

2024 Annual Report for Stored Raw Water, Reservoir Site Groundwater, Well and Infiltration Gallery Water Monitoring Programs – Diamond Valley

Approval License No. 1242-03



Prepared for:
Sheep River Regional Utility Corporation

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Prepared by:
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Project/File:
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Executive Summary

The Sheep River Regional Utility Corporation (SRRUC) retained Stantec Consulting Ltd. (Stantec) to prepare the 2024 annual stored raw water, reservoir site groundwater, well and infiltration gallery water monitoring report for the Turner Valley Raw Water Reservoir Site (TVR) and the Turner Valley Source Aquifer (TVSA). The TVR is located within a portion of the southeast quarter of Section 01, Township 20, Range 3, west of the 5th Meridian (SE-01-020-03-W5M), in Diamond Valley, Alberta operating under an Alberta Environment and Protected Areas (AEPA), formerly Alberta Environment and Parks (AEP), formerly Alberta Environment and Sustainable Resource Development AESRD) *Environmental Protection and Enhancement Act (EPEA)* Approval No. 1242-03-00 (Approval). The clay lined TVR has a holding capacity of approximately 184,000 m³ and is located on an upper terrace of the Sheep River. Adjacent to the south of the TVR, a double-lined stilling basin with a holding capacity of approximately 13,800 m³ contains raw water pumped directly from the Sheep River. The purpose of the stilling basin is to allow sediment to settle out of the raw water prior to pumping the water to the TVR. The purpose of the TVR is to supply raw water as a component of SRRUC's waterworks system, which provides the town of Diamond Valley and the Millarville Area within Foothills County with drinking water. The TVSA is a gravel aquifer in Diamond Valley within a portion of W-06-020-02-W5M. The gravel aquifer supplies groundwater via water supply wells to the TVR, which is treated at the water treatment plant (WTP). A series of piezometers were installed within the gravel aquifer to further characterize groundwater quality.

The monitoring requirements for the TVR and TVSA monitoring program are outlined in Section 3.3 of the Approval. Beginning in July 2021, several changes were made to the monitoring program at the TVR and TVSA as outlined in a detailed summary and rationale provided to AEPA, as well as notification sent to AEPA as required by the Approval. The changes that were made were as follows:

- A reduction in sampling frequency and water level/flow measurements to one occurrence per year, to be conducted in July.
- The removal of monitoring wells TVSA-01, TH-B1, TH-B2, and TH-B3 from the monitoring program.
- Utilize low flow sampling methods at all piezometers that require sampling.
- The removal of routine, physical, dissolved metals, and polycyclic aromatic hydrocarbon (PAH) parameters from the analytical suite at most sampling locations. These parameters will continue to be sampled within the stored water within the TVR (PS Blend), stilling basin and the water supply wells. If detectable petroleum hydrocarbon (PHC) concentrations are observed at a given sampling location, routine, physical, dissolved metals, and PAH parameters will also be sampled. Nitrate-nitrogen will also continue to be sampled at the deep groundwater interceptor.
- The removal of polychlorinated biphenyl (PCB) and naturally occurring radioactive material (NORM) parameters from the analytical suite at all sampling locations.



- Modifications to the remedial action plan, including eliminating the need to re-sample exceedances in groundwater that are historically known to be present (i.e., manganese).
- A detailed sampling and analytical protocol, which includes removing the requirements for Stantec to collect the stored water sample every four months and supervising SRRUC operators once a year when samples are being collected.

Additionally, piezometers TVR 6.1 and 6.2, which were decommissioned in 2018 due to stilling basin construction, were replaced with piezometers TVR 6.1R and 6.2R in July 2021.

The schedule in 2024 included the following:

- Groundwater sampled in July for select TVR and TVSA piezometers.
- Surface water sampled from two locations within the Sheep River in July.
- Groundwater interceptors – the shallow interceptor had insufficient water flow in July and could not be sampled, and the deep groundwater interceptor had enough flow to be sampled in July.
- Stored raw water sampled monthly.
- Water supply wells and stilling basin sampled twice per year (June and December). It should be noted that TW5A and CW8 were not sampled in December 2024, as they were placed out of service on October 24, 2024 due to low water availability. Water supply well TW7 was not sampled in 2024 as the well was placed out of service on August 17, 2023 as a precautionary measure while a remedial excavation conducted by Conoco Phillips occurs approximately 90 m northwest of TW7. Groundwater from the water supply wells was directed to the TVR and not directly fed to the WTP; therefore, no additional sampling was required.
- Remedial Action Plan (RAP) event No. 25 was reported under separate cover by Stantec following the June 2024 sampling event due to an exceedance of the dissolved manganese Maximum Allowable Concentration (MAC) at TW5A.

Based on the surface topography, the shallow groundwater flow at the TVR is generally expected to be toward the southeast in the direction of the Sheep River. As previously reported for the TVR and based on groundwater elevations in the shallow piezometers, the shallow groundwater appears to be diverted around the TVR. The shallow groundwater elevations were not contoured due to the potential influence of the TVR. The July 23 and 24, 2024 groundwater levels from the deep piezometers indicated that the apparent bedrock groundwater flow is to the northeast, which is consistent since 2016. The July 25, 2024, groundwater levels measured in the shallow piezometers within the TVSA indicated the interpreted groundwater flow is generally toward the northeast, parallel to the Sheep River, which has been consistent since the TVSA piezometers were installed in 2014.

Dissolved manganese exceeded the Guidelines for Canadian Drinking Water Quality (GCDWQ) MAC guideline in 2024 at TW5A (June). Dissolved manganese has historically exceeded the aesthetic (AO) and/or MAC guidelines in groundwater at TW5A at similar concentrations observed in 2024. A statistically significant increasing trend for dissolved manganese at TW5A was observed although concentrations have been generally similar since 2016. Concentrations of dissolved manganese in the TVR and stilling basin have historically been below laboratory detection or within five times the detection limit since



sampling commenced in May 2009 and January 2019, respectively, except for one sampling event on October 31, 2010 in the TVR when a concentration of 0.079 mg/L exceeded the GCDWQ AO guideline of 0.02 mg/L and one sampling event on December 11, 2024 in the SB when a below guideline concentration 0.0071 mg/L that was greater than 5 times the detection limit. Groundwater in southern Alberta is often naturally high in manganese and there are no known anthropogenic sources of manganese at the TVR or TVSA. Exceedances of the GCDWQ MAC for dissolved manganese within the TVR are not expected; however, the RAP outlines additional steps to be taken in the event concentrations within the TVR or stilling basin are significantly increasing and will likely lead to an exceedance.

Some naturally occurring physical, routine (pH, TDS, and dissolved sulphate) and dissolved metals parameter (dissolved manganese) exceeded the GCDWQ AO guidelines in 2024, which is consistent with historical data. Elevated sulphate, manganese and pH outside the AO guidelines is a common occurrence for the shallow groundwater in this area and are not considered to represent a concern.

Nitrate-nitrogen exceeded the AEPA freshwater aquatic life (FAL) guideline at the deep groundwater interceptor in 2024. The nitrate-nitrogen has consistently been above the AEPA FAL guideline at the deep groundwater interceptor with no clear data trend (no statistically significant trend) although the highest measured concentration was identified in July 2024. It should be noted that concentrations of nitrate-nitrogen at the deep groundwater interceptor have been below the GCDWQ MAC guideline value of 10 mg/L. As the AEPA FAL guideline is not a health-based guideline for potable use and the deep interceptor groundwater is not discharged directly to a surface water body, no additional evaluation is required at this time although sampling in 2025 will evaluate the presence of an increasing trend.

The active water supply wells (TW5A, VW5, and CW8) and stored raw water within the TVR had no health-based exceedances in 2024, except for the dissolved manganese concentration at TW5A, which contributes less than approximately 10% of the total raw water volume into the TVR and was placed out of service on October 24, 2024 due to low water availability. Historically health-based manganese exceedances in the water supply wells occurred primarily in TW5A or CW8, and all concentrations of dissolved manganese sampled from the stored raw water were below the GCDWQ AO and MAC guidelines with the majority of concentrations below the laboratory detection limits.

The groundwater monitoring program at the TVR site from 2007 to 2024 and the TVSA site from 2014 to 2024 indicates that the groundwater quality has not been impacted by the historical oil and gas operations in the Diamond Valley area. The groundwater data collected over the past eighteen years has provided a better understanding of the groundwater conditions at the TVR.

Due to the oil and gas activities in the area, vapour levels and presence of light and dense non-aqueous phase liquid (LNAPL and DNAPL) should continue to be monitored and recorded during monitoring events. In addition, Stantec recommends that the proposed changes that were conducted since the July 2021 sampling event and detailed in the letter to AEPA be continued in 2025 to meet the purpose of the SRRUC, which is to have a groundwater monitoring network that effectively monitors the quality of groundwater around the TVR and TVSA. A vertical survey of piezometers TVR 6.1R and TVR 6.2R should also be conducted in 2025.



**2024 Annual Report for Stored Raw Water, Reservoir Site Groundwater, Well and Infiltration Gallery Water
Monitoring Programs – Diamond Valley**

Executive Summary

February 27, 2025

The statements made in this Executive Summary are subject to the same limitations included in the Section 8 and are to be read in conjunction with the remainder of this report.



Table of Contents

Executive Summary	i
1 Introduction	1
1.1 Site Description	1
2 2024 Monitoring Program.....	2
2.1 Monitoring Network	2
2.2 Scope of Work.....	3
2.3 Assessment Guidelines.....	3
3 Results	5
3.1 Water Levels and Combustible Vapour Monitoring	5
3.2 Groundwater Flow.....	5
3.2.1 Horizontal Groundwater Flow	5
3.2.2 Vertical Groundwater Gradients.....	6
3.2.3 Flow Rates at Groundwater Interceptors	6
3.3 Groundwater Chemistry	6
3.3.1 Physical and Routine Parameters	6
3.3.2 Dissolved Metals	7
3.3.3 Petroleum Hydrocarbons	7
3.3.4 PAHs	7
3.3.5 PCBs	8
3.4 Surface Water Chemistry	8
3.4.1 Petroleum Hydrocarbons	8
3.5 Quality Assurance/Quality Control	8
4 Statistical Analysis	10
5 Discussion	12
5.1 Water Levels	12
5.2 Water Quality	13
5.2.1 Elevated Parameters	13
5.3 Stored Raw Water and Well Water Quality.....	15
5.4 Surface Water Quality	15
6 Summary.....	16
7 Recommendations	19
8 Limitations	20
9 Quality Management	22
10 References.....	23



List of Appendices

Appendix A	Figures
Appendix B	Background
Appendix C	Borehole Logs
Appendix D	Methods
Appendix E	Tables
Appendix F	Water Level Charts
Appendix G	Interceptor Flow Rates
Appendix H	Key Parameter Charts
Appendix I	Certificate of Analysis Reports
Appendix J	Historical Water Well Data



1 Introduction

The Sheep River Regional Utility Corporation (SRRUC) retained Stantec Consulting Ltd. (Stantec) to prepare the 2024 annual report for the Stored Raw Water, Reservoir Site Groundwater, Well and Infiltration Gallery Water Monitoring Programs conducted for the Turner Valley Raw Water Reservoir Site (TVR) and the Turner Valley Source Aquifer (TVSA) hereafter referred to as “Site”. The TVR is located within a portion of Quarter Section SE-01-020-03 W5M, in Diamond Valley, Alberta (Figure 1.0, **Appendix A**). The TVR operates under an Alberta Environment and Protected Areas (AEPA, formerly Alberta Environment and Parks [AEP]) *Environmental Protection and Enhancement Act (EPEA)* Approval No. 1242-03-00 (AEPA 2020).

1.1 Site Description

The TVR is a clay lined reservoir that has a holding capacity of approximately 184,000 m³ and is situated on an upper terrace of the Sheep River. Adjacent to the south of the TVR, a double-lined stilling basin with a holding capacity of approximately 13,800 m³ contains raw water pumped directly from the Sheep River. The purpose of the stilling basin is to allow sediment to settle out of the raw water prior to pumping the water to the TVR. On the lower terrace to the southeast of the TVR, a raw water pump station and the raw water mains transport water from the reservoir to the existing water treatment plant (WTP). A site diagram is provided in Figure 2.0, **Appendix A**. The purpose of the TVR is to supply raw water as a component of SRRUC’s waterworks system, which provides the Diamond Valley and the Millarville Area within Foothills County with drinking water. A series of piezometers were installed around the TVR to characterize groundwater quality.

The area of the water supply wells is located within the TVSA, a gravel aquifer in Diamond Valley within a portion of the quarter section NE/SE 01-020-03 W5M and NW/SW-06-020-02 W5M (Figure 2.0, **Appendix A**). The gravel aquifer supplies groundwater via water supply wells to the TVR, which is treated at the WTP prior to distribution to Diamond Valley and the Millarville Area within Foothills County (Stantec 2012a). A series of piezometers were installed within the gravel aquifer to further characterize groundwater quality.

A detailed site description, including site infrastructure and operations, physiographic setting, topography and drainage, geology, and hydrogeology is provided in **Appendix B**.



2 2024 Monitoring Program

2.1 Monitoring Network

The current water quality monitoring network consists of four active water supply wells, 30 groundwater monitoring piezometers, two groundwater interceptor drains, two surface water sampling locations within the Sheep River, the raw water header within the raw water pump station (PS Blend), and the header within the stilling basin (SB) pump station. Piezometers TVR 6.1 and 6.2, which were decommissioned in 2018 due to the stilling basin construction, were replaced with piezometers TVR 6.1R and 6.2R in July 2021 as per the groundwater monitoring program proposal approved by AEPA (Stantec 2019). Sampling the stilling basin water was added to the TVR groundwater monitoring program in 2019. One downstream surface water sample is collected from the Sheep River in proximity to the WTP and the other sample is collected approximately 3 km upstream. The piezometers and the two interceptor drains are components of the physical multi-barrier and risk management measures designed to protect the public health by providing high quality drinking water. All monitoring locations are shown on Figure 2.0, **Appendix A**. A copy of the borehole logs for the piezometer network is provided in **Appendix C**, and piezometer completion details are included on Table C.1, **Appendix C**.

