MW-10	E601	09-Jun-2022	15-Jun-2022	14 days	6 days	✓	16-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
MW-11	E601	09-Jun-2022	15-Jun-2022	14 days	6 days	✓	16-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
MW-12B	E601	10-Jun-2022	15-Jun-2022	14 days	6 days	✓	16-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
MW-23A	E601	10-Jun-2022	16-Jun-2022	14 days	6 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
MW-23B	E601	10-Jun-2022	16-Jun-2022	14 days	6 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
MW-25A	E601	10-Jun-2022	16-Jun-2022	14 days	6 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
MW-25B	E601	10-Jun-2022	16-Jun-2022	14 days	6 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
MW-26A	E601	10-Jun-2022	16-Jun-2022	14 days	6 days	✓	17-Jun-2022	40 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times* Rec	*Holding Times* Actual	*Eval*	*Analysis Date*	*Holding Times* Rec	*Holding Times* Actual	*Eval*
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-26B	E601	10-Jun-2022	16-Jun-2022	14 days	6 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-27A	E601	10-Jun-2022	16-Jun-2022	14 days	6 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-27B	E601	10-Jun-2022	16-Jun-2022	14 days	6 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-28A	E601	10-Jun-2022	16-Jun-2022	14 days	6 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-28B	E601	10-Jun-2022	16-Jun-2022	14 days	6 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-29A	E601	10-Jun-2022	16-Jun-2022	14 days	6 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-29B	E601	10-Jun-2022	16-Jun-2022	14 days	6 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-30A	E601	10-Jun-2022	16-Jun-2022	14 days	6 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-30B	E601	10-Jun-2022	16-Jun-2022	14 days	6 days	✓	17-Jun-2022	40 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-31A	E601	10-Jun-2022	16-Jun-2022	14 days	6 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-31B	E601	10-Jun-2022	16-Jun-2022	14 days	6 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-32A	E601	10-Jun-2022	16-Jun-2022	14 days	6 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-32B	E601	10-Jun-2022	16-Jun-2022	14 days	6 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-33A	E601	10-Jun-2022	16-Jun-2022	14 days	6 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-33B	E601	10-Jun-2022	16-Jun-2022	14 days	6 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-36 Deep	E601	10-Jun-2022	16-Jun-2022	14 days	6 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-36A	E601	10-Jun-2022	16-Jun-2022	14 days	6 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) Trip Blank	E601	10-Jun-2022	16-Jun-2022	14 days	6 days	✓	17-Jun-2022	40 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) DUP-A	E601	09-Jun-2022	16-Jun-2022	14 days	7 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-35A	E601	09-Jun-2022	16-Jun-2022	14 days	7 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-35B	E601	09-Jun-2022	16-Jun-2022	14 days	7 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-35C	E601	09-Jun-2022	16-Jun-2022	14 days	7 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-35-Deep	E601	09-Jun-2022	16-Jun-2022	14 days	7 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-37A	E601	09-Jun-2022	16-Jun-2022	14 days	7 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-37B	E601	09-Jun-2022	16-Jun-2022	14 days	7 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-38A	E601	09-Jun-2022	16-Jun-2022	14 days	7 days	✓	17-Jun-2022	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW-38B	E601	09-Jun-2022	16-Jun-2022	14 days	7 days	✓	17-Jun-2022	40 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) DUP-B	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) DUP-D	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) Field Blank	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-12A	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-12B	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-18A	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-18B	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-19A	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-19B	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-1B	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-1C	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-20A	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-20B	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-21A	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-21B	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-22A	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-22B	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-23A	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-23B	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-25A	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-25B	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-26A	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-26B	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-27A	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-27B	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-28A	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-28B	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-29A	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-29B	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-30A	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-30B	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-31A	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-31B	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-32A	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-32B	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-33A	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-33B	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-36 Deep	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-36A	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-8A	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-8B	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) Trip Blank	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	12 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) DUP-A	E358-L	09-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	13 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) DUP-C	E358-L	10-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	13 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-10	E358-L	09-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	13 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-11	E358-L	09-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	13 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-35A	E358-L	09-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	13 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-35B	E358-L	09-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	13 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-35C	E358-L	09-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	13 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-35-Deep	E358-L	09-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	13 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-37A	E358-L	09-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	13 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-37B	E358-L	09-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	13 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-38A	E358-L	09-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	13 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) MW-38B	E358-L	09-Jun-2022	22-Jun-2022	----	----		22-Jun-2022	28 days	13 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE MW-12A	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-12B	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-18A	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-18B	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-19A	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-19B	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-1B	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-1C	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-20A	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE MW-20B	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-21A	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-21B	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-22A	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-22B	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-23A	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-23B	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-25A	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-25B	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE MW-26A	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-26B	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-27A	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-27B	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-28A	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-28B	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-29A	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-29B	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-30A	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE MW-30B	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-31A	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-31B	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-32A	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-32B	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-33A	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-33B	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-36 Deep	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-36A	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE MW-8A	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-8B	E290	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE DUP-B	E290	10-Jun-2022	16-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE DUP-C	E290	10-Jun-2022	16-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE DUP-D	E290	10-Jun-2022	16-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Field Blank	E290	10-Jun-2022	16-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-10	E290	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-11	E290	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-35A	E290	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE MW-35B	E290	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-35C	E290	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-35-Deep	E290	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-37A	E290	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-37B	E290	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-38A	E290	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE MW-38B	E290	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Trip Blank	E290	10-Jun-2022	16-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE DUP-A	E290	09-Jun-2022	16-Jun-2022	----	----		17-Jun-2022	14 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE MW-12A	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-12B	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-18A	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-18B	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-19A	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-19B	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-1B	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-1C	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-20A	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE MW-20B	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-21A	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-21B	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-22A	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-22B	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-23A	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-23B	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-25A	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-25B	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE MW-26A	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-26B	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-27A	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-27B	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-28A	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-28B	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-29A	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-29B	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-30A	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE MW-30B	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-31A	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-31B	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-32A	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-32B	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-33A	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-33B	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-36 Deep	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-36A	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE MW-8A	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-8B	E100	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE DUP-B	E100	10-Jun-2022	16-Jun-2022	----	----		17-Jun-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE DUP-C	E100	10-Jun-2022	16-Jun-2022	----	----		17-Jun-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE DUP-D	E100	10-Jun-2022	16-Jun-2022	----	----		17-Jun-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE Field Blank	E100	10-Jun-2022	16-Jun-2022	----	----		17-Jun-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-10	E100	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-11	E100	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-35A	E100	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE MW-35B	E100	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-35C	E100	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-35-Deep	E100	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-37A	E100	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-37B	E100	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-38A	E100	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE MW-38B	E100	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE Trip Blank	E100	10-Jun-2022	16-Jun-2022	----	----		17-Jun-2022	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE DUP-A	E100	09-Jun-2022	16-Jun-2022	----	----		17-Jun-2022	28 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE MW-12A	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	130 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-30B	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	136 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-31A	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	136 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-31B	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	136 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-32A	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	136 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-28B	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	137 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-29A	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	137 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-29B	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	137 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-30A	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	137 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE MW-33A	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	137 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-33B	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	137 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-36 Deep	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	137 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-36A	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	137 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-25A	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	138 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-25B	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	138 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-26A	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	138 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-26B	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	138 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-27A	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	138 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE MW-27B	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	138 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-28A	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	138 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-22A	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	139 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-22B	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	139 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-23A	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	139 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-23B	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	139 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-19A	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	140 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-19B	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	140 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-20A	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	140 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE MW-20B	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	140 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-21A	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	140 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-21B	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	140 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-18A	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	141 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-18B	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	141 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-1B	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	141 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-1C	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	141 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-32B	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	148 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-8A	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	148 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE MW-8B	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	148 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-12B	E108	10-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	151 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-38A	E108	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	159 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-38B	E108	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	159 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-10	E108	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	160 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-11	E108	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	161 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-35-Deep	E108	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	163 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Trip Blank	E108	10-Jun-2022	16-Jun-2022	----	----		17-Jun-2022	0.25 hrs	163 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-35A	E108	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	164 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE MW-35B	E108	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	164 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-35C	E108	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	164 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-37A	E108	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	166 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE MW-37B	E108	09-Jun-2022	15-Jun-2022	----	----		16-Jun-2022	0.25 hrs	167 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE DUP-D	E108	10-Jun-2022	16-Jun-2022	----	----		17-Jun-2022	0.25 hrs	168 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE DUP-B	E108	10-Jun-2022	16-Jun-2022	----	----		17-Jun-2022	0.25 hrs	175 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE DUP-C	E108	10-Jun-2022	16-Jun-2022	----	----		17-Jun-2022	0.25 hrs	175 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Field Blank	E108	10-Jun-2022	16-Jun-2022	----	----		17-Jun-2022	0.25 hrs	178 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE DUP-A	E108	09-Jun-2022	16-Jun-2022	----	----		17-Jun-2022	0.25 hrs	191 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) DUP-D	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-12A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-18A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-18B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-19A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-19B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-1B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-1C	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-20A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-20B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-21A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-21B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-22A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-22B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-23A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-23B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-25A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-25B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-26A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-26B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-27A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-27B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-28A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-28B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-29A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-29B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-30A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-30B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-31A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-31B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-32A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-33A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-33B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-36 Deep	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-36A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) Trip Blank	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) DUP-A	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) DUP-B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) DUP-C	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) Field Blank	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-10	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-11	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-12B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-32B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-35A	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-35B	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-35C	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-35-Deep	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-37A	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-38A	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-38B	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-8A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-8B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-37B	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) DUP-A	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) DUP-B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) DUP-C	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) DUP-D	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) Field Blank	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-10	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-11	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-12A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-12B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-18A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-18B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-19A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-19B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-1B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-1C	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-20A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-20B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-21A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-21B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-22A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-22B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-23A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-23B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-25A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-25B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-26A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-26B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-27A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-27B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-28A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-28B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-29A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-29B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-30A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-30B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-31A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-31B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-32A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-32B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-33A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-33B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-35A	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-35B	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-35C	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-35-Deep	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-36 Deep	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-36A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-37A	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-37B	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-38A	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-38B	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-8A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-8B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Drycleaning] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) Trip Blank	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-12A	E611A	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-18A	E611A	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-18B	E611A	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-19A	E611A	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-19B	E611A	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-1B	E611A	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-1C	E611A	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-20A	E611A	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-20B	E611A	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-21A	E611A	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-21B	E611A	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-22A	E611A	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-22B	E611A	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-23A	E611A	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-23B	E611A	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-8A	E611A	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-8B	E611A	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	6 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-10	E611A	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-11	E611A	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-12B	E611A	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-25A	E611A	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-25B	E611A	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-26A	E611A	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-26B	E611A	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-27A	E611A	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-27B	E611A	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-28A	E611A	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-28B	E611A	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-29A	E611A	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-29B	E611A	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-30A	E611A	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-30B	E611A	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-31A	E611A	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-31B	E611A	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-32A	E611A	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-32B	E611A	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-33A	E611A	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-33B	E611A	10-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	7 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) DUP-B	E611A	10-Jun-2022	17-Jun-2022	----	----		18-Jun-2022	14 days	8 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) DUP-C	E611A	10-Jun-2022	17-Jun-2022	----	----		18-Jun-2022	14 days	8 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) DUP-D	E611A	10-Jun-2022	17-Jun-2022	----	----		18-Jun-2022	14 days	8 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) Field Blank	E611A	10-Jun-2022	17-Jun-2022	----	----		18-Jun-2022	14 days	8 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-35A	E611A	09-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	8 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-35-Deep	E611A	09-Jun-2022	17-Jun-2022	----	----		17-Jun-2022	14 days	8 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-36 Deep	E611A	10-Jun-2022	17-Jun-2022	----	----		18-Jun-2022	14 days	8 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-36A	E611A	10-Jun-2022	17-Jun-2022	----	----		18-Jun-2022	14 days	8 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) Trip Blank	E611A	10-Jun-2022	17-Jun-2022	----	----		18-Jun-2022	14 days	8 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) DUP-A	E611A	09-Jun-2022	17-Jun-2022	----	----		18-Jun-2022	14 days	9 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-35B	E611A	09-Jun-2022	17-Jun-2022	----	----		18-Jun-2022	14 days	9 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-35C	E611A	09-Jun-2022	17-Jun-2022	----	----		18-Jun-2022	14 days	9 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-37A	E611A	09-Jun-2022	17-Jun-2022	----	----		18-Jun-2022	14 days	9 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-37B	E611A	09-Jun-2022	17-Jun-2022	----	----		18-Jun-2022	14 days	9 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-38A	E611A	09-Jun-2022	17-Jun-2022	----	----		18-Jun-2022	14 days	9 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-38B	E611A	09-Jun-2022	17-Jun-2022	----	----		18-Jun-2022	14 days	9 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) DUP-A	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) DUP-B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) DUP-C	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) DUP-D	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) Field Blank	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-10	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-11	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-12A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-12B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-18A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-18B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-19A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-19B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-1B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-1C	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-20A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-20B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-21A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-21B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-22A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-22B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-23A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-23B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-25A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-25B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-26A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-26B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-27A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-27B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-28A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-28B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-29A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-29B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-30A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-30B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-31A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-31B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-32A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-32B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-33A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-33B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-35A	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-35B	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-35C	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-35-Deep	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-36 Deep	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-36A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-37A	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-37B	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-38A	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-38B	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-8A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-8B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [Fuels] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) Trip Blank	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) DUP-A	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) DUP-B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) DUP-C	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) DUP-D	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) Field Blank	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-10	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-11	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-12A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-12B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-18A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-18B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-19A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-19B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-1B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-1C	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-20A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-20B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-21A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-21B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-22A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-22B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-23A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-23B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-25A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-25B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-26A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-26B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-27A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-27B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-28A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-28B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-29A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-29B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-30A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-30B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-31A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-31B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-32A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-32B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-33A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-33B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-35A	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-35B	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-35C	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-35-Deep	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-36 Deep	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-36A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-37A	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-37B	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-38A	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-38B	E611F	09-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-8A	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) MW-8B	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	
Volatile Organic Compounds [THMs] : VOCs (Full List) by Headspace GC-MS										
Glass vial (sodium bisulfate) Trip Blank	E611F	10-Jun-2022	16-Jun-2022	----	----		16-Jun-2022	----	----	

Legend & Qualifier Definitions

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

EHT: Exceeded ALS recommended hold time prior to analysis.

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	524999	4	75	5.3	5.0	✓
Ammonia by Fluorescence	E298	536507	4	80	5.0	5.0	✓
BTEX by Headspace GC-MS	E611A	524838	3	54	5.5	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	524839	3	54	5.5	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	523464	5	83	6.0	5.0	✓
Chloride in Water by IC	E235.Cl	521041	4	76	5.2	5.0	✓
Conductivity in Water	E100	524998	4	72	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	528853	3	54	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	533784	4	68	5.8	5.0	✓
Fluoride in Water by IC	E235.F	521038	4	66	6.0	5.0	✓
Nitrate in Water by IC	E235.NO3	521042	4	72	5.5	5.0	✓
Nitrite in Water by IC	E235.NO2	521039	4	71	5.6	5.0	✓
pH by Meter	E108	524997	4	73	5.4	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	532688	4	76	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	521040	4	71	5.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	547730	3	59	5.0	5.0	✓
VOCs (Full List) by Headspace GC-MS	E611F	527226	4	54	7.4	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	524999	4	75	5.3	5.0	✓
Ammonia by Fluorescence	E298	536507	4	80	5.0	5.0	✓
BTEX by Headspace GC-MS	E611A	524838	3	54	5.5	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	524839	3	54	5.5	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601	525094	3	60	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	523464	5	83	6.0	5.0	✓
Chloride in Water by IC	E235.Cl	521041	4	76	5.2	5.0	✓
Conductivity in Water	E100	524998	4	72	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	528853	3	54	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	533784	4	68	5.8	5.0	✓
Fluoride in Water by IC	E235.F	521038	4	66	6.0	5.0	✓
Nitrate in Water by IC	E235.NO3	521042	4	72	5.5	5.0	✓
Nitrite in Water by IC	E235.NO2	521039	4	71	5.6	5.0	✓
pH by Meter	E108	524997	4	73	5.4	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	532688	4	76	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	521040	4	71	5.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	547730	3	59	5.0	5.0	✓
VOCs (Full List) by Headspace GC-MS	E611F	527226	4	54	7.4	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Method Blanks (MB)							
Alkalinity Species by Titration	E290	524999	4	75	5.3	5.0	✓
Ammonia by Fluorescence	E298	536507	4	80	5.0	5.0	✓
BTEX by Headspace GC-MS	E611A	524838	3	54	5.5	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	524839	3	54	5.5	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601	525094	3	60	5.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	523464	5	83	6.0	5.0	✓
Chloride in Water by IC	E235.Cl	521041	4	76	5.2	5.0	✓
Conductivity in Water	E100	524998	4	72	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	528853	3	54	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	533784	4	68	5.8	5.0	✓
Fluoride in Water by IC	E235.F	521038	4	66	6.0	5.0	✓
Nitrate in Water by IC	E235.NO3	521042	4	72	5.5	5.0	✓
Nitrite in Water by IC	E235.NO2	521039	4	71	5.6	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	532688	4	76	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	521040	4	71	5.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	547730	3	59	5.0	5.0	✓
VOCs (Full List) by Headspace GC-MS	E611F	527226	4	54	7.4	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	536507	4	80	5.0	5.0	✓
BTEX by Headspace GC-MS	E611A	524838	3	54	5.5	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	523464	5	83	6.0	5.0	✓
Chloride in Water by IC	E235.Cl	521041	4	76	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	528853	3	54	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	533784	4	68	5.8	5.0	✓
Fluoride in Water by IC	E235.F	521038	4	66	6.0	5.0	✓
Nitrate in Water by IC	E235.NO3	521042	4	72	5.5	5.0	✓
Nitrite in Water by IC	E235.NO2	521039	4	71	5.6	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	532688	4	76	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	521040	4	71	5.6	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	547730	3	59	5.0	5.0	✓
VOCs (Full List) by Headspace GC-MS	E611F	527226	4	54	7.4	5.0	✓

Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Edmonton - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Edmonton - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Chloride in Water by IC	E235.Cl Edmonton - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Edmonton - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC	E235.NO2 Edmonton - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC	E235.NO3 Edmonton - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Edmonton - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 Edmonton - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Edmonton - Environmental	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Edmonton - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Edmonton - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Dissolved Metals in Water by CRC ICPMS	E421 Edmonton - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L Edmonton - Environmental	Water	APHA 5220 D (mod)	Samples are analyzed using the closed reflux colourimetric method.
Phenols (4AAP) in Water by Colorimetry	E562 Edmonton - Environmental	Water	EPA 9066	This automated method is based on the distillation of phenol and subsequent reaction of the distillate with alkaline ferricyanide (K3Fe(CN)6) and 4-amino-antipyrine (4-AAP) to form a red complex which is measured colorimetrically.
CCME PHC - F1 by Headspace GC-FID	E581.F1 Edmonton - Environmental	Water	CCME PHC in Soil - Tier 1	CCME Fraction 1 (F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
CCME PHCs - F2-F4 by GC-FID	E601 Edmonton - Environmental	Water	CCME PHC in Soil - Tier 1	Sample extracts are analyzed by GC-FID for CCME hydrocarbon fractions (F2-F4).
BTEX by Headspace GC-MS	E611A Edmonton - Environmental	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
VOCs (Full List) by Headspace GC-MS	E611F Waterloo - Environmental	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
Dissolved Hardness (Calculated)	EC100 Edmonton - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Ion Balance using Dissolved Metals	EC101 Edmonton - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
TDS in Water (Calculation)	EC103 Edmonton - Environmental	Water	APHA 1030E (mod)	Total Dissolved Solids is calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N Edmonton - Environmental	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).
F1-BTEX	EC580 Edmonton - Environmental	Water	CCME PHC in Soil - Tier 1	F1-BTEX is calculated as follows: F1-BTEX = F1 (C6-C10) minus benzene, toluene, ethylbenzene and xylenes (BTEX).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Edmonton - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Edmonton - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Dissolved Organic Carbon for Combustion	EP358 Edmonton - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Dissolved Metals Water Filtration	EP421 Edmonton - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
VOCs Preparation for Headspace Analysis	EP581 Waterloo - Environmental	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.
PHCs and PAHs Hexane Extraction	EP601 Edmonton - Environmental	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **EO2204142**	Page	: 1 of 65
Amendment	: **1**		
Client	: Tetra Tech Canada Inc.	Laboratory	: Edmonton - Environmental
Contact	: Carl Forkheim	Account Manager	: Kieran Tordoff
Address	: North Building 14940 123 Ave NW Edmonton AB Canada T5V 1B4	Address	: 9450 - 17 Avenue NW Edmonton, Alberta Canada T6N 1M9
Telephone	:	Telephone	: +1 780 413 5227
Project	: 704-SWM.SWOP04401-01	Date Samples Received	: 11-Jun-2022 15:00
PO	: ----	Date Analysis Commenced	: 12-Jun-2022
C-O-C number	: ----	Issue Date	: 27-Oct-2022 09:20
Sampler	: MD 403-510-7241		
Site	: ----		
Quote number	: ----		
No. of samples received	: 54		
No. of samples analysed	: 54		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Laboratory Department*
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General Comments

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

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 524997)											
FC2201227-004	Anonymous	pH	----	E108	0.10	pH units	7.77	7.62	1.95%	3%	----
Physical Tests (QC Lot: 524998)											
FC2201227-004	Anonymous	conductivity	----	E100	2.0	µS/cm	1850	1850	0.0540%	10%	----
Physical Tests (QC Lot: 524999)											
FC2201227-004	Anonymous	alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	1220	1330	8.14%	20%	----
Physical Tests (QC Lot: 525052)											
EO2204142-020	MW-23B	pH	----	E108	0.10	pH units	8.22	8.22	0.00%	3%	----
Physical Tests (QC Lot: 525053)											
EO2204142-020	MW-23B	conductivity	----	E100	2.0	µS/cm	9290	9290	0.00%	10%	----
Physical Tests (QC Lot: 525054)											
EO2204142-020	MW-23B	alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	885	950	7.08%	20%	----
Physical Tests (QC Lot: 525153)											
EO2204142-040	MW-35A	pH	----	E108	0.10	pH units	1.91	1.89	0.02	Diff <2x LOR	----
Physical Tests (QC Lot: 525154)											
EO2204142-040	MW-35A	conductivity	----	E100	2.0	µS/cm	11000	11000	0.182%	10%	----
Physical Tests (QC Lot: 525155)											
EO2204142-040	MW-35A	alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 526723)											
EO2204142-054	Trip Blank	pH	----	E108	0.10	pH units	5.39	5.35	0.04	Diff <2x LOR	----
Physical Tests (QC Lot: 526724)											
EO2204142-054	Trip Blank	conductivity	----	E100	2.0	µS/cm	<2.0	<2.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 526725)											
EO2204142-054	Trip Blank	alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 521038)											
EO2204382-006	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 521039)											
EO2204382-006	Anonymous	nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 521040)											
EO2204382-006	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 521041)											

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Anions and Nutrients (QC Lot: 521041) - continued											
EO2204382-006	Anonymous	chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 521042)											
EO2204382-006	Anonymous	nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 521043)											
FC2201218-004	Anonymous	nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 521044)											
FC2201218-004	Anonymous	nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 521045)											
FC2201218-004	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	1.03	1.01	0.02	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 521046)											
FC2201218-004	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.030	0.028	0.002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 521047)											
FC2201218-004	Anonymous	chloride	16887-00-6	E235.Cl	0.50	mg/L	3.12	3.12	0.006	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 521061)											
EO2204142-031	MW-30A	nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	0.151	0.150	0.001	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 521062)											
EO2204142-031	MW-30A	nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L	0.016	0.015	0.0009	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 521063)											
EO2204142-031	MW-30A	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	381	382	0.214%	20%	----
Anions and Nutrients (QC Lot: 521064)											
EO2204142-031	MW-30A	fluoride	16984-48-8	E235.F	0.020	mg/L	0.635	0.616	3.04%	20%	----
Anions and Nutrients (QC Lot: 521065)											
EO2204142-031	MW-30A	chloride	16887-00-6	E235.Cl	0.50	mg/L	0.82	0.79	0.03	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 522281)											
EO2204142-054	Trip Blank	nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 522282)											
EO2204142-054	Trip Blank	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 522283)											
EO2204142-054	Trip Blank	nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 522284)											
EO2204142-054	Trip Blank	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 522285)											
EO2204142-054	Trip Blank	chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Anions and Nutrients (QC Lot: 536507)											
FC2201231-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0500	mg/L	<0.0500	<0.0500	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 536515)											
EO2204142-002	MW-1C	ammonia, total (as N)	7664-41-7	E298	0.0150	mg/L	0.603	0.599	0.665%	20%	----
Anions and Nutrients (QC Lot: 536518)											
EO2204142-022	MW-25B	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.477	0.484	1.44%	20%	----
Anions and Nutrients (QC Lot: 536533)											
EO2204142-054	Trip Blank	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 547730)											
EO2204142-001	MW-1B	Kjeldahl nitrogen, total [TKN]	----	E318	0.200	mg/L	0.880	0.675	0.205	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 548191)											
EO2204142-020	MW-23B	Kjeldahl nitrogen, total [TKN]	----	E318	0.200	mg/L	0.710	0.719	0.009	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 548271)											
EO2204142-053	Field Blank	Kjeldahl nitrogen, total [TKN]	----	E318	0.200	mg/L	<0.200	<0.200	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 533784)											
EO2204142-001	MW-1B	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	8.48	8.13	4.28%	20%	----
Organic / Inorganic Carbon (QC Lot: 533785)											
EO2204142-021	MW-25A	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	11.2	11.3	0.717%	20%	----
Organic / Inorganic Carbon (QC Lot: 533788)											
EO2204142-042	MW-35C	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	12.2	10.7	13.0%	20%	----
Organic / Inorganic Carbon (QC Lot: 534348)											
EO2204282-005	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 528853)											
EO2204142-001	MW-1B	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	0.0022	0.0040	0.0018	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	0.00045	0.00039	0.00006	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	0.00124	0.00123	0.000009	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.0376	0.0389	3.44%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000040	mg/L	<0.000040	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.627	0.626	0.125%	20%	----
		cadmium, dissolved	7440-43-9	E421	0.0000100	mg/L	0.0000366	0.0000399	0.0000033	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	6.53	6.56	0.476%	20%	----
		cesium, dissolved	7440-46-2	E421	0.000020	mg/L	0.000040	0.000042	0.000002	Diff <2x LOR	----
		chromium, dissolved	7440-47-3	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.00020	mg/L	0.00050	0.00048	0.00002	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 528853) - continued											
EO2204142-001	MW-1B	copper, dissolved	7440-50-8	E421	0.00040	mg/L	0.00079	0.00069	0.00010	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.060	mg/L	<0.060	<0.060	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	0.115	0.113	1.33%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	0.804	0.822	2.24%	20%	----
		manganese, dissolved	7439-96-5	E421	0.0100	mg/L	0.128	0.127	0.384%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.00605	0.00615	1.55%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	0.00593	0.00613	0.00020	Diff <2x LOR	----
		phosphorus, dissolved	7723-14-0	E421	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	1.84	1.86	0.741%	20%	----
		rubidium, dissolved	7440-17-7	E421	0.00040	mg/L	0.00312	0.00344	0.00032	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.000100	mg/L	0.000189	0.000146	0.000044	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	3.12	3.17	1.37%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.100	mg/L	509	512	0.508%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	0.149	0.151	1.49%	20%	----
		sulfur, dissolved	7704-34-9	E421	1.00	mg/L	73.0	72.0	1.43%	20%	----
		tellurium, dissolved	13494-80-9	E421	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		thorium, dissolved	7440-29-1	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		tungsten, dissolved	7440-33-7	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.00147	0.00150	1.75%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
		zirconium, dissolved	7440-67-7	E421	0.00060	mg/L	0.00102	0.00098	0.00004	Diff <2x LOR	----
Dissolved Metals (QC Lot: 528854)											
EO2204142-021	MW-25A	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	0.0032	0.0037	0.0005	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	0.00321	0.00328	2.14%	20%	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.0832	0.0823	1.06%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000040	mg/L	<0.000040	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 528854) - continued											
EO2204142-021	MW-25A	boron, dissolved	7440-42-8	E421	0.020	mg/L	0.764	0.794	3.86%	20%	----
		cadmium, dissolved	7440-43-9	E421	0.0000100	mg/L	<0.0000100	<0.0000100	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	5.03	5.07	0.797%	20%	----
		cesium, dissolved	7440-46-2	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		chromium, dissolved	7440-47-3	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.00020	mg/L	0.00030	0.00030	0.000003	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	0.00057	0.00056	0.000009	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.060	mg/L	<0.060	<0.060	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	0.102	0.106	2.99%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	0.536	0.552	3.01%	20%	----
		manganese, dissolved	7439-96-5	E421	0.0100	mg/L	0.0696	0.0693	0.00032	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.00806	0.00811	0.643%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	0.00216	0.00214	0.00002	Diff <2x LOR	----
		phosphorus, dissolved	7723-14-0	E421	0.100	mg/L	0.161	0.188	0.027	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	1.76	1.77	0.695%	20%	----
		rubidium, dissolved	7440-17-7	E421	0.00040	mg/L	0.00312	0.00288	0.00024	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	3.63	3.61	0.568%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.100	mg/L	520	526	1.12%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	0.114	0.115	1.63%	20%	----
		sulfur, dissolved	7704-34-9	E421	1.00	mg/L	<1.00	<1.00	0	Diff <2x LOR	----
		tellurium, dissolved	13494-80-9	E421	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		thorium, dissolved	7440-29-1	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		tungsten, dissolved	7440-33-7	E421	0.00020	mg/L	0.00028	0.00026	0.00002	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.000500	0.000499	0.120%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
		zirconium, dissolved	7440-67-7	E421	0.00060	mg/L	0.00256	0.00257	0.00001	Diff <2x LOR	----
Dissolved Metals (QC Lot: 528855)											

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 528855) - continued											
EO2204142-041	MW-35B	aluminum, dissolved	7429-90-5	E421	0.0050	mg/L	0.0228	0.0249	0.0021	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00050	mg/L	0.00074	0.00076	0.00002	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00050	mg/L	0.0233	0.0231	1.07%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.050	mg/L	0.693	0.737	6.13%	20%	----
		cadmium, dissolved	7440-43-9	E421	0.0000250	mg/L	<0.0000250	<0.0000250	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.250	mg/L	100	106	5.76%	20%	----
		cesium, dissolved	7440-46-2	E421	0.000050	mg/L	0.000103	0.000096	0.000007	Diff <2x LOR	----
		chromium, dissolved	7440-47-3	E421	0.00250	mg/L	<0.00250	<0.00250	0	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00100	mg/L	0.00385	0.00401	0.00016	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.150	mg/L	<0.150	<0.150	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0050	mg/L	0.546	0.544	0.409%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0250	mg/L	14.1	14.0	0.103%	20%	----
		manganese, dissolved	7439-96-5	E421	0.0250	mg/L	0.0814	0.0801	0.00131	Diff <2x LOR	----
		molybdenum, dissolved	7439-98-7	E421	0.000250	mg/L	0.00199	0.00193	0.000065	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00250	mg/L	0.00297	0.00327	0.00030	Diff <2x LOR	----
		phosphorus, dissolved	7723-14-0	E421	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.250	mg/L	7.16	7.05	1.59%	20%	----
		rubidium, dissolved	7440-17-7	E421	0.00100	mg/L	0.0120	0.0122	2.02%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.250	mg/L	3.54	3.54	0.0118%	20%	----
		silver, dissolved	7440-22-4	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.250	mg/L	1720	1710	0.446%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00100	mg/L	2.27	2.37	4.42%	20%	----
		sulfur, dissolved	7704-34-9	E421	2.50	mg/L	1260	1260	0.445%	20%	----
		tellurium, dissolved	13494-80-9	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		thorium, dissolved	7440-29-1	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00150	mg/L	<0.00150	<0.00150	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 528855) - continued											
EO2204142-041	MW-35B	tungsten, dissolved	7440-33-7	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000050	mg/L	0.000924	0.000932	0.889%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00250	mg/L	<0.00250	<0.00250	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		zirconium, dissolved	7440-67-7	E421	0.00150	mg/L	<0.00150	<0.00150	0	Diff <2x LOR	----
Aggregate Organics (QC Lot: 523464)											
EO2204142-001	MW-1B	chemical oxygen demand [COD]	----	E559-L	10	mg/L	36	36	0.2	Diff <2x LOR	----
Aggregate Organics (QC Lot: 524643)											
EO2204142-011	MW-19A	chemical oxygen demand [COD]	----	E559-L	10	mg/L	24	26	3	Diff <2x LOR	----
Aggregate Organics (QC Lot: 524644)											
EO2204142-031	MW-30A	chemical oxygen demand [COD]	----	E559-L	10	mg/L	27	28	1	Diff <2x LOR	----
Aggregate Organics (QC Lot: 524707)											
EO2204142-044	MW-36A	chemical oxygen demand [COD]	----	E559-L	10	mg/L	44	46	2	Diff <2x LOR	----
Aggregate Organics (QC Lot: 529414)											
EO2204142-023	MW-26A	chemical oxygen demand [COD]	----	E559-L	10	mg/L	59	59	0.2	Diff <2x LOR	----
Aggregate Organics (QC Lot: 532688)											
FC2201227-003	Anonymous	phenols, total (4AAP)	----	E562	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Aggregate Organics (QC Lot: 532699)											
EO2204142-009	MW-18A	phenols, total (4AAP)	----	E562	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Aggregate Organics (QC Lot: 534016)											
EO2204142-025	MW-27A	phenols, total (4AAP)	----	E562	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Aggregate Organics (QC Lot: 534023)											
EO2204142-054	Trip Blank	phenols, total (4AAP)	----	E562	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 524838)											
EO2204142-001	MW-1B	benzene	71-43-2	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		ethylbenzene	100-41-4	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		styrene	100-42-5	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		toluene	108-88-3	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		xylene, m+p-	179601-23-1	E611A	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		xylene, o-	95-47-6	E611A	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 526452)											
EO2204142-021	MW-25A	benzene	71-43-2	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		ethylbenzene	100-41-4	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 526452) - continued											
EO2204142-021	MW-25A	methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		styrene	100-42-5	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		toluene	108-88-3	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		xylene, m+p-	179601-23-1	E611A	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		xylene, o-	95-47-6	E611A	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 526467)											
EO2204142-041	MW-35B	benzene	71-43-2	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		ethylbenzene	100-41-4	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		styrene	100-42-5	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		toluene	108-88-3	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		xylene, m+p-	179601-23-1	E611A	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		xylene, o-	95-47-6	E611A	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 527226)											
EO2204142-001	MW-1B	Acetone	67-64-1	E611F	20	µg/L	<20	<20	0	Diff <2x LOR	----
		benzene	71-43-2	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromobenzene	108-86-1	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromochloromethane	74-97-5	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromodichloromethane	75-27-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromoform	75-25-2	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromomethane	74-83-9	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		butylbenzene, n-	104-51-8	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		butylbenzene, sec-	135-98-8	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		butylbenzene, tert-	98-06-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		carbon disulfide	75-15-0	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		carbon tetrachloride	56-23-5	E611F	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		chlorobenzene	108-90-7	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chloroethane	75-00-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chloroform	67-66-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chloromethane	74-87-3	E611F	2.0	µg/L	<2.0	<2.0	0	Diff <2x LOR	----
		chlorotoluene, 2-	95-49-8	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chlorotoluene, 4-	106-43-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		cymene, p-	99-87-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dibromo-3-chloropropane, 1,2-	96-12-8	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 527226) - continued											
EO2204142-001	MW-1B	dibromochloromethane	124-48-1	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dibromoethane, 1,2-	106-93-4	E611F	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		dibromomethane	74-95-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichlorobenzene, 1,2-	95-50-1	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichlorobenzene, 1,3-	541-73-1	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichlorobenzene, 1,4-	106-46-7	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichlorodifluoromethane	75-71-8	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethane, 1,1-	75-34-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethane, 1,2-	107-06-2	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethylene, 1,1-	75-35-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethylene, cis-1,2-	156-59-2	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethylene, trans-1,2-	156-60-5	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloromethane	75-09-2	E611F	1.0	µg/L	<1.0	<1.0	0	Diff <2x LOR	----
		dichloropropane, 1,2-	78-87-5	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropane, 1,3-	142-28-9	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropane, 2,2-	594-20-7	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropylene, 1,1-	563-58-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropylene, cis-1,3-	10061-01-5	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropylene, trans-1,3-	10061-02-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		ethylbenzene	100-41-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		hexachlorobutadiene	87-68-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		hexane, n-	110-54-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		hexanone, 2-	591-78-6	E611F	20	µg/L	<20	<20	0	Diff <2x LOR	----
		isopropylbenzene	98-82-8	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		methyl ethyl ketone [MEK]	78-93-3	E611F	20	µg/L	<20	<20	0	Diff <2x LOR	----
		methyl isobutyl ketone [MIBK]	108-10-1	E611F	20	µg/L	<20	<20	0	Diff <2x LOR	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		naphthalene	91-20-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		propylbenzene, n-	103-65-1	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		styrene	100-42-5	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tetrachloroethylene	127-18-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		toluene	108-88-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 527226) - continued											
EO2204142-001	MW-1B	trichlorobenzene, 1,2,3-	87-61-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichlorobenzene, 1,2,4-	120-82-1	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichloroethane, 1,1,1-	71-55-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichloroethane, 1,1,2-	79-00-5	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichloroethylene	79-01-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichlorofluoromethane	75-69-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichloropropane, 1,2,3-	96-18-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trimethylbenzene, 1,2,4-	95-63-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trimethylbenzene, 1,3,5-	108-67-8	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		vinyl chloride	75-01-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		xylene, m+p-	179601-23-1	E611F	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		xylene, o-	95-47-6	E611F	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 527259)											
EO2204142-021	MW-25A	Acetone	67-64-1	E611F	20	µg/L	<20	<20	0	Diff <2x LOR	----
		benzene	71-43-2	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromobenzene	108-86-1	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromochloromethane	74-97-5	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromodichloromethane	75-27-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromoform	75-25-2	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromomethane	74-83-9	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		butylbenzene, n-	104-51-8	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		butylbenzene, sec-	135-98-8	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		butylbenzene, tert-	98-06-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		carbon disulfide	75-15-0	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		carbon tetrachloride	56-23-5	E611F	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		chlorobenzene	108-90-7	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chloroethane	75-00-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chloroform	67-66-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chloromethane	74-87-3	E611F	2.0	µg/L	<2.0	<2.0	0	Diff <2x LOR	----
		chlorotoluene, 2-	95-49-8	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chlorotoluene, 4-	106-43-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		cymene, p-	99-87-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dibromo-3-chloropropane, 1,2-	96-12-8	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dibromochloromethane	124-48-1	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 527259) - continued											
EO2204142-021	MW-25A	dibromoethane, 1,2-	106-93-4	E611F	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		dibromomethane	74-95-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichlorobenzene, 1,2-	95-50-1	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichlorobenzene, 1,3-	541-73-1	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichlorobenzene, 1,4-	106-46-7	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichlorodifluoromethane	75-71-8	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethane, 1,1-	75-34-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethane, 1,2-	107-06-2	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethylene, 1,1-	75-35-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethylene, cis-1,2-	156-59-2	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethylene, trans-1,2-	156-60-5	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloromethane	75-09-2	E611F	1.0	µg/L	<1.0	<1.0	0	Diff <2x LOR	----
		dichloropropane, 1,2-	78-87-5	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropane, 1,3-	142-28-9	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropane, 2,2-	594-20-7	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropylene, 1,1-	563-58-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropylene, cis-1,3-	10061-01-5	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropylene, trans-1,3-	10061-02-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		ethylbenzene	100-41-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		hexachlorobutadiene	87-68-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		hexane, n-	110-54-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		hexanone, 2-	591-78-6	E611F	20	µg/L	<20	<20	0	Diff <2x LOR	----
		isopropylbenzene	98-82-8	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		methyl ethyl ketone [MEK]	78-93-3	E611F	20	µg/L	<20	<20	0	Diff <2x LOR	----
		methyl isobutyl ketone [MIBK]	108-10-1	E611F	20	µg/L	<20	<20	0	Diff <2x LOR	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		naphthalene	91-20-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		propylbenzene, n-	103-65-1	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		styrene	100-42-5	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tetrachloroethylene	127-18-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		toluene	108-88-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichlorobenzene, 1,2,3-	87-61-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 527259) - continued											
EO2204142-021	MW-25A	trichlorobenzene, 1,2,4-	120-82-1	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichloroethane, 1,1,1-	71-55-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichloroethane, 1,1,2-	79-00-5	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichloroethylene	79-01-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichlorofluoromethane	75-69-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichloropropane, 1,2,3-	96-18-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trimethylbenzene, 1,2,4-	95-63-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trimethylbenzene, 1,3,5-	108-67-8	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		vinyl chloride	75-01-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		xylene, m+p-	179601-23-1	E611F	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		xylene, o-	95-47-6	E611F	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 527268)											
EO2204142-043	MW-36 Deep	Acetone	67-64-1	E611F	20	µg/L	<20	<20	0	Diff <2x LOR	----
		benzene	71-43-2	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromobenzene	108-86-1	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromochloromethane	74-97-5	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromodichloromethane	75-27-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromoform	75-25-2	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromomethane	74-83-9	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		butylbenzene, n-	104-51-8	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		butylbenzene, sec-	135-98-8	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		butylbenzene, tert-	98-06-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		carbon disulfide	75-15-0	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		carbon tetrachloride	56-23-5	E611F	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		chlorobenzene	108-90-7	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chloroethane	75-00-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chloroform	67-66-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chloromethane	74-87-3	E611F	2.0	µg/L	<2.0	<2.0	0	Diff <2x LOR	----
		chlorotoluene, 2-	95-49-8	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chlorotoluene, 4-	106-43-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		cymene, p-	99-87-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dibromo-3-chloropropane, 1,2-	96-12-8	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dibromochloromethane	124-48-1	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dibromoethane, 1,2-	106-93-4	E611F	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 527268) - continued											
EO2204142-043	MW-36 Deep	dibromomethane	74-95-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichlorobenzene, 1,2-	95-50-1	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichlorobenzene, 1,3-	541-73-1	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichlorobenzene, 1,4-	106-46-7	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichlorodifluoromethane	75-71-8	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethane, 1,1-	75-34-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethane, 1,2-	107-06-2	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethylene, 1,1-	75-35-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethylene, cis-1,2-	156-59-2	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethylene, trans-1,2-	156-60-5	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloromethane	75-09-2	E611F	1.0	µg/L	<1.0	<1.0	0	Diff <2x LOR	----
		dichloropropane, 1,2-	78-87-5	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropane, 1,3-	142-28-9	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropane, 2,2-	594-20-7	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropylene, 1,1-	563-58-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropylene, cis-1,3-	10061-01-5	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropylene, trans-1,3-	10061-02-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		ethylbenzene	100-41-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		hexachlorobutadiene	87-68-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		hexane, n-	110-54-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		hexanone, 2-	591-78-6	E611F	20	µg/L	<20	<20	0	Diff <2x LOR	----
		isopropylbenzene	98-82-8	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		methyl ethyl ketone [MEK]	78-93-3	E611F	20	µg/L	<20	<20	0	Diff <2x LOR	----
		methyl isobutyl ketone [MIBK]	108-10-1	E611F	20	µg/L	<20	<20	0	Diff <2x LOR	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		naphthalene	91-20-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		propylbenzene, n-	103-65-1	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		styrene	100-42-5	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tetrachloroethylene	127-18-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		toluene	108-88-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichlorobenzene, 1,2,3-	87-61-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichlorobenzene, 1,2,4-	120-82-1	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 527268) - continued											
EO2204142-043	MW-36 Deep	trichloroethane, 1,1,1-	71-55-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichloroethane, 1,1,2-	79-00-5	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichloroethylene	79-01-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichlorofluoromethane	75-69-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichloropropane, 1,2,3-	96-18-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trimethylbenzene, 1,2,4-	95-63-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trimethylbenzene, 1,3,5-	108-67-8	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		vinyl chloride	75-01-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		xylene, m+p-	179601-23-1	E611F	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		xylene, o-	95-47-6	E611F	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 529117)											
EO2204142-016	MW-21B	Acetone	67-64-1	E611F	20	µg/L	<20	<20	0	Diff <2x LOR	----
		benzene	71-43-2	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromobenzene	108-86-1	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromochloromethane	74-97-5	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromodichloromethane	75-27-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromoform	75-25-2	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromomethane	74-83-9	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		butylbenzene, n-	104-51-8	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		butylbenzene, sec-	135-98-8	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		butylbenzene, tert-	98-06-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		carbon disulfide	75-15-0	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		carbon tetrachloride	56-23-5	E611F	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		chlorobenzene	108-90-7	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chloroethane	75-00-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chloroform	67-66-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chloromethane	74-87-3	E611F	2.0	µg/L	<2.0	<2.0	0	Diff <2x LOR	----
		chlorotoluene, 2-	95-49-8	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chlorotoluene, 4-	106-43-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		cymene, p-	99-87-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dibromo-3-chloropropane, 1,2-	96-12-8	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dibromochloromethane	124-48-1	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dibromoethane, 1,2-	106-93-4	E611F	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		dibromomethane	74-95-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 529117) - continued											
EO2204142-016	MW-21B	dichlorobenzene, 1,2-	95-50-1	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichlorobenzene, 1,3-	541-73-1	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichlorobenzene, 1,4-	106-46-7	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichlorodifluoromethane	75-71-8	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethane, 1,1-	75-34-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethane, 1,2-	107-06-2	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethylene, 1,1-	75-35-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethylene, cis-1,2-	156-59-2	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethylene, trans-1,2-	156-60-5	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloromethane	75-09-2	E611F	1.0	µg/L	<1.0	<1.0	0	Diff <2x LOR	----
		dichloropropane, 1,2-	78-87-5	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropane, 1,3-	142-28-9	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropane, 2,2-	594-20-7	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropylene, 1,1-	563-58-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropylene, cis-1,3-	10061-01-5	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropylene, trans-1,3-	10061-02-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		ethylbenzene	100-41-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		hexachlorobutadiene	87-68-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		hexane, n-	110-54-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		hexanone, 2-	591-78-6	E611F	20	µg/L	<20	<20	0	Diff <2x LOR	----
		isopropylbenzene	98-82-8	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		methyl ethyl ketone [MEK]	78-93-3	E611F	20	µg/L	<20	<20	0	Diff <2x LOR	----
		methyl isobutyl ketone [MIBK]	108-10-1	E611F	20	µg/L	<20	<20	0	Diff <2x LOR	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		naphthalene	91-20-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		propylbenzene, n-	103-65-1	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		styrene	100-42-5	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tetrachloroethylene	127-18-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		toluene	108-88-3	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichlorobenzene, 1,2,3-	87-61-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichlorobenzene, 1,2,4-	120-82-1	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichloroethane, 1,1,1-	71-55-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 529117) - continued											
EO2204142-016	MW-21B	trichloroethane, 1,1,2-	79-00-5	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichloroethylene	79-01-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichlorofluoromethane	75-69-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichloropropane, 1,2,3-	96-18-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trimethylbenzene, 1,2,4-	95-63-6	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trimethylbenzene, 1,3,5-	108-67-8	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		vinyl chloride	75-01-4	E611F	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		xylene, m+p-	179601-23-1	E611F	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		xylene, o-	95-47-6	E611F	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 524839)											
EO2204142-001	MW-1B	F1 (C6-C10)	----	E581.F1	100	µg/L	<100	<100	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 526453)											
EO2204142-021	MW-25A	F1 (C6-C10)	----	E581.F1	100	µg/L	<100	<100	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 526468)											
EO2204142-041	MW-35B	F1 (C6-C10)	----	E581.F1	100	µg/L	<100	<100	0	Diff <2x LOR	----

Method Blank (MB) Report

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

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 524998)						
conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 524999)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 525053)						
conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 525054)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 525154)						
conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 525155)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 526724)						
conductivity	----	E100	1	µS/cm	1.1	----
Physical Tests (QCLot: 526725)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Anions and Nutrients (QCLot: 521038)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 521039)						
nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	<0.010	----
Anions and Nutrients (QCLot: 521040)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 521041)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 521042)						
nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 521043)						
nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 521044)						
nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	<0.010	----
Anions and Nutrients (QCLot: 521045)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 521046)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 521046) - continued						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 521047)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 521061)						
nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 521062)						
nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	<0.010	----
Anions and Nutrients (QCLot: 521063)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 521064)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 521065)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 522281)						
nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	<0.010	----
Anions and Nutrients (QCLot: 522282)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 522283)						
nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 522284)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 522285)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 536507)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 536515)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 536518)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 536533)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 547730)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 548191)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 548271)						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
Organic / Inorganic Carbon (QCLot: 533784)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 533785)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 533788)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 534348)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Dissolved Metals (QCLot: 528853)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 528853) - continued						
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----
Dissolved Metals (QCLot: 528854)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 528854) - continued						
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----
Dissolved Metals (QCLot: 528855)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 528855) - continued						
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----
Aggregate Organics (QCLot: 523464)						
chemical oxygen demand [COD]	----	E559-L	10	mg/L	<10	----
Aggregate Organics (QCLot: 524643)						
chemical oxygen demand [COD]	----	E559-L	10	mg/L	<10	----
Aggregate Organics (QCLot: 524644)						
chemical oxygen demand [COD]	----	E559-L	10	mg/L	<10	----
Aggregate Organics (QCLot: 524707)						
chemical oxygen demand [COD]	----	E559-L	10	mg/L	<10	----
Aggregate Organics (QCLot: 529414)						
chemical oxygen demand [COD]	----	E559-L	10	mg/L	<10	----
Aggregate Organics (QCLot: 532688)						
phenols, total (4AAP)	----	E562	0.001	mg/L	<0.0010	----
Aggregate Organics (QCLot: 532699)						
phenols, total (4AAP)	----	E562	0.001	mg/L	<0.0010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Aggregate Organics (QCLot: 534016)						
phenols, total (4AAP)	----	E562	0.001	mg/L	<0.0010	----
Aggregate Organics (QCLot: 534023)						
phenols, total (4AAP)	----	E562	0.001	mg/L	<0.0010	----
Volatile Organic Compounds (QCLot: 524838)						
benzene	71-43-2	E611A	0.5	µg/L	<0.50	----
BTEX, total	----	E611A	1	µg/L	<1.0	----
ethylbenzene	100-41-4	E611A	0.5	µg/L	<0.50	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.5	µg/L	<0.50	----
styrene	100-42-5	E611A	0.5	µg/L	<0.50	----
toluene	108-88-3	E611A	0.5	µg/L	<0.50	----
xylene, m+p-	179601-23-1	E611A	0.4	µg/L	<0.40	----
xylene, o-	95-47-6	E611A	0.3	µg/L	<0.30	----
Volatile Organic Compounds (QCLot: 526452)						
benzene	71-43-2	E611A	0.5	µg/L	<0.50	----
BTEX, total	----	E611A	1	µg/L	<1.0	----
ethylbenzene	100-41-4	E611A	0.5	µg/L	<0.50	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.5	µg/L	<0.50	----
styrene	100-42-5	E611A	0.5	µg/L	<0.50	----
toluene	108-88-3	E611A	0.5	µg/L	<0.50	----
xylene, m+p-	179601-23-1	E611A	0.4	µg/L	<0.40	----
xylene, o-	95-47-6	E611A	0.3	µg/L	<0.30	----
Volatile Organic Compounds (QCLot: 526467)						
benzene	71-43-2	E611A	0.5	µg/L	<0.50	----
BTEX, total	----	E611A	1	µg/L	<1.0	----
ethylbenzene	100-41-4	E611A	0.5	µg/L	<0.50	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.5	µg/L	<0.50	----
styrene	100-42-5	E611A	0.5	µg/L	<0.50	----
toluene	108-88-3	E611A	0.5	µg/L	<0.50	----
xylene, m+p-	179601-23-1	E611A	0.4	µg/L	<0.40	----
xylene, o-	95-47-6	E611A	0.3	µg/L	<0.30	----
Volatile Organic Compounds (QCLot: 527226)						
Acetone	67-64-1	E611F	20	µg/L	<20	----
benzene	71-43-2	E611F	0.5	µg/L	<0.50	----
bromobenzene	108-86-1	E611F	0.5	µg/L	<0.50	----
bromochloromethane	74-97-5	E611F	0.5	µg/L	<0.50	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 527226) - continued						
bromodichloromethane	75-27-4	E611F	0.5	µg/L	<0.50	----
bromoform	75-25-2	E611F	0.5	µg/L	<0.50	----
bromomethane	74-83-9	E611F	0.5	µg/L	<0.50	----
butylbenzene, n-	104-51-8	E611F	0.5	µg/L	<0.50	----
butylbenzene, sec-	135-98-8	E611F	0.5	µg/L	<0.50	----
butylbenzene, tert-	98-06-6	E611F	0.5	µg/L	<0.50	----
carbon disulfide	75-15-0	E611F	0.5	µg/L	<0.50	----
carbon tetrachloride	56-23-5	E611F	0.2	µg/L	<0.20	----
chlorobenzene	108-90-7	E611F	0.5	µg/L	<0.50	----
chloroethane	75-00-3	E611F	0.5	µg/L	<0.50	----
chloroform	67-66-3	E611F	0.5	µg/L	<0.50	----
chloromethane	74-87-3	E611F	2	µg/L	<2.0	----
chlorotoluene, 2-	95-49-8	E611F	0.5	µg/L	<0.50	----
chlorotoluene, 4-	106-43-4	E611F	0.5	µg/L	<0.50	----
cymene, p-	99-87-6	E611F	0.5	µg/L	<0.50	----
dibromo-3-chloropropane, 1,2-	96-12-8	E611F	0.5	µg/L	<0.50	----
dibromochloromethane	124-48-1	E611F	0.5	µg/L	<0.50	----
dibromoethane, 1,2-	106-93-4	E611F	0.2	µg/L	<0.20	----
dibromomethane	74-95-3	E611F	0.5	µg/L	<0.50	----
dichlorobenzene, 1,2-	95-50-1	E611F	0.5	µg/L	<0.50	----
dichlorobenzene, 1,3-	541-73-1	E611F	0.5	µg/L	<0.50	----
dichlorobenzene, 1,4-	106-46-7	E611F	0.5	µg/L	<0.50	----
dichlorodifluoromethane	75-71-8	E611F	0.5	µg/L	<0.50	----
dichloroethane, 1,1-	75-34-3	E611F	0.5	µg/L	<0.50	----
dichloroethane, 1,2-	107-06-2	E611F	0.5	µg/L	<0.50	----
dichloroethylene, 1,1-	75-35-4	E611F	0.5	µg/L	<0.50	----
dichloroethylene, cis-1,2-	156-59-2	E611F	0.5	µg/L	<0.50	----
dichloroethylene, trans-1,2-	156-60-5	E611F	0.5	µg/L	<0.50	----
dichloromethane	75-09-2	E611F	1	µg/L	<1.0	----
dichloropropane, 1,2-	78-87-5	E611F	0.5	µg/L	<0.50	----
dichloropropane, 1,3-	142-28-9	E611F	0.5	µg/L	<0.50	----
dichloropropane, 2,2-	594-20-7	E611F	0.5	µg/L	<0.50	----
dichloropropylene, 1,1-	563-58-6	E611F	0.5	µg/L	<0.50	----
dichloropropylene, cis-1,3-	10061-01-5	E611F	0.5	µg/L	<0.50	----
dichloropropylene, trans-1,3-	10061-02-6	E611F	0.5	µg/L	<0.50	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 527226) - continued						
ethylbenzene	100-41-4	E611F	0.5	µg/L	<0.50	----
hexachlorobutadiene	87-68-3	E611F	0.5	µg/L	<0.50	----
hexane, n-	110-54-3	E611F	0.5	µg/L	<0.50	----
hexanone, 2-	591-78-6	E611F	20	µg/L	<20	----
isopropylbenzene	98-82-8	E611F	0.5	µg/L	<0.50	----
methyl ethyl ketone [MEK]	78-93-3	E611F	20	µg/L	<20	----
methyl isobutyl ketone [MIBK]	108-10-1	E611F	20	µg/L	<20	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611F	0.5	µg/L	<0.50	----
naphthalene	91-20-3	E611F	0.5	µg/L	<0.50	----
propylbenzene, n-	103-65-1	E611F	0.5	µg/L	<0.50	----
styrene	100-42-5	E611F	0.5	µg/L	<0.50	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611F	0.5	µg/L	<0.50	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611F	0.5	µg/L	<0.50	----
tetrachloroethylene	127-18-4	E611F	0.5	µg/L	<0.50	----
toluene	108-88-3	E611F	0.5	µg/L	<0.50	----
trichlorobenzene, 1,2,3-	87-61-6	E611F	0.5	µg/L	<0.50	----
trichlorobenzene, 1,2,4-	120-82-1	E611F	0.5	µg/L	<0.50	----
trichloroethane, 1,1,1-	71-55-6	E611F	0.5	µg/L	<0.50	----
trichloroethane, 1,1,2-	79-00-5	E611F	0.5	µg/L	<0.50	----
trichloroethylene	79-01-6	E611F	0.5	µg/L	<0.50	----
trichlorofluoromethane	75-69-4	E611F	0.5	µg/L	<0.50	----
trichloropropane, 1,2,3-	96-18-4	E611F	0.5	µg/L	<0.50	----
trimethylbenzene, 1,2,4-	95-63-6	E611F	0.5	µg/L	<0.50	----
trimethylbenzene, 1,3,5-	108-67-8	E611F	0.5	µg/L	<0.50	----
vinyl chloride	75-01-4	E611F	0.5	µg/L	<0.50	----
xylene, m+p-	179601-23-1	E611F	0.4	µg/L	<0.40	----
xylene, o-	95-47-6	E611F	0.3	µg/L	<0.30	----
Volatile Organic Compounds (QCLot: 527259)						
Acetone	67-64-1	E611F	20	µg/L	<20	----
benzene	71-43-2	E611F	0.5	µg/L	<0.50	----
bromobenzene	108-86-1	E611F	0.5	µg/L	<0.50	----
bromochloromethane	74-97-5	E611F	0.5	µg/L	<0.50	----
bromodichloromethane	75-27-4	E611F	0.5	µg/L	<0.50	----
bromoform	75-25-2	E611F	0.5	µg/L	<0.50	----
bromomethane	74-83-9	E611F	0.5	µg/L	<0.50	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 527259) - continued						
butylbenzene, n-	104-51-8	E611F	0.5	µg/L	<0.50	----
butylbenzene, sec-	135-98-8	E611F	0.5	µg/L	<0.50	----
butylbenzene, tert-	98-06-6	E611F	0.5	µg/L	<0.50	----
carbon disulfide	75-15-0	E611F	0.5	µg/L	<0.50	----
carbon tetrachloride	56-23-5	E611F	0.2	µg/L	<0.20	----
chlorobenzene	108-90-7	E611F	0.5	µg/L	<0.50	----
chloroethane	75-00-3	E611F	0.5	µg/L	<0.50	----
chloroform	67-66-3	E611F	0.5	µg/L	<0.50	----
chloromethane	74-87-3	E611F	2	µg/L	<2.0	----
chlorotoluene, 2-	95-49-8	E611F	0.5	µg/L	<0.50	----
chlorotoluene, 4-	106-43-4	E611F	0.5	µg/L	<0.50	----
cymene, p-	99-87-6	E611F	0.5	µg/L	<0.50	----
dibromo-3-chloropropane, 1,2-	96-12-8	E611F	0.5	µg/L	<0.50	----
dibromochloromethane	124-48-1	E611F	0.5	µg/L	<0.50	----
dibromoethane, 1,2-	106-93-4	E611F	0.2	µg/L	<0.20	----
dibromomethane	74-95-3	E611F	0.5	µg/L	<0.50	----
dichlorobenzene, 1,2-	95-50-1	E611F	0.5	µg/L	<0.50	----
dichlorobenzene, 1,3-	541-73-1	E611F	0.5	µg/L	<0.50	----
dichlorobenzene, 1,4-	106-46-7	E611F	0.5	µg/L	<0.50	----
dichlorodifluoromethane	75-71-8	E611F	0.5	µg/L	<0.50	----
dichloroethane, 1,1-	75-34-3	E611F	0.5	µg/L	<0.50	----
dichloroethane, 1,2-	107-06-2	E611F	0.5	µg/L	<0.50	----
dichloroethylene, 1,1-	75-35-4	E611F	0.5	µg/L	<0.50	----
dichloroethylene, cis-1,2-	156-59-2	E611F	0.5	µg/L	<0.50	----
dichloroethylene, trans-1,2-	156-60-5	E611F	0.5	µg/L	<0.50	----
dichloromethane	75-09-2	E611F	1	µg/L	<1.0	----
dichloropropane, 1,2-	78-87-5	E611F	0.5	µg/L	<0.50	----
dichloropropane, 1,3-	142-28-9	E611F	0.5	µg/L	<0.50	----
dichloropropane, 2,2-	594-20-7	E611F	0.5	µg/L	<0.50	----
dichloropropylene, 1,1-	563-58-6	E611F	0.5	µg/L	<0.50	----
dichloropropylene, cis-1,3-	10061-01-5	E611F	0.5	µg/L	<0.50	----
dichloropropylene, trans-1,3-	10061-02-6	E611F	0.5	µg/L	<0.50	----
ethylbenzene	100-41-4	E611F	0.5	µg/L	<0.50	----
hexachlorobutadiene	87-68-3	E611F	0.5	µg/L	<0.50	----
hexane, n-	110-54-3	E611F	0.5	µg/L	<0.50	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 527259) - continued						
hexanone, 2-	591-78-6	E611F	20	µg/L	<20	----
isopropylbenzene	98-82-8	E611F	0.5	µg/L	<0.50	----
methyl ethyl ketone [MEK]	78-93-3	E611F	20	µg/L	<20	----
methyl isobutyl ketone [MIBK]	108-10-1	E611F	20	µg/L	<20	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611F	0.5	µg/L	<0.50	----
naphthalene	91-20-3	E611F	0.5	µg/L	<0.50	----
propylbenzene, n-	103-65-1	E611F	0.5	µg/L	<0.50	----
styrene	100-42-5	E611F	0.5	µg/L	<0.50	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611F	0.5	µg/L	<0.50	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611F	0.5	µg/L	<0.50	----
tetrachloroethylene	127-18-4	E611F	0.5	µg/L	<0.50	----
toluene	108-88-3	E611F	0.5	µg/L	<0.50	----
trichlorobenzene, 1,2,3-	87-61-6	E611F	0.5	µg/L	<0.50	----
trichlorobenzene, 1,2,4-	120-82-1	E611F	0.5	µg/L	<0.50	----
trichloroethane, 1,1,1-	71-55-6	E611F	0.5	µg/L	<0.50	----
trichloroethane, 1,1,2-	79-00-5	E611F	0.5	µg/L	<0.50	----
trichloroethylene	79-01-6	E611F	0.5	µg/L	<0.50	----
trichlorofluoromethane	75-69-4	E611F	0.5	µg/L	<0.50	----
trichloropropane, 1,2,3-	96-18-4	E611F	0.5	µg/L	<0.50	----
trimethylbenzene, 1,2,4-	95-63-6	E611F	0.5	µg/L	<0.50	----
trimethylbenzene, 1,3,5-	108-67-8	E611F	0.5	µg/L	<0.50	----
vinyl chloride	75-01-4	E611F	0.5	µg/L	<0.50	----
xylene, m+p-	179601-23-1	E611F	0.4	µg/L	<0.40	----
xylene, o-	95-47-6	E611F	0.3	µg/L	<0.30	----
Volatile Organic Compounds (QCLot: 527268)						
Acetone	67-64-1	E611F	20	µg/L	<20	----
benzene	71-43-2	E611F	0.5	µg/L	<0.50	----
bromobenzene	108-86-1	E611F	0.5	µg/L	<0.50	----
bromochloromethane	74-97-5	E611F	0.5	µg/L	<0.50	----
bromodichloromethane	75-27-4	E611F	0.5	µg/L	<0.50	----
bromoform	75-25-2	E611F	0.5	µg/L	<0.50	----
bromomethane	74-83-9	E611F	0.5	µg/L	<0.50	----
butylbenzene, n-	104-51-8	E611F	0.5	µg/L	<0.50	----
butylbenzene, sec-	135-98-8	E611F	0.5	µg/L	<0.50	----
butylbenzene, tert-	98-06-6	E611F	0.5	µg/L	<0.50	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 527268) - continued						
carbon disulfide	75-15-0	E611F	0.5	µg/L	<0.50	----
carbon tetrachloride	56-23-5	E611F	0.2	µg/L	<0.20	----
chlorobenzene	108-90-7	E611F	0.5	µg/L	<0.50	----
chloroethane	75-00-3	E611F	0.5	µg/L	<0.50	----
chloroform	67-66-3	E611F	0.5	µg/L	<0.50	----
chloromethane	74-87-3	E611F	2	µg/L	<2.0	----
chlorotoluene, 2-	95-49-8	E611F	0.5	µg/L	<0.50	----
chlorotoluene, 4-	106-43-4	E611F	0.5	µg/L	<0.50	----
cymene, p-	99-87-6	E611F	0.5	µg/L	<0.50	----
dibromo-3-chloropropane, 1,2-	96-12-8	E611F	0.5	µg/L	<0.50	----
dibromochloromethane	124-48-1	E611F	0.5	µg/L	<0.50	----
dibromoethane, 1,2-	106-93-4	E611F	0.2	µg/L	<0.20	----
dibromomethane	74-95-3	E611F	0.5	µg/L	<0.50	----
dichlorobenzene, 1,2-	95-50-1	E611F	0.5	µg/L	<0.50	----
dichlorobenzene, 1,3-	541-73-1	E611F	0.5	µg/L	<0.50	----
dichlorobenzene, 1,4-	106-46-7	E611F	0.5	µg/L	<0.50	----
dichlorodifluoromethane	75-71-8	E611F	0.5	µg/L	<0.50	----
dichloroethane, 1,1-	75-34-3	E611F	0.5	µg/L	<0.50	----
dichloroethane, 1,2-	107-06-2	E611F	0.5	µg/L	<0.50	----
dichloroethylene, 1,1-	75-35-4	E611F	0.5	µg/L	<0.50	----
dichloroethylene, cis-1,2-	156-59-2	E611F	0.5	µg/L	<0.50	----
dichloroethylene, trans-1,2-	156-60-5	E611F	0.5	µg/L	<0.50	----
dichloromethane	75-09-2	E611F	1	µg/L	<1.0	----
dichloropropane, 1,2-	78-87-5	E611F	0.5	µg/L	<0.50	----
dichloropropane, 1,3-	142-28-9	E611F	0.5	µg/L	<0.50	----
dichloropropane, 2,2-	594-20-7	E611F	0.5	µg/L	<0.50	----
dichloropropylene, 1,1-	563-58-6	E611F	0.5	µg/L	<0.50	----
dichloropropylene, cis-1,3-	10061-01-5	E611F	0.5	µg/L	<0.50	----
dichloropropylene, trans-1,3-	10061-02-6	E611F	0.5	µg/L	<0.50	----
ethylbenzene	100-41-4	E611F	0.5	µg/L	<0.50	----
hexachlorobutadiene	87-68-3	E611F	0.5	µg/L	<0.50	----
hexane, n-	110-54-3	E611F	0.5	µg/L	<0.50	----
hexanone, 2-	591-78-6	E611F	20	µg/L	<20	----
isopropylbenzene	98-82-8	E611F	0.5	µg/L	<0.50	----
methyl ethyl ketone [MEK]	78-93-3	E611F	20	µg/L	<20	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 527268) - continued						
methyl isobutyl ketone [MIBK]	108-10-1	E611F	20	µg/L	<20	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611F	0.5	µg/L	<0.50	----
naphthalene	91-20-3	E611F	0.5	µg/L	<0.50	----
propylbenzene, n-	103-65-1	E611F	0.5	µg/L	<0.50	----
styrene	100-42-5	E611F	0.5	µg/L	<0.50	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611F	0.5	µg/L	<0.50	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611F	0.5	µg/L	<0.50	----
tetrachloroethylene	127-18-4	E611F	0.5	µg/L	<0.50	----
toluene	108-88-3	E611F	0.5	µg/L	<0.50	----
trichlorobenzene, 1,2,3-	87-61-6	E611F	0.5	µg/L	<0.50	----
trichlorobenzene, 1,2,4-	120-82-1	E611F	0.5	µg/L	<0.50	----
trichloroethane, 1,1,1-	71-55-6	E611F	0.5	µg/L	<0.50	----
trichloroethane, 1,1,2-	79-00-5	E611F	0.5	µg/L	<0.50	----
trichloroethylene	79-01-6	E611F	0.5	µg/L	<0.50	----
trichlorofluoromethane	75-69-4	E611F	0.5	µg/L	<0.50	----
trichloropropane, 1,2,3-	96-18-4	E611F	0.5	µg/L	<0.50	----
trimethylbenzene, 1,2,4-	95-63-6	E611F	0.5	µg/L	<0.50	----
trimethylbenzene, 1,3,5-	108-67-8	E611F	0.5	µg/L	<0.50	----
vinyl chloride	75-01-4	E611F	0.5	µg/L	<0.50	----
xylene, m+p-	179601-23-1	E611F	0.4	µg/L	<0.40	----
xylene, o-	95-47-6	E611F	0.3	µg/L	<0.30	----
Volatile Organic Compounds (QCLot: 529117)						
Acetone	67-64-1	E611F	20	µg/L	<20	----
benzene	71-43-2	E611F	0.5	µg/L	<0.50	----
bromobenzene	108-86-1	E611F	0.5	µg/L	<0.50	----
bromochloromethane	74-97-5	E611F	0.5	µg/L	<0.50	----
bromodichloromethane	75-27-4	E611F	0.5	µg/L	<0.50	----
bromoform	75-25-2	E611F	0.5	µg/L	<0.50	----
bromomethane	74-83-9	E611F	0.5	µg/L	<0.50	----
butylbenzene, n-	104-51-8	E611F	0.5	µg/L	<0.50	----
butylbenzene, sec-	135-98-8	E611F	0.5	µg/L	<0.50	----
butylbenzene, tert-	98-06-6	E611F	0.5	µg/L	<0.50	----
carbon disulfide	75-15-0	E611F	0.5	µg/L	<0.50	----
carbon tetrachloride	56-23-5	E611F	0.2	µg/L	<0.20	----
chlorobenzene	108-90-7	E611F	0.5	µg/L	<0.50	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 529117) - continued						
chloroethane	75-00-3	E611F	0.5	µg/L	<0.50	----
chloroform	67-66-3	E611F	0.5	µg/L	<0.50	----
chloromethane	74-87-3	E611F	2	µg/L	<2.0	----
chlorotoluene, 2-	95-49-8	E611F	0.5	µg/L	<0.50	----
chlorotoluene, 4-	106-43-4	E611F	0.5	µg/L	<0.50	----
cymene, p-	99-87-6	E611F	0.5	µg/L	<0.50	----
dibromo-3-chloropropane, 1,2-	96-12-8	E611F	0.5	µg/L	<0.50	----
dibromochloromethane	124-48-1	E611F	0.5	µg/L	<0.50	----
dibromoethane, 1,2-	106-93-4	E611F	0.2	µg/L	<0.20	----
dibromomethane	74-95-3	E611F	0.5	µg/L	<0.50	----
dichlorobenzene, 1,2-	95-50-1	E611F	0.5	µg/L	<0.50	----
dichlorobenzene, 1,3-	541-73-1	E611F	0.5	µg/L	<0.50	----
dichlorobenzene, 1,4-	106-46-7	E611F	0.5	µg/L	<0.50	----
dichlorodifluoromethane	75-71-8	E611F	0.5	µg/L	<0.50	----
dichloroethane, 1,1-	75-34-3	E611F	0.5	µg/L	<0.50	----
dichloroethane, 1,2-	107-06-2	E611F	0.5	µg/L	<0.50	----
dichloroethylene, 1,1-	75-35-4	E611F	0.5	µg/L	<0.50	----
dichloroethylene, cis-1,2-	156-59-2	E611F	0.5	µg/L	<0.50	----
dichloroethylene, trans-1,2-	156-60-5	E611F	0.5	µg/L	<0.50	----
dichloromethane	75-09-2	E611F	1	µg/L	<1.0	----
dichloropropane, 1,2-	78-87-5	E611F	0.5	µg/L	<0.50	----
dichloropropane, 1,3-	142-28-9	E611F	0.5	µg/L	<0.50	----
dichloropropane, 2,2-	594-20-7	E611F	0.5	µg/L	<0.50	----
dichloropropylene, 1,1-	563-58-6	E611F	0.5	µg/L	<0.50	----
dichloropropylene, cis-1,3-	10061-01-5	E611F	0.5	µg/L	<0.50	----
dichloropropylene, trans-1,3-	10061-02-6	E611F	0.5	µg/L	<0.50	----
ethylbenzene	100-41-4	E611F	0.5	µg/L	<0.50	----
hexachlorobutadiene	87-68-3	E611F	0.5	µg/L	<0.50	----
hexane, n-	110-54-3	E611F	0.5	µg/L	<0.50	----
hexanone, 2-	591-78-6	E611F	20	µg/L	<20	----
isopropylbenzene	98-82-8	E611F	0.5	µg/L	<0.50	----
methyl ethyl ketone [MEK]	78-93-3	E611F	20	µg/L	<20	----
methyl isobutyl ketone [MIBK]	108-10-1	E611F	20	µg/L	<20	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611F	0.5	µg/L	<0.50	----
naphthalene	91-20-3	E611F	0.5	µg/L	<0.50	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 529117) - continued						
propylbenzene, n-	103-65-1	E611F	0.5	µg/L	<0.50	----
styrene	100-42-5	E611F	0.5	µg/L	<0.50	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611F	0.5	µg/L	<0.50	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611F	0.5	µg/L	<0.50	----
tetrachloroethylene	127-18-4	E611F	0.5	µg/L	<0.50	----
toluene	108-88-3	E611F	0.5	µg/L	<0.50	----
trichlorobenzene, 1,2,3-	87-61-6	E611F	0.5	µg/L	<0.50	----
trichlorobenzene, 1,2,4-	120-82-1	E611F	0.5	µg/L	<0.50	----
trichloroethane, 1,1,1-	71-55-6	E611F	0.5	µg/L	<0.50	----
trichloroethane, 1,1,2-	79-00-5	E611F	0.5	µg/L	<0.50	----
trichloroethylene	79-01-6	E611F	0.5	µg/L	<0.50	----
trichlorofluoromethane	75-69-4	E611F	0.5	µg/L	<0.50	----
trichloropropane, 1,2,3-	96-18-4	E611F	0.5	µg/L	<0.50	----
trimethylbenzene, 1,2,4-	95-63-6	E611F	0.5	µg/L	<0.50	----
trimethylbenzene, 1,3,5-	108-67-8	E611F	0.5	µg/L	<0.50	----
vinyl chloride	75-01-4	E611F	0.5	µg/L	<0.50	----
xylene, m+p-	179601-23-1	E611F	0.4	µg/L	<0.40	----
xylene, o-	95-47-6	E611F	0.3	µg/L	<0.30	----
Hydrocarbons (QCLot: 524839)						
F1 (C6-C10)	----	E581.F1	100	µg/L	<100	----
Hydrocarbons (QCLot: 525094)						
F2 (C10-C16)	----	E601	100	µg/L	<100	----
Hydrocarbons (QCLot: 525908)						
F2 (C10-C16)	----	E601	100	µg/L	<100	----
Hydrocarbons (QCLot: 525989)						
F2 (C10-C16)	----	E601	100	µg/L	<100	----
Hydrocarbons (QCLot: 526453)						
F1 (C6-C10)	----	E581.F1	100	µg/L	<100	----
Hydrocarbons (QCLot: 526468)						
F1 (C6-C10)	----	E581.F1	100	µg/L	<100	----

Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 524997)									
pH	----	E108	----	pH units	6 pH units	101	97.0	103	----
Physical Tests (QCLot: 524998)									
conductivity	----	E100	1	µS/cm	1412 µS/cm	99.4	90.0	110	----
Physical Tests (QCLot: 524999)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	102	85.0	115	----
Physical Tests (QCLot: 525052)									
pH	----	E108	----	pH units	6 pH units	102	97.0	103	----
Physical Tests (QCLot: 525053)									
conductivity	----	E100	1	µS/cm	1412 µS/cm	99.7	90.0	110	----
Physical Tests (QCLot: 525054)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	101	85.0	115	----
Physical Tests (QCLot: 525153)									
pH	----	E108	----	pH units	6 pH units	101	97.0	103	----
Physical Tests (QCLot: 525154)									
conductivity	----	E100	1	µS/cm	1412 µS/cm	98.5	90.0	110	----
Physical Tests (QCLot: 525155)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	102	85.0	115	----
Physical Tests (QCLot: 526723)									
pH	----	E108	----	pH units	6 pH units	100	97.0	103	----
Physical Tests (QCLot: 526724)									
conductivity	----	E100	1	µS/cm	1412 µS/cm	95.6	90.0	110	----
Physical Tests (QCLot: 526725)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	104	85.0	115	----
Anions and Nutrients (QCLot: 521038)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 521039)									
nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	0.5 mg/L	94.4	90.0	110	----
Anions and Nutrients (QCLot: 521040)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 521041)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	101	90.0	110	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 521042)									
nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 521043)									
nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 521044)									
nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	0.5 mg/L	95.5	90.0	110	----
Anions and Nutrients (QCLot: 521045)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	105	90.0	110	----
Anions and Nutrients (QCLot: 521046)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 521047)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 521061)									
nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 521062)									
nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	0.5 mg/L	94.2	90.0	110	----
Anions and Nutrients (QCLot: 521063)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	105	90.0	110	----
Anions and Nutrients (QCLot: 521064)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 521065)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 522281)									
nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	0.5 mg/L	95.2	90.0	110	----
Anions and Nutrients (QCLot: 522282)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 522283)									
nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 522284)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 522285)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 536507)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----
Anions and Nutrients (QCLot: 536515)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	100	85.0	115	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 536518)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	100	85.0	115	----
Anions and Nutrients (QCLot: 536533)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	99.4	85.0	115	----
Anions and Nutrients (QCLot: 547730)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	96.5	75.0	125	----
Anions and Nutrients (QCLot: 548191)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	96.1	75.0	125	----
Anions and Nutrients (QCLot: 548271)									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	98.8	75.0	125	----
Organic / Inorganic Carbon (QCLot: 533784)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	119	80.0	120	----
Organic / Inorganic Carbon (QCLot: 533785)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	105	80.0	120	----
Organic / Inorganic Carbon (QCLot: 533788)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	112	80.0	120	----
Organic / Inorganic Carbon (QCLot: 534348)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	110	80.0	120	----
Dissolved Metals (QCLot: 528853)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	108	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	94.7	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	94.6	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.0	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	109	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	99.6	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	98.4	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	97.9	80.0	120	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	97.5	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	98.5	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	97.5	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.5	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	100	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	94.3	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 528853) - continued									
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	100	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	95.0	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	94.8	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.3	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	96.0	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	95.1	80.0	120	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	89.0	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	113	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	91.1	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	94.1	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	96.2	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	103	80.0	120	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	83.8	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	103	80.0	120	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	104	80.0	120	----
tin, dissolved	7440-31-5	E421	----	mg/L	0.5 mg/L	93.9	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	101	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	104	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	101	80.0	120	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	101	80.0	120	----
Dissolved Metals (QCLot: 528854)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	107	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	93.5	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	96.1	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	99.7	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	100	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	102	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.2	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	95.7	80.0	120	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	97.5	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	99.0	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.7	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 528854) - continued									
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.3	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	98.4	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.0	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	96.1	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	94.9	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.8	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	99.1	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	95.6	80.0	120	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	102	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	92.5	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	112	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	89.4	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	98.7	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	96.1	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	101	80.0	120	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	88.4	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	102	80.0	120	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	102	80.0	120	----
tin, dissolved	7440-31-5	E421	----	mg/L	0.5 mg/L	93.0	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	99.4	80.0	120	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	103	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	107	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.2	80.0	120	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	100.0	80.0	120	----
Dissolved Metals (QCLot: 528855)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	105	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	89.1	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	95.9	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.6	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	103	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.6	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 528855) - continued									
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.7	80.0	120	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	95.2	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	96.8	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.6	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	98.0	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	100	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	93.9	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	95.0	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	95.2	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.8	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	95.3	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	95.5	80.0	120	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	92.9	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	113	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	86.3	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	98.4	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	105	80.0	120	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	87.4	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	97.5	80.0	120	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	97.5	80.0	120	----
tin, dissolved	7440-31-5	E421	----	mg/L	0.5 mg/L	90.2	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.2	80.0	120	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	101	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	112	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	97.2	80.0	120	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	100	80.0	120	----
Aggregate Organics (QCLot: 523464)									
chemical oxygen demand [COD]	----	E559-L	10	mg/L	100 mg/L	94.7	85.0	115	----
Aggregate Organics (QCLot: 524643)									
chemical oxygen demand [COD]	----	E559-L	10	mg/L	100 mg/L	96.8	85.0	115	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Aggregate Organics (QCLot: 524644)									
chemical oxygen demand [COD]	----	E559-L	10	mg/L	100 mg/L	94.7	85.0	115	----
Aggregate Organics (QCLot: 524707)									
chemical oxygen demand [COD]	----	E559-L	10	mg/L	100 mg/L	94.0	85.0	115	----
Aggregate Organics (QCLot: 529414)									
chemical oxygen demand [COD]	----	E559-L	10	mg/L	100 mg/L	98.8	85.0	115	----
Aggregate Organics (QCLot: 532688)									
phenols, total (4AAP)	----	E562	0.001	mg/L	0.02 mg/L	91.2	85.0	115	----
Aggregate Organics (QCLot: 532699)									
phenols, total (4AAP)	----	E562	0.001	mg/L	0.02 mg/L	92.6	85.0	115	----
Aggregate Organics (QCLot: 534016)									
phenols, total (4AAP)	----	E562	0.001	mg/L	0.02 mg/L	96.2	85.0	115	----
Aggregate Organics (QCLot: 534023)									
phenols, total (4AAP)	----	E562	0.001	mg/L	0.02 mg/L	101	85.0	115	----
Volatile Organic Compounds (QCLot: 524838)									
benzene	71-43-2	E611A	0.5	µg/L	100 µg/L	82.3	70.0	130	----
ethylbenzene	100-41-4	E611A	0.5	µg/L	100 µg/L	82.0	70.0	130	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.5	µg/L	100 µg/L	98.0	70.0	130	----
styrene	100-42-5	E611A	0.5	µg/L	100 µg/L	97.7	70.0	130	----
toluene	108-88-3	E611A	0.5	µg/L	100 µg/L	85.7	70.0	130	----
xylene, m+p-	179601-23-1	E611A	0.4	µg/L	200 µg/L	88.4	70.0	130	----
xylene, o-	95-47-6	E611A	0.3	µg/L	100 µg/L	98.8	70.0	130	----
Volatile Organic Compounds (QCLot: 526452)									
benzene	71-43-2	E611A	0.5	µg/L	100 µg/L	89.4	70.0	130	----
ethylbenzene	100-41-4	E611A	0.5	µg/L	100 µg/L	83.1	70.0	130	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.5	µg/L	100 µg/L	85.6	70.0	130	----
styrene	100-42-5	E611A	0.5	µg/L	100 µg/L	94.3	70.0	130	----
toluene	108-88-3	E611A	0.5	µg/L	100 µg/L	87.4	70.0	130	----
xylene, m+p-	179601-23-1	E611A	0.4	µg/L	200 µg/L	80.8	70.0	130	----
xylene, o-	95-47-6	E611A	0.3	µg/L	100 µg/L	99.5	70.0	130	----
Volatile Organic Compounds (QCLot: 526467)									
benzene	71-43-2	E611A	0.5	µg/L	100 µg/L	95.3	70.0	130	----
ethylbenzene	100-41-4	E611A	0.5	µg/L	100 µg/L	89.3	70.0	130	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.5	µg/L	100 µg/L	108	70.0	130	----
styrene	100-42-5	E611A	0.5	µg/L	100 µg/L	104	70.0	130	----
toluene	108-88-3	E611A	0.5	µg/L	100 µg/L	108	70.0	130	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Volatile Organic Compounds (QCLot: 526467) - continued									
xylene, m+p-	179601-23-1	E611A	0.4	µg/L	200 µg/L	107	70.0	130	----
xylene, o-	95-47-6	E611A	0.3	µg/L	100 µg/L	104	70.0	130	----
Volatile Organic Compounds (QCLot: 527226)									
Acetone	67-64-1	E611F	20	µg/L	100 µg/L	90.0	70.0	130	----
benzene	71-43-2	E611F	0.5	µg/L	100 µg/L	108	70.0	130	----
bromobenzene	108-86-1	E611F	0.5	µg/L	100 µg/L	93.6	70.0	130	----
bromochloromethane	74-97-5	E611F	0.5	µg/L	100 µg/L	104	70.0	130	----
bromodichloromethane	75-27-4	E611F	0.5	µg/L	100 µg/L	99.8	70.0	130	----
bromoform	75-25-2	E611F	0.5	µg/L	100 µg/L	95.2	70.0	130	----
bromomethane	74-83-9	E611F	0.5	µg/L	100 µg/L	96.0	70.0	130	----
butylbenzene, n-	104-51-8	E611F	0.5	µg/L	100 µg/L	105	70.0	130	----
butylbenzene, sec-	135-98-8	E611F	0.5	µg/L	100 µg/L	109	70.0	130	----
butylbenzene, tert-	98-06-6	E611F	0.5	µg/L	100 µg/L	108	70.0	130	----
carbon disulfide	75-15-0	E611F	0.5	µg/L	100 µg/L	94.3	70.0	130	----
carbon tetrachloride	56-23-5	E611F	0.2	µg/L	100 µg/L	106	70.0	130	----
chlorobenzene	108-90-7	E611F	0.5	µg/L	100 µg/L	99.0	70.0	130	----
chloroethane	75-00-3	E611F	0.5	µg/L	100 µg/L	93.6	70.0	130	----
chloroform	67-66-3	E611F	0.5	µg/L	100 µg/L	96.7	70.0	130	----
chloromethane	74-87-3	E611F	2	µg/L	100 µg/L	84.0	70.0	130	----
chlorotoluene, 2-	95-49-8	E611F	0.5	µg/L	100 µg/L	102	70.0	130	----
chlorotoluene, 4-	106-43-4	E611F	0.5	µg/L	100 µg/L	99.8	70.0	130	----
cymene, p-	99-87-6	E611F	0.5	µg/L	100 µg/L	103	70.0	130	----
dibromo-3-chloropropane, 1,2-	96-12-8	E611F	0.5	µg/L	100 µg/L	94.5	70.0	130	----
dibromochloromethane	124-48-1	E611F	0.5	µg/L	100 µg/L	104	70.0	130	----
dibromoethane, 1,2-	106-93-4	E611F	0.2	µg/L	100 µg/L	86.7	70.0	130	----
dibromomethane	74-95-3	E611F	0.5	µg/L	100 µg/L	107	70.0	130	----
dichlorobenzene, 1,2-	95-50-1	E611F	0.5	µg/L	100 µg/L	104	70.0	130	----
dichlorobenzene, 1,3-	541-73-1	E611F	0.5	µg/L	100 µg/L	101	70.0	130	----
dichlorobenzene, 1,4-	106-46-7	E611F	0.5	µg/L	100 µg/L	102	70.0	130	----
dichlorodifluoromethane	75-71-8	E611F	0.5	µg/L	100 µg/L	87.1	70.0	130	----
dichloroethane, 1,1-	75-34-3	E611F	0.5	µg/L	100 µg/L	106	70.0	130	----
dichloroethane, 1,2-	107-06-2	E611F	0.5	µg/L	100 µg/L	93.5	70.0	130	----
dichloroethylene, 1,1-	75-35-4	E611F	0.5	µg/L	100 µg/L	95.6	70.0	130	----
dichloroethylene, cis-1,2-	156-59-2	E611F	0.5	µg/L	100 µg/L	89.0	70.0	130	----
dichloroethylene, trans-1,2-	156-60-5	E611F	0.5	µg/L	100 µg/L	98.5	70.0	130	----
dichloromethane	75-09-2	E611F	1	µg/L	100 µg/L	103	70.0	130	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 527226) - continued									
dichloropropane, 1,2-	78-87-5	E611F	0.5	µg/L	100 µg/L	95.7	70.0	130	----
dichloropropane, 1,3-	142-28-9	E611F	0.5	µg/L	100 µg/L	90.0	70.0	130	----
dichloropropane, 2,2-	594-20-7	E611F	0.5	µg/L	100 µg/L	78.0	70.0	130	----
dichloropropylene, 1,1-	563-58-6	E611F	0.5	µg/L	100 µg/L	93.8	70.0	130	----
dichloropropylene, cis-1,3-	10061-01-5	E611F	0.5	µg/L	100 µg/L	85.6	70.0	130	----
dichloropropylene, trans-1,3-	10061-02-6	E611F	0.5	µg/L	100 µg/L	76.1	70.0	130	----
ethylbenzene	100-41-4	E611F	0.5	µg/L	100 µg/L	99.8	70.0	130	----
hexachlorobutadiene	87-68-3	E611F	0.5	µg/L	100 µg/L	96.7	70.0	130	----
hexane, n-	110-54-3	E611F	0.5	µg/L	100 µg/L	106	70.0	130	----
hexanone, 2-	591-78-6	E611F	20	µg/L	100 µg/L	83.1	70.0	130	----
isopropylbenzene	98-82-8	E611F	0.5	µg/L	100 µg/L	106	70.0	130	----
methyl ethyl ketone [MEK]	78-93-3	E611F	20	µg/L	100 µg/L	95.0	70.0	130	----
methyl isobutyl ketone [MIBK]	108-10-1	E611F	20	µg/L	100 µg/L	82.2	70.0	130	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611F	0.5	µg/L	100 µg/L	102	70.0	130	----
naphthalene	91-20-3	E611F	0.5	µg/L	100 µg/L	100	70.0	130	----
propylbenzene, n-	103-65-1	E611F	0.5	µg/L	100 µg/L	103	70.0	130	----
styrene	100-42-5	E611F	0.5	µg/L	100 µg/L	97.3	70.0	130	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611F	0.5	µg/L	100 µg/L	92.7	70.0	130	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611F	0.5	µg/L	100 µg/L	90.4	70.0	130	----
tetrachloroethylene	127-18-4	E611F	0.5	µg/L	100 µg/L	101	70.0	130	----
toluene	108-88-3	E611F	0.5	µg/L	100 µg/L	103	70.0	130	----
trichlorobenzene, 1,2,3-	87-61-6	E611F	0.5	µg/L	100 µg/L	89.9	70.0	130	----
trichlorobenzene, 1,2,4-	120-82-1	E611F	0.5	µg/L	100 µg/L	89.7	70.0	130	----
trichloroethane, 1,1,1-	71-55-6	E611F	0.5	µg/L	100 µg/L	94.8	70.0	130	----
trichloroethane, 1,1,2-	79-00-5	E611F	0.5	µg/L	100 µg/L	95.7	70.0	130	----
trichloroethylene	79-01-6	E611F	0.5	µg/L	100 µg/L	101	70.0	130	----
trichlorofluoromethane	75-69-4	E611F	0.5	µg/L	100 µg/L	98.6	70.0	130	----
trichloropropane, 1,2,3-	96-18-4	E611F	0.5	µg/L	100 µg/L	95.8	70.0	130	----
trimethylbenzene, 1,2,4-	95-63-6	E611F	0.5	µg/L	100 µg/L	103	70.0	130	----
trimethylbenzene, 1,3,5-	108-67-8	E611F	0.5	µg/L	100 µg/L	100	70.0	130	----
vinyl chloride	75-01-4	E611F	0.5	µg/L	100 µg/L	88.9	70.0	130	----
xylene, m+p-	179601-23-1	E611F	0.4	µg/L	200 µg/L	98.3	70.0	130	----
xylene, o-	95-47-6	E611F	0.3	µg/L	100 µg/L	98.7	70.0	130	----
Volatile Organic Compounds (QCLot: 527259)									
Acetone	67-64-1	E611F	20	µg/L	100 µg/L	106	70.0	130	----
benzene	71-43-2	E611F	0.5	µg/L	100 µg/L	109	70.0	130	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 527259) - continued									
bromobenzene	108-86-1	E611F	0.5	µg/L	100 µg/L	91.1	70.0	130	----
bromochloromethane	74-97-5	E611F	0.5	µg/L	100 µg/L	118	70.0	130	----
bromodichloromethane	75-27-4	E611F	0.5	µg/L	100 µg/L	125	70.0	130	----
bromoform	75-25-2	E611F	0.5	µg/L	100 µg/L	83.6	70.0	130	----
bromomethane	74-83-9	E611F	0.5	µg/L	100 µg/L	119	70.0	130	----
butylbenzene, n-	104-51-8	E611F	0.5	µg/L	100 µg/L	107	70.0	130	----
butylbenzene, sec-	135-98-8	E611F	0.5	µg/L	100 µg/L	96.2	70.0	130	----
butylbenzene, tert-	98-06-6	E611F	0.5	µg/L	100 µg/L	91.7	70.0	130	----
carbon disulfide	75-15-0	E611F	0.5	µg/L	100 µg/L	117	70.0	130	----
carbon tetrachloride	56-23-5	E611F	0.2	µg/L	100 µg/L	120	70.0	130	----
chlorobenzene	108-90-7	E611F	0.5	µg/L	100 µg/L	97.1	70.0	130	----
chloroethane	75-00-3	E611F	0.5	µg/L	100 µg/L	98.3	70.0	130	----
chloroform	67-66-3	E611F	0.5	µg/L	100 µg/L	120	70.0	130	----
chloromethane	74-87-3	E611F	2	µg/L	100 µg/L	86.9	70.0	130	----
chlorotoluene, 2-	95-49-8	E611F	0.5	µg/L	100 µg/L	94.8	70.0	130	----
chlorotoluene, 4-	106-43-4	E611F	0.5	µg/L	100 µg/L	89.7	70.0	130	----
cymene, p-	99-87-6	E611F	0.5	µg/L	100 µg/L	89.8	70.0	130	----
dibromo-3-chloropropane, 1,2-	96-12-8	E611F	0.5	µg/L	100 µg/L	93.5	70.0	130	----
dibromochloromethane	124-48-1	E611F	0.5	µg/L	100 µg/L	96.6	70.0	130	----
dibromoethane, 1,2-	106-93-4	E611F	0.2	µg/L	100 µg/L	86.5	70.0	130	----
dibromomethane	74-95-3	E611F	0.5	µg/L	100 µg/L	109	70.0	130	----
dichlorobenzene, 1,2-	95-50-1	E611F	0.5	µg/L	100 µg/L	100	70.0	130	----
dichlorobenzene, 1,3-	541-73-1	E611F	0.5	µg/L	100 µg/L	102	70.0	130	----
dichlorobenzene, 1,4-	106-46-7	E611F	0.5	µg/L	100 µg/L	108	70.0	130	----
dichlorodifluoromethane	75-71-8	E611F	0.5	µg/L	100 µg/L	79.9	70.0	130	----
dichloroethane, 1,1-	75-34-3	E611F	0.5	µg/L	100 µg/L	119	70.0	130	----
dichloroethane, 1,2-	107-06-2	E611F	0.5	µg/L	100 µg/L	115	70.0	130	----
dichloroethylene, 1,1-	75-35-4	E611F	0.5	µg/L	100 µg/L	116	70.0	130	----
dichloroethylene, cis-1,2-	156-59-2	E611F	0.5	µg/L	100 µg/L	115	70.0	130	----
dichloroethylene, trans-1,2-	156-60-5	E611F	0.5	µg/L	100 µg/L	122	70.0	130	----
dichloromethane	75-09-2	E611F	1	µg/L	100 µg/L	128	70.0	130	----
dichloropropane, 1,2-	78-87-5	E611F	0.5	µg/L	100 µg/L	103	70.0	130	----
dichloropropane, 1,3-	142-28-9	E611F	0.5	µg/L	100 µg/L	82.6	70.0	130	----
dichloropropane, 2,2-	594-20-7	E611F	0.5	µg/L	100 µg/L	116	70.0	130	----
dichloropropylene, 1,1-	563-58-6	E611F	0.5	µg/L	100 µg/L	98.1	70.0	130	----
dichloropropylene, cis-1,3-	10061-01-5	E611F	0.5	µg/L	100 µg/L	102	70.0	130	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 527259) - continued									
dichloropropylene, trans-1,3-	10061-02-6	E611F	0.5	µg/L	100 µg/L	74.0	70.0	130	----
ethylbenzene	100-41-4	E611F	0.5	µg/L	100 µg/L	76.6	70.0	130	----
hexachlorobutadiene	87-68-3	E611F	0.5	µg/L	100 µg/L	99.1	70.0	130	----
hexane, n-	110-54-3	E611F	0.5	µg/L	100 µg/L	103	70.0	130	----
hexanone, 2-	591-78-6	E611F	20	µg/L	100 µg/L	# 51.8	70.0	130	LCS-L
isopropylbenzene	98-82-8	E611F	0.5	µg/L	100 µg/L	86.0	70.0	130	----
methyl ethyl ketone [MEK]	78-93-3	E611F	20	µg/L	100 µg/L	81.8	70.0	130	----
methyl isobutyl ketone [MIBK]	108-10-1	E611F	20	µg/L	100 µg/L	# 66.7	70.0	130	LCS-L
methyl-tert-butyl ether [MTBE]	1634-04-4	E611F	0.5	µg/L	100 µg/L	101	70.0	130	----
naphthalene	91-20-3	E611F	0.5	µg/L	100 µg/L	80.6	70.0	130	----
propylbenzene, n-	103-65-1	E611F	0.5	µg/L	100 µg/L	83.6	70.0	130	----
styrene	100-42-5	E611F	0.5	µg/L	100 µg/L	75.7	70.0	130	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611F	0.5	µg/L	100 µg/L	92.0	70.0	130	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611F	0.5	µg/L	100 µg/L	91.5	70.0	130	----
tetrachloroethylene	127-18-4	E611F	0.5	µg/L	100 µg/L	87.1	70.0	130	----
toluene	108-88-3	E611F	0.5	µg/L	100 µg/L	81.6	70.0	130	----
trichlorobenzene, 1,2,3-	87-61-6	E611F	0.5	µg/L	100 µg/L	95.6	70.0	130	----
trichlorobenzene, 1,2,4-	120-82-1	E611F	0.5	µg/L	100 µg/L	96.4	70.0	130	----
trichloroethane, 1,1,1-	71-55-6	E611F	0.5	µg/L	100 µg/L	117	70.0	130	----
trichloroethane, 1,1,2-	79-00-5	E611F	0.5	µg/L	100 µg/L	93.9	70.0	130	----
trichloroethylene	79-01-6	E611F	0.5	µg/L	100 µg/L	116	70.0	130	----
trichlorofluoromethane	75-69-4	E611F	0.5	µg/L	100 µg/L	116	70.0	130	----
trichloropropane, 1,2,3-	96-18-4	E611F	0.5	µg/L	100 µg/L	94.3	70.0	130	----
trimethylbenzene, 1,2,4-	95-63-6	E611F	0.5	µg/L	100 µg/L	89.5	70.0	130	----
trimethylbenzene, 1,3,5-	108-67-8	E611F	0.5	µg/L	100 µg/L	81.4	70.0	130	----
vinyl chloride	75-01-4	E611F	0.5	µg/L	100 µg/L	83.6	70.0	130	----
xylene, m+p-	179601-23-1	E611F	0.4	µg/L	200 µg/L	89.6	70.0	130	----
xylene, o-	95-47-6	E611F	0.3	µg/L	100 µg/L	75.4	70.0	130	----
Volatile Organic Compounds (QCLot: 527268)									
Acetone	67-64-1	E611F	20	µg/L	100 µg/L	118	70.0	130	----
benzene	71-43-2	E611F	0.5	µg/L	100 µg/L	98.7	70.0	130	----
bromobenzene	108-86-1	E611F	0.5	µg/L	100 µg/L	99.9	70.0	130	----
bromochloromethane	74-97-5	E611F	0.5	µg/L	100 µg/L	102	70.0	130	----
bromodichloromethane	75-27-4	E611F	0.5	µg/L	100 µg/L	111	70.0	130	----
bromoform	75-25-2	E611F	0.5	µg/L	100 µg/L	99.5	70.0	130	----
bromomethane	74-83-9	E611F	0.5	µg/L	100 µg/L	90.9	70.0	130	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 527268) - continued									
butylbenzene, n-	104-51-8	E611F	0.5	µg/L	100 µg/L	87.6	70.0	130	----
butylbenzene, sec-	135-98-8	E611F	0.5	µg/L	100 µg/L	94.0	70.0	130	----
butylbenzene, tert-	98-06-6	E611F	0.5	µg/L	100 µg/L	91.8	70.0	130	----
carbon disulfide	75-15-0	E611F	0.5	µg/L	100 µg/L	91.9	70.0	130	----
carbon tetrachloride	56-23-5	E611F	0.2	µg/L	100 µg/L	89.0	70.0	130	----
chlorobenzene	108-90-7	E611F	0.5	µg/L	100 µg/L	100	70.0	130	----
chloroethane	75-00-3	E611F	0.5	µg/L	100 µg/L	93.4	70.0	130	----
chloroform	67-66-3	E611F	0.5	µg/L	100 µg/L	102	70.0	130	----
chloromethane	74-87-3	E611F	2	µg/L	100 µg/L	82.2	70.0	130	----
chlorotoluene, 2-	95-49-8	E611F	0.5	µg/L	100 µg/L	95.3	70.0	130	----
chlorotoluene, 4-	106-43-4	E611F	0.5	µg/L	100 µg/L	92.3	70.0	130	----
cymene, p-	99-87-6	E611F	0.5	µg/L	100 µg/L	88.6	70.0	130	----
dibromo-3-chloropropane, 1,2-	96-12-8	E611F	0.5	µg/L	100 µg/L	108	70.0	130	----
dibromochloromethane	124-48-1	E611F	0.5	µg/L	100 µg/L	100	70.0	130	----
dibromoethane, 1,2-	106-93-4	E611F	0.2	µg/L	100 µg/L	101	70.0	130	----
dibromomethane	74-95-3	E611F	0.5	µg/L	100 µg/L	103	70.0	130	----
dichlorobenzene, 1,2-	95-50-1	E611F	0.5	µg/L	100 µg/L	97.2	70.0	130	----
dichlorobenzene, 1,3-	541-73-1	E611F	0.5	µg/L	100 µg/L	95.8	70.0	130	----
dichlorobenzene, 1,4-	106-46-7	E611F	0.5	µg/L	100 µg/L	98.4	70.0	130	----
dichlorodifluoromethane	75-71-8	E611F	0.5	µg/L	100 µg/L	87.0	70.0	130	----
dichloroethane, 1,1-	75-34-3	E611F	0.5	µg/L	100 µg/L	103	70.0	130	----
dichloroethane, 1,2-	107-06-2	E611F	0.5	µg/L	100 µg/L	106	70.0	130	----
dichloroethylene, 1,1-	75-35-4	E611F	0.5	µg/L	100 µg/L	90.5	70.0	130	----
dichloroethylene, cis-1,2-	156-59-2	E611F	0.5	µg/L	100 µg/L	85.9	70.0	130	----
dichloroethylene, trans-1,2-	156-60-5	E611F	0.5	µg/L	100 µg/L	96.1	70.0	130	----
dichloromethane	75-09-2	E611F	1	µg/L	100 µg/L	104	70.0	130	----
dichloropropane, 1,2-	78-87-5	E611F	0.5	µg/L	100 µg/L	97.0	70.0	130	----
dichloropropane, 1,3-	142-28-9	E611F	0.5	µg/L	100 µg/L	104	70.0	130	----
dichloropropane, 2,2-	594-20-7	E611F	0.5	µg/L	100 µg/L	87.8	70.0	130	----
dichloropropylene, 1,1-	563-58-6	E611F	0.5	µg/L	100 µg/L	92.2	70.0	130	----
dichloropropylene, cis-1,3-	10061-01-5	E611F	0.5	µg/L	100 µg/L	100	70.0	130	----
dichloropropylene, trans-1,3-	10061-02-6	E611F	0.5	µg/L	100 µg/L	91.7	70.0	130	----
ethylbenzene	100-41-4	E611F	0.5	µg/L	100 µg/L	86.3	70.0	130	----
hexachlorobutadiene	87-68-3	E611F	0.5	µg/L	100 µg/L	78.6	70.0	130	----
hexane, n-	110-54-3	E611F	0.5	µg/L	100 µg/L	91.3	70.0	130	----
hexanone, 2-	591-78-6	E611F	20	µg/L	100 µg/L	91.7	70.0	130	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 527268) - continued									
isopropylbenzene	98-82-8	E611F	0.5	µg/L	100 µg/L	91.3	70.0	130	----
methyl ethyl ketone [MEK]	78-93-3	E611F	20	µg/L	100 µg/L	110	70.0	130	----
methyl isobutyl ketone [MIBK]	108-10-1	E611F	20	µg/L	100 µg/L	95.0	70.0	130	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611F	0.5	µg/L	100 µg/L	95.1	70.0	130	----
naphthalene	91-20-3	E611F	0.5	µg/L	100 µg/L	96.0	70.0	130	----
propylbenzene, n-	103-65-1	E611F	0.5	µg/L	100 µg/L	90.1	70.0	130	----
styrene	100-42-5	E611F	0.5	µg/L	100 µg/L	88.8	70.0	130	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611F	0.5	µg/L	100 µg/L	94.0	70.0	130	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611F	0.5	µg/L	100 µg/L	113	70.0	130	----
tetrachloroethylene	127-18-4	E611F	0.5	µg/L	100 µg/L	84.2	70.0	130	----
toluene	108-88-3	E611F	0.5	µg/L	100 µg/L	86.7	70.0	130	----
trichlorobenzene, 1,2,3-	87-61-6	E611F	0.5	µg/L	100 µg/L	90.9	70.0	130	----
trichlorobenzene, 1,2,4-	120-82-1	E611F	0.5	µg/L	100 µg/L	87.0	70.0	130	----
trichloroethane, 1,1,1-	71-55-6	E611F	0.5	µg/L	100 µg/L	90.2	70.0	130	----
trichloroethane, 1,1,2-	79-00-5	E611F	0.5	µg/L	100 µg/L	107	70.0	130	----
trichloroethylene	79-01-6	E611F	0.5	µg/L	100 µg/L	87.4	70.0	130	----
trichlorofluoromethane	75-69-4	E611F	0.5	µg/L	100 µg/L	89.3	70.0	130	----
trichloropropane, 1,2,3-	96-18-4	E611F	0.5	µg/L	100 µg/L	118	70.0	130	----
trimethylbenzene, 1,2,4-	95-63-6	E611F	0.5	µg/L	100 µg/L	89.0	70.0	130	----
trimethylbenzene, 1,3,5-	108-67-8	E611F	0.5	µg/L	100 µg/L	85.7	70.0	130	----
vinyl chloride	75-01-4	E611F	0.5	µg/L	100 µg/L	82.4	70.0	130	----
xylene, m+p-	179601-23-1	E611F	0.4	µg/L	200 µg/L	90.2	70.0	130	----
xylene, o-	95-47-6	E611F	0.3	µg/L	100 µg/L	86.5	70.0	130	----
Volatile Organic Compounds (QCLot: 529117)									
Acetone	67-64-1	E611F	20	µg/L	100 µg/L	113	70.0	130	----
benzene	71-43-2	E611F	0.5	µg/L	100 µg/L	101	70.0	130	----
bromobenzene	108-86-1	E611F	0.5	µg/L	100 µg/L	102	70.0	130	----
bromochloromethane	74-97-5	E611F	0.5	µg/L	100 µg/L	107	70.0	130	----
bromodichloromethane	75-27-4	E611F	0.5	µg/L	100 µg/L	112	70.0	130	----
bromoform	75-25-2	E611F	0.5	µg/L	100 µg/L	101	70.0	130	----
bromomethane	74-83-9	E611F	0.5	µg/L	100 µg/L	113	70.0	130	----
butylbenzene, n-	104-51-8	E611F	0.5	µg/L	100 µg/L	86.4	70.0	130	----
butylbenzene, sec-	135-98-8	E611F	0.5	µg/L	100 µg/L	93.5	70.0	130	----
butylbenzene, tert-	98-06-6	E611F	0.5	µg/L	100 µg/L	91.4	70.0	130	----
carbon disulfide	75-15-0	E611F	0.5	µg/L	100 µg/L	102	70.0	130	----
carbon tetrachloride	56-23-5	E611F	0.2	µg/L	100 µg/L	92.6	70.0	130	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 529117) - continued									
chlorobenzene	108-90-7	E611F	0.5	µg/L	100 µg/L	101	70.0	130	----
chloroethane	75-00-3	E611F	0.5	µg/L	100 µg/L	100.0	70.0	130	----
chloroform	67-66-3	E611F	0.5	µg/L	100 µg/L	104	70.0	130	----
chloromethane	74-87-3	E611F	2	µg/L	100 µg/L	97.2	70.0	130	----
chlorotoluene, 2-	95-49-8	E611F	0.5	µg/L	100 µg/L	95.6	70.0	130	----
chlorotoluene, 4-	106-43-4	E611F	0.5	µg/L	100 µg/L	94.1	70.0	130	----
cymene, p-	99-87-6	E611F	0.5	µg/L	100 µg/L	89.1	70.0	130	----
dibromo-3-chloropropane, 1,2-	96-12-8	E611F	0.5	µg/L	100 µg/L	95.3	70.0	130	----
dibromochloromethane	124-48-1	E611F	0.5	µg/L	100 µg/L	102	70.0	130	----
dibromoethane, 1,2-	106-93-4	E611F	0.2	µg/L	100 µg/L	103	70.0	130	----
dibromomethane	74-95-3	E611F	0.5	µg/L	100 µg/L	108	70.0	130	----
dichlorobenzene, 1,2-	95-50-1	E611F	0.5	µg/L	100 µg/L	97.0	70.0	130	----
dichlorobenzene, 1,3-	541-73-1	E611F	0.5	µg/L	100 µg/L	96.9	70.0	130	----
dichlorobenzene, 1,4-	106-46-7	E611F	0.5	µg/L	100 µg/L	99.8	70.0	130	----
dichlorodifluoromethane	75-71-8	E611F	0.5	µg/L	100 µg/L	123	70.0	130	----
dichloroethane, 1,1-	75-34-3	E611F	0.5	µg/L	100 µg/L	105	70.0	130	----
dichloroethane, 1,2-	107-06-2	E611F	0.5	µg/L	100 µg/L	110	70.0	130	----
dichloroethylene, 1,1-	75-35-4	E611F	0.5	µg/L	100 µg/L	95.0	70.0	130	----
dichloroethylene, cis-1,2-	156-59-2	E611F	0.5	µg/L	100 µg/L	89.2	70.0	130	----
dichloroethylene, trans-1,2-	156-60-5	E611F	0.5	µg/L	100 µg/L	101	70.0	130	----
dichloromethane	75-09-2	E611F	1	µg/L	100 µg/L	110	70.0	130	----
dichloropropane, 1,2-	78-87-5	E611F	0.5	µg/L	100 µg/L	105	70.0	130	----
dichloropropane, 1,3-	142-28-9	E611F	0.5	µg/L	100 µg/L	104	70.0	130	----
dichloropropane, 2,2-	594-20-7	E611F	0.5	µg/L	100 µg/L	122	70.0	130	----
dichloropropylene, 1,1-	563-58-6	E611F	0.5	µg/L	100 µg/L	94.5	70.0	130	----
dichloropropylene, cis-1,3-	10061-01-5	E611F	0.5	µg/L	100 µg/L	110	70.0	130	----
dichloropropylene, trans-1,3-	10061-02-6	E611F	0.5	µg/L	100 µg/L	101	70.0	130	----
ethylbenzene	100-41-4	E611F	0.5	µg/L	100 µg/L	84.3	70.0	130	----
hexachlorobutadiene	87-68-3	E611F	0.5	µg/L	100 µg/L	89.4	70.0	130	----
hexane, n-	110-54-3	E611F	0.5	µg/L	100 µg/L	95.4	70.0	130	----
hexanone, 2-	591-78-6	E611F	20	µg/L	100 µg/L	78.2	70.0	130	----
isopropylbenzene	98-82-8	E611F	0.5	µg/L	100 µg/L	90.9	70.0	130	----
methyl ethyl ketone [MEK]	78-93-3	E611F	20	µg/L	100 µg/L	102	70.0	130	----
methyl isobutyl ketone [MIBK]	108-10-1	E611F	20	µg/L	100 µg/L	84.8	70.0	130	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611F	0.5	µg/L	100 µg/L	103	70.0	130	----
naphthalene	91-20-3	E611F	0.5	µg/L	100 µg/L	92.5	70.0	130	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 529117) - continued									
propylbenzene, n-	103-65-1	E611F	0.5	µg/L	100 µg/L	89.3	70.0	130	----
styrene	100-42-5	E611F	0.5	µg/L	100 µg/L	88.7	70.0	130	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611F	0.5	µg/L	100 µg/L	94.5	70.0	130	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611F	0.5	µg/L	100 µg/L	100	70.0	130	----
tetrachloroethylene	127-18-4	E611F	0.5	µg/L	100 µg/L	87.4	70.0	130	----
toluene	108-88-3	E611F	0.5	µg/L	100 µg/L	86.9	70.0	130	----
trichlorobenzene, 1,2,3-	87-61-6	E611F	0.5	µg/L	100 µg/L	92.2	70.0	130	----
trichlorobenzene, 1,2,4-	120-82-1	E611F	0.5	µg/L	100 µg/L	94.9	70.0	130	----
trichloroethane, 1,1,1-	71-55-6	E611F	0.5	µg/L	100 µg/L	93.2	70.0	130	----
trichloroethane, 1,1,2-	79-00-5	E611F	0.5	µg/L	100 µg/L	108	70.0	130	----
trichloroethylene	79-01-6	E611F	0.5	µg/L	100 µg/L	91.3	70.0	130	----
trichlorofluoromethane	75-69-4	E611F	0.5	µg/L	100 µg/L	96.4	70.0	130	----
trichloropropane, 1,2,3-	96-18-4	E611F	0.5	µg/L	100 µg/L	115	70.0	130	----
trimethylbenzene, 1,2,4-	95-63-6	E611F	0.5	µg/L	100 µg/L	89.2	70.0	130	----
trimethylbenzene, 1,3,5-	108-67-8	E611F	0.5	µg/L	100 µg/L	85.7	70.0	130	----
vinyl chloride	75-01-4	E611F	0.5	µg/L	100 µg/L	92.9	70.0	130	----
xylene, m+p-	179601-23-1	E611F	0.4	µg/L	200 µg/L	90.4	70.0	130	----
xylene, o-	95-47-6	E611F	0.3	µg/L	100 µg/L	85.8	70.0	130	----
Hydrocarbons (QCLot: 524839)									
F1 (C6-C10)	----	E581.F1	100	µg/L	2750 µg/L	82.6	70.0	130	----
Hydrocarbons (QCLot: 525094)									
F2 (C10-C16)	----	E601	100	µg/L	3260 µg/L	109	70.0	130	----
Hydrocarbons (QCLot: 525908)									
F2 (C10-C16)	----	E601	100	µg/L	3260 µg/L	113	70.0	130	----
Hydrocarbons (QCLot: 525989)									
F2 (C10-C16)	----	E601	100	µg/L	3260 µg/L	109	70.0	130	----
Hydrocarbons (QCLot: 526453)									
F1 (C6-C10)	----	E581.F1	100	µg/L	2750 µg/L	102	70.0	130	----
Hydrocarbons (QCLot: 526468)									
F1 (C6-C10)	----	E581.F1	100	µg/L	2750 µg/L	84.2	70.0	130	----

Qualifiers

Qualifier	Description
LCS-L	Lab Control Sample recovery was below ALS DQO. Reference Material and/or Matrix Spike results were acceptable. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.

Matrix Spike (MS) Report

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

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 521038)										
EO2204382-006	Anonymous	fluoride	16984-48-8	E235.F	1.07 mg/L	1 mg/L	107	75.0	125	----
Anions and Nutrients (QCLot: 521039)										
EO2204382-006	Anonymous	nitrite (as N)	14797-65-0	E235.NO2	0.524 mg/L	0.5 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 521040)										
EO2204382-006	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	107 mg/L	100 mg/L	107	75.0	125	----
Anions and Nutrients (QCLot: 521041)										
EO2204382-006	Anonymous	chloride	16887-00-6	E235.Cl	103 mg/L	100 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 521042)										
EO2204382-006	Anonymous	nitrate (as N)	14797-55-8	E235.NO3	2.54 mg/L	2.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 521043)										
FC2201218-004	Anonymous	nitrate (as N)	14797-55-8	E235.NO3	2.59 mg/L	2.5 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 521044)										
FC2201218-004	Anonymous	nitrite (as N)	14797-65-0	E235.NO2	0.528 mg/L	0.5 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 521045)										
FC2201218-004	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	106 mg/L	100 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 521046)										
FC2201218-004	Anonymous	fluoride	16984-48-8	E235.F	1.03 mg/L	1 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 521047)										
FC2201218-004	Anonymous	chloride	16887-00-6	E235.Cl	104 mg/L	100 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 521061)										
EO2204142-031	MW-30A	nitrate (as N)	14797-55-8	E235.NO3	2.60 mg/L	2.5 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 521062)										
EO2204142-031	MW-30A	nitrite (as N)	14797-65-0	E235.NO2	0.502 mg/L	0.5 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 521063)										
EO2204142-031	MW-30A	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 521064)										
EO2204142-031	MW-30A	fluoride	16984-48-8	E235.F	1.02 mg/L	1 mg/L	102	75.0	125	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 521065)										
EO2204142-031	MW-30A	chloride	16887-00-6	E235.Cl	103 mg/L	100 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 522281)										
EO2204142-054	Trip Blank	nitrite (as N)	14797-65-0	E235.NO2	0.507 mg/L	0.5 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 522282)										
EO2204142-054	Trip Blank	sulfate (as SO4)	14808-79-8	E235.SO4	104 mg/L	100 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 522283)										
EO2204142-054	Trip Blank	nitrate (as N)	14797-55-8	E235.NO3	2.46 mg/L	2.5 mg/L	98.5	75.0	125	----
Anions and Nutrients (QCLot: 522284)										
EO2204142-054	Trip Blank	fluoride	16984-48-8	E235.F	1.09 mg/L	1 mg/L	109	75.0	125	----
Anions and Nutrients (QCLot: 522285)										
EO2204142-054	Trip Blank	chloride	16887-00-6	E235.Cl	102 mg/L	100 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 536507)										
FC2201231-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0992 mg/L	0.1 mg/L	99.2	75.0	125	----
Anions and Nutrients (QCLot: 536515)										
EO2204142-002	MW-1C	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 536518)										
EO2204142-022	MW-25B	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 536533)										
EO2204142-054	Trip Blank	ammonia, total (as N)	7664-41-7	E298	0.0979 mg/L	0.1 mg/L	97.9	75.0	125	----
Anions and Nutrients (QCLot: 547730)										
EO2204142-002	MW-1C	Kjeldahl nitrogen, total [TKN]	----	E318	2.50 mg/L	2.5 mg/L	100	70.0	130	----
Anions and Nutrients (QCLot: 548191)										
EO2204142-021	MW-25A	Kjeldahl nitrogen, total [TKN]	----	E318	2.48 mg/L	2.5 mg/L	99.4	70.0	130	----
Anions and Nutrients (QCLot: 548271)										
EO2204142-054	Trip Blank	Kjeldahl nitrogen, total [TKN]	----	E318	2.96 mg/L	2.5 mg/L	118	70.0	130	----
Organic / Inorganic Carbon (QCLot: 533784)										
EO2204142-002	MW-1C	carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	5 mg/L	ND	70.0	130	----
Organic / Inorganic Carbon (QCLot: 533785)										
EO2204142-022	MW-25B	carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	5 mg/L	ND	70.0	130	----
Organic / Inorganic Carbon (QCLot: 533788)										
EO2204142-043	MW-36 Deep									

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Organic / Inorganic Carbon (QCLot: 533788) - continued										
EO2204142-043	MW-36 Deep	carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	5 mg/L	ND	70.0	130	----
Organic / Inorganic Carbon (QCLot: 534348)										
EO2204282-005	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	5.87 mg/L	5 mg/L	117	70.0	130	----
Dissolved Metals (QCLot: 528853)										
EO2204142-002	MW-1C	aluminum, dissolved	7429-90-5	E421	0.256 mg/L	0.2 mg/L	128	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0259 mg/L	0.02 mg/L	130	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0211 mg/L	0.02 mg/L	106	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0409 mg/L	0.04 mg/L	102	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00915 mg/L	0.01 mg/L	91.5	70.0	130	----
		boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00411 mg/L	0.004 mg/L	103	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cesium, dissolved	7440-46-2	E421	0.0102 mg/L	0.01 mg/L	102	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0415 mg/L	0.04 mg/L	104	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.03 mg/L	2 mg/L	102	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0192 mg/L	0.02 mg/L	95.9	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0274 mg/L	0.02 mg/L	137	70.0	130	MES
		nickel, dissolved	7440-02-0	E421	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	11.3 mg/L	10 mg/L	113	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		rubidium, dissolved	7440-17-7	E421	0.0215 mg/L	0.02 mg/L	107	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0432 mg/L	0.04 mg/L	108	70.0	130	----
		silicon, dissolved	7440-21-3	E421	13.4 mg/L	10 mg/L	134	70.0	130	MES
		silver, dissolved	7440-22-4	E421	0.00371 mg/L	0.004 mg/L	92.7	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		tellurium, dissolved	13494-80-9	E421	0.0466 mg/L	0.04 mg/L	116	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00387 mg/L	0.004 mg/L	96.8	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 528853) - continued										
EO2204142-002	MW-1C	thorium, dissolved	7440-29-1	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0276 mg/L	0.02 mg/L	138	70.0	130	MES
		titanium, dissolved	7440-32-6	E421	0.0525 mg/L	0.04 mg/L	131	70.0	130	MES
		tungsten, dissolved	7440-33-7	E421	0.0242 mg/L	0.02 mg/L	121	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00441 mg/L	0.004 mg/L	110	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.113 mg/L	0.1 mg/L	113	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.379 mg/L	0.4 mg/L	94.8	70.0	130	----
		zirconium, dissolved	7440-67-7	E421	0.0515 mg/L	0.04 mg/L	129	70.0	130	----
Dissolved Metals (QCLot: 528854)										
EO2204142-022	MW-25B	aluminum, dissolved	7429-90-5	E421	0.196 mg/L	0.2 mg/L	97.8	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0190 mg/L	0.02 mg/L	94.9	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0358 mg/L	0.04 mg/L	89.6	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00886 mg/L	0.01 mg/L	88.6	70.0	130	----
		boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00386 mg/L	0.004 mg/L	96.6	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cesium, dissolved	7440-46-2	E421	0.00942 mg/L	0.01 mg/L	94.2	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0394 mg/L	0.04 mg/L	98.4	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0188 mg/L	0.02 mg/L	94.0	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0183 mg/L	0.02 mg/L	91.4	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.98 mg/L	2 mg/L	99.1	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0182 mg/L	0.02 mg/L	91.0	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0358 mg/L	0.04 mg/L	89.6	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	10.2 mg/L	10 mg/L	102	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		rubidium, dissolved	7440-17-7	E421	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		silicon, dissolved	7440-21-3	E421	10.6 mg/L	10 mg/L	106	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00349 mg/L	0.004 mg/L	87.2	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 528854) - continued										
EO2204142-022	MW-25B	sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		tellurium, dissolved	13494-80-9	E421	0.0345 mg/L	0.04 mg/L	86.2	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00355 mg/L	0.004 mg/L	88.6	70.0	130	----
		thorium, dissolved	7440-29-1	E421	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0187 mg/L	0.02 mg/L	93.7	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0413 mg/L	0.04 mg/L	103	70.0	130	----
		tungsten, dissolved	7440-33-7	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00402 mg/L	0.004 mg/L	100	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.107 mg/L	0.1 mg/L	107	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.346 mg/L	0.4 mg/L	86.5	70.0	130	----
		zirconium, dissolved	7440-67-7	E421	0.0406 mg/L	0.04 mg/L	102	70.0	130	----
Dissolved Metals (QCLot: 528855)										
EO2204142-042	MW-35C	aluminum, dissolved	7429-90-5	E421	0.206 mg/L	0.2 mg/L	103	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0417 mg/L	0.04 mg/L	104	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00872 mg/L	0.01 mg/L	87.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00414 mg/L	0.004 mg/L	104	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cesium, dissolved	7440-46-2	E421	0.00975 mg/L	0.01 mg/L	97.5	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0400 mg/L	0.04 mg/L	100	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0199 mg/L	0.02 mg/L	99.7	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0186 mg/L	0.02 mg/L	92.8	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.00 mg/L	2 mg/L	100	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0184 mg/L	0.02 mg/L	91.8	70.0	130	----
		lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0377 mg/L	0.04 mg/L	94.2	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	10.7 mg/L	10 mg/L	107	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 528855) - continued										
EO2204142-042	MW-35C	potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		rubidium, dissolved	7440-17-7	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0420 mg/L	0.04 mg/L	105	70.0	130	----
		silicon, dissolved	7440-21-3	E421	11.4 mg/L	10 mg/L	114	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00346 mg/L	0.004 mg/L	86.6	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		tellurium, dissolved	13494-80-9	E421	0.0354 mg/L	0.04 mg/L	88.5	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00367 mg/L	0.004 mg/L	91.7	70.0	130	----
		thorium, dissolved	7440-29-1	E421	0.0178 mg/L	0.02 mg/L	89.0	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0196 mg/L	0.02 mg/L	98.1	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0432 mg/L	0.04 mg/L	108	70.0	130	----
		tungsten, dissolved	7440-33-7	E421	0.0198 mg/L	0.02 mg/L	98.9	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.108 mg/L	0.1 mg/L	108	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.356 mg/L	0.4 mg/L	89.0	70.0	130	----
		zirconium, dissolved	7440-67-7	E421	0.0416 mg/L	0.04 mg/L	104	70.0	130	----
Aggregate Organics (QCLot: 523464)										
EO2204142-002	MW-1C	chemical oxygen demand [COD]	----	E559-L	98 mg/L	100 mg/L	97.5	75.0	125	----
Aggregate Organics (QCLot: 524643)										
EO2204142-012	MW-19B	chemical oxygen demand [COD]	----	E559-L	94 mg/L	100 mg/L	94.0	75.0	125	----
Aggregate Organics (QCLot: 524644)										
EO2204142-032	MW-30B	chemical oxygen demand [COD]	----	E559-L	98 mg/L	100 mg/L	97.7	75.0	125	----
Aggregate Organics (QCLot: 524707)										
EO2204142-045	MW-37A	chemical oxygen demand [COD]	----	E559-L	92 mg/L	100 mg/L	92.0	75.0	125	----
Aggregate Organics (QCLot: 529414)										
EO2204142-040	MW-35A	chemical oxygen demand [COD]	----	E559-L	ND mg/L	100 mg/L	ND	75.0	125	----
Aggregate Organics (QCLot: 532688)										
FC2201227-003	Anonymous	phenols, total (4AAP)	----	E562	0.0203 mg/L	0.02 mg/L	102	75.0	125	----
Aggregate Organics (QCLot: 532699)										
EO2204142-009	MW-18A	phenols, total (4AAP)	----	E562	0.0225 mg/L	0.02 mg/L	112	75.0	125	----
Aggregate Organics (QCLot: 534016)										

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Aggregate Organics (QCLot: 534016) - continued										
EO2204142-025	MW-27A	phenols, total (4AAP)	----	E562	0.0194 mg/L	0.02 mg/L	97.2	75.0	125	----
Aggregate Organics (QCLot: 534023)										
EO2204142-054	Trip Blank	phenols, total (4AAP)	----	E562	0.0200 mg/L	0.02 mg/L	100	75.0	125	----
Volatile Organic Compounds (QCLot: 524838)										
EO2204142-002	MW-1C	benzene	71-43-2	E611A	75.6 µg/L	100 µg/L	75.6	50.0	140	----
		ethylbenzene	100-41-4	E611A	72.1 µg/L	100 µg/L	72.1	50.0	140	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	88.3 µg/L	100 µg/L	88.3	50.0	140	----
		styrene	100-42-5	E611A	88.6 µg/L	100 µg/L	88.6	50.0	140	----
		toluene	108-88-3	E611A	71.7 µg/L	100 µg/L	71.7	50.0	140	----
		xylene, m+p-	179601-23-1	E611A	156 µg/L	200 µg/L	77.9	50.0	140	----
		xylene, o-	95-47-6	E611A	88.7 µg/L	100 µg/L	88.7	50.0	140	----
Volatile Organic Compounds (QCLot: 526452)										
EO2204142-022	MW-25B	benzene	71-43-2	E611A	77.5 µg/L	100 µg/L	77.5	50.0	140	----
		ethylbenzene	100-41-4	E611A	78.7 µg/L	100 µg/L	78.7	50.0	140	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	74.8 µg/L	100 µg/L	74.8	50.0	140	----
		styrene	100-42-5	E611A	92.6 µg/L	100 µg/L	92.6	50.0	140	----
		toluene	108-88-3	E611A	85.4 µg/L	100 µg/L	85.4	50.0	140	----
		xylene, m+p-	179601-23-1	E611A	154 µg/L	200 µg/L	77.2	50.0	140	----
		xylene, o-	95-47-6	E611A	87.0 µg/L	100 µg/L	87.0	50.0	140	----
Volatile Organic Compounds (QCLot: 526467)										
EO2204142-042	MW-35C	benzene	71-43-2	E611A	102 µg/L	100 µg/L	102	50.0	140	----
		ethylbenzene	100-41-4	E611A	94.4 µg/L	100 µg/L	94.4	50.0	140	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	98.0 µg/L	100 µg/L	98.0	50.0	140	----
		styrene	100-42-5	E611A	109 µg/L	100 µg/L	109	50.0	140	----
		toluene	108-88-3	E611A	89.0 µg/L	100 µg/L	89.0	50.0	140	----
		xylene, m+p-	179601-23-1	E611A	176 µg/L	200 µg/L	88.0	50.0	140	----
		xylene, o-	95-47-6	E611A	94.1 µg/L	100 µg/L	94.1	50.0	140	----
Volatile Organic Compounds (QCLot: 527226)										
EO2204142-001	MW-1B	Acetone	67-64-1	E611F	92 µg/L	100 µg/L	92.1	60.0	140	----
		benzene	71-43-2	E611F	110 µg/L	100 µg/L	110	60.0	140	----
		bromobenzene	108-86-1	E611F	95.0 µg/L	100 µg/L	95.0	60.0	140	----
		bromochloromethane	74-97-5	E611F	106 µg/L	100 µg/L	106	60.0	140	----
		bromodichloromethane	75-27-4	E611F	102 µg/L	100 µg/L	102	60.0	140	----
		bromoform	75-25-2	E611F	96.1 µg/L	100 µg/L	96.1	60.0	140	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 527226) - continued										
EO2204142-001	MW-1B	bromomethane	74-83-9	E611F	96.9 µg/L	100 µg/L	96.9	60.0	140	----
		butylbenzene, n-	104-51-8	E611F	114 µg/L	100 µg/L	114	60.0	140	----
		butylbenzene, sec-	135-98-8	E611F	111 µg/L	100 µg/L	111	60.0	140	----
		butylbenzene, tert-	98-06-6	E611F	110 µg/L	100 µg/L	110	60.0	140	----
		carbon disulfide	75-15-0	E611F	94.0 µg/L	100 µg/L	94.0	60.0	140	----
		carbon tetrachloride	56-23-5	E611F	108 µg/L	100 µg/L	108	60.0	140	----
		chlorobenzene	108-90-7	E611F	100 µg/L	100 µg/L	100	60.0	140	----
		chloroethane	75-00-3	E611F	102 µg/L	100 µg/L	102	60.0	140	----
		chloroform	67-66-3	E611F	98.6 µg/L	100 µg/L	98.6	60.0	140	----
		chloromethane	74-87-3	E611F	81.7 µg/L	100 µg/L	81.7	60.0	140	----
		chlorotoluene, 2-	95-49-8	E611F	104 µg/L	100 µg/L	104	60.0	140	----
		chlorotoluene, 4-	106-43-4	E611F	102 µg/L	100 µg/L	102	60.0	140	----
		cymene, p-	99-87-6	E611F	105 µg/L	100 µg/L	105	60.0	140	----
		dibromo-3-chloropropane, 1,2-	96-12-8	E611F	94.6 µg/L	100 µg/L	94.6	60.0	140	----
		dibromochloromethane	124-48-1	E611F	104 µg/L	100 µg/L	104	60.0	140	----
		dibromoethane, 1,2-	106-93-4	E611F	85.8 µg/L	100 µg/L	85.8	60.0	140	----
		dibromomethane	74-95-3	E611F	110 µg/L	100 µg/L	110	60.0	140	----
		dichlorobenzene, 1,2-	95-50-1	E611F	107 µg/L	100 µg/L	107	60.0	140	----
		dichlorobenzene, 1,3-	541-73-1	E611F	111 µg/L	100 µg/L	111	60.0	140	----
		dichlorobenzene, 1,4-	106-46-7	E611F	112 µg/L	100 µg/L	112	60.0	140	----
		dichlorodifluoromethane	75-71-8	E611F	77.4 µg/L	100 µg/L	77.4	60.0	140	----
		dichloroethane, 1,1-	75-34-3	E611F	107 µg/L	100 µg/L	107	60.0	140	----
		dichloroethane, 1,2-	107-06-2	E611F	95.8 µg/L	100 µg/L	95.8	60.0	140	----
		dichloroethylene, 1,1-	75-35-4	E611F	96.4 µg/L	100 µg/L	96.4	60.0	140	----
		dichloroethylene, cis-1,2-	156-59-2	E611F	89.9 µg/L	100 µg/L	89.9	60.0	140	----
		dichloroethylene, trans-1,2-	156-60-5	E611F	101 µg/L	100 µg/L	101	60.0	140	----
		dichloromethane	75-09-2	E611F	105 µg/L	100 µg/L	105	60.0	140	----
		dichloropropane, 1,2-	78-87-5	E611F	97.3 µg/L	100 µg/L	97.3	60.0	140	----
		dichloropropane, 1,3-	142-28-9	E611F	95.8 µg/L	100 µg/L	95.8	60.0	140	----
		dichloropropane, 2,2-	594-20-7	E611F	80.9 µg/L	100 µg/L	80.9	60.0	140	----
		dichloropropylene, 1,1-	563-58-6	E611F	95.8 µg/L	100 µg/L	95.8	60.0	140	----
		dichloropropylene, cis-1,3-	10061-01-5	E611F	86.4 µg/L	100 µg/L	86.4	60.0	140	----
		dichloropropylene, trans-1,3-	10061-02-6	E611F	77.7 µg/L	100 µg/L	77.7	60.0	140	----
		ethylbenzene	100-41-4	E611F	101 µg/L	100 µg/L	101	60.0	140	----
		hexachlorobutadiene	87-68-3	E611F	103 µg/L	100 µg/L	103	60.0	140	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 527226) - continued										
EO2204142-001	MW-1B	hexane, n-	110-54-3	E611F	104 µg/L	100 µg/L	104	60.0	140	----
		hexanone, 2-	591-78-6	E611F	76 µg/L	100 µg/L	76.0	60.0	140	----
		isopropylbenzene	98-82-8	E611F	107 µg/L	100 µg/L	107	60.0	140	----
		methyl ethyl ketone [MEK]	78-93-3	E611F	87 µg/L	100 µg/L	87.2	60.0	140	----
		methyl isobutyl ketone [MIBK]	108-10-1	E611F	81 µg/L	100 µg/L	80.8	60.0	140	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611F	105 µg/L	100 µg/L	105	60.0	140	----
		naphthalene	91-20-3	E611F	101 µg/L	100 µg/L	101	60.0	140	----
		propylbenzene, n-	103-65-1	E611F	104 µg/L	100 µg/L	104	60.0	140	----
		styrene	100-42-5	E611F	96.7 µg/L	100 µg/L	96.7	60.0	140	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611F	93.0 µg/L	100 µg/L	93.0	60.0	140	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611F	88.7 µg/L	100 µg/L	88.7	60.0	140	----
		tetrachloroethylene	127-18-4	E611F	102 µg/L	100 µg/L	102	60.0	140	----
		toluene	108-88-3	E611F	104 µg/L	100 µg/L	104	60.0	140	----
		trichlorobenzene, 1,2,3-	87-61-6	E611F	95.3 µg/L	100 µg/L	95.3	60.0	140	----
		trichlorobenzene, 1,2,4-	120-82-1	E611F	97.0 µg/L	100 µg/L	97.0	60.0	140	----
		trichloroethane, 1,1,1-	71-55-6	E611F	98.8 µg/L	100 µg/L	98.8	60.0	140	----
		trichloroethane, 1,1,2-	79-00-5	E611F	95.2 µg/L	100 µg/L	95.2	60.0	140	----
		trichloroethylene	79-01-6	E611F	103 µg/L	100 µg/L	103	60.0	140	----
		trichlorofluoromethane	75-69-4	E611F	97.9 µg/L	100 µg/L	97.9	60.0	140	----
		trichloropropane, 1,2,3-	96-18-4	E611F	98.4 µg/L	100 µg/L	98.4	60.0	140	----
		trimethylbenzene, 1,2,4-	95-63-6	E611F	105 µg/L	100 µg/L	105	60.0	140	----
		trimethylbenzene, 1,3,5-	108-67-8	E611F	102 µg/L	100 µg/L	102	60.0	140	----
		vinyl chloride	75-01-4	E611F	87.6 µg/L	100 µg/L	87.6	60.0	140	----
		xylene, m+p-	179601-23-1	E611F	201 µg/L	200 µg/L	100	60.0	140	----
		xylene, o-	95-47-6	E611F	99.8 µg/L	100 µg/L	99.8	60.0	140	----
Volatile Organic Compounds (QCLot: 527259)										
EO2204142-021	MW-25A	Acetone	67-64-1	E611F	115 µg/L	100 µg/L	115	60.0	140	----
		benzene	71-43-2	E611F	108 µg/L	100 µg/L	108	60.0	140	----
		bromobenzene	108-86-1	E611F	91.1 µg/L	100 µg/L	91.1	60.0	140	----
		bromochloromethane	74-97-5	E611F	123 µg/L	100 µg/L	123	60.0	140	----
		bromodichloromethane	75-27-4	E611F	130 µg/L	100 µg/L	130	60.0	140	----
		bromoform	75-25-2	E611F	87.3 µg/L	100 µg/L	87.3	60.0	140	----
		bromomethane	74-83-9	E611F	117 µg/L	100 µg/L	117	60.0	140	----
		butylbenzene, n-	104-51-8	E611F	96.5 µg/L	100 µg/L	96.5	60.0	140	----
		butylbenzene, sec-	135-98-8	E611F	90.0 µg/L	100 µg/L	90.0	60.0	140	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 527259) - continued										
EO2204142-021	MW-25A	butylbenzene, tert-	98-06-6	E611F	85.2 µg/L	100 µg/L	85.2	60.0	140	----
		carbon disulfide	75-15-0	E611F	111 µg/L	100 µg/L	111	60.0	140	----
		carbon tetrachloride	56-23-5	E611F	116 µg/L	100 µg/L	116	60.0	140	----
		chlorobenzene	108-90-7	E611F	95.8 µg/L	100 µg/L	95.8	60.0	140	----
		chloroethane	75-00-3	E611F	95.0 µg/L	100 µg/L	95.0	60.0	140	----
		chloroform	67-66-3	E611F	122 µg/L	100 µg/L	122	60.0	140	----
		chloromethane	74-87-3	E611F	83.1 µg/L	100 µg/L	83.1	60.0	140	----
		chlorotoluene, 2-	95-49-8	E611F	91.7 µg/L	100 µg/L	91.7	60.0	140	----
		chlorotoluene, 4-	106-43-4	E611F	86.3 µg/L	100 µg/L	86.3	60.0	140	----
		cymene, p-	99-87-6	E611F	82.6 µg/L	100 µg/L	82.6	60.0	140	----
		dibromo-3-chloropropane, 1,2-	96-12-8	E611F	102 µg/L	100 µg/L	102	60.0	140	----
		dibromochloromethane	124-48-1	E611F	99.0 µg/L	100 µg/L	99.0	60.0	140	----
		dibromoethane, 1,2-	106-93-4	E611F	89.5 µg/L	100 µg/L	89.5	60.0	140	----
		dibromomethane	74-95-3	E611F	116 µg/L	100 µg/L	116	60.0	140	----
		dichlorobenzene, 1,2-	95-50-1	E611F	98.8 µg/L	100 µg/L	98.8	60.0	140	----
		dichlorobenzene, 1,3-	541-73-1	E611F	98.5 µg/L	100 µg/L	98.5	60.0	140	----
		dichlorobenzene, 1,4-	106-46-7	E611F	104 µg/L	100 µg/L	104	60.0	140	----
		dichlorodifluoromethane	75-71-8	E611F	70.6 µg/L	100 µg/L	70.6	60.0	140	----
		dichloroethane, 1,1-	75-34-3	E611F	119 µg/L	100 µg/L	119	60.0	140	----
		dichloroethane, 1,2-	107-06-2	E611F	122 µg/L	100 µg/L	122	60.0	140	----
		dichloroethylene, 1,1-	75-35-4	E611F	110 µg/L	100 µg/L	110	60.0	140	----
		dichloroethylene, cis-1,2-	156-59-2	E611F	115 µg/L	100 µg/L	115	60.0	140	----
		dichloroethylene, trans-1,2-	156-60-5	E611F	119 µg/L	100 µg/L	119	60.0	140	----
		dichloromethane	75-09-2	E611F	130 µg/L	100 µg/L	130	60.0	140	----
		dichloropropane, 1,2-	78-87-5	E611F	106 µg/L	100 µg/L	106	60.0	140	----
		dichloropropane, 1,3-	142-28-9	E611F	84.9 µg/L	100 µg/L	84.9	60.0	140	----
		dichloropropane, 2,2-	594-20-7	E611F	112 µg/L	100 µg/L	112	60.0	140	----
		dichloropropylene, 1,1-	563-58-6	E611F	92.8 µg/L	100 µg/L	92.8	60.0	140	----
		dichloropropylene, cis-1,3-	10061-01-5	E611F	103 µg/L	100 µg/L	103	60.0	140	----
		dichloropropylene, trans-1,3-	10061-02-6	E611F	74.8 µg/L	100 µg/L	74.8	60.0	140	----
		ethylbenzene	100-41-4	E611F	70.9 µg/L	100 µg/L	70.9	60.0	140	----
		hexachlorobutadiene	87-68-3	E611F	92.2 µg/L	100 µg/L	92.2	60.0	140	----
		hexane, n-	110-54-3	E611F	94.0 µg/L	100 µg/L	94.0	60.0	140	----
		hexanone, 2-	591-78-6	E611F	54 µg/L	100 µg/L	54.2	60.0	140	MES
		isopropylbenzene	98-82-8	E611F	79.3 µg/L	100 µg/L	79.3	60.0	140	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 527259) - continued										
EO2204142-021	MW-25A	methyl ethyl ketone [MEK]	78-93-3	E611F	88 µg/L	100 µg/L	87.7	60.0	140	----
		methyl isobutyl ketone [MIBK]	108-10-1	E611F	71 µg/L	100 µg/L	71.4	60.0	140	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611F	99.4 µg/L	100 µg/L	99.4	60.0	140	----
		naphthalene	91-20-3	E611F	83.1 µg/L	100 µg/L	83.1	60.0	140	----
		propylbenzene, n-	103-65-1	E611F	76.2 µg/L	100 µg/L	76.2	60.0	140	----
		styrene	100-42-5	E611F	70.8 µg/L	100 µg/L	70.8	60.0	140	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611F	91.5 µg/L	100 µg/L	91.5	60.0	140	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611F	98.3 µg/L	100 µg/L	98.3	60.0	140	----
		tetrachloroethylene	127-18-4	E611F	81.8 µg/L	100 µg/L	81.8	60.0	140	----
		toluene	108-88-3	E611F	77.2 µg/L	100 µg/L	77.2	60.0	140	----
		trichlorobenzene, 1,2,3-	87-61-6	E611F	95.5 µg/L	100 µg/L	95.5	60.0	140	----
		trichlorobenzene, 1,2,4-	120-82-1	E611F	93.7 µg/L	100 µg/L	93.7	60.0	140	----
		trichloroethane, 1,1,1-	71-55-6	E611F	114 µg/L	100 µg/L	114	60.0	140	----
		trichloroethane, 1,1,2-	79-00-5	E611F	97.1 µg/L	100 µg/L	97.1	60.0	140	----
		trichloroethylene	79-01-6	E611F	113 µg/L	100 µg/L	113	60.0	140	----
		trichlorofluoromethane	75-69-4	E611F	109 µg/L	100 µg/L	109	60.0	140	----
		trichloropropane, 1,2,3-	96-18-4	E611F	101 µg/L	100 µg/L	101	60.0	140	----
		trimethylbenzene, 1,2,4-	95-63-6	E611F	84.1 µg/L	100 µg/L	84.1	60.0	140	----
		trimethylbenzene, 1,3,5-	108-67-8	E611F	74.1 µg/L	100 µg/L	74.1	60.0	140	----
		vinyl chloride	75-01-4	E611F	77.8 µg/L	100 µg/L	77.8	60.0	140	----
		xylene, m+p-	179601-23-1	E611F	169 µg/L	200 µg/L	84.6	60.0	140	----
		xylene, o-	95-47-6	E611F	70.3 µg/L	100 µg/L	70.3	60.0	140	----
Volatile Organic Compounds (QCLot: 527268)										
EO2204142-043	MW-36 Deep	Acetone	67-64-1	E611F	115 µg/L	100 µg/L	115	60.0	140	----
		benzene	71-43-2	E611F	98.7 µg/L	100 µg/L	98.7	60.0	140	----
		bromobenzene	108-86-1	E611F	99.2 µg/L	100 µg/L	99.2	60.0	140	----
		bromochloromethane	74-97-5	E611F	103 µg/L	100 µg/L	103	60.0	140	----
		bromodichloromethane	75-27-4	E611F	113 µg/L	100 µg/L	113	60.0	140	----
		bromoform	75-25-2	E611F	98.0 µg/L	100 µg/L	98.0	60.0	140	----
		bromomethane	74-83-9	E611F	87.2 µg/L	100 µg/L	87.2	60.0	140	----
		butylbenzene, n-	104-51-8	E611F	85.4 µg/L	100 µg/L	85.4	60.0	140	----
		butylbenzene, sec-	135-98-8	E611F	92.7 µg/L	100 µg/L	92.7	60.0	140	----
		butylbenzene, tert-	98-06-6	E611F	91.5 µg/L	100 µg/L	91.5	60.0	140	----
		carbon disulfide	75-15-0	E611F	87.9 µg/L	100 µg/L	87.9	60.0	140	----
		carbon tetrachloride	56-23-5	E611F	88.5 µg/L	100 µg/L	88.5	60.0	140	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 527268) - continued										
EO2204142-043	MW-36 Deep	chlorobenzene	108-90-7	E611F	100 µg/L	100 µg/L	100	60.0	140	----
		chloroethane	75-00-3	E611F	91.3 µg/L	100 µg/L	91.3	60.0	140	----
		chloroform	67-66-3	E611F	103 µg/L	100 µg/L	103	60.0	140	----
		chloromethane	74-87-3	E611F	78.8 µg/L	100 µg/L	78.8	60.0	140	----
		chlorotoluene, 2-	95-49-8	E611F	94.5 µg/L	100 µg/L	94.5	60.0	140	----
		chlorotoluene, 4-	106-43-4	E611F	90.4 µg/L	100 µg/L	90.4	60.0	140	----
		cymene, p-	99-87-6	E611F	86.0 µg/L	100 µg/L	86.0	60.0	140	----
		dibromo-3-chloropropane, 1,2-	96-12-8	E611F	103 µg/L	100 µg/L	103	60.0	140	----
		dibromochloromethane	124-48-1	E611F	100 µg/L	100 µg/L	100	60.0	140	----
		dibromoethane, 1,2-	106-93-4	E611F	101 µg/L	100 µg/L	101	60.0	140	----
		dibromomethane	74-95-3	E611F	104 µg/L	100 µg/L	104	60.0	140	----
		dichlorobenzene, 1,2-	95-50-1	E611F	97.0 µg/L	100 µg/L	97.0	60.0	140	----
		dichlorobenzene, 1,3-	541-73-1	E611F	96.2 µg/L	100 µg/L	96.2	60.0	140	----
		dichlorobenzene, 1,4-	106-46-7	E611F	98.5 µg/L	100 µg/L	98.5	60.0	140	----
		dichlorodifluoromethane	75-71-8	E611F	78.6 µg/L	100 µg/L	78.6	60.0	140	----
		dichloroethane, 1,1-	75-34-3	E611F	104 µg/L	100 µg/L	104	60.0	140	----
		dichloroethane, 1,2-	107-06-2	E611F	108 µg/L	100 µg/L	108	60.0	140	----
		dichloroethylene, 1,1-	75-35-4	E611F	88.7 µg/L	100 µg/L	88.7	60.0	140	----
		dichloroethylene, cis-1,2-	156-59-2	E611F	85.1 µg/L	100 µg/L	85.1	60.0	140	----
		dichloroethylene, trans-1,2-	156-60-5	E611F	93.9 µg/L	100 µg/L	93.9	60.0	140	----
		dichloromethane	75-09-2	E611F	105 µg/L	100 µg/L	105	60.0	140	----
		dichloropropane, 1,2-	78-87-5	E611F	98.1 µg/L	100 µg/L	98.1	60.0	140	----
		dichloropropane, 1,3-	142-28-9	E611F	105 µg/L	100 µg/L	105	60.0	140	----
		dichloropropane, 2,2-	594-20-7	E611F	88.4 µg/L	100 µg/L	88.4	60.0	140	----
		dichloropropylene, 1,1-	563-58-6	E611F	90.4 µg/L	100 µg/L	90.4	60.0	140	----
		dichloropropylene, cis-1,3-	10061-01-5	E611F	97.9 µg/L	100 µg/L	97.9	60.0	140	----
		dichloropropylene, trans-1,3-	10061-02-6	E611F	88.6 µg/L	100 µg/L	88.6	60.0	140	----
		ethylbenzene	100-41-4	E611F	84.3 µg/L	100 µg/L	84.3	60.0	140	----
		hexachlorobutadiene	87-68-3	E611F	77.2 µg/L	100 µg/L	77.2	60.0	140	----
		hexane, n-	110-54-3	E611F	87.9 µg/L	100 µg/L	87.9	60.0	140	----
		hexanone, 2-	591-78-6	E611F	84 µg/L	100 µg/L	83.7	60.0	140	----
		isopropylbenzene	98-82-8	E611F	90.0 µg/L	100 µg/L	90.0	60.0	140	----
		methyl ethyl ketone [MEK]	78-93-3	E611F	108 µg/L	100 µg/L	108	60.0	140	----
		methyl isobutyl ketone [MIBK]	108-10-1	E611F	88 µg/L	100 µg/L	88.5	60.0	140	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611F	94.8 µg/L	100 µg/L	94.8	60.0	140	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 527268) - continued										
EO2204142-043	MW-36 Deep	naphthalene	91-20-3	E611F	89.8 µg/L	100 µg/L	89.8	60.0	140	----
		propylbenzene, n-	103-65-1	E611F	87.3 µg/L	100 µg/L	87.3	60.0	140	----
		styrene	100-42-5	E611F	85.3 µg/L	100 µg/L	85.3	60.0	140	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611F	94.2 µg/L	100 µg/L	94.2	60.0	140	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611F	110 µg/L	100 µg/L	110	60.0	140	----
		tetrachloroethylene	127-18-4	E611F	82.4 µg/L	100 µg/L	82.4	60.0	140	----
		toluene	108-88-3	E611F	85.4 µg/L	100 µg/L	85.4	60.0	140	----
		trichlorobenzene, 1,2,3-	87-61-6	E611F	87.8 µg/L	100 µg/L	87.8	60.0	140	----
		trichlorobenzene, 1,2,4-	120-82-1	E611F	83.6 µg/L	100 µg/L	83.6	60.0	140	----
		trichloroethane, 1,1,1-	71-55-6	E611F	90.2 µg/L	100 µg/L	90.2	60.0	140	----
		trichloroethane, 1,1,2-	79-00-5	E611F	108 µg/L	100 µg/L	108	60.0	140	----
		trichloroethylene	79-01-6	E611F	86.3 µg/L	100 µg/L	86.3	60.0	140	----
		trichlorofluoromethane	75-69-4	E611F	86.6 µg/L	100 µg/L	86.6	60.0	140	----
		trichloropropane, 1,2,3-	96-18-4	E611F	115 µg/L	100 µg/L	115	60.0	140	----
		trimethylbenzene, 1,2,4-	95-63-6	E611F	86.6 µg/L	100 µg/L	86.6	60.0	140	----
		trimethylbenzene, 1,3,5-	108-67-8	E611F	83.0 µg/L	100 µg/L	83.0	60.0	140	----
		vinyl chloride	75-01-4	E611F	78.4 µg/L	100 µg/L	78.4	60.0	140	----
		xylene, m+p-	179601-23-1	E611F	179 µg/L	200 µg/L	89.3	60.0	140	----
		xylene, o-	95-47-6	E611F	84.7 µg/L	100 µg/L	84.7	60.0	140	----
Volatile Organic Compounds (QCLot: 529117)										
EO2204142-016	MW-21B	Acetone	67-64-1	E611F	120 µg/L	100 µg/L	120	60.0	140	----
		benzene	71-43-2	E611F	104 µg/L	100 µg/L	104	60.0	140	----
		bromobenzene	108-86-1	E611F	105 µg/L	100 µg/L	105	60.0	140	----
		bromochloromethane	74-97-5	E611F	113 µg/L	100 µg/L	113	60.0	140	----
		bromodichloromethane	75-27-4	E611F	119 µg/L	100 µg/L	119	60.0	140	----
		bromoform	75-25-2	E611F	103 µg/L	100 µg/L	103	60.0	140	----
		bromomethane	74-83-9	E611F	116 µg/L	100 µg/L	116	60.0	140	----
		butylbenzene, n-	104-51-8	E611F	90.4 µg/L	100 µg/L	90.4	60.0	140	----
		butylbenzene, sec-	135-98-8	E611F	95.4 µg/L	100 µg/L	95.4	60.0	140	----
		butylbenzene, tert-	98-06-6	E611F	92.9 µg/L	100 µg/L	92.9	60.0	140	----
		carbon disulfide	75-15-0	E611F	104 µg/L	100 µg/L	104	60.0	140	----
		carbon tetrachloride	56-23-5	E611F	93.0 µg/L	100 µg/L	93.0	60.0	140	----
		chlorobenzene	108-90-7	E611F	105 µg/L	100 µg/L	105	60.0	140	----
		chloroethane	75-00-3	E611F	101 µg/L	100 µg/L	101	60.0	140	----
		chloroform	67-66-3	E611F	109 µg/L	100 µg/L	109	60.0	140	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 529117) - continued										
EO2204142-016	MW-21B	chloromethane	74-87-3	E611F	97.5 µg/L	100 µg/L	97.5	60.0	140	----
		chlorotoluene, 2-	95-49-8	E611F	99.2 µg/L	100 µg/L	99.2	60.0	140	----
		chlorotoluene, 4-	106-43-4	E611F	98.4 µg/L	100 µg/L	98.4	60.0	140	----
		cymene, p-	99-87-6	E611F	91.6 µg/L	100 µg/L	91.6	60.0	140	----
		dibromo-3-chloropropane, 1,2-	96-12-8	E611F	96.2 µg/L	100 µg/L	96.2	60.0	140	----
		dibromochloromethane	124-48-1	E611F	105 µg/L	100 µg/L	105	60.0	140	----
		dibromoethane, 1,2-	106-93-4	E611F	106 µg/L	100 µg/L	106	60.0	140	----
		dibromomethane	74-95-3	E611F	114 µg/L	100 µg/L	114	60.0	140	----
		dichlorobenzene, 1,2-	95-50-1	E611F	100 µg/L	100 µg/L	100	60.0	140	----
		dichlorobenzene, 1,3-	541-73-1	E611F	101 µg/L	100 µg/L	101	60.0	140	----
		dichlorobenzene, 1,4-	106-46-7	E611F	105 µg/L	100 µg/L	105	60.0	140	----
		dichlorodifluoromethane	75-71-8	E611F	115 µg/L	100 µg/L	115	60.0	140	----
		dichloroethane, 1,1-	75-34-3	E611F	108 µg/L	100 µg/L	108	60.0	140	----
		dichloroethane, 1,2-	107-06-2	E611F	116 µg/L	100 µg/L	116	60.0	140	----
		dichloroethylene, 1,1-	75-35-4	E611F	95.6 µg/L	100 µg/L	95.6	60.0	140	----
		dichloroethylene, cis-1,2-	156-59-2	E611F	91.8 µg/L	100 µg/L	91.8	60.0	140	----
		dichloroethylene, trans-1,2-	156-60-5	E611F	104 µg/L	100 µg/L	104	60.0	140	----
		dichloromethane	75-09-2	E611F	114 µg/L	100 µg/L	114	60.0	140	----
		dichloropropane, 1,2-	78-87-5	E611F	111 µg/L	100 µg/L	111	60.0	140	----
		dichloropropane, 1,3-	142-28-9	E611F	108 µg/L	100 µg/L	108	60.0	140	----
		dichloropropane, 2,2-	594-20-7	E611F	124 µg/L	100 µg/L	124	60.0	140	----
		dichloropropylene, 1,1-	563-58-6	E611F	96.1 µg/L	100 µg/L	96.1	60.0	140	----
		dichloropropylene, cis-1,3-	10061-01-5	E611F	117 µg/L	100 µg/L	117	60.0	140	----
		dichloropropylene, trans-1,3-	10061-02-6	E611F	105 µg/L	100 µg/L	105	60.0	140	----
		ethylbenzene	100-41-4	E611F	85.3 µg/L	100 µg/L	85.3	60.0	140	----
		hexachlorobutadiene	87-68-3	E611F	91.0 µg/L	100 µg/L	91.0	60.0	140	----
		hexane, n-	110-54-3	E611F	92.6 µg/L	100 µg/L	92.6	60.0	140	----
		hexanone, 2-	591-78-6	E611F	78 µg/L	100 µg/L	77.9	60.0	140	----
		isopropylbenzene	98-82-8	E611F	92.1 µg/L	100 µg/L	92.1	60.0	140	----
		methyl ethyl ketone [MEK]	78-93-3	E611F	107 µg/L	100 µg/L	107	60.0	140	----
		methyl isobutyl ketone [MIBK]	108-10-1	E611F	88 µg/L	100 µg/L	88.2	60.0	140	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611F	108 µg/L	100 µg/L	108	60.0	140	----
		naphthalene	91-20-3	E611F	92.8 µg/L	100 µg/L	92.8	60.0	140	----
		propylbenzene, n-	103-65-1	E611F	91.3 µg/L	100 µg/L	91.3	60.0	140	----
		styrene	100-42-5	E611F	90.1 µg/L	100 µg/L	90.1	60.0	140	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 529117) - continued										
EO2204142-016	MW-21B	tetrachloroethane, 1,1,1,2-	630-20-6	E611F	97.0 µg/L	100 µg/L	97.0	60.0	140	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611F	103 µg/L	100 µg/L	103	60.0	140	----
		tetrachloroethylene	127-18-4	E611F	88.3 µg/L	100 µg/L	88.3	60.0	140	----
		toluene	108-88-3	E611F	87.6 µg/L	100 µg/L	87.6	60.0	140	----
		trichlorobenzene, 1,2,3-	87-61-6	E611F	94.3 µg/L	100 µg/L	94.3	60.0	140	----
		trichlorobenzene, 1,2,4-	120-82-1	E611F	99.1 µg/L	100 µg/L	99.1	60.0	140	----
		trichloroethane, 1,1,1-	71-55-6	E611F	94.6 µg/L	100 µg/L	94.6	60.0	140	----
		trichloroethane, 1,1,2-	79-00-5	E611F	111 µg/L	100 µg/L	111	60.0	140	----
		trichloroethylene	79-01-6	E611F	94.0 µg/L	100 µg/L	94.0	60.0	140	----
		trichlorofluoromethane	75-69-4	E611F	94.6 µg/L	100 µg/L	94.6	60.0	140	----
		trichloropropane, 1,2,3-	96-18-4	E611F	119 µg/L	100 µg/L	119	60.0	140	----
		trimethylbenzene, 1,2,4-	95-63-6	E611F	92.1 µg/L	100 µg/L	92.1	60.0	140	----
		trimethylbenzene, 1,3,5-	108-67-8	E611F	87.2 µg/L	100 µg/L	87.2	60.0	140	----
		vinyl chloride	75-01-4	E611F	91.7 µg/L	100 µg/L	91.7	60.0	140	----
		xylene, m+p-	179601-23-1	E611F	186 µg/L	200 µg/L	92.8	60.0	140	----
		xylene, o-	95-47-6	E611F	87.1 µg/L	100 µg/L	87.1	60.0	140	----