Beginning in July 2021, several changes were made to the monitoring programs at the TVR and TVSA. A detailed summary and rationale of the changes were summarized in a letter to AEPA (MPE 2021a) and following the implementation of the changes, notification was sent to AEPA as required by the Approval (MPE 2021b). The changes that were made were as follows:

- A reduction in sampling frequency and water level/flow measurements to one occurrence per year, to be conducted in July.
- The removal of monitoring wells TVSA-01, TH-B1, TH-B2, and TH-B3 from the monitoring program.
- Utilize low flow sampling methods at all piezometers that require sampling.
- The removal of routine, physical, dissolved metals, and polycyclic aromatic hydrocarbon (PAH) parameters from the analytical suite at most sampling locations. These parameters will continue to be sampled at PS Blend, SB and the water supply wells. If detectable petroleum hydrocarbons (PHC) concentrations are observed at a given sampling location, routine, physical, dissolved metals, and PAH parameters will also be sampled. Nitrate-nitrogen will also continue to be sampled at the deep groundwater interceptor.
- The removal of polychlorinated biphenyl (PCB) and naturally occurring radioactive material (NORM) parameters from the analytical suite at all sampling locations.
- Modifications to the remedial action plan, including eliminating the need to re-sample exceedances in groundwater that are historically known to be present (i.e., manganese).
- A detailed sampling and analytical protocol, which includes removing the requirements for Stantec to collect the stored water sample every four months and supervising SRRUC operators once a year when samples are being collected.



2.2 Scope of Work

The TVR and TVSA piezometer monitoring and sampling event in 2024 was conducted by Stantec between July 23 and 25. The deep groundwater interceptor drain was sampled by Stantec on July 25; however, the shallow groundwater interceptor drain had insufficient water flow in July 2024 and was not sampled. Surface water samples were collected from the Sheep River locations by Stantec on July 24 and July 25 as part of the TVSA groundwater monitoring and sampling program. In 2024, Operations staff at the Site sampled the stored raw water monthly (January 10, February 7, March 20, April 10, May 8, June 12, July 10, August 14, September 11, October 2, November 6, and December 11) and the stilling basin and water supply wells (TW5A, VW5 and CW8) on June 12 and December 11 and supplied Stantec with the analytical data. It should be noted that TW5A and CW8 were not sampled in December 2024, as they were placed out of service on October 24, 2024 due to low water availability. Water supply well TW7 was not sampled in 2024 as the well was placed out of service on August 17, 2023 as a precautionary measure while a remedial excavation conducted by Conoco Phillips occurs approximately 90 m northwest of TW7. It is currently unknown when the remedial activities will be concluded and TW7 will be put back in service. Operations personnel also supplied Stantec with the interceptor flow rates collected in 2024. It should be noted that groundwater from the water supply wells were directed to the TVR and not directly fed to the WTP in 2024. Remedial Action Plan (RAP) event No. 25 was reported by Stantec following the June 2024 sampling event due to an exceedance of the Maximum Allowable Concentration (MAC) guideline for dissolved manganese at TW5A and is reported under a separate cover (Stantec 2024).

Monitoring requirements include the measurement of headspace within the well for the presence of combustible headspace vapours (CHVs), monitor the presence of light non-aqueous phase liquid (LNAPL) or dense non-aqueous phase liquid (DNAPL), collect water level measurements in the groundwater piezometers, flow measurements from the groundwater interceptors, and water sample collection from the stored water, stilling basin, and water supply wells for analysis of physical parameters, routine parameters, dissolved metals, PHCs (including benzene, toluene, ethylbenzene, xylenes [BTEX], PHC fractions [F] 1 and 2), and PAHs. Additionally, water samples from the water supply wells and stilling basin were analyzed for PCBs and PHC F3 and F4 during the June 2024 sampling event due to a lab submission error. In addition, groundwater piezometers, groundwater interceptors, and Sheep River surface water are required to be sampled for PHCs and nutrients (deep groundwater interceptor only), unless there is a confirmed detection of PHCs in any given groundwater sample, in which case all parameters would be analyzed at that sample location. A detailed record of the methods used to complete the 2024 monitoring and sampling programs is provided in **Appendix D**.

2.3 Assessment Guidelines

The Approval identifies the Guidelines for Canadian Drinking Water Quality (GCDWQ) published by Health Canada (Health Canada 2024) and the AEPA Tier 1 Soil and Groundwater Remediation Guidelines (AEPA Tier 1 Guidelines) published by AEPA (AEPA 2024), as the appropriate guidelines for comparison of water quality. The applicable AEPA Tier 1 Guidelines for the groundwater and stored water samples are those for the potable groundwater exposure pathway for residential/parkland land use and coarse-grained soil conditions. The applicable AEPA Tier 1 Guidelines for water from the groundwater



interceptors are those for the freshwater aquatic life (FAL) exposure pathway. For the purposes of this report, both sets of guidelines will be included with respect to samples collected from the groundwater interceptors. This is consistent with previous reporting conducted at the TVR. In addition, surface water samples were compared to AEPA Surface Water Quality Guidelines as presented in the AEPA Tier 1 Guidelines. It should be noted that the GCDWQ are intended for potable water; therefore, comparison to untreated water is for comparison purposes only. The following table (Table 2.1) summarizes the parameters included in each of the analytical groups mentioned above and the applicable guidelines consistent with historical sampling programs.

Table 2.1 Analytical Parameters and Guidelines

Parameters		Quality Limits ¹
Physical	Colour	
	pH	
	Total Dissolved Solids	
	Turbidity	
Routine	Bicarbonate	Guidelines for Canadian Drinking Water Quality AEPA Tier 1 Guidelines – Aquatic Life Pathway (interceptor trenches only) AEPA Tier 1 Guidelines – Surface Water Quality Guidelines (surface water only)
	Calcium	
	Carbonate	
	Chloride	
	Conductivity	
	Cyanide	
	Fluoride	
	Hydroxide	
	Magnesium	
	Nitrate - N	
	Nitrite - N	
	Potassium	
	Sodium	
	Sulphate	
	Total Alkalinity	
	Total Hardness	
	Total Kjeldahl Nitrogen	
	Total Organic Carbon	
	Ion Balance	
PCBs		AEPA Tier 1 – Potable Use Pathway
NORMs		AEPA Tier 1 – Potable Use Pathway

Parameters		Quality Limits ¹
Metals (total/dissolved)	Aluminum	Guidelines for Canadian Drinking Water Quality AEPA Tier 1 Guidelines – Aquatic Life Pathway (interceptor trenches only) AEPA Tier 1 Guidelines – Surface Water Quality Guidelines (surface water only)
	Antimony	
	Arsenic	
	Barium	
	Beryllium	
	Bismuth	
	Boron	
	Cadmium	
	Calcium	
	Chromium	
	Cobalt	
	Copper	
	Iron	
	Lanthanum	
	Lead	
	Lithium	
	Magnesium	
	Manganese	
	Mercury	
	Molybdenum	
	Nickel	
	Phosphorus	
	Selenium	
	Silicon	
	Silver	
	Strontium	
	Sulphur	
	Thallium	
	Tin	
	Titanium	
	Tungsten	
	Uranium	
	Vanadium	
	Zinc	
	Zirconium	

Parameters		Quality Limits ¹
Hydrocarbons (PHCs)	Benzene	Guidelines for Canadian Drinking Water Quality AEPA Tier 1 Guidelines – Potable Use Pathway AEPA Tier 1 Guidelines – Aquatic Life Pathway (interceptor trenches only) AEPA Tier 1 Guidelines – Surface Water Quality Guidelines (surface water only)
	Toluene	
	Ethylbenzene	
	Xylenes	
	Fraction 1	
	Fraction 2	
	Fraction 3	
	Fraction 4	
PAHs	Acenaphthene	
	Acenaphthylene	
	Acridine	
	Anthracene	
	Benzo(a)Anthracene	
	Benzo(b+j)	
	Fluoranthene	
	Benzo(k)	
	Fluoranthene	
	Benzo(g,h,i)	
	Perylene	
	Benzo(c) phenanthrene	
	Benzo(a)pyrene	
	Benzo[e]pyrene	
	Chrysene	
	Dibenzo(a,h)	
	Anthracene	
	Fluoranthene	
	Fluorene	
	Indeno(1,2,3-cd)pyrene	
	1-Methylnaphthalene	
	2-Methylnaphthalene	
	Naphthalene	
	Phenanthrene	
	Perylene	
	Pyrene	
	Quinoline	

Notes: ¹ The water quality results will be compared to the most stringent guideline.



3 Results

3.1 Water Levels and Combustible Vapour Monitoring

In 2024, no LNAPL or DNAPL was measured in any of the piezometers and vapours ranged from below equipment detection limit (i.e., 5 parts per million [ppm]) in several piezometers to 5 ppm in TVR 1.1 and TVR 5.1 and are not considered elevated (i.e., greater than 500 ppm).

When sufficient water was present in the piezometer, they were purged and sampled using low flow sampling methodology. At piezometers TVR 2.3, TVR 3.2, TVR 4.2, and TVR 6.1R, insufficient water levels were present to be purged and were not sampled. Groundwater elevations are shown in Table E.1, **Appendix E** and groundwater levels at each piezometer are shown on Graphs 1.0 through 8.0, **Appendix F**.

3.2 Groundwater Flow

3.2.1 Horizontal Groundwater Flow

The interpreted direction of groundwater flow within the shallow deposits of the TVR is approximate due to the presence of the TVR, and as a result the groundwater elevations have not been contoured (Figure 3.0, **Appendix A**). The July 23 and 24, 2024 groundwater levels from the deep piezometers (TVR 1.4, 2.4, 3.3, and 4.4R) indicated the apparent bedrock groundwater flow is toward the northeast (Figure 4.0, **Appendix A**), consistent with historical results. It should be noted that the water elevation at TVR 5.4 was not used for assessing apparent groundwater flow as this piezometer's water level was not consistent with historical findings and will be confirmed in 2025. The July 25, 2024, groundwater levels measured in the TVSA shallow piezometers (TVSA-02, TVSA-03, TVSA-06, TVSA-07, and TVSA-08) indicated the apparent groundwater flow is generally toward the northeast, parallel to the Sheep River (Figure 5.0, **Appendix A**), consistent with historical results. It should be noted that water elevations from TVSA-04 and TVSA-05 were not used for assessing apparent groundwater flow as these piezometers are screened in a different lithology.

Groundwater velocities (VL) are calculated using the following equation:

$$V_L = \frac{Ki}{n_e}$$

where:

K = hydraulic conductivity

i = horizontal hydraulic gradient

n_e = effective porosity



Groundwater velocity was based on groundwater elevations measured on July 25, 2024, in the TVSA shallow piezometers (TVSA-02, TVSA-03, TVSA-06, TVSA-07, and TVSA-08). The geometric mean K value of 5×10^{-3} m/s for the shallow soils in the TVSA as calculated in Stantec's Licensing Vault Well No. 5 report (Stantec 2014) was used. Using a measured i of 0.004 for the TVSA, and an average n_e of 35% (Freeze and Cherry 1979), the estimated average V_L is calculated to be approximately 5 m/day for the shallow groundwater within the TVSA and is generally consistent with historical results. The groundwater velocity for the deep TVR piezometers completed in the bedrock was not calculated as the groundwater flow in that unit may be fracture-dependent given the logged bedrock conditions.

3.2.2 Vertical Groundwater Gradients

Based on the July 23 and 24, 2024 groundwater elevations in the nested piezometers at the TVR piezometers, the vertical hydraulic gradients were all downwards (Figure 6.0, **Appendix A** and **Appendix F**) except for an upward gradient in TVR 5.3R/5.4 and neutral gradient at TVR 2.3/2.4 and TVR 7.1/7.2. The vertical hydraulic gradients in the nested piezometers were generally consistent with historical findings. Upward gradients in TVR 5.3R/5.4 were also observed between 2015 and 2020 and is likely due to allowing TVR 5.4 to recover to static conditions, as sampling is no longer required at this location.

3.2.3 Flow Rates at Groundwater Interceptors

Flow rates from both the shallow and deep groundwater interceptors were measured in 2024 by Operations staff at the Site. The shallow groundwater interceptor ranged from having no measurable flow (January to April, and June to December) to 0.1 L/s measured on May 3, 2024. The deep groundwater interceptor ranged from having no measurable flow (January to April) to 0.8 L/s measured on June 3, 2024 (**Appendix G**). These findings are slightly elevated with respect to historical results but within the historical range of flow rates identified at the Site.

3.3 Groundwater Chemistry

The 2024 analytical results for the stored raw water, TVR groundwater and well and infiltration gallery water programs are summarized in Table E.2 to Table E.7, **Appendix E** and key parameters for currently sampled wells are charted in **Appendix H**. Laboratory certificates of analysis are provided in **Appendix I**.

3.3.1 Physical and Routine Parameters

The physical and routine analytical results from the deep groundwater interceptor, stored raw water, stilling basin, and water supply wells met the applicable guidelines except for the following (Table E.2, **Appendix E**):

- pH at the raw water pump station (PS Blend) (January – 6.8, February – 6.9) fell outside of the acceptable GCDWQ aesthetic objective (AO) range of 7.0-10.5.



- Total dissolved solids at TW5A (June – 1,123 mg/L) exceeded the GCDWQ AO guideline of 500 mg/L.
- Dissolved sulphate at TW5A (June – 542.9 mg/L) exceeded the GCDWQ AO guideline of 500 mg/L.
- Dissolved nitrate-nitrogen at the deep groundwater interceptor (July – 6.6 mg/L) exceeded the AEPA FAL guideline of 3.0 mg/L; however, was below the GCDWQ MAC guideline of 10 mg/L.