Qualifiers

Qualifier	Description
MES	*Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).*

Chain of Custody (COC) / Analytical Request Form

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Canada Toll Free: 1 800 668 9878

COC Number: 17 -

Page 3 of

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)
Company:	Tetra Tech	Select Report Format: ☑ PDF ☐ EXCEL ☑ EDD (DIGITAL)	Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Carl Forkheim	Quality Control (QC) Report with Report ☑ YES ☐ NO	PRIORITY (Business Days): 4 day [P4-20%] ☐ / 3 day [P3-25%] ☐ / 2 day [P2-50%] ☐ — EMERGENCY: 1 Business day [E - 100%] ☐ / Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐
Phone:	403-510-7241	☐ Compare Results to Criteria on Report - provide details below if box checked	
	Company address below will appear on the final report	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	
Street:	Suite 110, 140 Quarry Park Blvd SE	Email 1 or Fax EBA.labdata@tetratech.com	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
City/Province:	Calgary AB	Email 2	For tests that can not be performed according to the service level selected, you will be contacted.
Postal Code:	T2C 3G3	Email 3 Carl.Forkheim@tetratech.com	
Invoice To	Same as Report To ☐ YES ☐ NO	Invoice Distribution	
	Copy of Invoice with Report ☐ YES ☐ NO	Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX	
Company:	Clean Harbors	Email 1 or Fax	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q53988	AFE/Cost Center:	PO#
Job #:	704-SWM.SWOP04401-01	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):		ALS Contact:	Sampler: MD

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Routine Parameters	Dissolved Metals (including Hg)	Nutrients (TKN, Ammonia-N, DOC)	BTEX and F1-F2	Total Phenols	VOC, TCE and PCE	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
					Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below								
16	MW21B	10-Jun-22	12:10	Water	8	✓	✓	✓	✓	✓	✓		
15	MW21A	10-Jun-22	12:00	Water	8	✓	✓	✓	✓	✓	✓		
14	MW20B	10-Jun-22	11:45	Water	8	✓	✓	✓	✓	✓	✓		
13	MW20A	10-Jun-22	11:35	Water	8	✓	✓	✓	✓	✓	✓		
2	MW1C	10-Jun-22	10:45	Water	8	✓	✓	✓	✓	✓	✓		
1	MW1B	10-Jun-22	10:35	Water	8	✓	✓	✓	✓	✓	✓		
12	MW19B	10-Jun-22	11:25	Water	8	✓	✓	✓	✓	✓	✓		
11	MW19A	10-Jun-22	11:20	Water	8	✓	✓	✓	✓	✓	✓		
10	MW18B	10-Jun-22	11:00	Water	8	✓	✓	✓	✓	✓	✓		
9	MW18A	10-Jun-22	10:55	Water	8	✓	✓	✓	✓	✓	✓		
8	MW12B	10-Jun-22	10:00	Water	8	✓	✓	✓	✓	✓	✓		
7	MW12A	10-Jun-22	10:10	Water	8	✓	✓	✓	✓	✓	✓		

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☐ NO	- dissolved metals filtered not preserved
Are samples for human consumption/use? ☐ YES ☐ NO	

SAMPLE CONDITION AS RECEIVED (lab use)			
Frozen ☐		SIF Observations	Yes ☐
Ice Packs ☐	Ice Cubes ☐	Custody seal intact	Yes ☐
Cooling Initiated ☐			
INITIAL COOLER TEMPERATURES °C			FINAL COO
10.3			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by: / Date:
				June 11, 22		

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

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

Environmental Division
Edmonton
Work Order Reference
EO2204142

Telephone : +1 780 413 5227

Chain of Custody (COC) / Analytical Request Form

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Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here

COC Number: 17 -

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)
Company:	Tetra Tech	Select Report Format: ☑ PDF ☐ EXCEL ☑ EDD (DIGITAL)	Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Carl Forkheim	Quality Control (QC) Report with Report ☑ YES ☐ NO	PRIORITY (Business Days): 4 day [P4-20%] ☐ / 3 day [P3-25%] ☐ / 2 day [P2-50%] ☐ — EMERGENCY: 1 Business day [E - 100%] ☐ / Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐
Phone:	403-510-7241	☐ Compare Results to Criteria on Report - provide details below if box checked	
	Company address below will appear on the final report	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	
Street:	Suite 110, 140 Quarry Park Blvd SE	Email 1 or Fax EBA.labdata@tetratech.com	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
City/Province:	Calgary AB	Email 2	For tests that can not be performed according to the service level selected, you will be contacted.
Postal Code:	T2C 3G3	Email 3 Carl.Forkheim@tetratech.com	
Invoice To	Same as Report To ☐ YES ☐ NO	Invoice Distribution	
	Copy of Invoice with Report ☐ YES ☐ NO	Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX	
Company:	Clean Harbors	Email 1 or Fax	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q83888	AFE/Cost Center:	PO#:
Job #:	704-SWM.SWOP04401-01	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):		ALS Contact:	Sampler: MD

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below: Routine Parameters	Dissolved Metals (inCluding Hg) (F)	Nutrients (TKN, Ammonia-N, DOC)	BTEX and F1-F2	Total Phenols (P)	VOC, TCE and PCE	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
28	MW28B	10-Jun-22	14:15	Water	8								
27	MW28A	10-Jun-22	14:05	Water	8								
26	MW27B	10-Jun-22	13:55	Water	8								
25	MW27A	10-Jun-22	13:45	Water	8								
24	MW26B	10-Jun-22	13:45	Water	8								
23	MW26A	10-Jun-22	13:35	Water	8								
22	MW25B	10-Jun-22	13:25	Water	8								
21	MW25A	10-Jun-22	13:15	Water	8								
20	MW23B	10-Jun-22	13:05	Water	8								
19	MW23A	10-Jun-22	12:55	Water	8								
18	MW22B	10-Jun-22	12:25	Water	8								
17	MW22A	10-Jun-22	12:45	Water	8								

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☐ NO	- Dissolved metals filtered not preserved -
Are samples for human consumption/ use? ☐ YES ☐ NO	- MW26A = Limited Sample. prioritize Routine & Dissolved metals

SAMPLE CONDITION AS RECEIVED (lab use only)			
Frozen ☐	SIF Observations	Yes ☐	No ☐
Ice Packs ☐ Ice Cubes ☐	Custody seal intact	Yes ☐	No ☐
Cooling Initiated ☐			

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:

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

Chain of Custody (COC) / Analytical Request Form

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COC Number: 17 -

Page 1 of 5

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)
Company:	Tetra Tech	Select Report Format: ☑ PDF ☐ EXCEL ☑ EDD (DIGITAL)	Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Carl Forkheim	Quality Control (QC) Report with Report ☑ YES ☐ NO	PRIORITY (Business Days): 4 day [P4-20%] ☐ ; 3 day [P3-25%] ☐ ; 2 day [P2-50%] ☐ — EMERGENCY: 1 Business day [E - 100%] ☐ ; Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐
Phone:	403-510-7241	☐ Compare Results to Criteria on Report - provide details below if box checked	
	Company address below will appear on the final report	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	
Street:	Suite 110, 140 Quarry Park Blvd SE	Email 1 or Fax EBA.labdata@tetratech.com	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
City/Province:	Calgary AB	Email 2	For tests that can not be performed according to the service level selected, you will be contacted.
Postal Code:	T2C 3G3	Email 3 Carl.Forkheim@tetratech.com	
Invoice To	Same as Report To ☐ YES ☐ NO	Invoice Distribution	Analysis Request
	Copy of Invoice with Report ☐ YES ☐ NO	Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX	
Company:	Clean Harbors	Email 1 or Fax	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q83988	AFE/Cost Center:	PO#
Job #:	704-SWM.SWOP04401-01	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):		ALS Contact:	Sampler: MD

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Routine Parameters	Dissolved Metals (including Hg)	Nutrients (TKN, Ammonia-N, DOC)	BTEX and F1-F2	Total Phenols	VOC, TCE and PCE	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
4	MW8B	10-Jun-22	3:35	Water	8	X	X	X	X	X	X		
3	MW8A	23-Jun-10	3:45	Water	8	X	X	X	X	X	X		
33	MW33B	28-Jun-10	3:50	Water	8	X	X	X	X	X	X		
37	MW33A	25-Jun-10	4:15	Water	8	X	X	X	X	X	V		
36	MW32B	28-Jun-10	15:30	Water	8	X	X	X	X	X	X		
35	MW32A	27-Jun-10	15:40	Water	8	X	X	X	X	X	X		
34	MW31B	28-Jun-10	15:25	Water	8	X	X	X	X	X	X		
33	MW31A	29-Jun-10	15:15	Water	8	X	X	X	X	X	X		
32	MW30B	30-Jun-10	14:45	Water	8	X	X	X	X	X	X		
31	MW30A	1-Jul-10	14:35	Water	8	X	X	X	X	X	X		
30	MW29B	2-Jul-10	14:35	Water	8	X	X	X	X	X	X		
29	MW29A	3-Jul-10	14:25	Water	8	X	X	X	X	X	X		

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☐ NO	Dissolved metals filtered not preserved
Are samples for human consumption/ use? ☐ YES ☐ NO	

SAMPLE CONDITION AS RECEIVED (lab use only)			
Frozen ☐	SIF Observations	Yes ☐	No ☐
Ice Packs ☐ Ice Cubes ☐	Custody seal intact	Yes ☐	No ☐
Cooling Initiated ☐			
INITIAL COOLER TEMPERATURES °C		FINAL COOLER TEMPERATURES °C	
8.7			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date: Jun 11, 22	Time:	Received by:	Date:	Time:

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

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Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here

COC Number: 17 -

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Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)
Company:	Tetra Tech	Select Report Format: ☑ PDF ☐ EXCEL ☑ EDD (DIGITAL)	Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Carl Forkheim	Quality Control (QC) Report with Report ☑ YES ☐ NO	PRIORITY (Business Days): 4 day [P4-20%] ☐ / 3 day [P3-25%] ☐ / 2 day [P2-50%] ☐ — EMERGENCY: 1 Business day [E - 100%] ☐ / Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐
Phone:	403-510-7241	☐ Compare Results to Criteria on Report - provide details below if box checked	
	Company address below will appear on the final report	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
Street:	Suite 110, 140 Quarry Park Blvd SE	Email 1 or Fax EBA.labdata@tetratech.com	For tests that can not be performed according to the service level selected, you will be contacted.
City/Province:	Calgary AB	Email 2	
Postal Code:	T2C 3G3	Email 3 Carl.Forkheim@tetratech.com	
Invoice To	Same as Report To ☐ YES ☐ NO	Invoice Distribution	
	Copy of Invoice with Report ☐ YES ☐ NO	Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX	
Company:	Clean Harbors	Email 1 or Fax	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q83988	AFE/Cost Center:	PO#
Job #:	704-SWM.SWOP04401-01	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):		ALS Contact:	Sampler: MD

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Routine Parameters	Dissolved Metals (including Hg)	Nutrients (TKN, Ammonia-N, DOC)	BTEX and F1-F2	Total Phenols	VOC, TCE and PCE	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
					Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below								
6	MW11	9-Jun-22	15:05	Water	8	X	X	X	X	X	X		
5	MW10	9-Jun-22	15:20	Water	8	X	X	X	X	X	X		
48	19MW38B	9-Jun-22	16:35	Water	8	X	X	X	X	X	X		
47	19MW38A	9-Jun-22	16:25	Water	8	X	X	X	X	X	X		
46	19MW37B	9-Jun-22	9:05	Water	8	X	X	X	X	X	X		
45	19MW37A	9-Jun-22	9:40	Water	8	X	X	X	X	X	X		
43	15MW36-Deep	10-Jun-22	15:00	Water	8	X	X	X	X	X	X		
44	15MW36A	10-Jun-22	14:50	Water	8	X	X	X	X	X	X		
39	15MW35-Deep	9-Jun-22	12:30	Water	8	X	X	X	X	X	X		
42	15MW35C	9-Jun-22	11:45	Water	8	X	X	X	X	X	X		
41	15MW35B	9-Jun-22	12:10	Water	8	X	X	X	X	X	X		
40	15MW35A	9-Jun-22	11:30	Water	8	X	X	X	X	X	X		

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☐ NO	- Dissolved Metals Filtered not preserved - = 15MW35A = Limited Sample - prioritize Routine & Dissolved metals
Are samples for human consumption/ use? ☐ YES ☐ NO	15MW36-Deep and 15MW35-Deep - Not Filtered/preserved

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

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

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here

COC Number: 17 -

Page 5 of

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)
Company:	Tetra Tech	Select Report Format: ☑ PDF ☐ EXCEL ☑ EDD (DIGITAL)	Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Carl Forkheim	Quality Control (QC) Report with Report ☑ YES ☐ NO	PRIORITY (Business Days): 4 day [P4-20%] ☐ ; 3 day [P3-25%] ☐ ; 2 day [P2-50%] ☐ — EMERGENCY: 1 Business day [E - 100%] ☐ ; Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐
Phone:	403-510-7241	☐ Compare Results to Criteria on Report - provide details below if box checked	
	Company address below will appear on the final report	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
Street:	Suite 110, 140 Quarry Park Blvd SE	Email 1 or Fax EBA.labdata@tetratech.com	For tests that can not be performed according to the service level selected, you will be contacted.
City/Province:	Calgary AB	Email 2	
Postal Code:	T2C 3G3	Email 3 Carl.Forkheim@tetratech.com	
Invoice To	Same as Report To ☐ YES ☐ NO	Invoice Distribution	
	Copy of Invoice with Report ☐ YES ☐ NO	Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX	
Company:	Clean Harbors	Email 1 or Fax	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q83988	AFE/Cost Center:	PO#:
Job #:	704-SWM.SWOP04401-01	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):		ALS Contact:	Sampler: MD

Analysis Request

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Routine Parameters	Dissolved Metals (including Hg)	Nutrients (TKN, Ammonia-N, DOC)	BTEX and F1-F2	Total Phenols	VOC, TCE and PCE	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
					Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below								
49	DUP-A	9-Jun-22	11:30	Water	8	F	F						
50	DUP-B	10-Jun-22	3:05	Water	8	F	F						
51	DUP-C		3:35	Water	8								
52	DUP-D		10:35	Water	8	F	F						
54	Trip Blank		N/A	Water	8								
53	Field Blank			Water	8								
				Water									
				Water									
				Water									
				Water									
				Water									
				Water									

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☐ NO	- Dissolved metals filtered not preserved.
Are samples for human consumption/ use? ☐ YES ☐ NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

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

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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

APPENDIX E

HISTORICAL ANALYTICAL RESULTS

Table E1A: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 1A																		
			Apr-91	Oct-91	Apr-92	Oct-92	Apr-93	Oct-93	Apr-94	Oct-94	Apr-95	Oct-95	Apr-96	Oct-96	Apr-97	Oct-97	Apr-98	Oct-98	Apr-99	Oct-99	Apr-00	Oct-00
Field Measurements																						
Field pH	-	-	7.71	8.4	7.7	8.1	8.4	7.7	8.4	8.29	7.9	7.7	7.7	7.6	7.5	7.7	7.6	7.03	7.58	7.03	7.52	7.2
Routine Water																						
pH	-	6.5 - 8.5	8.0	7.8	7.9	7.5	7.7	7.6	8.2	8.0	7.9	7.7	7.86	7.92	7.68	7.94	7.79	7.72	7.66	7.76	7.80	7.71
Conductivity (EC)	µS/cm	1000	4420	4500	5050	5450	5300	5630	5420	5840	5530	5960	5540	5710	5550	5240	5590	6230	5610	6520	6740	5790
Calcium	mg/L	-	96	104	97	115	108	114	109	131	120	134	121	127	101	122	122	75	141	132	169	389
Magnesium	mg/L	-	25	33	27	33.4	31.3	33.7	31.8	37.5	34.1	41	34.8	36.6	30.2	32.8	29.3	40.7	42.4	44.1	47.2	94.1
Sodium	mg/L	200	1150	1160	1140	1260	1240	1360	1260	1230	1360	1394	1350	1330	1360	1460	1360	1590	1360	1590	1570	1520
Potassium	mg/L	-	8.9	8.7	9.9	8.34	7.71	7.74	8.46	7.61	7.94	8	6.73	6.88	5.71	7.26	5.87	8.26	7.56	10.8	7.9	17.9
Iron	mg/L	0.3	0.02	<0.02	0.33	11.3	0.07	2.71	< 0.04	0.04	< 0.04	0.028	0.5	0.07	0.06	0.037	0.134	0.216	0.514	0.024	0.044	< 0.003
Sulphate	mg/L	128-429 [2]	2171	2030	2400	2460	2460	2450	2350	2420	2590	2681	2670	2570	2830	3010	2510	3330	2950	3460	3330	3490
Chloride	mg/L	100	1	10	3	0.6	0.5	0.9	0.8	<0.1	0.6	3	1.4	4.9	0.4	1.4	1.1	<0.5	1.4	0.7	<0.5	<0.5
Bicarbonate	mg/L	-	706	776	788	806	797	802	809	815	814	812	811	820	794	793	792	774	767	768	760	781
Carbonate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<6	<6
Nitrate	mg/L	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	0.16	0.213	<0.04
Total Dissolved Solids (TDS)	mg/L	500	3704	3760	4330	4270	4240	4360	4160	4220	4500	5075	4590	4480	4720	5020	4410	5430	4880	5620	5510	5700
Water Nutrients																						
Ammonia-N	mg/L	0.018-190 [3]	3	*<1*	*<1*	0.755	0.808	0.85	0.58	0.503	0.58	0.721	0.424	0.538	0.385	0.59	0.58	0.78	0.45	0.54	0.48	0.63
TKN	mg/L	-	3	<1	1.1	1.64	1.1	1.45	1.12	1.13	1.2	1.46	1.81	1.31	2.73	1.12	1.24	1.34	0.97	1.2	1.63	1.16
Organics																						
COD	mg/L	-	18	26	12	64	30	31	26	47	54	26	24	51	22	35	38	63	53	38	36	37
TOC	mg/L	-	9	19	9	11.8	8.3	10.8	9.9	8.5	10.2	8.9	8.9	10.2	12.1	11.4	14.3	14.5	18.2	15.2	14.4	15
Oil & Grease	mg/L	-	<1	<1	<1	<0.2	<0.2	6	0.9	0.4	0.3	<0.2	<0.2	0.4	<0.2	<1	1	1	2	<1	<1	7
Metals																						
Antimony	mg/L	0.006	0.001	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	0.0062	<0.0005	<0.0005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.007	<0.006	<0.006
Barium	mg/L	1	0.04	0.022	0.021	0.038	0.005	0.009	<0.004	<0.004	<0.004	0.0102	0.0148	0.0089	0.0093	0.0097	0.0105	0.0097	0.0128	0.008	0.0068	0.007
Cadmium	mg/L	0.00004- 0.00037 [2]	*<0.01*	*<0.003*	*<0.003*	*<0.003*	*<0.003*	*<0.005*	*<0.005*	*<0.003*	*<0.003*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0005*	*<0.0006*	*<0.0006*
Chromium	mg/L	0.05	0.02	<0.006	<0.006	<0.006	0.012	<0.005	<0.005	<0.006	<0.006	0.0022	0.0015	0.0009	<0.0008	<0.0008	<0.0008	0.0014	<0.0008	<0.0008	<0.0009	<0.0009
Cobalt	mg/L	-	<0.01	<0.01	<0.01	<0.01	0.01	0.03	<0.01	<0.01	<0.01	0.0012	0.0013	0.0009	0.0009	0.0009	<0.0007	0.0035	0.0042	0.0038	0.0056	0.0048
Copper	mg/L	0.007	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	0.608	<0.001
Lead	mg/L	0.001- 0.007 [2]	*<0.03*	*<0.04*	*<0.04*	*<0.04*	*<0.04*	*<0.04*	*<0.04*	*<0.04*	*<0.04*	*<0.002*	0.003	*<0.002*	*<0.002*	*<0.002*	*<0.002*	*<0.002*	*<0.002*	0.007	0.034	*<0.002*
Mercury	mg/L	0.000005	*<0.0002*	*<0.0001*	*<0.0002*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*
Molybdenum	mg/L	-	0.05	0.03	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.001	0.004	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	mg/L	0.007- 0.17	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.003	0.002	0.001	0.002	0.001	<0.001	0.003	0.001	0.007	0.006	0.002
Zinc	mg/L	0.03	0.04	0.019	0.04	0.071	0.021	0.014	< 0.005	< 0.005	< 0.005	0.0031	0.008	0.0282	0.001	0.0261	0.0065	0.0054	0.0088	0.0201	0.11	0.0203

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with pH and temperature

"-" No applicable guideline or not analyzed

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E1B: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 1B																																		
			Apr-96	Oct-96	Apr-97	Oct-97	Apr-98	Oct-98	Apr-99	Oct-99	Apr-00	Oct-00	Apr-01	Oct-01	Apr-02	Oct-02	Apr-03	Oct-03	Apr-04	Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	Jun-14	May-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements																																					
Field pH	-	-	-	8.4	8.5	-	8.3	7.12	7.73	7.2	7.42	7.03	7.51	7.03	7.36	7.72	7.37	7.63	7.67	7.67	7.36	7.31	7.37	7.68	7.59	7.94	7.664	7.800	8.11	7.67	7.61	6.17	9.9	8.4	6.33	-	-	8.10	7.91
Field EC	mS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.6	21.5 (EF)	7.93	6.86	13.04	10.24	5.480	3.096	3.3	3.08	2.47	4.11	2.95	3.05	3.67	-	-	2.36	2.48
Field Temperature	°C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.4	3.2	6.8	6.2	8.3	9.11	5.1	11.7	21.9	8	7.7	8.2	7.5	8.3	-	-	-	10.3	8.4
Routine Water																																					
pH	-	6.5 - 8.5	-	8.38	8.23	8.39	8.47	8.05	8.06	8.16	7.93	7.8	7.93	7.83	7.75	7.88	7.89	7.84	8.1	8.1	8.1	8.1	8.1	8.3	8.3	8.2	8.2	8.29	8.23	8.32	8.44	8.41	8.05	8.24	8.44	8.54	8.29	8.54	8.43
Conductivity (EC)	µS/cm	1000	-	5160	3410	2790	2600	4620	4970	6340	6960	7420	7140	7860	7190	7960	7190	8450	9150	8840	8320	8430	6540	6840	5830	4900	4420	5000	4020	2900	3700	3,200	2800	2900	2700	2900	2500	2300	2500
Calcium	mg/L	-	-	72.7	15.3	17.7	10.6	44.2	49.5	72.9	99.9	149	109	152	115	143	124	208	249	172	186	149	105	99.2	67.1	46.4	43.5	43.2	25.3	13	19	14	12	12	10	12	9.1	7.9	10
Magnesium	mg/L	-	-	12.7	2.1	5.8	2.9	8.4	7.9	9.3	19.1	31.6	15.5	27.1	17.5	22.3	18	35.7	48.2	35.5	31.9	26.8	15.9	20.8	10.1	6.9	7.9	6.26	3.61	1.9	2.8	2	1.7	1.6	1.3	1.6	1.1	0.91	1.3
Sodium	mg/L	200	-	1300	819	843	685	1240	1390	1900	1800	2130	1970	2190	2100	2290	1850	2420	2420	2270	2180	2150	1730	1750	1470	1260	1100	1170	941	750	890	730	740	740	680	670	620	570	630
Potassium	mg/L	-	-	7.59	3.32	8.38	4.51	8.98	5.18	5.97	6	7.3	5.1	8.3	7	7.4	7.2	9.6	7.5	8.2	8.4	7.8	6.3	10.1	6.5	3	2.4	3.82	3.51	2.2	3.6	2.6	2.5	2.4	2.1	2.2	2.2	2.0	2.2
Iron	mg/L	0.3	-	0.08	0.15	5.04	0.268	3.9	0.387	-	0.378	0.022	0.067	< 0.02	0.079	< 0.1	< 0.1	< 0.1	0.009	0.061	<0.005	<0.005	0.094	0.010	<0.005	<0.005	<0.005	<0.0050	0.024	<0.06	<0.060	<0.060	0.64	<0.060	<0.060	<0.060	<0.06	<0.060	0.62
Sulphate	mg/L	128-429 [2]	-	2420	1020	935	573	1950	2430	3620	3590	4410	3860	4480	4350	5050	4030	5240	5320	4880	4240	4540	3240	3220	2360	1830	1590	1960	1270 *	670	1200	860	680	680	540	610	390	300	430
Chloride	mg/L	100	-	4.5	8.2	9.4	12.9	7.5	4.8	8.5	1.5	0.9	< 0.5	0.9	0.5	1.7	1.9	1.3	1	2	1	2	4	4	4	6	6	3.8	<10 *	6	4.8	5.2	5.1	6.1	6.1	6.2	9.6	5.9	6.2
Bicarbonate	mg/L	-	-	625	880	959	946	862	805	696	737	667	640	634	635	653	684	651	644	673	669	673	780	750	889	984	1030	915	1010	1100	1000	1,000	1100	1100	1100	1000	1100	1100	1000
Carbonate	mg/L	-	-	-	-	-	-	-	-	-	<6	<6	<6	<6	<6	<6	<6	<6	<5	<5	<5	<5	<5	6	<5	<5	<5	<5.0	<5.0	8.4	15	16	<0.50	<0.50	13	21	<1.0	43	16
Hydroxide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	-	-	-	-	-	3.1	3.54	1.92	4.33	2.69	4.75	5.79	2.92	5.86	2.99	4.64	5.1	0.4	0.7	7.4	6.6	3.0	3.3	17.3	4.9	3.81	4.7 *	2.2	5	5.3	3.7	0.89	1.1	13	3.3	0.79	0.8
Nitrite (N)	mg/L	0.02 - 0.20 [3]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.016	0.019	<0.033	0.037	0.069	0.025
Nitrate and Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.91	1.1	2.8	3.3	0.86	0.82
Total Dissolved Solids (TDS)	mg/L	500	-	4120	2300	2300	1790	3680	4280	5950	5880	7700	6280	7160	6910	7840	6360	8230	8390	7700	6980	7240	5510	5490	4370	3710	3280	3650	2670	2000	2700	2,200	2000	2000	1800	1800	1600	1500	1600
Hardness	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	37	30	35	27	23	30
Alkalinity (total as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	880	900	890	940	960	870
Alkalinity (pp as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	10	17		36	-
Ionic Balance	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0	1.0	1.9	0.52	0.31	3.2
Water Nutrients																																						
Ammonia-N	mg/L	0.018-190 [4]	-	1.28	0.831	0.56	0.82	1.17	1.6	1.97	0.93	1.15	0.95	0.7	1.29	0.61	0.85	0.61	0.59	1.56	1.28	1.25	0.57	0.96	0.95	0.23	0.14	0.823	0.43	0.41	0.47	0.36	<0.050	0.26	0.36	-	0.2	0.30	0.3
TKN	mg/L	-	-	9.09	5.77	2.92	2.74	2.44	2.54	3.68	2.65	2.5	2.94	2.53	4.05	2.66	3.79	3.52	2.4	3.2	2.9	4.2	3.0	2.4	2.1	1.6	1.7	2.34	2.63	2.2	2.8	2.4	2.2*	1.6	0.96	-	3.2	4.0	2.9
Hydrocarbons																																						
Benzene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.0010	<0.0008	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10) - BTEX	mg/L	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.050	<0.25	<0.1	<0.75	<0.10	<0.10	<0.10	<0.10	<0.27	<0.10	<0.10	<0.10
Organics																																						
COD	mg/L	-	-	295	421	156	147	102	65	17	15	74	83	82	235	84	239	114	100	80	95	73	76	90	49	38	33	44	32.7	33	120	270	98	120	47	-	130	250	135
TOC	mg/L	-	-	38.4	18.1	12.9	31.2	13.1	18.6	19.8	19	30.1	1.2	35	34.4	34.8	25.4	35.9	36	36	35	31	26	20	18	15	-	-	-	-	-	-	-	-	-	-	-	-	-
DOC	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	15.5	12.6	14	13	11	9.9	10	8.8	11	9.3	8.5	12
Oil & Grease	mg/L	-	-	-	-	-	1	-	< 1	-	1	2	< 5	< 5	6	10	< 1	< 5	< 1	< 1	<1	<1	3	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																																						
Aluminum	mg/L	0.0007 / 0.005 [5]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0044	0.061	0.059	0.003	0.034	0.25
Antimony	mg/L	0.006	-	< 0.005	< 0.005	-	< 0.005	-	< 0.005	-	< 0.006	< 0.006	< 0.03	< 0.02	< 0.005	0.0005	0.0027	0.0003	0.0008	0.0013	0.0011	<0.0004	0.0012	0.0008	0.0008	0.0011	-	-	0.00047	<0.006	<0.00060	0.00064	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0012	0.0015	0.00098	0.0012	0.00092	0.0013
Barium	mg/L	1	-	0.0343	0.0524	-	0.0331	-	0.0351	-	0.0297	0.0173	0.0717	0.021	0.0147	0.019	0.016	0.016	0.014	0.013	0.015	0.011	0.041	0.011	0.012	0.016	0.016	0.0119	0.0225	0.017	0.015	0.017	0.039	0.017	0.021	0.024	0.03	0.036	0.049
Beryllium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.0010	<0.001		<0.0010	-
Boron	mg/L	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.63	0.62	0.64	0.72	0.73	0.72
Cadmium	mg/L	0.00004-0.00037 [2]	-	< 0.0005	< 0.0005	-	< 0.0005	-	< 0.005	-	< 0.0006	< 0.0006	< 0.003	< 0.003	< 0.0005	< 0.00001	< 0.0001	0.00003	< 0.001	< 0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.0010	<0.000050	<0.000050	0.000038	0.000057	<0.000025	0.000029	0.000029	0.000022	<0.00002	<0.000020	0.000027
Chromium	mg/L	0.05	-	0.0012	0.0015	-	0.0012	-	< 0.0008	-	< 0.0009	< 0.0009	< 0.0044	0.005	< 0.0008	0.0012	< 0.005	0.0008	< 0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.0050	<0.01	<0.0010	<0.0010	0.0034	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	-	0.0035	0.0031	-	< 0.0007	-	0.0043	-	0.0046	0.0041	0.013	0.012	0.0032	0.0004	< 0.001	0.0007	< 0.002	< 0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0020	<0.0020	<0.003	0.00066	0.00068	0.001	0.00058	0.00083	0.00099	<0.00030	0.00037	-
Copper	mg/L	0.007	-	0.002	0.01	-	0.006	-	0.004	-	< 0.001	0.003	< 0.006	< 0.005	0.006	0.009	< 0.01	0.012	0.018	0.021	0.015	0.014	0.008	0.007	0.005	0.003	0.004	0.005	0.0084	<0.002	0.0008	0.0032	0.0057	0.0020	0.0035	0.0018	0.0021	0.00075	0.0065
Lead	mg/L	0.001-0.007 [2]	-	< 0.002	0.003	-	0.003	-	< 0.002	-	0.005	< 0.002	< 0.01	< 0.01	< 0.002	0.0008	< 0.001	0.0004	< 0.005	< 0.005	<0.0001	<0.0001	0.0005	<0.0001	<0.0001	<0.0001	<0.005	<0.0050	0.0003	<0.002	<0.00020	<0.00020	0.00056	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	0.00063
Lithium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.14	0.13	0.14		0.12	-
Manganese	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.10	0.057	0.095	0.027	0.075	0.1
Mercury	mg/L	0.000005	-	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-	-	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-	-	< 0.0001	< 0.0001	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.000005	<3E - 06	<3E - 07	0.00003	<0.0000050	<0.0000020	<0.0000020	0.0000021	<0.0000020	0.00013
Molybdenum	mg/L	-	-	0.038	0.023	-	0.012	-	0.01	-	0.006	0.004	0.008	< 0.005	0.004	0.004	< 0.01	0.005	< 0.005	< 0.005	<0.005	<0.005	<0.005	0.005	0.006	0.006	0.019	0.0061	0.0062	0.011	0.0095	0.011	0.0085	0.0082	0.0084	0.0075	0.0073	0.0069	-
Nickel	mg/L	0.007-0.170 [2]	-	0.017	0.007	-	0.004	-	0.005	-	0.006	0.006	< 0.006	0.01	0.006	0.0022	< 0.005	< 0.0005	< 0.002	0.005	0.005	0.005	0.007	0.006	0.003	0.004	0.004	0.005	0.0072	<0.005	0.004	0.0053	0.0068	0.0038	0.0060	0.0056	0.0044	0.0037	0.0048
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.13	0.11	<0.1	-	<0.10	-
Selenium	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	0.00058	0.00035	0.00023	0.00021	<0.00020
Silicon	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.5	2.2	2.7		2.9	-
Silver	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.29	0.25	0.26		0.17	-
Sulphur	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	150	190		110	-
Thallium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	<0.00020	<0.0002		<0.00020	-
Tin	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001		<0.0010	-
Titanium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	0.0018	<0.001		0.001	-
Uranium	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0019	0.0022	0.0020	0.0018	0.0016	0.0015
Vanadium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	0.0012	<0.001	<0.0030	<0.0010	-
Zinc	mg/L	0.03	-	0.0116	0.0013	-	0.0017	-	0.0018	-	0.0159	0.0222	0.017	0.147	0.0146	0.06	0.02	0.015	0.014	0.028	0.026	0.017	0.03	0.003	0.008	0.008	0.01	0.0052	0.0068	<0.03	<0.0030	0.0078	0.0034	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E1B: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 1B																																			MW 1B								
			Apr-96	Oct-96	Apr-97	Oct-97	Apr-98	Oct-98	Apr-99	Oct-99	Apr-00	Oct-00	Apr-01	Oct-01	Apr-02	Oct-02	Apr-03	Oct-03	Apr-04	Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	Jun-14	May-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Volatile Organic Compounds (VOCs)																																															
Bromodichloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromomethane	mg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness
[3] Guideline varies with chloride
[4] Guideline varies with pH and temperature
[5] Guideline varies with pH
"-" No applicable guideline or not analyzed
Equipment Failure, parameter not reported (EF)
Detection limit adjusted (*)
Exceeds Regulatory Limit
Italic - Detection limit greater than Tier 1 Guideline

Table E8A: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 8A							
			Jun-13	May-14	May-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements										
Field pH	-	-	7.14	8.5	8.5	8.51	8.5	7.84	8.15	8.21
Field EC	mS	-	4.92	2.56	2.91	2.51	2.67	2.63	2.82	2480
Field Temperature	°C	-	6.1	5.4	6.0	8.7	8.4	6.9	12.2	9.5
Routine Water										
pH	-	6.5 - 8.5	8.45	8.67	8.32	8.49	8.49	8.48	8.44	8.48
Conductivity (EC)	µS/cm	1000	4100	2400	2700	2400	2500	2400	2800	2400
Calcium	mg/L	-	25	7.7	7.6	7.8	8.3	7.1	10	7.3
Magnesium	mg/L	-	7.3	1.7	1.5	1.3	1.3	1	1.4	0.93
Sodium	mg/L	200	930	610	670	600	630	650	680	630
Potassium	mg/L	-	3.7	2.2	2.1	2.3	2.4	2	2.3	1.7
Iron	mg/L	0.3	<0.060	0.31	<0.060	<0.060	<0.060	<0.06	<0.060	
Sulphate	mg/L	128-429 [2]	1300	300	450	290	360	270	550	230
Chloride	mg/L	100	9.8	8.0	7.6	7.4	7.1	7.3	7.5	7.7
Bicarbonate	mg/L	-	1200	1300	1300	1200	1300	1300	1300	1200
Carbonate	mg/L	-	26	49	3.0	25	21	27	34	24
Hydroxide	mg/L	-	-	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	0.017	<0.010	<0.010	<0.010	<0.044	<0.020	0.029	0.044
Nitrite (N)	mg/L	0.02 - 0.20 [3]	-	-	0.012	<0.010	<0.033	<0.010	0.027	0.016
Nitrate and Nitrate (N)	mg/L	-	-	-	0.012	<0.020	<0.01	<0.020	0.056	0.06
Total Dissolved Solids (TDS)	mg/L	500	2900	1600	1800	1500	1700	1600	1900	1500
Hardness	mg/L	-	-	-	25	25	26	22	31	22
Alkalinity (total as CaCO3)	mg/L	-	-	-	1100	1000	1100	1100	1100	1000
Alkalinity (pp as CaCO3)	mg/L	-	-	-	2.5	21	17		28	-
Ionic Balance	N/A	-	-	-	0.97	1.0	2.2	1.4	5.1	3.9
Water Nutrients										
Ammonia-N	mg/L	0.018-190 [4]	1.1	0.89	0.96	0.81	0.63	0.72	0.76	0.83
TKN	mg/L	-	1.9	1.5	1.6	1.1	1.3	1.4	1.3	1.5
Hydrocarbons										
Benzene	mg/L	0.005	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics										
COD	mg/L	-	79	68	71	36	40	51	46	34
TOC	mg/L	-	-	-	-	-	-	-	-	-
DOC	mg/L	-	11	9	10	11	12	12	14	12
Oil & Grease	mg/L	-	-	-	-	-	-	-	-	-
Metals										
Aluminum	mg/L	0.0007 / 0.05 [5]	-	-	0.0043	0.0093	0.0088	0.0079	0.0050	0.0041
Antimony	mg/L	0.006	0.00081	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	-	-	0.0014	0.0021	0.0019	0.0027	0.0032	0.0039
Barium	mg/L	1	0.04	0.041	0.025	0.045	0.049	0.044	0.050	0.04
Beryllium	mg/L	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	-
Boron	mg/L	1	-	-	0.68	0.72	0.77	0.73	0.76	0.67
Cadmium	mg/L	0.00004-0.00037 [2]	0.000035	<0.000025	<0.000020	<0.000020	<0.000020	<0.00002	<0.000020	<0.000020
Chromium	mg/L	0.05	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	0.0012	0.0014	0.00033	0.00046	0.00032	<0.00030	0.00036	-
Copper	mg/L	0.007	0.0017	0.00047	0.00064	0.00042	<0.00020	0.00055	0.00097	0.00058
Lead	mg/L	0.001-0.007 [2]	<0.00020	<0.0002	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	-
Lithium	mg/L	-	-	-	0.12	0.11	-	-	0.12	-
Manganese	mg/L	0.05	-	-	0.017	0.015	0.025	0.042	0.10	0.08
Mercury	mg/L	0.000005	<0.0000050	<0.0000050	<0.0000050	<0.0000020	<0.0000020	0.0000025	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.012	0.00036	0.0057	0.0070	0.0062	0.0067	0.0071	0.0008
Nickel	mg/L	0.007-0.170 [2]	0.005	0.0023	0.0020	0.0023	0.0011	0.0012	0.0010	0.0008
Phosphorus	mg/L	-	-	-	0.19	0.10	0.15	-	0.15	-
Selenium	mg/L	0.002	-	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon	mg/L	-	-	-	3.4	3.6	3.8	-	4.0	-
Silver	mg/L	0.0001	-	-	<0.00010	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	-	-	0.20	0.17	0.19	-	0.22	-
Sulphur	mg/L	-	-	-	120	100	110	-	150	-
Thallium	mg/L	-	-	-	<0.00020	<0.00020	<0.0002	-	<0.00020	-
Tin	mg/L	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	-
Titanium	mg/L	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	-
Uranium	mg/L	0.01	-	-	0.00071	0.00092	0.00074	0.00056	0.00055	0.0005
Vanadium	mg/L	-	-	-	0.0042	0.0028	0.0022	<0.0030	0.0014	-
Zinc	mg/L	0.03	0.012	0.007	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Volatile Organic Compounds (VOCs)										
Bromodichloromethane	mg/L	-	-	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Table E8B: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 8B							
			Jun-13	May-14	May-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements										
Field pH	-	-	6.57	7.6	8	7.73	7.8	7.5	7.72	7.62
Field EC	mS	-	10.05	8.96	9.28	8.94	9.25	8.88	8.01	7.73
Field Temperature	°C	-	7.4	4.0	6.6	6.8	5.8	7.8	14.0	10.2
Routine Water										
pH	-	6.5 - 8.5	8.31	8.37	7.95	8.19	8.17	8.16	8.14	8.3
Conductivity (EC)	µS/cm	1000	8800	8500	8700	8700	8800	8400	8100	8000
Calcium	mg/L	-	92	110	90	97	97	88	86	74
Magnesium	mg/L	-	48	62	56	54	57	52	41	40
Sodium	mg/L	200	2100	2300	2200	2000	2100	2100	2000	2000
Potassium	mg/L	-	5.8	5.4	6.2	6.7	6.7	6.8	<30	5.1
Iron	mg/L	0.3	<0.060	<0.60	<0.60	<0.060	<0.60	<0.60	*<0.60*	0.077
Sulphate	mg/L	128-429 [2]	4300	4500	4200	3900	3900	3800	3200	2800
Chloride	mg/L	100	23	23	26	28	30	38	43	62
Bicarbonate	mg/L	-	1100	1100	1100	1100	1100	1200	1200	1200
Carbonate	mg/L	-	7.2	18	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0
Hydroxide	mg/L	-	-	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	0.022	0.074	0.12	0.10	1.5	0.17	0.11	0.11
Nitrite (N)	mg/L	0.02 - 0.20 [3]	-	-	<0.010	<0.050	<0.16	0.03	<0.10	0.034
Nitrate and Nitrate (N)	mg/L	-	-	-	0.12	0.10	0.35	0.2	<0.14	0.15
Total Dissolved Solids (TDS)	mg/L	500	7100	7600	7100	6600	6800	6700	6000	5600
Hardness	mg/L	-	-	-	460	460	480	430	380	350
Alkalinity (total as CaCO3)	mg/L	-	-	-	910	870	940	1000	1000	1000
Alkalinity (pp as CaCO3)	mg/L	-	-	-	<0.50	<0.50	<0.5		<1.0	
Ionic Balance	N/A	-	-	-	1.0	0.97	0.098	0.79	2.8	7.8
Water Nutrients										
Ammonia-N	mg/L	0.018-190 [4]	0.61	0.57	0.69	0.62	0.38	0.49	0.59	0.48
TKN	mg/L	-	1.7	1.4	1.6	1.3	1.3	1.4	1.4	1.6
Hydrocarbons										
Benzene	mg/L	0.005	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics										
COD	mg/L	-	75	39	48	47	44	44	51	52
TOC	mg/L	-	-	-	-	-	-	-	-	-
DOC	mg/L	-	13	13	14	15	16	15	17	17
Oil & Grease	mg/L	-	-	-	-	-	-	-	-	-
Metals										
Aluminum	mg/L	0.0007 / 0.05 [5]	-	-	<0.030	0.0050	0.0600	0.0045	0.0047	<0.0030
Antimony	mg/L	0.006	<0.006	<0.0060	<0.0060	<0.00060	<0.00060	<0.00072	<0.00060	<0.00060
Arsenic	mg/L	0.005	-	-	0.0021	0.0015	0.0013	0.0012	0.0014	0.0011
Barium	mg/L	1	0.025	<0.10	<0.10	0.013	<0.10	<0.10	<1.0	0.01
Beryllium	mg/L	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Boron	mg/L	1	-	-	0.41	0.41	0.40	0.41	0.48	0.35
Cadmium	mg/L	0.00004-0.00037 [2]	0.000096	<0.000050	<0.00020	0.00003	<0.000020	0.000021	<0.000020	<0.000020
Chromium	mg/L	0.05	<0.010	<0.010	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	<0.0030	<0.0030	<0.0030	0.0011	0.00095	0.00087	0.00077	
Copper	mg/L	0.007	<0.0020	0.0031	<0.0020	0.00034	0.00039	0.001	0.00087	0.00063
Lead	mg/L	0.001-0.007 [2]	<0.0020	<0.0020	<0.0020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	-	-	0.34	0.30	-	-	<2.0	
Manganese	mg/L	0.05	-	-	0.18	0.18	0.180	0.150	0.13	0.21
Mercury	mg/L	0.000005	<0.0000050	<0.0000050	<0.0000050	<0.0000020	<0.0000020	0.0000041	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.0021	0.0023	<0.0020	0.0016	0.0013	0.0016	0.0014	0.00047
Nickel	mg/L	0.007-0.170 [2]	0.0052	0.006	<0.0050	0.0035	0.0027	0.0029	0.0027	0.0012
Phosphorus	mg/L	-	-	-	<1.0	<0.10	<1	-	<10	
Selenium	mg/L	0.002	-	-	<0.0020	<0.00020	0.00025	<0.00020	<0.00020	<0.00020
Silicon	mg/L	-	-	-	4.3	4.3	4.3	-	<10	
Silver	mg/L	0.0001	-	-	<0.0010	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	-	-	2.4	2.1	2.4	-	<2.0	
Sulphur	mg/L	-	-	-	1300	1400	1400	-	1200	
Thallium	mg/L	-	-	-	<0.0020	<0.00020	<0.0002	-	<0.00020	
Tin	mg/L	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Titanium	mg/L	-	-	-	<0.010	0.0011	<0.001	-	<0.0010	
Uranium	mg/L	0.01	-	-	0.0022	0.0024	0.0022	0.0018	0.0022	0.00013
Vanadium	mg/L	-	-	-	<0.010	<0.0010	<0.001	<0.0030	<0.0010	
Zinc	mg/L	0.03	<0.030	<0.030	<0.030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Volatile Organic Compounds (VOCs)										
Bromodichloromethane	mg/L	-	-	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Table E12A: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 12A																									
			Apr-01	Oct-01	Apr-02	Oct-02	Apr-03	Oct-03	Apr-04	Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	May-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements																												
Field pH	-	-	7.3	7.02	7.3	7.71	7.78	7.85	7.13	7.61	6.97	7.57	7.67	7.5	7.45	7.52	7.490	7.380	7.79	7.66	7.33	6	7.8	7.6	6.15	7.5	7.8	7.57	7.52
Field EC	mS	-	-	-	-	-	-	-	-	-	11.8	26.8 (EF)	9.81	6.98	26.5	27.02	10.670	10.780	2.4	10.84	4.75	13.32	11.38	11.13	15.40	11.64	11.28	12.34	12.98
Field Temperature	°C	-	-	-	-	-	-	-	-	-	6.2	7.6	4.3	6.5	6.5	9.95	5.5	5.8	14.1	9.7	6.1	6.2	8.7	5.7	-	7.7	9.6	8.4	6.3
Routine Water																													
pH	-	6.5 - 8.5	7.49	7.68	7.67	7.75	7.99	7.87	8.1	8.00	8.00	8.20	8.00	8.30	8.20	7.90	8.1	8.03	8	7.98	8	8.15	8.25	7.75	8.00	8.02	8.02	8.02	7.97
Conductivity (EC)	µS/cm	1000	9630	10600	10600	11500	10400	11600	10500	11300	11000	9570	10500	10900	11400	10900	10900	10700	11300	11000	11000	11000	11,000	11,000	11,000	11,000	10,000	13,000	13,000
Calcium	mg/L	-	129	129	137	160	153	154	143	131	158	153	140	143	157	136	150	135	143 *	140	140	130	150	120	150	160	130	170	160
Magnesium	mg/L	-	72.9	80.1	77	94.4	86.5	90.3	84.6	98.7	99.9	95.3	78.8	87	98.5	81.8	91.3	76.7	81.8 *	75	71	72	86	64	82	90	74	100	110
Sodium	mg/L	200	2660	3060	2910	3410	2650	2940	2810	3210	3120	3090	2690	2810	3110	2820	2830	2750	2810 *	2700	3000	2700	3000	2600	2600	2800	2600	3100	3500
Potassium	mg/L	-	8.6	12	9.5	12	8.4	11	8.7	12.8	11.6	11.6	10.7	12.2	13	8.6	5.6	11.6	10.4 *	11	11	9.7	10	10	11	10	11	<30	11
Iron	mg/L	0.3	0.14	<0.02	0.02	<0.1	<0.1	<0.1	0.141	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	0.021	<0.005	<0.050	<0.050 *	<0.06	<0.060	<0.060	<0.60	0.75	<0.060	<0.6	<0.60	*<0.60*	0.16
Sulphate	mg/L	128-429 [2]	6020	6250	6580	7840	6360	6630	5970	5970	6350	6240	5690	5570	6010	5760	5700	5680	5470 *	5800	5900	6100	6700	5600	6300	5600	4900	6100	7000
Chloride	mg/L	100	<0.5	0.6	0.8	<0.5	0.8	1.1	1	1	1	2	1	1	3	3	3	1.14	<10 *	3	1.8	1.8	1.9	2.2	1.6	1.3	1.7	2.5	2.2
Bicarbonate	mg/L	-	948	990	938	1020	969	1020	934	1020	976	958	881	904	981	893	965	919	906	850	860	910	900	900	880	950	960	980	920
Carbonate	mg/L	-	<6	<6	<6	<6	<6	<6	<6	<5	<5	<5	<5	<5	<5	<5	<5	<5.0	<5.0	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0
Hydroxide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	<0.04	<0.04	0.08	<0.04	<0.08	<0.08	0.2	0.1	<0.1	<0.1	0.1	<0.1	0.3	<0.1	0.3	0.06	<1.0 *	0.067	0.095	0.15	0.11	0.082	0.082	0.87	0.18	<0.20	0.1
Nitrite (N)	mg/L	0.02 - 0.20 [3]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.05	0.04	<0.16	0.054	*<0.20*	0.035
Nitrate and Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.13	0.12	0.2	0.23	<0.28	0.14
Total Dissolved Solids (TDS)	mg/L	500	9360	10000	10200	12000	9730	10300	9480	9930	10200	10100	9040	9070	9880	9250	9260	9110	8960	9200	9500	9600	10,000	8900	9600	9200	8200	9900	11000
Hardness	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	580	710	770	630	840	860
Alkalinity (total as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	730	720	780	790	800	750
Alkalinity (pp as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	-	<1.0	
Ionic Balance	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.96	0.89	2.1	3.9	2.8	2.9
Water Nutrients																													
Ammonia-N	mg/L	0.018-190 [4]	0.31	0.11	0.41	0.18	0.35	0.41	0.11	0.12	0.09	0.19	0.27	0.15	<0.05	0.29	<0.05	0.308	<0.050	0.37	0.46	0.27	0.26	0.38	0.21	0.067	0.11	0.15	0.11
TKN	mg/L	-	1.02	0.8	2.31	2.08	2.88	4.22	0.9	0.4	0.8	0.9	1.0	0.8	0.9	0.9	1.6	1.54	1.29	1.2	1.2	0.87	0.89	1.3	0.45	0.7	0.8	0.73	0.53
Hydrocarbons																													
Benzene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.0010	<0.0008	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.050	<0.25	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics																													
COD	mg/L	-	44	35	161	98	305	421	30	40	38	39	41	43	39	43	30	35.6	39.8	78	61	53	41	68	48	40	53	44	41
TOC	mg/L	-	16.1	15	14.8	14.9	15	15.3	16	17	14	16	16	15	15	16	-	-	-	-	-	-	-	-	-	-	-	-	
DOC	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	13.8	14.8	14	15	14	15	16	17	16	17	18	15
Oil & Grease	mg/L	-	<5	<5	<5	<5	<5	<5	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	
Metals																													
Aluminum	mg/L	0.0007 / 0.05 [5]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.19	0.0087	<0.0030	<0.0030	0.022	<0.0030
Antimony	mg/L	0.006	<0.05	<0.02	<0.02	<0.002	<0.002	<0.002	0.0389	0.0008	0.0007	<0.0004	0.0007	0.0006	<0.0004	0.0010	-	-	<0.0016 *	<0.01	<0.012	0.00074	<0.0060	<0.012	<0.00060	<0.00060	<0.00062	<0.00060	<0.00060
Arsenic	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0040	0.00097	0.00078	0.00054	0.00070	0.00070
Barium	mg/L	1	0.007	0.0095	0.01	0.014	0.0100	0.0160	0.0130	0.0110	0.0110	0.011	0.013	0.010	0.014	0.009	0.009	0.007	0.0096 *	<0.01	<0.010	<0.010	<0.10	<0.010	<0.010	<0.10	<0.10	<1.0	<0.010
Beryllium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.020	<0.0010	<0.001	-	<0.0010	
Boron	mg/L	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.44	0.42	0.46	0.44	0.47	0.37
Cadmium	mg/L	0.00004-0.00037 [2]	*<0.005*	*<0.003*	*<0.003*	<0.0001	<0.0001	<0.0001	0.0002	*<0.001*	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.001	<0.0010	<0.00020 *	0.0001	*<0.10*	<0.0001	<0.000050	<0.00040	0.000042	0.000022	<0.000020	<0.000020	<0.000020
Chromium	mg/L	0.05	<0.008	<0.004	<0.004	0.0051	<0.005	<0.005	0.0090	<0.005	<0.005	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.0050 *	<0.02	<0.020	<0.020	<0.010	<0.020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	0.02	0.012	0.017	0.0042	0.0044	0.0077	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0020	<0.0020 *	<0.006	<0.0060	<0.0060	<0.0030	<0.0060	0.00048	0.00072	<0.00030	0.00033	
Copper	mg/L	0.007	*<0.01*	<0.005	<0.005	0.013	0.0120	0.0140	0.0720	0.0440	0.0300	0.016	0.010	0.011	0.009	0.007	0.014	0.0111	0.0162 *	<0.004	<0.0040	<0.0040	<0.0020	<0.0040	0.0028	0.00074	0.0019	0.0015	0.0013
Lead	mg/L	0.001-0.007 [2]	*<0.02*	0.012	*<0.01*	<0.001	<0.001	<0.001	0.0004	<0.005	0.0001	<0.0001	0.0004	<0.0001	<0.0001	<0.0001	<0.005	<0.0050	<0.00040 *	<0.004	<0.0040	<0.0040	<0.0020	<0.0040	0.00022	<0.00020	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.59	0.59	-	-	<2.0	
Manganese	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.087	0.055	<0.040	<0.040	0.044	0.017
Mercury	mg/L	0.000005	*<0.001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0002*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*0.0001*	*0.0001*	*<0.00010*	*<0.00010*	<0.000005	0.0000062	<0.0000050	<0.0000050	<0.0000050	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000019
Molybdenum	mg/L	-	<0.01	<0.005	<0.005	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.0050 *	<0.004	<0.0040	<0.0040	<0.0020	<0.0040	0.00071	0.00076	0.00041	0.00037	
Nickel	mg/L	0.007-0.170 [2]	<0.01	0.017	0.025	0.0066	<0.005	0.015	0.007	<0.002	<0.002	<0.002	0.003	0.006	<0.002	0.008	0.007	0.0067	0.0090 *	<0.01	<0.010	<0.010	<0.0050	<0.010	0.0035	0.007	0.0034	0.0031	0.0033
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	<0.10	<1	-	<10	
Selenium	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0040	0.00023	<0.00020	<0.00020	0.00026	0.00027
Silicon	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.1	4.5	4.4	-	<10	
Silver	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.7	3.0	3.7	-	3.9	
Sulphur	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1800	2100	2000	-	2300	
Thallium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0040	<0.00020	<0.0002	-	<0.00020	
Tin	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.020	<0.0010	<0.001	-	<0.0010	
Titanium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.020	<0.0010	<0.001	-	0.0029	
Uranium	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	0.0021	0.0023	0.0013	0.0034	0.0043
Vanadium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.020	<0.0010	<0.001	-	<0.0010	
Zinc	mg/L	0.03	0.034	0.024	<0.003	0.027	<0.01	0.023	0.059	0.051	0.039	0.034	0.020	0.016	0.042	0.031	0.033	0.0153	0.0176 *	<0.06	<0.060	<0.060	<0.030	<0.060	0.010	0.0042	0.005	0.0075	0.0064

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E12A: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 12A																									
			Apr-01	Oct-01	Apr-02	Oct-02	Apr-03	Oct-03	Apr-04	Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	May-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Polycyclic Aromatic Hydrocarbons (PAHs)																												
Benzo[a]pyrene equivalency	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000010	-	-	-	-	-
Acenaphthene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acenaphthylene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acridine	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Anthracene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benz(a)anthracene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(a) pyrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(b+j)fluoranthene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0000085	-	-	-	-	-
Benzo(c)phenanthrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000050	-	-	-	-	-
Benzo(e)pyrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000050	-	-	-	-	-
Benzo(g,h,i)perylene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0000085	-	-	-	-	-
Benzo(k)fluoranthene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0000085	-	-	-	-	-
Chrysene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0000085	-	-	-	-	-
Dibenz(a,h)anthracene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0000075	-	-	-	-	-
Fluoranthene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000010	-	-	-	-	-
Fluorene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000050	-	-	-	-	-
Indeno(1,2,3-c,d)pyrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0000085	-	-	-	-	-
1-Methylnaphthalene	mg/L																												
2-Methylnaphthalene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	-	-	-	-	-
Naphthalene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	-	-	-	-	-
Perylene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000050	-	-	-	-	-
Phenanthrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000050	-	-	-	-	-
Pyrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000020	-	-	-	-	-
Quinoline	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	-	-	-	-	-
Volatile Organic Compounds (VOCs)																												
Bromodichloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E1C: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 1C									
			Jun-11	May-12	Jun-13	May-14	May-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements												
Field pH	-	-	7.61	6.1	5.41	8.0	8.2	6.43	7.6	8	7.59	7.24
Field EC	mS	-	5.85	19.99	7.03	6.1	6.42	7.54	7.27	6.98	5.99	5.9
Field Temperature	°C	-	11.3	10	6.4	6.7	6.6	8.1	9.7	6.1	9.9	7.9
Routine Water												
pH	-	6.5 - 8.5	8.05	8.11	8.26	8.08	7.98	8.18	8.23	8.1	8.14	8.25
Conductivity (EC)	µS/cm	1000	5800	5800	5900	5900	6100	6100	6100	6100	6100	5900
Calcium	mg/L	-	150	130	130	130	140	140	150	140	140	140
Magnesium	mg/L	-	37	34	34	33	34	36	38	37	33	34
Sodium	mg/L	200	1300	1400	1300	1300	1400	1300	1400	1400	1300	1400
Potassium	mg/L	-	7.6	6.7	6.2	4.8	6.6	6.9	7.1	6.7	6.4	6.5
Iron	mg/L	0.3	<0.06	<0.060	0.095	<0.60	<0.060	<0.060	<0.6	<0.60	<0.060	0.07
Sulphate	mg/L	128-429 [2]	2700	2600	2800	3000	2900	2800	2600	2700	2500	2600
Chloride	mg/L	100	2	1.8	1.3	1.1	1.7	1.4	<1	<1.0	1.8	2.1
Bicarbonate	mg/L	-	740	760	760	770	750	710	760	760	760	700
Carbonate	mg/L	-	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Hydroxide	mg/L	-	-	-	-	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	0.009	0.0078	0.25	0.093	0.080	0.22	0.41	0.15	0.19	0.38
Nitrite (N)	mg/L	0.02 - 0.20 [3]	-	-	-	-	<0.010	0.018	0.28	<0.010	0.027	0.042
Nitrate and Nitrate (N)	mg/L	-	-	-	-	-	0.080	0.23	-	0.15	0.22	0.42
Total Dissolved Solids (TDS)	mg/L	500	4600	4600	4600	4800	4800	4700	4600	4700	4400	4500
Hardness	mg/L	-	-	-	-	-	490	510	530	510	480	480
Alkalinity (total as CaCO3)	mg/L	-	-	-	-	-	620	580	620	620	620	570
Alkalinity (pp as CaCO3)	mg/L	-	-	-	-	-	<0.50	<0.50	<0.5		<1.0	-
Ionic Balance	N/A	-	-	-	-	-	0.99	0.96	3.8	0.72	2.4	2.1
Water Nutrients												
Ammonia-N	mg/L	0.018-190 [4]	0.74	0.66	0.57	0.57	0.60	0.46	0.7	0.56	0.63	0.39
TKN	mg/L	-	1.6	1.3	1.2	1.2	1.2	0.58	1.1	1.1	0.94	0.91
Hydrocarbons												
Benzene	mg/L	0.005	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.0004	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.0004	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.0004	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	<0.0008	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.0008	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10
Organics												
COD	mg/L	-	78	56	46	39	42	51	28	30	48	36
TOC	mg/L	-	-	-	-	-	-	-	-	-	-	-
DOC	mg/L	-	11	10	12	9.6	11	11	10	11	12	9.9
Oil & Grease	mg/L	-	-	-	-	-	-	-	-	-	-	-
Metals												
Aluminum	mg/L	0.0007 / 0.05 [5]	-	-	-	-	<0.030	0.0079	0.0069	<0.0030	0.0056	0.012
Antimony	mg/L	0.006	<0.006	<0.0060	<0.0060	<0.0060	<0.0060	<0.00060	<0.0006	<0.00062	<0.00060	<0.00060
Arsenic	mg/L	0.005	-	-	-	-	<0.0020	0.0011	0.00068	0.00068	0.00077	0.0005
Barium	mg/L	1	0.06	0.037	0.035	<0.10	0.025	0.023	<0.1	<0.10	0.019	0.015
Beryllium	mg/L	-	-	-	-	-	<0.010	<0.0010	<0.001		<0.0010	-
Boron	mg/L	1	-	-	-	-	0.24	0.24	0.24	0.24	0.25	0.24
Cadmium	mg/L	0.00004-0.00037 [2]	0.00009	<0.050	0.000065	<0.000050	<0.00020	0.000036	<0.00002	<0.000020	<0.000020	<0.000020
Chromium	mg/L	0.05	<0.01	<0.010	<0.010	<0.010	<0.010	<0.0010	<0.001	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	<0.003	<0.0030	<0.0030	<0.0030	<0.0030	0.00087	0.00067	0.00069	0.00067	-
Copper	mg/L	0.007	<0.002	<0.0020	<0.0020	<0.0020	<0.0020	0.00070	0.00039	0.00043	0.00080	0.0004
Lead	mg/L	0.001-0.007 [2]	<0.002	<0.0020	<0.0020	<0.0020	<0.0020	<0.00020	<0.0002	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	-	-	-	-	0.32	0.32	0.35		0.32	-
Manganese	mg/L	0.05	-	-	-	-	0.27	0.28	0.28	0.27	0.21	0.21
Mercury	mg/L	0.000005	<0.000005	<0.0020	<0.0000050	<0.0000050	<0.0000050	<0.0000020	<0.000002	<0.0000020	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.003	<0.0020	0.002	<0.0020	<0.0020	0.0013	0.00068	0.00082	0.00086	0.00047
Nickel	mg/L	0.007-0.170 [2]	<0.005	<0.0050	<0.0050	<0.0050	<0.0050	0.0021	0.0013	0.0016	0.0012	0.0012
Phosphorus	mg/L	-	-	-	-	-	0.10	<0.10	<1		<0.10	-
Selenium	mg/L	0.002	-	-	-	-	<0.0020	<0.00020	<0.0002	<0.00020	<0.00020	<0.00020
Silicon	mg/L	-	-	-	-	-	4.3	4.1	4.2		4.0	-
Silver	mg/L	0.0001	-	-	-	-	*<0.0010*	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	-	-	-	-	2.2	2.2	2.6		2.1	-
Sulphur	mg/L	-	-	-	-	-	920	950	960		960	-
Thallium	mg/L	-	-	-	-	-	<0.0020	<0.00020	<0.0002		<0.00020	-
Tin	mg/L	-	-	-	-	-	<0.010	<0.0010	<0.001		<0.0010	-
Titanium	mg/L	-	-	-	-	-	<0.010	<0.0010	<0.001		<0.0010	-
Uranium	mg/L	0.01	-	-	-	-	<0.0010	0.00036	0.00022	0.00018	0.00012	0.00013
Vanadium	mg/L	-	-	-	-	-	<0.010	<0.0010	<0.001	<0.0030	<0.0010	-
Zinc	mg/L	0.03	<0.03	<0.030	0.074	<0.030	<0.030	0.0037	<0.003	<0.0030	<0.0030	<0.0030
Volatile Organic Compounds (VOCs)												
Bromodichloromethane	mg/L	-	-	-	-	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E10: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 10																									
			Apr-01	Oct-01	Apr-02	Oct-02	Apr-03	Oct-03	Apr-04	Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	May-15	Jun-16	Jun-17	Jun-18	Jun-19	May-20
Field Measurements																												
Field pH	-	-	-	8.27	-	8.39	8.42	8.11	7.54	7.63	7.54	7.68	7.52	7.93	7.99	8.03	7.86	7.870	8.26	7.92	7.69	7.77	8.3	8.3	8.06	8.0	7.7	7.38	7.67
Field EC	mS	-	-	-	-	-	-	-	-	-	4.23	9.72 (EF)	4.39	3.79	9.20	9.06	3.98	4.250	5.7	4.52	2.03	4.52	4.92	4.98	4.42	4.26	4.53	4.24	2.95
Field Temperature	°C	-	-	-	-	-	-	-	-	-	5.7	4.9	4.6	10.2	3.5	11.55	8	4.3	16.4	17	8.6	11.5	4.2	7.5	9.8	10.3	8.5	11.2	5.5
Routine Water																												
pH	-	6.5 - 8.5	-	8.31	-	8.43	8.57	8.25	8.4	8.3	8.2	8.4	8.2	8.4	8.3	8.1	8.2	8.16	8.32	8.18	8.1	8.33	8.12	7.79	8.26	8.11	8.27	8.14	8.14
Conductivity (EC)	µS/cm	1000	-	2570	-	2640	2700	3090	3450	3330	3710	3370	3980	3910	4320	4300	4210	4440	4460	4600	4900	4600	4600	4700	4500	4100	4100	4300	4300
Calcium	mg/L	-	-	28.3	-	25.8	29.7	34.8	52.8	34.9	65.3	62.5	72.3	65.2	86	78.4	79.6	82.2	78.4	72	91	83	68	140	60	71	68	73	70
Magnesium	mg/L	-	-	14.9	-	15.1	16.6	16.1	21.7	20.5	25.2	26.7	27.0	29.4	35.9	31.6	31.4	28.2	34.1	34	33	34	35	44	31	32	32	24	26
Sodium	mg/L	200	-	593	-	687	659	678	798	732	836	887	906	888	1010	1000	969	971	929	990	1200	1100	990	910	840	870	910	940	960
Potassium	mg/L	-	-	3	-	2.7	3.3	2.7	1.4	2.4	4.5	4.2	4.5	4.9	5.3	4.9	2.9	5.23	4.72	4.2	5	4.4	4	4.5	4.4	4.2	4	4.2	3.7
Iron	mg/L	0.3	-	<0.02	-	<0.05	0.19	<0.05	0.329	0.006	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.033	0.012	<0.06	<0.060	<0.060	<0.060	8.3	<0.060	<0.060	<0.06	<0.060	<0.060
Sulphate	mg/L	128-429 [2]	-	915	-	1080	1130	1160	1440	1250	1450	1560	1690	1560	1830	1850	1750	1950	1870	1900	2200	2200	2100	1900	1700	1600	1600	1600	1600
Chloride	mg/L	100	-	3.2	-	1.4	2.1	4.8	8	8	13	12	14	12	15	16	19	19.4	16 *	23	25	23	26	140	60	59	55	65	74
Bicarbonate	mg/L	-	-	640	-	539	467	614	571	578	579	581	579	559	591	595	613	599	579	590	600	580	600	590	620	630	650	660	660
Carbonate	mg/L	-	-	< 6	-	26	46	< 6	7	< 5	<5	6	<5	12	<5	<5	<5	<5.0	5.7	<0.5	<0.50	4.6	<0.50	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0
Hydroxide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	-	1.04	-	0.771	0.436	< 0.04	0.2	0.4	0.1	0.2	0.2	0.2	0.2	0.3	0.1	<0.050	<1.0 *	0.14	0.019	0.13	0.079	0.014	0.04	3.0	0.1	0.057	0.11
Nitrite (N)	mg/L	0.02 - 0.20 [3]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	0.01	<0.16	<0.010	<0.010	<0.01
Nitrate and Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.014	0.05	-	0.13	0.057	0.11
Total Dissolved Solids (TDS)	mg/L	500	-	1870	-	2100	2120	2200	2610	2340	2680	2840	3000	2850	3270	3280	3150	3350	3220	3300	3900	3700	3500	3400	3000	3000	3000	3000	3100
Hardness	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	520	280	310	300	280	280
Alkalinity (total as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	490	500	520	530	540	540
Alkalinity (pp as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	-	<1.0	
Ionic Balance	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.95	0.9	2	1.3	1.1	0.51
Water Nutrients																													
Ammonia-N	mg/L	0.018-190 [4]	-	<0.05	-	<0.05	<0.05	<0.05	0.07	0.1	<0.05	0.16	0.17	0.10	<0.05	0.13	0.06	0.111	<0.050	0.07	0.31	0.094	0.17	0.23	0.16	0.052	0.06	0.30	0.17
TKN	mg/L	-	-	0.32	-	0.41	0.06	0.42	0.7	0.4	0.9	0.7	1.1	0.7	0.6	0.5	1.2	0.96	1.09	0.61	0.86	0.69	0.68	0.68	0.57	0.49	0.49	0.58	0.61
Hydrocarbons																													
Benzene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.0010	<0.0008	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.050	<0.25	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics																													
COD	mg/L	-	-	5	-	13	18	14	20	20	24	24	23	22	26	26	23	25.6	15.5	32	33	43	33	35	32	24	28	31	34
TOC	mg/L	-	-	6.9	-	7.8	6.7	6.6	7	7	8	8	9	9	9	9	-	-	-	-	-	-	-	-	-	-	-	-	
DOC	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	8.3	9.2	11	10	11	9.6	11	9.7	8	8.6	17	9
Oil & Grease	mg/L	-	-	<5	-	7	-	<5	<1	2	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	
Metals																													
Aluminum	mg/L	0.0007 / 0.05 [5]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0030	0.0091	<0.0030	0.0068	<0.0030	<0.0030
Antimony	mg/L	0.006	-	<0.02	-	<0.001	-	<0.001	0.0209	0.0011	0.0007	<0.0004	0.0004	0.0008	<0.0004	0.0009	-	-	<0.00040	<0.0006	<0.0030	0.00073	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00049	0.0006	0.00042	0.00059	0.00072	0.00061
Barium	mg/L	1	-	0.022	-	0.017	-	0.026	0.026	0.024	0.025	0.024	0.018	0.020	0.023	0.017	0.018	0.0121	0.0184	0.018	0.015	0.015	0.016	0.087	0.023	0.023	0.018	0.010	0.013
Beryllium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Boron	mg/L	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.11	0.12	0.13	0.11	0.14	0.11
Cadmium	mg/L	0.00004-0.00037 [2]	-	*<0.003*	-	<0.00005	-	<0.00005	<0.0001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	*<0.0010*	<0.000050	<0.000025	0.000047	0.000045	<0.000025	0.000049	0.000023	0.000021	<0.000020	<0.000020	<0.000020
Chromium	mg/L	0.05	-	0.0075	-	0.015	-	0.011	0.008	0.006	<0.005	<0.005	<0.0005	<0.0005	<0.005	<0.005	<0.005	<0.0050	<0.0050	0.002	<0.0050	<0.0010	0.0014	<0.0010	0.0021	0.0018	0.0059	<0.0010	0.0014
Cobalt	mg/L	-	-	0.0035	-	<0.0005	-	<0.0005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0020	<0.0020	<0.0003	<0.0015	0.00059	0.00042	0.014	0.00057	0.00045	<0.00030	0.00034	
Copper	mg/L	0.007	-	0.068	-	<0.005	-	0.005	0.029	0.012	0.011	0.005	0.004	0.005	0.003	0.003	0.005	0.004	0.0055	0.0014	0.0012	0.0025	0.17	0.0079	0.0035	0.0033	0.002	0.0015	0.0014
Lead	mg/L	0.001-0.007 [2]	-	*<0.01*	-	<0.0005	-	<0.0005	0.0002	<0.005	0.0003	<0.0001	0.003	0.0001	0.0001	0.0002	<0.005	<0.0050	<0.00010	<0.0002	*<0.0010*	<0.00020	0.009	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.24	0.23	-	-	0.25	
Manganese	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	0.094	0.076	<0.004	0.088	0.28
Mercury	mg/L	0.000005	-	*<0.0001*	-	*<0.0001*	-	*<0.0001*	*<0.0001*	*<0.0002*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*0.0002*	*<0.0001*	*<0.00010*	*<0.00010*	<0.000005	0.0000056	<0.000010	<0.0000050	<0.0000050	0.0000034	<0.0000020	0.000005	<0.0000020	<0.0000019
Molybdenum	mg/L	-	-	<0.005	-	<0.005	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.0050	0.0019	0.0012	0.0015	0.0022	0.0017	0.0038	0.0022	0.0025	0.0012	
Nickel	mg/L	0.007-0.170 [2]	-	0.007	-	<0.003	-	0.0051	0.005	0.003	0.004	0.003	0.003	0.005	0.003	0.010	0.005	0.0082	0.0081	0.0059	0.0094	0.0088	0.0078	1.5	0.059	0.033	0.02	0.0095	0.011
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	<0.10	<0.1	-	<0.10	
Selenium	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0003	0.00052	0.00053	0.0006	<0.00020	0.00041
Silicon	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.9	4.7	4.8	-	4.1	
Silver	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.0001	<0.00010	<0.00010	<0.0001
Strontium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.4	0.92	1	-	0.88	
Sulphur	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	550	510	530	-	590	
Thallium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	<0.00020	<0.0002	-	<0.00020	
Tin	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Titanium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	0.0010	<0.001	-	<0.0010	
Uranium	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0048	0.0093	0.0086	0.0099	0.0027	0.0054
Vanadium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Zinc	mg/L	0.03	-	0.184	-	0.007	-	0.006	0.018	0.018	0.015	0.006	0.009	0.003	0.011	0.018	0.01	0.0111	0.0031	0.009	0.018	0.0063	0.11	0.0038	0.0065	<0.0030	<0.0030	0.0031	<0.0030