The monitoring program did not identify any concentrations of physical and routine parameters exceeding the GCDWQ health-based MAC guidelines.

3.3.2 Dissolved Metals

The dissolved metals concentrations measured at the stored raw water, stilling basin, and water supply wells met the applicable guidelines except for the following (Table E.3, **Appendix E**):

- Dissolved manganese at CW8 (June – 0.0880 mg/L) exceeded the GCDWQ AO guideline of 0.02 mg/L. In addition, dissolved manganese exceeded the GCDWQ health-based MAC guideline of 0.12 mg/L at TW5A (June – 0.2921 mg/L). The dissolved manganese MAC exceedance for TW5A triggered RAP event No. 25, which did not involve re-sampling. Additional details of the dissolved manganese exceedance at TW5A are summarized in the RAP event No. 25 report (Stantec 2024). It should be noted that sampled water from CW8 and TW5A was untreated and that the water sampled at the raw water pump station (PS Blend) had manganese concentrations below the applicable guidelines.

Except for dissolved manganese, no other dissolved metals parameters exceeded the GCDWQ health-based MAC guidelines.

3.3.3 Petroleum Hydrocarbons

Petroleum hydrocarbon parameters BTEX and PHC F1 to F4 were below laboratory detection limits in 2024 for all samples collected at the TVR and TVSA piezometers, stored raw water, stilling basin, deep groundwater interceptor, and water supply wells except for below guideline detections of PHC F2 at TVSA-03 to TVSA-08 and the deep groundwater interceptor (Table E.4, **Appendix E**).

3.3.4 PAHs

PAH parameters were below laboratory detection limits in 2024 for all samples collected at the stored raw water, stilling basin and water supply wells except for a below guideline detection of phenanthrene at the PS Blend in September (Table E.5, **Appendix E**).



3.3.5 PCBs

PCB parameters were below laboratory detection limits in 2024 for samples collected at the stilling basin and water supply wells during the June 2024 sampling event (Table E.6, **Appendix E**). It should be noted that PCBs are no longer required to be sampled (MPE 2021b).

3.4 Surface Water Chemistry

The surface water analytical results from the two Sheep River sampling locations are summarized in Table E.4, **Appendix E**. Laboratory certificates of analysis are provided in **Appendix I**.

3.4.1 Petroleum Hydrocarbons

Petroleum hydrocarbon parameters BTEX and PHC F1 to F2 were below laboratory detection limits for both samples except for a below guideline detection of PHC F2 at Sheep River 2 sample (Table E.4, **Appendix E**).

3.5 Quality Assurance/Quality Control

Quality assurance/quality control (QA/QC) groundwater samples were collected to assess the reproducibility of the sample collection methodology and laboratory analytical procedures.

The relative percent difference (RPD) is used to evaluate the sample result variability and is calculated by the following equation:

$$RPD = \left[\frac{|S1 - S2|}{S3} \right] \times 100$$

where:

- RPD = relative percent difference
- S1 = original groundwater sample concentration
- S2 = duplicate groundwater sample concentration
- S3 = average concentrations (S1+S2)/2

For groundwater samples, RPD values of less than 30% are considered to be within acceptable duplicate sample variability. An RPD of greater than 30% may reflect a difference in sample turbidity or variance in sampling procedures; however, RPD values were not calculated to evaluate those parameters where one of the two concentrations are equal to or less than five times the reliable detection limit (RDL).

Duplicate groundwater sample results are presented on Table E.7 (**Appendix E**). Given that all RPD values were not calculated, the 2024 groundwater analytical results are considered to reflect acceptable sample variability.



As part of the annual program three (3) trip blank samples (labeled as TVR 8.1, TVR 8.2, and TVR 8.3) were collected to identify potential contamination of bottles and samples during travel and storage. The trip blanks were sampled for analysis of PHCs. The analytical results as shown on Table E.4 in **Appendix E** show that parameters were below laboratory detection limits for the three trip blank samples, with the exception of an F2 concentration of 0.11 mg/L in sample TVR 8.3. As this value is significantly below the APEA Tier 1 potable guideline of 1.1 mg/L, the overall interpretation of the data is expected to be acceptable. It should be noted that all but one sample submitted the same day as TVR 8.3 (July 25, 2024), also had slight detections of PHC F2 (TVSA-03 to TVSA-08, Deep GW INT, Sheep River 2), suggesting that minor cross-contamination may have occurred. Given the detections were less than 2 times the RDL and well below the referenced guideline, resampling of PHC F2 and/or the full suite of analytical parameters was not conducted as the PHC F2 results are not expected to be representative. Results of quality control calculations (i.e., matrix spike, spiked blank, method blank and RPD calculations) for the laboratory QA/QC samples are presented in the laboratory certificates of analysis provided in **Appendix I**. Where recovery and/or RPD values were outside the control limits, overall quality control was said to meet acceptability criteria.

Based on the results of the above QA/QC program the data was considered reliably and fit for purpose, except for PHC F2 results at samples collected on July 25, 2024, which may not be representative of the sample locations.



4 Statistical Analysis

As part of the 2008 Annual Report (JWA 2009) the water quality data was reviewed with the intent to use statistical analysis to set action levels prior to a concentration exceeding the applicable guideline. The review conducted in 2008 indicated that high turbidity levels in the water samples may interfere in the laboratory analysis, resulting in an unreliable detection (“false positives”) of concentrations of the parameters. The redevelopment of piezometers, completed on November 19, 2007, and May 15, 2008, decreased the turbidity (Table E.8, **Appendix E**).

Due to the possible number of false positives in the data, interpreted to be interference of sample turbidity, statistical analysis was not conducted until 2012 for the TVR. Statistical analysis has been conducted annually since 2012 using Mann-Kendall on the basis that at least 10 representative data points have been obtained since sample turbidity has improved (decreased) after 2007. Details outlining the methods to conduct the Mann-Kendall trend analysis is outlined in **Appendix D**. Key parameters that have previously been identified included turbidity, chloride, antimony, selenium, pyrene, benzo(a)pyrene, and nitrate-nitrogen. These key parameters were previously chosen because concentrations exceeded the applicable guideline at one time. Dissolved barium was identified as a parameter of concern in 2018 due to an exceedance in groundwater at TVR 4.4R in November 2018. However, the current MAC guideline of dissolved barium increased from 1 mg/L to 2 mg/L in 2020, resulting in concentrations above the trigger level but below the guideline. Dissolved manganese was identified as a parameter of concern in 2019 due to new guidelines that came into effect in June 2019, which included a new MAC and a more stringent AO. Although parameters such as pH, total dissolved solids, sodium, and iron have exceeded the applicable guidelines, they were not considered key because the guidelines are aesthetic objectives. Historically, the key parameters have been charted along with their applicable guideline and the trigger value as defined above. With the reduction of sampling parameters in 2021, many of the key parameters are not sampled at the TVR and TVSA piezometers, Sheep River, or deep groundwater interceptor as concentrations at these locations had remained stable or decreased with the corresponding decrease in turbidity values. Since July 2021, the key parameters that continue to be sampled and charted include nitrate-nitrogen at the deep groundwater interceptor and dissolved manganese in the stored water, stilling basin and water supply wells (**Appendix H**). Generally, the key parameter charts plotted in 2024 showed an increase in nitrate-nitrogen concentrations in the deep groundwater interceptor and fluctuating dissolved manganese concentrations at water supply well TW5A. The key parameter concentrations have remained below the guideline and trigger except for the following:

- Nitrate-nitrogen concentrations were measured above the AEPA FAL trigger level at the deep groundwater interceptor since sampling began except for September 2008 and March 2014. Concentrations exceeded the AEPA FAL guideline during every sampling event except for November 2007, May 2008, September 2008, November 2008, July 2009, November 2009, March 2014, November 2019, and July 2021.



2024 Annual Report for Stored Raw Water, Reservoir Site Groundwater, Well and Infiltration Gallery Water Monitoring Programs – Diamond Valley

Section 4: Statistical Analysis

February 27, 2025

- Dissolved manganese was above the GCDWQ MAC guideline at least once in the following years at the following locations: TW5A (2016 to 2024) and CW8 (2014). In addition to the locations listed above, dissolved manganese was above the trigger, but below the GCDWQ MAC guideline at PS Blend (October 2010) and TW3 (February 2014).

A Mann-Kendall statistical analysis was performed on nitrate-nitrogen for the deep groundwater interceptor and dissolved manganese for TW5A and CW8. A confidence value of 95% was needed to statistically show an increasing or decreasing trend. The results of the analysis showed:

- Nitrate-nitrogen had a confidence value of 81.7% for the deep groundwater interceptor between November 2007 and July 2024, meaning the trend maybe increasing although is not statistically significant.
- A statistically significant increasing dissolved manganese trend was noted for TW5A between January 2014 and June 2024, although concentrations have been generally similar since 2016.
- Dissolved manganese had a confidence value of 91.1% for CW8 between May 2014 and June 2024, meaning the trend maybe decreasing, although is not statistically significant.



5 Discussion

5.1 Water Levels

Water levels measured in 2024 were generally comparable to historical water levels. Water levels measured at TVR 2.2 are within the historical range prior to the filling of the reservoir; however, have been elevated above historical levels since 2021. Piezometer TVR 4.2 continued to show low water levels in 2024 when compared to data prior to 2015. The spike in water levels at piezometer TVR 4.3 that was observed in July 2011, July 2012, July 2013, May 2014, July 2020, and July 2023 was not observed in July 2024. Water levels at TVR 5.1 have gradually been increasing since 2021. A water level spike at piezometer TVR 5.2R consistent with those observed in July 2018 and July 2020 was observed in July 2024. Water levels in TVR 5.4 were higher in 2015 through 2024 than previous years, and are likely due to the cessation of sampling, as per the Approval. Piezometer TVSA-05 continued to show high water levels in 2024 when compared to data prior to 2022. It was noted that the groundwater elevation data collected from shallow piezometer TVR 7.2 from 2015 to 2024 was at least 4 m higher than the other TVR #.2 series piezometers. Piezometer TVR 7.2 was generally completed at similar depths as the other TVR #.2 series piezometers and was properly completed with a bentonite seal above the top of the sand pack to isolate the well screen. The groundwater chemistry of TVR 7.2 and other TVR #.2 series piezometers were plotted on tri-linear diagrams from 2017 to 2019 and TVR 7.2 showed similar results to the other TVR #.2 series piezometers sampled. Additionally, Stantec conducted a well integrity test in July 2020 at TVR 7.2, which involved pouring distilled water along the ground surface adjacent to the well casing while monitoring water levels at TVR 7.2, to assess if there is a hydraulic connection (surface leakage). The well integrity test showed no signs of surface water influencing groundwater levels at TVR 7.2. Based on a review of the borehole logs for the TVR #.1 to TVR #.3 series piezometers, it was noted that a clayey silt till separated the gravel/silt till and silt and clay till that TVR #.1 and TVR #.2 series wells are completed in. The clayey silt till was not present at TVR 7.1 and 7.2 and may account for water levels at TVR 7.2 being similar to TVR 7.1.

Based on the water levels recorded from July 2007 to July 2024, it is Stantec's opinion that the filling of the TVR has not increased the surrounding groundwater level as the water levels prior to filling (2008) are generally consistent with water levels collected between 2008 and 2024.

As previously reported for the TVR and on the basis of groundwater elevations in the shallow piezometers, the shallow groundwater flow appears to be diverted around the TVR. Based on the surface topography, the shallow groundwater flow at the TVR is generally expected to be toward the southeast in the direction of the Sheep River. The interpreted bedrock groundwater flow for the TVR in 2024 is toward the northeast, which is consistent since 2016. The interpreted shallow groundwater flow in the TVSA is generally toward the northeast, parallel to the Sheep River, which has been consistent since the TVSA piezometers were installed in 2014.



Peak flow was observed at the deep groundwater interceptor in June 2024 and is likely a result of seasonal melting of the snowpack and the resulting runoff. Historical peak flow rates have been observed between March and May (2008, 2009, 2010, 2013, 2015, 2017, 2018, and 2023), June and July (2011, 2012, 2014, 2016, 2020, 2021, and 2022), and November (2019). During the winter months, the flow rates at the deep interceptor typically have not been measured as the drainage point of the interceptor is generally blocked with ice and inaccessible. Flow rates were measured in the deep interceptor during the winter months of 2015 most likely due to a warmer than average winter.

5.2 Water Quality

Historical analytical results from the sampling events conducted since 2007 are provided in **Appendix E**, Table E.8 to Table E.17. It should be noted that beginning in July 2021, changes to the sampling program were implemented at the Site as summarized in a letter to AEPA (MPE 2021a) and as notified to AEPA (MPE 2021b). These changes included only sampling for PHC parameters using low flow sampling methodology at all sampling locations except for the stored raw water, stilling basin, and the water supply wells. Physical and routine parameters, dissolved metals, and PAHs would only be sampled using low flow methodology if detectable concentrations of PHC parameters are observed at any given sampling location. Additionally, nitrate-nitrogen will be sampled at the deep groundwater interceptor due to elevated concentrations. Stantec has gathered a sufficient amount of data over an 18-year period to confidently conclude that elevated concentrations of key parameters are likely not originating from an anthropogenic source and are related to low water volumes during sampling and/or naturally occurring in the area. The oil and gas history of the surrounding area is one of the main reasons for the extensive groundwater sampling and the reasoning behind sampling for PHC and PAH parameters. As such, sampling hydrocarbons would continue as part of the regular groundwater monitoring programs.

5.2.1 Elevated Parameters

Historically, a variety of parameters have been considered elevated or in exceedance of the GCDWQ guidelines. Several of these parameters are no longer regularly sampled in groundwater since changes to the sampling program were implemented at the Site in 2021. Discussion for these parameters and sampling locations are included in **Appendix B**. The following is a description of the parameters and sampling locations that remain part of the annual program and provides rational on why these parameters were elevated.

5.2.1.1 Nitrate-Nitrogen

At the deep groundwater interceptor, nitrate-nitrogen concentrations exceeded the AEPA FAL Guideline during every sampling event except for November 2007, May 2008, September 2008, November 2008, July 2009, November 2009, March 2014, November 2019 and July 2021. It should be noted that the deep groundwater interceptor has only been sampled eight times since the end of 2014 due to insufficient flow (Table E.8, **Appendix E**). Statistical analysis generally showed no clear trend although the highest measured concentration of nitrate-nitrogen was identified in July 2024. It should be noted that concentrations of nitrate-nitrogen at the deep groundwater interceptor have been at or below the GCDWQ



MAC trigger value of 5 mg/L since September 2012 except for July 2024 and have never exceeded the GCDWQ MAC guideline. As the AEPA FAL guideline is not a health-based guideline for potable use and the deep interceptor groundwater is not discharged directly to a surface water body, no additional evaluation is required at this time although sampling in 2025 will evaluate the presence of an increasing trend.

5.2.1.2 Manganese

In June 2019, new guidelines came into effect for dissolved manganese, which included a new MAC and a more stringent AO. Dissolved manganese has historically exceeded in groundwater at several locations around the TVR and TVSA and within each stratigraphic unit (from near surface to approximately 20 metres below ground surface). (Table E.18, **Appendix E**). It should be noted that dissolved manganese has not been sampled at piezometer or interceptor locations since 2021. Statistical analysis generally showed an increasing trend at TW5A although manganese concentrations have been generally similar since 2016. Concentrations of dissolved manganese in the stored water and stilling basin have historically been below laboratory detection or within five times the detection limit since sampling commenced in May 2009 and January 2019, respectively, except for one sampling event on October 31, 2010, in the stored water when a concentration of 0.079 mg/L exceeded the GCDWQ AO guideline of 0.02 mg/L and one sampling event on December 11, 2024 in the SB when a below guideline concentration 0.0071 mg/L that was greater than 5 times the detection limit (Table E.9, **Appendix E**). Groundwater in southern Alberta is often naturally high in iron and manganese (AAFRD 2000) and both metals are common components of Alberta tills (Pawluk and Bayrock 1969). Based on the above and given that manganese is naturally occurring, and that no known anthropogenic source of manganese is present at the Site, an exceedance of the GCDWQ MAC for dissolved manganese within the TVR is not expected. No further assessment to characterize potential manganese impacts is recommended at this time. However, the RAP outlines additional steps to be taken in the event concentrations within the TVR or stilling basin are significantly increasing and will likely lead to an exceedance (MPE and Stantec 2021).

5.2.1.3 Petroleum Hydrocarbons

Historical analytical results indicate that hydrocarbons have been below laboratory detection limits in the groundwater sampled from all sampling locations since sampling began except for certain parameters at TVR 2.4 (July 2021), TVR 4.2 (November 2008 and May 2014), TVR 5.4 (March and July 2014), TVSA-03 (September 2014 and July 2024), TVSA-04 to TVSA-08 (July 2024), TH-B1 (June 2014), SW Cell 1 (July 2008), PS Blend (June 2009 and December 2012), SB (July 2019), and the deep groundwater interceptor (November 2007, July 2014, and July 2024) (Table E.11, **Appendix E**). The detections of certain hydrocarbon parameters were considered anomalous and may be a result of minor cross-contamination that may have occurred during sampling.



5.3 Stored Raw Water and Well Water Quality

Based on the review of the water data collected from 2008 to 2024 (Table E.8 to Table E.12, **Appendix E**) and the historical data from 2001 to 2007 provided by Diamond Valley (Table J.1, Table J.2, and Table J.3, **Appendix J**), there have been few health-based exceedances in the water supply wells, the stored raw water within the TVR or the stilling basin. The only health-based exceedances were a total antimony concentration at TW5 that slightly exceeded the guideline in December 2003, a benzo(a)pyrene equivalency concentration equal to the AEPA Tier 1 guideline (potable groundwater pathway) in a duplicate sample collected in August 2015 from the stored water, as reported in RAP Event No. 7 (Stantec 2015), and dissolved manganese concentrations at TW5A since 2016 and at CW8 in December 2014. Re-analysis/re-sampling of the stored raw water after the December 2003 and August 2015 sampling events showed concentrations below the laboratory detection limits. It has been previously noted that manganese is naturally occurring in the area, and that no known anthropogenic source of manganese is present at the Site. An exceedance of the GCDWQ MAC for dissolved manganese within the TVR is not expected. However, the RAP outlines additional steps to be taken in the event concentrations within the TVR or stilling basin are significantly increasing and will likely lead to an exceedance (MPE and Stantec 2021).

5.4 Surface Water Quality

Based on the review of the water data collected from 2014 to 2024 from the two Sheep River sample locations, the only exceedance was in November 2015 when dissolved aluminum at the Sheep River 1 sampling location exceeded the AEPA Tier 1 FAL guideline. All subsequent concentrations have been well below the guideline and the exceedance appears to be anomalous (Table E.8 to Table E.12, **Appendix E**).



6 Summary

Based on the results of the 2024 stored raw water, TVR groundwater, well and infiltration gallery water monitoring programs, the following summary is provided:

1. The TVR and TVSA groundwater piezometers were monitored and sampled in 2024 by Stantec in July for PHC parameters, as outlined in the proposed changes submitted to AEPA in 2021 (MPE 2021a and MPE 2021b). The surface water from the Sheep River was sampled in July by Stantec for PHC parameters. The groundwater interceptor trenches were intended to be sampled in July by Stantec; however, only the deep groundwater interceptor had sufficient water flow to be sampled. The stored raw water within the TVR was sampled 12 times (January to December) and the active water supply wells (TW5A, VW5, and CW8) and stilling basin were sampled in June and December by the Operators at the Site for the required parameters, consistent with historical programs. It should be noted that TW5A and CW8 were not sampled in December 2024, as they were shut off on October 24, 2024 due to low water availability. It should also be noted that TW7 was not sampled in 2024, as the well was placed out of service on August 17, 2023 as a precautionary measure while a remedial excavation conducted by Conoco Phillips occurs approximately 90 m northwest of TW7.
2. Water levels measured in 2024 were generally comparable to historical water levels.
3. The shallow groundwater interceptor remained dry throughout the year and is consistent with most historical flow measurements. It is noted that shallow groundwater is present in the shallow gravel and silt till at certain times of the year; however, the shallow groundwater interceptor continues to be dry at the interceptor sampling point. Groundwater may be discharging from the perforated pipe of the shallow groundwater interceptor before it reaches the interceptor sampling point.
4. As previously reported for the TVR and based on groundwater elevations in the shallow piezometers, the shallow groundwater flow appears to be diverted around the reservoir. Based on the surface topography, the shallow groundwater flow at the TVR is generally expected to be toward the southeast in the direction of the Sheep River. The July 23 and 24, 2024 groundwater levels from the deep piezometers indicated the interpreted bedrock groundwater flow is toward the northeast, which is consistent since 2016. The interpreted shallow groundwater flow in the TVSA in 2024 is toward the northeast, parallel to the Sheep River, which has been consistent since 2014.



5. In 2016, Bureau Veritas Laboratories lowered the amount of groundwater volume required to run the required analyses, resulting in more piezometers sampled since 2016. Due to the additional recharge from the approximate two-week waiting period between purging and sampling and lower water volume required for sampling, several piezometers were sampled on a more consistent basis since 2016. Furthermore, Stantec has concluded a 3-year low flow sampling study at the Site and has implemented low flow sampling methodology since July 2021 to improve the number of wells sampled and water quality characterization. This was implemented in July 2021 and resulted in additional wells sampled from 2021 to 2024 compared to historical events.
6. In 2024, naturally occurring physical, routine (pH, TDS, and sulphate), and dissolved metal parameter (dissolved manganese) exceeded the GCDWQ aesthetic guidelines, which is consistent with historical data. Elevated pH, dissolved sulphate, and manganese outside the aesthetic guidelines is a common occurrence for the shallow groundwater in this area and are not considered to represent a concern. The 2024 analytical results for the parameters with guideline exceedances other than the GCDWQ aesthetic guidelines are summarized below:
 - a. Dissolved manganese exceeded GCDWQ health-based MAC guideline of 0.12 mg/L at TW5A (December – 0.2921 mg/L). The dissolved manganese MAC exceedance triggered RAP event No. 25, which did not involve re-sampling. Additional details of the dissolved manganese exceedance at TW5A are summarized in the RAP event No. 25 report.
 - b. Dissolved nitrate-nitrogen at the deep groundwater interceptor (6.6 mg/L) exceeded the AEPA FAL guideline of 3.0 mg/L; however, was below the GCDWQ MAC guideline of 10 mg/L.
7. Petroleum hydrocarbon parameters BTEX and PHC F1 to F4 were below laboratory detection limits in 2024 for all samples collected at the TVR and TVSA piezometers, stored raw water, stilling basin, deep groundwater interceptor, water supply wells, and surface water samples except for below guideline detections of PHC F2 at TVSA-03 to TVSA-08, the deep groundwater interceptor, and Sheep River 2 sample. It should be noted that all but one water sample submitted on July 25, 2024, including trip blank TVR 8.3, had detections of PHC F2 that were less than 2 times the RDL. The detections of PHC F2 noted in the July 25, 2024 samples are not expected to be representative.
8. The active water supply wells (TW5A, VW5, TW7, and CW8) and stored raw water within the TVR and stilling basin had no health-based exceedances in 2024 except for the dissolved manganese concentration at TW5A, which contributes less than approximately 10% of the total raw water volume into the TVR and was placed out of service on October 24, 2024 due to low water availability.



9. Key parameters including nitrate-nitrogen and manganese were charted at locations currently sampled for these parameters. Mann-Kendall analysis showed no clear trend for nitrate-nitrogen in the deep groundwater interceptor although the highest measured concentration was identified in July 2024. Statistical analysis identified a statistically significant increasing trend for dissolved manganese at TW5A although concentrations have been generally similar since 2016. Concentrations of dissolved manganese in the stored water within the TVR and stilling basin have historically been below laboratory detection or within five times the detection limit since sampling commenced in May 2009 and January 2019, respectively, except for one sampling event on October 31, 2010 in the stored water when a concentration of 0.079 mg/L exceeded the 2022 GCDWQ AO guideline of 0.02 mg/L and one sampling event on December 11, 2024 in the SB when a below guideline concentration 0.0071 mg/L that was greater than 5 times the detection limit. Groundwater in southern Alberta is often naturally high in manganese and there are no known anthropogenic sources of manganese at the TVR or TVSA. Exceedances of the GCDWQ MAC for dissolved manganese within the TVR are not expected; however, the RAP outlines additional steps to be taken in the event concentrations within the TVR or stilling basin are significantly increasing and will likely lead to an exceedance (MPE and Stantec 2021).



7 Recommendations

The groundwater monitoring program at the TVR site from 2007 to 2024 and the TVSA site from 2014 to 2024 has indicated that the groundwater quality has not been impacted by the historical oil and gas operations in the Diamond Valley area. The water level measurements during this time period have indicated that the filling and the operation of the TVR has not impacted the groundwater levels of the piezometers adjacent to the TVR; however, there is evidence that the clay liner used to construct the reservoir is acting as a barrier deflecting shallow natural groundwater around the reservoir. The groundwater data collected over the past eighteen years has provided a better understanding of the groundwater conditions at the TVR. Stantec recommends that the proposed changes that were conducted since the July 2021 sampling event and detailed in the letter to AEPA be continued in 2025 to meet the purpose of the Sheep River Regional Utility Corporation, which is to have a groundwater monitoring network that effectively monitors the quality of groundwater around the TVR and TVSA (MPE 2021a).

Additional recommendations are as follows:

1. Due to the oil and gas activities in the area, vapour levels and presence of light and dense non-aqueous phase liquid (LNAPL and DNAPL) should continue to be monitored and recorded during monitoring events.
2. Continue to conduct statistical analysis (e.g., Mann-Kendall or equivalent) during future assessment of groundwater quality trends. The trend for parameters that have exceeded the applicable guideline should be analyzed in accordance with the RAP for the TVR site. The use of a statistical analysis method should be considered for piezometers with sufficient data (at least 10 samples) and low turbidity values, and one of the following conditions: recent (in the last 2 years) reported concentrations that are greater than one half of the applicable guideline (trigger level), or if the concentration is found to have increased in three consecutive sampling events by more than three times the detection limit each time.
3. Conduct a vertical survey of piezometers TVR 6.1R and TVR 6.2R.



8 Limitations

This report documents work that was performed in accordance with generally accepted professional standards at the time and location in which the services were provided. No other representations, warranties or guarantees are made concerning the accuracy or completeness of the data or conclusions contained within this report, including no assurance that this work has uncovered all potential liabilities associated with the identified property.

This report provides an evaluation of selected environmental conditions associated with the identified portion of the property that was assessed at the time the work was conducted and is based on information obtained by and/or provided to Stantec at that time. There are no assurances regarding the accuracy and completeness of this information. All information received from the client or third parties in the preparation of this report has been assumed by Stantec to be correct. Stantec assumes no responsibility for any deficiency or inaccuracy in information received from others.

The opinions in this report can only be relied upon as they relate to the condition of the portion of the identified property that was assessed at the time the work was conducted. Activities at the property subsequent to Stantec's assessment may have significantly altered the property's condition. Stantec cannot comment on other areas of the property that were not assessed.

Conclusions made within this report consist of Stantec's professional opinion as of the time of the writing of this report. They are based solely on the scope of work described in the report, the limited data available and the results of the work. They are not a certification of the property's environmental condition. This report should not be construed as legal advice.

This report has been prepared for the exclusive use of the client identified herein, and any use by any third party is prohibited. Stantec assumes no responsibility for losses, damages, liabilities or claims, howsoever arising, from third-party use of this report.

This report is limited by the following:

- Stored water, stilling basin, water supply wells, and interceptor drain measurements conducted by Operations personnel. Interceptor flow rates provided to Stantec by Operations personnel.