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E10: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 10																								
			Apr-01	Oct-01	Apr-02	Oct-02	Apr-03	Oct-03	Apr-04	Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	May-15	Jun-16	Jun-17	Jun-18	Jun-19	May-20
Volatile Organic Compounds (VOCs)																											
Bromodichloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E11: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 11																									
			Apr-01	Oct-01	Apr-02	Oct-02	Apr-03	Oct-03	Apr-04	Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	May-15	Jun-16	Jun-17	Jun-18	Jun-19	May-20
Field Measurements																												
Field pH	-	-	7.73	7.64	7.62	7.69	8.02	7.72	7.47	7.01	6.83	7.33	7.29	7.62	7.55	6.98	7.656	7.477	7.55	7.73	7.41	7.31	7.5	7.8	7.61	7.7	7.5	7.28	7.18
Field EC	mS	-	-	-	-	-	-	-	-	-	8.65	27.2 (EF)	9.4	7.7	21.50	19.16	8.550	9.380	38.0	9.6	4.31	9.67	10.02	10.14	9.90	9.71	10.35	8.86	9.26
Field Temperature	°C	-	-	-	-	-	-	-	-	-	6.0	5.0	4.4	9.6	4.8	11.25	7.1	7.0	24.1	9.9	8.8	10.5	6.2	6.4	8.6	7.4	7.9	9.6	9.3
Routine Water																													
pH	-	6.5 - 8.5	7.83	7.75	7.79	7.78	8.09	7.95	8.2	8.1	8.0	8.2	8.0	8.2	8.2	7.9	8.2	8.01	7.98	8.04	7.98	8.06	8.19	7.79	8.03	7.88	8.01	7.99	8.05
Conductivity (EC)	µS/cm	1000	5900	7930	6680	7360	6040	8570	7770	8020	7710	8430	8900	10700 (EF)	8790	9370	8760	9420	8760	9800	9900	9300	9500	9500	9600	9100	9800	8500	9400
Calcium	mg/L	-	104	152	114	146	105	175	165	151	169	231	218	271	201	219	195	220	175	190	240	220	240	210	230	200	240	190	230
Magnesium	mg/L	-	56.1	93.7	60.4	79.3	56.9	101	92.5	92.6	94.5	150	120	184	124	132	117	120	94.5	110	130	110	130	110	120	120	130	92	120
Sodium	mg/L	200	1560	1990	1710	2110	1440	2000	1930	2020	1960	2540	2180	2820 (EF)	2210	2320	2130	2220	1920	2200	2600	2100	2300	2200	2100	2100	2300	2000	2300
Potassium	mg/L	-	4.6	8.4	6	8.8	< 4	6.6	5.5	8.2	7.3	9	8.3	11.1	9.2	6.1	3	9.25	7.69	7.1	9.1	7.1	7.6	8.4	9.1	8	8.7	<30	8.4
Iron	mg/L	0.3	0.093	<0.02	0.019	<0.1	<0.1	<0.1	0.022	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.019	<0.005	<0.05	<0.010	<0.06	<0.060	<0.060	<0.60	<0.060	<0.060	<0.60	<0.60	*<0.60*	*<0.60*
Sulphate	mg/L	128-429 [2]	3140	4390	3660	4720	3280	4720	4280	4380	3950	5550	4750	5710	4450	5190	4440	5020	4170	5300	5600	5400	5600	5100	4800	4500	4600	3700	3800
Chloride	mg/L	100	1.7	4.3	2.7	2.7	2.4	5.4	5	5	5	9	7	17	8	16	10	9.17	<10 *	16	14	14	14	20	32	37	36	31	53
Bicarbonate	mg/L	-	735	851	747	793	769	864	747	756	751	936	808	1170	913	870	882	839	813	920	880	890	840	900	930	1000	1000	910	960
Carbonate	mg/L	-	<6	<6	<6	<6	<6	<6	<6	<5	<5	<5	<5	<5	<5	<5	<5	<5.0	<5.0	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0
Hydroxide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	0.583	0.488	0.345	<0.04	<0.04	0.36	0.5	0.4	0.3	0.4	0.5	0.5	0.4	0.4	0.4	0.282	<1.0 *	0.49	0.27	0.37	0.27	0.19	0.23	0.71	0.33	0.26	0.074
Nitrite (N)	mg/L	0.02 - 0.20 [3]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	0.015	<0.16	<0.01	<0.10	<0.050
Nitrate and Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.19	0.25	-	0.33	0.26	0.075
Total Dissolved Solids (TDS)	mg/L	500	5230	7060	5920	7450	5270	7430	6850	7030	6560	8950	7680	9590	7450	8310	7330	8010	6770	8300	9000	8300	8800	8200	7800	7500	7800	6500	7000
Hardness	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	980	1100	980	1100	860	1100
Alkalinity (total as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	740	770	850	830	750	780
Alkalinity (pp as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	-	<1.0	
Ionic Balance	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.96	0.97	0.26	3.8	6.5	11
Water Nutrients																													
Ammonia-N	mg/L	0.018-190 [4]	0.11	0.28	0.13	0.14	0.12	0.09	<0.05	0.12	<0.05	0.17	<0.05	0.07	<0.05	0.06	<0.05	0.088	<0.050	<0.05	0.14	0.081	0.14	0.17	0.15	0.086	0.063	0.11	0.22
TKN	mg/L	-	1.77	2.95	2.63	2.28	1.6	2.12	1.6	1.4	1.7	2	1.7	2.4	1.7	1.8	1.4	2.31	2.08	1.8	1.8	1.5	1.7	1.7	0.81	1.5	1.7	1.2	1.1
Hydrocarbons																		2.31											
Benzene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.0010	<0.0008	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.050	<0.25	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics																													
COD	mg/L	-	103	116	167	108	84	104	100	100	99	118	105	119	92	98	80	101	90.7	110	100	95	96	100	100	84	98	86	91
TOC	mg/L	-	34.5	45	36.6	39.8	25.9	40.4	38	39	40	45	42	48	33	39	-	-	-	-	-	-	-	-	-	-	-	-	
DOC	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34	36.4	34.7	36	36	33	29	34	36	31	36	32	27
Oil & Grease	mg/L	-	<5	<5	<5	<5	<5	<5	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	
Metals																													
Aluminum	mg/L	0.0007 / 0.05 [5]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.030	0.0060	<0.0030	0.0055	0.012	<0.0030
Antimony	mg/L	0.006	<0.05	<0.02	<0.02	<0.002	<0.002	< 0.002	0.0474	0.0011	0.0009	<0.0004	0.0008	0.0012	<0.0004	0.001	-	-	0.00061	<0.006	<0.0060	0.001	<0.0060	<0.0060	<0.00060	<0.00060	<0.00077	<0.00060	<0.00060
Arsenic	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	0.0011	0.0011	0.0011	0.00085	0.0011
Barium	mg/L	1	0.01	0.0315	0.012	0.017	0.01	0.014	0.019	0.011	0.012	0.014	0.010	0.009	0.009	0.010	0.008	0.0074	0.0084	<0.01	<0.010	<0.010	<0.10	<0.010	<0.010	<0.10	<0.10	<1.0	<0.010
Beryllium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Boron	mg/L	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.19	0.20	<0.20	0.21	0.25	0.2
Cadmium	mg/L	0.00004-0.00037 [2]	*<0.005*	*<0.003*	*<0.003*	0.00013	< 0.0001	0.00015	0.0002	*<0.001*	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.0010	<0.000050	<0.000050	0.000055	0.000084	<0.000050	<0.00020	0.000024	0.000029	<0.000020	<0.000020	<0.000020
Chromium	mg/L	0.05	<0.008	<0.004	<0.004	<0.005	< 0.005	<0.005	0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.0050	<0.01	<0.010	<0.0010	<0.010	<0.010	0.0011	<0.0010	0.0011	<0.0010	<0.0010
Cobalt	mg/L	-	0.014	0.015	0.014	0.0019	0.0011	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0020	<0.0020	<0.003	<0.0030	<0.00030	<0.0030	<0.0030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
Copper	mg/L	0.007	*<0.01*	<0.005	<0.005	*<0.01*	*< 0.01*	0.012	0.068	0.033	0.025	0.014	0.010	0.014	0.008	0.007	0.012	0.0097	0.011	0.003	0.0032	0.0031	0.0024	<0.0020	0.0025	0.0025	0.0026	0.0023	0.002
Lead	mg/L	0.001-0.007 [2]	*<0.02*	*< 0.01*	*<0.01*	<0.001	<0.001	<0.001	0.0004	<0.005	0.0002	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.005	<0.0050	<0.00010	<0.002	<0.0020	<0.00020	<0.0020	<0.0020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.54	0.55	-	-	<2.0	
Manganese	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.015	0.0081	<0.040	<0.040	<0.040	0.015
Mercury	mg/L	0.000005	*< .001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0002*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*0.0001*	*<0.0001*	*<0.00010*	*<0.00010*	<0.000005	0.0000038	<0.000010	<0.0000050	<0.0000050	0.0000022	<0.0000020	<0.0000020	<0.0000020	<0.0000019
Molybdenum	mg/L	-	<0.01	<0.005	<0.005	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.0050	<0.002	<0.0020	0.0017	<0.0020	<0.0020	0.0009	0.0011	0.0011	0.00099	
Nickel	mg/L	0.007-0.170 [2]	<0.01	0.026	0.021	<0.005	<0.005	<0.005	0.012	0.006	0.005	0.004	0.004	0.012	<0.002	0.012	0.009	0.0103	0.0109	0.008	0.0064	0.0062	0.006	0.0058	0.0060	0.0055	0.0056	0.0042	0.005
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	<0.10	<1	-	<10	
Selenium	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	0.0011	0.00079	0.00095	0.00044	0.00027
Silicon	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.8	4.9	4.8	-	<10	
Silver	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*<0.0010*	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.7	4.0	3.8	-	3.4	
Sulphur	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1700	1700	1500	-	1500	
Thallium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.00020	<0.0002	-	<0.00020	
Tin	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Titanium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Uranium	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.024	0.030	0.030	0.030	0.020	0.031
Vanadium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Zinc	mg/L	0.03	0.018	0.017	0.007	0.03	<0.01	0.017	0.042	0.037	0.025	0.017	0.019	<0.002	0.035	0.015	0.014	0.0147	0.0113	<0.03	<0.030	0.0098	<0.030	<0.030	0.0077	0.0044	<0.0030	0.0046	0.0034

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E11: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[3]	MW 11																									
			Apr-01	Oct-01	Apr-02	Oct-02	Apr-03	Oct-03	Apr-04	Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	May-15	Jun-16	Jun-17	Jun-18	Jun-19	May-20
Volatile Organic Compounds (VOCs)																												
Bromodichloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E12B: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 12B																					
			Apr-03	Oct-03	Apr-04	Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun -10	Jun-11	May-12	Jun-13	May-14	May-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements																									
Field pH	-	-	7.63	7.5	7.48	7.64	6.87	7.51	7.51	7.79	7.45	7.69	7.520	7.606	7.76	7.62	7.52	6.17	7.3	7.7	6.28	7.4	8.2	7.32	7.36
Field EC	mS	-	-	-	-	-	8.83	18.42 (EF)	7.64	7.78	17.93	18.76	7.600	7.830	3	10.85	4.29	11.9	11.87	11.50	13.83	11.5	11.72	12.41	10.71
Field Temperature	°C	-	-	-	-	-	9.4	3.0	8.1	6.7	5.7	10.94	6.4	9.6	8.9	10.2	7.5	7.1	6.9	7.5	-	6.3	5.8	8.3	5.6
Routine Water																									
pH	-	6.5 - 8.5	7.82	7.88	8.2	8.2	8.1	8.1	8.2	8.4	8.3	8.0	8.1	8.16	7.95	7.96	7.97	8.14	8.17	7.71	8.00	7.87	8.01	7.96	7.93
Conductivity (EC)	µS/cm	1000	7820	8280	8090	7800	7650	7860	7760	7760	7850	7920	7720	7740	11200	11000	9700	10000	11,000	11,000	11,000	11,000	11,000	13,000	11,000
Calcium	mg/L	-	138	139	142	99.4	129	118	113	114	123	120	123	103	248 *	250	160	210	380	260	270	280	230	360	240
Magnesium	mg/L	-	25.3	28	29.2	23.3	23.9	21.8	14.8	20.6	22	21.6	22.1	14.5	38.9 *	40	29	37	78	60	54	63	47	69	59
Sodium	mg/L	200	1920	1990	2040	2040	2010	2020	1970	1990	2030	2080	1980	1850	2970 *	2600	2500	2400	3400	2800	2500	2600	2500	2900	2700
Potassium	mg/L	-	4.2	6.6	5.9	7.6	7.2	7.7	7.0	7.8	8.6	5.0	4.2	7.43	10.2 *	10	8	8.2	11	10	11	9.3	9.3	<30	8.5
Iron	mg/L	0.3	<0.1	<0.1	0.008	0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.050	<0.050 *	<0.06	<0.060	<0.060	<0.60	<0.60	0.13	<0.6	<0.6	*<0.60*	0.081
Sulphate	mg/L	128-429 [2]	4410	4390	4290	4030	3650	4020	3920	3720	3760	3850	3760	3730	5710 *	6100	5300	5600	6800	6100	5600	5300	4900	6100	5100
Chloride	mg/L	100	1.1	1.6	2	2	2	3	3	3	2	3	3	1.93	<10 *	6	4	3.7	6.2	5.6	6.0	4.6	4.7	7.9	4.6
Bicarbonate	mg/L	-	755	756	739	750	740	741	739	696	748	786	762	738	808	770	760	790	870	850	820	860	820	970	810
Carbonate	mg/L	-	<6	<6	<5	<5	<6	<5	<5	9	<5	<5	<5	<5.0	<5.0	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<1.0
Hydroxide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	1	< 0.04	1.3	0.3	0.8	3.4	2.5	1.8	1.8	0.8	2	2.53	1.3 *	1.4	1.8	0.58	0.2	0.12	0.19	<0.22	0.64	0.71	0.19
Nitrite (N)	mg/L	0.02 - 0.20 [3]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.038	0.053	<0.16	0.012	*<0.20*	*0.028*
Nitrate and Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.16	0.25	<0.05	0.65	0.71	0.22
Total Dissolved Solids (TDS)	mg/L	500	6880	6930	6880	6570	6190	6570	6400	6210	6320	6470	6280	6080	9380	9400	8400	8700	11,000	9700	8900	8600	8200	10,000	8,500
Hardness	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	890	900	950	780	1200	830
Alkalinity (total as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	700	670	710	670	800	660
Alkalinity (pp as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	-	<1.0	
Ionic Balance	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.98	0.99	3.2	4.5	2.5	5.7
Water Nutrients																									
Ammonia-N	mg/L	0.018-190 [4]	1.16	1.3	1.05	1.4	1.24	0.48	1.56	1.36	0.90	1.46	0.82	0.833	2.23	2.1	1.6	1.7	2.1	2.2	2.1	1.7	1.1	2.3	1.8
TKN	mg/L	-	1.77	2.12	1.4	1.7	1.7	1	2.2	1.5	1.3	1.6	2.1	1.66	3.9	3.5	2.2	2.7	3.3	3.4	2.8	2.8	2.1	3.3	1.9
Hydrocarbons																									
Benzene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.0010	<0.0008	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	-	-	-	-	-	-	-	-	-	-	<0.1	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	-	-	-	-	-	-	-	-	-	-	<0.05	<0.050	<0.25	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics																									
COD	mg/L	-	22	25	20	20	18	17	19	30	19	21	21	14.9	79.2	98	37	56	71	61	71	52	53	80	52
TOC	mg/L	-	7.2	8.8	8	7	7	7	7	6	8	8	-	-	-	-	-	-	-	-	-	-	-	-	
DOC	mg/L	-	-	-	-	-	-	-	-	-	-	-	7	6.5	25.4	26	14	20	21	22	24	21	19	35	21
Oil & Grease	mg/L	-	6	<5	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	
Metals																									
Aluminum	mg/L	0.0007 / 0.05 [5]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*<0.060*	<0.0030	0.0037	<0.003	<0.0030	<0.0030
Antimony	mg/L	0.006	<0.002	<0.002	0.0094	0.0009	0.0007	<0.0004	0.0006	0.0007	-	0.0007	-	-	<0.0016 *	<0.01	<0.0060	0.00084	<0.0060	<0.012	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0040	0.00088	0.00067	0.00066	0.00086	0.00075
Barium	mg/L	1	0.015	<0.01	0.011	0.012	0.009	0.013	0.018	0.011	0.015	0.011	0.015	0.0137	0.0199 *	0.01	<0.010	<0.010	<0.10	<0.10	<0.010	<0.10	<0.10	<1.0	<0.010
Beryllium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.020	<0.0010	<0.001	-	<0.0010	
Boron	mg/L	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.56	0.57	0.55	0.59	0.60	0.45
Cadmium	mg/L	0.00004-0.00037 [2]	<0.0001	<0.0001	0.0001	*<0.001*	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.001	<0.0010	<0.00020 *	0.0001	*<0.050*	<0.00010	<0.000050	<0.00040	0.000027	<0.000020	<0.00002	<0.000020	<0.000020
Chromium	mg/L	0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.0050 *	<0.02	<0.010	<0.020	<0.010	<0.020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0020	<0.0020 *	<0.006	<0.0030	<0.0060	<0.0030	<0.0060	0.00050	0.00034	0.00033	0.00043	
Copper	mg/L	0.007	*<0.01*	*<0.01*	0.038	0.033	0.024	0.013	0.009	0.007	0.006	0.005	0.009	0.0099	0.0210 *	<0.004	0.0028	<0.0040	<0.0020	<0.0040	0.0023	0.0015	0.0027	0.0041	0.0018
Lead	mg/L	0.001-0.007 [2]	<0.001	<0.001	0.0025	<0.005	0.0002	0.0001	0.0004	0.0001	<0.0001	0.0004	<0.005	<0.0050	<0.00040 *	<0.004	<0.0020	<0.0040	<0.0020	<0.0040	0.00021	<0.00020	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.59	0.56	-	-	<2.0	
Manganese	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.43	0.36	0.42	0.3	0.39	0.31
Mercury	mg/L	0.000005	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0002*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.00010*	*<0.00010*	<0.000005	<0.0000021	<0.0000050	<0.0000050	<0.0000050	<0.0000020	<0.0000020	<0.000002	<0.0000020	<0.0000019
Molybdenum	mg/L	-	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.0050 *	<0.004	<0.0020	<0.0040	<0.0020	<0.0040	0.00077	0.00052	0.00081	0.00078	
Nickel	mg/L	0.007-0.170 [2]	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	<0.002	0.004	0.004	0.0039	0.0089 *	<0.01	<0.0050	<0.010	<0.0050	<0.010	0.0030	0.0012	0.0022	0.0032	0.0012
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1.0	<0.10	<1	-	<10	
Selenium	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0040	0.00029	<0.00020	0.00022	0.00037	0.00024
Silicon	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.7	4.5	4.7	-	<10	
Silver	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*<0.0020*	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.8	5.2	5.5	-	7.2	
Sulphur	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1900	2000	1900	-	2300	
Thallium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0040	<0.00020	<0.0002	-	<0.00020	
Tin	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.020	<0.0010	<0.001	-	<0.0010	
Titanium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.020	<0.0010	<0.001	-	<0.0010	
Uranium	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.019	0.021	0.025	0.018	0.048	0.05
Vanadium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.020	<0.0010	<0.001	-	<0.0010	
Zinc	mg/L	0.03	<0.01	0.017	0.029	0.025	0.025	0.018	0.017	0.003	0.032	0.049	0.008	0.014	0.0464 *	<0.06	0.037	<0.060	<0.030	<0.060	0.0061	<0.0030	<0.0030	0.0033	<0.0030

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E12B: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 12B																				
			Apr-03	Oct-03	Apr-04	Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun -10	Jun-11	May-12	Jun-13	May-14	May-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Volatile Organic Compounds (VOCs)																									
Bromodichloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E18A: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 18A												
			May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	May-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements															
Field pH	-	-	8.5	8.377	8.21	8.34	8.31	6.09	8.4	8.8	6.75	8.5	8.2	8.53	8.53
Field EC	mS	-	1.386	1.500	13.4	1.56	1.614	1.80	15.82	1.64	1.916	1.517	1719	1.592	1.547
Field Temperature	°C	-	6.6	8.0	14.1	10.9	7.6	6.79	6.4	6.6	8.3	8.7	6.1	9.4	6.3
Routine Water															
pH	-	6.5 - 8.5	8.5	8.51	8.39	8.45	8.52	8.58	8.61	8.39	8.44	8.5	8.45	8.49	8.4
Conductivity (EC)	µS/cm	1000	1470	1500	1490	1500	1500	1,500	1500	1500	1500	1500	1500	1500	1500
Calcium	mg/L	-	4.1	4	4.43	3.8	3.8	3.1	3	2.7	3.0	2.9	2.8	2.9	3
Magnesium	mg/L	-	0.9	0.52	0.58	0.4	0.39	0.36	<2.0	0.30	0.34	0.31	0.3	0.25	0.37
Sodium	mg/L	200	375	380	389	400	380	360	390	360	380	380	380	360	390
Potassium	mg/L	-	1.2	1.45	1.46	1.5	1.4	1.3	<3.0	1.3	1.5	1.4	1.4	1.4	1.4
Iron	mg/L	0.3	0.108	0.0364	0.045	<0.06	<0.060	<0.060	<0.60	<0.060	0.11	<0.060	<0.06	<0.060	<0.060
Sulphate	mg/L	128-429 [2]	5.7	1.42	<0.50	2	<1.0	2.0	2.4	1.4	6.9	2.1	<1.0	1.6	<1.0
Chloride	mg/L	100	8	6.18	5.75	7	6.7	6.2	7.3	7.2	7.4	7.3	7.5	7.3	7.6
Bicarbonate	mg/L	-	1010	1000	991	960	960	980	970	1000	950	1000	1000	990	930
Carbonate	mg/L	-	29	28.1	18.9	17	26	30	38	8.9	9.5	17	14	19	9.6
Hydroxide	mg/L	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	<0.1	<0.050	<0.050	0.12	<0.0030	<0.003	<0.010	<0.010	0.011	<0.044	<0.020	<0.010	<0.010
Nitrite (N)	mg/L	0.02 - 0.20 [3]	-	-	-	-	-	-	-	<0.010	<0.010	<0.033	<0.010	<0.010	<0.010
Nitrate and Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	<0.010	<0.020	-	<0.020	<0.014	<0.014
Total Dissolved Solids (TDS)	mg/L	500	922	914	908	910	900	890	920	880	870	910	910	880	870
Hardness	mg/L	-	-	-	-	-	-	-	-	8.1	8.9	8.4	8.3	8.3	8.9
Alkalinity (total as CaCO3)	mg/L	-	-	-	-	-	-	-	-	840	800	850	850	840	780
Alkalinity (pp as CaCO3)	mg/L	-	-	-	-	-	-	-	-	7.4	7.9	15	-	16	
Ionic Balance	N/A	-	-	-	-	-	-	-	-	0.95	1.0	0.86	1.1	3.1	4.2
Water Nutrients															
Ammonia-N	mg/L	0.018-190 [4]	0.54	0.598	0.231	0.64	0.64	0.62	0.62	0.64	0.66	0.72	0.59	0.60	0.63
TKN	mg/L	-	0.9	1.13	1.28	1.1	1	1.1	1.1	0.98	0.90	0.94	0.92	0.92	1
Hydrocarbons															
Benzene	mg/L	0.005	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	<0.00050	<0.00050	<0.0010	<0.0008	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	<0.1	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	<0.05	<0.050	<0.25	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics															
COD	mg/L	-	6	18.4	22.4	34	24	34	29	28	27	26	35	37	26
TOC	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	
DOC	mg/L	-	8	6.7	8.5	7.9	7.2	6.5	5.2	6.9	6.9	7.2	7.4	9.7	6.6
Oil & Grease	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	
Metals															
Aluminum	mg/L	0.0007 / 0.05 [5]	-	-	-	-	-	-	-	0.0046	0.029	0.0045	0.0074	<0.0030	<0.0030
Antimony	mg/L	0.006	-	-	0.0004	<0.006	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	-	-	-	-	-	-	-	0.0010	0.00092	0.001	0.0013	0.0010	0.0013
Barium	mg/L	1	0.124	0.0834	0.117	0.1	0.095	0.098	<0.10	0.089	0.091	0.1	0.1	0.10	0.08
Beryllium	mg/L	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Boron	mg/L	1	-	-	-	-	-	-	-	0.78	0.81	0.83	0.83	0.85	0.81
Cadmium	mg/L	0.00004-0.00037 [2]	*<0.001*	*<0.0010*	0.00007	<0.00005	0.000024	<0.000025	<0.000025	<0.000020	<0.000020	<0.000020	<0.00002	<0.000020	<0.000020
Chromium	mg/L	0.05	<0.005	<0.0050	<0.0050	<0.01	<0.0010	<0.0010	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	<0.002	<0.0020	<0.0020	<0.003	0.00056	0.00045	0.00067	0.00031	0.00031	<0.00030	<0.00030	<0.00030	
Copper	mg/L	0.007	<0.001	0.0015	0.0032	<0.002	0.00059	0.00039	0.00057	0.00025	0.00023	0.00038	<0.00020	0.00066	0.0039
Lead	mg/L	0.001-0.007 [2]	<0.005	<0.0050	0.00013	<0.002	<0.00020	<0.00020	0.00033	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	-	-	-	-	-	-	-	0.066	0.073	-	-	0.073	
Manganese	mg/L	0.05	-	-	-	-	-	-	-	0.045	0.059	0.04	0.049	0.034	0.049
Mercury	mg/L	0.000005	-	*<0.00010*	*<0.00010*	<0.000005	*<0.002*	<0.0000050	<0.0000050	<0.0000050	<0.0000020	<0.0000020	<0.000002	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.026	0.0058	0.0088	0.004	0.0046	0.0047	0.0048	0.0043	0.0043	0.0043	0.0063	0.0041	
Nickel	mg/L	0.007-0.170 [2]	0.003	0.01	0.0121	0.006	0.0043	0.0036	0.0044	0.0039	0.0035	0.0024	0.0025	0.0021	0.0022
Phosphorus	mg/L	-	-	-	-	-	-	-	-	0.21	0.10	0.11	-	<0.10	
Selenium	mg/L	0.002	-	-	-	-	-	-	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon	mg/L	-	-	-	-	-	-	-	-	3.2	3.5	3.5	-	3.4	
Silver	mg/L	0.0001	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	-	-	-	-	-	-	-	0.064	0.066	0.068	-	0.063	
Sulphur	mg/L	-	-	-	-	-	-	-	-	0.22	0.22	0.32	-	0.2	
Thallium	mg/L	-	-	-	-	-	-	-	-	<0.00020	<0.00020	<0.0002	-	<0.00020	
Tin	mg/L	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Titanium	mg/L	-	-	-	-	-	-	-	-	<0.0010	0.0013	<0.001	-	<0.0010	
Uranium	mg/L	0.01	-	-	-	-	-	-	-	0.00026	0.00013	0.00026	0.00029	0.0003	0.0001
Vanadium	mg/L	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Zinc	mg/L	0.03	0.003	0.0111	0.0079	<0.03	0.0038	<0.0030	0.0033	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E18A: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 18A												
			May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	May-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Volatile Organic Compounds (VOCs)															
Bromodichloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050

Notes:
[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use
[2] Guideline varies with hardness
[3] Guideline varies with chloride
[4] Guideline varies with pH and temperature
[5] Guideline varies with pH
"-" No applicable guideline or not analyzed
Detection limit adjusted (*)
Exceeds Regulatory Limit
Italic - Detection limit greater than Tier 1 Guideline

Table E18B: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 18B												
			May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	May-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements															
Field pH	-	-	7.302	7.263	7.21	7.34	7.06	6.04	7.6	8.0	6.00	7.4	7.4	7.25	7.06
Field EC	mS	-	6.08	6.04	1.05	6.33	3.10	4.92	2.92	3.80	4.24	3.16	3.5	2.84	2.95
Field Temperature	°C	-	5.7	6.9	7	7	7.2	11.6	8.9	5.9	8.3	8	8.7	11.2	8.7
Routine Water															
pH	-	6.5 - 8.5	8	7.9	7.93	7.8	7.92	8.11	8.27	7.79	7.96	8.05	7.89	7.96	7.68
Conductivity (EC)	µS/cm	1000	6020	6270	6460	6200	6900	4200	2900	3600	3400	3000	3300	2800	2900
Calcium	mg/L	-	511	524	519	450	540	230	120	190	180	180	210	180	200
Magnesium	mg/L	-	134	116	135	120	150	57	33	47	45	48	55	42	54
Sodium	mg/L	200	1110	1250	1020	1100	1300	690	510	670	570	530	560	420	460
Potassium	mg/L	-	3.6	8.42	7.08	7.4	8.4	4.9	3.7	4.6	4.5	4.4	4.7	4.1	4.2
Iron	mg/L	0.3	0.007	0.0177	0.021	<0.06	<0.060	<0.060	<0.060	<0.060	0.25	<0.060	<0.06	<0.060	<0.060
Sulphate	mg/L	128-429 [2]	3230	3380	3420 *	3300	3700	2200	1400	1700	1500	1100	1100	910	720
Chloride	mg/L	100	22	19.5	<10 *	48	3.5	17	14	17	22	29	44	53	130
Bicarbonate	mg/L	-	846	838	880	780	980	400	350	410	390	760	800	650	910
Carbonate	mg/L	-	<5	<5.0	<5.0	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0
Hydroxide	mg/L	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	<0.1	<0.050	<1.0 *	0.23	0.016	0.2	0.2	0.13	0.089	0.36	0.17	0.13	0.15
Nitrite (N)	mg/L	0.02 - 0.20 [3]	-	-	-	-	-	-	-	0.011	0.015	0.037	<0.010	<0.010	<0.010
Nitrate and Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	0.14	0.10	-	0.17	0.13	0.15
Total Dissolved Solids (TDS)	mg/L	500	5430	5710	5530	5400	6200	3400	2300	2800	2600	2200	2400	1900	2000
Hardness	mg/L	-	-	-	-	-	-	-	-	670	630	660	740	620	720
Alkalinity (total as CaCO3)	mg/L	-	-	-	-	-	-	-	-	330	320	620	650	530	750
Alkalinity (pp as CaCO3)	mg/L	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	-	<1.0	
Ionic Balance	N/A	-	-	-	-	-	-	-	-	1.0	0.96	1.8	1.9	0.32	1.2
Water Nutrients															
Ammonia-N	mg/L	0.018-190 [4]	0.16	0.507	0.052	0.63	0.48	0.23	0.09	0.14	0.10	0.17	0.072	0.25	0.17
TKN	mg/L	-	1.2	1.38	1.96	1.3	1.2	1.1	0.68	1.5	0.32	0.87	1.1	0.74	0.94
Hydrocarbons															
Benzene	mg/L	0.005	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	<0.00050	<0.00050	<0.0010	<0.0008	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	<0.1	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	<0.05	<0.050	<0.25	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics															
COD	mg/L	-	28	27.6	21.4	60	53	34	27	64	30	24	49	29	36
TOC	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	
DOC	mg/L	-	11	11.3	9.3	11	8.9	9.3	7.3	9.2	8.2	11	12	9.9	15
Oil & Grease	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	
Metals															
Aluminum	mg/L	0.0007 / 0.05 [5]	-	-	-	-	-	-	-	0.0034	0.11	0.0062	0.004	<0.0030	<0.0030
Antimony	mg/L	0.006	-	-	<0.00040	<0.006	<0.0060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	-	-	-	-	-	-	-	0.0004	0.00041	0.00037	0.00037	0.00037	0.00035
Barium	mg/L	1	0.016	0.0117	0.0173	0.01	0.012	0.011	0.017	0.012	0.014	0.016	0.015	0.016	0.015
Beryllium	mg/L	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Boron	mg/L	1	-	-	-	-	-	-	-	0.071	0.075	0.062	0.069	0.058	0.05
Cadmium	mg/L	0.00004-0.00037 [2]	*<0.001*	*<0.0010*	<0.000050	<0.000050	0.000053	0.00004	<0.000025	<0.00002	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Chromium	mg/L	0.05	<0.005	<0.0050	<0.0050	<0.01	<0.010	<0.0010	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	<0.002	<0.0020	<0.0020	<0.003	<0.0030	0.0005	0.00039	0.00041	0.00031	0.00039	<0.00030	<0.00030	
Copper	mg/L	0.007	0.009	0.0072	0.009	0.003	<0.0020	0.0014	0.0012	0.0007	0.0013	0.00064	0.0012	0.0016	0.0038
Lead	mg/L	0.001-0.007 [2]	<0.005	<0.0050	<0.00010	<0.002	<0.0020	<0.00020	<0.0002	<0.00020	0.00037	<0.00020	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	-	-	-	-	-	-	-	0.17	0.17	-	-	0.13	
Manganese	mg/L	0.05	-	-	-	-	-	-	-	0.15	0.046	0.15	0.057	0.085	0.11
Mercury	mg/L	0.000005	-	*<0.00010*	*<0.00010*	<0.000005	0.0000033	<0.0000050	<0.0000050	<0.0000050	0.0000068	<0.0000020	0.0000035	<0.0000020	<0.0000019
Molybdenum	mg/L	-	<0.005	<0.0050	<0.0050	<0.002	<0.0020	0.0009	0.0011	0.00074	0.00072	0.00066	0.00056	0.00055	
Nickel	mg/L	0.007-0.170 [2]	0.015	0.0136	0.0123	0.005	0.0053	0.0039	0.0035	0.0039	0.0044	0.004	0.0037	0.0035	0.005
Phosphorus	mg/L	-	-	-	-	-	-	-	-	<0.10	<0.10	<0.1	-	<0.10	
Selenium	mg/L	0.002	-	-	-	-	-	-	-	<0.00020	<0.00020	<0.00020	<0.0002	<0.00020	<0.00020
Silicon	mg/L	-	-	-	-	-	-	-	-	4.1	4.1	4.9	-	4.9	
Silver	mg/L	0.0001	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	-	-	-	-	-	-	-	1.6	1.5	1.7	-	1.3	
Sulphur	mg/L	-	-	-	-	-	-	-	-	550	510	360	-	320	
Thallium	mg/L	-	-	-	-	-	-	-	-	<0.00020	<0.00020	<0.0002	-	<0.00020	
Tin	mg/L	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Titanium	mg/L	-	-	-	-	-	-	-	-	<0.0010	0.0011	<0.001	-	<0.0010	
Uranium	mg/L	0.01	-	-	-	-	-	-	-	0.0011	0.00091	0.0044	0.0042	0.0039	0.0068
Vanadium	mg/L	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Zinc	mg/L	0.03	0.011	0.0102	0.0041	<0.03	<0.030	0.005	<0.0030	<0.0030	0.0047	<0.0030	<0.0030	<0.0030	<0.0030

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E18B: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 18B												
			May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	May-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Volatile Organic Compounds (VOCs)															
Bromodichloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050

Notes:
[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use
[2] Guideline varies with hardness
[3] Guideline varies with chloride
[4] Guideline varies with pH and temperature
[5] Guideline varies with pH
"-" No applicable guideline or not analyzed
Detection limit adjusted (*)
Exceeds Regulatory Limit
Italic - Detection limit greater than Tier 1 Guideline

Table E19A: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 19A																									MW 19A							
			Oct-96	Apr-97	Oct-97	Apr-98	Oct-98	Apr-99	Oct-99	Apr-00	Oct-00	Apr-01	Oct-01	Apr-02	Oct-02	Apr-03	Oct-03	Apr-04	Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	May-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements																																					
Field pH	-	-	8.6	8.8	-	8.1	7.11	7.95	7.25	7.96	-	-	8	-	8.14	8.14	8.18	7.57	7.94	7.18	7.29	7.13	7.83	7.61	7.88	7.633	7.622	7.68	7.8	7.47	5.23	8.2	7.7	7.97	7.6	8.1	7.92	7.91
Field EC	mS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.83	13.76 (EF)	5.33	5.1	16.05	15.29	7.140	7.360	1.444	8.19	3.67	7.94	6.35	7.87	8.51	6	7.39	7.27	6.68
Field Temperature	°C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.9	2.9	9.2	6.3	6.3	9.46	6.1	8.1	9.8	9.3	7.5	8.2	8.7	6.3	-	7.7	12	11.1	8
Routine Water																																					
pH	-	6.5 - 8.5	8.46	8.42	8.42	8.44	8.13	7.99	8.51	8.65	-	-	8.12	-	8.13	8.19	8.17	8.3	8.3	8.2	8.2	8.2	8.5	8.4	8.1	8.2	8.18	8.26	8.07	8.11	8.45	8.09	7.99	8.25	8.31	8.22	8.24	7.97
Conductivity (EC)	µS/cm	1000	4310	3060	2570	3120	5310	4470	4690	3320	-	-	4370	-	4700	3570	4880	5940	5640	5730	6080	5700	6240	7070	7250	7270	7200	7750	8100	8300	6200	7900	7500	6900	6900	7000	7500	6600
Calcium	mg/L	-	33.2	10.9	21	19	36.7	26.7	36.9	16.1	-	-	25.6	-	28	15	36.3	47.5	18.7	49.8	35.9	49.6	52.0	68.1	69.8	78.4	67.1	83.4	78	85	32	90	62	55	57	63	64	56
Magnesium	mg/L	-	17.5	1.5	19.8	12.4	12.5	6.4	19.2	8.27	-	-	4.31	-	4.2	2.4	5.6	16.9	7.4	13.2	10.5	8.2	17.9	27.2	30.0	32.8	34.2	25.4	44	46	20	42	37	32	32	21	23	19
Sodium	mg/L	200	1080	729	785	776	1470	1360	1390	839	-	-	1090	-	1200	1050	1320	1590	1440	1490	1500	1470	1530	1800	1830	1860	1740	1810	2000	2300	1500	2200	1900	1500	1700	1700	1700	1700
Potassium	mg/L	-	13.6	4.68	22.5	9.12	6.92	5.22	10.3	5.7	-	-	4.3	-	4	2.9	5.2	4.3	5.2	5.7	6.2	6.1	7.1	8.7	7.2	5.2	8.6	7.54	11	11	7.7	8.9	9.4	8.9	8.6	7.4	<30	6.5
Iron	mg/L	0.3	37.3	0.26	20.5	66.9	1.76	0.166	-	-	-	-	0.057	-	<0.05	0.07	<0.1	0.105	<0.005	0.011	0.006	0.018	0.025	0.006	0.011	<0.005	<0.050	<0.030 *	<0.06	<0.060	0.13	<0.60	<0.060	<0.060	<0.60	<0.60	<0.60	
Sulphate	mg/L	128-429 [2]	1660	867	655	633	2200	1750	1880	728	-	-	1480	-	1720	1060	1870	2470	2240	2170	2480	2340	2410	2930	3230	3150	3180	3360	3900	3900	2600	3700	3400	3000	2800	2900	2800	2600
Chloride	mg/L	100	11.8	10.9	9.9	36.5	1.8	10.8	5.4	7.8	-	-	4.7	-	3.4	5.5	4.1	6	6	7	8	7	8	7	9	9	8.32	<10 *	11	10	3.1	8.8	8.9	6.7	7.4	8.2	9.4	15
Bicarbonate	mg/L	-	749	887	1150	1230	1250	1200	1100	1080	-	-	1250	-	1190	1300	1200	1160	1170	1170	1150	1190	1100	1160	1170	1210	1190	1160	1100	1200	1100	1200	1200	1100	1200	1200	1200	1100
Carbonate	mg/L	-	-	-	-	-	-	-	57	79	-	-	<6	-	<6	<6	<6	<5	<5	<5	<5	<5	31	21	<5	<5	<5.0	<5.0	<0.5	<0.50	25	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0
Hydroxide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	-	-	-	-	1.55	1.26	1.02	9.04	-	-	3.01	-	1.43	4.93	2.36	1.2	0.2	0.4	5.1	<0.1	0.2	0.6	0.9	0.9	<0.050	<1.0 *	0.15	0.2	0.02	0.15	0.023	<0.050	0.16	0.022	<0.10	0.011
Nitrite (N)	mg/L	0.02 - 0.20 [3]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.015	<0.050	0.28	<0.010	0.11	<0.010
Nitrate and Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.038	<0.020	-	0.022	<0.14	<0.014
Total Dissolved Solids (TDS)	mg/L	500	3210	2070	2100	2140	4340	3740	3940	2220	-	-	3230	-	3540	2770	3840	4710	4290	4310	4630	4470	4600	5440	5760	5740	5620	5620	6600	6900	4700	6700	6000	5200	5200	5300	5200	5000
Hardness	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	310	270	270	250	250	220
Alkalinity (total as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	950	880	970	980	980	920
Alkalinity (pp as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	-	<1.0	
Ionic Balance	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.96	0.91	2.2	0.51	0.96	3.9
Water Nutrients																																					
Ammonia-N	mg/L	0.018-190 [4]	1.62	1.58	0.23	0.78	0.88	1.1	1.39	0.71	-	-	0.32	-	0.8	0.22	0.18	0.57	0.88	0.86	0.43	1.25	1.11	0.78	0.69	0.46	0.736	0.982	0.66	0.69	0.82	0.98	0.43	0.49	0.76	1.2	0.87	1.2
TKN	mg/L	-	25.8	9.91	5.66	2.72	1.28	2.21	1.97	2.16	-	-	1.11	-	2.12	2.52	1.05	0.8	1.3	1.4	2.1	1.4	1.7	1.1	1.3	1.1	1.31	1.93	1.1	1.2	1	1.4	0.80	0.96	1.1	1.5	1.2	1.8
Hydrocarbons																																					
Benzene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.0010	<0.0008	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.050	<0.25	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics																																					
COD	mg/L	-	3580	1660	526	402	71	180	131	114	-	-	22	-	171	227	146	20	10	25	18	18	20	20	16	14	13.7	20	25	28	22	20	25	19	27	23	23	20
TOC	mg/L	-	214	10.8	11.6	17.5	8.1	13.6	5.6	10.8	-	-	7.2	-	7.5	14.2	7.4	7	6	7	7	8	8	8	9	-	-	-	-	-	-	-	-	-	-	-	-	-
DOC	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	6.8	7.7	8.1	7.3	6.8	6	7.5	7.1	7.1	8	8.3	8.6
Oil & Grease	mg/L	-	-	-	-	-	<1	2	-	-	-	-	<5	-	7	<1	<5	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																																					
Aluminum	mg/L	0.0007 / 0.005 [5]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.030	0.0072	<0.0030	<0.003	<0.0030	<0.0030
Antimony	mg/L	0.006	<0.005	-	-	-	<0.005	<0.005	-	-	-	-	<0.02	-	0.001	0.0012	0.0012	0.001	0.0018	0.001	0.0008	0.0008	0.0007	0.0006	0.0012	-	-	0.00068	<0.006	<0.0060	<0.006	<0.0060	<0.0060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	0.00065	0.00054	0.00056	0.00056	0.00091
Barium	mg/L	1	0.0625	-	-	-	0.0858	0.0377	-	-	-	-	0.0225	-	0.023	0.019	0.021	0.031	0.029	0.026	0.026	0.027	0.021	0.037	0.023	0.035	0.0155	0.0387	0.02	0.013	0.028	<0.10	<0.010	<0.010	<0.10	<0.10	<1.0	0.026
Beryllium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Boron	mg/L	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.40	0.41	0.43	0.47	0.45	0.41
Cadmium	mg/L	0.00004-0.00037 [2]	<0.0005	-	-	-	<0.0005	<0.005	-	-	-	-	<0.003	-	<0.00005	<0.00005	0.00004	<0.001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.001	<0.0010	0.000115	0.00008	0.000092	<0.000050	0.000055	<0.00020	0.000039	<0.000020	<0.00002	<0.000020	<0.000020
Chromium	mg/L	0.05	0.0024	-	-	-	0.0033	<0.0008	-	-	-	-	<0.004	-	0.0043	0.0065	0.0018	<0.005	<0.005	<0.005	0.007	<0.0005	<0.0005	<0.005	<0.005	<0.005	<0.0050	<0.0050	<0.01	<0.010	<0.010	<0.010	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	0.0012	-	-	-	0.003	0.0059	-	-	-	-	0.0085	-	0.0009	<0.0005	0.0012	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	<0.002	<0.0020	0.0026	<0.003	<0.0030	<0.0030	<0.0030	<0.0030	0.00042	0.00043	0.0009	0.00042	
Copper	mg/L	0.007	<0.001	-	-	-	0.002	0.001	-	-	-	-	<0.005	-	0.005	< 0.005	0.005	0.014	0.017	0.015	0.011	0.006	0.007	0.006	0.006	0.006	0.0056	0.0087	<0.002	0.0043	<0.0020	<0.0020	<0.0020	0.0014	0.00041	0.00022	0.00078	0.0011
Lead	mg/L	0.001-0.007 [2]	<0.002	-	-	-	<0.002	<0.002	-	-	-	-	<0.01	-	<0.0005	<0.0005	0.0003	<0.005	<0.005	0.0002	<0.0001	<0.0001	0.0003	0.0001	<0.0001	<0.005	<0.0050	<0.0010	<0.002	<0.0020	<0.0020	<0.0020	<0.0020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.56	0.51	-	-	<2.0	
Manganese	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.39	0.36	0.4	0.71	0.40	0.53
Mercury	mg/L	0.000005	-	-	<0.0001	<0.0001	<0.0001	-	-	-	-	-	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0001	0.0016	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.000005	<0.0020	0.0000082	<0.0000050	<0.0000050	<0.0000020	<0.0000020	<0.000002	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.082	-	-	-	0.005	0.005	-	-	-	-	0.005	-	0.007	0.009	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.021	<0.0050	<0.0050	<0.002	<0.0020	0.0037	0.0022	<0.0020	0.0016	0.0016	0.003	0.0023	
Nickel	mg/L	0.007-0.170 [2]	0.008	-	-	-	0.004	0.002	-	-	-	-	0.008	-	0.0039	<0.0025	0.0072	<0.002	0.003	0.003	0.007	0.003	0.005	0.008	0.008	0.009	0.005	0.0111	<0.005	<0.0050	<0.0050	<0.0050	<0.0050	0.0028	0.0017	0.0029	0.0015	0.0037
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	<0.10	<1	-	<10	
Selenium	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.9	4.5	4.4	-	<10	
Silver	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.00010	<0.0001	<0.00010	<0.00010	
Strontium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.4	1.3	1.5	-	<2.0	
Sulphur	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1100	980	980	-	1000	
Thallium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.00020	<0.0002	-	<0.00020	
Tin	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Titanium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Uranium	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.005	0.006	0.006	0.006	0.0070	0.0075
Vanadium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Zinc	mg/L	0.03	0.0013	-	-	-	0.0039	0.0021	-	-	-	-	0.022	-	0.008	0.007	0.009	0.02	0.018	0.019	0.012	0.019	0.023	0.014	0.019	0.006	0.0078	0.017	<0.03	<0.030	<0.030	<0.030	<0.030	0.0082	<0.0030	<0.0030	<0.0030	<0.0030

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E19A: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 19A																										MW 19A							
			Oct-96	Apr-97	Oct-97	Apr-98	Oct-98	Apr-99	Oct-99	Apr-00	Oct-00	Apr-01	Oct-01	Apr-02	Oct-02	Apr-03	Oct-03	Apr-04	Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	May-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Volatile Organic Compounds (VOCs)																																					
Bromodichloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness
[3] Guideline varies with chloride
[4] Guideline varies with pH and temperature
[5] Guideline varies with pH
"-" No applicable guideline or not analyzed
Equipment Failure, parameter not reported (EF)
Detection limit adjusted (*)
Exceeds Regulatory Limit
Italic - Detection limit greater than Tier 1 Guideline

Table E19B: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW19B												
			May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	May-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements															
Field pH	-	-	7.453	7.514	bent	7.65	7.75	5.32	7.5	8.4	8.09	8.2	8.2	8.23	8.48
Field EC	mS	-	6.390	6.480	bent	6.24	2.81	7.51	8.08	6.26	7.17	6.43	6.1	6.01	6.44
Field Temperature	°C	-	6.2	7.9	bent	10.7	7.9	8	8.3	6.5	-	7	8	12.3	7.6
Routine Water															
pH	-	6.5 - 8.5	8.2	8.13	8.08	8.1	8.4	8.27	8.33	8.26	8.43	8.5	8.3	8.46	8.3
Conductivity (EC)	µS/cm	1000	6290	6430	6370	6200	6500	8200	6000	5900	5700	5800	5800	5900	6300
Calcium	mg/L	-	68.6	62.6	63.2	62	61	77	29	32	31	29	30	26	33
Magnesium	mg/L	-	27.7	25.1	23.3	23	25	35	20	17	17	18	17	17	21
Sodium	mg/L	200	1580	1470	1440	1500	1800	2000	1500	1500	1300	1400	1400	930	1600
Potassium	mg/L	-	6.3	8	8.35	8.9	8.8	8.7	6.7	7.4	7.6	7.5	7.7	7.3	7.8
Iron	mg/L	0.3	<0.005	<0.050	0.022	<0.06	0.26	<0.060	<0.60	0.36	0.21	<0.6	<0.6	<0.060	0.29
Sulphate	mg/L	128-429 [2]	2630	2700	2530	2600	2800	3700	2600	2400	2200	2000	2200	2100	2500
Chloride	mg/L	100	5	3.64	<10 *	4	4.2	9.8	2.6	3.1	3.1	2.7	2.8	3.3	5
Bicarbonate	mg/L	-	1140	1130	1110	1100	1100	1200	1100	1100	1000	1100	1100	1000	1100
Carbonate	mg/L	-	<5	<5.0	<5.0	<0.5	19	<0.50	5	<0.50	13	22	<1.0	33	4.8
Hydroxide	mg/L	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	<0.1	0.279	<1.0 *	0.032	0.015	0.21	<0.010	<0.010	0.015	<0.044	0.038	0.026	0.024
Nitrite (N)	mg/L	0.02 - 0.20 [3]	-	-	-	-	-	-	-	<0.010	0.013	0.11	0.012	0.011	0.01
Nitrate and Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	<0.010	0.028	-	0.049	0.036	0.034
Total Dissolved Solids (TDS)	mg/L	500	4880	4830	4610	4800	5200	6500	4700	4500	4100	4100	4300	3600	4800
Hardness	mg/L	-	-	-	-	-	-	-	-	150	150	150	150	130	170
Alkalinity (total as CaCO3)	mg/L	-	-	-	-	-	-	-	-	900	860	910	910	900	920
Alkalinity (pp as CaCO3)	mg/L	-	-	-	-	-	-	-	-	<0.50	11	18	-	27	
Ionic Balance	N/A	-	-	-	-	-	-	-	-	0.98	0.96	3.6	0.54	18	2.9
Water Nutrients															
Ammonia-N	mg/L	0.018-190 [4]	0.64	0.382	0.569	0.64	0.73	1	0.76	0.76	0.73	0.84	0.63	0.63	0.81
TKN	mg/L	-	1	0.8	1.51	1.6	1.1	1.6	1.1	1.1	1.1	1.0	1.1	1.1	0.94
Hydrocarbons															
Benzene	mg/L	0.005	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.0006	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	<0.00050	<0.00050	<0.0010	<0.0008	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	<0.1	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	<0.05	<0.050	<0.25	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics															
COD	mg/L	-	-	13.7	10.8	86	22	27	28	17	17	17	34	33	18
TOC	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	
DOC	mg/L	-	-	5.2	6.1	6.1	5.9	8.2	5	5.7	6.0	6.3	6.1	5.3	6.6
Oil and Grease	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	
Metals															
Aluminum	mg/L	0.0007 / 0.05 [5]	-	-	-	-	-	-	-	<0.030	<0.0030	0.0034	<0.003	<0.0030	0.0036
Antimony	mg/L	0.006	-	-	<0.00040	<0.006	<0.0060	<0.006	<0.0060	<0.0060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	-	-	-	-	-	-	-	0.0021	0.0025	0.0017	0.0017	0.0023	0.0021
Barium	mg/L	1	-	0.0148	0.0188	0.02	0.019	0.02	<0.10	0.027	0.029	<0.10	<0.1	0.024	0.036
Beryllium	mg/L	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Boron	mg/L	1	-	-	-	-	-	-	-	0.47	0.48	0.52	0.49	0.53	0.48
Cadmium	mg/L	0.00004-0.00037 [2]	*<0.001*	*<0.0010*	<0.000050	<0.00005	*<0.050*	0.00011	<0.000050	<0.00020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Chromium	mg/L	0.05	<0.005	<0.0050	<0.0050	<0.01	<0.010	<0.010	<0.010	<0.010	0.0010	<0.001	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	<0.002	<0.0020	<0.0020	<0.003	<0.0030	<0.0030	<0.0030	<0.0030	0.0003	<0.00030	<0.00030	<0.00030	
Copper	mg/L	0.007	0.005	0.0062	0.0071	<0.002	<0.0020	<0.0020	<0.0020	<0.0020	0.00023	<0.00020	<0.0002	<0.00020	0.00032
Lead	mg/L	0.001-0.007 [2]	<0.005	<0.0050	<0.00010	<0.002	<0.0020	<0.0020	<0.0020	<0.0020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	-	-	-	-	-	-	-	0.48	0.47	-	-	0.49	
Manganese	mg/L	0.05	-	-	-	-	-	-	-	0.21	0.21	0.19	0.17	0.088	0.16
Mercury	mg/L	0.000005	-	*<0.00010*	*<0.00010*	<0.000005	<0.0020	<0.0000050	<0.0000050	<0.0000050	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.007	<0.0050	<0.0050	<0.002	<0.0020	0.0021	0.0029	<0.0020	0.0020	0.0016	0.0016	0.0017	
Nickel	mg/L	0.007-0.170 [2]	0.005	0.0041	0.0057	<0.005	<0.0050	<0.0050	<0.0050	<0.0050	0.0025	<0.00050	0.00082	<0.00050	0.00068
Phosphorus	mg/L	-	-	-	-	-	-	-	-	0.11	<0.10	<1	-	<0.10	
Selenium	mg/L	0.002	-	-	-	-	-	-	-	<0.0020	<0.00020	<0.00020	<0.0002	<0.00020	<0.00020
Silicon	mg/L	-	-	-	-	-	-	-	-	4.5	4.4	4.7	-	4.5	
Silver	mg/L	0.0001	-	-	-	-	-	-	-	<0.0010	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	-	-	-	-	-	-	-	1.1	1.1	1.2	-	1.0	
Sulphur	mg/L	-	-	-	-	-	-	-	-	770	750	750	-	540	
Thallium	mg/L	-	-	-	-	-	-	-	-	<0.0020	<0.00020	<0.0002	-	<0.00020	
Tin	mg/L	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Titanium	mg/L	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Uranium	mg/L	0.01	-	-	-	-	-	-	-	<0.0010	0.00021	0.00024	0.00027	0.00025	0.00022
Vanadium	mg/L	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Zinc	mg/L	0.03	0.012	0.0094	0.0046	<0.030	<0.030	<0.030	<0.030	<0.030	<0.0030	<0.0030	<0.0030	<0.0030	<0.003

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Detection limit adjusted (*)

Pipe is bent and was unable to measure water elevation (bent)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E19B: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW19B												
			May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	May-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Volatile Organic Compounds (VOCs)															
Bromodichloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050

Notes:
[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use
[2] Guideline varies with hardness
[3] Guideline varies with chloride
[4] Guideline varies with pH and temperature
[5] Guideline varies with pH
"-" No applicable guideline or not analyzed
Detection limit adjusted (*)
Pipe is bent and was unable to measure water elevation (bent)
Exceeds Regulatory Limit
Italic - Detection limit greater than Tier 1 Guideline