The locations of any utilities, buildings and structures, and property boundaries illustrated in or described within this report, if any, including pole lines, conduits, water mains, sewers and other surface or sub-surface utilities and structures, are not guaranteed. Before starting work, the exact location of all such utilities and structures should be confirmed, and Stantec assumes no liability for damage to them.



The conclusions are based on the site conditions encountered by Stantec at the time the work was performed at the specific testing and/or sampling locations, and conditions may vary among sampling locations. Factors such as areas of potential concern identified in previous studies, site conditions (e.g., utilities) and cost may have constrained the sampling locations used in this assessment. In addition, analysis has been carried out for only a limited number of chemical parameters, and it should not be inferred that other chemical species are not present. Due to the nature of the investigation and the limited data available, Stantec does not warrant against undiscovered environmental liabilities nor that the sampling results are indicative of the condition of the entire Site. The purpose of this report is to identify site conditions that may pose an environmental risk; the identification of non-environmental risks to structures or people on the Site is beyond the scope of this assessment.

Should additional information become available which differs significantly from our understanding of conditions presented in this report, Stantec specifically disclaims any responsibility to update the conclusions in this report.



9 Quality Management

This document entitled “2024 Annual Report for Stored Raw Water, Reservoir Site Groundwater, Well and Infiltration Gallery Water Monitoring Programs – Diamond Valley” was prepared by Stantec Consulting Ltd. (“Stantec”).



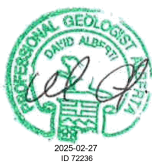
Prepared by: _____

Signature

Lauren Kennedy, M.Sc., EIT
Environmental Engineer in Training

Printed Name

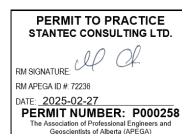
Reviewed &
Approved by: _____



Signature

David Alberti, M.Sc., P.Geol., MBA
Principal, Senior Hydrogeologist

Printed Name



Stantec Consulting Ltd. prepared this report for the account of Sheep River Regional Utility Corporation. The material in it reflects Stantec Consulting Ltd.'s best judgement in light of the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decision made based on it, are the responsibility of such third parties. Stantec Consulting Ltd. accepts no responsibility or damages, if any, suffered by any third party as a result of decisions made or actions based on this report.



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2024 Annual Report for Stored Raw Water, Reservoir Site Groundwater, Well and Infiltration Gallery Water Monitoring Programs – Diamond Valley

Section 10: References

February 27, 2025

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Appendices





Appendix A

Figures





Base Data - AltaUS, Canvec, Government of AB.
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Distribution Airbus DS
Date: 2/7/2025

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123513703-0001 Project Location
Prepared by V.Montanez on 2/7/2025 Alberta
Technical Review by L.Kennedy on 2/7/2025
Independent Review by D.Alberli on 2/7/2025



200 - 325 25TH ST. SE CALGARY, AB T2A 7H8
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THIS MAP IS FOR REFERENCE ONLY AND SHOULD NOT BE USED FOR CONSTRUCTION.

Client/Project

SRRUC

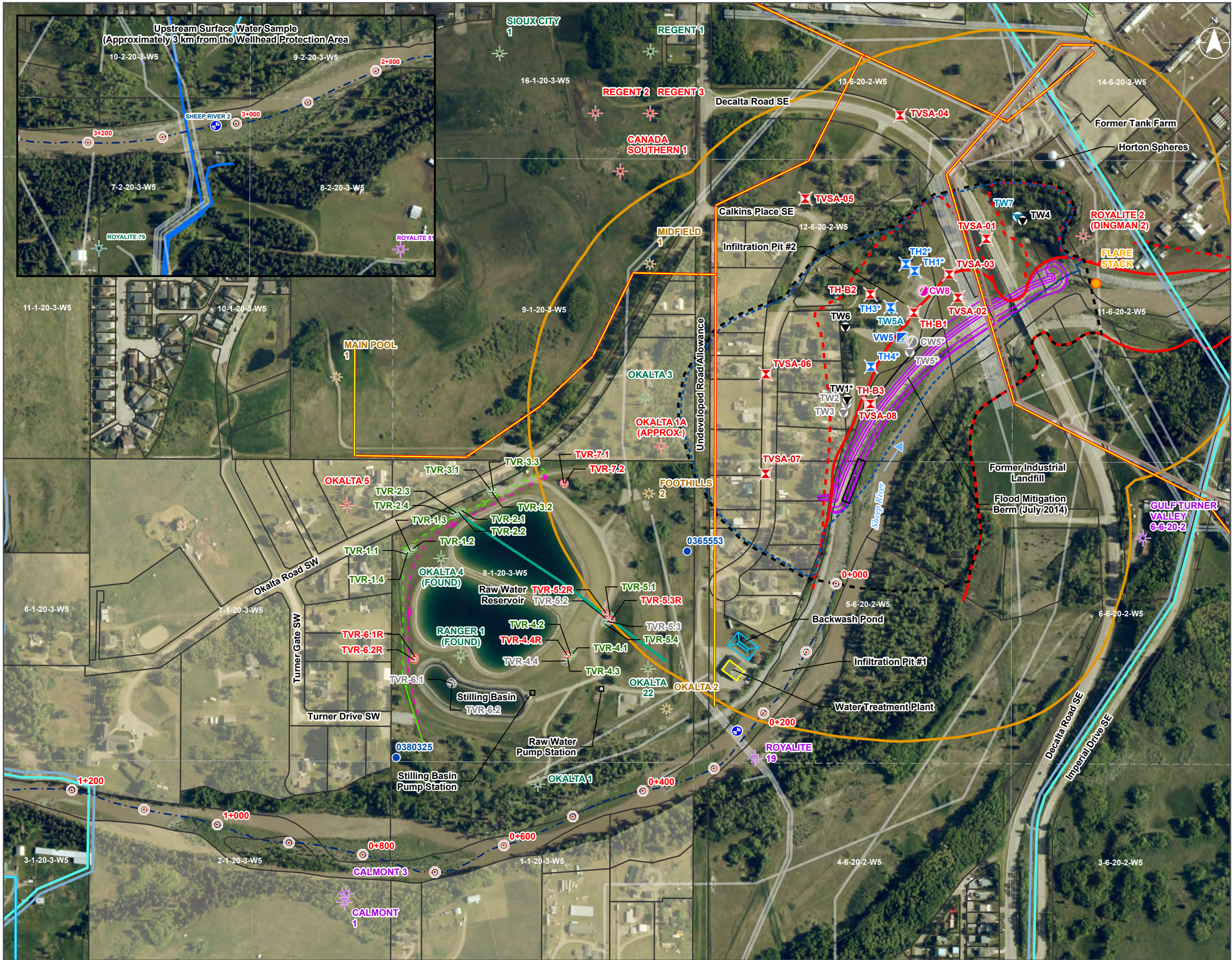
2024 Annual Report For Stored Raw Water, Reservoir
Site Groundwater, Well and Infiltration Gallery Water
Monitoring Programs
Diamond Valley, Alberta

Figure No.

1.0

Title

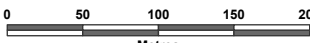
Site Location Plan



200 - 325 25TH ST. SE CALGARY, AB T2A 7H8
STANTEC DOES NOT CERTIFY THE ACCURACY OF THE DATA.
THIS MAP IS FOR REFERENCE ONLY AND SHOULD NOT BE
USED FOR CONSTRUCTION.

- Active Source Culvert Well**
Active Source Vault Well
Active Source Water Well
Chainage
Decommissioned Culvert Well
Destroyed/ Decommissioned Source Water Well
Decommissioned Peizometer
Flare Stack
Inactive Source Water Well
Monitoring Well Location (Installed by Stantec)
Nested Peizometer (Installed by Stantec)
Nested Peizometer (Installed by WDA Consultants)
Registered Water Well Location
Surface Water Sample Location
Water Well Location (Installed by GERL)
- Turner Valley Infrastructure**
Berm
Deep Groundwater Interceptor (Perforated PVC Pipe)
Legal Line
Shallow Groundwater Interceptor (Perforated PVC Pipe)
Shallow Groundwater Interceptor (Solid PVC Pipe)
- Pipeline Infrastructure**
Abandoned/Discontinued Line
Fuel Gas
HVP Product
LVP Product
Natural Gas Line
Oil Well Effluent
Sour Natural Gas
Water Line
Subdivisions with Decommissioned Septic Fields
Legal Subdivision
- Oil and Gas Wells**
Soil and Groundwater Remediated Well
Abandoned Not Yet Remediated
Abandoned But Remediated Status Unknown
Active Well (ERCB Registered)

- Project Feature**
Aquifer Boundary
Cross Section
Floodway Boundary
Flood Risk Boundary
River Flow Direction
Sheep River Centre Line
Source Water Protection Area
Surface Water Protection Area
Wellhead Protection Area
200 m Wellhead Protection Area Boundary
*** Indicates water wells installed by others**



Date: 2/18/2025

Project Location: Alberta
Prepared by: V.Montanez on 2/18/2025
Technical Review by: L.Kennedy on 2/18/2025
Independent Review by: D.Alberti on 2/18/2025

Client/Project: SRRUC
2024 Annual Report For Stored Raw Water, Reservoir Site Groundwater, Well and Infiltration Gallery Water Monitoring Programs
Diamond Valley, Alberta

Figure No.: 2.0

Title: Site Plan



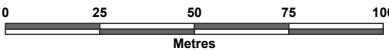
200 - 325 25TH ST. SE CALGARY, AB T2A 7H8
STANTEC DOES NOT CERTIFY THE ACCURACY OF THE DATA.
THIS MAP IS FOR REFERENCE ONLY AND SHOULD NOT BE
USED FOR CONSTRUCTION.

- ⊗ Piezometer (Installed by Stantec)
- ⊗ Piezometer (Installed by WDA Consultants Inc.)

Turner Valley Infrastructure

- Deep Groundwater Interceptor (Perforated PVC Pipe)
- Shallow Groundwater Interceptor (Perforated PVC Pipe)
- Shallow Groundwater Interceptor (Solid PVC Pipe)
- Subdivisions with Decommissioned Septic Fields

(1201.605) Groundwater Elevation (m ASL)
NS - Not Surveyed



NAD 1983 3TM 114

Date: 2/18/2025

Project Location 123513703-0003
Alberta Prepared by V.Montanez on 2/18/2025
Technical Review by L.Kennedy on 2/18/2025
Independent Review by D.Alberti on 2/18/2025

Client/Project
SRRUC
2024 Annual Report For Stored Raw Water, Reservoir
Site Groundwater, Well and Infiltration Gallery Water
Monitoring Programs
Diamond Valley, Alberta

Figure No.
3.0

Title
**Shallow Groundwater Elevations
TVR Piezometers, July 23 and 24, 2025**



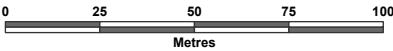
200 - 325 25TH ST. SE CALGARY, AB T2A 7H8
STANTEC DOES NOT CERTIFY THE ACCURACY OF THE DATA.
THIS MAP IS FOR REFERENCE ONLY AND SHOULD NOT BE
USED FOR CONSTRUCTION.

- ⊗ Piezometer (Installed by Stantec)
- ⊗ Piezometer (Installed by WDA Consultants Inc.)
- Apparent Groundwater Elevation Contour (masl)
- ➡ Apparent Groundwater Flow Direction

Turner Valley Infrastructure

- - Deep Groundwater Interceptor (Perforated PVC Pipe)
- - Shallow Groundwater Interceptor (Perforated PVC Pipe)
- - Shallow Groundwater Interceptor (Solid PVC Pipe)
- Subdivisions with Decommissioned Septic Fields

(1201.605) Groundwater Elevation (masl)
TVR-5.4** - Not used to assess apparent bedrock groundwater flow direction



NAD 1983 3TM 114

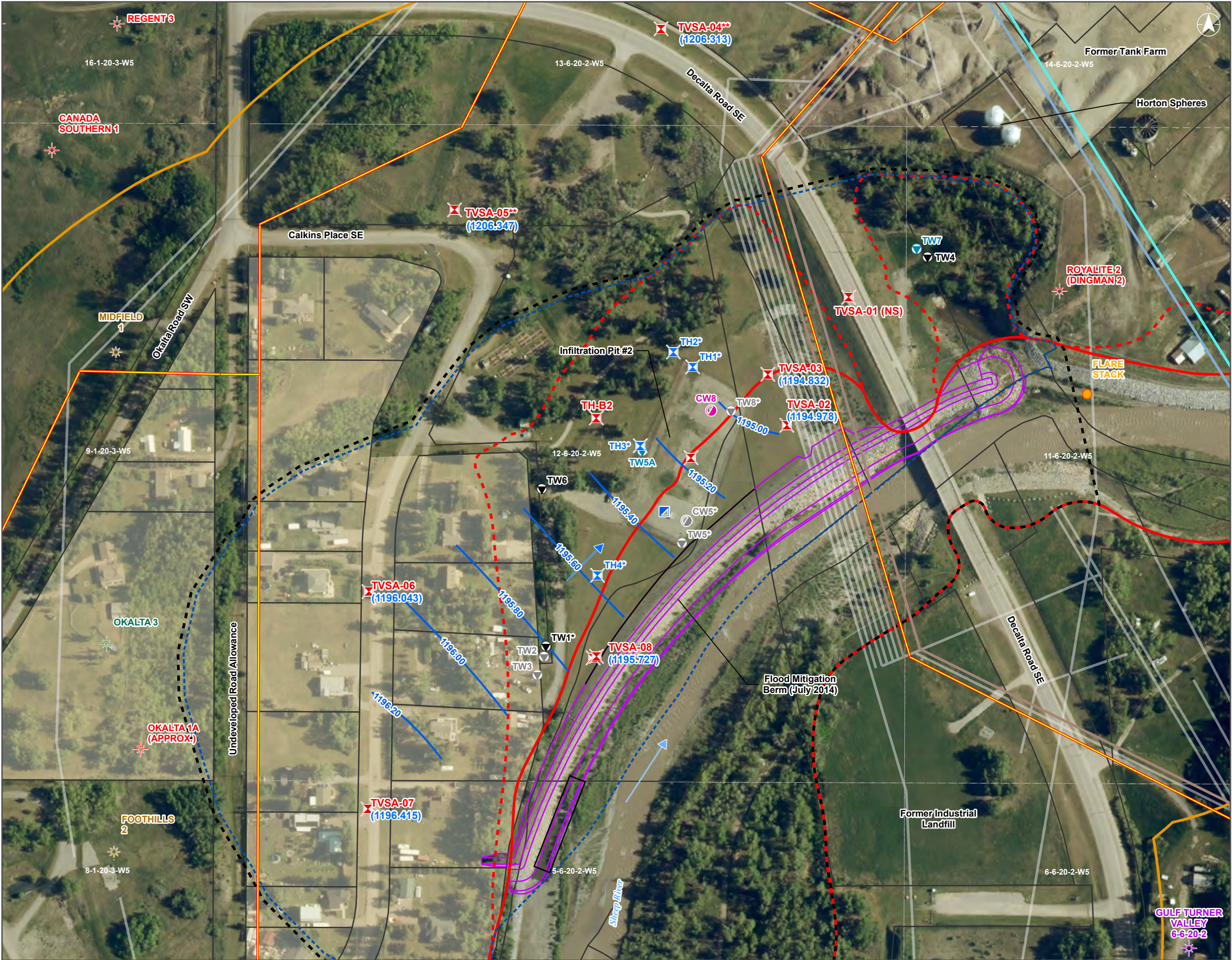
Date: 2/18/2025

Project Location 1235137030004
Alberta Prepared by V.Montanez on 2/18/2025
Technical Review by L.Kennedy on 2/18/2025
Independent Review by D.Alberti on 2/18/2025