Table E20A: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 20A																									MW 20A						
			Oct-96	Apr-97	Oct-97	Apr-98	Oct-98	Apr-99	Oct-99	Apr-00	Oct-00	Apr-01	Oct-01	Apr-02	Oct-02	Apr-03	Oct-03	Apr-04	Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements																																				
Field pH	-	-	8.1	8.3	-	8.1	7.5	7.91	7.63	7.62	7.8	7.93	7.8	7.98	8.04	7.85	7.78	7.74	7.67	7.67	7.61	7.38	7.73	7.5	8.09	7.749	7.400	8.250	7.710	7.63	-	8.0	8.2	8.6	7.8	7.8	7.60	7.52
Field EC	mS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.28	9.81 (EF)	4.27	3.62	7.94	7.74	4.050	2	2.9	3.4	1.999	3.98	3.5	3.31	3.57	3	3.12	2.61	3.77
Field Temperature	°C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.3	3.7	7.5	6.4	7.7	11.46	7.9	11.2	15.5	10	8.7	8.4	7.8	7.9	8.1	6.9	6.5	9.8	9.1
Routine Water																																				
pH	-	6.5 - 8.5	8.26	8.07	8.24	8.43	8.36	8.25	8.17	8.46	8.12	7.96	8.1	7.95	8.08	8.11	8.28	8.3	8.3	8.2	8.2	8.3	8.4	8.4	8.2	8.3	8.38	8.25	8.25	8.37	8.4	8.05	8.03	8.15	8.34	8.08	8.28	8.17
Conductivity (EC)	µS/cm	1000	3660	3730	2950	3210	3160	3510	3410	3250	3290	3320	3330	3210	3230	3480	3670	3880	3920	3840	3900	3480	3500	3310	3310	4110	3650	3440	3400	3400	3400	3300	3100	3300	3200	3400	3400	3700
Calcium	mg/L	-	71.5	34.3	28.3	20.7	16.7	17.1	24.9	19.3	21.3	23.9	18.7	20.5	17	25.1	30.5	42.4	11.5	42	14.7	26.2	25.6	20.6	20.6	48.6	27.1	23.5	18	22	19	19	18	19	18	21	21	32
Magnesium	mg/L	-	13.8	8	6.6	5	2.6	2.9	7.3	6.29	3.44	4.25	3.2	3.49	2.9	3.5	5.2	8.4	6.3	6.8	10.2	4.0	4.4	2.6	2.2	13.8	5.01	3.66	2.5	2.9	2.6	2.7	2.4	2.5	2.4	2.8	2.7	5.2
Sodium	mg/L	200	870	924	912	773	797	798	908	775	753	933	714	903	748	879	934	984	934	944	966	862	870	824	866	980	841	792	850	930	800	800	750	830	780	850	820	960
Potassium	mg/L	-	8.93	8.67	8.88	8.35	4.39	5.29	8.73	7.3	3.5	4.8	3.6	3.9	2.6	3	4	4.3	4.7	4.5	6.1	3.9	4.4	4.7	3.4	3.8	2.86	3.71	3	3.8	3.3	3.3	3.5	3.3	2.9	3.4	3.4	3.7
Iron	mg/L	0.3	0.16	6.73	43.9	1.65	0.026	-	2.2	-	0.022	1.02	0.059	0.908	<0.05	0.06	<0.05	0.097	<0.005	0.011	<0.005	0.014	0.011	<0.005	0.006	<0.005	<0.0050	0.017	<0.06	<0.060	<0.060	0.44	<0.060	<0.060	<0.060	<0.06	<0.06	<0.060	
Sulphate	mg/L	128-429 [2]	1450	1360	1110	830	749	849	960	784	945	1030	804	957	784	1140	1290	1220	1150	1200	1300	1040	900	772	789	1340	1040	835	830	830	800	800	680	740	660	820	740	1000
Chloride	mg/L	100	14	8.6	8.2	22.6	11.1	12.1	6.7	11.7	8.4	5.2	4.6	6.3	5.9	4.5	2.4	3	4	4	4	6	6	7	8	8	6.22	5.6	8	6.9	6.7	6.9	8.3	7.0	7.9	8.1	7.1	6.4
Bicarbonate	mg/L	-	612	797	997	1030	1090	1140	1120	1050	1140	1120	1150	1160	1190	1130	1100	1130	1130	1130	1110	1140	1120	1210	1260	1110	1150	1180	1200	1200	1200	1300	1200	1300	1200	1300	1300	1100
Carbonate	mg/L	-	-	-	-	-	17.9	-	-	46	<6	<6	<6	<6	<6	<6	<6	<6	<5	7	<5	<5	<5	24	16	<5	<5	17.5	<5.0	<0.5	15	18	<0.50	<0.50	<0.50	5.5	<1.0	<1.0	<1.0
Hydroxide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	-	-	-	-	2.31	1.88	4.02	3.36	3.9	4.4	3.92	3.89	3.06	3.82	2.56	1.9	1.1	0.8	3	4.4	1.9	4.3	4.1	6.1	3.27	6.28	6.9	1.8	3.4	1.8	6.6	3.1	21	2.8	3.0	1.8
Nitrite (N)	mg/L	0.02 - 0.20 [3]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.061	0.041	0.28	0.036	0.057	0.023
Nitrate and Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.7	3.1	4.9	2.8	3.1	1.8
Total Dissolved Solids (TDS)	mg/L	500	2720	2740	2560	2200	2130	2240	2470	2170	2270	2550	2110	2470	2150	2610	2800	2830	2680	2760	2860	2520	2400	2260	2330	2970	2520	2270	2300	2400	2300	2300	2100	2200	2100	2300	2200	2600
Hardness	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	54	58	54	64	65	100
Alkalinity (total as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1000	1100	1000	1000	1000	920
Alkalinity (pp as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	4.6	-	<1.0	
Ionic Balance	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.96	1.0	0.38	0.042	0.70	4.50
Water Nutrients																																						
Ammonia-N	mg/L	0.018-190 [4]	0.788	1.05	1.4	1.16	0.92	1.59	0.75	0.95	0.58	0.12	0.32	0.3	0.34	0.24	0.28	0.08	0.5	0.36	0.15	0.14	0.57	0.5	0.28	0.38	0.151	0.22	0.41	0.49	0.55	0.33	0.23	0.53	0.3	0.28	0.17	0.4
TKN	mg/L	-	5.53	6.08	2.34	4.22	1.71	2.44	1.92	2.8	1.87	1.09	0.19	1.18	2.24	1.29	1.28	< 0.2	0.7	0.7	0.4	0.4	0.6	1.2	0.8	1.1	-	0.87	1.1	1	1.3	1	0.93	1.2	1.0	1.0	1.0	0.7
Hydrocarbons																																						
Benzene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.0010	<0.0008	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.10	<0.25	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics																																						
COD	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5.0	38	45	75	66	28	19	35	26	38	<10
TOC	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	6.8	-	-	-	-	-	-	-	-	-	-	-
DOC	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.5	9.6	5.9	5.2	4.4	5.7	4.3	6.4	5.4	6.9	5.3
Oil & Grease	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																																						
Aluminum	mg/L	0.0007 / 0.05 [5]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0052	0.0040	0.0078	0.004	0.020	<0.0030
Antimony	mg/L	0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	<0.006	<0.006	<0.05	<0.02	<0.02	<0.001	<0.001	<0.002	0.0007	0.0026	0.0009	<0.0004	0.0006	0.0006	<0.0004	0.0007	-	-	<0.00040	<0.0006	<0.0030	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00037	0.00051	0.0004	0.0004	0.00042	0.00033
Barium	mg/L	1	0.0848	0.0465	0.0337	0.0642	0.0417	0.04	0.0309	0.0249	0.0243	0.024	0.0335	0.023	0.025	0.021	0.024	0.024	0.025	0.021	0.028	0.022	0.016	0.017	0.018	0.045	0.0252	0.0245	0.018	0.022	0.021	0.025	0.015	0.018	0.027	0.022	0.023	0.02
Beryllium	mg/L	-	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	-
Boron	mg/L	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.80	0.92	0.79	0.88	0.88	0.69
Cadmium	mg/L	0.00004-0.00037 [2]	<0.0005	<0.0005	-	<0.0005	<0.0005	-	<0.0005	-	<0.0006	<0.003	<0.003	<0.0005	<0.00005	<0.00005	<0.00005	<0.001	< 0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.0010	<0.000050	0.00005	0.000066	0.000031	<0.000025	<0.000020	<0.000020	<0.000020	<0.00002	<0.000020	<0.000020
Chromium	mg/L	0.05	0.001	0.0009	-	0.0009	0.0017	-	0.0014	-	<0.0009	<0.004	<0.004	<0.0008	0.0044	0.0059	<0.002	<0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.0050	<0.001	<0.0050	<0.0010	0.0019	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	0.0021	0.0018	-	0.0011	0.0029	-	0.0028	-	0.0032	0.0072	0.006	0.0027	0.0014	0.0018	0.0029	<0.002	< 0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0020	<0.0020	<0.0003	<0.0015	<0.00030	0.00057	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
Copper	mg/L	0.007	0.001	0.004	-	0.003	0.004	-	0.005	-	0.002	<0.006	0.005	0.004	<0.005	<0.005	<0.005	0.008	0.012	0.009	0.005	0.006	0.003	0.002	0.002	0.003	0.0043	0.0039	0.0023	0.0025	0.0016	0.0036	0.00075	0.00038	0.00031	0.00068	0.00076	0.0003
Lead	mg/L	0.001-0.007 [2]	<0.002	<0.002	-	0.006	0.002	-	0.002	-	<0.002	<0.01	<0.01	<0.002	<0.0005	<0.0005	<0.0005	<0.005	< 0.005	0.0002	<0.0001	0.0062	<0.0001	<0.0001	0.0002	<0.005	<0.0050	<0.00010	<0.0002	<0.0010	<0.00020	0.0003	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.20	0.23	-	-	0.24	
Manganese	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.026	0.026	0.031	0.016	0.011	0.089
Mercury	mg/L	0.000005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	<0.0001	-	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0002	< 0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.000005	<0.0020	<0.0000050	<0.0000050	<0.0000050	<0.0000020	0.000002	<0.0000020	<0.0000019
Molybdenum	mg/L	-	14.5	0.024	-	0.005	0.009	-	0.006	-	0.004	0.006	<0.005	0.003	<0.005	<0.005	<0.005	<0.005	< 0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.014	<0.0050	<0.0050	0.0017	0.0018	0.0018	0.0016	0.0016	0.0014	0.0015	0.0013	0.0014	
Nickel	mg/L	0.007-0.170 [2]	0.011	0.011	-	0.008	0.004	-	0.006	-	0.003	<0.006	0.009	0.003	0.0041	<0.003	0.0097	<0.002	< 0.002	<0.002	<0.002	0.003	0.002	<0.002	0.002	0.003	0.0047	<0.0020	0.0017	<0.0025	0.0016	0.0031	0.0015	0.0011	0.0014	0.0012	0.0010	0.0010
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	<0.10	<0.1	-	<0.10	
Selenium	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	0.0014	<0.00020	<0.00020	<0.00020	<0.00020
Silicon	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0	3.1	2.9	-	3.0	
Silver	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.37	0.39	0.38	-	0.42	
Sulphur	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	210	240	220	-	270	
Thallium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	<0.00020	<0.0002	-	<0.00020	
Tin	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Titanium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Uranium	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0015	0.0016	0.0015	0.0015	0.0016	0.0017
Vanadium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Zinc	mg/L	0.03	0.0068	0.0272	-	0.0131	0.0218	-	0.0249	-	0.0241	0.029	0.026	0.0128	0.008	<0.005	0.008	0.02	0.019	0.013	0.01	0.030	<0.002	0.010	0.031	0.009	0.0496	0.0039	0.014	0.017	0.0084	0.0036	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E20A: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 20A																											MW 20A						
			Oct-96	Apr-97	Oct-97	Apr-98	Oct-98	Apr-99	Oct-99	Apr-00	Oct-00	Apr-01	Oct-01	Apr-02	Oct-02	Apr-03	Oct-03	Apr-04	Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Volatile Organic Compounds (VOCs)																																					
Bromodichloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E20B: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 20B																																	
			Oct-96	Apr-97	Oct-97	Apr-98	Oct-98	Apr-99	Oct-99	Apr-00	Oct-00	Apr-01	Oct-01	Apr-02	Oct-02	Apr-03	Oct-03	Apr-04	Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	May-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements																																				
Field pH	-	-	7.6	7.4	-	7.6	7.11	7.28	7.22	7.66	7.49	7.52	7.49	7.54	7.65	7.63	7.75	7.81	7.49	7.33	7.23	7.33	7.47	7.56	7.55	7.631	7.487	8.9	7.54	7.41	5.32	7.9	7.9	7.64	7.6	7.3	7.51	7.56
Field EC	mS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.41	10.55 (EF)	4.51	4.29	10.49	10.94	4.570	4.400	2.7	4.59	1.97	5.35	5.32	5.03	4.97	5.18	5.3	4.81	5.86
Field Temperature	°C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.4	7.5	5.80	8.90	6.0	11.60	6.8	8.7	12	10.1	6.9	7.1	7.9	5.5	7.3	6.2	5	8.5	5.6
Routine Water																																				
pH	-	6.5 - 8.5	7.79	7.8	7.87	7.71	7.71	7.63	7.8	7.84	7.78	7.76	7.8	7.68	7.81	7.84	7.99	8.2	8.2	8.1	8.2	8.1	8.2	8.1	8.0	8.2	8.13	8.22	8.13	8.14	8.19	8.02	8.04	8.04	8.17	8.1	8.10	7.90
Conductivity (EC)	µS/cm	1000	4150	4220	3380	4130	4310	4000	4180	4420	4050	4050	4160	4260	4220	4150	4010	4270	4320	4160	3910	4290	4370	4700	4480	4660	4450	4620	4700	4600	4600	4900	4700	4700	5000	4800	4700	5700
Calcium	mg/L	-	91.1	54.8	91.6	90.7	21.8	90.8	95.1	102	84.4	94.2	90.2	95.1	94.6	102	89.9	79.5	43.8	100	81.6	105	104	130	109	138	108	116	100	110	110	130	120	110	140	120	120	200
Magnesium	mg/L	-	29	29.9	27.9	27	33.7	29.5	30.8	31.1	29.5	31.1	31.2	32.5	31.4	34.7	27.6	34.4	32.3	31.5	35	33.2	9.4	46.5	37.2	50.6	35.3	39.6	36	34	39	47	39	37	50	42	36	65
Sodium	mg/L	200	975	1020	1080	975	1080	967	1030	1080	926	929	924	1020	1110	959	943	1010	1000	978	1060	975	995	1050	1040	1030	1070	936	1000	1100	960	1000	1000	1000	1100	1100	1100	1300
Potassium	mg/L	-	9.34	8.43	8.9	7.43	9.86	8.08	12.8	8.7	9.8	7.1	8.7	8.7	9.2	7.6	7.6	6.9	9.3	7.6	9.5	8.4	9.4	10.2	9.6	7.4	10.3	9.17	8	9.2	8.7	9.4	9.0	9.0	9.8	9.3	8.7	10
Iron	mg/L	0.3	<0.04	0.15	0.004	0.387	0.088	0.623	0.019	0.047	<0.003	0.055	<0.02	0.072	<0.05	<0.05	<0.1	0.183	<0.005	0.007	<0.005	<0.005	<0.005	<0.005	0.013	<0.005	0.0216	0.018	<0.06	0.060	<0.060	0.24	<0.060	<0.60	<0.60	<0.06	<0.060	0.1
Sulphate	mg/L	128-429 [2]	1520	1580	1770	1450	1750	1570	1730	1720	1860	1590	1590	1720	1820	1710	1670	1630	1610	1560	1610	1580	1600	1790	1710	1890	1680	1780 *	1800	1800	1900	2200	1900	1800	1900	1800	1600	2600
Chloride	mg/L	100	1.7	0.4	1	1.3	<0.5	0.7	<0.5	<0.5	1.7	<0.5	0.8	0.8	<0.5	0.8	<0.5	1	2	2	3	2	2	2	2	4	0.82	<10 *	2	1.6	1.6	1.3	1.5	1.4	1.1	<1.0	1.2	2.2
Bicarbonate	mg/L	-	1080	1060	1090	1080	1100	1090	1090	1080	1080	1080	1100	1060	1080	1070	1040	1030	1060	1060	1070	1060	1030	962	1050	986	1060	976	990	1000	960	950	990	1100	960	1000	1000	870
Carbonate	mg/L	-	-	-	-	-	-	-	-	<6	<6	<6	<6	<6	<6	<6	<6	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5.0	<5.0	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0
Hydroxide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	-	-	-	-	<0.05	<0.05	<0.05	0.505	<0.04	<0.04	0.058	0.045	<0.04	<0.02	<0.02	0.1	0.2	<0.1	<0.1	0.2	0.2	0.6	0.1	0.4	0.102	<1.0 *	0.11	0.052	0.28	0.27	0.17	0.14	0.86	0.079	0.14	0.33
Nitrite (N)	mg/L	0.02 - 0.20 [3]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.010	<0.033	<0.010	0.011	<0.010
Nitrate and Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17	0.14	-	0.079	0.15	0.33
Total Dissolved Solids (TDS)	mg/L	500	3150	3220	3520	3090	3430	3200	3440	3460	3520	3180	3190	3400	3590	3340	3250	3270	3220	3200	3320	3230	3250	3500	3420	3610	3430	3360	3400	3600	3500	3800	3600	3500	3700	3500	3300	4600
Hardness	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	450	430	570	480	440	770
Alkalinity (total as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	810	880	790	820	850	710
Alkalinity (pp as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	-	<1.0	
Ionic Balance	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.98	0.96	4.5	1.2	5.6	1.6
Water Nutrients																																						
Ammonia-N	mg/L	0.018-190 [4]	0.183	0.163	0.23	0.15	0.26	0.27	0.15	< 0.05	0.09	0.1	< 0.05	0.12	< 0.05	< 0.05	0.06	< 0.05	0.08	<0.05	0.12	0.10	0.11	<0.05	0.06	<0.05	<0.050	<0.050	<0.05	0.13	<0.05	0.058	<0.050	<0.050	0.035	<0.015	0.051	0.035
TKN	mg/L	-	0.97	0.43	0.32	1.01	0.47	0.35	0.52	0.89	0.46	0.55	0.44	1.91	2.22	1.7	0.85	< 0.2	< 0.2	<0.2	1.5	1.5	0.4	0.4	0.8	0.5	0.57	1.57	0.32	1.3	2.9	3	3.7	0.29	0.74	0.32	0.61	1
Hydrocarbons																																						
Benzene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.0010	<0.0008	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.050	<0.25	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics																																						
COD	mg/L	-	45	33	48	43	102	12	18	< 5	13	16	< 5	127	119	138	32	< 10	< 10	16	17	14	14	24	11	13	10.6	9.4	58	91	63	96	120	15	81	32	32	27
TOC	mg/L	-	6.8	8.2	6.8	6.8	6.2	5.8	6.4	5.4	6.8	5.6	5.6	5.3	5.2	5.2	5	4	5	5	5	5	6	6	6	-	-	-	-	-	-	-	-	-	-	-	-	-
DOC	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	4.7	6	6.9	5.9	5.6	7.2	6.4	4.3	6	6	5.8	12						
Oil & Grease	mg/L	-	0.3	<0.2	10	<1	<1	2	<1	<1	5	<5	<5	6	10	<5	6	<1	<1	<1	<1	<1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																																						
Aluminum	mg/L	0.0007 / 0.05 [5]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0035	<0.0030	0.0041	<0.003	0.013	<0.0030
Antimony	mg/L	0.006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	<0.006	<0.006	<0.05	<0.02	<0.02	<0.001	<0.001	<0.002	0.0007	0.0026	0.0009	<0.0004	0.0006	0.0006	<0.0004	0.0007	-	-	<0.00040	<0.0006	<0.0030	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00032	0.00030	0.00032	0.00027	0.00030	0.00030
Barium	mg/L	1	0.0848	0.0465	0.0337	0.0642	0.0417	0.04	0.0309	0.0249	0.0243	0.024	0.0335	0.023	0.025	0.021	0.024	0.024	0.025	0.021	0.028	0.022	0.016	0.017	0.018	0.021	0.0156	0.0223	0.018	0.015	0.017	0.022	0.014	<0.10	<0.10	0.016	0.015	0.014
Beryllium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Boron	mg/L	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.33	0.38	0.35	0.34	0.38	0.26
Cadmium	mg/L	0.00004-0.00037 [2]	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0006	<0.0006	<0.005	<0.003	<0.003	<0.00005	<0.00005	<0.0001	<0.001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.000050	<0.000025	0.000051	0.00018	<0.000025	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Chromium	mg/L	0.05	<0.0008	<0.0008	<0.0008	0.0012	<0.0008	<0.0008	<0.0008	<0.0009	<0.0009	<0.008	<0.004	<0.004	0.0046	0.0053	<0.005	<0.005	<0.005	<0.005	0.011	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.0050	0.003	<0.0050	0.0033	0.0036	0.0029	0.0035	0.0011	0.0016	0.0020	0.0012
Cobalt	mg/L	-	0.0009	0.0007	0.0011	<0.0007	0.0032	0.0038	0.0029	0.0039	0.0036	0.009	0.007	0.008	<0.0005	0.0006	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0020	<0.0020	<0.0003	<0.0015	<0.00030	<0.0003	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
Copper	mg/L	0.007	<0.001	0.003	<0.001	0.002	<0.001	<0.001	0.001	0.001	0.002	<0.01	<0.005	0.006	<0.005	<0.005	<0.01	0.012	0.014	0.011	0.005	0.005	0.003	0.003	0.003	0.004	0.0046	0.0052	0.0014	0.0025	0.0012	0.002	0.0013	0.00053	0.00059	0.00073	0.00093	0.004
Lead	mg/L	0.001-0.007 [2]	<0.002	<0.002	<0.002	<0.002	0.003	<0.002	<0.002	0.005	<0.002	<0.002	<0.02	<0.01	<0.01	<0.01	<0.0005	<0.0005	<0.001	<0.005	<0.005	<0.005	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.005	<0.0050	<0.00010	<0.0002	<0.0010	<0.00020	0.00036	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.47	0.49	-	-	0.47	
Manganese	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0040	<0.040	<0.040	<0.004	<0.0040	<0.0040
Mercury	mg/L	0.000005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.000005	0.0000032	<0.0000050	<0.0000050	<0.0000050	0.0000026	<0.0000020	<0.0000020	<0.0000019
Molybdenum	mg/L	-	27.2	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.005	<0.005	<0.005	<0.005	<0.01	<0.0002	<0.0002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.0050	0.0009	<0.0010	0.00096	0.00094	0.00083	0.00076	0.00078	0.00069	0.00071	
Nickel	mg/L	0.007-0.170 [2]	0.006	0.004	0.002	0.002	0.004	0.003	0.004	0.004	0.003	<0.01	0.006	0.009	<0.003	<0.0025	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	<0.002	0.004	0.003	0.0029	0.0026	0.0013	<0.0025	0.0013	0.0023	0.0011	0.0016	0.00067	0.0015	0.0010	0.0010
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	<1.0	<1	-	<0.10	
Selenium	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0031	<0.00020	0.013	0.00073	<0.00020	0.03
Silicon	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.6	4.5	4.7	-	4.4	
Silver	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7	1.6	2.2	-	1.5	
Sulphur	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	610	580	680	-	660	
Thallium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	<0.00020	<0.0002	-	<0.00020	
Tin	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Titanium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Uranium	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0033	0.0013	0.005	0.0034	0.0017	0.011
Vanadium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Zinc	mg/L	0.03	0.0079	0.001	0.0105	0.002	0.0115	0.0065	0.0251	0.0144	0.023	0.016	<0.003	<0.003	0.007	<0.005	<0.01	0.021	0.016	0.011	0.006	0.006	<0.002	0.006	0.004	0.004	0.0054	<0.0020	0.013	<0.015	0.0037	0.0045	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E20B: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 20B																																		MW 20B							
			Oct-96	Apr-97	Oct-97	Apr-98	Oct-98	Apr-99	Oct-99	Apr-00	Oct-00	Apr-01	Oct-01	Apr-02	Oct-02	Apr-03	Oct-03	Apr-04	Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	May-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Volatile Organic Compounds (VOCs)																																												
Bromodichloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E21A: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 21A																									MW 21A						
			Oct-97	Apr-98	Oct-98	Apr-99	Oct-99	Apr-00	Oct-00	Apr-01	Oct-01	Apr-02	Oct-02	Apr-03	Oct-03	Apr-04	Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	Jun-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements																																			
Field pH	-	-	7.7	-	8.17	7.86	7.52	7.81	8.06	8	8.06	7.98	8.16	8.07	8.09	7.76	7.04	7.69	7.73	7.56	7.42	7.5	7.72	7.847	8.400	8.17	7.94	8.2	7.79	9.9	8.3	7.88	7.9	7.93	7.88
Field EC	mS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.15	4.4	2.40	2.25	4.59	4.44	1.959	2.760	2.4	2.16	1.5	2.38	2.12	2.11	2.14	2.03	2.24	2.14	1.994
Field Temperature	°C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.3	4.1 (EF)	9.6	5.7	8.3	6.62	8.5	13.0	9.5	8.7	8.9	10.2	8.3	8.4	7.9	7.5	7.8	13.6	7.7
Routine Water																																			
pH	-	6.5-8.5	8.07	-	8.81	8.45	8.29	8.56	8.29	8.28	8.14	7.99	8.27	8.19	8.2	8.3	8.4	8.3	8.4	8.3	8.5	8.6	8.3	8.3	8.38	8.47	8.28	8.59	8.33	8.18	8.19	8.29	8.41	8.35	8.51	8.41
Conductivity (EC)	µS/cm	1000	5630	-	3050	2240	2320	2310	2220	2090	2090	2180	2150	1970	2050	2110	2160	2030	2110	2070	2100	2450	2110	2030	2070	2060	2100	2100	2000	2000	2000	2000	2000	2000	2100	2000
Calcium	mg/L	-	70.2	-	28.1	6.4	14.4	7.7	6.2	4.6	5.3	5.1	4.9	2.6	5	5.8	5.1	5.4	5.7	5.4	5.3	6.9	4.8	6.2	4.24	4.85	4.6	4.1	4.8	4.4	4.4	4.7	4.3	4.3	4.3	4.6
Magnesium	mg/L	-	31	-	6.4	1.3	16	5.47	0.72	0.52	0.6	0.82	< 1	< 1	< 1	0.6	0.5	<0.1	0.8	0.6	0.6	0.7	<0.1	1.4	0.36	0.54	0.5	0.47	0.53	0.47	0.44	0.45	0.4	0.4	0.42	0.47
Sodium	mg/L	200	1660	-	802	595	597	536	602	613	565	629	600	590	582	562	552	536	547	553	534	630	581	527	496	514	440	540	460	470	490	490	480	530	470	540
Potassium	mg/L	-	5.68	-	8.88	2.79	16.4	6.2	2.5	1.7	<2	2.4	<2	<2	<2	<2	0.7	1.7	1.5	2.2	2.1	2.2	3.2	1.5	2.4	1.28	1.95	1.5	2	1.6	1.8	1.9	1.7	1.5	1.7	1.6	1.7
Iron	mg/L	0.3	0.028	-	86	-	34.2	-	-	0.02	0.024	-	<0.05	0.09	<0.05	1.06	0.021	0.041	0.169	0.096	0.092	0.106	0.015	0.046	<0.0050	0.059	<0.06	<0.060	<0.060	0.22	<0.060	<0.060	<0.060	<0.060	0.13	<0.060
Sulphate	mg/L	128-429 [2]	2960	-	1490	352	232	156	126	93.5	93.9	96.9	89.9	65	76.6	83.2	75.4	70.4	54.5	77.4	79.9	68.5	258	75.9	59.5	62.1	83.1	81	91	82	90	72	71	65	63	66	68
Chloride	mg/L	100	21.4	-	23.9	18.9	16.8	14.2	15.6	8.9	7.7	8.5	7.7	8.4	6.9	9	10	11	15	10	10	16	11	15	8.35	7.95	9	8.9	8.4	9.3	9.4	8.7	11	11	11	10
Bicarbonate	mg/L	-	1110	-	470	1050	1280	1150	1340	1360	1340	1340	1330	1330	1310	1270	1270	1320	1260	1300	1210	1240	1350	1340	1310	1220	1300	1200	1300	1300	1300	1300	1300	1300	1200	1200
Carbonate	mg/L	-	-	-	65.4	49.7	-	61	< 6	< 6	< 6	< 6	< 6	< 6	< 6	14	19	10	25	<5	31	43	<5	13	17.3	31.7	<0.5	38	8.5	<0.50	<0.50	<0.50	11	8	47	11
Hydroxide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	-	-	18.1	7.26	11.3	11.5	14.7	13.4	17.7	17	17	17.4	19.7	14.9	16.9	6.3	12.5	14.6	13.9	<0.1	30.1	9.6	6.84	9.3	1.8	1.8	1.8	2.3	1.2	1.3	4.1	0.62	0.98	1.4
Nitrite (N)	mg/L	0.02 - 0.20 [3]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.012	0.023	0.064	<0.010	<0.010	<0.010
Nitrate and Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2	1.3	0.96	0.62	0.98	1.4
Total Dissolved Solids (TDS)	mg/L	500	5300	-	2650	1540	1520	1360	1410	1390	1330	1400	1360	1330	1320	1360	1360	1300	1350	1360	1310	1570	1470	1330	1260	1280	1200	1300	1200	1200	1200	1200	1200	1300	1200	1200
Hardness	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	14	12	12	12	13
Alkalinity (total as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1100	1100	1100	1100	1100	1000
Alkalinity (pp as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	9.4	-	39	
Ionic Balance	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.92	0.93	4.4	0.25	5.0	4.1
Water Nutrients																																				
Ammonia-N	mg/L	0.018-199 [4]	0.25	-	2.24	1.49	0.89	0.67	0.71	0.34	0.31	0.42	0.22	0.08	0.35	0.36	0.27	0.17	0.16	0.34	0.37	0.32	0.35	0.34	0.352	0.275	0.13	0.065	0.24	0.068	0.12	0.12	0.071	0.039	0.097	0.063
TKN	mg/L	-	0.7	-	20.1	5.62	2.32	2.43	2.31	1.76	2.65	1.96	1.91	1.63	3	2.2	<0.2	1.7	1.9	1.3	2	1.4	1.9	2.7	1.66	2.31	1.5	0.95	2.2	1.4	1.7	0.81	0.96	0.92	0.73	0.47
Hydrocarbons																																				
Benzene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	0.00074	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.0010	<0.0008	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	0.156	<0.48 *	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics																																				
COD	mg/L	-	34	-	1190	450	91	105	132	53	158	73	135	72	134	20	<10	27	24	19	22	42	21	19	24.8	18.7	29	41	110	96	74	28	43	49	39	32
TOC	mg/L	-	13.3	-	62.5	85.1	7.5	0.9	1.7	15.7	1.1	8.4	8.3	11.3	17	7	6	10	9	7	8	15	10	-	-	-	-	-	-	-	-	-	-	-	-	-
DOC	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	7.7	8.6	9.5	9.8	10	7	8.4	7.1	9.2	9.1	10	8.5
Oil & Grease	mg/L	-	<1	-	-	1	2	-	10	<5	<5	31	23	<1	6	<1	<1	<1	<1	<1	1	<1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																																				
Aluminum	mg/L	0.0007 / 0.05 [5]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0058	0.0047	0.0043	<0.003	0.058	0.0038
Antimony	mg/L	0.006	<0.005	-	-	-	-	0.006	-	-	<0.006	<0.02	-	0.0022	0.0014	0.0015	0.0019	0.002	0.0022	0.0011	0.0020	0.0016	0.0007	0.0014	-	-	0.00082	<0.0006	<0.00060	0.0011	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	0.00065	<0.00060
Arsenic	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00093	0.0010	0.0011	0.0012	0.0011	0.00078
Barium	mg/L	1	0.0181	-	-	-	-	0.541	-	-	0.0533	0.054	-	0.105	0.058	0.07	0.081	0.073	0.059	0.086	0.077	0.082	0.037	0.081	0.185	0.0849	0.103	0.084	0.085	0.084	0.073	0.062	0.073	0.096	0.081	0.090	0.070
Beryllium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Boron	mg/L	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.83	0.93	0.82	0.9	0.85	0.89
Cadmium	mg/L	0.00004-0.00037 [2]	<0.0005	-	-	-	0.002	-	-	<0.0006	<0.003	-	<0.00001	<0.00005	0.00012	<0.001	<0.001	<0.0001	<0.0001	<0.0001	0.0002	0.0002	0.0002	<0.001	<0.0010	0.00009	0.00024	0.000062	0.0001	0.000034	0.000067	0.000079	0.000099	0.00012	0.00014	0.00027
Chromium	mg/L	0.05	0.002	-	-	-	0.0287	-	-	<0.0009	<0.004	-	0.0006	0.0031	0.0027	<.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.0050	<0.001	<0.0010	<0.0010	0.0014	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	<0.0007	-	-	-	0.0128	-	-	0.0031	0.0045	-	0.0013	<0.0005	0.0003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0020	<0.0020	<0.0003	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
Copper	mg/L	0.007	<0.001	-	-	-	0.059	-	-	0.004	0.006	-	0.011	0.023	0.003	0.004	0.005	0.004	0.003	0.003	0.002	0.001	0.002	0.001	0.0017	0.0022	0.002	0.0009	0.003	0.0015	0.0012	0.0025	0.0016	0.0021	0.0050	0.0020
Lead	mg/L	0.001-0.007 [2]	<0.002	-	-	-	0.019	-	-	<0.002	<0.01	-	0.0026	<0.0005	0.0001	< 0.005	<0.005	0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.005	<0.0050	<0.00010	<0.0002	<0.00020	<0.00020	0.00024	<0.00020	<0.00020	<0.00020	<0.00020	0.00041	<0.00020
Lithium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.10	0.12	-	-	0.10	
Manganese	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0040	<0.0040	0.0047	0.0048	0.014	0.0073
Mercury	mg/L	0.000005	<0.0001	-	<0.0001	-	< 0.0001	-	-	<0.0001	<0.0001	-	-	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.000005	<0.0020	<0.000010	0.0000058	<0.0000050	<0.0000020	<0.0000020	-	<0.0000020	<0.0000019
Molybdenum	mg/L	-	<0.001	-	-	-	0.035	-	-	0.018	0.02	-	0.023	0.017	0.018	0.016	0.014	0.012	0.010	0.010	0.010	0.008	0.009	0.019	0.0085	0.0075	0.0076	0.0071	0.0069	0.0065	0.0058	0.0062	0.0058	0.0059	0.0052	
Nickel	mg/L	0.007-0.170 [2]	0.002	-	-	-	0.038	-	-	0.002	0.005	-	0.0092	<0.0025	0.0026	0.003	0.003	0.003	0.002	0.002	0.003	0.009	0.003	<0.002	0.0031	0.0023	0.0031	0.0025	0.0027	0.0027	0.0029	0.0031	0.0028	0.0031	0.0027	0.0027
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.10	<0.10	<0.1	-	<0.10	
Selenium	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00022	<0.00020	0.0002	0.00025	<0.00020	0.00023
Silicon	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.7	2.8	2.7	-	3.0	
Silver	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.11	0.11	0.11	-	0.11	
Sulphur	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	23	19	-	20	
Thallium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	<0.00020	<0.0002	-	<0.00020	
Tin	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Titanium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Uranium	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0034	0.0033	0.0036	0.0035	0.0033	0.0036
Vanadium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Zinc	mg/L	0.03	0.0144	-	-	-	0.146	-	-	0.0299	0.023	-	0.061	0.012	0.007	0.015	0.007	0.009	0.004	0.01	0.003	0.004	0.008	0.004	0.0061	0.0047	0.014	<0.0030	0.005	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	0.010	<0.0030

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E21A: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 21A																										MW 21A						
			Oct-97	Apr-98	Oct-98	Apr-99	Oct-99	Apr-00	Oct-00	Apr-01	Oct-01	Apr-02	Oct-02	Apr-03	Oct-03	Apr-04	Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	Jun-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Volatile Organic Compounds (VOCs)																																			
Bromodichloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness
[3] Guideline varies with chloride
[4] Guideline varies with pH and temperature
[5] Guideline varies with pH
"-" No applicable guideline or not analyzed
Equipment Failure, parameter not reported (EF)
Detection limit adjusted (*)
Exceeds Regulatory Limit
Italic - Detection limit greater than Tier 1 Guideline

Table E21B: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 21B																													
			Oct-98	Apr-99	Oct-99	Apr-00	Oct-00	Apr-01	Oct-01	Apr-02	Oct-02	Apr-03	Oct-03	Apr-04	Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements																																
Field pH	-	-	7.37	7.47	7.44	7.37	8	7.75	8	8.15	8.24	8.22	8.1	8.21	7.75	7.73	7.54	7.55	7.64	7.59	8.66	7.851	7.803	8.08	7.83	7.68	5.6	8.0	8.3	7.89	7.8	-	7.86	7.67
Field EC	mS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.79	5.99 (EF)	2.68	2.77	6.27	6.12	2.420	2.640	15.3	2.78	1.18	2.99	2.87	2.82	2.84	2.78	-	2.87	3.01
Field Temperature	°C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.8	8.9	6.5	9.3	4.6	10.87	5.2	6.2	15.7	12.3	6.9	-	6.6	6.9	6.5	6.5	-	7.3	6.1
Routine Water																																
pH	-	6.5 - 8.5	7.93	7.82	7.97	8.04	8.01	7.94	8.12	8.02	8.25	8.27	8.45	8.4	8.4	8.3	8.3	8.3	8.4	8.5	8.3	8.4	8.35	8.38	8.27	8.33	8.43	8.21	8.16	8.25	8.39	8.29	8.44	8.36
Conductivity (EC)	µS/cm	1000	2490	2370	2510	2650	2380	2370	2440	2460	2500	2450	2470	2560	2660	2510	2490	2670	2770	2610	2560	2530	2660	2700	2700	2700	2700	2700	2700	2600	2600	2900	2900	2900
Calcium	mg/L	-	6.2	17.6	18.8	17.1	13.8	15	14.3	14.9	15.1	13.4	13.7	17.3	7.6	17.1	15	19	18.9	2.5	16.5	17.2	19.5	17.6	17	17	16	17	16	16	17	19	20	22
Magnesium	mg/L	-	5.2	5.3	5.8	5.04	4.58	5.13	4.67	3.96	4.1	3.2	3.6	5.1	5.2	4.2	5.0	5.8	6.2	1.0	4.3	5.6	6.3	5.41	5.4	5.6	5.4	5.6	4.9	5.0	5.3	6.1	5.9	6.8
Sodium	mg/L	200	643	587	665	710	557	587	573	692	720	603	632	624	627	625	638	648	670	131	641	603	679	600	650	700	620	610	630	630	640	680	670	730
Potassium	mg/L	-	6	4.46	1.17	4	4.4	< 4	3.6	3.7	3.5	2.3	3.2	3.9	4.4	3.8	3.2	4.4	4.7	0.8	5.7	3.2	4.4	4.12	4.2	4.3	3.9	4	4.2	3.9	4.1	4.2	4.0	4.3
Iron	mg/L	0.3	1.87	1.38	0.035	0.046	<0.003	0.056	<0.02	0.073	<0.05	<0.05	<0.05	0.408	<0.005	0.006	0.104	0.005	0.019	0.017	0.013	0.028	0.113	<0.010	<0.06	<0.060	<0.060	0.071	<0.060	<0.060	<0.060	<0.06	0.084	<0.060
Sulphate	mg/L	128-429 [2]	563	561	644	618	600	545	549	606	630	592	604	566	590	550	524	619	613	123	564	532	588	579	600	590	590	650	570	530	570	650	660	720
Chloride	mg/L	100	0.9	0.9	<0.5	0.7	2.4	<0.5	0.6	0.5	<0.5	<0.5	<0.5	1	2	2	2	3	2	2	2	3	0.74	0.66	2	1.1	1.7	1.5	1.6	1.1	1.1	1.3	1.7	2
Bicarbonate	mg/L	-	995	1010	1020	1030	1020	1030	1030	1080	1070	1090	1000	994	1010	1010	1000	1030	1000	980	1030	1040	1040	996	1000	1000	1000	1000	1000	1000	1000	1100	970	940
Carbonate	mg/L	-	-	-	-	<6	<6	<6	<6	<6	<6	<6	33	17	13	<5	8	8	21	0.1	<5	14	11.9	24.5	<0.5	8.3	19	<0.50	<0.50	<0.50	9.2	<1.0	26	9.4
Hydroxide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	0.17	<0.05	0.12	0.17	0.14	<0.04	0.11	0.073	<0.02	0.284	<0.02	0.2	0.4	<0.1	<0.1	0.2	0.2	0.1	<0.1	<0.1	<0.050	<0.050	0.052	0.022	0.045	<0.010	0.11	0.11	0.19	0.1	0.12	0.096
Nitrite (N)	mg/L	0.02 - 0.20 [3]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.010	<0.033	<0.010	<0.010	<0.010
Nitrate and Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.11	0.11	-	0.1	0.12	0.096
Total Dissolved Solids (TDS)	mg/L	500	1710	1670	1830	1860	1810	1660	1650	1850	1900	1750	1780	1720	1750	1700	1690	1810	1830	773	1740	1690	1820	1720	1800	1800	1800	1800	1800	1700	1800	1900	1900	1900
Hardness	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	61	61	64	72	74	83
Alkalinity (total as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	860	850	860	870	840	780
Alkalinity (pp as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	7.6	-	21	
Ionic Balance	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.99	1.0	0.56	0.26	0.046	4.3
Water Nutrients																																
Ammonia-N	mg/L	0.018-190 [4]	0.23	0.17	0.2	0.14	0.35	0.09	<0.05	0.28	<0.05	0.14	0.22	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.050	<0.050	<0.05	<0.050	<0.05	<0.050	<0.050	<0.050	0.016	<0.015	0.034	<0.015
TKN	mg/L	-	0.56	0.46	0.54	0.67	0.48	0.35	0.19	0.86	0.5	0.86	0.87	0.4	<0.2	0.3	0.4	0.3	<0.2	0.3	0.3	0.6	0.43	0.54	0.45	0.4	0.36	0.34	0.28	<0.05	0.31	0.31	0.32	0.32
Hydrocarbons																																
Benzene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.0010	<0.0008	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.050	<0.25	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics																																
COD	mg/L	-	45	21	17	9	22	19	8	68	6	29	22	< 10	< 10	17	16	15	14	17	9	12	45.7	11.8	32	34	23	31	20	20	20	27	30	23
TOC	mg/L	-	6.3	7.1	6.2	5.9	7	6.1	5.8	5.8	5.3	7.1	5.1	5	5	5	5	6	6	5	7	-	-	-	-	-	-	-	-	-	-	-	-	-
DOC	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	4.4	5.2	4.6	5.5	4.7	3.8	4.2	4.4	6.1	6.5	5.9	6.2
Oil & Grease	mg/L	-	< 1	1	< 1	< 1	3	6	< 5	< 5	9	< 5	6	< 1	< 1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																																
Aluminum	mg/L	0.0007 / 0.05 [5]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0042	<0.0030	0.0035	<0.003	0.028	0.003
Antimony	mg/L	0.006	<0.005	<0.005	<0.005	<0.006	<0.006	<0.05	<0.02	<0.02	<0.001	<0.001	<0.001	0.0007	0.001	0.0008	<0.0004	0.0008	0.0006	0.0005	0.0006	-	-	<0.00040	<0.006	<0.0030	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00053	0.00064	0.00064	0.00066	0.00057	0.00048
Barium	mg/L	1	0.053	0.0369	0.0149	0.0118	0.0104	0.011	0.0125	0.013	0.011	0.012	0.015	0.011	0.011	0.011	0.011	0.017	0.01	0.01	0.009	0.018	0.009	0.0102	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010
Beryllium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Boron	mg/L	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22	0.25	0.23	0.23	0.22	0.23
Cadmium	mg/L	0.00004-0.00037 [2]	<0.0005	<0.0005	<0.0005	<0.0006	<0.0006	*<0.005*	*<0.003*	*<0.003*	<0.00005	<0.00005	<0.00005	<0.0001	*<0.001*	<0.0001	<0.0001	0.0001	0.0007	0.0002	0.0001	*<0.001*	*<0.0010*	0.000225	<0.00005	0.000057	0.000038	0.000042	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Chromium	mg/L	0.05	0.0049	0.002	<0.0008	<0.0009	<0.0009	<0.008	< .004	<0.004	0.0043	0.0051	0.0026	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.0050	<0.01	<0.0050	<0.0010	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	0.0029	0.0029	0.0021	0.0023	0.0024	<0.007	0.0035	0.0085	<0.0005	< 0.0005	0.0006	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0020	<0.0020	<0.003	<0.0015	<0.00030	<0.0003	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
Copper	mg/L	0.007	0.002	0.003	0.002	0.003	0.004	<0.01	<0.005	0.007	<0.005	<0.005	0.007	0.006	0.007	0.007	0.004	0.004	0.003	0.002	0.002	0.001	0.003	0.0028	<0.002	0.0011	0.0014	0.0014	0.0008	0.00066	0.00033	0.00072	0.0015	0.00095
Lead	mg/L	0.001-0.007 [2]	0.002	< 0.002	0.003	<0.002	<0.002	*<0.02*	0.012	*<0.01*	<0.0005	<0.0005	<0.0005	0.0001	<0.005	0.0002	<0.0001	0.0007	0.0001	0.0001	<0.0001	<0.005	<0.0050	<0.00010	<0.002	<0.0010	<0.00020	<0.0002	<0.00020	<0.00020	0.00034	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22	0.24	-	-	0.25	
Manganese	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.004	<0.0040	0.0041	<0.004	0.0079	<0.0040
Mercury	mg/L	0.000005	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0002*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.00010*	*<0.00010*	<0.0000005	*<0.0020*	<0.0000050	<0.0000050	<0.0000050	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.001	<0.001	0.002	<0.001	<0.001	<0.01	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.007	<0.0050	<0.0050	<0.002	0.0011	0.002	0.0063	0.0051	0.0027	0.0018	0.0015	0.0014	
Nickel	mg/L	0.007-0.170 [2]	0.007	0.002	0.002	0.002	0.002	<0.01	<0.005	<0.005	<0.003	<0.0025	0.0028	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	<0.002	<0.002	<0.002	<0.0020	<0.0020	<0.005	<0.0025	0.001	0.0015	0.0013	0.0013	0.00086	0.0012	0.0022	0.0022
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	<0.10	<0.1	-	<0.10	
Selenium	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	<0.00020	<0.00020	<0.0002	<0.00020	<0.00020
Silicon	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.8	3.9	3.9	-	4.0	
Silver	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.27	0.26	0.3	-	0.33	
Sulphur	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	170	180	190	-	220	
Thallium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	<0.00020	<0.0002	-	<0.00020	
Tin	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Titanium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Uranium	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0016	0.0017	0.0017	0.0019	0.0019	0.0019
Vanadium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Zinc	mg/L	0.03	0.0131	0.0075	0.0084	0.0087	0.0186	0.014	<0.003	<0.003	<0.005	<0.005	0.009	0.007	0.01	0.043	0.006	0.008	0.004	0.008	0.005	0.005	0.007	<0.0020	<0.03	0.016	0.0051	0.003	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E21B: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 21B																															
			Oct-98	Apr-99	Oct-99	Apr-00	Oct-00	Apr-01	Oct-01	Apr-02	Oct-02	Apr-03	Oct-03	Apr-04	Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Volatile Organic Compounds (VOCs)																																		
Bromodichloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E22A: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 22A																													
			Oct-98	Apr-99	Oct-99	Apr-00	Oct-00	Apr-01	Oct-01	Apr-02	Oct-02	Apr-03	Oct-03	Apr-04	Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	May-10	Jun-11	May-12	Jun-13	Jun-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements																																
Field pH	-	-	8.06	8.12	7.74	7.62	7.54	7.7	7.54	7.15	7.9	7.81	7.81	7.75	7.63	7.46	7.97	7.32	7.73	7.45	7.73	7.639	7.900	8.12	7.71	7.9	7.45	9.9	-	7.76	7.6	7.74	7.82	7.51
Field EC	mS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.47	12.89 (EF)	5.70	5.51	12.66	12.26	5.130	3.450	3	5.27	1.34	4.78	5.64	-	5.60	5.29	5.71	5.532	5.36
Field Temperature	°C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.2	4.2	10.4	6.1	7.5	8.0	8.8	10.0	11.4	11	9.6	10.9	7.4	-	10.0	9	7.2	10.0	9.1
Routine Water																																		
pH	-	6.5 - 8.5	8.78	8.27	8.23	8.4	7.94	8.02	7.94	7.84	8.02	8.01	8.11	8.3	8.3	8.1	8.2	8.0	8.5	8.3	8.2	8.2	8.2	8.26	8.19	8.33	8.18	7.83	8.08	8.09	8.33	8.08	8.33	8.24
Conductivity (EC)	µS/cm	1000	6260	5240	5510	5390	5440	5310	5290	5090	5480	5120	5280	5500	5530	7630	5540	7470	5600	5640	5660	5320	5350	5360	5400	5500	5300	5300	5300	5300	5200	5300	5300	5300
Calcium	mg/L	-	46.6	33.8	42.2	36.5	39.8	39.4	39.4	40	41.4	34.7	46.2	44.7	18.5	116	41.5	117	48.9	42.5	43.8	41.1	36.4	37	33	35	36	36	36	35	36	36	35	40
Magnesium	mg/L	-	10.6	5.4	6.2	4.18	4.43	4.3	4.31	4.62	4.3	3.4	4.3	4.5	4.6	55.5	5.3	56.5	6.7	4.3	4.0	4.6	3.73	3.98	3.5	3.8	3.6	3.7	3.6	3.4	3.6	3.3	4.0	4.0
Sodium	mg/L	200	1580	1450	1660	1460	1510	1450	1310	1460	1510	1190	1440	1320	1340	2020	1390	2000	1460	1390	1490	1330	1200	1220	1200	1300	1300	1300	1200	1200	1300	1300	1300	1300
Potassium	mg/L	-	10.6	5.75	6.07	4.5	4.1	4.7	4.7	4.3	4.8	3.7	4.9	4	4.9	8.9	4.8	9.0	5.3	5.6	3.6	2.5	3.22	4.33	3.8	4.9	3.9	4.1	4.7	4.1	4.6	4.3	4.2	4.4
Iron	mg/L	0.3	62.6	-	0.004	-	0.022	-	<0.02	2.42	<0.05	<0.05	<0.1	0.661	<0.005	0.013	<0.005	<0.005	0.212	0.061	<0.005	0.074	<0.0050	0.013	<0.06	0.083	<0.060	0.065	<0.060	<0.60	<0.60	<0.6	<0.60	
Sulphate	mg/L	128-429 [2]	2950	2380	2750	2380	2450	2260	2190	2370	2560	2000	2360	2180	2170	3520	2340	3770	2250	2030	2180	2020	2040	2040 *	1900	2500	2200	2200	2000	2000	1900	1900	1800	1900
Chloride	mg/L	100	16.2	16.4	10.3	15.7	11.2	8.1	6.4	10.2	9.3	10.4	9.8	11	10	2	12	3	12	13	11	11	10.6	<10 *	12	11	11	11	12	11	13	13	12	13
Bicarbonate	mg/L	-	492	841	908	832	939	937	935	927	957	974	959	948	963	1210	932	1210	867	956	957	973	986	951	950	940	950	940	960	960	950	940	920	890
Carbonate	mg/L	-	74.1	-	-	24	<6	<6	<6	<6	<6	<6	<6	<6	7	<5	<5	<5	<5	20	<5	<5	<5.0	<5.0	<0.5	4.8	<0.50	<0.50	<0.50	<0.50	2.4	<1.0	8.9	<1.0
Hydroxide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	1.83	3.41	4.43	6.83	7.56	9.36	11.8	10.9	12.2	12.2	13.3	12.8	11.2	<0.1	12.5	0.1	11.8	13.3	27.5	16.2	11.1	6.4 *	7	16	15	16	16	17	70	14	18	17
Nitrite (N)	mg/L	0.02 - 0.20 [3]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.011	<0.010	<0.033	<0.010	0.019	0.033
Nitrate and Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	17	-	14	18	17
Total Dissolved Solids (TDS)	mg/L	500	4930	4300	4920	4330	4870	4220	4010	4350	4590	3720	4330	4090	4070	6320	4310	6550	4280	4020	4320	3960	3830	3800	3700	4400	4100	4100	3800	3800	3800	3800	3700	3800
Hardness	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	100	110	100	100	120
Alkalinity (total as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	790	790	780	770	770	730
Alkalinity (pp as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	2	-	7.4	
Ionic Balance	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.93	0.93	1.2	1.1	2.2	3.5
Water Nutrients																																		
Ammonia-N	mg/L	0.018-190 [4]	1.95	2.1	<0.05	1.5	1.32	0.23	0.39	0.42	0.4	0.36	0.17	0.32	0.39	<0.05	0.25	<0.05	0.12	0.15	<0.05	0.31	0.196	0.224	0.1	0.34	0.18	<0.050	0.11	<0.050	0.15	0.049	0.074	0.24
TKN	mg/L	-	4.11	2.37	3.14	2.63	1.49	0.93	1.25	1.52	1.31	1.42	2.5	1.5	0.4	0.4	1.5	<0.2	1.2	1.1	1.3	2.1	1.46	1.13	0.83	0.74	0.83	1.2	0.99	0.070	1	0.88	0.9	0.63
Hydrocarbons																																		
Benzene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.0010	<0.0008	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.050	<0.25	<0.1	<0.75	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics																																		
COD	mg/L	-	421	78	154	102	46	16	27	52	31	51	59	<10	<10	19	21	10	70	15	14	21	17.3	11.8	100	56	49	92	49	21	36	67	43	33
TOC	mg/L	-	13.9	10.5	18	6.2	6	7.2	5.7	5.9	5.8	7.3	10.4	5	4	5	6	6	4	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
DOC	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	5.6	6.2	8.3	6.2	7.4	5.1	7.0	5.4	6.7	6.8	6.4	6.1
Oil & Grease	mg/L	-	-	<1	1	2	2	<5	<5	10	-	<1	<5	<1	1	<1	<1	<1	<1	<1	1	-	-	-	-	-	-	-	-	-	-	-	-	
Metals																																		
Aluminum	mg/L	0.0007 / 0.005 [5]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.030	0.0047	0.0058	<0.003	0.004	<0.0030
Antimony	mg/L	0.006	-	-	0.006	-	<0.006	-	-	<0.005	0.001	< 0.001	0.0008	0.0012	0.0014	0.0014	0.0004	0.0007	0.0010	0.0010	0.0008	-	-	0.00046	<0.006	<0.0060	0.00091	<0.00060	<0.0060	<0.00060	<0.00060	<0.00060	<0.00060	<0.000600
Arsenic	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	0.00033	0.0003	0.00028	<0.00020	0.00029
Barium	mg/L	1	-	-	0.0173	-	0.0136	-	-	0.0182	0.015	0.015	0.016	0.018	0.011	0.013	0.02	0.011	0.020	0.015	0.011	0.014	0.0109	0.0105	0.011	0.011	0.01	0.014	<0.010	<0.10	<0.10	<0.10	<0.10	<0.010
Beryllium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Boron	mg/L	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.82	0.85	0.9	0.84	0.88	0.86
Cadmium	mg/L	0.00004-0.00037 [2]	-	-	<0.0005	-	<0.0006	-	-	0.0005	<0.00001	<0.00005	0.00021	0.0003	<0.001	0.0003	<0.0001	0.0001	0.0003	<0.0001	0.0003	<0.001	<0.0010	0.000405	0.00012	0.00022	0.00012	0.000059	<0.00020	0.000026	0.000058	0.000047	0.00017	0.00034
Chromium	mg/L	0.05	-	-	<0.0008	-	<0.0009	-	-	<0.0008	<0.0005	<0.003	0.0013	<0.005	0.015	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.0050	<0.01	<0.010	<0.0010	<0.0010	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	0.0014	<0.0010
Cobalt	mg/L	-	-	-	0.0029	-	0.0039	-	-	0.0033	0.0005	0.001	0.0008	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0020	<0.0020	<0.003	<0.0030	<0.00030	<0.00030	<0.0030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
Copper	mg/L	0.007	-	-	0.006	-	0.003	-	-	0.012	0.005	<0.005	0.006	0.015	0.019	0.012	0.008	0.007	0.007	0.004	0.003	0.007	0.0047	0.0057	<0.002	<0.0020	0.0024	0.00084	<0.0020	0.0024	0.002	0.0012	0.0020	0.0009
Lead	mg/L	0.001-0.007 [2]	-	-	<0.002	-	<0.002	-	-	0.003	0.0003	<0.0005	<0.0001	<0.0001	<0.005	0.00021	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.005	<0.0050	<0.00010	<0.002	<0.0020	<0.00020	<0.00020	<0.0020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.29	0.32	-	-	0.31	
Manganese	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.018	<0.040	<0.040	<0.04	<0.040	0.035
Mercury	mg/L	0.000005	<0.0001	-	<0.0001	-	<0.0001	-	-	-	-	<0.0001	<0.0001	<0.0001	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00010	<0.00010	<0.000005	<0.0020	<0.000010	<0.0000050	<0.0000050	<0.0000020	<0.0000020	-	<0.0000020	<0.0000019
Molybdenum	mg/L	-	-	-	0.023	-	0.015	-	-	0.011	0.013	0.01	0.01	0.008	0.008	0.007	0.006	<0.005	0.006	0.009	0.008	0.007	0.0065	0.0072	0.01	0.006	0.0062	0.0054	0.0056	0.0057	0.006	0.0055	0.0051	
Nickel	mg/L	0.007-0.170 [2]	-	-	0.011	-	0.007	-	-	0.007	0.0039	<0.003	0.0032	0.004	0.004	0.004	0.004	<0.002	0.004	<0.002	0.004	0.004	0.0042	0.0037	<0.005	<0.0050	0.0028	0.0024	<0.0050	0.0051	0.0023	0.0022	0.0034	0.0032
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	<1.0	<1	-	<1.0	
Selenium	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.00020	<0.00020	<0.00020	<0.00020	0.00026
Silicon	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.9	2.8	2.9	-	2.7	
Silver	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.85	0.85	0.94	-	0.95	
Sulphur	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	640	630	650	-	630	
Thallium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.00020	<0.0002	-	<0.00020	
Tin	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Titanium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Uranium	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.004	0.0042	0.0041	0.0041	0.0041	0.0044
Vanadium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Zinc	mg/L	0.03	-	-	0.0201	-	0.0298	-	-	0.0271	0.066	0.011	0.013	0.015	0.024	0.022	0.009	0.014	0.004	0.015	0.012	0.015	0.0064	0.0743	<0.03	<0.030	0.0052	<0.0030	<0.030	0.0033	<0.0030	<0.0030	<0.0030	0.0032

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E22A: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 22A																															
			Oct-98	Apr-99	Oct-99	Apr-00	Oct-00	Apr-01	Oct-01	Apr-02	Oct-02	Apr-03	Oct-03	Apr-04	Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	May-10	Jun-11	May-12	Jun-13	Jun-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Volatile Organic Compounds (VOCs)																																		
Bromodichloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

italic - Detection limit greater than Tier 1 Guideline

Table E22B: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 22B																									MW 22B					
			Oct-98	Apr-99	Oct-99	Apr-00	Oct-00	Apr-01	Oct-01	Apr-02	Oct-02	Apr-03	Oct-03	Apr-04	Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Jan-07	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements																																	
Field pH	-	-	6.97	7.45	7.13	7.12	7.43	7.77	7.43	7.8	7.51	7.51	7.65	7.71	7.46	7.18	6.96	7.2	7.4	-	7.44	7.56	7.569	7.300	7.84	7.71	7.35	5.5	7.7	7.8	7.57	7.5	7.03	7.60	7.54
Field EC	mS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.96	18.78 (EF)	8.07	7.26	-	17.20	19.83	7.270	>3.999	3.1	8.11	3.5	8.25	8.56	8.25	8.78	7.87	8.75	8.04	8.18
Field Temperature	°C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.6	8.5	6.9	7.2	-	4.8	10.08	14.9	11.5	11.6	9.6	6.8	10.3	6.4	8.4	9.7	7.8	6.7	10.3	7.9
Routine Water																																		
pH	-	6.5-8.5	7.97	7.5	7.64	7.7	7.66	7.61	7.76	7.69	7.72	7.81	8.06	8.2	8.1	8.2	8.1	8.1	8.2	8.0	8.2	8.1	8.1	8.18	8.14	8.03	8.18	8.24	8.07	7.86	7.97	8.23	7.98	8.27	8.11
Conductivity (EC)	µS/cm	1000	8110	7850	8400	8610	7590	7750	7870	7900	7940	7890	7420	7890	8010	5420	7460	8020	9950	8280	8040	8240	7930	8320	8200	8100	8100	8200	8100	8200	8200	8000	8000	8000	8100
Calcium	mg/L	-	42.5	119	140	127	98.4	119	106	125	123	128	105	118	70.8	44.9	71.9	126	187	135	109	117	113	112	109	110	120	100	110	120	110	110	110	110	120
Magnesium	mg/L	-	53	57.5	61.8	58.9	53.1	57.7	55.5	58.2	59.2	58.7	46.6	54.7	57.2	3.6	57.8	61.4	73.2	60.9	55.1	61.4	58	53.9	53.1	52	52	49	51	55	55	54	53	51	57
Sodium	mg/L	200	2180	1900	2250	2160	2150	1900	2020	2340	2450	1960	1910	2000	2010	1420	2120	2030	2530	2230	2000	2100	2000	1910	1860	2000	2100	2000	2100	1900	2000	2000	1900	2000	2100
Potassium	mg/L	-	13.5	9.97	17.1	10.1	12.8	8.2	11	11	11	7.4	9	7.3	10.7	4.6	10.2	9.5	13.9	12.0	10.7	9.2	5.8	9.61	8.79	9.9	9.8	9	8.5	10	10	9.8	9.4	9.3	9.4
Iron	mg/L	0.3	1.37	1.13	0.025	0.026	0.014	0.1	<0.02	0.018	<0.1	<0.1	<0.1	0.243	<0.005	0.005	<0.005	<0.005	0.005	-	0.012	<0.005	<0.005	<0.0050	0.015	<0.06	<0.060	<0.060	0.075	<0.60	<0.60	<0.60	<0.6	<0.60	<0.60
Sulphate	mg/L	128-429 [5]	4140	4020	4540	4070	4480	4000	3880	4570	4890	4120	3800	3750	3800	2170	3590	3890	4970	3820	3440	3840	3470	3730	3590 *	3900	3800	3800	3900	3900	3900	3300	3300	3300	3600
Chloride	mg/L	100	1	1	<0.5	0.8	4.5	0.5	0.6	0.9	<0.5	3	<0.5	1	2	11	3	3	3	3	2	2	3	1.21	<10 *	3	1.5	1.8	1.3	1.8	1.4	1.9	1.7	2.7	2.7
Bicarbonate	mg/L	-	1210	1230	1230	1230	1240	1230	1260	1190	1250	1220	1210	1180	1220	962	1230	1200	992	1180	1230	1240	1260	1240	1210	1200	1200	1200	1200	1200	1300	1200	1200	1200	1200
Carbonate	mg/L	-	-	-	-	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<5	<5	<5	<5	<5	<5	<5	<5	<5.0	<5.0	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<1.0
Hydroxide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	0.28	< 0.05	0.17	0.12	0.14	< 0.04	0.083	0.218	0.063	< 0.04	< 0.04	0.5	0.2	7.6	0.1	0.2	0.3	0.3	0.2	0.1	0.3	0.09	<1.0 *	0.14	0.18	0.11	0.11	0.16	<0.010	0.38	0.039	0.094	0.096
Nitrite (N)	mg/L	0.02 - 0.20 [3]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.010	<0.16	<0.010	<0.010	<0.010
Nitrate and Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.16	<0.020	-	0.039	0.094	0.096
Total Dissolved Solids (TDS)	mg/L	500	7030	6710	7620	7030	7430	6690	6700	7680	8150	6870	6470	6510	6550	4160	6460	6710	8270	6840	6220	6740	6270	6430	6220	6600	6700	6600	6800	6600	6600	6000	6300	6100	6400
Hardness	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	520	510	490	480	480	530
Alkalinity (total as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1000	1000	1000	1000	1000	960
Alkalinity (pp as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	-	<1.0	
Ionic Balance	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.92	0.95	4	0.19	3.8	3.2
Water Nutrients																																		
Ammonia-N	mg/L	0.018-190 [4]	0.47	0.29	0.3	0.41	0.11	0.12	<0.05	0.34	<0.05	<0.05	0.23	<0.05	<0.05	0.1	<0.05	<0.05	0.27	-	<0.05	<0.05	<0.05	<0.050	<0.050	<0.05	<0.050	<0.05	<0.050	<0.050	<0.050	0.04	<0.015	0.031	0.021
TKN	mg/L	-	1	0.8	0.7	0.91	0.76	0.57	0.28	1.84	0.38	0.49	2.08	0.6	< 0.2	0.5	0.5	<0.2	0.6	-	0.5	0.3	0.4	0.58	0.88	0.51	0.36	0.46	0.36	0.52	0.27	0.32	0.26	0.49	0.38
Hydrocarbons																																		
Benzene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.0010	<0.0008	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	0.118	<0.25	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics																																		
COD	mg/L	-	69	30	22	<5	28	24	12	98	12	14	74	10	< 10	18	20	14	20	-	15	17	22	20.8	12.9	41	19	37	15	51	18	20	23	44	16
TOC	mg/L	-	8.1	8.8	8.2	6.6	7.8	7.1	6.4	6.7	6.6	6.2	6.7	5	5	5	6	5	8	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
DOC	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	6.1	6.2	8	5.9	6	5.3	5.7	4.7	6.6	5.9	6.7	6.1
Oil & Grease	mg/L	-	<1	2	<1	<1	9	<5	<5	<5	10	6	7	<1	<1	<1	<1	<1	<1	-	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																																		
Aluminum	mg/L	0.0007 / 0.05 [5]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.030	<0.0030	0.0037	<0.003	0.074	<0.0030
Antimony	mg/L	0.006	<0.005	<0.005	<0.005	<0.006	<0.006	<0.05	<0.02	<0.02	<0.002	<0.002	<0.002	0.0007	0.0009	0.001	<0.0004	0.0008	0.006	-	<0.0004	0.0009	-	-	<0.00040	<0.006	<0.0060	<0.0060	<0.0060	<0.0060	<0.00060	<0.00080	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	0.00035	0.00027	0.00024	0.00050	0.00025
Barium	mg/L	1	0.0591	0.0293	0.0123	0.0074	0.0101	0.007	0.0125	0.0115	0.011	<0.01	0.014	0.009	0.012	0.01	0.012	0.01	0.013	-	0.01	0.008	0.008	0.0067	0.0101	<0.01	<0.010	<0.010	<0.010	<0.10	<0.10	<0.10	<0.1	<0.10	<0.01
Beryllium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Boron	mg/L	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.25	0.25	0.25	0.24	0.25	0.21
Cadmium	mg/L	0.00004-0.00037 [2]	<0.0005	<0.0005	<0.0005	<0.0006	<0.0006	<0.005	<0.003	<0.003	<0.0001	<0.0001	<0.0001	0.0003	<0.001	0.0001	0.0004	0.0002	0.0002	-	<0.0001	0.0020	<0.001	<0.0010	0.00021	0.00013	0.000096	0.000082	0.00018	<0.00020	<0.000020	<0.000020	0.000021	<0.000020	<0.000020
Chromium	mg/L	0.05	0.0022	0.0016	<0.0008	<0.0009	<0.0009	<0.008	<0.004	<0.004	<0.005	0.0062	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.0050	<0.0050	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	0.0015	<0.0010	<0.0010	0.0011	0.0012
Cobalt	mg/L	-	0.0046	0.0044	0.0037	0.0048	0.0044	0.016	0.012	0.018	<0.001	<0.001	0.0022	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.0020	<0.0020	<0.003	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	0.00030	<0.00030	<0.00030	<0.00030	
Copper	mg/L	0.007	0.007	0.005	0.003	0.002	0.003	<0.01	<0.005	0.008	<0.01	<0.01	<0.01	0.019	0.029	0.016	0.009	0.009	0.009	-	0.006	0.005	0.009	0.0076	0.0093	<0.002	0.0046	<0.0020	<0.0020	<0.0020	<0.0020	0.0012	0.00037	0.00072	0.0021	0.0017
Lead	mg/L	0.001-0.007 [2]	<0.002	<0.002	0.005	0.003	<0.002	<0.02	0.017	<0.01	<0.001	<0.001	<0.001	<0.0001	<0.005	<0.0001	<0.0001	0.0002	<0.0001	-	<0.0001	0.0002	<0.005	<0.0050	<0.00010	<0.002	<0.0020	<0.0020	<0.0020	<0.0020	<0.00020	<0.00020	<0.00020	<0.00020	0.0024	<0.00020
Lithium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.64	0.74	-	-	0.73	
Manganese	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.040	<0.040	<0.040	<0.04	<0.040	<0.0040
Mercury	mg/L	0.000005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	-	<0.0001	0.0001	<0.0001	<0.00010	<0.00010	<0.000005	<0.0020	<0.0000050	<0.0000050	<0.0000050	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.005	<0.005	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	.005	<0.005	<0.0050	<0.0050	<0.002	<0.0020	<0.0020	<0.0020	<0.0020	0.00081	0.00082	0.00098	0.00084	
Nickel	mg/L	0.007-0.170 [2]	0.017	0.005	0.007	0.005	0.004	<0.01	0.014	0.029	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	0.0069	-	<0.002	0.005	0.004	0.0047	0.0044	<0.005	<0.0050	<0.0050	<0.0050	<0.0050	0.0020	0.0013	0.0016	0.0041	0.0026
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1.0	<1.0	<1	-	<1.0	
Selenium	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	0.00036	0.00028	0.00037	0.00035	0.00056
Silicon	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.7	4.8	4.7	-	4.9	
Silver	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.5	2.4	2.5	-	2.7	
Sulphur	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1200	1200	1200	-	1200	
Thallium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.00020	<0.0002	-	<0.00020	
Tin	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Titanium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	0.0014	
Uranium	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0073	0.0079	0.0079	0.0072	0.0071	0.0099
Vanadium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	
Zinc	mg/L	0.03	0.0261	0.0165	0.0191	0.0136	0.0169	0.015	0.0045	0.013	0.016	< 0.01	0.018	0.022	0.031	0.025	0.011	0.013	0.003	-	0.005	0.020	0.024	0.006	0.0026	<0.03	<0.030	<0.030	<0.030	<0.030	<0.0030	<0.0030	<0.0030	0.0032	<0.0030

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E22B: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 22B																										MW 22B					
			Oct-98	Apr-99	Oct-99	Apr-00	Oct-00	Apr-01	Oct-01	Apr-02	Oct-02	Apr-03	Oct-03	Apr-04	Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Jan-07	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Volatile Organic Compounds (VOCs)																																		
Bromodichloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

italic - Detection limit greater than Tier 1 Guideline

Table E23A: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 23A																									MW 23A					
			Oct-97	Oct-98	Apr-99	Oct-99	Apr-00	Oct-00	Apr-01	Oct-01	Apr-02	Oct-02	Apr-03	Oct-03	Apr-04	Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements																																	
Field pH	-	-	-	7.11	8.54	7.69	8.26	9.07	8.78	9.07	8.46	8.81	8.75	8.73	7.76	8.49	8.04	8.19	8.05	8.36	8.15	7.89	8.529	7.5	8.3	8.63	7.85	6.08	8.5	8.8	8.65	8.8	8.6	8.12	8.74
Field EC	mS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.9	6.04 (EF)	2.56	2.73	5.78	5.73	2.190	2.632	1.935	2.52	3.5	2.81	2.25	2.24	2.24	2.13	2.38	2.41	2.17
Field Temperature	°C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.4	4.3	8.1	5.3	7.4	9.2	9.0	11.2	10.2	11.3	12	9.1	7.9	8.9	8.6	8.5	6.8	11.6	7.8
Routine Water																																			
pH	-	6.5 - 8.5	8.22	8.35	8.54	8.67	8.72	8.73	8.61	8.7	8.48	8.72	8.57	8.63	8.5	8.5	8.5	8.5	8.5	8.6	8.5	8.5	8.5	8.57	8.57	8.63	8.57	8.63	8.48	8.44	8.53	8.75	8.51	8.70	8.63
Conductivity (EC)	µS/cm	1000	3740	9620	5490	3820	3260	3160	2990	2750	2740	2640	2420	2590	2340	2610	2440	2430	2450	2440	2090	2450	2290	2320	2220	2400	2300	2200	2200	2100	2100	2100	2200	2200	2200
Calcium	mg/L	-	32.2	109	22.2	20.6	13.7	7.7	8.9	6.7	8	6.4	3.7	7.6	6.5	7.4	7.2	7.1	9	7.6	4.8	6.5	6.6	5.7	5.5	6	4.7	4.8	5.4	4.1	4.1	4.4	4.1	4.0	3.2
Magnesium	mg/L	-	9.2	30.1	5.5	14.8	7.32	1.81	1.88	1.4	1.16	<1	<1	1.1	1	1.2	<0.1	1.5	1.1	1.3	0.2	0.2	1.1	0.8	0.74	0.8	0.62	0.6	0.63	0.48	0.49	0.47	0.49	0.54	0.54
Sodium	mg/L	200	1260	2620	1400	978	897	830	840	685	762	706	678	730	631	672	628	631	633	633	536	656	601	578	519	600	580	550	570	500	560	570	560	560	590
Potassium	mg/L	-	6.71	13.8	6.24	14.6	8.7	3.2	3.2	2.5	2.3	<2	<2	2.3	1.8	1.4	1.7	2.3	2.4	2.5	2.3	1.9	1.4	2	2.01	2.2	2.2	1.9	1.8	2.2	2.0	2	2	1.8	1.9
Iron	mg/L	0.3	0.017	102	< 0.003	< 0.003	-	-	-	0.021	< 0.003	<0.05	0.09	<0.05	0.254	0.011	0.046	0.009	0.073	0.260	0.098	0.029	0.032	0.0698	0.02	<0.06	<0.060	<0.060	0.38	<0.060	<0.060	<0.060	<0.06	<0.060	<0.060
Sulphate	mg/L	128-429 [2]	1780	5540	2390	1510	1110	768	836	635	679	509	380	537	281	413	318	301	329	280	60.6	284	232	193	155	190	190	160	110	90	85	77	88	85	120
Chloride	mg/L	100	1.9	5.6	16.8	18.5	18.6	18.5	< 0.5	14.1	14.4	13.4	15.7	15.8	17	18	18	19	20	19	9	18	18	16.7	16.1	18	19	19	17	20	18	21	20	19	19
Bicarbonate	mg/L	-	1230	509	648	821	659	842	956	1020	1010	1020	1120	1080	1190	1170	1200	1220	1210	1190	1290	1260	1290	1250	1200	1200	1300	1200	1300	1300	1300	1300	1300	1200	1200
Carbonate	mg/L	-	-	8.12	54.3	67.7	60	91	56	50	56	87	58	65	32	32	33	34	28	43	36	31	29	41.2	45.3	44	35	55	28	17	26	54	31	85	42
Hydroxide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	-	<0.05	<0.05	0.09	0.055	<0.02	<0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	9.7	<0.1	0.7	<0.050	<0.050	0.016	0.005	<0.003	<0.010	<0.010	<0.010	<0.044	<0.020	<0.010	<0.010
Nitrite (N)	mg/L	0.02 - 0.20 [3]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.010	<0.033	<0.010	<0.010	<0.010
Nitrate and Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.020	-	<0.020	<0.014	<0.014
Total Dissolved Solids (TDS)	mg/L	500	3700	8570	4210	3030	-	2140	2220	1900	2020	1830	1690	1890	1560	1720	1600	1590	1620	1570	1330	1610	1520	1450	1330	1500	1500	1400	1400	1300	1300	1300	1300	1300	1400
Hardness	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	12	13	12	12	10
Alkalinity (total as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1100	1100	1100	1100	1100	1000
Alkalinity (pp as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	22	45	-	71	
Ionic Balance	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.90	1.0	0.52	0.13	0.59	5.3
Water Nutrients																																			
Ammonia-N	mg/L	0.018-190 [4]	0.63	2.75	2.04	0.84	3.21	1.66	0.81	1.03	0.85	0.76	0.69	0.98	0.79	0.7	0.42	0.68	1.03	0.94	0.44	0.78	0.85	0.785	0.426	1.1	0.86	0.79	0.6	0.76	0.76	0.93	0.79	0.79	0.84
TKN	mg/L	-	0.94	26.7	2.52	11.9	5.42	2.08	1.7	1.49	2.31	1.7	1.82	4.94	1.1	1.3	1.9	1.7	3.6	2.7	2.9	1.5	1.5	1.71	2.01	3.2	1.7	2	1.5	1.4	1.5	1.6	1.5	1.3	0.83
Hydrocarbons																																			
Benzene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.0010	<0.0008	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.10	<0.10	<0.1	0.12	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	0.095	<0.25	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics																																			
COD	mg/L	-	18	1650	95	937	65	85	62	50	99	67	72	187	40	10	48	51	42	44	21	39	49	46.5	44.9	190	78	78	81	55	55	57	67	59	73
TOC	mg/L	-	7.8	25.6	16.5	11.5	14	2.9	20.8	15.8	14.5	14.5	20.8	31.6	14	13	17	16	16	14	8	16	-	-	-	-	-	-	-	-	-	-	-	-	-
DOC	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	15.2	16.8	16	19	18	16	16	16	21	17	19	14
Oil & Grease	mg/L	-	<1	-	<1	16	1	2	<5	<5	7	11	<1	5	<1	<1	<1	<1	<1	1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																																			
Aluminum	mg/L	0.0007 / 0.05 [5]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0043	0.0049	0.01	<0.003	0.016	0.0054
Antimony	mg/L	0.006	<0.005	-	-	0.008	-	-	-	-	<0.005	0.0015	0.007	0.0028	0.0007	0.0009	0.0015	<0.0004	0.0018	0.0017	0.0016	0.0008	-	-	<0.00040	<0.006	<0.00060	0.0012	0.00082	<0.00060	<0.00060	0.0013	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0065	0.0058	0.009	0.0056	0.0057	0.0064
Barium	mg/L	1	0.0463	-	-	0.0149	-	-	-	-	0.0227	0.057	0.017	0.032	0.027	0.022	0.023	0.029	0.033	0.036	0.097	0.032	0.032	0.0331	0.0356	0.04	0.037	0.043	0.040	0.038	0.050	0.063	0.058	0.061	0.055
Beryllium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Boron	mg/L	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.77	0.88	0.85	0.87	0.82	0.86
Cadmium	mg/L	0.00004-0.00037 [2]	<0.0005	-	-	<0.0005	-	-	-	-	<0.0005	0.00002	<0.0001	0.00009	*<0.001*	*<0.001*	<0.0001	<0.0001	0.0002	0.0003	0.0002	0.0001	*<0.001*	<0.0010	0.000085	0.00006	0.00011	0.000066	0.000075	<0.000020	<0.000020	<0.000020	0.000026	<0.000020	<0.000020
Chromium	mg/L	0.05	<0.0008	-	-	<0.0008	-	-	-	-	<0.0008	0.0024	<0.005	0.0029	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.0050	<0.01	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	0.0015	-	-	0.0019	-	-	-	-	0.0023	0.0052	<0.001	0.0011	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0020	<0.0020	<0.003	0.00036	0.0003	0.0007	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
Copper	mg/L	0.007	<0.001	-	-	0.002	-	-	-	-	0.004	0.036	<0.01	0.004	0.004	0.004	0.004	0.003	0.005	0.004	0.002	0.001	0.004	0.0016	0.0014	<0.002	0.00059	0.00026	0.0028	0.00042	0.00049	<0.00020	0.00029	0.0006	0.00038
Lead	mg/L	0.001-0.007 [2]	0.002	-	-	0.002	-	-	-	-	<0.002	0.0083	<0.001	0.0003	<0.005	<0.005	0.0002	<0.0001	0.0003	0.0007	<0.0001	0.0003	<0.005	<0.0050	0.00016	<0.002	<0.00020	<0.00020	0.00088	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0002
Lithium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.098	0.11	-	-	0.10	
Manganese	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0071	0.0079	0.0064	0.0084	0.008	0.005
Mercury	mg/L	0.000005	*<0.0001*	*<0.0001*	-	*<0.0001*	-	-	-	-	-	-	*<0.0001*	*<0.0001*	*<0.0002*	*<0.0002*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.00010*	*<0.00010*	<0.000005	*<0.0020*	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000020	<0.0000050	<0.0000020	<0.0000050	<0.0000019
Molybdenum	mg/L	-	0.003	-	-	0.035	-	-	-	-	0.031	0.025	0.019	0.02	0.01	0.012	0.01	0.011	0.011	0.009	0.01	0.009	0.006	0.0065	0.0059	0.006	0.0058	0.0055	0.0050	0.0042	0.0046	0.0045	0.0042	0.0039	
Nickel	mg/L	0.007-0.170 [2]	0.019	-	-	0.011	-	-	-	-	0.011	0.0276	0.015	0.0261	0.014	0.005	0.018	0.013	0.017	0.019	0.002	0.009	0.01	0.0079	0.0054	0.011	0.0069	0.0069	0.0097	0.0032	0.0031	0.0095	0.0022	0.0032	0.0016
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.18	0.12	<0.1	-	0.14	
Selenium	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.0031
Silicon	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.9	3.1	3.1	-	3.3	
Silver	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.11	0.11	0.12	-	0.12	
Sulphur	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	28	23	-	28	
Thallium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	<0.00020	<0.0002	-	<0.00020	
Tin	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Titanium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Uranium	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0032	0.0027	0.0049	0.0024	0.0017	0.0018
Vanadium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Zinc	mg/L	0.03	0.0096	-	-	0.0067	-	-	-	-	0.0107	0.053	<0.01	0.007	0.029	0.009	0.009	0.004	0.005	0.005	0.005	0.036	0.016	0.0093	0.0033	<0.03	0.0071	<0.0030	0.0031	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E23A: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 23A																										MW 23A					
			Oct-97	Oct-98	Apr-99	Oct-99	Apr-00	Oct-00	Apr-01	Oct-01	Apr-02	Oct-02	Apr-03	Oct-03	Apr-04	Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Volatile Organic Compounds (VOCs)																																		
Bromodichloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

italic - Detection limit greater than Tier 1 Guideline

Table E23B: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 23B																												
			Oct-98	Oct-99	Apr-00	Oct-00	Apr-01	Oct-01	Apr-02	Oct-02	Apr-03	Oct-03	Apr-04	Oct-04	Apr-05	Oct-05	May-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements																															
Field pH	-	-	6.98	-	7.18	7.71	7.33	7.71	7.5	7.51	7.52	7.58	7.51	7.36	7.2	6.87	7.11	7.27	7.14	7.19	7.437	8.3	-	7.43	7.17	5.77	7.5	7.8	7.45	7.3	7.7	7.41	7.3
Field EC	mS	-	-	-	-	-	-	-	-	-	-	-	-	-	9.44	24.7 (EF)	11.1	7.19	23.8	21.1	8.730	1.816	-	9.39	4.38	10.67	9.8	9.75	10.17	9.7	10.68	9.97	10.02
Field Temperature	°C	-	-	-	-	-	-	-	-	-	-	-	-	-	9.8	8.2	5.9	6.6	6.0	7.2	9.0	13.2	-	12.9	8.8	9.5	9.9	9.8	10.3	9.3	8	9.9	8.3
Routine Water																																
pH	-	6.5 - 8.5	7.69	7.68	7.67	7.67	7.54	7.67	7.59	7.8	7.75	7.95	8.1	8.1	8	8	8	8.3	8.2	8.0	8	8.19	8.16	7.94	8.07	8.24	8.06	7.76	7.89	8.05	7.95	8.09	8.04
Conductivity (EC)	µS/cm	1000	8760	9560	10000	8950	9280	9590	9140	9480	9220	8970	9870	9580	9660	8940	10200	8250	10100	9790	9490	9710	9530	9400	9400	9700	9600	9700	9900	10000	10000	10,000	9,900
Calcium	mg/L	-	113	181	162	147	192	172	191	193	191	168	201	169	209	158	163	121	184	171	173	160	178 *	160	160	150	170	170	170	170	170	160	180
Magnesium	mg/L	-	49.4	51.7	48.2	39.9	51.8	50.3	43.3	41.6	45.1	35.6	64	54.6	71.2	63.7	66.1	64.8	71.5	65.3	65.9	59.7	64.2 *	56	56	55	64	62	63	66	68	63	67
Sodium	mg/L	200	2290	2540	2560	2560	2460	2610	2620	2730	2280	2330	2660	2610	2610	2690	2660	2070	2540	2490	2360	2200	2440 *	2300	2500	2300	2400	2300	2400	2400	2400	2300	2500
Potassium	mg/L	-	14.6	10.4	10.3	13.8	10	13	12	11	8.1	10	10.9	12.8	11.3	13.1	11.9	11.4	13	11.0	7.2	11.7	11.4 *	12	11	11	11	13	12	12	12	11	12
Iron	mg/L	0.3	0.46	0.02	0.064	<0.003	0.086	< 0.02	0.066	<0.1	<0.1	<0.1	0.69	<0.005	<0.005	<0.005	<0.005	0.008	<0.005	0.035	<0.005	<0.0050	1.63 *	0.07	0.07	<0.060	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60
Sulphate	mg/L	128-429 [2]	4770	5520	4990	5880	5450	5410	5240	6280	5420	5000	5490	5370	5050	5450	4960	3730	4850	4970	4480	4700	4550 *	5000	4900	5400	5200	4900	4900	4700	4800	4600	5000
Chloride	mg/L	100	3.8	2.5	5.2	3.6	4	3.8	3.4	3.1	3.3	2.7	3	4	3	3	4	3	3	3	4	2.33	<10 *	3	2.2	2.6	2.2	2.6	1.9	3.7	3.2	4.4	4.2
Bicarbonate	mg/L	-	842	930	938	926	933	939	897	930	917	910	915	963	968	977	969	1200	1040	1050	1080	1070	1040	1000	1000	1100	1100	1000	1100	1100	1100	1100	980
Carbonate	mg/L	-	-	-	<6	<6	<6	<6	<6	<6	<6	<6	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5.0	<5.0	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0
Hydroxide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	0.24	0.09	0.225	0.25	< 0.04	0.33	0.066	0.159	< 0.04	< 0.04	0.6	0.2	<0.5	0.2	0.2	0.2	0.3	0.1	<0.1	0.147	<1.0 *	0.24	0.073	0.26	0.36	0.072	0.32	0.85	0.068	0.21	0.24
Nitrite (N)	mg/L	0.02 - 0.20 [3]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.015	<0.010	<0.16	<0.01	0.022	0.026
Nitrate and Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.087	0.32	-	0.068	0.23	0.26
Total Dissolved Solids (TDS)	mg/L	500	7650	8760	8230	9070	8630	8720	8550	9710	8410	7990	8880	8700	8430	8860	8340	6590	8170	8230	7620	7660	7760	8100	8200	8500	8400	7900	8000	7900	8000	7600	8300
Hardness	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	670	670	690	710	650	730
Alkalinity (total as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	860	860	870	860	860	800
Alkalinity (pp as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	-	<1.0	
Ionic Balance	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.94	0.98	1.3	1.2	0.80	0.89
Water Nutrients																																
Ammonia-N	mg/L	0.018-190 [4]	0.91	1.91	1.69	1.55	0.8	1.15	1.56	1.56	1.23	1.79	0.1	1.12	0.46	1.30	1.10	<0.05	0.32	0.52	0.56	0.652	0.311	0.42	0.3	0.39	0.18	0.42	<0.050	0.39	0.33	0.25	0.38
TKN	mg/L	-	1.45	2.36	2.39	1.8	1.59	1.25	2.78	1.9	1.64	3.12	<0.2	1.2	0.7	1.6	1.3	0.4	0.6	0.9	1.2	1.37	1.37	0.91	0.76	1.1	0.56	0.76	0.46	0.67	0.71	0.63	0.54
Hydrocarbons																																
Benzene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.0010	<0.0008	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	0.061	<0.25	<0.1	0.23	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics																																
COD	mg/L	-	69	30	17	20	19	16	71	14	19	46	< 10	< 10	19	20	23	19	19	18	27	18.8	12.6	37	30	45	47	23	22	22	28	32	75
TOC	mg/L	-	8.5	9.4	7.8	9.4	8.4	8.3	7.5	7.7	7.6	7.5	7	7	7	7	8	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
DOC	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	6.8	7.2	9.6	6.5	7.1	5.8	7.4	5.5	9.5	6.6	7.7	7.8
Oil & Grease	mg/L	-	<1	<1	2	12	<5	<5	<5	11	<5	6	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																																
Aluminum	mg/L	0.0007 / 0.05 [5]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.030	0.0081	<0.0030	<0.003	<0.0030	<0.0030
Antimony	mg/L	0.006	<0.005	0.007	<0.006	<0.006	<0.05	<0.02	<0.02	<0.002	<0.002	<0.002	0.006	0.0011	0.0008	<0.0004	0.0007	0.0005	<0.0004	0.0007	-	-	<0.00040	<0.006	<0.0060	<0.0060	<0.0060	<0.0060	<0.00060	<0.00060	<0.00072	<0.00060	<0.00060
Arsenic	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	0.00024	0.0003	0.00022	0.00023	0.00033
Barium	mg/L	1	0.0741	0.0184	0.0118	0.0121	0.01	0.02	0.0095	0.011	<0.01	0.012	0.012	0.012	0.012	0.014	0.011	0.011	0.012	0.009	0.012	0.0111	0.0159	<0.01	<0.010	<0.010	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Beryllium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	0.33
Boron	mg/L	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.35	0.40	0.36	0.35	0.32	
Cadmium	mg/L	0.00004-0.00037 [2]	0.0007	<0.0005	<0.0006	<0.0006	<0.005	<0.003	<0.003	<0.0001	<0.0001	0.00011	<0.001	<0.001	0.0007	<0.0001	0.0001	<0.0001	<0.0001	0.0003	<0.001	<0.0010	0.000335	0.00014	0.000083	0.00062	0.00005	<0.00020	0.00028	0.000047	0.000035	0.000094	0.000078
Chromium	mg/L	0.05	0.0018	<0.0008	<0.0009	<0.0009	<0.008	<0.004	<0.004	<0.005	< 0.005	<0.005	<0.005	0.014	<0.005	0.010	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.0050	<0.01	<0.010	<0.010	<0.010	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	0.0032	0.0041	0.0058	0.005	0.019	0.014	0.018	0.0019	<0.001	0.0013	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0020	0.0023	<0.003	<0.0030	<0.0030	<0.0030	<0.0030	<0.00030	0.00033	0.00035	0.00040	
Copper	mg/L	0.007	0.005	0.009	0.006	0.005	<0.01	<0.005	0.006	0.011	<0.01	0.016	0.032	0.039	0.024	0.010	0.009	0.008	0.005	0.005	0.01	0.0092	0.0168	<0.002	<0.0020	<0.0020	<0.0020	<0.0020	0.0013	<0.00020	0.0003	0.00080	0.00021
Lead	mg/L	0.001-0.007 [2]	<0.002	0.005	<0.002	<0.002	<0.02	0.012	<0.01	<0.001	<0.001	<0.001	<0.005	<0.005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.005	<0.0050	0.00236	<0.002	<0.0020	<0.0020	<0.0020	<0.0020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	0.86	-	-	0.79	
Manganese	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.14	0.065	0.12	0.12	0.11	0.14
Mercury	mg/L	0.000005	<0.0001	<0.0001	<0.0001	<0.0001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.00010	<0.00010	<0.000005	0.0000025	<0.0000050	<0.0000050	<0.0000050	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.003	0.004	0.002	< 0.001	<0.01	<0.005	<0.005	<0.01	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.0050	<0.002	<0.0020	<0.0020	<0.0020	<0.0020	0.0005	0.00025	0.0003	0.00031	
Nickel	mg/L	0.007-0.170 [2]	0.016	0.042	0.014	0.009	<0.01	0.016	0.026	<0.005	<0.005	<0.005	<0.002	0.002	<0.002	<0.002	<0.002	0.004	<0.002	0.005	0.005	0.0054	0.0072	<0.005	<0.0050	<0.0050	<0.0050	<0.0050	0.0028	0.0012	0.0013	0.0019	0.011
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1.0	<1.0	<1	-	<1.0	
Selenium	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.4	5.5	5.4	-	5.1	
Silver	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.6	3.7	3.9	-	4.0	
Sulphur	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1600	1600	1600	-	1500	
Thallium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.00020	<0.0002	-	<0.00020	
Tin	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Titanium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Uranium	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0023	0.0020	0.0035	0.0032	0.0029	0.0025
Vanadium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Zinc	mg/L	0.03	0.0354	0.0314	0.016	0.0208	0.02	0.014	0.0035	0.02	<0.01	0.016	0.04	0.038	0.033	0.016	0.016	<0.002	0.034	0.023	0.016	0.0076	0.0099	<0.03	<0.030	<0.030	<0.030	<0.030	0.0039	<0.0030	<0.0030	<0.0030	<00030

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

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			Oct-98	Oct-99	Apr-00	Oct-00	Apr-01	Oct-01	Apr-02	Oct-02	Apr-03	Oct-03	Apr-04	Oct-04	Apr-05	Oct-05	May-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Volatile Organic Compounds (VOCs)																																		
Bromodichloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness
[3] Guideline varies with chloride
[4] Guideline varies with pH and temperature
[5] Guideline varies with pH
"-" No applicable guideline or not analyzed
Equipment Failure, parameter not reported (EF)
Detection limit adjusted (*)
Exceeds Regulatory Limit
Italic - Detection limit greater than Tier 1 Guideline

Table E25A: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 25A																		
			Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	Jun-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements																						
Field pH	-	-	7.95	7.82	8.13	7.62	8.02	8.21	7.71	8.274	8.900	8.41	8.4	8.42	8.02	10	8.6	8.39	8.4	8.5	8.17	8.32
Field EC	mS	-	-	2.54	5.33 (EF)	2.90	6.29	4.83	4.62	1.926	1.667	2.1	2.16	0.93	2.29	2.22	2.19	2.13	2.05	2.32	2.12	2.08
Field Temperature	°C	-	-	11.1	3.8	9.2	7.1	8.8	9.88	7.7	13.1	11.7	10.7	8.6	10.1	7.1	8.3	9.4	8.2	6.5	10.8	8.6
Routine Water																						
pH	-	6.5-8.5	8.5	8.4	8.5	8.4	8.7	8.7	8.5	8.4	8.59	8.59	8.56	8.67	8.53	8.28	8.39	8.45	8.55	8.51	8.58	8.51
Conductivity (EC)	µS/cm	1000	4660	2380	2120	2110	2070	2070	2080	2000	2100	2050	2100	2200	2100	2000	2100	2100	2000	2100	2100	2100
Calcium	mg/L	-	43	10.7	7.2	6.8	7.2	5.3	5.3	5.6	5.02	5.01	4.7	5.4	4.7	4.7	4.6	5.1	4.5	4.7	4.6	4.9
Magnesium	mg/L	-	21.8	0.4	1.1	0.9	1.1	0.2	<0.1	0.7	0.51	0.57	0.5	0.59	0.5	0.49	0.44	0.47	0.42	0.45	0.45	0.49
Sodium	mg/L	200	1270	625	558	557	539	553	585	543	511	436	450	490	570	480	490	540	490	550	540	570
Potassium	mg/L	-	9.3	2.7	2.5	1.9	2.5	2.9	1.7	1.3	1.74	1.9	1.8	2	1.9	1.9	2.3	1.8	1.7	1.8	1.7	2
Iron	mg/L	0.3	3.32	0.358	0.516	0.0186	0.112	0.175	0.057	0.068	0.0525	0.095	<0.06	<0.060	<0.060	<0.060	<0.060	<0.060	<0.06	0.069	<0.060	<0.060
Sulphate	mg/L	128-429 [2]	2090	323	60.7	102	52.1	36.2	21.3	24.7	19.8	13.2	-	3.2	7.1	14	13	4.3	3.1	<1.0	<1.0	2.2
Chloride	mg/L	100	30	14	11	3	10	9	10	10	7.74	7.24	10	8.3	8.5	8	9.2	8.4	8.9	9.4	8.7	9.3
Bicarbonate	mg/L	-	812	1220	1350	1350	1260	1330	1400	1430	1360	1320	1300	1300	1400	1400	1400	1400	1400	1400	1300	1300
Carbonate	mg/L	-	31	25	42	25	53	55	38	26	50.7	49	38	62	39	<0.50	11	19	28	30	68	28
Hydroxide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.050	<0.050	0.065	0.031	0.32	0.97	0.85	0.18	2	<0.020	<0.010	0.52
Nitrite (N)	mg/L	0.02 - 0.20 [3]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.21	0.029	0.27	<0.010	0.081	0.1
Nitrate and Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1	0.21	0.53	<0.020	0.081	0.62
Total Dissolved Solids (TDS)	mg/L	500	3900	1600	1340	1360	1280	1310	1350	1310	1270	1220	1200	1200	1300	1200	1200	1300	1200	1300	1300	1300
Hardness	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	15	13	14	13	14
Alkalinity (total as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1200	1200	1200	1200	1200	1100
Alkalinity (pp as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.0	16	23	-	57	
Ionic Balance	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.91	1.0	4.6	0.22	0.54	5.1
Water Nutrients																						
Ammonia-N	mg/L	0.018-190 [4]	0.68	0.42	0.54	0.83	0.85	0.62	0.68	0.68	0.68	0.281	0.67	1.2	0.59	0.42	0.41	0.62	0.55	0.76	0.71	0.66
TKN	mg/L	-	3.5	2.8	1.6	1.8	2.3	1	0.9	1.1	1.16	1.67	1.1	3.9	1.2	1.1	1.1	1.2	1.2	1.2	1.0	1.2
Hydrocarbons																						
Benzene	mg/L	0.005	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.0010	<0.0008	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	-	-	-	-	-	-	-	<0.1	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	-	-	-	-	-	-	-	<0.05	<0.050	<0.25	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics																						
COD	mg/L	-	40	35	15	24	21	23	18	28	21.7	19.6	40	190	29	32	35	29	25	29	32	23
TOC	mg/L	-	8	13	8	9	9	9	9	-	-	-	-	-	-	-	-	-	-	-	-	
DOC	mg/L	-	-	-	-	-	-	-	-	7	9	9.7	14	9.8	9.3	7.9	8.1	7.9	9.6	8.7	10	8.8
Oil & Grease	mg/L	-	<1	1	<1	3	1	<1	1	-	-	-	-	-	-	-	-	-	-	-	-	
Metals																						
Aluminum	mg/L	0.0007 / 0.05 [5]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0051	0.0046	0.0043	0.0034	0.012	<0.0030
Antimony	mg/L	0.006	0.001	0.0114	0.0012	0.0018	0.0015	0.0012	0.0011	-	-	0.00086	0.0011	0.0033	0.0012	0.00078	0.0011	<0.00060	0.00064	<0.00060	<0.00060	0.00076
Arsenic	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0021	0.0019	0.0023	0.0024	0.0023	0.002
Barium	mg/L	1	0.03	0.051	0.063	0.041	0.045	0.062	0.051	0.051	0.0547	0.0622	0.074	0.11	0.085	0.081	0.081	0.088	0.10	0.08	0.098	0.099
Beryllium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Boron	mg/L	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.81	0.94	0.83	0.89	0.85	0.89
Cadmium	mg/L	0.00004-0.00037 [2]	*<0.001*	0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	*<0.001*	*<0.0010*	0.000175	0.00011	0.000041	0.000033	<0.000025	0.000022	<0.000020	<0.000020	<0.00002	<0.000020	<0.000020
Chromium	mg/L	0.05	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.0050	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0020	<0.0020	0.0006	0.00068	0.00037	0.00046	<0.00030	0.00034	0.00032	0.00033	<0.00030	
Copper	mg/L	0.007	0.012	0.01	0.003	0.003	0.003	0.001	0.002	0.004	<0.0010	0.0012	0.0018	0.0014	0.0022	0.0009	0.0009	0.00045	<0.00020	<0.00020	0.0020	0.0055
Lead	mg/L	0.001-0.007 [2]	<0.005	0.0029	<0.0001	0.0003	0.0012	0.0004	0.0002	<0.005	<0.0050	0.0003	0.0002	0.00029	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	<0.00020
Lithium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.10	0.11	-	-	0.097	
Manganese	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.051	0.10	0.07	0.13	0.063	0.051
Mercury	mg/L	0.000005	*<0.0002*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.00010*	*<0.00010*	<0.000005	0.0000059	*<0.000010*	<0.0000050	<0.0000050	<0.0000020	<0.0000020	<0.000002	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.008	0.021	0.008	0.011	0.007	0.007	<0.005	<0.005	<0.0050	0.0052	0.005	0.013	0.0044	0.0039	0.0051	0.0064	0.006	0.0076	0.0063	
Nickel	mg/L	0.007-0.170 [2]	0.003	0.01	0.003	0.007	0.005	0.003	0.003	0.003	0.0033	0.003	0.0041	0.0054	0.0025	0.0025	0.0032	0.0023	0.0022	0.0015	0.0021	0.0023
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.11	<0.10	<0.1	-	0.12	
Selenium	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00041	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.7	3.4	2.9	-	3.3	
Silver	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.11	0.11	0.11	-	0.12	
Sulphur	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.2	2.4	1.3	-	0.72	
Thallium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	<0.00020	<0.0002	-	<0.00020	
Tin	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Titanium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Uranium	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0015	0.00074	0.0012	0.00036	0.0010	0.0018
Vanadium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0021	0.0013	0.0015	-	<0.0010	
Zinc	mg/L	0.03	0.022	0.064	0.004	0.023	0.011	0.005	0.017	0.026	0.0395	0.0048	0.011	0.005	0.0033	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E25A: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 25A																		
			Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	Jun-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Polycyclic Aromatic Hydrocarbons (PAHs)																						
Benzo[a]pyrene equivalency	mg/L	0.00004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000010	<0.000010	-	<0.000010	
Acenaphthene	mg/L	0.006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	-	<0.00010	
Acenaphthylene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	-	<0.00010	
Acridine	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	<0.00020	-	<0.000040	<0.00050
Anthracene	mg/L	0.0034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000010	<0.000010	-	<0.000010	<0.00050
Benz(a)anthracene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0000085	<0.0000085	-	<0.0000085	
Benzo(a) pyrene	mg/L	0.0018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0000075	<0.0000075	-	<0.0000075	<0.00050
Benzo(b+j)fluoranthene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0000085	<0.0000085	-	<0.0000085	
Benzo(c)phenanthrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000050	<0.000050	-	<0.000050	<0.0010
Benzo(e)pyrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000050	<0.000050	-	<0.000050	
Benzo(g,h,i)perylene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0000085	<0.0000085	-	<0.0000085	<0.00050
Benzo(k)fluoranthene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0000085	<0.0000085	-	<0.0000085	
Chrysene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0000085	<0.0000085	-	<0.0000085	<0.00050
Dibenz(a,h)anthracene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0000075	<0.0000075	-	<0.0000075	
Fluoranthene	mg/L	0.24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000010	<0.000010	-	<0.000010	<0.00050
Fluorene	mg/L	0.0042	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000050	<0.000050	-	<0.000050	<0.00050
Indeno(1,2,3-c,d)pyrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0000085	<0.0000085	-	<0.0000085	
1-Methylnaphthalene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	
2-Methylnaphthalene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	-	<0.00010	
Naphthalene	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	-	<0.00010	
Perylene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000050	<0.000050	-	<0.000050	
Phenanthrene	mg/L	0.00086	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000050	<0.000050	-	<0.000050	<0.00050
Pyrene	mg/L	0.71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000020	<0.000020	-	<0.000020	<0.0020
Quinoline	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	<0.00020	-	<0.00020	<0.00050
Volatile Organic Compounds (VOCs)																						
Bromodichloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.00050
Carbon tetrachloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.0010
Chlorobenzene	mg/L	0.0013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.0010
Chloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.00050
Chloroform	mg/L	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Chloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.00050
1,2-Dibromoethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.0013
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1-Dichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Methylene Chloride	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Methyl Methacrylate	mg/L	0.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Styrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trichlorofluoromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0013	
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E25B: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 25B																		
			Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements																						
Field pH	-	-	7.49	7.36	7.35	7.3	7.49	7.59	7.44	7.444	7.410	7.58	7.5	7.3	5.91	7.4	7.8	7.56	7.4	7.7	7.52	7.2
Field EC	mS	-	-	8.38	18.83 (EF)	7.66	9.12	19.39	20.36	8.560	8.880	2.4	9.03	3.98	10.59	9.91	10.02	9.51	9.72	9.2	9.25	9.43
Field Temperature	°C	-	-	6.9	5.9	6.1	9.9	6.8	10.09	8.8	7.9	11.6	11.9	8.3	10.1	7.2	8.2	8.6	7.5	7.6	11.5	11.8
Routine Water																						
pH	-	6.5 - 8.5	8.4	8.2	8.3	8.0	8.3	8.2	8.0	8.1	8.09	8.11	8.05	7.84	8.19	8.12	7.85	8.09	8.14	7.85	8.17	8.14
Conductivity (EC)	µS/cm	1000	4860	8300	7490	8100	8660	8970	9120	8790	8900	9200	9200	9200	9400	9400	9500	9500	9500	9600	9500	9400
Calcium	mg/L	-	52.7	172	145	172	168	172	175	174	175	181 *	180	190	170	190	190	190	190	200	190	190
Magnesium	mg/L	-	44.8	42.2	43.4	42.3	45.7	50.4	51.6	50.8	47.9	48.2 *	48	50	47	54	53	51	54	54	52	51
Sodium	mg/L	200	1520	2150	2310	2170	2190	2260	2300	2180	2160	2180 *	2200	2500	2200	2300	2200	2100	2300	2400	2400	2300
Potassium	mg/L	-	7	10.1	11.8	10.1	12.1	12.2	10.9	7.6	11.8	10.8 *	12	12	11	11	12	12	12	13	12	11
Iron	mg/L	0.3	0.266	0.009	<0.005	0.010	<0.005	0.006	<0.005	<0.005	<0.050	<0.050 *	<0.06	<0.060	<0.060	<0.60	<0.60	<0.060	<0.6	<0.60	*<0.60*	*<0.60*
Sulphate	mg/L	128-429 [2]	2720	3880	4420	4290	4210	4140	4480	4090	4350	4370 *	4800	4700	5100	5200	4600	4500	4100	4600	4400	4500
Chloride	mg/L	100	2	2	3	10	2	3	2	3	1.69	<10 *	3	1.4	2	1.9	2.2	2.5	2.3	2.3	2.7	2.5
Bicarbonate	mg/L	-	973	1050	1060	1040	988	1030	1070	1080	1060	1040	1000	1000	1000	1100	1000	970	1000	1000	1000	960
Carbonate	mg/L	-	21	<5	<5	<5	<5	<5	<5	<5	<5.0	<5.0	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Hydroxide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	< 0.1	<0.5	<0.1	0.3	0.3	0.3	<0.1	0.8	0.187	<1.0 *	0.12	0.09	0.5	0.42	0.77	0.62	2.5	0.6	0.80	0.97
Nitrite (N)	mg/L	0.02 - 0.20 [3]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.016	0.019	<0.16	0.05	0.018	<0.010
Nitrate and Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.78	0.64	-	0.65	0.82	0.97
Total Dissolved Solids (TDS)	mg/L	500	4850	6770	7450	7210	7120	7140	7550	7040	7270	7300	7800	8000	8000	8300	7600	7300	7100	7800	7500	7600
Hardness	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	690	680	700	710	680	680
Alkalinity (total as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	850	790	840	840	850	
Alkalinity (pp as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	-	<1.0	
Ionic Balance	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.97	0.95	6	2.2	4.1	1.8
Water Nutrients																						
Ammonia-N	mg/L	0.018-190 [4]	0.45	1.21	1.44	0.95	1.37	0.79	1.08	0.42	0.637	0.224	0.77	0.82	0.56	0.59	0.29	0.58	0.44	<0.015	0.15	0.07
TKN	mg/L	-	1	1.6	1.9	1.4	1.8	1	1.3	0.8	1.43	1.44	1.3	1.2	0.53	0.84	0.86	1.2	0.87	0.55	0.52	0.48
Hydrocarbons																						
Benzene	mg/L	0.005	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.0004	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.0004	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.0004	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.0010	<0.0008	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.0008	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	-	-	-	-	-	-	-	<0.1	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	-	-	-	-	-	-	-	<0.05	<0.050	<0.25	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10
Organics																						
COD	mg/L	-	30	25	26	26	27	25	19	34	22.6	19	42	36	42	35	29	30	27	27	32	26
TOC	mg/L	-	8	10	10	10	10	10	11	-	-	-	-	-	-	-	-	-	-	-	-	
DOC	mg/L	-	-	-	-	-	-	-	-	9	8.9	9.8	9.3	9.2	8.4	9	9.9	10	12	10	11	10
Oil & Grease	mg/L	-	< 1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	
Metals																						
Aluminum	mg/L	0.0007 / 0.05 [5]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.030	0.0084	0.0053	<0.003	<0.0030	<0.0030
Antimony	mg/L	0.006	0.0008	0.0014	0.0004	0.0008	0.0010	<0.0004	0.0006	-	-	<0.00040	<0.006	<0.0060	<0.0060	<0.0060	<0.0060	<0.00060	<0.0006	<0.00077	<0.00060	<0.00060
Arsenic	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	0.00055	0.00047	0.00041	0.00039	0.00038
Barium	mg/L	1	0.056	0.038	0.031	0.025	0.027	0.018	0.019	0.02	0.0157	0.0217	0.01	0.012	0.015	<0.10	<0.10	0.011	<0.1	<0.10	<0.10	0.017
Beryllium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Boron	mg/L	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.46	0.46	0.47	0.48	0.50	0.44
Cadmium	mg/L	0.00004-0.00037 [2]	*<0.001*	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	*<0.001*	*<0.0010*	<0.000050	0.00009	*<0.050*	0.000069	0.00021	<0.00020	<0.000020	<0.00002	<0.00002	0.000026	<0.00002
Chromium	mg/L	0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.0050	<0.01	<0.010	<0.010	<0.010	<0.010	0.0016	<0.001	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	0.004	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0020	<0.0020	<0.003	<0.0030	<0.0030	<0.0030	<0.0030	0.00075	0.00065	0.00051	0.00062	
Copper	mg/L	0.007	0.01	0.021	0.01	0.007	0.009	0.005	0.005	0.01	0.0085	0.0098	<0.002	0.0036	<0.0020	<0.0020	<0.0020	0.00081	0.00041	0.00096	0.0016	0.0019
Lead	mg/L	0.001-0.007 [2]	<0.005	0.0001	<0.0001	0.0003	<0.0001	<0.0001	<0.0001	<0.005	<0.0050	<0.00010	<0.002	<0.0020	<0.0020	<0.0020	<0.0020	<0.00020	<0.0002	<0.0002	<0.00020	<0.00020
Lithium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.62	0.64	-	-	0.73	
Manganese	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.17	0.18	0.21	0.18	0.19	0.19
Mercury	mg/L	0.000005	*<0.0002*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*0.0001*	*<0.0001*	*<0.00010*	*<0.00010*	<0.000005	*<0.0020*	<0.0000050	<0.0000050	<0.0000050	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000019
Molybdenum	mg/L	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.0050	<0.002	<0.0020	<0.0020	<0.0020	<0.0020	0.00072	0.00067	0.0009	0.0010	0.0007
Nickel	mg/L	0.007-0.170 [2]	0.006	0.005	0.004	0.002	0.008	<0.002	0.006	0.008	0.0058	0.0065	<0.005	<0.0050	<0.0050	<0.0050	<0.0050	0.0031	0.0028	0.0025	0.0042	0.0026
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1.0	<0.10	<1	-	<1.0	
Selenium	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.00020	<0.0002	<0.00020	<0.00020	<0.00020
Silicon	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.6	4.5	4.4	-	4.6	
Silver	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*<0.0010*	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.0	3.7	4.3	-	4.6	
Sulphur	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1500	1600	1600	-	1600	
Thallium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.00020	<0.0002	-	<0.00020	
Tin	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Titanium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	0.0011	<0.001	-	<0.0010	
Uranium	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	0.00033	0.00028	0.00027	0.00029	0.00023
Vanadium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Zinc	mg/L	0.03	0.016	0.028	0.013	0.024	0.005	0.264	0.016	0.018	0.0042	0.0074	<0.03	<0.030	<0.030	<0.030	<0.030	<0.0030	<0.003	<0.0030	0.0036	<0.0030

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E25B: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 25B																		
			Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Polycyclic Aromatic Hydrocarbons (PAHs)																						
Benzo[a]pyrene equivalency	mg/L	0.00004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000010	<0.000010	-	<0.000010	
Acenaphthene	mg/L	0.006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	-	<0.00010	
Acenaphthylene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	-	<0.00010	
Acridine	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	<0.00020	-	<0.000040	
Anthracene	mg/L	0.0034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000010	<0.000010	-	<0.000010	
Benz(a)anthracene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0000085	<0.0000085	-	<0.0000085	
Benzo(a) pyrene	mg/L	0.0018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0000075	<0.0000075	-	<0.0000075	
Benzo(b+j)fluoranthene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0000085	<0.0000085	-	<0.0000085	
Benzo(c)phenanthrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000050	<0.000050	-	<0.000050	
Benzo(e)pyrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000050	<0.000050	-	<0.000050	
Benzo(g,h,i)perylene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0000085	<0.0000085	-	<0.0000085	
Benzo(k)fluoranthene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0000085	<0.0000085	-	<0.0000085	
Chrysene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0000085	<0.0000085	-	<0.0000085	
Dibenz(a,h)anthracene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0000075	<0.0000075	-	<0.0000075	
Fluoranthene	mg/L	0.24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000010	<0.000010	-	<0.000010	
Fluorene	mg/L	0.0042	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000050	<0.000050	-	<0.000050	
Indeno(1,2,3-c,d)pyrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0000085	<0.0000085	-	<0.0000085	
1-Methylnaphthalene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	
2-Methylnaphthalene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	-	<0.00010	
Naphthalene	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	-	<0.00010	
Perylene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000050	<0.000050	-	<0.000050	
Phenanthrene	mg/L	0.00086	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000050	<0.000050	-	<0.000050	
Pyrene	mg/L	0.71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000020	<0.000020	-	<0.000020	
Quinoline	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	<0.00020	-	<0.00020	
Volatile Organic Compounds (VOCs)																						
Bromodichloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050

Notes:
[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use
[2] Guideline varies with hardness
[3] Guideline varies with chloride
[4] Guideline varies with pH and temperature
[5] Guideline varies with pH
"-" No applicable guideline or not analyzed
Equipment Failure, parameter not reported (EF)
Detection limit adjusted (*)
Exceeds Regulatory Limit
Italic - Detection limit greater than Tier 1 Guideline

Table E26A: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 26A																			
			Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Jan-07	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	Jun-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements																						
Field pH	-	-	8.11	7.01	8.1	8.2	7.7	-	NM	8.62	-	8.4	8.51	8.48	8.1	8.31	9.9	-	-	-	8.6	8.43	-
Field EC	mS	-	-	-	8.18 (EF)	3.51	6.53	-	4.26	6.54	-	2.162	2.4	2.94	2.15	2.97	2.91	-	-	-	2.96	2.85	-
Field Temperature	°C	-	-	-	2.9	7.8	7.9	-	8.5	8.32	-	12.3	10.7	10.5	8.6	9.4	6.7	-	-	-	7	18.7	-
Routine Water																						
pH	-	6.5 - 8.5	8.5	8.5	8.5	8.6	8.4	8.4	8.4	8.5	8.5	8.61	8.57	8.58	8.68	8.58	8.45	8.38	8.53	8.56	8.51	-	8.51
Conductivity (EC)	µS/cm	1000	2640	3930	3310	3010	6550	2980	2970	3020	2850	2900	2890	2900	2800	2,700	2700	2700	2600	2600	2700	-	2600
Calcium	mg/L	-	20.4	25.7	15.4	14.5	82.5	13.2	12.9	12.1	11.2	10	10.9	9.6	7.5	9.5	9.5	9.1	8.7	8.5 *	9.5	8.2	9.2
Magnesium	mg/L	-	3	9	5.0	3.5	52.9	3.0	2.6	1.8	2.3	1.84	1.88	1.6	1.1	1.4	1.4	1.2	1.1	1.2 *	1.2	1.0	1.1
Sodium	mg/L	200	769	938	798	750	1640	759	771	787	674	650	672	770	680	690	680	650	640	670 *	640	650	670
Potassium	mg/L	-	3.8	4.2	4.2	2.9	7.7	3.2	3.4	3.0	1.6	2.27	2.58	2.2	2.3	2.3	2.4	2.7	2.5	2.4 *	2.4	2.3	2.3
Iron	mg/L	0.3	3.77	0.09	0.239	0.043	0.011	-	0.083	0.059	0.017	<0.0050	0.026	<0.06	<0.060	<0.060	0.15	<0.060	0.084	<0.060 *	<0.06	<0.060	<0.060
Sulphate	mg/L	128-429 [2]	812	1240	948	783	2970	720	731	756	629	633	651	680	730	610	610	520	490	510	510	-	510
Chloride	mg/L	100	15	5	9	6	2	6	6	6	5	4.89	3.75	6	5.4	5.8	5.9	5.3	5.0	5.4	5.9	-	6
Bicarbonate	mg/L	-	968	930	965	989	907	1010	1020	988	1030	999	967	1000	970	1,000	1000	1100	1100	1100	1100	-	990
Carbonate	mg/L	-	31	22	38	32	20	16	12	31	24	43.4	40.3	29	41	34	15	8.6	23	23	24	-	24
Hydroxide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	<1.0	-	<1.0
Nitrate (N)	mg/L	3	0.2	1.2	0.4	1.1	0.1	1.2	1.6	1.5	1.7	1.29	1.01	3.4	1.5	1.8	1.6	0.94	1.0	5.7	0.9	-	1.5
Nitrite (N)	mg/L	0.02 - 0.20 [3]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	0.075	<0.033	<0.010	-	<0.010
Nitrate and Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.94	1.1	1.3	0.92	-	1.5
Total Dissolved Solids (TDS)	mg/L	500	2130	2710	2290	2080	5220	2020	2050	2090	1860	1840	1860	2000	2000	1,900	1800	1700	1700	1700	1700	-	1700
Hardness	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28	26	26	29	-	27
Alkalinity (total as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	900	910	900	910	-	850
Alkalinity (pp as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.1	19	20	-	-	
Ionic Balance	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0	1.0	1	0.78	-	3.2
Water Nutrients																						
Ammonia-N	mg/L	0.018-190 [4]	0.75	0.2	0.96	0.27	0.58	-	<0.05	<0.05	<0.05	<0.050	0.209	<0.05	<0.050	<0.05	<0.050	<0.050	<0.050	<0.015	<0.015	0.021	0.028
TKN	mg/L	-	1.8	4.4	2.3	1.0	0.9	-	0.8	0.6	0.7	0.49	1.34	0.58	0.89	1.2	0.78	1.7	1.2	0.77	1.8	0.75	1.6
Hydrocarbons																						
Benzene	mg/L	0.005	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	-
Toluene	mg/L	0.024	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	-
Ethylbenzene	mg/L	0.0016	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	-
Xylene	mg/L	0.02	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.0010	<0.0008	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	-
F1 (C6-C10)	mg/L	2.2	-	-	-	-	-	-	-	-	<0.1	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	-
F2 (>C10-C16)	mg/L	1.1	-	-	-	-	-	-	-	-	<0.05	0.071	<0.25	<0.1	<0.10	<0.21	<0.10	<0.26	<0.10	<0.10	<0.10	<0.10	-
Organics																						
COD	mg/L	-	40	37	25	24	30	-	24	25	24	20.9	15.8	33	50	77	29	-	51	26	120	39	66
TOC	mg/L	-	10	212	8	9	7	-	9	10	-	-	-	-	-	-	-	-	-	-	-	-	
DOC	mg/L	-	-	-	-	-	-	-	-	-	8	8.7	8.9	9.9	9.8	9.8	7.8	9.3	10	-	9.4	-	8.9
Oil & Grease	mg/L	-	< 1	<1	<1	3	<1	-	<3	1	-	-	-	-	-	-	-	-	-	-	-	-	
Metals																						
Aluminum	mg/L	0.0007 / 0.05 [5]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0049	0.15	0.0099 *	0.0038	0.0073	0.0084
Antimony	mg/L	0.006	0.002	0.0018	0.0013	0.0014	0.0005	-	0.0011	0.0008	-	-	<0.00040	<0.0006	<0.00060	0.00061	<0.00060	<0.00060	<0.00060	<0.00060 *	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0021	0.0024	0.0023 *	0.0021	0.0020	0.0018
Barium	mg/L	1	0.096	0.018	0.015	0.029	0.017	-	0.034	0.029	0.031	0.036	0.0397	0.041	0.039	0.041	0.045	0.033	0.047	0.054 *	0.053	0.048	0.054
Beryllium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	- *	-	<0.0010	
Boron	mg/L	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.74	0.85	0.81 *	0.8	0.80	0.83
Cadmium	mg/L	0.00004-0.00037 [2]	*< 0.001*	<0.0001	<0.0001	0.0001	0.0001	-	<0.0001	<0.0001	*<0.001*	*<0.0010*	0.00005	0.000076	*<0.050*	0.00021	0.000034	<0.000020	<0.000020	<0.000020 *	<0.00002	<0.000020	<0.000020
Chromium	mg/L	0.05	0.006	0.007	<0.005	0.006	<0.005	-	<0.005	<0.005	<0.005	<0.0050	<0.0050	<0.001	<0.0010	0.0015	0.0012	<0.0010	<0.0010	<0.0010 *	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	0.004	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.0020	<0.0020	<0.0003	<0.00030	0.00032	0.00034	<0.00030	<0.00030	<0.00030 *	<0.00030	<0.00030	
Copper	mg/L	0.007	0.011	0.006	0.007	0.007	0.006	-	0.003	0.002	0.016	0.0028	0.0031	0.0016	0.00068	0.0020	0.0018	0.0015	0.0058	0.004 *	0.0034	0.0043	0.0038
Lead	mg/L	0.001-0.007 [2]	< 0.005	0.0004	<0.0001	0.0052	<0.0001	-	0.0004	0.0010	<0.005	<0.0050	0.00017	<0.0002	0.00022	<0.00020	0.0012	<0.00020	0.00083	<0.060 *	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.12	0.14	0.15 *	-	0.13	
Manganese	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0098	<0.0040	<0.0040 *	0.005	0.0077	<0.0040
Mercury	mg/L	0.000005	*< 0.0002*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	-	*<0.0001*	*<0.0001*	*<0.0001*	*<0.00010*	*<0.00010*	<0.000005	0.0000021	<0.000010	<0.0000050	<0.0000050	<0.0000020	-	0.000003	-	<0.0000019
Molybdenum	mg/L	-	0.025	0.008	0.008	0.005	<0.005	-	<0.005	<0.005	<0.005	<0.0050	<0.0050	0.0034	0.0036	0.0034	0.0029	0.0020	0.0035	0.0026 *	0.0024	0.0021	
Nickel	mg/L	0.007-0.170 [2]	0.016	0.004	0.010	0.003	0.004	-	<0.002	<0.002	<0.002	<0.0020	<0.0020	0.0015	0.0029	0.0019	0.0024	0.0017	0.0039	8.5 *	0.002	0.0016	0.00073
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.13	0.21	- *	-	0.13	
Selenium	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	<0.00020	0.0019 *	<0.00020	<0.00020	<0.00020
Silicon	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.9	4.1	- *	-	4.1	
Silver	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	- *	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.21	0.19	- *	-	0.19	
Sulphur	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	160	160	- *	-	150	
Thallium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	<0.00020	- *	-	<0.00020	
Tin	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	- *	-	<0.0010	
Titanium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	0.0029	- *	-	<0.0010	
Uranium	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00063	0.00065	0.00063 *	0.00069	0.00059	0.00062
Vanadium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0053	0.014	- *	-	0.0014	
Zinc	mg/L	0.03	0.013	0.011	0.005	0.010	0.008	-	0.015	0.037	0.022	0.0433	0.0079	0.014	0.0039	0.0064	0.013	<0.0030	<0.0030	0.0032 *	<0.0030	<0.0030	<0.0030

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Lab Filtered (*)

Not measured (NM)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E26A: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 26A																			
			Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Jan-07	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	Jun-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Volatile Organic Compounds (VOCs)																						
Bromodichloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050

Notes:
[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use
[2] Guideline varies with hardness
[3] Guideline varies with chloride
[4] Guideline varies with pH and temperature
[5] Guideline varies with pH
"-" No applicable guideline or not analyzed
Equipment Failure, parameter not reported (EF)
Lab Filtered (*)
Not measured (NM)
Exceeds Regulatory Limit
Italic - Detection limit greater than Tier 1 Guideline

Table E26B: Chemical Analysis Results - Ryley Integrated Waste Management Facility

Parameter ID	Units	Regulatory Limits[1]	MW 26B																			
			Oct-03	Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements																							
Field pH	-	-	-	7.46	7.05	7.37	7.26	7.44	7.38	7.98	8.060	7.382	7.9	7.67	7.35	5.62	7.7	7.5	7.63	7.4	6.85	7.52	7.08
Field EC	mS	-	-	-	6.92	15.11 (EF)	6.48	6.35	15.33	15.28	6.520	6.530	2.3	6.54	2.79	7.14	5.28	7.45	6.45	7.81	6.85	7.786	7.65
Field Temperature	°C	-	-	-	7.7	6.3	5.7	8.3	6.0	9.68	6.6	7.0	11.8	9.1	9.2	8.1	5.8	9.1	8.9	5.9	6.7	11.5	7
Routine Water																							
pH	-	6.5 - 8.5	-	8.3	8.1	8.3	8.1	8.4	8.3	8.1	8.1	8.11	8.16	8.1	8.05	8.37	8.09	7.93	8.15	8.19	8.12	8.19	8.16
Conductivity (EC)	µS/cm	1000	-	5980	6130	5520	6360	6440	6710	6660	6510	6560	6470	6400	6300	6400	6100	7100	7400	7600	7400	7700	7500
Calcium	mg/L	-	-	102	89.2	83.3	91.6	87.5	88.1	89.1	90.9	88.1	78.4	78	89	74	73	100	110	120	120	110	120
Magnesium	mg/L	-	-	41.6	47.1	48.4	50.1	52.3	50.7	50.6	53.2	48.2	43.2	41	44	40	36	56	58	66	67	64	65
Sodium	mg/L	200	-	2200	1560	1620	1560	1600	1610	1640	1540	1560	1370	1500	1700	1500	1400	1600	1600	1800	1800	1800	1800
Potassium	mg/L	-	-	12.2	5.6	6.4	6.4	7.5	8.0	6.5	3.8	6.97	6.42	6.4	6.4	5.9	5	8.3	7.7	7.5	8	7.5	7.4
Iron	mg/L	0.3	-	0.113	0.029	<0.005	<0.005	<0.005	<0.005	0.006	<0.005	<0.050	<0.010	<0.06	<0.060	<0.060	<0.060	<0.60	<0.060	<0.6	<0.60	*<0.60*	<0.60
Sulphate	mg/L	128-429 [2]	-	4180	2690	2820	2870	2810	2740	2960	2820	2890	2480 *	2600	2900	3000	3000	3300	3400	3200	3300	3400	3300
Chloride	mg/L	100	-	4	2	2	2	1	2	2	2	0.62	<10 *	2	<1.0	1.6	1.7	3.5	3.9	4.5	5.6	6.0	5.6
Bicarbonate	mg/L	-	-	973	1000	998	993	926	1010	1010	1040	1030	1000	980	1000	1000	960	1000	990	1000	1100	1000	960
Carbonate	mg/L	-	-	11	<5	<5	<5	18	<5	<5	<5	<5.0	<5.0	<0.5	<0.50	15	<0.50	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Hydroxide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	-	<0.1	<0.1	<0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.050	<1.0 *	0.081	0.043	0.14	0.052	0.23	0.19	0.42	0.09	0.048	0.18
Nitrite (N)	mg/L	0.02 - 0.20 [3]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.039	0.036	<0.16	0.012	0.027	0.1
Nitrate and Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.27	0.23	-	0.1	0.074	0.29
Total Dissolved Solids (TDS)	mg/L	500	-	7030	4890	5070	5070	5030	5000	5250	5020	5100	4470	4700	5200	5100	4900	5600	5600	5700	5800	5800	5700
Hardness	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	490	500	570	560	540	580
Alkalinity (total as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	830	810	860	860	830	790
Alkalinity (pp as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	-	<1.0	
Ionic Balance	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.95	0.91	3.1	3.7	0.58	4
Water Nutrients																							
Ammonia-N	mg/L	0.018-190 [4]	-	1.03	0.54	0.66	0.60	0.62	0.59	0.67	0.45	0.535	0.552	0.6	0.54	0.51	0.52	0.43	0.43	0.66	0.49	0.60	0.58
TKN	mg/L	-	-	1.6	1.1	1.0	1.0	1.1	1.0	1.0	0.9	1.28	1.57	1.3	0.98	1.1	0.89	0.86	0.73	0.99	1.1	0.98	0.96
Hydrocarbons																							
Benzene	mg/L	0.005	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.0010	<0.0008	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	-	-	-	-	-	-	-	-	<0.1	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	-	-	-	-	-	-	-	-	<0.05	<0.050	<0.25	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics																							
COD	mg/L	-	-	50	28	22	22	22	21	21	29	20.3	19.2	46	29	59	49	24	35	28	29	44	34
TOC	mg/L	-	-	11	9	9	9	10	9	10	-	-	-	-	-	-	-	-	-	-	-	-	
DOC	mg/L	-	-	-	-	-	-	-	-	-	9	8.2	8.9	8.6	8.3	8.7	7.3	9.0	10	12	9.6	12	10
Oil & Grease	mg/L	-	-	< 1	<1	<1	<1	2	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	
Metals																							
Aluminum	mg/L	0.0007 / 0.05 [5]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.030	0.0095	0.0072	<0.003	<0.0030	<0.0030
Antimony	mg/L	0.006	-	0.0012	0.0006	<0.0004	0.0010	0.0007	<0.0004	0.0007	-	-	<0.00040	<0.006	<0.0060	<0.0060	<0.0060	<0.0060	<0.00060	<0.0006	<0.00082	<0.00060	<0.00060
Arsenic	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	0.00081	0.00077	0.00056	0.00052	0.00052
Barium	mg/L	1	-	0.071	0.031	0.025	0.019	0.018	0.015	0.013	0.011	0.0093	0.0146	0.01	0.01	0.01	0.01	<0.10	0.010	<0.1	<0.10	<0.10	<0.010
Beryllium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Boron	mg/L	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.30	0.32	0.29	0.3	0.31	0.3
Cadmium	mg/L	0.00004-0.00037 [2]	-	*< 0.001*	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	*<0.001*	*<0.0010*	0.00005	0.00007	0.0037	0.000056	<0.000050	<0.00020	<0.000020	<0.00002	<0.00002	<0.000020	<0.000020
Chromium	mg/L	0.05	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.0050	<0.01	<0.010	<0.010	<0.010	<0.010	0.0017	<0.001	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	-	0.003	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0020	0.0025	<0.003	<0.0030	<0.0030	<0.0030	<0.0030	0.00087	0.00081	0.00076	0.00071	
Copper	mg/L	0.007	-	0.023	0.01	0.008	0.006	0.007	0.005	0.003	0.007	0.0063	0.0073	0.11	0.0049	<0.0020	<0.0020	<0.0020	0.0014	0.00039	0.00071	0.00084	0.00037
Lead	mg/L	0.001-0.007 [2]	-	<0.005	0.0002	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	<0.005	<0.0050	<0.00010	0.004	<0.0020	<0.0020	<0.0020	<0.0020	<0.00020	<0.0002	<0.0002	<0.00020	<0.00020
Lithium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.38	0.38	-	-	0.41	
Manganese	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.20	0.20	0.22	0.20	0.22	0.21
Mercury	mg/L	0.000005	-	*<0.0002*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*<0.0001*	*0.0002*	*<0.0001*	*<0.00010*	*<0.00010*	<0.000005	0.0000038	<0.0000050	<0.0000050	<0.0000050	0.0000040	<0.000002	0.0000026	<0.0000020	<0.0000019
Molybdenum	mg/L	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.0050	<0.002	0.0022	<0.0020	<0.0020	0.0024	0.0013	0.00087	0.0018	0.00094	0.00068
Nickel	mg/L	0.007-0.170 [2]	-	0.012	0.003	0.002	<0.002	0.004	<0.002	0.003	0.004	0.0027	0.0056	<0.005	<0.0050	<0.0050	<0.0050	<0.0050	0.0029	0.0013	0.0019	0.0017	0.0012
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1.0	<0.10	<1	-	<1.0	
Selenium	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.00020	<0.0002	0.0002	<0.00020	<0.00020
Silicon	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.3	4.4	4.5	-	4.5	
Silver	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.0	2.0	2.5	-	2.5	
Sulphur	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1000	1100	1200	-	1100	
Thallium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.00020	<0.0002	-	<0.00020	
Tin	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Titanium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Uranium	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	0.0012	0.00082	0.00094	0.00095	0.00086
Vanadium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.0010	<0.001	-	<0.0010	
Zinc	mg/L	0.03	-	0.02	0.019	0.012	0.012	0.005	0.004	0.015	0.013	0.0105	0.0047	0.07	<0.030	<0.030	<0.030	<0.030	0.0084	<0.003	<0.0030	<0.0030	<0.0030

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E26B: Chemical Analysis Results - Ryley Integrated Waste Management Facility

Parameter ID	Units	Regulatory Limits[1]	MW 26B																			
			Oct-03	Oct-04	Apr-05	Oct-05	Apr-06	Oct-06	Apr-07	Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Polycyclic Aromatic Hydrocarbons (PAHs)																							
Benzo[a]pyrene equivalency	mg/L	0.00004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0037	<0.000010	<0.000010	<0.000010	<0.000010	-
Acenaphthene	mg/L	0.006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	-
Acenaphthylene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	-
Acridine	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	<0.00020	<0.00020	<0.000040	-
Anthracene	mg/L	0.0034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000010	<0.000010	<0.000010	<0.000010	-
Benz(a)anthracene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0000085	<0.0000085	<0.0000085	<0.0000085	-
Benzo(a) pyrene	mg/L	0.0018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0000075	<0.0000075	<0.0000075	<0.0000075	-
Benzo(b+j)fluoranthene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0026	<0.0000085	<0.0000085	<0.0000085	<0.0000085	-
Benzo(c)phenanthrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0017	<0.000050	<0.000050	<0.000050	<0.000050	-
Benzo(e)pyrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0014	<0.000050	<0.000050	<0.000050	<0.000050	-
Benzo(g,h,i)perylene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0014	<0.0000085	<0.0000085	<0.0000085	<0.0000085	-
Benzo(k)fluoranthene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0015	<0.0000085	<0.0000085	<0.0000085	<0.0000085	-
Chrysene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0015	<0.0000085	<0.0000085	<0.0000085	<0.0000085	-
Dibenz(a,h)anthracene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0014	<0.0000075	<0.0000075	<0.0000075	<0.0000075	-
Fluoranthene	mg/L	0.24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0018	<0.000010	<0.000010	<0.000010	<0.000010	-
Fluorene	mg/L	0.0042	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0018	<0.000050	<0.000050	<0.000050	<0.000050	-
Indeno(1,2,3-c,d)pyrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0014	<0.0000085	<0.0000085	<0.0000085	<0.0000085	-
1-Methylnaphthalene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	-
2-Methylnaphthalene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0019	<0.00010	<0.00010	<0.00010	<0.00010	-
Naphthalene	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0020	<0.00010	<0.00010	<0.00010	<0.00010	-
Perylene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0015	<0.000050	<0.000050	<0.000050	<0.000050	-
Phenanthrene	mg/L	0.00086	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0019	<0.000050	<0.000050	<0.000050	<0.000050	-
Pyrene	mg/L	0.71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0019	<0.000020	<0.000020	<0.000020	<0.000020	-
Quinoline	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0019	<0.00020	<0.00020	<0.00020	<0.00020	-
Volatile Organic Compounds (VOCs)																							
Bromodichloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E27A: Chemical Analysis Results - Ryley Integrated Waste Management Facility

Parameter ID	Units	Regulatory Limits[1]	MW 27A													
			Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements																
Field pH	-	-	8.09	8.479	8.3	8.5	8.52	8.35	6.03	8.3	8.9	8.62	8.5	7.96	8.48	8.4
Field EC	mS	-	15.95	2.890	1.125	2.8	2.98	1.3	3.66	2.89	2.88	2.86	2.81	3.12	3.05	2.93
Field Temperature	°C	-	9.44	5.5	9.0	10.7	10.6	8.1	6.3	7.0	10.3	6.2	8.2	6.5	11.8	6.2
Routine Water																
pH	-	6.5 - 8.5	8.5	8.5	8.64	8.59	8.53	8.45	8.64	8.52	8.38	8.57	8.6	8.41	8.59	8.47
Conductivity (EC)	µS/cm	1000	3960	2990	2940	2790	2800	2700	2800	2800	2900	2800	2900	2800	2900	2800
Calcium	mg/L	-	18.1	9.9	8.43	8.19	8.5	9.7	8.2	9.0	8.5	8.5	8.7	8.4	8.4	8.9
Magnesium	mg/L	-	10.3	4.1	2.66	1.79	1.5	1.5	1.4	1.2	1.1	1.0	1	1	0.97	0.96
Sodium	mg/L	200	1030	756	678	668	700	740	670	730	690	620	700	740	700	750
Potassium	mg/L	-	2.9	2.1	2.98	2.52	2.3	2.3	2.3	2.1	2.5	2.2	2.3	2.2	2.1	2.4
Iron	mg/L	0.3	0.012	0.057	1.09	0.112	<0.06	1.1	<0.060	0.46	<0.060	<0.060	<0.060	<0.06	<0.060	<0.060
Sulphate	mg/L	128-429 [2]	1260	775	681	630	710	630	730	770	730	710	720	700	660	680
Chloride	mg/L	100	10	7	5.26	4.42	8	4.4	5.8	6.2	5.2	5.0	6.9	5.1	5.5	5.7
Bicarbonate	mg/L	-	1010	992	924	898	900	940	910	920	930	850	920	950	860	930
Carbonate	mg/L	-	35	24	48.2	37.6	24	14	35	27	7.5	21	26	11	49	16
Hydroxide	mg/L	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	<0.1	0.1	0.273	0.419	0.21	0.093	0.14	0.11	0.046	0.21	0.47	0.26	0.33	0.31
Nitrite (N)	mg/L	0.02 - 0.20 [3]	-	-	-	-	-	-	-	-	0.17	0.071	0.28	<0.010	0.029	0.032
Nitrate and Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	0.22	0.28	-	0.26	0.36	0.34
Total Dissolved Solids (TDS)	mg/L	500	2860	2070	1880	1800	1900	1900	1900	2000	1900	1800	1900	1900	1900	1900
Hardness	mg/L	-	-	-	-	-	-	-	-	-	26	25	26	25	25	26
Alkalinity (total as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	780	730	800	790	790	790
Alkalinity (pp as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	6.3	17	21	-	41	
Ionic Balance	N/A	-	-	-	-	-	-	-	-	-	0.99	0.94	0.027	3.6	1.8	4.7
Water Nutrients																
Ammonia-N	mg/L	0.018-190 [4]	0.50	0.89	0.499	0.456	0.89	0.87	0.85	0.97	0.63	0.86	0.86	0.61	0.66	0.81
TKN	mg/L	-	1.1	1.3	1.08	1.57	1.5	1.4	1.4	1.2	1.2	0.76	1.2	1.1	0.85	0.85
Hydrocarbons																
Benzene	mg/L	0.005	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	-	<0.00050	<0.00050	<0.0010	<0.0008	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	-	<0.1	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	-	<0.05	<0.050	<0.25	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics																
COD	mg/L	-	34	41	35.1	30.4	40	48	49	43	34	39	30	32	40	31
TOC	mg/L	-	16	-	-	-	-	-	-	-	-	-	-	-	-	
DOC	mg/L	-	-	11	201	11.5	12	9.5	10	11	11	11	14	11	13	12
Oil & Grease	mg/L	-	<1	-	-	-	-	-	-	-	-	-	-	-	-	
Metals																
Aluminum	mg/L	0.0007 / 0.05 [5]	-	-	-	-	-	-	-	-	0.0043	0.073	0.029	0.006	0.0036	0.022
Antimony	mg/L	0.006	0.0014	-	-	<0.00040	<0.006	<0.0030	0.0017	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	-	-	-	-	-	-	-	-	0.0024	0.0028	0.003	0.0027	0.0023	0.0025
Barium	mg/L	1	0.014	0.01	0.0163	0.0132	0.01	0.044	0.013	0.025	0.011	0.014	0.016	0.014	0.013	0.014
Beryllium	mg/L	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Boron	mg/L	1	-	-	-	-	-	-	-	-	0.77	0.75	0.83	0.82	0.81	0.79
Cadmium	mg/L	0.00004-0.00037 [2]	<0.0001	*<0.001*	*<0.0010*	<0.000050	<0.000050	0.000027	0.000026	<0.000025	<0.000020	<0.000020	<0.000020	<0.00002	<0.000020	<0.000020
Chromium	mg/L	0.05	<0.005	<0.005	<0.0050	<0.0050	<0.01	<0.0050	<0.0010	0.0031	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	<0.002	<0.002	<0.0020	<0.0020	<0.003	<0.0015	<0.00030	0.00066	<0.00030	0.00043	<0.00030	<0.00030	<0.00030	
Copper	mg/L	0.007	0.002	0.004	0.0026	0.0027	<0.002	0.0038	0.0014	0.0019	0.00053	0.00098	0.0003	0.00047	0.00024	0.00059
Lead	mg/L	0.001-0.007 [2]	<0.0001	<0.005	<0.0050	0.00012	<0.002	0.0015	<0.00020	0.00077	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	-	-	-	-	-	-	-	-	0.11	0.12	-	-	0.12	
Manganese	mg/L	0.05	-	-	-	-	-	-	-	-	0.013	0.011	0.012	0.011	0.011	0.012
Mercury	mg/L	0.000005	*<0.0001*	*<0.0001*	*<0.00010*	*<0.00010*	<0.000005	0.0000022	<0.0000050	<0.0000050	<0.0000050	0.0000021	<0.0000020	0.0000023	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.010	0.005	<0.0050	<0.0050	0.003	0.0031	0.0028	0.0019	0.0013	0.0023	0.0019	0.0015	0.0012	
Nickel	mg/L	0.007-0.170 [2]	0.003	<0.002	0.0027	<0.0020	<0.005	0.0068	0.002	0.003	0.0012	0.0033	0.0014	0.00073	<0.00050	0.00054
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	0.23	0.28	0.16	-	0.19	
Selenium	mg/L	0.002	-	-	-	-	-	-	-	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon	mg/L	-	-	-	-	-	-	-	-	-	3.9	3.5	4	-	3.9	
Silver	mg/L	0.0001	-	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	-	-	-	-	-	-	-	-	0.20	0.21	0.22	-	0.21	
Sulphur	mg/L	-	-	-	-	-	-	-	-	-	220	200	240	-	220	
Thallium	mg/L	-	-	-	-	-	-	-	-	-	<0.00020	<0.00020	<0.0002	-	<0.00020	
Tin	mg/L	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Titanium	mg/L	-	-	-	-	-	-	-	-	-	<0.0010	0.0017	<0.001	-	<0.0010	
Uranium	mg/L	0.01	-	-	-	-	-	-	-	-	0.00055	0.00065	0.00057	0.00055	0.00054	0.00058
Vanadium	mg/L	-	-	-	-	-	-	-	-	-	0.0020	0.020	0.0092	-	<0.0010	
Zinc	mg/L	0.03	0.011	0.008	0.0217	0.0045	<0.03	<0.015	0.0057	0.0049	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E27A: Chemical Analysis Results - Ryley Integrated Waste Management Facility

Parameter ID	Units	Regulatory Limits[1]	MW 27A													
			Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Volatile Organic Compounds (VOCs)																
Bromodichloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050

Notes:
[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use
[2] Guideline varies with hardness
[3] Guideline varies with chloride
[4] Guideline varies with pH and temperature
[5] Guideline varies with pH
"-" No applicable guideline or not analyzed
Equipment Failure, parameter not reported (EF)
Detection limit adjusted (*)
Exceeds Regulatory Limit
Italic - Detection limit greater than Tier 1 Guideline

Table E27B: Chemical Analysis Results - Ryley Integrated Waste Management Facility

Parameter ID	Units	Regulatory Limits[1]	MW 27B													
			Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements																
Field pH	-	-	7.23	7.818	7.6	7.96	7.86	7.62	6.2	7.5	8.1	7.74	7.6	7.4	7.60	7.40
Field EC	mS	-	20.75	8.250	>3.999	2.4	10.47	4.53	12.45	11.56	11.53	11.53	11.41	12.54	11.47	11.57
Field Temperature	°C	-	9.66	4.7	10.5	13.4	13	10.9	10.1	9.8	9.1	7.8	8.3	6.9	11.2	8.3
Routine Water																
pH	-	6.5 - 8.5	8.2	8.2	8.4	8.33	8.15	8.07	8.38	8.14	7.97	8.19	8.1	7.96	8.22	8.12
Conductivity (EC)	µS/cm	1000	9620	8440	8320	8240	10,000	10,000	11,000	11,000	11,000	11,000	12,000	12,000	12,000	12,000
Calcium	mg/L	-	91.5	83.4	74.4	71.2	100	130	110	130	130	140	140	150	140	140
Magnesium	mg/L	-	85.6	53	45.8	40.7	82	96	96	110	100	100	130	110	120	110
Sodium	mg/L	200	2530	2170	1980	1930	2600	2900	2900	2800	2700	2700	3100	3100	3000	3200
Potassium	mg/L	-	8.6	4.1	9.01	8.13	9.1	9.5	9.3	9.2	11	11	11	11	10	10
Iron	mg/L	0.3	<0.005	<0.005	<0.0050	0.048	<0.06	0.088	<0.060	<0.60	<0.60	<0.060	<0.60	<0.60	*<0.60*	<0.60
Sulphate	mg/L	128-429 [2]	4520	3610	3580	3280 *	4700	5600	6000	6100	5100	5300	5100	5400	5300	5500
Chloride	mg/L	100	41	41	35.6	28 *	37	36	37	40	35	42	51	49	74	94
Bicarbonate	mg/L	-	1420	1380	1270	1250	1400	1500	1600	1700	1700	1600	1900	1800	1800	1600
Carbonate	mg/L	-	<5	<5	25.7	12.5	<0.5	<0.50	27	<0.50	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0
Hydroxide	mg/L	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	0.1	0.1	0.448	<1.0 *	0.11	0.11	0.35	0.29	1.1	0.91	1.5	1	<0.010	1.4
Nitrite (N)	mg/L	0.02 - 0.20 [3]	-	-	-	-	-	-	-	-	0.01	0.014	0.21	<0.01	0.029	0.022
Nitrate and Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	1.1	0.92	-	1	0.029	1.5
Total Dissolved Solids (TDS)	mg/L	500	7970	6640	6370	5990	8200	9500	9900	10,000	9000	9100	9400	9700	9600	9900
Hardness	mg/L	-	-	-	-	-	-	-	-	-	740	770	860	830	820	830
Alkalinity (total as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	1400	1300	1500	1500	1500	1300
Alkalinity (pp as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.5	-	<1.0	
Ionic Balance	N/A	-	-	-	-	-	-	-	-	-	0.99	0.97	4.4	2.5	2.1	4.8
Water Nutrients																
Ammonia-N	mg/L	0.018-190 [4]	0.63	0.98	0.571	0.625	0.72	0.6	0.53	0.51	0.15	0.42	0.67	0.16	0.20	0.17
TKN	mg/L	-	1.3	1.5	1.33	1.71	1.7	1.4	0.49	1.5	1.0	0.55	1.4	1.1	0.99	0.85
Hydrocarbons																
Benzene	mg/L	0.005	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	-	<0.00050	<0.00050	<0.00050	<0.0004	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	-	<0.00050	<0.00050	<0.0010	<0.0008	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	-	<0.1	<0.10	<0.10	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	-	<0.05	<0.050	<0.25	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics																
COD	mg/L	-	33	31	37.6	20.9	45	43	42	64	35	37	43	43	37	33
TOC	mg/L	-	15	-	-	-	-	-	-	-	-	-	-	-	-	
DOC	mg/L	-	-	11	253	10.2	12	12	14	13	13	15	18	13	16	14
Oil & Grease	mg/L	-	<1	-	-	-	-	-	-	-	-	-	-	-	-	
Metals																
Aluminum	mg/L	0.0007 / 0.05 [5]	-	-	-	-	-	-	-	-	<0.060	0.0056	0.01	0.0031	0.0093	<0.0030
Antimony	mg/L	0.006	0.0013	-	-	0.00049	<0.006	<0.012	<0.012	<0.012	<0.012	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	-	-	-	-	-	-	-	-	<0.0040	0.0020	0.0019	0.0018	0.0017	0.0017
Barium	mg/L	1	0.040	0.02	0.019	0.0194	0.02	0.013	0.013	<0.10	<0.10	<0.010	<0.1	<0.10	<0.10	<0.010
Beryllium	mg/L	-	-	-	-	-	-	-	-	-	<0.020	<0.0010	<0.001	-	<0.0010	
Boron	mg/L	1	-	-	-	-	-	-	-	-	0.42	0.43	0.46	0.45	0.45	0.39
Cadmium	mg/L	0.00004-0.00037 [2]	0.0001	*<0.001*	*<0.0010*	0.00013	0.00006	*<0.10*	0.00011	<0.0001	<0.00040	0.00004	0.000022	0.000027	0.000026	0.000028
Chromium	mg/L	0.05	<0.005	<0.005	<0.0050	<0.0050	<0.01	<0.020	<0.020	<0.020	<0.020	0.0011	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	0.006	<0.002	<0.0020	<0.0020	<0.003	<0.0060	<0.0060	<0.0060	<0.0060	0.0011	0.0012	0.0011	0.0011	
Copper	mg/L	0.007	0.006	0.009	0.0079	0.0089	<0.002	0.0073	<0.0040	<0.0040	<0.0040	0.0010	<0.00020	0.00067	0.00051	0.00041
Lead	mg/L	0.001-0.007 [2]	<0.0001	<0.005	<0.0050	0.00075	<0.002	<0.0040	<0.0040	<0.0040	<0.0040	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	-	-	-	-	-	-	-	-	0.48	0.49	-	-	0.54	
Manganese	mg/L	0.05	-	-	-	-	-	-	-	-	0.052	0.052	0.062	0.053	0.051	0.056
Mercury	mg/L	0.000005	0.0002	*<0.0001*	*<0.00010*	*<0.00010*	<0.000005	*<0.0020*	<0.0000050	<0.0000050	<0.0000050	<0.0000020	<0.0000020	0.0000035	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.005	0.007	0.0057	<0.0050	0.002	<0.0040	<0.0040	<0.0040	<0.0040	0.0022	0.0018	0.0022	0.0016	0.0016
Nickel	mg/L	0.007-0.170 [2]	0.019	0.009	0.0068	0.006	<0.005	<0.010	<0.010	<0.010	<0.010	0.0077	0.0051	0.005	0.0048	0.005
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	<1.0	0.14	<1	-	<1.0	
Selenium	mg/L	0.002	-	-	-	-	-	-	-	-	<0.0040	0.00039	0.0002	0.00033	<0.00020	<0.00020
Silicon	mg/L	-	-	-	-	-	-	-	-	-	4.2	4.2	4.5	-	4.5	
Silver	mg/L	0.0001	-	-	-	-	-	-	-	-	*<0.0020*	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	-	-	-	-	-	-	-	-	4.0	3.8	4.5	-	4.7	
Sulphur	mg/L	-	-	-	-	-	-	-	-	-	1700	1900	1900	-	1800	
Thallium	mg/L	-	-	-	-	-	-	-	-	-	<0.0040	<0.00020	<0.0002	-	<0.00020	
Tin	mg/L	-	-	-	-	-	-	-	-	-	<0.020	<0.0010	<0.001	-	<0.0010	
Titanium	mg/L	-	-	-	-	-	-	-	-	-	<0.020	<0.0010	<0.001	-	<0.0010	
Uranium	mg/L	0.01	-	-	-	-	-	-	-	-	0.0021	0.0025	0.0034	0.0021	0.0024	0.0023
Vanadium	mg/L	-	-	-	-	-	-	-	-	-	<0.020	0.0070	0.0054	-	<0.0010	
Zinc	mg/L	0.03	0.018	0.01	0.007	0.0096	<0.03	<0.060	<0.060	<0.060	<0.060	0.0048	<0.0030	<0.0030	<0.0030	<0.0030

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E27B: Chemical Analysis Results - Ryley Integrated Waste Management Facility

Parameter ID	Units	Regulatory Limits[1]	MW 27B													
			Oct-07	May-08	May-09	Jun-10	Jun-11	May-12	Jun-13	May-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Polycyclic Aromatic Hydrocarbons (PAHs)																
Benzo[a]pyrene equivalency	mg/L	0.00004	-	-	-	-	-	-	-	-	-	<0.000010	<0.000010	-	<0.000010	-
Acenaphthene	mg/L	0.006	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	-	<0.00010	-
Acenaphthylene	mg/L	-	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	-	<0.00010	-
Acridine	mg/L	-	-	-	-	-	-	-	-	-	-	<0.00020	<0.000050	-	<0.000040	-
Anthracene	mg/L	0.0034	-	-	-	-	-	-	-	-	-	<0.000010	<0.000010	-	<0.000010	-
Benz(a)anthracene	mg/L	-	-	-	-	-	-	-	-	-	-	<0.0000085	<0.0000085	-	<0.0000085	-
Benzo(a) pyrene	mg/L	0.0018	-	-	-	-	-	-	-	-	-	<0.0000075	<0.0000075	-	<0.0000075	-
Benzo(b+j)fluoranthene	mg/L	-	-	-	-	-	-	-	-	-	-	<0.0000085	<0.0000085	-	<0.0000085	-
Benzo(c)phenanthrene	mg/L	-	-	-	-	-	-	-	-	-	-	<0.000050	<0.000050	-	<0.000050	-
Benzo(e)pyrene	mg/L	-	-	-	-	-	-	-	-	-	-	<0.000050	<0.000050	-	<0.000050	-
Benzo(g,h,i)perylene	mg/L	-	-	-	-	-	-	-	-	-	-	<0.0000085	<0.0000085	-	<0.0000085	-
Benzo(k)fluoranthene	mg/L	-	-	-	-	-	-	-	-	-	-	<0.0000085	<0.0000085	-	<0.0000085	-
Chrysene	mg/L	-	-	-	-	-	-	-	-	-	-	<0.0000085	<0.0000085	-	<0.0000085	-
Dibenz(a,h)anthracene	mg/L	-	-	-	-	-	-	-	-	-	-	<0.0000075	<0.0000075	-	<0.0000075	-
Fluoranthene	mg/L	0.24	-	-	-	-	-	-	-	-	-	<0.000010	<0.000010	-	<0.000010	-
Fluorene	mg/L	0.0042	-	-	-	-	-	-	-	-	-	<0.000050	<0.000050	-	<0.000050	-
Indeno(1,2,3-c,d)pyrene	mg/L	-	-	-	-	-	-	-	-	-	-	<0.0000085	<0.0000085	-	<0.0000085	-
1-Methylnaphthalene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	-
2-Methylnaphthalene	mg/L	-	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	-	<0.00010	-
Naphthalene	mg/L	0.001	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	-	<0.00010	-
Perylene	mg/L	-	-	-	-	-	-	-	-	-	-	<0.000050	<0.000050	-	<0.000050	-
Phenanthrene	mg/L	0.00086	-	-	-	-	-	-	-	-	-	<0.000050	<0.000050	-	<0.000050	-
Pyrene	mg/L	0.71	-	-	-	-	-	-	-	-	-	<0.000020	<0.000020	-	<0.000020	-
Quinoline	mg/L	-	-	-	-	-	-	-	-	-	-	<0.00020	<0.00020	-	<0.00020	-
Volatile Organic Compounds (VOCs)																
Bromodichloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E28A: Chemical Analysis Results - Ryley Integrated Waste Management Facility

Parameter ID	Units	Regulatory Limits[1]	MW 28A							
			Jun-13	May-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements										
Field pH	-	-	8.28	8.4	8.4	8.51	8.5	7.94	8.47	8.27
Field EC	mS	-	3.66	3.63	3.59	3.38	3.49	3.38	3.62	3.39
Field Temperature	°C	-	10	6.2	8.5	7.7	6.7	8.6	11.2	8.9
Routine Water										
pH	-	6.5 - 8.5	8.48	8.46	8.34	8.54	8.47	8.43	8.57	8.38
Conductivity (EC)	µS/cm	1000	3400	3400	3400	3300	3300	3300	3400	3300
Calcium	mg/L	-	14	13	13	12	13	12	12	13
Magnesium	mg/L	-	1.5	1.4	1.3	1.1	1.2	1.2	1.1	1.3
Sodium	mg/L	200	820	850	870	800	810	860	810	850
Potassium	mg/L	-	2.6	2.5	3.1	2.6	2.7	2.5	2.5	2.6
Iron	mg/L	0.3	<0.060	0.29	<0.060	<0.060	<0.060	<0.06	<0.060	<0.060
Sulphate	mg/L	128-429 [2]	1200	1200	1100	1000	1000	1000	960	1200
Chloride	mg/L	100	5	5.3	5.0	5.2	5	4.7	5.2	4.8
Bicarbonate	mg/L	-	820	830	850	780	850	850	800	790
Carbonate	mg/L	-	18	19	3.4	16	13	15	34	6.4
Hydroxide	mg/L	-	-	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	0.037	0.027	<0.010	0.066	0.044	0.047	0.041	0.13
Nitrite (N)	mg/L	0.02 - 0.20 [3]	-	-	0.012	0.030	<0.033	0.037	0.046	0.017
Nitrate and Nitrate (N)	mg/L	-	-	-	0.012	0.096	-	0.084	0.087	0.15
Total Dissolved Solids (TDS)	mg/L	500	2400	2500	2400	2200	2300	2300	2200	2500
Hardness	mg/L	-	-	-	38	35	36	35	36	38
Alkalinity (total as CaCO3)	mg/L	-	-	-	710	660	720	720	710	
Alkalinity (pp as CaCO3)	mg/L	-	-	-	2.8	13	11	-	29	
Ionic Balance	N/A	-	-	-	1.1	1.0	0.99	3.6	2.4	0.65
Water Nutrients										
Ammonia-N	mg/L	0.018-190 [4]	1.2	1.3	1.1	1.2	1.4	1.1	1.3	1.2
TKN	mg/L	-	1.6	1.6	1.6	1.7	1.6	1.5	1.7	1.3
Hydrocarbons										
Benzene	mg/L	0.005	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics										
COD	mg/L	-	47	42	39	31	28	31	39	18
TOC	mg/L	-	-	-	-	-	-	-	-	
DOC	mg/L	-	11	9.6	8.5	10	12	9	11	9.1
Oil & Grease	mg/L	-	-	-	-	-	-	-	-	
Metals										
Aluminum	mg/L	0.0007 / 0.05 [5]	-	-	0.0046	0.012	0.005	<0.003	0.013	0.014
Antimony	mg/L	0.006	0.00061	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	-	-	0.001	0.00084	0.00053	0.00085	0.00064	0.00073
Barium	mg/L	1	0.013	0.015	<0.010	<0.010	<0.010	<0.010	0.011	<0.010
Beryllium	mg/L	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Boron	mg/L	1	-	-	0.74	0.77	0.82	0.8	0.80	0.78
Cadmium	mg/L	0.00004-0.00037 [2]	<0.000025	<0.000025	<0.000020	<0.000020	<0.000020	<0.00002	<0.000020	<0.000020
Chromium	mg/L	0.05	<0.0010	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	0.00069	0.00062	<0.00030	0.00039	<0.00030	<0.00030	<0.00030	
Copper	mg/L	0.007	0.0013	0.0021	0.00044	0.00085	<0.00020	0.00041	0.00098	0.0005
Lead	mg/L	0.001-0.007 [2]	<0.00020	0.00022	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	-	-	0.13	0.14	-	-	0.14	
Manganese	mg/L	0.05	-	-	0.029	<0.0040	0.019	0.023	0.019	0.027
Mercury	mg/L	0.000005	*<0.000010*	<0.0000050	<0.0000050	<0.0000020	<0.0000020	<0.000002	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.0035	0.0026	0.0021	0.0017	0.0016	0.0023	0.0014	
Nickel	mg/L	0.007-0.170 [2]	0.0027	0.0024	0.0014	0.0018	0.00082	0.00079	0.00086	-
Phosphorus	mg/L	-	-	-	<0.10	0.12	<0.1	-	<0.10	
Selenium	mg/L	0.002	-	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon	mg/L	-	-	-	3.6	3.3	4	-	3.9	
Silver	mg/L	0.0001	-	-	<0.00010	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	-	-	0.29	0.31	0.31	-	0.30	
Sulphur	mg/L	-	-	-	330	300	340	-	320	
Thallium	mg/L	-	-	-	<0.00020	<0.00020	<0.0002	-	<0.00020	
Tin	mg/L	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Titanium	mg/L	-	-	-	<0.0010	<0.0010	<0.001	-	<0.0010	
Uranium	mg/L	0.01	-	-	0.00056	0.00031	0.00025	0.00051	0.00031	0.00039
Vanadium	mg/L	-	-	-	<0.0010	0.0029	0.0016	-	<0.0010	
Zinc	mg/L	0.03	<0.0030	0.0039	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.003
Volatile Organic Compounds (VOCs)										
Bromodichloromethane	mg/L	-	-	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E28B: Chemical Analysis Results - Ryley Integrated Waste Management Facility

Parameter ID	Units	Regulatory Limits[1]	MW 28B							
			Jun-13	May-14	Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements										
Field pH	-	-	7.55	7.4	7.8	7.58	7.5	7.3	7.46	7.45
Field EC	mS	-	11.63	12.78	13.02	12.86	13	14	12.49	12.83
Field Temperature	°C	-	9.1	6.5	7.2	7.8	6.2	7.4	9.5	7.1
Routine Water										
pH	-	6.5 - 8.5	8.07	8.08	7.9	8.14	8.08	7.86	8.11	8.1
Conductivity (EC)	µS/cm	1000	12000	12000	12,000	13,000	12,000	13,000	13,000	13,000
Calcium	mg/L	-	210	230	220	210	220	230	240	240
Magnesium	mg/L	-	60	89	95	93	100	110	120	100
Sodium	mg/L	200	2700	3200	3000	2800	3200	3300	3600	3500
Potassium	mg/L	-	9.4	11	13	13	12	12	13	12
Iron	mg/L	0.3	<0.060	<0.60	<0.60	<0.060	<0.60	<0.60	*<0.60*	<0.60
Sulphate	mg/L	128-429 [2]	6500	6900	6500	6700	5700	6500	6200	6600
Chloride	mg/L	100	34	37	35	33	30	28	27	27
Bicarbonate	mg/L	-	1000	1100	1100	1000	1100	1000	1000	960
Carbonate	mg/L	-	<0.5	<0.50	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0
Hydroxide	mg/L	-	-	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	0.16	0.075	0.24	0.31	<0.22	0.39	<0.010	0.36
Nitrite (N)	mg/L	0.02 - 0.20 [3]	-	-	0.094	0.038	0.38	0.043	0.038	0.026
Nitrate and Nitrate (N)	mg/L	-	-	-	0.34	0.35	-	0.43	0.038	1.9
Total Dissolved Solids (TDS)	mg/L	500	10,000	11,000	10,000	10,000	9,700	11,000	11,000	11,000
Hardness	mg/L	-	-	-	940	920	960	1000	1100	1000
Alkalinity (total as CaCO3)	mg/L	-	-	-	900	840	870	860	840	790
Alkalinity (pp as CaCO3)	mg/L	-	-	-	<0.50	<0.50	<0.5	-	<1.0	
Ionic Balance	N/A	-	-	-	0.95	0.91	7.3	3.5	9.8	5.3
Water Nutrients										
Ammonia-N	mg/L	0.018-190 [4]	2	1.6	1.2	1.4	1.6	1.1	1.1	1.5
TKN	mg/L	-	2.8	2.5	2.0	2.1	2.1	1.7	2.0	1.9
Hydrocarbons										
Benzene	mg/L	0.005	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics										
COD	mg/L	-	45	61	45	48	35	37	45	41
TOC	mg/L	-	-	-	-	-	-	-	-	
DOC	mg/L	-	19	15	16	17	17	14	15	14
Oil & Grease	mg/L	-	-	-	-	-	-	-	-	
Metals										
Aluminum	mg/L	0.0007 / 0.05 [5]	-	-	<0.060	0.011	0.0039	<0.003	<0.0030	<0.0030
Antimony	mg/L	0.006	0.00091	<0.012	<0.012	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	-	-	<0.0040	0.00044	0.0004	0.00038	0.00030	0.00026
Barium	mg/L	1	0.033	<0.10	<0.10	0.010	<0.10	<0.10	<0.10	0.014
Beryllium	mg/L	-	-	-	<0.020	<0.0010	<0.001	-	<0.0010	
Boron	mg/L	1	-	-	0.44	0.45	0.44	0.44	0.52	0.39
Cadmium	mg/L	0.00004-0.00037 [2]	0.00027	<0.00010	<0.00040	0.000034	0.000022	0.000024	0.000027	<0.000020
Chromium	mg/L	0.05	<0.0010	<0.020	<0.020	0.0012	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	0.0051	<0.0060	<0.0060	0.0019	0.0015	0.0014	0.0013	
Copper	mg/L	0.007	0.0021	<0.0040	<0.0040	0.0015	0.00033	0.00064	0.0014	0.0013
Lead	mg/L	0.001-0.007 [2]	<0.00020	<0.0040	<0.0040	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	-	-	0.58	0.61	-	-	0.70	
Manganese	mg/L	0.05	-	-	0.27	0.25	0.25	0.25	0.25	0.31
Mercury	mg/L	0.000005	*<0.000010*	<0.0000050	<0.0000050	<0.0000020	<0.0000020	0.0000022	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.0029	<0.0040	<0.0040	0.0009	0.00078	0.00087	0.00054	0.00059
Nickel	mg/L	0.007-0.170 [2]	0.012	<0.010	<0.010	0.0049	0.0038	0.0034	0.0032	0.0032
Phosphorus	mg/L	-	-	-	<1.0	<0.10	<1	-	<1.0	
Selenium	mg/L	0.002	-	-	*<0.0040*	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon	mg/L	-	-	-	4.8	4.8	4.7	-	5.4	
Silver	mg/L	0.0001	-	-	<0.0020	<0.00010	<0.0001	<0.0001	<0.00010	<0.00010
Strontium	mg/L	-	-	-	5.0	4.7	5.4	-	6.4	
Sulphur	mg/L	-	-	-	2100	2200	2200	-	2500	
Thallium	mg/L	-	-	-	<0.0040	<0.00020	<0.0002	-	<0.00020	
Tin	mg/L	-	-	-	<0.020	<0.0010	<0.001	-	<0.0010	
Titanium	mg/L	-	-	-	<0.020	<0.0010	<0.001	-	<0.0010	
Uranium	mg/L	0.01	-	-	<0.0020	0.00062	0.00054	0.00047	0.00045	0.00056
Vanadium	mg/L	-	-	-	<0.020	0.0013	<0.001	-	<0.0010	
Zinc	mg/L	0.03	0.0037	<0.060	<0.060	0.0052	<0.0030	<0.0030	<0.0030	<0.0030
Volatile Organic Compounds (VOCs)										
Bromodichloromethane	mg/L	-	-	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Equipment Failure, parameter not reported (EF)