Client/Project
SRRUC
2024 Annual Report For Stored Raw Water, Reservoir
Site Groundwater, Well and Infiltration Gallery Water
Monitoring Programs
Diamond Valley, Alberta

Figure No.
4.0

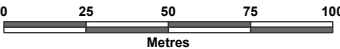
Title
**Interpreted Bedrock Groundwater Flow -
TVR Piezometers, July 23-24, 2024**



200 - 325 25TH ST. SE CALGARY, AB T2A 7H8
STANTEC DOES NOT CERTIFY THE ACCURACY OF THE DATA.
THIS MAP IS FOR REFERENCE ONLY AND SHOULD NOT BE
USED FOR CONSTRUCTION.

- Active Source Culvert Well
- Active Source Vault Well
- Active Source Water Well
- Decommissioned Culvert Well
- Destroyed/Decommissioned Source Water Well
- Inactive Source Water Well
- Monitoring Well Location (Installed by Stantec)
- Water Well Location (Installed by GERL)
- Oil and Gas Wells
 - Soil and Groundwater Remediated Well
 - Abandoned Not Yet Remediated
 - Abandoned But Remediated Status Unknown
 - Active Well (ERCB Registered)
- Apparent Groundwater Elevation Contour (masl)
- Apparent Groundwater Flow Direction
- Project Feature
 - Aquifer Boundary
 - Floodway Boundary
 - Flood Risk Boundary
 - River Flow Direction
 - Source Water Protection Area
 - Surface Water Protection Area
 - Wellhead Protection Area
 - 200 m Wellhead Protection Area Boundary
- Turner Valley Infrastructure
 - Berm
 - Legal Line
- Pipeline Infrastructure
 - Abandoned/Discontinued Line
 - Fuel Gas
 - Natural Gas Line
 - Sour Natural Gas
 - Subdivisions with Decommissioned Septic Fields
 - Legal Subdivision

TVSA-05** and TVSA-04** - Not used to assess apparent shallow
* Indicates well was installed by others
NS - Not Surveyed



NAD 1983 3TM 114

Date: 2/18/2025

Project Location
Alberta
123513703-0005
Prepared by V.Montanez on 2/18/2025
Technical Review by L.Kennedy on 2/18/2025
Independent Review by D.Alberti on 2/18/2025

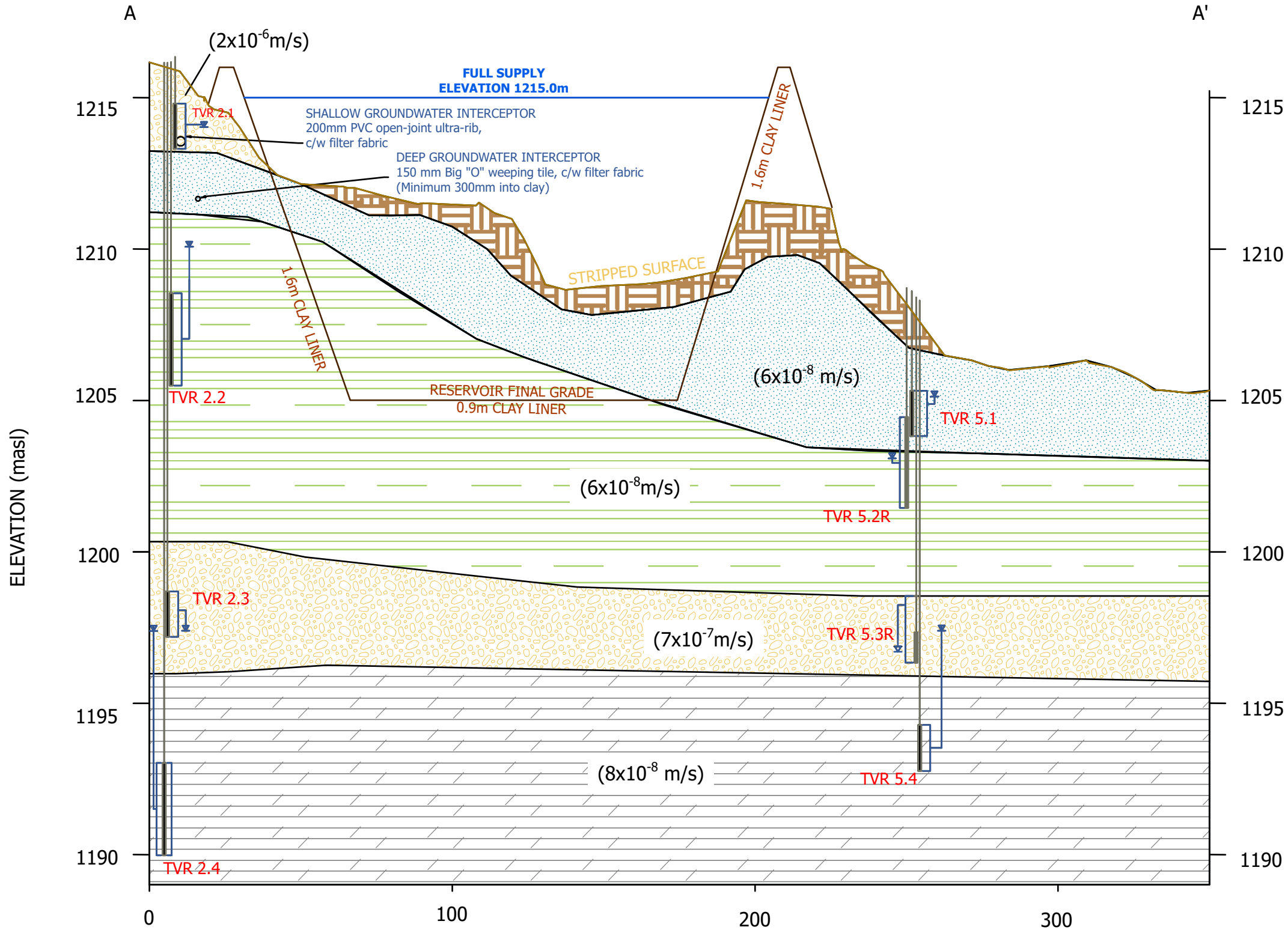
Client/Project
SRRUC
2024 Annual Report For Stored Raw Water, Reservoir
Site Groundwater, Well and Infiltration Gallery Water
Monitoring Programs
Diamond Valley, Alberta

Figure No.
5.0

Title
Interpreted Shallow Groundwater Flow -
TVSA Piezometers July 25, 2024

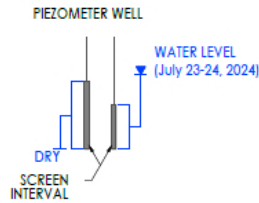


200 - 325 25TH ST. SE CALGARY, AB T2A 7H8
STANTEC DOES NOT CERTIFY THE ACCURACY OF THE DATA.
THIS MAP IS FOR REFERENCE ONLY AND SHOULD NOT BE
USED FOR CONSTRUCTION.

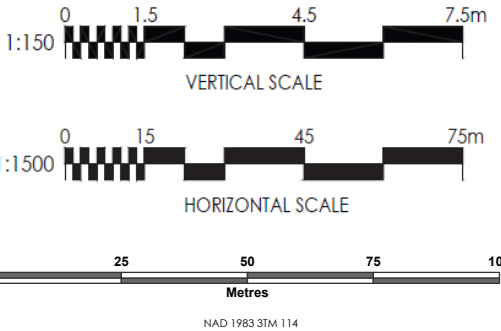


- Top Soil
- Silt Till
- Silt & Clay Till
- Gravel/Silt/Clay
- Shale Bedrock

Estimated Hydraulic Conductivity m/s
(Geometric Mean) **(6x10⁻⁸ m/s)**



Notes: *Base figure provided by MPE Engineering Ltd.
**Piezometers TVR 2.1, 2.2, 2.3, 2.4, 5.1, 5.4 installed by WDA Consulting Inc.
***Piezometers TVR 5.2R and 5.3R installed by Stantec Consulting Inc.



Date: 2/18/2025
Project Location: Alberta
Client/Project: SRRUC
2024 Annual Report For Stored Raw Water, Reservoir Site Groundwater, Well and Infiltration Gallery Water Monitoring Programs
Diamond Valley, Alberta
Figure No. **6.0**
Title **Cross Section A-A'**



Appendix B

Background



B.1 Site History for the Turner Valley Reservoir (TVR)

Three water supply wells (Well No. 5, Well No. 7, and Well No. 8) installed in the sands and gravels of the Sheep River floodplain were used to supply drinking water for Diamond Valley, historically known as the Town of Turner Valley (Figure 2.0, **Appendix A**). Following the drought of 2002, the Town of Turner Valley Council decided to construct a raw water reservoir. Given the Town's limited well capacity and diversion license, a reservoir was contemplated to accommodate a 20-year population. MPE Engineering Ltd. (MPE) recommended that the reservoir be sized to offset the water deficit that could occur from two consecutive drought years (each year being similar to 2002), and that the reservoir be sized for a future design population of 3,500. Given local Site conditions, a larger two-cell reservoir was actually constructed, with each cell capable of meeting the 20-year design condition.

Following an initial Phase I Environmental Site Assessment (ESA) and field program by Sabatini Earth Technologies (SET 2004), the 46-acre reservoir property was purchased by the Town in 2004. The actual "Reservoir Site" is 17 acres located in the far northwest corner of the larger property. The property was formerly a small farm operation.

MPE designed the Turner Valley Reservoir (TVR) and in the summer of 2006 the Town retained a contractor to construct the facility. Construction was completed in July 2008. Leakage testing, final commissioning and start-up were then carried out, and the TVR was put into service in March 2009. Public Report #6 (MPE 2008) provides more detailed information on the history of the TVR construction, documentation of items encountered during construction, soil and water sampling before and during the TVR construction.

The Phase I ESA (SET 2004) identified six oil and gas wells in the vicinity of the TVR (Okalta 2, Foothills 2, Talisman 1, Okalta 22, Okalta 4, and Ranger 1). The ESA and subsequent follow up by SET indicated that all the wells were either dry or gas producing (with a lower risk of contamination), except for Okalta 22, an abandoned oil well, which was being remediated by the Orphan Well Association (OWA). The remediation of Okalta 22 was completed by OWA in 2011.

The TVR was sited away from the known oil and gas wells. Based upon Energy Resources Conservation Board (ERCB) and oil company records available prior to construction, no oil and gas wells were located on the TVR itself. During excavation, two of the wells (Okalta 4 and Ranger 1) were found to be on the TVR, approximately 70 meters from their recorded locations. Both wells were found to have never produced, both having been dry and abandoned. Both wells were immediately remediated by their owner. No exceedances were noted in the soil samples taken, and neither well is expected to impact the TVR. Given the well locations, the TVR footprint was modified, and construction moved forward.

As part of the Approval from Alberta Environment in 2006, items encountered on the property during construction were to be documented, and environmental sampling of soils and groundwater were carried out. Outside of the TVR, primarily in the vicinity of Okalta 22, some impacted soils were encountered. The location of a raw water pump station and design of a water main were subsequently modified.



Other items were encountered and documented during construction, including numerous abandoned small diameter steam lines, two septic tanks, farm buildings, farm debris, an abandoned water well, abandoned groundwater piezometers, and a pole-mounted transformer. These items were assessed individually, and testing carried out as deemed necessary. Each item was abandoned and disposed of as appropriate to minimize any risk of impact to the TVR facility.

Prior to the use of the TVR, the stored water monitoring program consisted of collecting water samples (labeled as SW Cell 1 and SW Cell 2) monthly from the two stored raw water cells. The water samples were analyzed for physical, routine, dissolved metals, petroleum hydrocarbons (PHCs), and polycyclic aromatic hydrocarbons (PAHs). The results were used to establish baseline water quality in each cell.

Given the Diamond Valley area has significant oil and gas activities, a number of which pre-date the current Alberta Energy Regulator (AER) pipeline and well database, a groundwater monitoring well program was anticipated. Nineteen nested groundwater piezometers (TVR 1.1 to TVR 1.4, TVR 2.1 to TVR 2.4, TVR 3.1 to TVR 3.3, TVR 4.1 to TVR 4.4, and TVR 5.1 to TVR 5.4) were installed in 2007. Two groundwater interceptor drains were installed on the north and west sides of the TVR (Figure 2.0, **Appendix A**). The TVR groundwater quality monitoring program included monitoring the groundwater levels in all groundwater piezometers (nested piezometer series labeled as TVR 1 to TVR 5) once per week; however, this requirement was reduced to once every two months on June 8, 2009 (AESRD 2009) and water flow measurements from the groundwater interceptors (Shallow GW Int and Deep GW Int) on a monthly basis. Due to the frequency reduction in the monitoring of the groundwater levels in the piezometers, the dataloggers that were used to measure and record the groundwater levels around the TVR, for the period during and following the filling of the TVR (April 19, 2008 to July 1, 2009), were removed.

On a borehole log provided by WDA for TVR 2.4, it was noted that a hydrocarbon odour was present at 19.80 metres below grade (mbg) and 20.5 mbg. The piezometer screen interval was installed between approximately 23.1 mbg and 26.2 mbg, below the potential hydrocarbon impacts. It should be noted that hydrocarbon odour observations were observed in only one well during the WDA piezometer installation program. The hydrocarbon impacts appear to be localized and present within the upper meter of the bedrock lithology, immediately underlying a clayey silt till. Given TVR 2.4 is screened approximately 10 m below the bottom of the TVR and hydrocarbons are predominately below laboratory detection limits at the Site, the observations of a hydrocarbon odour within TVR 2.4 are not expected to influence the quality within the TVR. No further assessment to characterize potential hydrocarbon impacts at TVR 2.4 is recommended at this time.

Piezometer development was conducted by WDA Consultants Inc. (WDA) and by JWA in 2007 and 2008 (Stantec 2010a) (see Table B.1 below). Development techniques and other activities that aided in the development of the groundwater piezometers included: bailing, air purging, sampling, and well surging with a slug.



Table B.1 Piezometer Development

Event	Date	Piezometer																			
		1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	3.1	3.2	3.3	4.1	4.2	4.3	4.4	5.1	5.2	5.3	5.4	
Bailing	16-Jul-07							√	√												
	17-Jul-07		√	√																	
Air Purging	21-Jul-07		√		√		√	√	√		√	√		√	√	√		√	√	√	
Slug Testing	26-Jul-07													√				√			
	27-Jul-07											√									
	28-Jul-07											√									
	23-Aug-07		√																		
	24-Aug-07					√				√											
	27-Aug-07						√		√												
	10-Sep-07					√	√	√		√	√						√		√	√	
	11-Sep-07	√	√	√	√								√	√	√	√					
Re-development	19-Nov-07 ¹	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
	15/16-May-08 ²	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	

Notes:

- piezometers that had water levels below the top of the screen (TVR 1.1, 1.3, 1.4, 2.1, 2.3, 4.1, 5.3) were developed by flushing the sand pack with distilled water and then purging the piezometer dry afterwards. Subsequently all piezometers were pumped dry.
- piezometers were redeveloped using a solid 1 to 2 m length slug lowered into the piezometer screen zone and displaced in a vertical pumping motion for 10 to 20 strokes to surge the groundwater through the screen and sand pack area. The disturbed fines and the groundwater in the piezometer were then removed with a submersible pump.

Sampling and monitoring of the piezometers provides groundwater chemical analyses for the detection of contamination and to assess apparent groundwater flow direction. During construction of the interceptors, concern from the public resulted in an Environmental Appeals Board (EAB) Hearing, held in January 2008. One primary outcome of the hearing was a more intensive groundwater and stored water sampling program using these piezometers, and the two groundwater interceptor pipes. The interceptors were designed and installed by MPE to intercept groundwater flowing toward the TVR, relieve hydrostatic pressure and prevent groundwater from recharging the TVR. This program would establish an improved baseline of groundwater information outside the TVR footprint.

In 2008, the major filling of the TVR cells from the Sheep River occurred from July 3 to 19 and from August 1 to 12 for Cell 1 (South Cell), and from July 2 to 7, on July 17, and from July 23 to August 1 for Cell 2 (North Cell). In March 2009, raw water from the cells was directed to the raw water pump station. The monitoring program consisted of collecting water samples (labeled as PS Cell 1 and PS Cell 2) monthly from the raw water pump station for two months. After the two months, single blended stored water samples (labeled as PS Blend) were collected monthly from the raw water header within the raw



water pump station. The water samples were analyzed for physical, routine, dissolved metals, PHCs, and PAHs. The water treatment plant started treating water from the TVR on March 2, 2009. The TVR was primarily filled with water from the Sheep River as a one-time event, but after the start up on March 2, 2009, the water supply wells (Well No. 5, Well No. 7, and Well No. 8) were exclusively used to supply water to the TVR. As part of the baseline sampling program, water samples were also collected for water quality characterization from the Sheep River (approximately 30 m southeast of the water treatment plant) (JWA 2009). In June 2009 nearby Dingman #2 oil well was abandoned and at that time Well No. 7 was shut-in as a precaution due to the proximity of Dingman #2. Water Well No. 7 was brought back into service in late September 2009.

The findings of the 2010 interim groundwater report (Stantec 2010a) identified three piezometers (TVR 1.1, 1.4, and 4.4) that historically had insufficient water volumes for sampling. This was thought to have resulted in the detection of elevated nitrate-nitrogen and/or barium concentrations, which exceeded the AEPA Tier 1 Guidelines. It was noted that the cause of the low water volume at piezometer TVR 1.1 is likely due to dewatering caused by the shallow interceptor. This can be explained by the similar elevations of the top of screen of TVR 1.1 (1,213.18 metres above sea level [masl]) and the depth of the shallow interceptor (approximately 1,213 masl). Groundwater would be diverted away from TVR 1.1 since the shallow interceptor is located west (i.e., upgradient) of TVR 1.1. Groundwater would reach the shallow interceptor before reaching TVR 1.1. It is noted that shallow groundwater is present in the shallow gravel and silt till at certain times of the year; however, the shallow groundwater interceptor was dry in 2024 and has historically been dry at the sampling point. It is suspected that groundwater may be discharging from the perforated pipe of the interceptor before it reaches the sampling point. Insufficient water volumes in TVR 1.4 and TVR 4.4 were likely due to the slow recharge of the piezometer and piezometer completion lithology and depth, respectively. Piezometer TVR 1.4 required a longer period between purging and sampling to produce sufficient volumes for sampling; however, it should be noted that TVR 1.4 is no longer required to be sampled as per the Approval. Piezometer TVR 4.4 was replaced in January 2015 with TVR 4.4R at approximately 1.5 m deeper than TVR 4.4 to allow for more representative groundwater sampling.

The June 2013 flood event destroyed Well No. 5 and Well No. 8 and resulted in Well No. 7 being temporarily disconnected. As a result of the flood event, the Town replaced Well No. 5 and Well No. 8 with Well 5A (TW5A) and Culvert Well 8 (CW8), respectively. In addition, Vault Well 5 (VW5) was installed to supply additional raw water as part of the proposed infiltration gallery project. Immediately after the June 2013 flood event, two temporary infiltration pits (Infiltration Pit #1 and #2) were installed on an emergency basis to supply water to the TVR through an aboveground irrigation pipe. Infiltration Pit #1 was used in 2014; however, was intended to be a temporary measure and is currently not in operation, nor expected to resume operation. Infiltration Pit #2 was decommissioned in November 2013. These new water supply wells are located within the same quarter section and are completed in the same hydrogeological formation as their predecessors. As a result of installing the new water supply wells (CW8, TW5A, and VW5), and approval requirements outlined in Approval No. 1242-02-02, these wells were sampled more frequently in 2014. Each water supply well that is used to supply water at any time during the year is required to be monitored once every six months (or monthly, if the well water is pumped directly into the water treatment plant at any time during the month) for the analysis of physical parameters, routine parameters, dissolved metals, PHCs, and PAHs.



Between January 12 and 16, 2015, seven piezometers (TVR 4.4R, TVR 5.2R, TVR 5.3R, TVR 6.1, TVR 6.2, TVR 7.1, and TVR 7.2) were installed by Ernco under direction from Stantec. The locations of the new piezometers are shown on Figure 2.0, **Appendix A**. Destroyed piezometer TVR 4.4 was replaced by TVR 4.4R, which was also deepened (1.5 m) due to historically low water volume. As part of the January 2011 field program it was noted piezometer TVR 4.4 was destroyed, likely by snow removal equipment. Piezometer TVR 5.2 was decommissioned and replaced by TVR 5.2R as it appears the piezometer integrity of TVR 5.2 was compromised. TVR 5.2R was drilled at a shallower depth to monitor the shallow groundwater table as piezometer TVR 5.1 is historically dry. Piezometer TVR 5.3 was decommissioned in error and was replaced by TVR 5.3R, which was drilled slightly deeper (1.2 m) into the water-bearing unit. Four new piezometers (TVR 6.1, 6.2, 7.1, and 7.2) were installed in the southwest and northeast portion of the TVR to provide better coverage for oil and gas activities in the area. The new piezometers installed in 2015 were developed by Stantec personnel on March 12/13, 2015, March 14, 2016, and July 7, 2016. It should be noted that piezometers TVR 5.2R, TVR 6.1, TVR 6.2, and TVR 7.1 either had insufficient water or were dry during the first development event, so ten well volumes of potable water were quickly introduced into the piezometers on July 7, 2016 in an attempt to saturate the entire screen interval. Typical well development methods were used afterwards in an attempt to remove fines from the piezometers and the piezometers were purged dry to remove all added water. Piezometers TVR 6.1 and TVR 6.2 were decommissioned in late August of 2018 during construction of a stilling basin and were replaced in June 2021 as TVR 6.1R and TVR 6.2R, respectively.

Several new piezometers were drilled in 2015, including replacement piezometers TVR 4.4R, 5.2R, and 5.3R. Only piezometer TVR 5.3R is consistent with the water levels of the original piezometer (TVR 5.3). The water levels of TVR 4.4R are approximately 4 m higher compared to TVR 4.4 (Graph 4.0, **Appendix F**), and TVR 5.2R are approximately 4 m lower compared to TVR 5.2 (Graph 5.0, **Appendix F**). Water levels in the replacement piezometers TVR 4.4R and TVR 5.2R are expected to be more representative of site conditions. Replacement piezometers TVR 6.1R and TVR 6.2R were drilled in June 2021 with the intention of providing sufficient water to obtain groundwater samples as no samples were ever collected from TVR 6.1 and TVR 6.2. A sample was only collected from TVR 6.2R in 2022, 2023 and 2024, since insufficient water was available at TVR 6.1R.

In 2016, Bureau Veritas Laboratories (formerly Maxxam Analytics) lowered the amount of groundwater volume required to run the required analyses, resulting in more piezometers sampled since 2016. Due to the additional recharge (waiting 2 weeks following purging) and lower water volume required for sampling, several piezometers were sampled on a more consistent basis since 2016. The extended waiting period of approximately two weeks between purging and sampling improved the sampling conditions in certain piezometers. Furthermore, Stantec has concluded a 3-year low flow sampling study at the Site and has implemented low flow sampling methodology since July 2021 to improve the number of wells sampled and water quality characterization. This was implemented in July 2021 and resulted in additional wells sampled from 2021 to 2024 compared to historical events.

The stilling basin was constructed to provide supplemental water to the TVR. Water from the Sheep River is pumped to the stilling basin to remove sediments and then transferred to the TVR. Following the installation of the two hydrocarbon-resistant, high-density polyvinyl liners, water was pumped from the direct intake into the stilling basin for the first time in 2019. A water sample was collected by Stantec and



submitted to Maxxam Analytics (Maxxam, now Bureau Veritas Laboratories [BV Labs]) in Calgary for analysis of parameters required as per the Approval. Following below-guidelines results in the water sample, water was diverted from the stilling basin to the TVR. It should be noted that water was diverted to the TVR due to an urgent need to supplement water supply, and that additional mechanical changes to the settling pond pump station occurred after water was initially diverted (Stantec 2019b).

The Approval was amended (1242-02-05) to adjust the number of piezometers and the sampling frequency of the TVR piezometers to three times a year (March, July, and November) beginning in 2015. Water samples were collected three times a year (March, July, and November) from the shallow groundwater piezometers (TVR .1 and .2 series), two times a year (July and November) from select deep groundwater piezometers (TVR .3 and .4 series), and twice a year (July and November) from the groundwater interceptors for analysis of physical and routine parameters, dissolved metals, total metals (groundwater interceptors only), PHCs, and PAHs. Additional adjustments to the monitoring program were implemented in July 2021 and are described in Section 2.1 of the 2022 Annual Report (Stantec 2023).

As part of the Approval, water samples collected from the piezometers and the groundwater interceptors were analyzed for polychlorinated biphenyls (PCBs) and naturally occurring radioactive material (NORMs) where sufficient water volumes were present, one time prior to the use of the reservoir. Sampling for PCBs and NORMs at certain piezometers and the shallow groundwater interceptor where sampling was not completed prior to the use of the TVR has been limited after 2008 due to insufficient groundwater due to the large volume of water required for these analyses.

The monitoring requirements for the TVR were outlined in Part 5, Section 5 and Schedules 2 through 3 of EPEA Approval No. 1242-02-00, and Schedules 3A through 3C of EPEA Approval No. 1242-02-05. Separate monitoring requirements were outlined for the following five groups of water; Raw Water (Schedule 2), Treated Water Quality (Schedule 3), Stored Raw Water Quality (Schedule 3A), Reservoir Site Groundwater Quality (Schedule 3B), and Well and Infiltration Gallery Water (Schedule 3C). Currently, the monitoring requirements for the five groups of water are outlined in Section 3.3 of EPEA Approval No. 1242-03-00 and further modifications are outlined in a letter to Alberta Environment (MPE 2021).