Detection limit adjusted (*)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E29A: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 29A					
			Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements								
Field pH	-	-	8.5	8.15	8.1	7.48	8.06	7.89
Field EC	mS	-	4.74	3.44	3.74	3.44	3.76	3.56
Field Temperature	ºC	-	6.7	7.0	6.5	8.4	8.8	6.8
Routine Water								
pH	-	6.5 - 8.5	8.28	8.41	8.34	8.33	8.45	8.13
Conductivity (EC)	µS/cm	1000	4900	3400	3400	3400	3500	3500
Calcium	mg/L	-	72	33	32	30	32	37
Magnesium	mg/L	-	9.9	5.1	5.2	4.8	5.1	7.3
Sodium	mg/L	200	1200	810	810	850	810	840
Potassium	mg/L	-	7.4	4.1	4.1	3.8	3.7	3.9
Iron	mg/L	0.3	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060
Sulphate	mg/L	128-429 [2]	2000	1200	1100	1100	1100	1200
Chloride	mg/L	100	7.3	3.3	3.6	3.2	3.5	3.6
Bicarbonate	mg/L	-	680	710	760	770	740	760
Carbonate	mg/L	-	<0.50	7.7	3	4.2	16	<1.0
Hydroxide	mg/L	-	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	0.054	0.063	0.33	0.32	0.18	0.24
Nitrite (N)	mg/L	0.02 - 0.20 [3]	0.084	0.014	1.1	0.026	0.089	0.08
Nitrate and Nitrate (N)	mg/L	-	0.14	0.077	-	0.35	0.27	0.32
Total Dissolved Solids (TDS)	mg/L	500	3600	2400	2400	2400	2300	2400
Hardness	mg/L	-	220	100	100	95	100	120
Alkalinity (total as CaCO3)	mg/L	-	560	590	630	640	630	620
Alkalinity (pp as CaCO3)	mg/L	-	<0.50	6.4	2.5	-	13	
Ionic Balance	N/A	-	1.0	1.0	2	3.6	2.7	2.8
Water Nutrients								
Ammonia-N	mg/L	0.018-190 [4]	4.3	1.2	1.4	0.9	1.1	1.1
TKN	mg/L	-	16	1.3	1.6	1.3	1.7	1.5
Hydrocarbons								
Benzene	mg/L	0.005	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics								
COD	mg/L	-	1100	55	25	22	58	22
TOC	mg/L	-	-	-	-	-	-	
DOC	mg/L	-	13	8.3	9.1	7.7	9.1	8.1
Oil & Grease	mg/L	-	-	-	-	-	-	
Metals								
Aluminum	mg/L	0.0007 / 0.05 [5]	0.0048	0.0067	0.0079	0.0042	0.012	0.0057
Antimony	mg/L	0.006	0.0012	<0.00060	0.23	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	0.0030	0.0011	0.00093	0.00076	0.00072	0.00071
Barium	mg/L	1	0.021	0.015	0.018	0.014	0.014	0.014
Beryllium	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Boron	mg/L	1	0.50	0.75	0.74	0.72	0.72	0.71
Cadmium	mg/L	0.00004-0.00037 [2]	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Chromium	mg/L	0.05	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	0.00044	0.00061	0.00046	<0.00030	0.00034	
Copper	mg/L	0.007	0.0012	0.0020	0.00093	0.00098	0.0031	0.0049
Lead	mg/L	0.001-0.007 [2]	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	0.26	0.22	0.23	0.22	0.21	
Manganese	mg/L	0.05	0.081	0.064	0.06	0.051	0.050	0.059
Mercury	mg/L	0.000005	<0.0000050	<0.0000020	<0.000002	0.0000028	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.0091	0.0017	0.0019	0.0016	0.0015	0.0018
Nickel	mg/L	0.007-0.170 [2]	0.0036	0.0020	0.0014	0.0011	0.0013	0.0013
Phosphorus	mg/L	-	<0.10	<0.10	<0.10	<0.10	<0.10	
Selenium	mg/L	0.002	0.00039	0.00022	0.00027	0.00023	<0.00020	<0.00020
Silicon	mg/L	-	1.7	3.6	3.7	3.6	3.8	
Silver	mg/L	0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	1.4	0.67	0.68	0.66	0.66	
Sulphur	mg/L	-	740	400	390	370	360	
Thallium	mg/L	-	<0.00020	<0.00020	<0.00020	<0.0002	<0.00020	
Tin	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Titanium	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Uranium	mg/L	0.01	0.0093	0.0006	0.00055	0.00043	0.00047	0.00066
Vanadium	mg/L	-	<0.0010	0.0011	<0.0010	<0.0010	<0.0010	
Zinc	mg/L	0.03	<0.0030	<0.0030	<0.0030	<0.0030	0.0032	<0.0030
Volatile Organic Compounds (VOCs)								
Bromodichloromethane	mg/L	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Total Dissolved Solids, not a measured value (TDS)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E29B: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 29B					
			Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements								
Field pH	-	-	7.4	7.21	7.2	6.9	7.20	7.18
Field EC	mS	-	8.67	8.80	9.23	8.62	8.7	8.84
Field Temperature	ºC	-	7.1	7.7	6	9	9.1	7.8
Routine Water								
pH	-	6.5 - 8.5	7.62	7.85	7.9	7.76	7.88	7.34
Conductivity (EC)	µS/cm	1000	8200	8400	8500	8600	8900	8700
Calcium	mg/L	-	520	560	530	530	440	440
Magnesium	mg/L	-	260	230	240	260	260	260
Sodium	mg/L	200	1400	1600	1600	1700	1700	1900
Potassium	mg/L	-	12	11	11	12	10	11
Iron	mg/L	0.3	<0.60	0.54	<0.60	<0.60	*<0.60*	*<0.60*
Sulphate	mg/L	128-429 [2]	4700	5100	4700	5000	4900	5000
Chloride	mg/L	100	5.7	5.2	6	6.3	8.2	8.6
Bicarbonate	mg/L	-	570	520	550	560	570	570
Carbonate	mg/L	-	<0.50	<0.50	0<0.5	<1.0	<1.0	<1.0
Hydroxide	mg/L	-	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	0.39	0.11	<0.22	0.13	<0.010	0.53
Nitrite (N)	mg/L	0.02 - 0.20 [3]	0.027	0.025	<0.16	0.032	0.079	0.059
Nitrate and Nitrate (N)	mg/L	-	0.42	0.13	-	0.17	0.079	0.59
Total Dissolved Solids (TDS)	mg/L	500	7200	7700	7400	7800	7600	7900
Hardness	mg/L	-	2300	2400	2300	2400	2200	2200
Alkalinity (total as CaCO3)	mg/L	-	470	420	450	460	470	470
Alkalinity (pp as CaCO3)	mg/L	-	<0.50	<0.50	<0.50	-	<1.0	
Ionic Balance	N/A	-	1.0	1.0	4.6	3.5	1.7	4.3
Water Nutrients								
Ammonia-N	mg/L	0.018-190 [4]	0.72	1.1	1.4	1.2	0.91	0.81
TKN	mg/L	-	4.5	0.96	1.8	1.9	1.5	1.1
Hydrocarbons								
Benzene	mg/L	0.005	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics								
COD	mg/L	-	150	41	45	76	56	34
TOC	mg/L	-	-	-	-	-	-	
DOC	mg/L	-	17	15	18	14	17	15
Oil & Grease	mg/L	-	-	-	-	-	-	
Metals								
Aluminum	mg/L	0.0007 / 0.05 [5]	0.0041	0.022	0.01	0.0049	<0.0030	<0.0030
Antimony	mg/L	0.006	0.0017	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	0.0077	0.00054	0.00031	0.00035	<0.00020	0.00037
Barium	mg/L	1	<0.10	0.019	<0.10	<0.10	<0.10	0.1
Beryllium	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Boron	mg/L	1	<0.20	0.20	0.21	<0.20	0.20	0.19
Cadmium	mg/L	0.00004-0.00037 [2]	0.00017	0.000082	0.00006	0.000057	0.000058	0.000046
Chromium	mg/L	0.05	<0.0010	0.0014	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	0.018	0.0056	0.0044	0.0041	0.0032	
Copper	mg/L	0.007	0.0019	0.0019	0.00098	0.0009	0.0014	0.00055
Lead	mg/L	0.001-0.007 [2]	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	0.55	0.65	0.67	0.68	0.61	
Manganese	mg/L	0.05	0.77	0.85	0.88	0.96	0.80	0.81
Mercury	mg/L	0.000005	<0.0000050	0.0000043	<0.0000020	0.0000036	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.016	0.00045	0.00057	0.00043	0.00030	
Nickel	mg/L	0.007-0.170 [2]	0.048	0.0099	0.0075	0.0075	0.0055	0.0053
Phosphorus	mg/L	-	<1.0	<0.10	<1.0	<1.0	<1.0	
Selenium	mg/L	0.002	0.001	<0.00020	<0.00020	0.0002	<0.00020	<0.00020
Silicon	mg/L	-	4.4	5.3	5.6	5.4	5.2	
Silver	mg/L	0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	6.9	7.9	8	8.2	8.6	
Sulphur	mg/L	-	1600	1800	1700	1800	1700	
Thallium	mg/L	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
Tin	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Titanium	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Uranium	mg/L	0.01	0.019	0.0042	0.0061	0.0049	0.0042	0.005
Vanadium	mg/L	-	<0.0010	0.0015	<0.0010	<0.0010	<0.0010	
Zinc	mg/L	0.03	0.014	0.0051	<0.0030	<0.0030	<0.0030	<0.0030
Volatile Organic Compounds (VOCs)								
Bromodichloromethane	mg/L	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E30A: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 30A					
			Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	May-20
Field Measurements								
Field pH	-	-	8.5	8.29	8.2	7.98	8.19	8.08
Field EC	mS	-	2.40	2.32	2.02	1.932	2.18	1.94
Field Temperature	ºC	-	7.5	8.7	7	8.4	10.1	6.9
Routine Water								
pH	-	6.5 - 8.5	8.34	8.37	8.57	8.44	8.53	8.4
Conductivity (EC)	µS/cm	1000	2300	2200	1900	1900	2000	2000
Calcium	mg/L	-	16	12	8.9	7.9	8.3	8.8
Magnesium	mg/L	-	2.2	1.6	1.4	1.3	1.4	1.3
Sodium	mg/L	200	540	540	460	450	430	420
Potassium	mg/L	-	2.9	2.4	2.2	2.1	2.0	1.8
Iron	mg/L	0.3	0.44	0.63	<0.06	<0.060	<0.060	<0.060
Sulphate	mg/L	128-429 [2]	510	510	360	350	350	360
Chloride	mg/L	100	5.3	3.0	1.3	1.5	1.3	2.2
Bicarbonate	mg/L	-	770	780	770	770	740	730
Carbonate	mg/L	-	3.5	5.3	17	12	23	7.9
Hydroxide	mg/L	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	0.013	0.16	0.19	0.1	0.086	0.088
Nitrite (N)	mg/L	0.02 - 0.20 [3]	<0.033	0.046	0.081	<0.010	0.010	0.023
Nitrate and Nitrate (N)	mg/L	-	0.023	0.21	-	0.1	0.096	0.11
Total Dissolved Solids (TDS)	mg/L	500	1500	1500	1200	1200	1200	1200
Hardness	mg/L	-	48	36	28	25	26	27
Alkalinity (total as CaCO3)	mg/L	-	640	650	660	650	640	610
Alkalinity (pp as CaCO3)	mg/L	-	2.9	4.5	14	-	19	
Ionic Balance	N/A	-	1.0	1.0	0.27	0.61	2.4	2.2
Water Nutrients								
Ammonia-N	mg/L	0.018-190 [4]	0.78	0.42	0.46	0.39	0.40	0.40
TKN	mg/L	-	2.6	1.1	0.8	0.75	0.76	0.79
Hydrocarbons								
Benzene	mg/L	0.005	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics								
COD	mg/L	-	130	43	23	57	24	22
TOC	mg/L	-	-	-	-	-	-	
DOC	mg/L	-	15	9.9	7.8	7.1	8.7	7.3
Oil & Grease	mg/L	-	-	-	-	-	-	
Metals								
Aluminum	mg/L	0.0007 / 0.05 [5]	1.0	3.8	0.011	0.0059	<0.0030	<0.0030
Antimony	mg/L	0.006	0.0008	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	0.0037	0.0030	0.00089	0.00077	0.00059	0.00066
Barium	mg/L	1	0.028	0.025	0.015	0.013	0.011	0.012
Beryllium	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Boron	mg/L	1	0.43	0.52	0.40	0.38	0.39	0.37
Cadmium	mg/L	0.00004-0.00037 [2]	0.00004	0.000026	<0.000020	<0.000020	<0.000020	<0.000020
Chromium	mg/L	0.05	0.0016	0.0045	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	0.0012	0.0012	<0.00030	<0.0003	<0.00030	
Copper	mg/L	0.007	0.0056	0.0075	0.00034	0.00057	0.00065	0.0005
Lead	mg/L	0.001-0.007 [2]	0.00077	0.00054	<0.00020	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	0.11	0.13	0.16	0.15	0.14	
Manganese	mg/L	0.05	0.081	0.059	0.018	0.016	0.015	0.015
Mercury	mg/L	0.000005	<0.0000050	<0.0000020	<0.0000020	0.0000025	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.013	0.0082	0.0015	0.001	0.00080	0.00081
Nickel	mg/L	0.007-0.170 [2]	0.013	0.010	0.0023	0.00065	0.00074	<0.00050
Phosphorus	mg/L	-	<0.10	0.11	0.1	<0.10	<0.10	
Selenium	mg/L	0.002	0.0012	0.00064	<0.00020	<0.00020	<0.00020	<0.00020
Silicon	mg/L	-	3.4	3.7	3.9	3.6	3.9	
Silver	mg/L	0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	0.15	0.13	0.14	0.14	0.15	
Sulphur	mg/L	-	190	170	120	120	120	
Thallium	mg/L	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
Tin	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Titanium	mg/L	-	0.033	0.084	<0.0010	<0.0010	<0.0010	
Uranium	mg/L	0.01	0.0063	0.0035	0.00018	0.00017	0.00011	<0.00010
Vanadium	mg/L	-	0.0034	0.0090	0.011	<0.0010	<0.0010	
Zinc	mg/L	0.03	0.0034	0.0037	<0.0030	<0.0030	<0.0030	<0.0030
Volatile Organic Compounds (VOCs)								
Bromodichloromethane	mg/L	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E30B: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 30B					
			Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	May-20
Field Measurements								
Field pH	-	-	8.1	8.19	7.9	7.28	7.88	7.67
Field EC	mS	-	2.83	2.65	2.68	2.5	2.47	2.53
Field Temperature	ºC	-	6.5	7.4	5.6	8.7	8.4	5.9
Routine Water								
pH	-	6.5 - 8.5	8.06	8.44	8.32	8.27	8.26	8.22
Conductivity (EC)	µS/cm	1000	2700	2600	2500	2500	2500	2500
Calcium	mg/L	-	29	26	24	22	22	23
Magnesium	mg/L	-	9.1	9.5	8.9	8	8.1	8.2
Sodium	mg/L	200	680	610	560	610	570	580
Potassium	mg/L	-	3.3	3.2	2.9	2.6	2.6	2.4
Iron	mg/L	0.3	<0.060	<0.060	<0.060	<0.060	0.13	<0.30
Sulphate	mg/L	128-429 [2]	830	830	750	720	690	700
Chloride	mg/L	100	1.4	1.5	1.8	<1.0	1.9	2
Bicarbonate	mg/L	-	670	610	680	710	700	660
Carbonate	mg/L	-	<0.50	8.0	<0.50	<1.0	<1.0	<1.0
Hydroxide	mg/L	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	1.3	0.12	1.5	0.4	0.45	0.63
Nitrite (N)	mg/L	0.02 - 0.20 [3]	<0.010	0.012	<0.033	<0.010	<0.010	0.017
Nitrate and Nitrate (N)	mg/L	-	1.3	0.13	-	0.4	0.45	0.65
Total Dissolved Solids (TDS)	mg/L	500	1900	1800	1700	1700	1600	1600
Hardness	mg/L	-	110	100	97	87	88	91
Alkalinity (total as CaCO3)	mg/L	-	550	520	560	580	570	540
Alkalinity (pp as CaCO3)	mg/L	-	<0.50	6.7	<0.5	-	<1.0	
Ionic Balance	N/A	-	1.1	1.0	0.76	3.4	1.4	2.9
Water Nutrients								
Ammonia-N	mg/L	0.018-190 [4]	0.16	<0.050	<0.015	<0.015	0.056	<0.015
TKN	mg/L	-	0.49	0.40	0.6	0.62	0.62	0.68
Hydrocarbons								
Benzene	mg/L	0.005	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics								
COD	mg/L	-	110	44	38	55	32	29
TOC	mg/L	-	-	-	-	-	-	
DOC	mg/L	-	8.4	9.1	10	8	9.6	8.4
Oil & Grease	mg/L	-	-	-	-	-	-	
Metals								
Aluminum	mg/L	0.0007 / 0.05 [5]	<0.030	0.011	0.0039	<0.0030	0.18	0.025
Antimony	mg/L	0.006	<0.0060	<0.00060	<0.0006	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	0.0024	0.0010	0.00068	0.00068	0.00084	0.00096
Barium	mg/L	1	0.022	0.022	0.024	0.019	0.021	0.018
Beryllium	mg/L	-	<0.010	<0.0010	<0.001	<0.0010	<0.0010	
Boron	mg/L	1	0.11	0.14	0.12	0.12	0.12	0.11
Cadmium	mg/L	0.00004-0.00037 [2]	<0.00020	<0.000020	<0.00002	<0.000020	<0.000020	<0.000020
Chromium	mg/L	0.05	<0.010	0.0012	<0.001	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	<0.0030	<0.00030	<0.0003	<0.0003	<0.00030	
Copper	mg/L	0.007	0.0035	0.0024	0.00083	0.00091	0.0014	0.00084
Lead	mg/L	0.001-0.007 [2]	<0.0020	<0.00020	<0.0002	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	0.21	0.24	0.24	0.24	0.22	
Manganese	mg/L	0.05	0.068	<0.0040	<0.004	<0.0040	0.0057	<0.0040
Mercury	mg/L	0.000005	<0.0000050	<0.0000020	<0.000002	0.0000033	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.0028	0.0011	0.00092	0.00089	0.00087	
Nickel	mg/L	0.007-0.170 [2]	0.0053	0.0023	0.001	0.00098	0.0029	0.00071
Phosphorus	mg/L	-	<0.10	<0.10	0.13	<0.10	<0.10	
Selenium	mg/L	0.002	<0.0020	0.00024	0.00046	0.0006	0.00058	0.00062
Silicon	mg/L	-	4.6	4.7	4.8	4.8	5.1	
Silver	mg/L	0.0001	<0.0010	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	0.37	0.33	0.35	0.33	0.32	
Sulphur	mg/L	-	260	290	250	230	230	
Thallium	mg/L	-	<0.0020	<0.00020	<0.0002	<0.00020	<0.00020	
Tin	mg/L	-	<0.010	<0.0010	<0.001	<0.0010	<0.0010	
Titanium	mg/L	-	<0.010	<0.0010	<0.001	<0.0010	0.0034	
Uranium	mg/L	0.01	0.0053	0.0032	0.0038	0.0024	0.0030	0.0040
Vanadium	mg/L	-	<0.010	0.0019	<0.001	<0.0010	<0.0010	
Zinc	mg/L	0.03	<0.030	0.0064	<0.003	<0.0030	<0.0030	<0.0030
Volatile Organic Compounds (VOCs)								
Bromodichloromethane	mg/L	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E31A: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 31A					
			Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements								
Field pH	-	-	8.6	8.53	-	8.03	8.46	8.13
Field EC	mS	-	1.98	1.72	-	1.796	1.702	1.73
Field Temperature	ºC	-	10.5	9.5	-	13.8	10.5	8.7
Routine Water								
pH	-	6.5 - 8.5	8.57	8.53	8.57	8.48	8.66	8.46
Conductivity (EC)	µS/cm	1000	1900	1800	1700	1700	1800	1800
Calcium	mg/L	-	7.8	4.5	4.9 *	4.9	3.5	4.4
Magnesium	mg/L	-	3.1	<2.0	0.52 *	0.51	0.35	0.43
Sodium	mg/L	200	420	430	470	440	410	470
Potassium	mg/L	-	3.2	<3.0	1.9 *	1.6	1.5	1.6
Iron	mg/L	0.3	9.0	<0.60	0.18 *	0.074	0.06	<0.060
Sulphate	mg/L	128-429 [2]	220	120	76	67	58	51
Chloride	mg/L	100	12	6.7	5.2	11	8.5	4.9
Bicarbonate	mg/L	-	920	940	1000	1100	990	1000
Carbonate	mg/L	-	22	18	23	19	57	16
Hydroxide	mg/L	-	<0.50	<0.50	<0.5	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	0.017	2.0	14	1.5	1.9	1.8
Nitrite (N)	mg/L	0.02 - 0.20 [3]	0.013	0.028	0.077	<0.010	<0.010	<0.010
Nitrate and Nitrate (N)	mg/L	-	0.03	2.0	3.2	1.5	1.9	1.8
Total Dissolved Solids (TDS)	mg/L	500	1100	1000	1100	1100	1000	1100
Hardness	mg/L	-	32	11	15	15	10	13
Alkalinity (total as CaCO3)	mg/L	-	790	800	880	900	910	880
Alkalinity (pp as CaCO3)	mg/L	-	19	15	19	-	48	
Ionic Balance	N/A	-	0.94	1.0	3.2	2	3.9	4.7
Water Nutrients								
Ammonia-N	mg/L	0.018-190 [4]	1.1	1.1	1.2	0.52	0.61	0.47
TKN	mg/L	-	5.2	1.0	7.4	1.9	3.0	1.0
Hydrocarbons								
Benzene	mg/L	0.005	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics								
COD	mg/L	-	560	380	300	140	270	89
TOC	mg/L	-	-	-	-	-	-	
DOC	mg/L	-	19	17	-	11	18	9.5
Oil & Grease	mg/L	-	-	-	-	-	-	
Metals								
Aluminum	mg/L	0.0007 / 0.05 [5]	1.5	0.31	0.55 *	0.097	0.024	0.074
Antimony	mg/L	0.006	0.0013	<0.00060	0.00077 *	0.00065	0.00073	<0.00060
Arsenic	mg/L	0.005	0.0069	0.00088	0.0042 *	0.0035	0.0051	0.0028
Barium	mg/L	1	0.097	<0.10	0.085 *	0.05	0.051	0.054
Beryllium	mg/L	-	<0.0010	<0.0010	<0.0010 *	<0.0010	<0.0010	
Boron	mg/L	1	0.58	0.66	0.74 *	0.76	0.75	0.8
Cadmium	mg/L	0.00004-0.00037 [2]	0.000048	<0.000020	0.000025 *	<0.000020	0.000026	<0.000020
Chromium	mg/L	0.05	0.0017	<0.0010	<0.0010 *	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	0.0034	0.00039	0.0016 *	<0.00030	0.00050	
Copper	mg/L	0.007	0.0093	0.00093	0.0046 *	0.0021	0.0020	0.0010
Lead	mg/L	0.001-0.007 [2]	0.0021	0.00043	0.00043 *	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	0.064	<0.20	0.086 *	0.083	0.072	
Manganese	mg/L	0.05	0.068	<0.040	0.036 *	<0.0040	0.027	0.021
Mercury	mg/L	0.000005	0.000008	0.000043	<0.0000020 *	0.0000051	-	<0.0000019
Molybdenum	mg/L	-	0.023	0.0021	0.019 *	0.01	0.023	0.011
Nickel	mg/L	0.007-0.170 [2]	0.020	0.0026	0.012 *	0.0033	0.0056	0.0031
Phosphorus	mg/L	-	0.12	<1.0	<0.10 *	<0.10	0.12	
Selenium	mg/L	0.002	0.0013	<0.00020	0.00078 *	0.00051	0.00054	0.00024
Silicon	mg/L	-	55	2.7	3.1 *	2.8	2.6	
Silver	mg/L	0.0001	<0.00010	<0.00010	<0.00010 *	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	0.10	<0.20	0.11 *	0.078	0.07	
Sulphur	mg/L	-	75	40	24 *	21	17	
Thallium	mg/L	-	<0.00020	<0.00020	<0.00020 *	<0.00020	<0.00020	
Tin	mg/L	-	<0.0010	<0.0010	<0.0010 *	<0.0010	<0.0010	
Titanium	mg/L	-	0.030	0.0032	0.0094 *	0.0014	<0.0010	
Uranium	mg/L	0.01	0.0095	0.00054	0.0041 *	0.0039	0.0032	0.0029
Vanadium	mg/L	-	0.0028	<0.0010	0.0013 *	<0.0010	<0.0010	
Zinc	mg/L	0.03	0.0051	<0.0030	<0.0030 *	<0.0030	<0.0030	<0.0030
Volatile Organic Compounds (VOCs)								
Bromodichloromethane	mg/L	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Exceeds Regulatory Limit

Laboratory filtered (*)

Italic - Detection limit greater than Tier 1 Guideline

Table E31B: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 31B					
			Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements								
Field pH	-	-	8.4	8.33	8.1	7.55	8.15	7.78
Field EC	mS	-	2.53	2.50	2.66	2.72	2.71	2.75
Field Temperature	ºC	-	8.0	9.4	8.1	9.5	10.3	7.6
Routine Water								
pH	-	6.5 - 8.5	8.29	8.56	8.4	8.39	8.45	8.29
Conductivity (EC)	µS/cm	1000	2400	2500	2500	2700	2800	2700
Calcium	mg/L	-	15	15	14	15	17	18
Magnesium	mg/L	-	4.3	5.4	5.6	5.7	6.4	7
Sodium	mg/L	200	550	590	570	660	630	650
Potassium	mg/L	-	3.7	3.6	3.3	3.4	3.5	3.6
Iron	mg/L	0.3	0.75	0.26	<0.060	<0.060	0.22	<0.060
Sulphate	mg/L	128-429 [2]	670	750	780	850	850	900
Chloride	mg/L	100	1.1	1.4	1.4	<1.0	2.0	1.6
Bicarbonate	mg/L	-	690	610	640	630	610	580
Carbonate	mg/L	-	<0.50	13	5.2	7.2	12	<1.0
Hydroxide	mg/L	-	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	0.046	<0.010	0.8	0.14	0.15	0.17
Nitrite (N)	mg/L	0.02 - 0.20 [3]	<0.010	<0.010	<0.033	<0.010	<0.010	<0.010
Nitrate and Nitrate (N)	mg/L	-	0.046	<0.020	-	0.14	0.15	0.17
Total Dissolved Solids (TDS)	mg/L	500	1600	1700	1700	1900	1800	1900
Hardness	mg/L	-	55	59	59	61	68	73
Alkalinity (total as CaCO3)	mg/L	-	570	520	530	530	520	480
Alkalinity (pp as CaCO3)	mg/L	-	<0.50	11	4.3	-	9.6	
Ionic Balance	N/A	-	0.99	1.0	1.7	2.6	1.2	2.6
Water Nutrients								
Ammonia-N	mg/L	0.018-190 [4]	0.59	0.13	0.034	<0.015	0.02	0.015
TKN	mg/L	-	2.2	0.38	0.51	0.4	0.51	0.46
Hydrocarbons								
Benzene	mg/L	0.005	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	0.12	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics								
COD	mg/L	-	140	28	30	24	31	33
TOC	mg/L	-	-	-	-	-	-	
DOC	mg/L	-	9	8.2	8.8	7.7	10	7.5
Oil & Grease	mg/L	-	-	-	-	-	-	
Metals								
Aluminum	mg/L	0.0007 / 0.05 [5]	0.70	0.084	0.011	0.0038	0.12	0.0032
Antimony	mg/L	0.006	0.00095	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	0.0094	0.0017	0.0011	0.0011	0.0011	0.00099
Barium	mg/L	1	0.024	0.023	0.022	0.018	0.019	0.018
Beryllium	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Boron	mg/L	1	0.16	0.20	0.17	0.18	0.17	0.18
Cadmium	mg/L	0.00004-0.00037 [2]	<0.00002	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Chromium	mg/L	0.05	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	0.0021	0.00053	<0.0003	<0.00030	<0.00030	
Copper	mg/L	0.007	0.0022	0.0022	0.00027	0.00064	0.0017	0.00082
Lead	mg/L	0.001-0.007 [2]	0.00048	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	0.12	0.16	0.15	0.16	0.15	
Manganese	mg/L	0.05	0.061	0.041	0.017	0.01	0.015	<0.0040
Mercury	mg/L	0.000005	<0.0000050	0.0000027	<0.0000020	0.0000035	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.0058	0.0015	0.0014	0.0013	0.0014	
Nickel	mg/L	0.007-0.170 [2]	0.0086	0.0033	0.00081	0.0008	0.0011	0.00067
Phosphorus	mg/L	-	<0.10	<0.10	0.13	<0.10	<0.10	
Selenium	mg/L	0.002	0.00064	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Silicon	mg/L	-	5.2	3.9	3.6	3.6	3.9	
Silver	mg/L	0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	0.17	0.23	0.24	0.27	0.27	
Sulphur	mg/L	-	220	270	250	270	280	
Thallium	mg/L	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
Tin	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Titanium	mg/L	-	0.018	<0.0010	<0.0010	<0.0010	0.0025	
Uranium	mg/L	0.01	0.0034	0.00099	0.0012	0.0008	0.00098	0.0011
Vanadium	mg/L	-	0.0024	0.0011	<0.0010	<0.0010	<0.0010	
Zinc	mg/L	0.03	<0.0030	0.0078	<0.0030	<0.0030	<0.0030	<0.0030
Volatile Organic Compounds (VOCs)								
Bromodichloromethane	mg/L	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E32A: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 32A					
			Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	May-20
Field Measurements								
Field pH	-	-	8.2	7.79	7.6	7.51	7.65	7.74
Field EC	mS	-	8.66	7.91	8.49	13.26	8.1	8.1
Field Temperature	ºC	-	7.6	8.2	7.3	11.7	11.5	8.1
Routine Water								
pH	-	6.5 - 8.5	8.16	8.25	8.12	8	8.04	8.12
Conductivity (EC)	µS/cm	1000	8200	8100	8000	8100	8200	8000
Calcium	mg/L	-	120	120	120	120	120	110
Magnesium	mg/L	-	15	15	15	16	<20	12
Sodium	mg/L	200	2000	2000	2000	2100	1900	2000
Potassium	mg/L	-	11	8.4	7.7	8	<30	6.5
Iron	mg/L	0.3	<0.60	0.12	<0.60	<0.60	*<0.60*	*<0.60*
Sulphate	mg/L	128-429 [2]	4100	3900	3400	3500	3300	3200
Chloride	mg/L	100	8.9	3.1	3.2	2.8	3.7	4.1
Bicarbonate	mg/L	-	960	980	1000	1000	1000	810
Carbonate	mg/L	-	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0
Hydroxide	mg/L	-	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	<0.010	<0.050	<0.22	0.058	<0.20	0.11
Nitrite (N)	mg/L	0.02 - 0.20 [3]	0.013	<0.050	0.71	0.017	<0.20	0.26
Nitrate and Nitrate (N)	mg/L	-	0.013	<0.020	-	0.075	<0.28	0.37
Total Dissolved Solids (TDS)	mg/L	500	6700	6500	6100	6300	5900	5800
Hardness	mg/L	-	370	360	350	360	300	320
Alkalinity (total as CaCO3)	mg/L	-	790	800	850	840	820	670
Alkalinity (pp as CaCO3)	mg/L	-	<0.50	<0.50	<0.50	-	<1.0	
Ionic Balance	N/A	-	0.92	1.0	4.4	4.5	2.8	7.6
Water Nutrients								
Ammonia-N	mg/L	0.018-190 [4]	3.5	2.9	3.2	2.8	2.9	3
TKN	mg/L	-	6.8	3.2	3.2	3.2	3.2	3.1
Hydrocarbons								
Benzene	mg/L	0.005	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	<0.00040	<0.00040	<0.00040	<0.00040	0.0011	0.0011
Ethylbenzene	mg/L	0.0016	<0.00040	<0.00040	<0.00040	<0.00040	0.00043	0.00043
Xylene	mg/L	0.02	<0.00080	<0.00080	<0.00080	<0.00089	0.0026	0.0026
F1 (C6-C10)	mg/L	2.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	<0.10	<0.10	<0.10	<0.10	<0.10	0.28
Organics								
COD	mg/L	-	410	26	19	39	39	26
TOC	mg/L	-	-	-	-	-	-	
DOC	mg/L	-	12	7.9	7.2	7.6	7.8	8.9
Oil & Grease	mg/L	-	-	-	-	-	-	
Metals								
Aluminum	mg/L	0.0007 / 0.05 [5]	<0.030	0.029	0.008	0.008	<0.0030	<0.0030
Antimony	mg/L	0.006	<0.0060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	0.0041	0.00051	0.00037	0.00035	0.00039	0.00061
Barium	mg/L	1	<0.10	0.015	<0.10	<0.10	<1.0	0.021
Beryllium	mg/L	-	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	
Boron	mg/L	1	0.85	1.2	1.2	1.2	1.1	0.94
Cadmium	mg/L	0.00004-0.00037 [2]	<0.00020	<0.000020	0.000021	0.000021	<0.000020	0.000027
Chromium	mg/L	0.05	<0.010	0.0015	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	<0.0030	0.00077	0.00062	0.00044	0.00047	
Copper	mg/L	0.007	<0.0020	0.0031	0.00073	0.0082	0.0016	0.0012
Lead	mg/L	0.001-0.007 [2]	<0.0020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	0.36	0.47	0.49	0.45	<2.0	
Manganese	mg/L	0.05	0.15	0.12	0.14	0.12	0.11	0.16
Mercury	mg/L	0.000005	<0.0000050	0.0000023	<0.0000020	0.0000032	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.014	0.00054	0.00068	0.00069	0.00064	
Nickel	mg/L	0.007-0.170 [2]	0.011	0.0032	0.0016	0.0026	0.0011	0.0018
Phosphorus	mg/L	-	<1.0	<0.10	<1.0	<1.0	<10	
Selenium	mg/L	0.002	<0.0020	<0.00020	<0.00020	<0.00020	0.00025	<0.00020
Silicon	mg/L	-	2.4	5.2	5.3	5.2	<10	
Silver	mg/L	0.0001	*<0.0010*	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	2.6	2.9	3.0	3.0	2.8	
Sulphur	mg/L	-	1300	1300	1300	1300	1300	
Thallium	mg/L	-	<0.0020	<0.00020	<0.00020	<0.00020	<0.00020	
Tin	mg/L	-	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	
Titanium	mg/L	-	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	
Uranium	mg/L	0.01	0.0080	0.00016	0.00014	0.00013	0.00011	0.00042
Vanadium	mg/L	-	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	
Zinc	mg/L	0.03	<0.030	0.015	<0.0030	0.0091	<0.0030	<0.0030
Volatile Organic Compounds (VOCs)								
Bromodichloromethane	mg/L	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E32B: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 32B					
			Jun-15	Jun-16	Jun-17	Jun-18	Jun-19	May-20
Field Measurements								
Field pH	-	-	7.7	7.69	7.4	7.48	7.50	7.03
Field EC	mS	-	12.55	13.26	13.01	8	12.01	12.22
Field Temperature	ºC	-	7.6	9.1	6.8	9.6	11.7	8.5
Routine Water								
pH	-	6.5 - 8.5	7.73	7.97	7.98	7.82	7.98	7.92
Conductivity (EC)	µS/cm	1000	12,000	13,000	12,000	12,000	12,000	12,000
Calcium	mg/L	-	210	230	210	220	220	220
Magnesium	mg/L	-	100	120	100	110	92	96
Sodium	mg/L	200	2800	3200	3000	3200	2900	3200
Potassium	mg/L	-	18	17	15	16	<30	14
Iron	mg/L	0.3	<0.60	<0.60	<0.60	<0.60	*<0.60*	*0.22*
Sulphate	mg/L	128-429 [2]	6300	6800	5700	6400	5700	4500
Chloride	mg/L	100	110	120	120	130	130	140
Bicarbonate	mg/L	-	1300	1300	1300	1300	1200	1100
Carbonate	mg/L	-	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0
Hydroxide	mg/L	-	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	<0.050	<0.050	<0.22	0.14	<0.10	0.17
Nitrite (N)	mg/L	0.02 - 0.20 [3]	<0.050	<0.050	<0.16	0.073	<0.10	0.11
Nitrate and Nitrate (N)	mg/L	-	<0.050	<0.020	-	0.22	<0.14	0.28
Total Dissolved Solids (TDS)	mg/L	500	10,000	11,000	9,800	11,000	9700	8700
Hardness	mg/L	-	930	1100	950	1000	930	940
Alkalinity (total as CaCO3)	mg/L	-	1100	1100	1000	1000	1000	930
Alkalinity (pp as CaCO3)	mg/L	-	<0.50	<0.50	<0.50	-	<1.0	
Ionic Balance	N/A	-	0.91	0.97	1.9	1.1	0.83	14
Water Nutrients								
Ammonia-N	mg/L	0.018-190 [4]	1.3	1.5	1.5	1.1	1.3	1.5
TKN	mg/L	-	3.5	2.6	2.3	2	2.3	2.4
Hydrocarbons								
Benzene	mg/L	0.005	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics								
COD	mg/L	-	210	78	74	85	51	68
TOC	mg/L	-	-	-	-	-	-	
DOC	mg/L	-	18	15	17	15	15	13
Oil & Grease	mg/L	-	-	-	-	-	-	
Metals								
Aluminum	mg/L	0.0007 / 0.05 [5]	0.0045	0.0038	0.016	0.27	<0.0030	<0.0030
Antimony	mg/L	0.006	0.0016	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	0.012	0.0016	0.00085	0.0011	0.00081	0.00068
Barium	mg/L	1	<0.10	<0.10	<0.10	<0.10	<1.0	0.014
Beryllium	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Boron	mg/L	1	0.40	0.48	0.46	0.48	0.46	0.39
Cadmium	mg/L	0.00004-0.00037 [2]	0.00011	0.00046	0.000083	0.00014	0.000028	<0.000020
Chromium	mg/L	0.05	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	0.0093	0.0054	0.0028	0.0033	0.0018	
Copper	mg/L	0.007	0.0012	0.0036	0.0022	0.001	0.00023	0.00029
Lead	mg/L	0.001-0.007 [2]	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	0.43	0.54	0.47	0.52	<2.0	
Manganese	mg/L	0.05	0.68	0.85	0.67	0.57	0.52	0.6
Mercury	mg/L	0.000005	<0.0000050	<0.0000020	<0.0000020	0.0000037	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.0089	0.0016	0.0012	0.007	0.0010	
Nickel	mg/L	0.007-0.170 [2]	0.031	0.013	0.0066	0.0089	0.0037	0.005
Phosphorus	mg/L	-	<1.0	<1.0	<1.0	<1.0	<10	
Selenium	mg/L	0.002	0.00079	0.00046	<0.00020	0.00028	0.00063	<0.00020
Silicon	mg/L	-	3.9	4.7	4.7	4.6	<10	
Silver	mg/L	0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	4.3	5.1	4.7	5.1	4.6	
Sulphur	mg/L	-	2000	2300	2000	2200	2100	
Thallium	mg/L	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
Tin	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Titanium	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Uranium	mg/L	0.01	0.0027	0.00085	0.00084	0.0006	0.00045	0.00049
Vanadium	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Zinc	mg/L	0.03	0.0055	0.0040	<0.0030	<0.0030	<0.0030	<0.0030
Volatile Organic Compounds (VOCs)								
Bromodichloromethane	mg/L	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E33A: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 33A					
			May-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements								
Field pH	-	-	8.6	8.66	-	8.97	8.54	8.81
Field EC	mS	-	2.54	2.01	-	2.37	1.859	1.768
Field Temperature	ºC	-	6.9	7.0	-	10.9	9.6	8.1
Routine Water								
pH	-	6.5 - 8.5	8.32	8.52	8.52	8.57	8.72	8.45
Conductivity (EC)	µS/cm	1000	3300	2100	1800	1800	1800	1800
Calcium	mg/L	-	35	7.4	4.7	6.4	3.6	4
Magnesium	mg/L	-	10	1.4	0.7	0.81	0.41	0.52
Sodium	mg/L	200	930	480	390	460	410	450
Potassium	mg/L	-	5.8	2.2	1.4	2	1.5	1.5
Iron	mg/L	0.3	<0.060	0.60	<0.060	1.2	0.34	<0.060
Sulphate	mg/L	128-429 [2]	860	230	130	75	51	59
Chloride	mg/L	100	28	27	24	28	24	24
Bicarbonate	mg/L	-	1100	990	990	1100	960	1000
Carbonate	mg/L	-	2.6	16	18	30	60	15
Hydroxide	mg/L	-	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	<0.010	<0.010	<0.044	0.021	<0.010	<0.010
Nitrite (N)	mg/L	0.02 - 0.20 [3]	<0.010	<0.010	<0.033	<0.010	<0.010	<0.010
Nitrate and Nitrate (N)	mg/L	-	<0.010	<0.020	<0.010	0.021	<0.014	<0.014
Total Dissolved Solids (TDS)	mg/L	500	2400	1200	1100	1100	1000	1100
Hardness	mg/L	-	130	24	15	19	11	12
Alkalinity (total as CaCO3)	mg/L	-	870	840	840	930	890	860
Alkalinity (pp as CaCO3)	mg/L	-	2.2	13	15	-	50	
Ionic Balance	N/A	-	1.2	0.96	7.7	0.47	3.2	2.5
Water Nutrients								
Ammonia-N	mg/L	0.018-190 [4]	1.3	0.89	0.79	0.7	1.4	0.58
TKN	mg/L	-	8.0	2.6	2.4	1.5	9.2	1.1
Hydrocarbons								
Benzene	mg/L	0.005	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics								
COD	mg/L	-	460	140	130	110	730	67
TOC	mg/L	-	-	-	-	-	-	
DOC	mg/L	-	39	33	25	26	23	27
Oil & Grease	mg/L	-	-	-	-	-	-	
Metals								
Aluminum	mg/L	0.0007 / 0.05 [5]	0.0044	0.66	0.005	0.22	0.081	0.0083
Antimony	mg/L	0.006	0.00076	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	0.0089	0.0042	0.0018	0.0056	0.0011	0.00088
Barium	mg/L	1	0.070	0.080	0.053	0.11	0.059	0.024
Beryllium	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Boron	mg/L	1	0.50	0.71	0.68	0.82	0.87	0.75
Cadmium	mg/L	0.00004-0.00037 [2]	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Chromium	mg/L	0.05	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	0.0032	0.0016	0.00057	0.0016	0.00030	
Copper	mg/L	0.007	0.0017	0.028	<0.00020	0.0012	0.00087	0.0019
Lead	mg/L	0.001-0.007 [2]	<0.00020	0.00094	<0.00020	0.00073	<0.00020	<0.00020
Lithium	mg/L	-	0.20	0.089	0.07	0.087	0.078	
Manganese	mg/L	0.05	0.13	0.058	0.027	0.081	0.037	0.069
Mercury	mg/L	0.000005	<0.0000050	<0.0000060	<0.0000020	0.000016	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.023	0.018	0.016	0.022	0.021	0.0026
Nickel	mg/L	0.007-0.170 [2]	0.016	0.0083	0.0022	0.009	0.00074	0.0027
Phosphorus	mg/L	-	<0.10	0.17	<0.10	0.11	0.16	
Selenium	mg/L	0.002	0.00058	<0.00020	<0.00020	0.00028	<0.00020	<0.00020
Silicon	mg/L	-	3.5	3.9	3.3	3.8	3.9	
Silver	mg/L	0.0001	<0.00010	<0.00010	<0.0001	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	0.7	0.16	0.093	0.12	0.073	
Sulphur	mg/L	-	360	64	35	35	16	
Thallium	mg/L	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
Tin	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Titanium	mg/L	-	<0.0010	0.0095	<0.0010	0.0034	0.0015	
Uranium	mg/L	0.01	0.0096	0.0035	0.0012	0.0013	0.00054	0.00096
Vanadium	mg/L	-	0.0015	0.0040	0.0014	0.003	<0.0010	
Zinc	mg/L	0.03	<0.0030	<0.0030	<0.0030	0.004	<0.0030	<0.0030
Volatile Organic Compounds (VOCs)								
Bromodichloromethane	mg/L	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E33B: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW 33B					
			May-15	Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements								
Field pH	-	-	7.5	7.48	-	7.88	7.36	7.35
Field EC	mS	-	5.18	5.34	-	5.65	5.42	5.85
Field Temperature	ºC	-	6.0	6.9	-	11.6	13.0	7.6
Routine Water								
pH	-	6.5 - 8.5	7.89	8.15	7.99	7.82	7.96	7.85
Conductivity (EC)	µS/cm	1000	5000	5400	5600	5500	5600	5800
Calcium	mg/L	-	91	110	130	120	130	120
Magnesium	mg/L	-	26	38	42	39	40	40
Sodium	mg/L	200	1200	1300	1200	1300	1300	1400
Potassium	mg/L	-	6.9	6.9	6.1	6.4	6.6	6
Iron	mg/L	0.3	<0.060	0.35	<0.6	<0.060	1.6	0.66
Sulphate	mg/L	128-429 [2]	1900	2000	2100	2100	1900	2200
Chloride	mg/L	100	21	20	21	22	23	23
Bicarbonate	mg/L	-	1000	1100	1200	1300	1200	1200
Carbonate	mg/L	-	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0
Hydroxide	mg/L	-	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	<0.010	<0.050	0.68	0.097	0.011	0.017
Nitrite (N)	mg/L	0.02 - 0.20 [3]	<0.010	<0.050	0.2	0.056	0.023	0.015
Nitrate and Nitrate (N)	mg/L	-	<0.010	<0.020	0.21	0.15	0.034	0.032
Total Dissolved Solids (TDS)	mg/L	500	3700	4000	4100	4200	4000	4400
Hardness	mg/L	-	340	440	490	460	490	470
Alkalinity (total as CaCO3)	mg/L	-	850	920	1000	1000	1000	1000
Alkalinity (pp as CaCO3)	mg/L	-	<0.50	<0.50	<0.50	-	<1.0	
Ionic Balance	N/A	-	1.0	1.0	0.82	1.3	2.4	4.1
Water Nutrients								
Ammonia-N	mg/L	0.018-190 [4]	0.83	0.78	0.6	0.44	0.58	0.82
TKN	mg/L	-	5.3	2.6	2.7	2.3	2.4	1.9
Hydrocarbons								
Benzene	mg/L	0.005	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	<0.00080	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Organics								
COD	mg/L	-	280	140	150	120	150	116
TOC	mg/L	-	-	-	-	-	-	
DOC	mg/L	-	45	44	49	48	59	48
Oil & Grease	mg/L	-	-	-	-	-	-	
Metals								
Aluminum	mg/L	0.0007 / 0.05 [5]	0.0056	0.060	0.0049	0.073	0.19	0.1
Antimony	mg/L	0.006	0.0013	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	0.0065	0.0013	0.0014	0.0021	0.0013	0.0012
Barium	mg/L	1	0.038	0.031	<0.10	0.025	0.028	0.022
Beryllium	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Boron	mg/L	1	0.23	0.28	0.25	0.27	0.29	0.25
Cadmium	mg/L	0.00004-0.00037 [2]	<0.000020	<0.000020	0.000044	0.00002	0.000020	<0.000020
Chromium	mg/L	0.05	<0.0010	0.0020	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	0.0030	0.0020	0.0024	0.0026	0.0013	
Copper	mg/L	0.007	0.00037	0.0027	0.0028	0.0012	0.00038	0.00041
Lead	mg/L	0.001-0.007 [2]	<0.00020	0.00024	<0.00020	<0.00020	0.00039	0.00022
Lithium	mg/L	-	0.30	0.35	0.37	0.34	0.35	
Manganese	mg/L	0.05	0.19	0.24	0.25	0.23	0.22	0.23
Mercury	mg/L	0.000005	<0.0000050	0.00023	0.0000076	0.0000053	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.0070	0.00038	0.0008	0.00077	0.00044	
Nickel	mg/L	0.007-0.170 [2]	0.015	0.0096	0.011	0.01	0.0090	0.0099
Phosphorus	mg/L	-	<0.10	<0.10	<1.0	<0.10	<0.10	
Selenium	mg/L	0.002	0.00064	0.00038	0.00043	0.00048	0.00060	0.00046
Silicon	mg/L	-	3.9	5.0	4.6	4.9	5.0	
Silver	mg/L	0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	1.6	2.1	2.3	2.3	2.1	
Sulphur	mg/L	-	610	720	690	720	730	
Thallium	mg/L	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
Tin	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Titanium	mg/L	-	<0.0010	0.0033	<0.0010	<0.0010	0.0066	
Uranium	mg/L	0.01	0.0021	0.00016	0.00026	0.00014	<0.00010	<0.00010
Vanadium	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Zinc	mg/L	0.03	<0.0030	0.0056	<0.0030	<0.0030	<0.0030	<0.0030
Volatile Organic Compounds (VOCs)								
Bromodichloromethane	mg/L	-	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E35-Deep: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW-35-DEEP				
			Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements							
Field pH	-	-	8.22	8.1	7.66	7.90	7.64
Field EC	mS	-	4.90	3.92	-	5.39	5270
Field Temperature	°C	-	8.9	10	13.2	10.4	9.8
Routine Water							
pH	-	6.5 - 8.5	8.19	8.13	8.14	8.29	8.11
Conductivity (EC)	µS/cm	1000	4700	5300	5100	5300	5600
Calcium	mg/L	-	18	20	20	21	24
Magnesium	mg/L	-	2.1	2.1	2	2.0	2.4
Sodium	mg/L	200	970	1100	1100	1300	1200
Potassium	mg/L	-	3.3	3.8	3.7	3.6	3.9
Iron	mg/L	0.3	<0.060	<0.060	<0.060	<0.060	
Sulphate	mg/L	128-429 [2]	25	13	25	27	23
Chloride	mg/L	100	1100	1400	1400	1400	1500
Bicarbonate	mg/L	-	560	500	540	530	440
Carbonate	mg/L	-	<0.50	<0.50	<1.0	<1.0	<1.0
Hydroxide	mg/L	-	<0.50	<0.50	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	0.25	<0.22	<0.02	<0.010	<0.010
Nitrite (N)	mg/L	0.02 - 0.20 [3]	<0.010	<0.16	<0.010	<0.010	<0.010
Nitrate and Nitrate (N)	mg/L	-	0.25	<0.050	<0.020	<0.014	<0.014
Total Dissolved Solids (TDS)	mg/L	500	2400	2800	2800	3000	3000
Hardness	mg/L	-	53	58	59	60	69
Alkalinity (total as CaCO3)	mg/L	-	460	410	450	430	360
Alkalinity (pp as CaCO3)	mg/L	-	<0.50	<0.50	-	<1.0	-
Ionic Balance	N/A	-	1.0	2.3	1.7	9.5	2.7
Water Nutrients		-	-	-	-	-	
Ammonia-N	mg/L	0.018-190 [4]	1.1	1.2	1	1.1	1.5
TKN	mg/L	-	2.2	2.5	2.2	1.8	2
Hydrocarbons							
Benzene	mg/L	0.005	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	<0.10	<0.10	<0.10	<0.10	<0.10
Organics							
COD	mg/L	-	110	130	100	110	144
TOC	mg/L	-	-	-	-	-	-
DOC	mg/L	-	18	-	19	19	29
Oil & Grease	mg/L	-	-	-	-	-	-
Metals							
Aluminum	mg/L	0.0007 / 0.05 [5]	0.017	0.0031	0.0034	0.0044	0.0054
Antimony	mg/L	0.006	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	0.0018	0.00081	0.00089	0.00092	0.00087
Barium	mg/L	1	0.27	0.41	0.38	0.39	0.42
Beryllium	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010	-
Boron	mg/L	1	0.69	0.75	0.81	0.75	0.78
Cadmium	mg/L	0.00004-0.00037 [2]	0.000040	<0.000020	<0.000020	0.000040	<0.000020
Chromium	mg/L	0.05	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	0.00069	0.00052	0.00051	0.00051	-
Copper	mg/L	0.007	0.00094	0.00048	0.00079	0.00034	<0.00020
Lead	mg/L	0.001-0.007 [2]	<0.00020	<0.00020	<0.00020	<0.00020	-
Lithium	mg/L	-	0.15	0.19	0.17	0.17	-
Manganese	mg/L	0.05	0.048	0.053	0.061	0.082	0.12
Mercury	mg/L	0.000005	0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.021	0.017	0.02	0.018	-
Nickel	mg/L	0.007-0.170 [2]	0.0038	0.0013	0.0017	0.0017	0.0018
Phosphorus	mg/L	-	<0.10	<0.10	<0.10	<0.10	-
Selenium	mg/L	0.002	0.00020	<0.00020	0.0003	<0.00020	<0.00020
Silicon	mg/L	-	3.5	3.6	3.6	3.7	-
Silver	mg/L	0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	0.36	0.5	0.45	0.50	-
Sulphur	mg/L	-	9.2	4.6	8	8.2	-
Thallium	mg/L	-	<0.00020	<0.00020	<0.00020	<0.00020	-
Tin	mg/L	-	<0.0010	0.0013	<0.0010	<0.0010	-
Titanium	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010	-
Uranium	mg/L	0.01	0.0023	0.00064	0.00075	0.00078	0.00081
Vanadium	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010	-
Zinc	mg/L	0.03	<0.0030	0.16	0.48	0.030	<0.0030
Volatile Organic Compounds (VOCs)							
Bromodichloromethane	mg/L	-	-	-	-	<0.00050	-
Bromoform	mg/L	-	-	-	-	<0.00050	-
Bromomethane	mg/L	-	-	-	-	<0.0020	-
Carbon tetrachloride	mg/L	0.002	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	<0.0010	-
Chloroform	mg/L	0.08	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	<0.0020	-
Dibromochloromethane	mg/L	0.1	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	<0.00020	-
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	<0.00050	-
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	<0.00050	-
1,2-Dichloroethane	mg/L	0.005	-	-	-	<0.00050	-
1,1-Dichloroethene	mg/L	0.014	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	<0.00050	-
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	<0.00050	-
1,2-Dichloropropane	mg/L	-	-	-	-	<0.00050	-
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	<0.00050	-
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	<0.00050	-
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	<0.00050	-
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	<0.0010	-
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	<0.0020	-
Tetrachloroethene	mg/L	0.01	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	<0.00050	-
1,1,2-Trichloroethane	mg/L	-	-	-	-	<0.00050	-
Trichloroethene	mg/L	0.005	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	<0.00050	-
Trihalomethanes	mg/L	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	<0.00050	-
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	<0.00050	-
Vinyl chloride	mg/L	0.002	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E35A: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW-35A				
			Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements							
Field pH	-	-	-	-	-	8.6	
Field EC	mS	-	-	-	-	1.992	
Field Temperature	°C	-	-	-	-	12.5	
Routine Water							
pH	-	6.5 - 8.5	8.60	8.61	8.44	-	8.47
Conductivity (EC)	µS/cm	1000	1500	1600	1600	-	1700
Calcium	mg/L	-	3.8	3.6	3.6	-	3.4
Magnesium	mg/L	-	0.36	0.34	0.32	-	0.3
Sodium	mg/L	200	370	390	410	-	450
Potassium	mg/L	-	2.2	3.1	2.2	-	1.9
Iron	mg/L	0.3	0.11	<0.060	0.28	-	0.069
Sulphate	mg/L	128-429 [2]	41	21	17	-	16
Chloride	mg/L	100	36	36	40	-	40
Bicarbonate	mg/L	-	900	960	1000	-	960
Carbonate	mg/L	-	26	23	16	-	18
Hydroxide	mg/L	-	<0.50	<0.50	<1.0	-	<1.0
Nitrate (N)	mg/L	3	<0.010	<0.044	<0.020	-	<0.010
Nitrite (N)	mg/L	0.02 - 0.20 [3]	<0.010	<0.033	<0.010	-	<0.010
Nitrate and Nitrate (N)	mg/L	-	<0.020	<0.010	<0.020	-	<0.014
Total Dissolved Solids (TDS)	mg/L	500	930	950	990	-	1000
Hardness	mg/L	-	11	10	10	-	9.7
Alkalinity (total as CaCO3)	mg/L	-	780	830	860	-	820
Alkalinity (pp as CaCO3)	mg/L	-	22	19	-	-	
Ionic Balance	N/A	-	0.95	2.4	1.2	-	5.6
Water Nutrients							
Ammonia-N	mg/L	0.018-190 [4]	0.83	-	0.33	0.68	0.37
TKN	mg/L	-	12	-	7	3.7	3.4
Hydrocarbons							
Benzene	mg/L	0.005	<0.00040	0.00049	0.003	<0.00040	-
Toluene	mg/L	0.024	<0.00040	<0.00040	<0.00040	<0.00040	-
Ethylbenzene	mg/L	0.0016	<0.00040	<0.00040	<0.00040	<0.00040	-
Xylene	mg/L	0.02	<0.00080	<0.00080	<0.00089	<0.00089	-
F1 (C6-C10)	mg/L	2.2	<0.10	<0.10	<0.10	<0.10	-
F2 (>C10-C16)	mg/L	1.1	<0.27	<0.27	-	<0.10	-
Organics							
COD	mg/L	-	1100	-	310	140	
TOC	mg/L	-	-	-	-	-	
DOC	mg/L	-	15	-	-	-	18
Oil & Grease	mg/L	-	-	-	-	-	
Metals							
Aluminum	mg/L	0.0007 / 0.05 [5]	0.092	0.055	0.12	-	0.0076
Antimony	mg/L	0.006	<0.00060	<0.00060	<0.00060	-	<0.00060
Arsenic	mg/L	0.005	0.0035	0.0023	0.0015	-	0.0011
Barium	mg/L	1	0.080	0.13	0.084	-	
Beryllium	mg/L	-	<0.0010	<0.0010	<0.0010	-	0.078
Boron	mg/L	1	0.75	0.74	0.79	-	0.82
Cadmium	mg/L	0.00004-0.00037 [2]	<0.000020	<0.000020	<0.000020	-	<0.000020
Chromium	mg/L	0.05	<0.0010	<0.0010	<0.0010	-	<0.0010
Cobalt	mg/L	-	0.00042	0.00035	0.00035	-	
Copper	mg/L	0.007	0.0011	0.00065	0.0022	-	0.0025
Lead	mg/L	0.001-0.007 [2]	<0.00020	<0.00020	<0.00020	-	<0.00020
Lithium	mg/L	-	0.068	0.069	0.074	-	
Manganese	mg/L	0.05	0.012	0.013	0.028	-	0.017
Mercury	mg/L	0.000005	<0.000020	<0.0000020	-	-	<0.0000019
Molybdenum	mg/L	-	0.020	0.016	0.016	-	
Nickel	mg/L	0.007-0.170 [2]	0.0053	0.0034	0.0016	-	0.0017
Phosphorus	mg/L	-	0.15	1.2	0.58	-	
Selenium	mg/L	0.002	<0.00020	<0.00020	<0.00020	-	0.00026
Silicon	mg/L	-	3.7	3.5	4.4	-	
Silver	mg/L	0.0001	<0.00010	<0.00010	<0.00010	-	<0.00010
Strontium	mg/L	-	0.076	0.086	0.081	-	
Sulphur	mg/L	-	11	5.9	5.4	-	
Thallium	mg/L	-	<0.00020	<0.00020	<0.00020	-	
Tin	mg/L	-	<0.0010	<0.0010	<0.0010	-	
Titanium	mg/L	-	0.0015	<0.0010	0.0028	-	
Uranium	mg/L	0.01	0.0013	0.00095	0.00073	-	0.00076
Vanadium	mg/L	-	0.0014	0.0012	0.0015	-	
Zinc	mg/L	0.03	0.0035	<0.0030	<0.0030	-	<0.0030
Volatile Organic Compounds (VOCs)							
Bromodichloromethane	mg/L	-	-	-	-	<0.00050	-
Bromoform	mg/L	-	-	-	-	<0.00050	-
Bromomethane	mg/L	-	-	-	-	<0.0020	-
Carbon tetrachloride	mg/L	0.002	-	-	-	<0.00050	-
Chlorobenzene	mg/L	0.0013	-	-	-	<0.00050	-
Chloroethane	mg/L	-	-	-	-	<0.0010	-
Chloroform	mg/L	0.08	-	-	-	<0.00050	-
Chloromethane	mg/L	-	-	-	-	<0.0020	-
Dibromochloromethane	mg/L	0.1	-	-	-	<0.0010	-
1,2-Dibromoethane	mg/L	-	-	-	-	<0.00020	-
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	<0.00050	-
1,3-Dichlorobenzene	mg/L	-	-	-	-	<0.00050	-
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	<0.00050	-
1,1-Dichloroethane	mg/L	-	-	-	-	<0.00050	-
1,2-Dichloroethane	mg/L	0.005	-	-	-	<0.00050	-
1,1-Dichloroethene	mg/L	0.014	-	-	-	<0.00050	-
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	<0.00050	-
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	<0.00050	-
1,2-Dichloropropane	mg/L	-	-	-	-	<0.00050	-
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	<0.00050	-
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	<0.00050	-
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	<0.00050	-
Methylene Chloride	mg/L	0.05	-	-	-	<0.0020	-
Methyl Methacrylate	mg/L	0.47	-	-	-	<0.00050	-
Styrene	mg/L	-	-	-	-	<0.00050	-
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	<0.0010	-
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	<0.0020	-
Tetrachloroethene	mg/L	0.01	-	-	-	<0.00050	-
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	<0.0010	-
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	<0.0010	-
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	<0.00050	-
1,1,1-Trichloroethane	mg/L	-	-	-	-	<0.00050	-
1,1,2-Trichloroethane	mg/L	-	-	-	-	<0.00050	-
Trichloroethene	mg/L	0.005	-	-	-	<0.00050	-
Trichlorofluoromethane	mg/L	-	-	-	-	<0.00050	-
Trihalomethanes	mg/L	-	-	-	-	<0.0013	-
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	<0.00050	-
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	<0.00050	-
Vinyl chloride	mg/L	0.002	-	-	-	<0.00050	-

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E35B: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW-35B				
			Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements							
Field pH	-	-	7.83	7.8	7.05	7.70	7.70
Field EC	mS	-	8.08	7.27	8.53	7.97	7.41
Field Temperature	ºC	-	7.6	8	7.1	9.9	7.5
Routine Water							
pH	-	6.5 - 8.5	8.16	8.22	8.12	8.27	8.21
Conductivity (EC)	µS/cm	1000	7700	7600	7700	7800	7800
Calcium	mg/L	-	99	98	110	120	6100
Magnesium	mg/L	-	14	14	15	16	15
Sodium	mg/L	200	1800	1800	2000	2100	2000
Potassium	mg/L	-	7.8	8.6	8.4	9.1	7.8
Iron	mg/L	0.3	<0.60	<0.60	<0.60	*<0.60*	*<0.60*
Sulphate	mg/L	128-429 [2]	3700	3300	3500	3400	3600
Chloride	mg/L	100	5.2	6.8	6.3	6.3	6.6
Bicarbonate	mg/L	-	790	780	830	820	780
Carbonate	mg/L	-	<0.50	<0.50	<1.0	<1.0	<1.0
Hydroxide	mg/L	-	<0.50	<0.50	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	0.42	2.5	0.76	1.6	1.5
Nitrite (N)	mg/L	0.02 - 0.20 [3]	<0.010	<0.16	<0.01	0.019	0.026
Nitrate and Nitrate (N)	mg/L	-	0.42	-	0.76	1.6	1.5
Total Dissolved Solids (TDS)	mg/L	500	6000	5700	6000	6100	6100
Hardness	mg/L	-	300	300	330	360	340
Alkalinity (total as CaCO3)	mg/L	-	650	640	680	680	640
Alkalinity (pp as CaCO3)	mg/L	-	<0.50	<0.50	-	<1.0	
Ionic Balance	N/A	-	0.95	2.3	2.8	8.0	2.7
Water Nutrients							
Ammonia-N	mg/L	0.018-190 [4]	1.9	2	1.3	1.2	1.1
TKN	mg/L	-	2.7	2.5	2	1.7	1.5
Hydrocarbons							
Benzene	mg/L	0.005	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	<0.00040	<0.00040	<0.00040	0.0004	0.0004
Ethylbenzene	mg/L	0.0016	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	<0.10	<0.10	<0.10	<0.10	<0.10
Organics							
COD	mg/L	-	37	66	33	37	28
TOC	mg/L	-	-	-	-	-	
DOC	mg/L	-	8.2	12	10	10	8.9
Oil & Grease	mg/L	-	-	-	-	-	
Metals							
Aluminum	mg/L	0.0007 / 0.05 [5]	0.012	0.0035	0.0047	0.0032	0.0032
Antimony	mg/L	0.006	0.00069	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	0.0019	0.0014	0.0011	0.0011	0.0011
Barium	mg/L	1	<0.10	<0.1	<0.10	<0.10	<0.10
Beryllium	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Boron	mg/L	1	0.70	0.71	0.82	0.84	0.84
Cadmium	mg/L	0.00004-0.00037 [2]	<0.000020	0.000022	<0.000020	0.000065	0.000065
Chromium	mg/L	0.05	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	0.00065	0.00054	0.00032	0.00037	0.00037
Copper	mg/L	0.007	0.0018	0.0032	0.0016	0.0026	0.0026
Lead	mg/L	0.001-0.007 [2]	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	0.50	0.52	0.55	0.66	0.66
Manganese	mg/L	0.05	0.066	0.074	0.049	0.049	0.049
Mercury	mg/L	0.000005	<0.0000020	<0.0000020	0.0000027	<0.0000020	<0.0000020
Molybdenum	mg/L	-	0.0055	0.0041	0.0031	0.0031	0.0031
Nickel	mg/L	0.007-0.170 [2]	0.0041	0.0036	0.0028	0.0033	0.0033
Phosphorus	mg/L	-	<1.0	<1.0	<1.0	<1.0	<1.0
Selenium	mg/L	0.002	0.00082	0.00053	0.00034	0.00049	0.00049
Silicon	mg/L	-	3.1	3.1	3.3	3.5	3.5
Silver	mg/L	0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	2.2	2.3	2.6	2.5	2.5
Sulphur	mg/L	-	1200	1200	1200	1300	1300
Thallium	mg/L	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Tin	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Titanium	mg/L	-	<0.0010	<0.0010	<0.0010	0.0011	0.0011
Uranium	mg/L	0.01	0.0023	0.0015	0.001	0.0010	0.0010
Vanadium	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc	mg/L	0.03	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Volatile Organic Compounds (VOCs)							
Bromodichloromethane	mg/L	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E36-Deep: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW-36-DEEP				
			Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements							
Field pH	-	-	8.52	8	7.38	8.05	7.78
Field EC	mS	-	3.83	4.84	4.9	5.28	4760
Field Temperature	ºC	-	7.7	10.3	10.9	12.3	11.4
Routine Water							
pH	-	6.5 - 8.5	8.51	8.33	8.19	8.39	8.32
Conductivity (EC)	µS/cm	1000	3600	4800	4700	4800	4800
Calcium	mg/L	-	17	18	18	18	19
Magnesium	mg/L	-	2.4	2.1	2	1.9	2.1
Sodium	mg/L	200	800	1100	1100	1100	1100
Potassium	mg/L	-	5.4	3.9	3.7	3.7	3.6
Iron	mg/L	0.3	0.41	<0.060	<0.060	<0.060	
Sulphate	mg/L	128-429 [2]	46	11	10	11	12
Chloride	mg/L	100	770	1100	1000	980	1100
Bicarbonate	mg/L	-	650	940	960	900	910
Carbonate	mg/L	-	13	3.1	<1.0	16	3.8
Hydroxide	mg/L	-	<0.50	<0.50	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	0.018	<0.044	<0.020	<0.010	<0.010
Nitrite (N)	mg/L	0.02 - 0.20 [3]	0.043	<0.033	<0.010	<0.010	<0.010
Nitrate and Nitrate (N)	mg/L	-	0.061	<0.01	<0.020	<0.014	<0.014
Total Dissolved Solids (TDS)	mg/L	500	2000	2600	2600	2500	2700
Hardness	mg/L	-	52	53	53	52	57
Alkalinity (total as CaCO3)	mg/L	-	550	770	780	770	750
Alkalinity (pp as CaCO3)	mg/L	-	11	2.6	-	13	-
Ionic Balance	N/A	-	1.1	2.3	2.6	4.7	3
Water Nutrients							
Ammonia-N	mg/L	0.018-190 [4]	0.92	1.3	1.3	1.3	1.3
TKN	mg/L	-	1.9	2.6	2.8	2.1	1.9
Hydrocarbons							
Benzene	mg/L	0.005	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	<0.10	<0.10	<0.10	<0.10	<0.10
Organics							
COD	mg/L	-	99	140	130	140	144
TOC	mg/L	-	-	-	-	-	-
DOC	mg/L	-	12	-	35	33	33
Oil & Grease	mg/L	-	-	-	-	-	-
Metals							
Aluminum	mg/L	0.0007 / 0.05 [5]	0.19	0.0069	0.0039	0.0059	0.0034
Antimony	mg/L	0.006	0.0030	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	0.0088	0.0024	0.0025	0.0020	0.0019
Barium	mg/L	1	0.23	0.32	0.32	0.34	0.37
Beryllium	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010	-
Boron	mg/L	1	0.71	0.97	1	1.0	1.0
Cadmium	mg/L	0.00004-0.00037 [2]	0.000070	<0.000020	<0.000020	<0.000020	<0.000020
Chromium	mg/L	0.05	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	0.00082	0.0012	0.001	0.0010	-
Copper	mg/L	0.007	0.011	0.0006	0.00085	0.00029	<0.00020
Lead	mg/L	0.001-0.007 [2]	0.00094	<0.00020	<0.00020	<0.00020	-
Lithium	mg/L	-	0.11	0.19	0.18	0.19	-
Manganese	mg/L	0.05	0.030	0.071	0.072	0.13	0.58
Mercury	mg/L	0.000005	0.00019	<0.0000020	<0.0000020	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.041	0.011	0.014	0.013	-
Nickel	mg/L	0.007-0.170 [2]	0.0086	0.0046	0.005	0.0046	0.0052
Phosphorus	mg/L	-	0.13	<0.10	<0.10	<0.10	-
Selenium	mg/L	0.002	0.00096	0.0003	0.00064	<0.00020	<0.00020
Silicon	mg/L	-	2.6	3.6	3.6	3.5	-
Silver	mg/L	0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	0.34	0.46	0.4	0.42	-
Sulphur	mg/L	-	17	3.3	3.5	3.7	-
Thallium	mg/L	-	<0.00020	<0.00020	<0.00020	<0.00020	-
Tin	mg/L	-	<0.0010	0.003	0.0064	0.0025	-
Titanium	mg/L	-	0.0030	<0.0010	<0.0010	<0.0010	-
Uranium	mg/L	0.01	0.0066	0.0016	0.0016	0.0015	0.0016
Vanadium	mg/L	-	0.0078	<0.0010	<0.0010	<0.0010	-
Zinc	mg/L	0.03	0.0068	0.1	0.11	0.010	<0.0030
Volatile Organic Compounds (VOCs)							
Bromodichloromethane	mg/L	-	-	-	-	<0.00050	-
Bromoform	mg/L	-	-	-	-	<0.00050	-
Bromomethane	mg/L	-	-	-	-	<0.0020	-
Carbon tetrachloride	mg/L	0.002	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	<0.0010	-
Chloroform	mg/L	0.08	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	<0.0020	-
Dibromochloromethane	mg/L	0.1	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	<0.00020	-
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	<0.00050	-
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	<0.00050	-
1,2-Dichloroethane	mg/L	0.005	-	-	-	<0.00050	-
1,1-Dichloroethene	mg/L	0.014	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	<0.00050	-
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	<0.00050	-
1,2-Dichloropropane	mg/L	-	-	-	-	<0.00050	-
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	<0.00050	-
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	<0.00050	-
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	<0.00050	-
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	<0.0010	-
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	<0.0020	-
Tetrachloroethene	mg/L	0.01	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	<0.00050	-
1,1,2-Trichloroethane	mg/L	-	-	-	-	<0.00050	-
Trichloroethene	mg/L	0.005	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	<0.00050	-
Trihalomethanes	mg/L	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	<0.00050	-
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	<0.00050	-
Vinyl chloride	mg/L	0.002	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E36A: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	MW-36A				
			Jun-16	Jun-17	Jun-18	Jun-19	Jun-20
Field Measurements							
Field pH	-	-	8.87	8.8	8.57	8.73	8.6
Field EC	mS	-	1.588	1.633	1.609	1.68	1.57
Field Temperature	ºC	-	9.1	6.5	9.2	9.9	7.8
Routine Water							
pH	-	6.5 - 8.5	8.66	8.52	8.52	8.71	8.55
Conductivity (EC)	µS/cm	1000	1600	1600	1600	1600	1600
Calcium	mg/L	-	3.9	3.3	3.2	3.2	960
Magnesium	mg/L	-	0.41	0.32	0.33	0.23	0.42
Sodium	mg/L	200	390	380	410	380	440
Potassium	mg/L	-	1.4	1.3	1.4	1.5	1.4
Iron	mg/L	0.3	<0.060	<0.060	<0.060	0.076	0.1
Sulphate	mg/L	128-429 [2]	<1.0	2.9	<1.0	1.8	<1.0
Chloride	mg/L	100	7.4	7.1	7.1	8.9	8.2
Bicarbonate	mg/L	-	970	1000	1000	960	980
Carbonate	mg/L	-	25	18	24	58	26
Hydroxide	mg/L	-	<0.50	<0.50	<1.0	<1.0	<1.0
Nitrate (N)	mg/L	3	<0.010	<0.044	<0.020	0.018	<0.010
Nitrite (N)	mg/L	0.02 - 0.20 [3]	<0.010	<0.033	<0.010	<0.010	<0.010
Nitrate and Nitrate (N)	mg/L	-	<0.020	<0.010	<0.020	0.018	<0.014
Total Dissolved Solids (TDS)	mg/L	500	900	930	960	930	960
Hardness	mg/L	-	12	9.5	9.3	9	11
Alkalinity (total as CaCO3)	mg/L	-	830	880	900	890	840
Alkalinity (pp as CaCO3)	mg/L	-	21	15	-	48	
Ionic Balance	N/A	-	1.0	2.7	0.69	3.0	6.2
Water Nutrients							
Ammonia-N	mg/L	0.018-190 [4]	0.60	0.52	0.63	0.69	0.6
TKN	mg/L	-	1.3	1.2	1	1.0	1.4
Hydrocarbons							
Benzene	mg/L	0.005	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Toluene	mg/L	0.024	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Xylene	mg/L	0.02	<0.00080	<0.00080	<0.00089	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	<0.10	<0.10	<0.10	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	<0.10	<0.10	<0.10	<0.10	<0.10
Organics							
COD	mg/L	-	55	42	44	57	47
TOC	mg/L	-	-	-	-	-	
DOC	mg/L	-	13	14	13	10	13
Oil & Grease	mg/L	-	-	-	-	-	
Metals							
Aluminum	mg/L	0.0007 / 0.05 [5]	0.015	0.0093	0.0071	0.047	0.0043
Antimony	mg/L	0.006	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060
Arsenic	mg/L	0.005	0.0012	0.00075	0.001	0.00069	0.00095
Barium	mg/L	1	0.031	0.034	0.033	0.046	0.044
Beryllium	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010	
Boron	mg/L	1	0.82	0.79	0.84	0.87	0.81
Cadmium	mg/L	0.00004-0.00037 [2]	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Chromium	mg/L	0.05	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	-	0.00056	0.00043	0.00033	0.00040	
Copper	mg/L	0.007	0.0026	<0.00020	0.00041	0.00099	<0.00020
Lead	mg/L	0.001-0.007 [2]	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Lithium	mg/L	-	0.064	0.067	0.069	0.073	
Manganese	mg/L	0.05	0.022	0.032	0.039	0.033	0.23
Mercury	mg/L	0.000005	0.000017	<0.0000020	0.0000026	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.010	0.0088	0.011	0.0081	
Nickel	mg/L	0.007-0.170 [2]	0.0019	0.00085	0.0012	0.00067	0.0022
Phosphorus	mg/L	-	0.13	0.11	0.18	0.15	
Selenium	mg/L	0.002	0.00023	<0.00020	<0.00020	<0.00020	<0.00020
Silicon	mg/L	-	3.4	3.5	3.6	3.5	
Silver	mg/L	0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	0.045	0.046	0.047	0.049	
Sulphur	mg/L	-	1.0	0.72	0.95	0.45	
Thallium	mg/L	-	<0.00020	<0.00020	<0.00020	<0.00020	
Tin	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010	
Titanium	mg/L	-	<0.0010	<0.0010	<0.0010	0.0033	
Uranium	mg/L	0.01	0.00037	0.00026	0.00058	0.00018	0.0011
Vanadium	mg/L	-	0.0028	0.0021	<0.0010	0.0032	
Zinc	mg/L	0.03	0.0033	<0.0030	<0.0030	<0.0030	<0.0030
Volatile Organic Compounds (VOCs)							
Bromodichloromethane	mg/L	-	-	-	-	<0.00050	
Bromoform	mg/L	-	-	-	-	<0.00050	
Bromomethane	mg/L	-	-	-	-	<0.0020	
Carbon tetrachloride	mg/L	0.002	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.0013	-	-	-	<0.00050	<0.00050
Chloroethane	mg/L	-	-	-	-	<0.0010	
Chloroform	mg/L	0.08	-	-	-	<0.00050	<0.00050
Chloromethane	mg/L	-	-	-	-	<0.0020	
Dibromochloromethane	mg/L	0.1	-	-	-	<0.0010	<0.0010
1,2-Dibromoethane	mg/L	-	-	-	-	<0.00020	
1,2-Dichlorobenzene	mg/L	0.0007	-	-	-	<0.00050	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-	-	<0.00050	
1,4-Dichlorobenzene	mg/L	0.001	-	-	-	<0.00050	<0.00050
1,1-Dichloroethane	mg/L	-	-	-	-	<0.00050	
1,2-Dichloroethane	mg/L	0.005	-	-	-	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	-	-	<0.00050	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-	-	<0.00050	
1,2-Dichloroethene (trans)	mg/L	-	-	-	-	<0.00050	
1,2-Dichloropropane	mg/L	-	-	-	-	<0.00050	
1,3-Dichloropropene [cis]	mg/L	-	-	-	-	<0.00050	
1,3-Dichloropropene [trans]	mg/L	-	-	-	-	<0.00050	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	-	-	<0.00050	<0.00050
Methylene Chloride	mg/L	0.05	-	-	-	<0.0020	<0.0020
Methyl Methacrylate	mg/L	0.47	-	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	-	<0.00050	
1,1,1,2-Tetrachloroethane	mg/L	-	-	-	-	<0.0010	
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	-	<0.0020	
Tetrachloroethene	mg/L	0.01	-	-	-	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	-	-	<0.0010	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	-	-	<0.0010	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	-	-	<0.00050	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-	-	<0.00050	
1,1,2-Trichloroethane	mg/L	-	-	-	-	<0.00050	
Trichloroethene	mg/L	0.005	-	-	-	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-	-	<0.00050	
Trihalomethanes	mg/L	-	-	-	-	<0.0013	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	<0.00050	
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	<0.00050	
Vinyl chloride	mg/L	0.002	-	-	-	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E37A: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	19MW37A Nov-19	19MW37A Jun-20
Field Measurements				
Field pH	-	-	8.10	8.14
Field EC	mS	-	3.24	3.9
Field Temperature	°C	-	1.0	6.5
Routine Water				
pH	-	6.5 - 8.5	8.06	8.38
Conductivity (EC)	µS/cm	1000	3000	3800
Calcium	mg/L	-	32	26
Magnesium	mg/L	-	12	9.1
Sodium	mg/L	200	770	960
Potassium	mg/L	-	5.5	4.9
Iron	mg/L	0.3	3.8	<0.060
Sulphate	mg/L	128-429 [2]	730	1200
Chloride	mg/L	100	8.0	6.3
Bicarbonate	mg/L	-	1100	850
Carbonate	mg/L	-	<1.0	8.2
Hydroxide	mg/L	-	<1.0	<1.0
Nitrate (N)	mg/L	3	0.029	<0.010
Nitrite (N)	mg/L	0.02 - 0.20 [3]	<0.010	<0.010
Nitrate and Nitrate (N)	mg/L	-	0.029	<0.014
Total Dissolved Solids (TDS)	mg/L	500	2100	2600
Hardness	mg/L	-	130	100
Alkalinity (total as CaCO3)	mg/L	-	870	710
Alkalinity (pp as CaCO3)	mg/L	-	<1.0	
Ionic Balance	N/A	-	5.5	5.4
Water Nutrients				
Ammonia-N	mg/L	0.018-190 [4]	0.69	1.3
TKN	mg/L	-	1.3	1.5
Hydrocarbons				
Benzene	mg/L	0.005	<0.00040	<0.00040
Toluene	mg/L	0.024	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	<0.00040	<0.00040
Xylene	mg/L	0.02	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	<0.10	<0.10
Organics				
COD	mg/L	-	62	41
TOC	mg/L	-	-	
DOC	mg/L	-	10	11
Oil & Grease	mg/L	-	-	
Metals				
Aluminum	mg/L	0.0007 / 0.05 [5]	0.90	0.01
Antimony	mg/L	0.006	<0.00060	<0.00060
Arsenic	mg/L	0.005	0.0019	0.0006
Barium	mg/L	1	0.018	<0.010
Beryllium	mg/L	-	<0.0010	
Boron	mg/L	1	0.60	0.69
Cadmium	mg/L	0.00004-0.00037 [2]	0.000051	<0.000020
Chromium	mg/L	0.05	0.0011	<0.0010
Cobalt	mg/L	-	0.0027	
Copper	mg/L	0.007	0.0029	0.0005
Lead	mg/L	0.001-0.007 [2]	0.0042	<0.00020
Lithium	mg/L	-	0.19	
Manganese	mg/L	0.05	0.43	0.28
Mercury	mg/L	0.000005	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.00061	0.0013
Nickel	mg/L	0.007-0.170 [2]	0.0061	0.0017
Phosphorus	mg/L	-	0.16	
Selenium	mg/L	0.002	<0.00020	<0.0002
Silicon	mg/L	-	6.1	
Silver	mg/L	0.0001	<0.00010	<0.0001
Strontium	mg/L	-	0.55	
Sulphur	mg/L	-	370	
Thallium	mg/L	-	<0.00020	
Tin	mg/L	-	0.0010	
Titanium	mg/L	-	0.010	
Uranium	mg/L	0.01	0.0033	0.0055
Vanadium	mg/L	-	0.0041	
Zinc	mg/L	0.03	0.014	0.0033
Volatile Organic Compounds (VOCs)				
Bromodichloromethane	mg/L	-	-	-
Bromoform	mg/L	-	-	-
Bromomethane	mg/L	-	-	-
Carbon tetrachloride	mg/L	0.002	-	<0.00050
Chlorobenzene	mg/L	0.0013	-	<0.00050
Chloroethane	mg/L	-	-	-
Chloroform	mg/L	0.08	-	<0.00050
Chloromethane	mg/L	-	-	-
Dibromochloromethane	mg/L	0.1	-	<0.0010
1,2-Dibromoethane	mg/L	-	-	-
1,2-Dichlorobenzene	mg/L	0.0007	-	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-
1,4-Dichlorobenzene	mg/L	0.001	-	<0.00050
1,1-Dichloroethane	mg/L	-	-	-
1,2-Dichloroethane	mg/L	0.005	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	<0.00050
1,2-Dichloroethene (trans)	mg/L	-	-	-
1,2-Dichloropropane	mg/L	-	-	-
1,3-Dichloropropene [cis]	mg/L	-	-	-
1,3-Dichloropropene [trans]	mg/L	-	-	-
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	<0.00050
Methylene Chloride	mg/L	0.05	-	<0.0020
Methyl Methacrylate	mg/L	0.47	-	<0.00050
Styrene	mg/L	-	-	-
1,1,1,2-Tetrachloroethane	mg/L	-	-	-
1,1,2,2-Tetrachloroethane	mg/L	-	-	-
Tetrachloroethene	mg/L	0.01	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-
1,1,2-Trichloroethane	mg/L	-	-	-
Trichloroethene	mg/L	0.005	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-
Trihalomethanes	mg/L	-	-	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-
1,3,5-Trimethylbenzene	mg/L	-	-	-
Vinyl chloride	mg/L	0.002	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Total Dissolved Solids, not a measured value (TDS)

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E37B: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	19MW37B Nov-19	19MW37B Jun-20
Field Measurements				
Field pH	-	-	7.58	7.25
Field EC	mS	-	2.05	1.92
Field Temperature	°C	-	2.2	8.2
Routine Water				
pH	-	6.5 - 8.5	7.74	7.94
Conductivity (EC)	µS/cm	1000	1900	1900
Calcium	mg/L	-	79	73
Magnesium	mg/L	-	36	30
Sodium	mg/L	200	320	370
Potassium	mg/L	-	11	9.3
Iron	mg/L	0.3	0.096	<0.060
Sulphate	mg/L	128-429 [2]	220	230
Chloride	mg/L	100	3.6	3.3
Bicarbonate	mg/L	-	1000	1000
Carbonate	mg/L	-	<1.0	<1.0
Hydroxide	mg/L	-	<1.0	<1.0
Nitrate (N)	mg/L	3	<0.010	0.011
Nitrite (N)	mg/L	0.02 - 0.20 [3]	<0.010	<0.010
Nitrate and Nitrate (N)	mg/L	-	<0.014	<0.014
Total Dissolved Solids (TDS)	mg/L	500	1200	1200
Hardness	mg/L	-	350	310
Alkalinity (total as CaCO3)	mg/L	-	850	820
Alkalinity (pp as CaCO3)	mg/L	-	<1.0	
Ionic Balance	N/A	-	1.6	2.9
Water Nutrients				
Ammonia-N	mg/L	0.018-190 [4]	0.64	0.69
TKN	mg/L	-	3.5	0.99
Hydrocarbons				
Benzene	mg/L	0.005	<0.00040	<0.00040
Toluene	mg/L	0.024	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	<0.00040	<0.00040
Xylene	mg/L	0.02	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	<0.10	<0.10
Organics				
COD	mg/L	-	189	19
TOC	mg/L	-	-	
DOC	mg/L	-	7.5	8.4
Oil & Grease	mg/L	-	-	
Metals				
Aluminum	mg/L	0.0007 / 0.05 [5]	<0.0030	<0.0030
Antimony	mg/L	0.006	<0.00060	<0.00060
Arsenic	mg/L	0.005	0.001	0.00051
Barium	mg/L	1	0.027	0.023
Beryllium	mg/L	-	<0.0010	
Boron	mg/L	1	0.11	0.12
Cadmium	mg/L	0.00004-0.00037 [2]	<0.000020	<0.000020
Chromium	mg/L	0.05	<0.0010	<0.0010
Cobalt	mg/L	-	0.0012	
Copper	mg/L	0.007	0.00021	0.0033
Lead	mg/L	0.001-0.007 [2]	0.00026	<0.00020
Lithium	mg/L	-	0.13	
Manganese	mg/L	0.05	0.27	0.26
Mercury	mg/L	0.000005	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.00054	
Nickel	mg/L	0.007-0.170 [2]	0.0017	0.0012
Phosphorus	mg/L	-	<0.10	
Selenium	mg/L	0.002	<0.00020	<0.00020
Silicon	mg/L	-	6	
Silver	mg/L	0.0001	<0.00010	<0.00010
Strontium	mg/L	-	0.84	
Sulphur	mg/L	-	73	
Thallium	mg/L	-	<0.00020	
Tin	mg/L	-	<0.0010	
Titanium	mg/L	-	<0.0010	
Uranium	mg/L	0.01	0.0012	0.0019
Vanadium	mg/L	-	<0.0010	
Zinc	mg/L	0.03	<0.0030	<0.0030
Volatile Organic Compounds (VOCs)				
Bromodichloromethane	mg/L	-	-	
Bromoform	mg/L	-	-	
Bromomethane	mg/L	-	-	
Carbon tetrachloride	mg/L	0.002	-	<0.00050
Chlorobenzene	mg/L	0.0013	-	<0.00050
Chloroethane	mg/L	-	-	
Chloroform	mg/L	0.08	-	<0.00050
Chloromethane	mg/L	-	-	
Dibromochloromethane	mg/L	0.1	-	<0.0010
1,2-Dibromoethane	mg/L	-	-	
1,2-Dichlorobenzene	mg/L	0.0007	-	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	
1,4-Dichlorobenzene	mg/L	0.001	-	<0.00050
1,1-Dichloroethane	mg/L	-	-	
1,2-Dichloroethane	mg/L	0.005	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	
1,2-Dichloroethene (trans)	mg/L	-	-	
1,2-Dichloropropane	mg/L	-	-	
1,3-Dichloropropene [cis]	mg/L	-	-	
1,3-Dichloropropene [trans]	mg/L	-	-	
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	<0.00050
Methylene Chloride	mg/L	0.05	-	<0.0020
Methyl Methacrylate	mg/L	0.47	-	<0.00050
Styrene	mg/L	-	-	
1,1,1,2-Tetrachloroethane	mg/L	-	-	
1,1,2,2-Tetrachloroethane	mg/L	-	-	
Tetrachloroethene	mg/L	0.01	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	
1,1,2-Trichloroethane	mg/L	-	-	
Trichloroethene	mg/L	0.005	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	
Trihalomethanes	mg/L	-	-	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	
1,3,5-Trimethylbenzene	mg/L	-	-	
Vinyl chloride	mg/L	0.002	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E38A: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	19MW38A Nov-19	19MW38A Jun-20
Field Measurements				
Field pH	-	-	7.99	8.34
Field EC	mS	-	4.45	2680
Field Temperature	°C	-	2.0	5.1
Routine Water				
pH	-	6.5 - 8.5	8.42	8.77
Conductivity (EC)	µS/cm	1000	4000	2170
Calcium	mg/L	-	31	12
Magnesium	mg/L	-	13	3
Sodium	mg/L	200	1000	420
Potassium	mg/L	-	9.9	3.6
Iron	mg/L	0.3	0.15	<0.060
Sulphate	mg/L	128-429 [2]	980	420
Chloride	mg/L	100	8.8	13.0
Bicarbonate	mg/L	-	1400	1100
Carbonate	mg/L	-	25	21
Hydroxide	mg/L	-	<1.0	<1.0
Nitrate (N)	mg/L	3	<0.010	<0.010
Nitrite (N)	mg/L	0.02 - 0.20 [3]	<0.010	0.012
Nitrate and Nitrate (N)	mg/L	-	<0.014	<0.014
Total Dissolved Solids (TDS)	mg/L	500	2800	1700
Hardness	mg/L	-	130	42
Alkalinity (total as CaCO3)	mg/L	-	1200	930
Alkalinity (pp as CaCO3)	mg/L	-	20	-
Ionic Balance	N/A	-	2.8	6.4
Water Nutrients				
Ammonia-N	mg/L	0.018-190 [4]	1.8	0.95
TKN	mg/L	-	46	1.7
Hydrocarbons				
Benzene	mg/L	0.005	<0.00040	<0.00040
Toluene	mg/L	0.024	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	<0.00040	<0.00040
Xylene	mg/L	0.02	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	<0.10	<0.10
Organics				
COD	mg/L	-	3540	45
TOC	mg/L	-	-	-
DOC	mg/L	-	16	16
Oil & Grease	mg/L	-	-	-
Metals				
Aluminum	mg/L	0.0007 / 0.05 [5]	0.11	0.02
Antimony	mg/L	0.006	0.00075	<0.00060
Arsenic	mg/L	0.005	0.0049	0.0049
Barium	mg/L	1	0.022	0.017
Beryllium	mg/L	-	<0.0010	-
Boron	mg/L	1	0.52	0.76
Cadmium	mg/L	0.00004-0.00037 [2]	<0.000020	<0.000020
Chromium	mg/L	0.05	<0.0010	<0.0010
Cobalt	mg/L	-	0.00074	-
Copper	mg/L	0.007	0.00058	0.0016
Lead	mg/L	0.001-0.007 [2]	<0.00020	-
Lithium	mg/L	-	0.17	-
Manganese	mg/L	0.05	0.12	0.032
Mercury	mg/L	0.000005	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.015	0.0097
Nickel	mg/L	0.007-0.170 [2]	0.0055	0.005
Phosphorus	mg/L	-	<0.10	-
Selenium	mg/L	0.002	0.00052	0.0004
Silicon	mg/L	-	4.4	-
Silver	mg/L	0.0001	<0.00010	<0.00010
Strontium	mg/L	-	0.52	-
Sulphur	mg/L	-	300	-
Thallium	mg/L	-	<0.00020	-
Tin	mg/L	-	<0.0010	-
Titanium	mg/L	-	0.006	-
Uranium	mg/L	0.01	0.0094	0.0035
Vanadium	mg/L	-	0.0033	-
Zinc	mg/L	0.03	<0.0030	<0.0030
Volatile Organic Compounds (VOCs)				
Bromodichloromethane	mg/L	-	-	-
Bromoform	mg/L	-	-	-
Bromomethane	mg/L	-	-	-
Carbon tetrachloride	mg/L	0.002	-	<0.00050
Chlorobenzene	mg/L	0.0013	-	<0.00050
Chloroethane	mg/L	-	-	-
Chloroform	mg/L	0.08	-	<0.00050
Chloromethane	mg/L	-	-	<0.0010
Dibromochloromethane	mg/L	0.1	-	<0.00050
1,2-Dibromoethane	mg/L	-	-	-
1,2-Dichlorobenzene	mg/L	0.0007	-	<0.00050
1,3-Dichlorobenzene	mg/L	-	-	-
1,4-Dichlorobenzene	mg/L	0.001	-	<0.00050
1,1-Dichloroethane	mg/L	-	-	-
1,2-Dichloroethane	mg/L	0.005	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	<0.00050
1,2-Dichloroethene (cis)	mg/L	-	-	-
1,2-Dichloroethene (trans)	mg/L	-	-	-
1,2-Dichloropropane	mg/L	-	-	-
1,3-Dichloropropene [cis]	mg/L	-	-	-
1,3-Dichloropropene [trans]	mg/L	-	-	-
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	<0.00050
Methylene Chloride	mg/L	0.05	-	<0.0020
Methyl Methacrylate	mg/L	0.47	-	<0.00050
Styrene	mg/L	-	-	-
1,1,1,2-Tetrachloroethane	mg/L	-	-	-
1,1,2,2-Tetrachloroethane	mg/L	-	-	-
Tetrachloroethene	mg/L	0.01	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	<0.00050
1,1,1-Trichloroethane	mg/L	-	-	-
1,1,2-Trichloroethane	mg/L	-	-	-
Trichloroethene	mg/L	0.005	<0.00050	<0.00050
Trichlorofluoromethane	mg/L	-	-	-
Trihalomethanes	mg/L	-	-	<0.0013
1,2,4-Trimethylbenzene	mg/L	-	-	-
1,3,5-Trimethylbenzene	mg/L	-	-	-
Vinyl chloride	mg/L	0.002	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

Table E38B: Field Data and Chemical Analysis Results

Parameter ID	Units	Regulatory Limits[1]	19MW38B Nov-19	19MW38B Jun-20
Field Measurements				
Field pH	-	-	7.86	7.86
Field EC	mS	-	4.43	4440
Field Temperature	°C	-	1.8	5.2
Routine Water				
pH	-	6.5 - 8.5	8.23	8.27
Conductivity (EC)	µS/cm	1000	4300	4300
Calcium	mg/L	-	32	25
Magnesium	mg/L	-	20	21
Sodium	mg/L	200	980	1100
Potassium	mg/L	-	11	9.9
Iron	mg/L	0.3	0.17	<0.060
Sulphate	mg/L	128-429 [2]	960	900
Chloride	mg/L	100	2.9	3.4
Bicarbonate	mg/L	-	1700	1600
Carbonate	mg/L	-	<1.0	<1.0
Hydroxide	mg/L	-	<1.0	<1.0
Nitrate (N)	mg/L	3	<0.010	0.032
Nitrite (N)	mg/L	0.02 - 0.20 [3]	<0.010	0.035
Nitrate and Nitrate (N)	mg/L	-	<0.014	0.067
Total Dissolved Solids (TDS)	mg/L	500	2800	2900
Hardness	mg/L	-	160	150
Alkalinity (total as CaCO3)	mg/L	-	1400	1300
Alkalinity (pp as CaCO3)	mg/L	-	<1.0	-
Ionic Balance	N/A	-	1.8	6.7
Water Nutrients				
Ammonia-N	mg/L	0.018-190 [4]	0.4	0.26
TKN	mg/L	-	6.4	0.9
Hydrocarbons				
Benzene	mg/L	0.005	<0.00040	<0.00040
Toluene	mg/L	0.024	<0.00040	<0.00040
Ethylbenzene	mg/L	0.0016	<0.00040	<0.00040
Xylene	mg/L	0.02	<0.00089	<0.00089
F1 (C6-C10)	mg/L	2.2	<0.10	<0.10
F2 (>C10-C16)	mg/L	1.1	<0.10	<0.10
Organics				
COD	mg/L	-	696	31
TOC	mg/L	-	-	-
DOC	mg/L	-	16	13
Oil & Grease	mg/L	-	-	-
Metals				
Aluminum	mg/L	0.0007 / 0.05 [5]	0.04	0.02
Antimony	mg/L	0.006	<0.00060	<0.00060
Arsenic	mg/L	0.005	0.0028	0.0017
Barium	mg/L	1	0.028	0.023
Beryllium	mg/L	-	<0.0010	-
Boron	mg/L	1	0.31	0.23
Cadmium	mg/L	0.00004-0.00037 [2]	<0.000020	<0.000020
Chromium	mg/L	0.05	<0.0010	<0.0010
Cobalt	mg/L	-	0.0017	-
Copper	mg/L	0.007	0.0014	0.0016
Lead	mg/L	0.001-0.007 [2]	<0.00020	-
Lithium	mg/L	-	0.13	-
Manganese	mg/L	0.05	0.15	0.15
Mercury	mg/L	0.000005	<0.0000020	<0.0000019
Molybdenum	mg/L	-	0.0045	-
Nickel	mg/L	0.007-0.170 [2]	0.0062	0.0041
Phosphorus	mg/L	-	<0.10	-
Selenium	mg/L	0.002	0.00044	0.00021
Silicon	mg/L	-	4.9	-
Silver	mg/L	0.0001	<0.00010	<0.00010
Strontium	mg/L	-	0.38	-
Sulphur	mg/L	-	280	-
Thallium	mg/L	-	<0.00020	-
Tin	mg/L	-	<0.0010	-
Titanium	mg/L	-	0.005	-
Uranium	mg/L	0.01	0.008	0.0086
Vanadium	mg/L	-	0.0011	-
Zinc	mg/L	0.03	<0.0030	<0.0030
Volatile Organic Compounds (VOCs)				
Carbon tetrachloride	mg/L	0.002	-	<0.00050
Chlorobenzene	mg/L	0.0013	-	<0.00050
Chloroform	mg/L	0.08	-	<0.00050
Chloromethane	mg/L	-	-	<0.00050
Dibromochloromethane	mg/L	0.1	-	<0.0010
1,2-Dichlorobenzene	mg/L	0.0007	-	<0.00050
1,4-Dichlorobenzene	mg/L	0.001	-	<0.00050
1,2-Dichloroethane	mg/L	0.005	<0.00050	<0.00050
1,1-Dichloroethene	mg/L	0.014	-	<0.00050
Methyl t-Butyl Ether (MTBE)	mg/L	0.015	-	<0.00050
Methylene Chloride	mg/L	0.05	-	<0.0020
Methyl Methacrylate	mg/L	0.47	-	<0.00050
Tetrachloroethene	mg/L	0.01	<0.00050	<0.00050
1,2,3-Trichlorobenzene	mg/L	0.008	-	<0.0010
1,2,4-Trichlorobenzene	mg/L	0.015	-	<0.0010
1,3,5-Trichlorobenzene	mg/L	0.014	-	<0.00050
Trichloroethene	mg/L	0.005	<0.00050	<0.00050
Trihalomethanes	mg/L	-	-	<0.0013
Vinyl chloride	mg/L	0.002	<0.00050	<0.00050

Notes:

[1] Alberta Environment and Parks (AEP). 2019. Alberta Tier 1 Soil and Groundwater Remediation Guidelines. Land Policy Branch, Policy and Planning Division. 198 pp. Referenced guidelines are for fine textured soils under Agricultural land use

[2] Guideline varies with hardness

[3] Guideline varies with chloride

[4] Guideline varies with pH and temperature

[5] Guideline varies with pH

"-" No applicable guideline or not analyzed

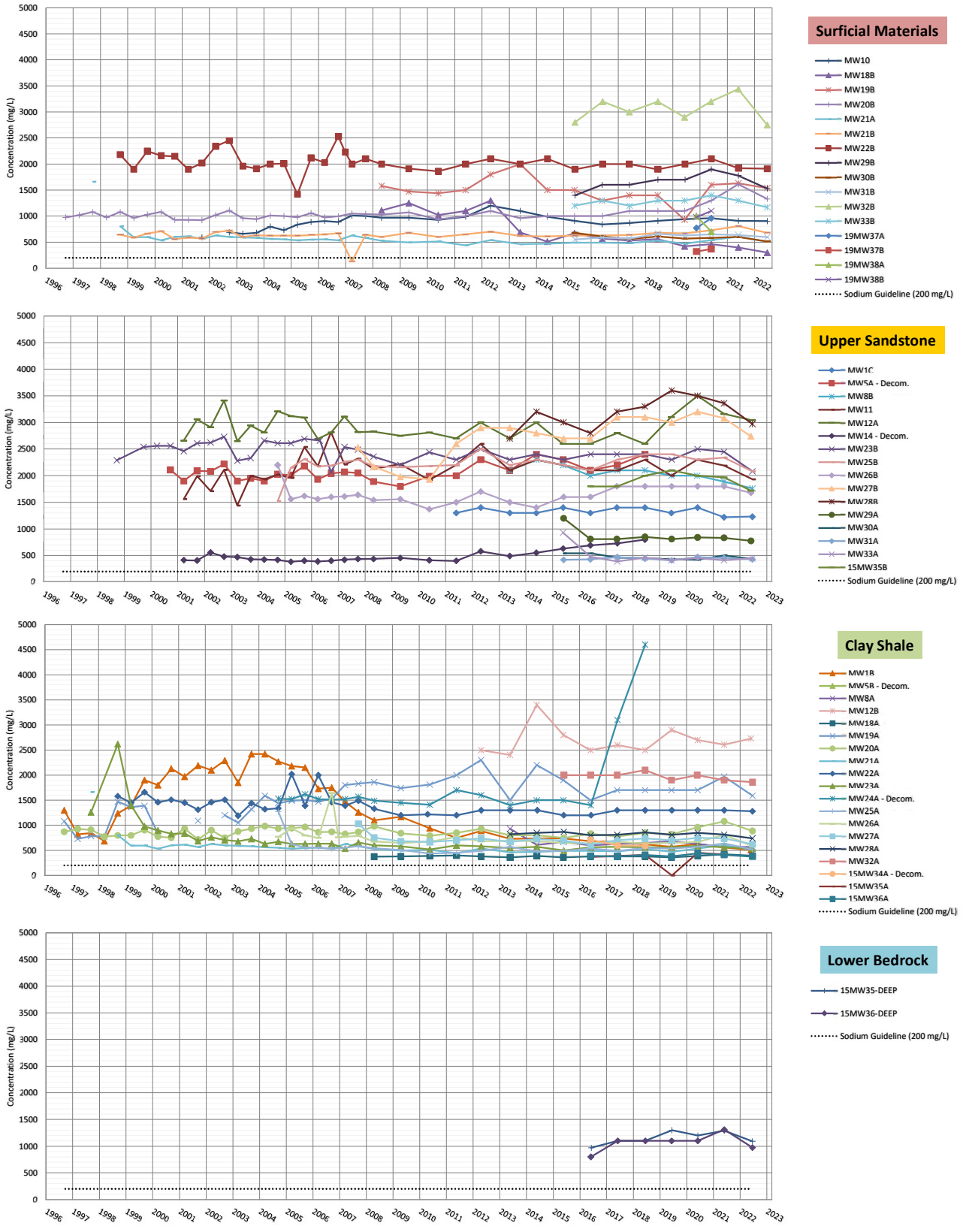
Exceeds Regulatory Limit

Italic - Detection limit greater than Tier 1 Guideline

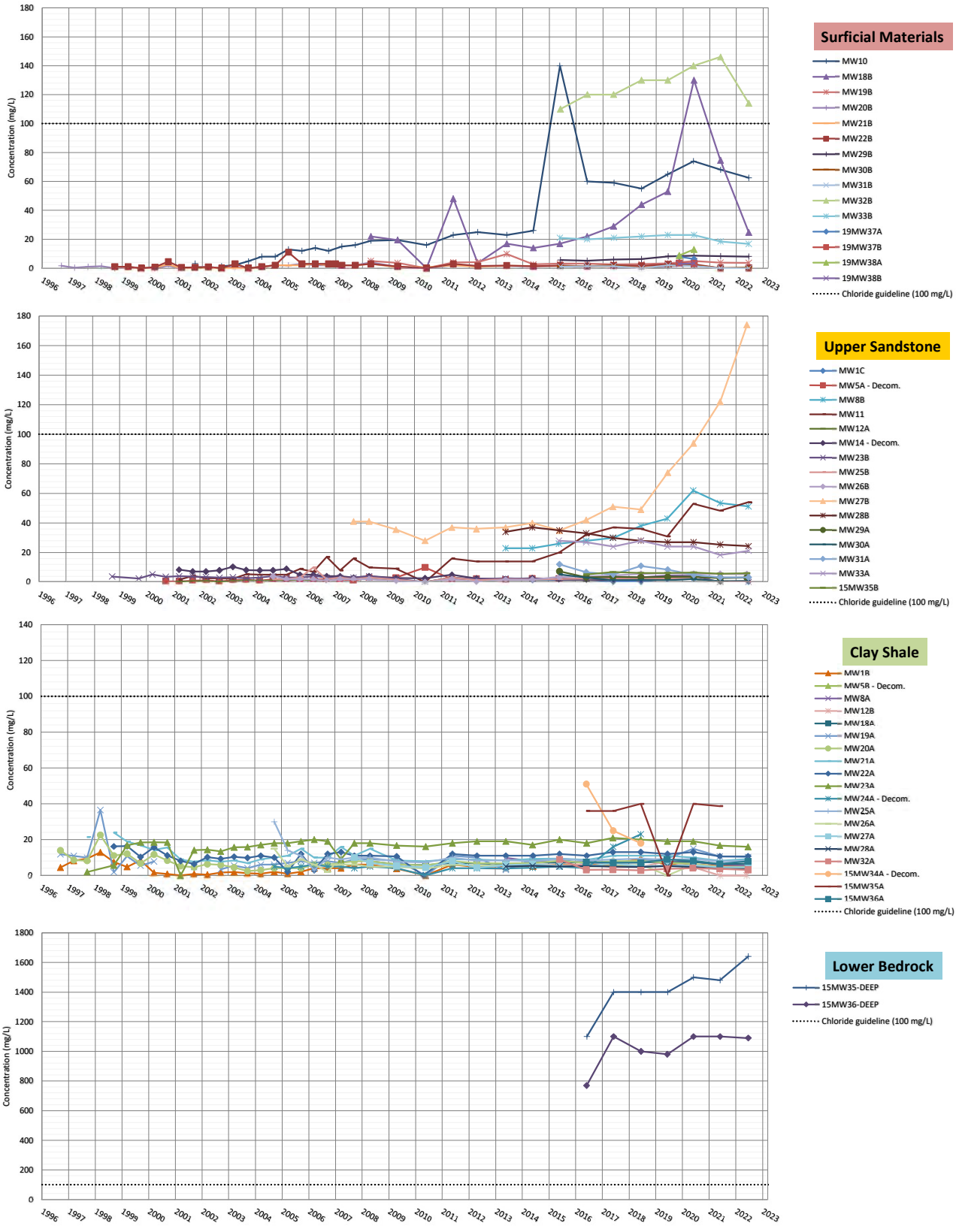
APPENDIX F

CONCENTRATION TRENDS

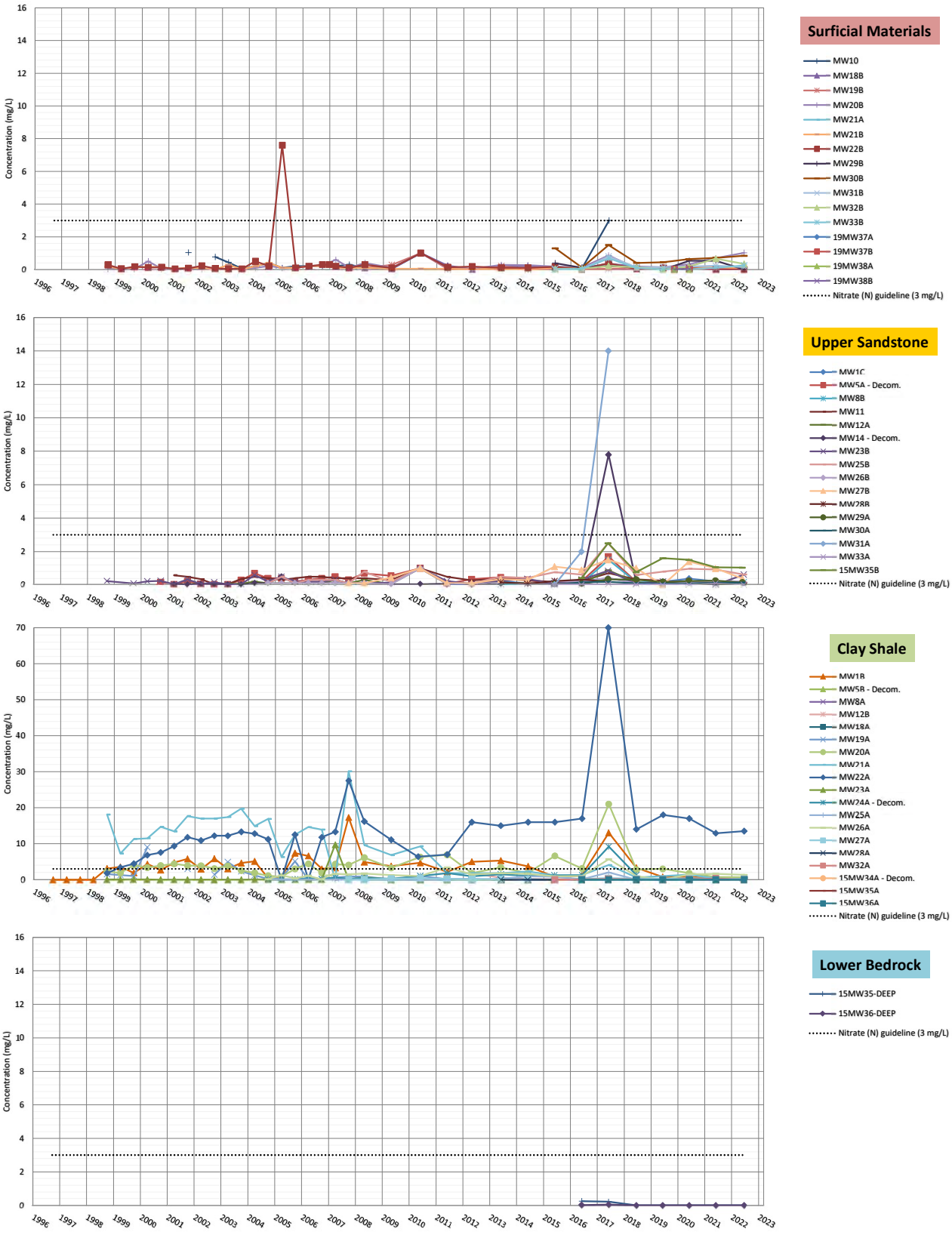
Appendix F1 - Sodium Concentration Trends



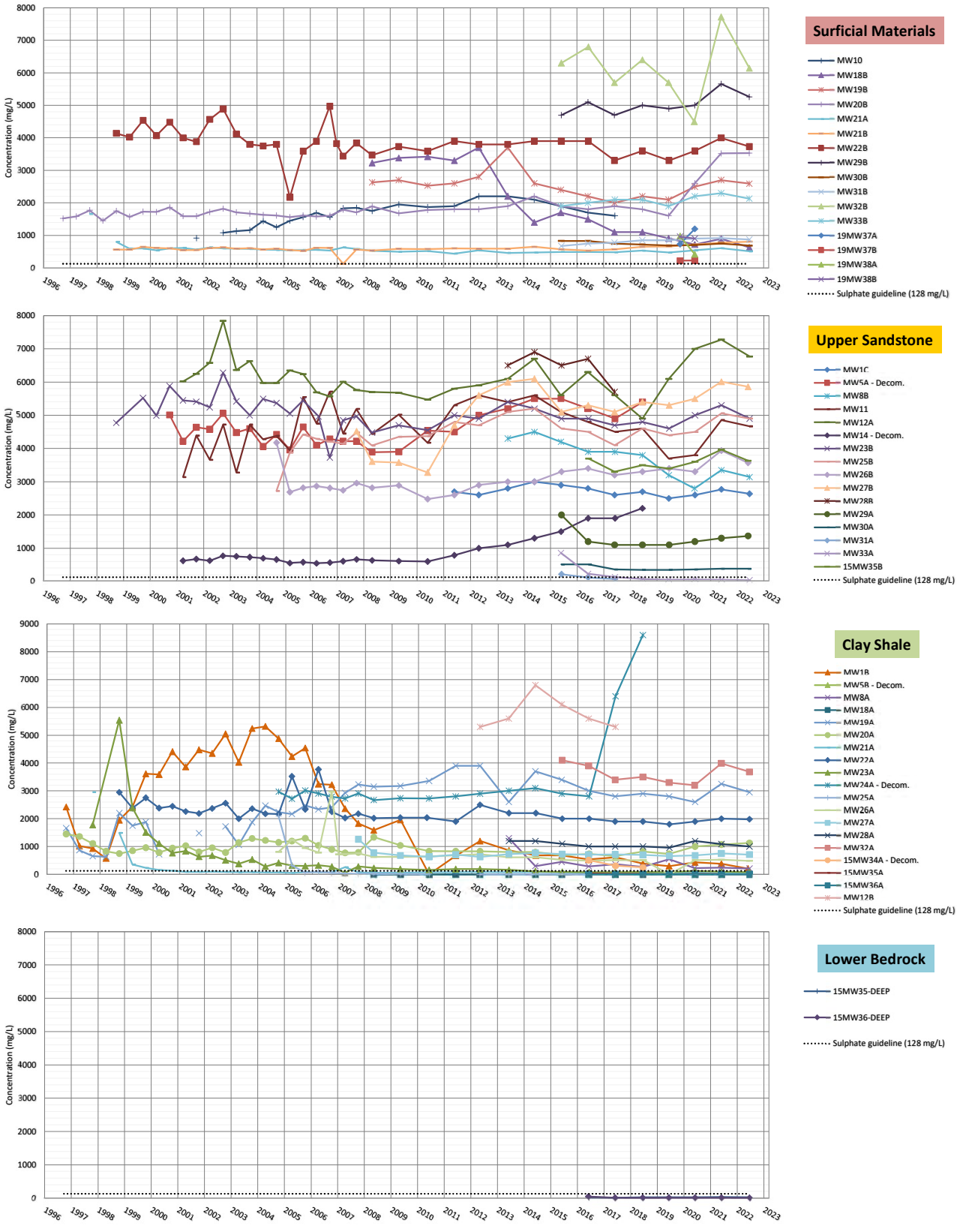
Appendix F2 - Chloride Concentration Trends



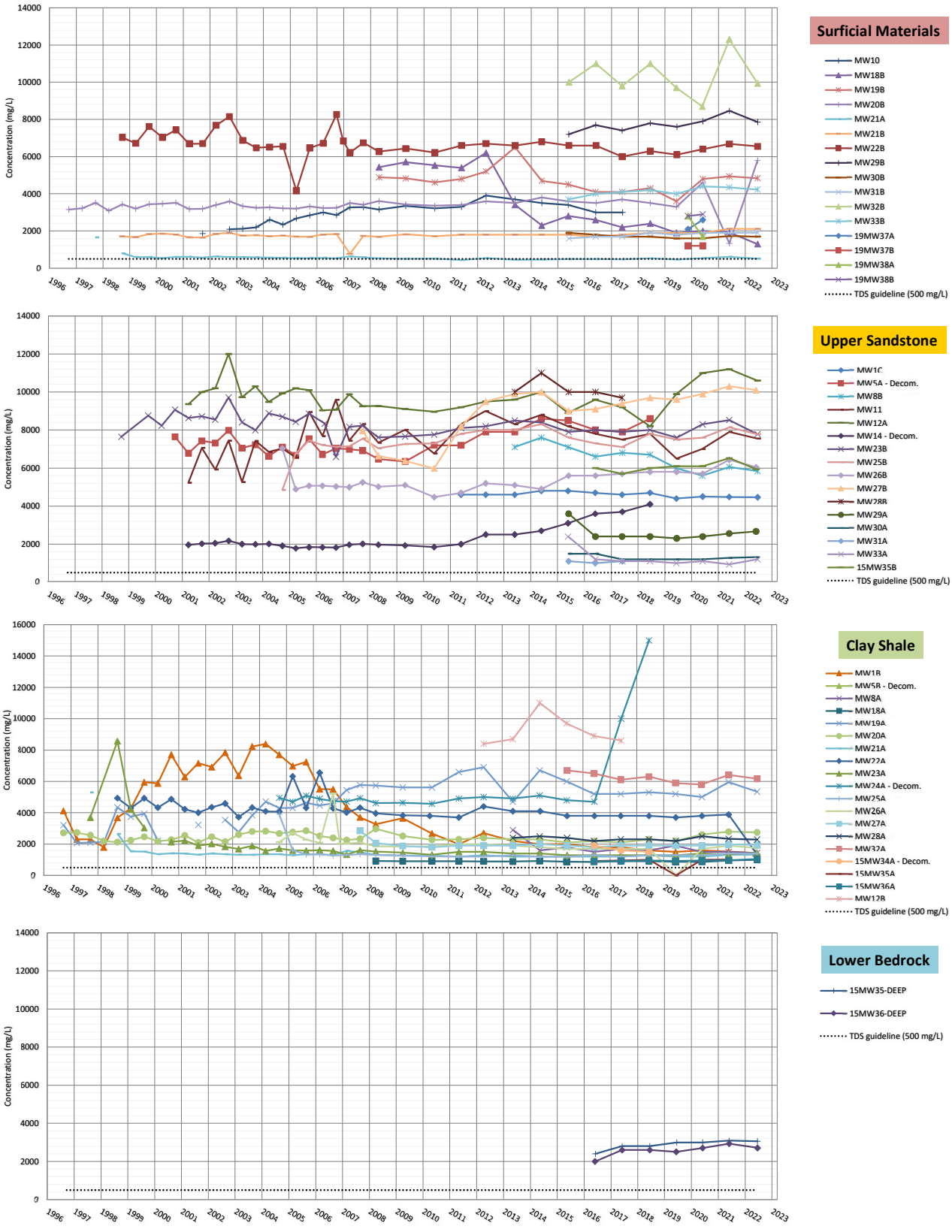
Appendix F3 - Nitrate Concentration Trends



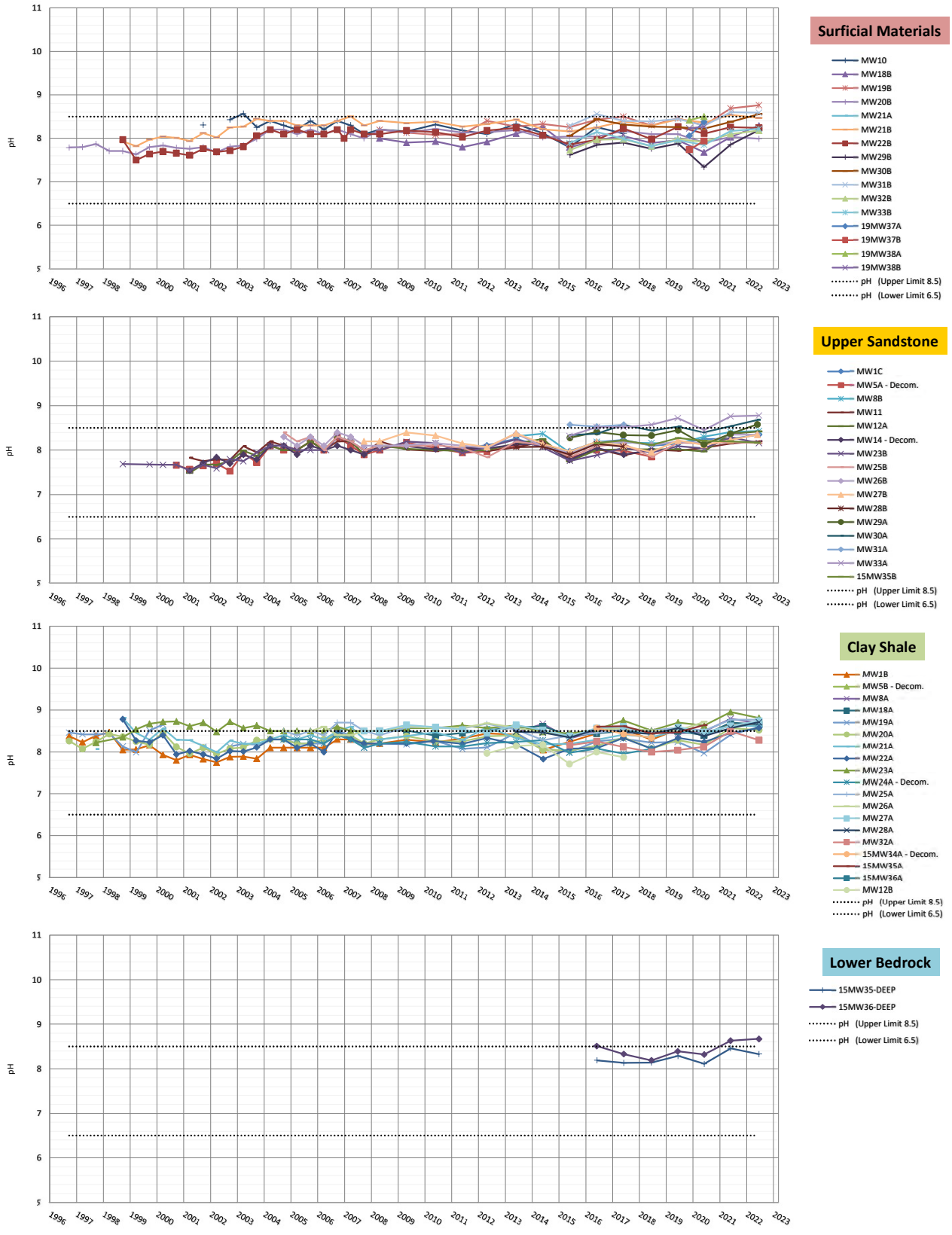
Appendix F4 - Sulphate Concentration Trends



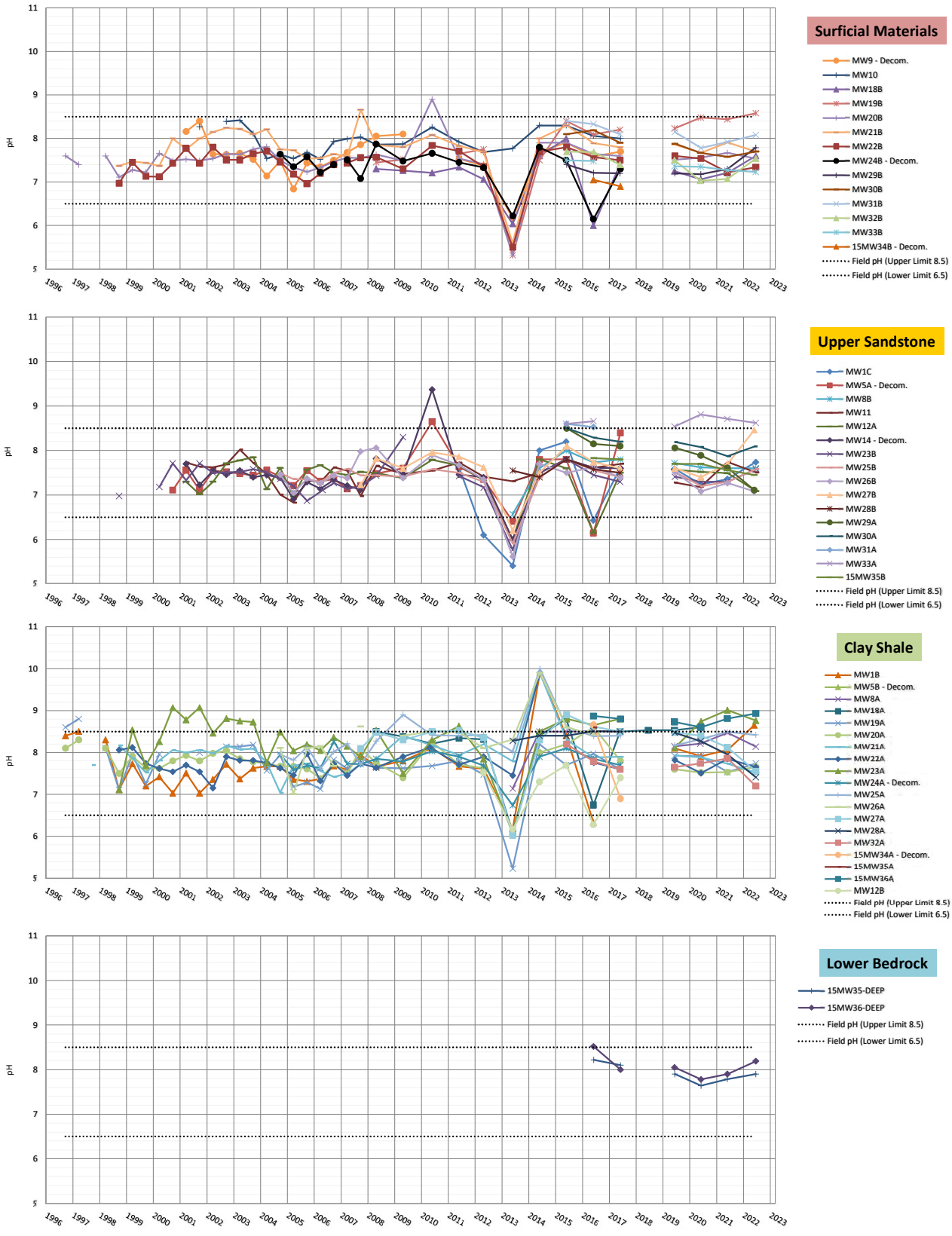
Appendix F5 - TDS Concentration Trends



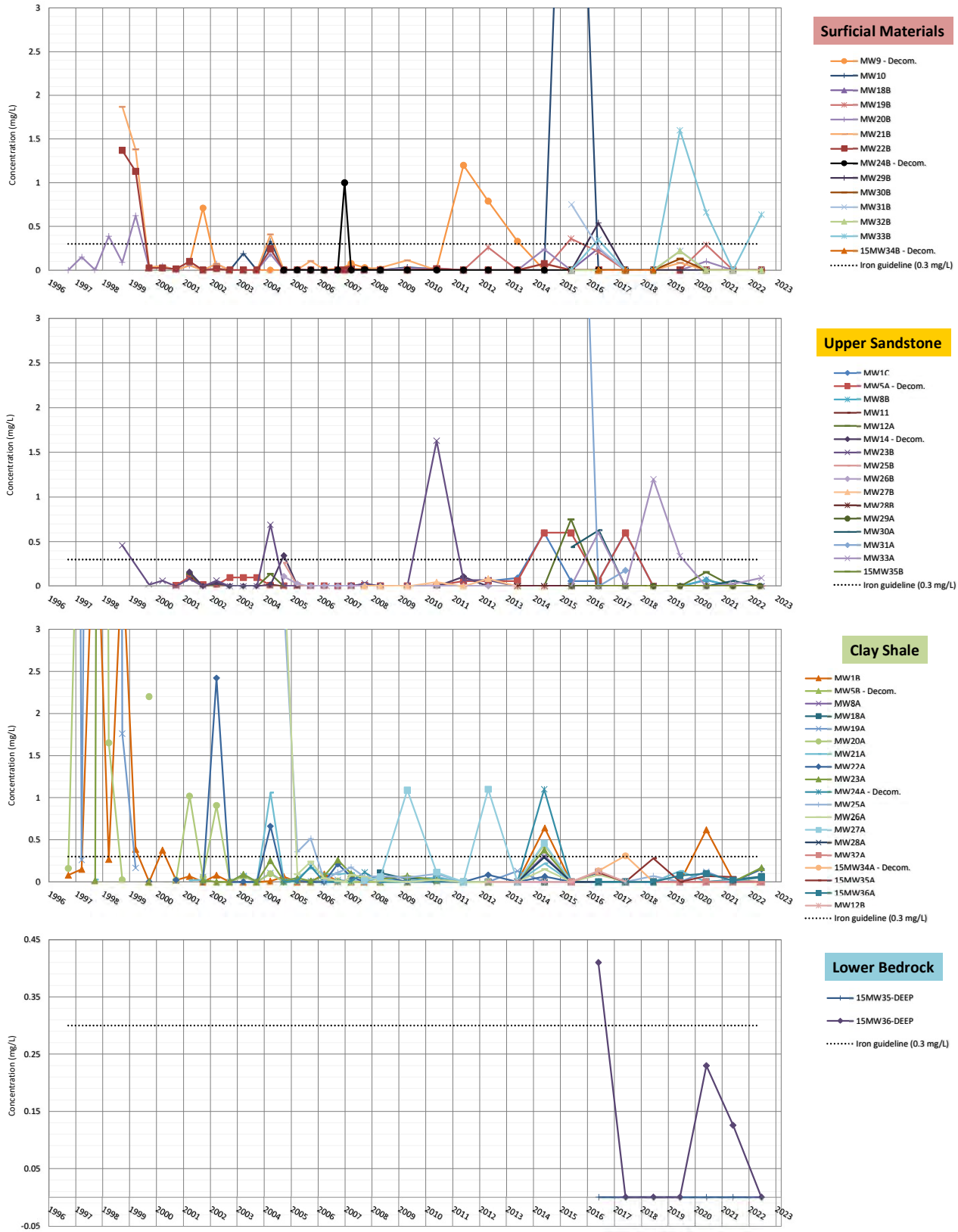
Appendix F6 - Lab pH Trends



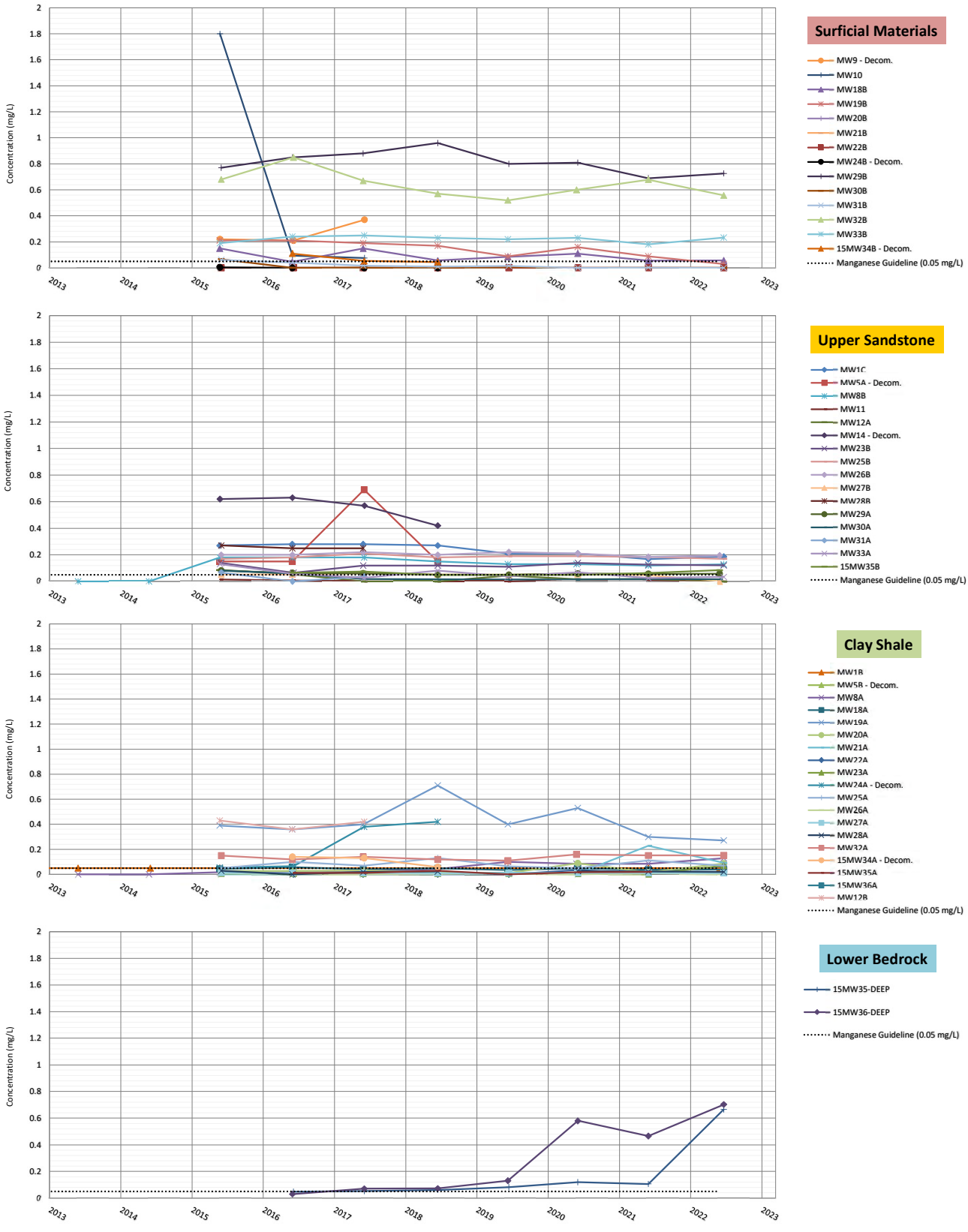
Appendix F7 - Field pH Trends



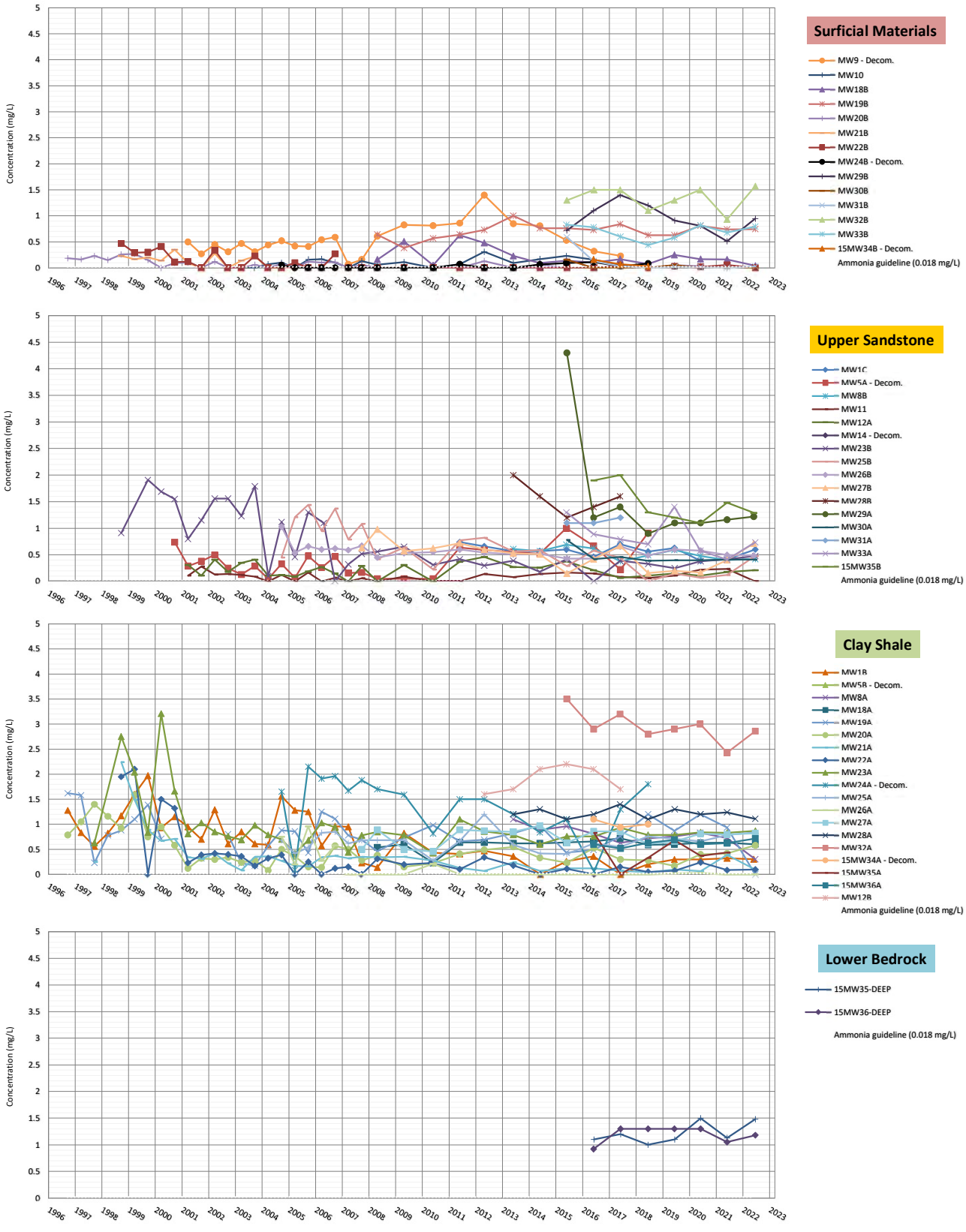
Appendix F8 - Iron Concentration Trends



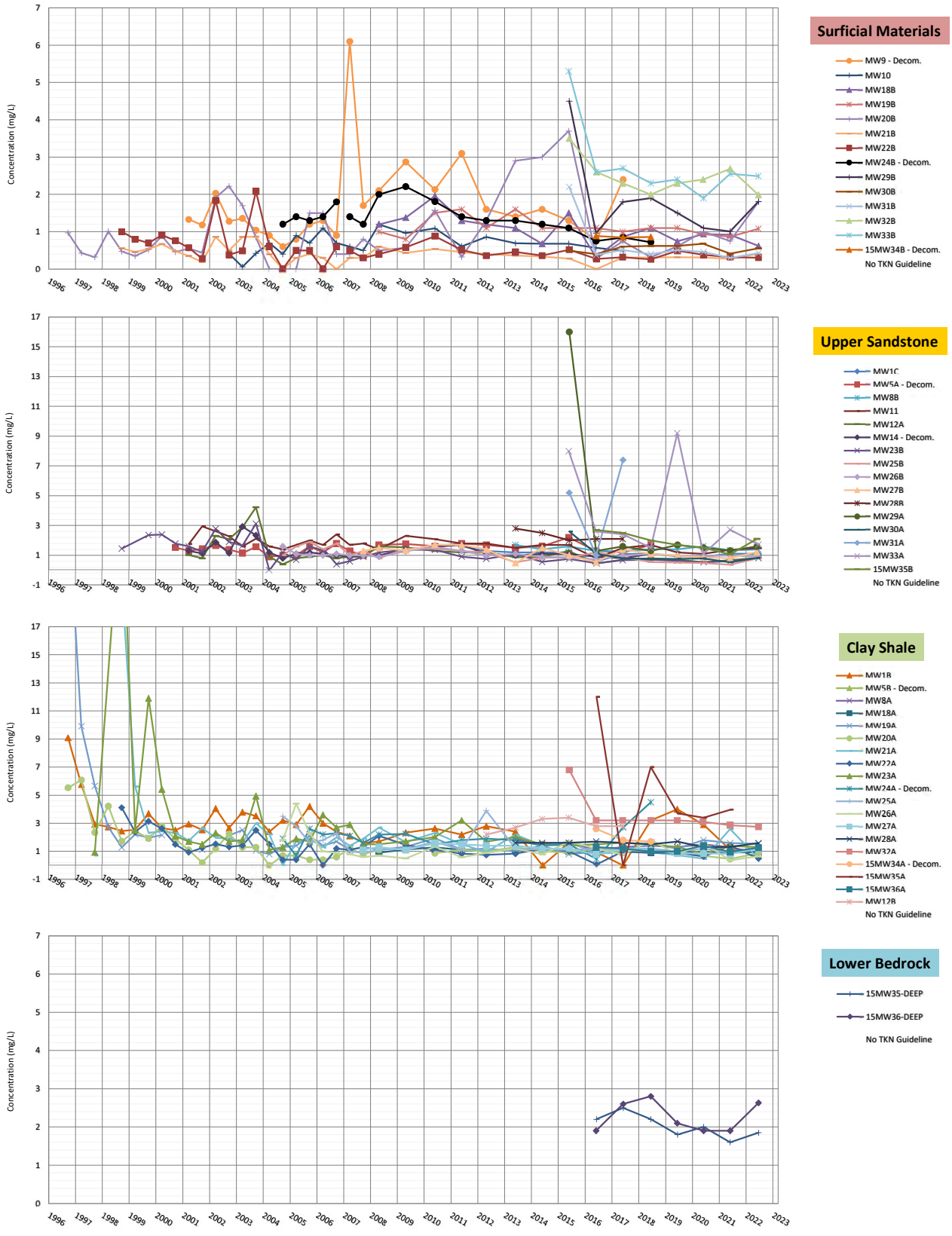
Appendix F9 - Manganese Concentration Trends



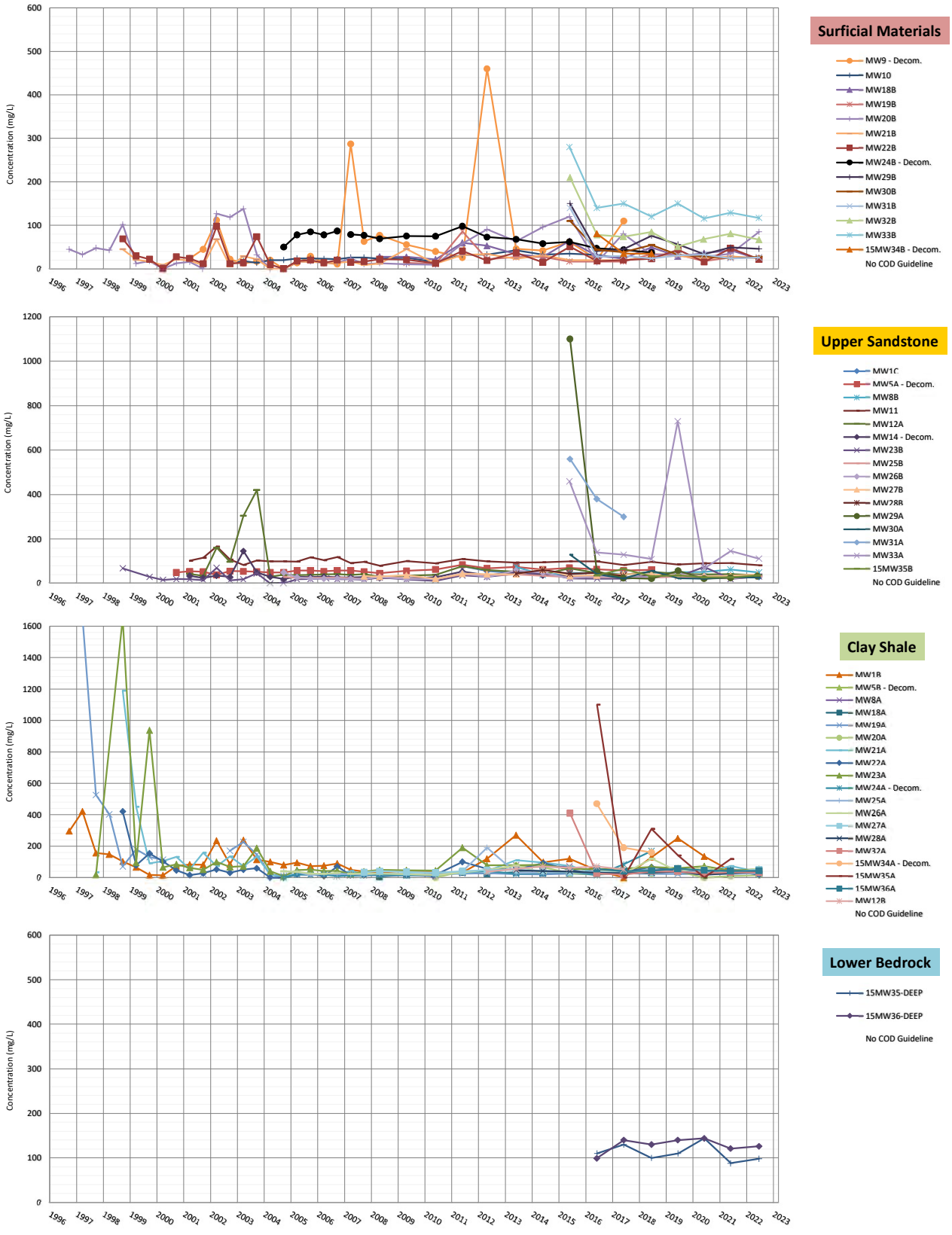
Appendix F10 - Ammonia Concentration Trends



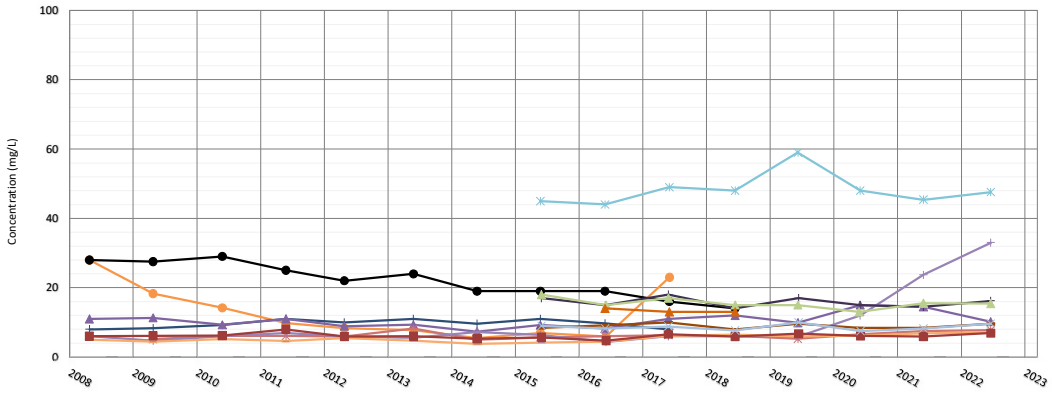
Appendix F11 - TKN Concentration Trends



Appendix F12 - COD Concentration Trends



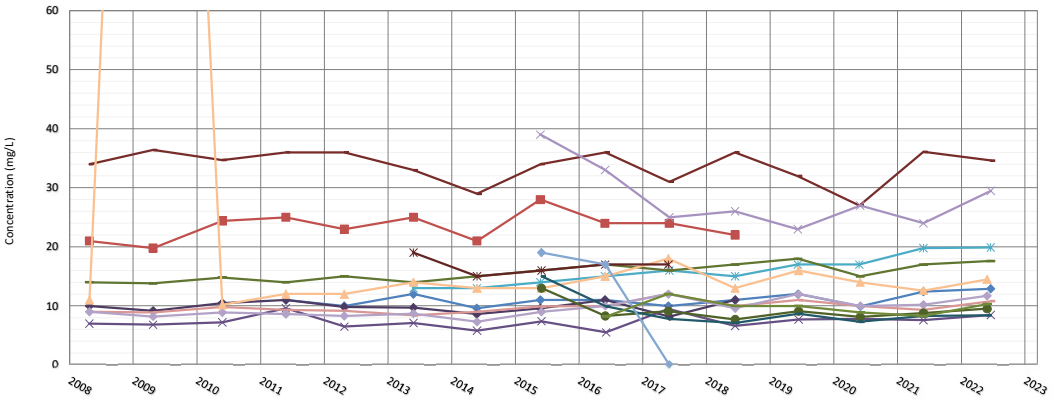
Appendix F13 - DOC Concentration Trends



Surficial Materials

- MW9 - Decom.
- MW10
- MW18B
- MW19B
- MW20B
- MW21B
- MW22B
- MW24B - Decom.
- MW29B
- MW30B
- MW31B
- MW32B
- MW33B
- 15MW34B - Decom.

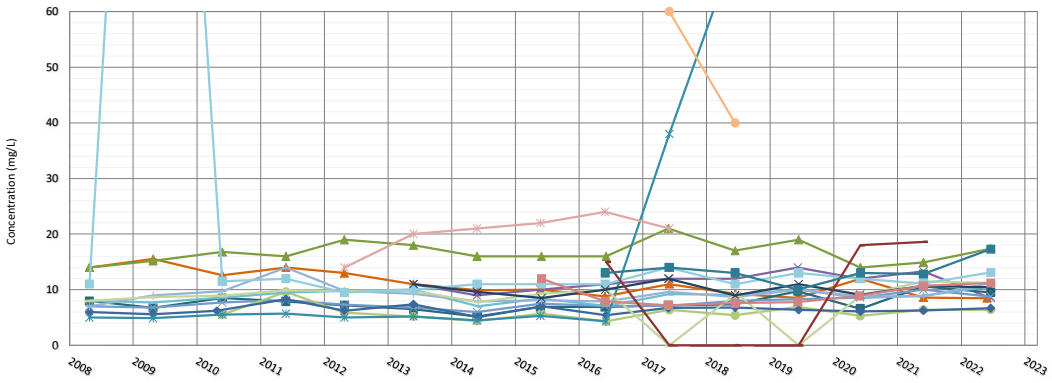
No DOC Guideline



Upper Sandstone

- MW1C
- MW5A - Decom.
- MW8B
- MW11
- MW12A
- MW14 - Decom.
- MW23B
- MW25B
- MW26B
- MW27B
- MW28B
- MW29A
- MW30A
- MW31A
- MW33A
- 15MW35B

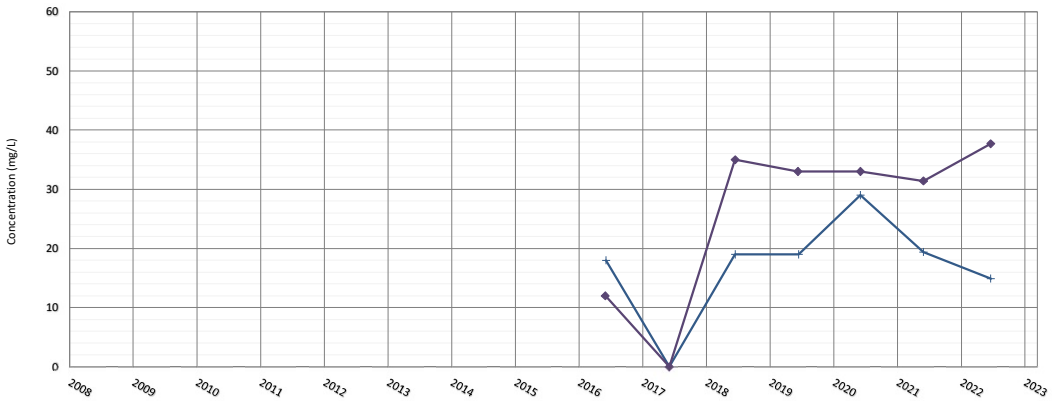
No DOC Guideline



Clay Shale

- MW1B
- MW5B - Decom.
- MW8A
- MW18A
- MW19A
- MW20A
- MW21A
- MW22A
- MW23A
- MW24A - Decom.
- MW25A
- MW26A
- MW27A
- MW28A
- MW32A
- 15MW34A - Decom.
- 15MW35A
- 15MW36A
- MW12B

No DOC Guideline



Lower Bedrock

- 15MW35-DEEP
- 15MW36-DEEP

No DOC Guideline

APPENDIX G

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LIMITATIONS ON USE OF THIS DOCUMENT

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