It should be noted that a low flow pilot testing program was developed as part of Ministerial Order 41/2015 and approved by Alberta Environment and Parks (AEP), now Alberta Environment and Protected Areas (AEPA) in January 2018. The low flow pilot test, which began in 2018, has been conducted at the Site over three years to evaluate the use of an alternate purging and sampling methodology. The low flow pilot test was conducted on select TVR piezometers to assess if this sampling methodology will decrease the number of piezometers that are not sampled due to insufficient water, as well as assess if this approach will reduce turbidity in the samples. The low flow pilot testing program finished in 2020 and concluded that low flow sampling methodology improved the ability to sample wells that previously had insufficient water and reduced the turbidity in most samples (Stantec 2021a).



B.2 Site History for Turner Valley Source Aquifer (TVSA)

The Turner Valley Source Water Aquifer TVSA is a gravel aquifer, bounded by an escarpment on three sides, and on the fourth side by the Sheep River. The groundwater in the gravel aquifer appears to have a direct hydraulic connection with the Sheep River and supplies groundwater via water supply wells to the TVR. The potential contamination sources in the area of the TVSA include septic fields located along Calkins Place SE (disconnected and tied into Town sewer lines in 2014), lawns and gardens located along Calkins Place SE, winter road maintenance along Calkins Place SE and Decalta Road SE, flooding, active and inactive oil and gas operations (i.e., currently nine pipelines were reported in the eastern portion of the TVSA [2 operating natural gas, 1 operating sour natural gas, 1 discontinued low vapour pressure [LVP], 4 discontinued natural gas and 1 abandoned crude oil]), a former tank farm located approximately 0.75 km SE of the main four-way intersection in Diamond Valley, the former Turner Valley Gas Plant, the former industrial landfill, and the Horton spheres.

A monitoring well network was recommended to establish a groundwater protection plan for the TVSA and the Wellhead Protection Area. In particular, the installation of piezometers west and east of the pipeline corridor located between Wells TW7 and Culvert Well No. 8 (formerly TW8), north of the aquifer between the aquifer and the active and abandoned pipelines running northeast-southwest and northwest-southeast, additional piezometers in the southwest for wellheads Okalta 3 and Foothills 2, and the pipelines running approximately north-south. Between April 15 and 23, 2014, six piezometers (TVSA-03 to TVSA-08, and TH-B1 to TH-B3) were installed by Ernco under direction from Stantec. The locations of the piezometers are shown on Figure 2.0, **Appendix A**. Piezometer locations TVSA-01 and TVSA-02 could not be installed at the time of drilling due to construction activities related to the infiltration gallery and flood mitigation berm; however, were installed on January 14, 2015. The piezometers installed in 2014 were developed by Stantec personnel on May 6 and May 7, 2014, and piezometer TVSA-02 was developed on March 12, 2015. Piezometer TVSA-01 was dry and could not be developed. In November 2015, following the monitoring and sampling program, piezometers TVSA-01 and TVSA-07 were raised following paving activities along Calkins Place SE. Piezometer TVSA-06 was redeveloped on July 8, 2016 due to silty water after the first development event. Piezometers TVSA-06 and TVSA-07 were noted as damaged in November 2019, likely due to snow plowing activities. Both piezometers were repaired in July 2020, which included the replacement of the protective flushmount well casing.

Groundwater samples were collected from piezometers with sufficient water in March and November from 2015 until 2020, concurrent with the TVR groundwater monitoring and sampling program. After the March 2021 monitoring and sampling event, groundwater samples are to be collected once per year beginning in July 2021 in conjunction with the TVR groundwater monitoring and sampling program. In addition, two surface water samples are collected from the Sheep River. One surface water sample is collected from the Sheep River in proximity to the water treatment plant, and another sample is collected approximately 3 km upstream, as shown on Figure 2.0, **Appendix A**. As requested by AEP, bedrock piezometers (TH-B1 to TH-B3) and Water supply well #3 (TW3) were added to the TVSA sampling program in 2016. Sampling and monitoring of the piezometers provides groundwater chemical analyses for the detection of contamination and to assess apparent groundwater flow direction. Water supply well TW3 was decommissioned on November 9, 2018 by Titan Water Systems Inc and is no longer part of the TVSA



sampling program. Additionally, the bedrock piezometers and TVSA-01 were removed from the program in July 2021 as bedrock characterization is not required and TVSA-01 has always been dry.

The monitoring requirements for the TVSA and River Water Monitoring Program are outlined in Section 3.3 of *EPEA* Approval No. 1242-03-00 and modifications implemented in July 2021 are outlined in a letter to Alberta Environment (MPE 2021). It should be noted that the naming scheme of the TVSA piezometers differ from the previous approval (Section 5.3.9.2 of *EPEA* Approval No. 1242-02-02); however, the locations are generally the same. Table B.2 below identifies the corresponding well identification numbers between the approval and the reported well location.

Table B.2 Corresponding Well Identification Numbers

Location I.D. (Approval)	Location I.D. (Installed)
MW14-01	TVSA-01
MW14-02	TVSA-02
MW14-03	TVSA-03
MW14-04	TVSA-04
MW14-05	TVSA-05
MW14-06	TVSA-06
MW14-07	TVSA-07
MW14-08	TVSA-08

Stantec conducted environmental work, including the advancement of boreholes, completed as piezometers to monitor the TVSA based on recommendations made in the 2011 Wellhead Protection Area Monitoring Well Inventory report (Stantec 2012b). The purpose of the TVSA piezometers is to monitor the groundwater quality of the source aquifer for the water supply and to assess water quality downgradient, where possible, of potential sources of contamination.

B.3 Regional and Site Characteristics

B.3.1 Surface Topography and Drainage

Based on the surface topography, the shallow groundwater flow at the TVR is generally expected to be toward the southeast in the direction of the Sheep River (Figure 1.0, **Appendix A**). The TVR is situated on an upper terrace of the Sheep River. On the lower terrace, a raw water pump station and the raw water mains transport water between the TVR and the existing water treatment plant to the east. The area of the TVSA is also situated on the lower terrace. Surface water drainage runs overland toward the Sheep River to the southeast on both the TVR and the TVSA sites (Figure 2.0, **Appendix A**). It is expected that surface water will infiltrate into the surficial soils as no direct discharge to the Sheep River has been observed by the Town staff. It should be noted that a culvert located in the northeast portion of



the TVSA feeds into an old river channel northeast of Decalta Road SE, which during high water levels may discharge into the Sheep River.

B.3.2 Regional Geology

Surficial sediments in the regional area of the reservoir consist of rolling glaciolacustrine plain sediments with a local relief of one to two metres. These glaciolacustrine sediments include thinly to massively bedded fine sand, silt and clay and have a thickness of approximately 6 to 20 m (Jackson 1998). The TVR location sits in the center of the Sheep River Anticline where the bedrock geology consists of the Colorado Shale Formation, a homogenous well-bedded shale with thin fine-grained sandy members. Secondary stresses on the formation include minor faults, folds, and fractures (Gallup 1975).

B.3.3 Local Geology

The local geologic setting at the TVR, based on the borehole logs (**Appendix C**) provided by WDA, indicated that the Site stratigraphy from the surface down consists of surficial deposits including gravel or topsoil (2 to 3 m thick) underlain by silt till (1 to 3 m thick), underlain by silt and clay till (5 to 12 m thick), gravel with silt and clay till (2 to 5 m thick), followed by shale bedrock. The depth below grade to the shale bedrock varies from approximately 12 m to 20 m. Piezometers were completed in these geologic units. A cross-section of the geology at the TVR is presented in Figure 6.0, **Appendix A**.

The nested TVR piezometers were screened in six geologic units; shallow gravels/silt till (TVR 1.1, 2.1, 3.1, and 4.1), silt till (TVR 5.1 and 6.1), cobbles/clay till (TVR 7.1), silt till/clay till (TVR 1.2, 2.2, 3.2, 4.2, 5.2R, 6.1R, 6.2, 6.2R, and 7.2) gravel/silt/clay (TVR 1.3, 2.3, 4.3, and 5.3R) and shale bedrock (TVR 1.4, 2.4, 3.3, 4.4, 4.4R, and 5.4). TVSA piezometers were screened in four geologic units; gravel/cobble/clay (TVSA-02 and TVSA-03), clay/gravel (TVSA-01, TVSA-04, TVSA-05, and TVSA-08), sand/gravel (TVSA-06 and TVSA-07), and bedrock (TH-B1, TH-B2, and TH-B3) (Stantec 2014b). The borehole logs are provided in **Appendix C**.

B.3.4 Groundwater Use

Local areas in the Turner Valley area have yields of 1.9 to 7.6 L/s (Borneuf 1980). This range of yields can result from local fracturing in bedrock sediments and the presence of alluvial sands and gravels.

Based on the review of the AEPA Groundwater Information Centre conducted in February 2025, there were approximately 368 registered water wells (of which 83 are reported as decommissioned) within a 3.5 km radius of the TVR and 24 registered water wells (of which 12 are reported as decommissioned) within a 500 m radius of the TVR (Figure B.1, **Appendix B**) (AEPA 2025). Two registered water wells at the Site are presented in Figure 2.0, **Appendix A**. The Reconnaissance Report of the 368 registered water wells is provided in **Appendix B**. A review of the water well drilling records within 1 km of the TVR indicated that the registered water wells were completed in both surficial sediments and bedrock, and for the 24 registered water wells located within a 500 m radius of the TVR, the details are summarized in Table B.3 below.



Table B.3 Summary of Reconnaissance Report (within 500 m radius of TVR)

Well ID	Reported Well Depth (m)	Reported Use	Well ID	Reported Well Depth (m)	Reported Use
365553*	85	Domestic	380327	15	Domestic
370222	25	Domestic	1021770*	5	Domestic
370223*	26	Domestic	1071771*	3	Domestic
370224*	29	Domestic	1021772*	4	Domestic
380297	31	Domestic	1021773*	5	Domestic
380303	20	Domestic	1023337	85	Domestic
380307*	65	Domestic	2096843*	-	Unknown
380314*	34	Domestic	2096844*	-	Unknown
380315	-	Domestic	9546383	37	Domestic
380318*	32	Domestic	9546473	41	Domestic
380321	32	Domestic	9546747	41	Domestic
380325	3	Unknown	9546475	41	Domestic

Notes:

* Water wells reported as decommissioned.

B.3.5 Hydraulic Conductivities

Hydraulic conductivity testing at the TVR piezometers was completed by WDA (refer to Table B.4 below). Hydraulic conductivity is the rate at which a fluid can move through a permeable medium or the quantity of water that will flow through a unit cross-sectional area of a porous material per unit time under a hydraulic gradient of 1.00 (Nielsen 1991). As indicated by the hydraulic conductivity values provided in Table B.4, the lowest hydraulic conductivity values were in the till and shale.



2024 Annual Report for Stored Raw Water, Reservoir Site Groundwater, Well and Infiltration Gallery Water Monitoring Programs – Diamond Valley

Appendix B: Background

February 27, 2025

Table B.4 Hydraulic Conductivities

Lithology	Well	Hydraulic Conductivity (m/s)	
Gravel/Silt Till	1.1	1E-05	
	2.1	1E-06	
	3.1	1E-06	
	4.1	3E-06	
		Geometric Mean	2E-06
Silt Till	5.1	6E-08	
		Geometric Mean	6E-08
Silt Till/Clay Till	1.2	6E-08	
	2.2	8E-08	
	3.2	3E-08	
	4.2	5E-08	
	5.2	8E-08	
		Geometric Mean	6E-08
Gravel/Silt/Clay	1.3	5E-07	
	2.3	2E-05	
	4.3	9E-08	
	5.3	2E-07	
		Geometric Mean	7E-07
Shale	1.4	6E-08	
	2.4	3E-07	
	3.3	5E-07	
	4.4	6E-08	
	5.4	7E-09	
		Geometric Mean	8E-08



B.3.6 Water Chemistry

Select water quality results from water samples collected in 2013 (i.e., March, July, November) were plotted on a tri-linear diagram using the relative concentrations of major ions (mg/L) to demonstrate the distinct groups of water chemistry, and were supplied to Alberta Environment and Sustainable Resource Development, now AEPA, in a letter dated July 4, 2014 (Stantec 2014c). While water from the upper gravel, the water supply wells, the deep interceptor, and TVR was calcium dominated, water from the tills was slightly less calcium dominated by an increase in sodium concentrations, and the bedrock water quality was sodium dominated. This was consistent with a tri-linear diagram completed in 2008 (JWA 2009).

B.3.7 Elevated Parameters

Historically, a variety of parameters have been considered elevated or in exceedance of the Guidelines for Canadian Drinking Water Quality (GCDWQ) guidelines. Since changes to the sampling program implemented at the Site in 2021, several of the parameters are no longer regularly sampled in groundwater. The following is a description of the historical concentrations and why these parameters were elevated.

Nitrate-Nitrogen

Nitrate-nitrogen concentrations at select piezometers have occasionally been elevated and can likely be attributed to low water volumes in the piezometer (Stantec 2010a, Stantec 2010b). It should be noted that nitrate-nitrogen was not sampled at piezometer locations in 2023. Piezometer TVR 1.1 slightly exceeded the GCDWQ maximum allowable concentration (MAC) guideline of 10 mg/L once in July 2010 (11 mg/L) (Table E.8, **Appendix E**). Piezometer TVR 1.1 has only been sampled five times historically due to insufficient water volume. At destroyed piezometer TVR 4.4, the nitrate-nitrogen concentrations of 17.7 mg/L (March 2008), 21 mg/L (August 2008), and 18 mg/L (November 2009) exceeded the GCDWQ MAC guideline of 10 mg/L (Table E.8, **Appendix E**). Insufficient water volume was also an issue for sampling at TVR 4.4, prior to the piezometer being destroyed in January 2011. Replacement piezometer TVR 4.4R, which was installed approximately 1.5 m deeper than TVR 4.4 to allow for more representative groundwater sampling and has approximately 5 m of water, was sampled twelve (12) times from 2015 to 2020. Except for the November 2018 sample, all other samples have been below the laboratory detection limit for nitrate-nitrogen. The nitrate-nitrogen results for TVR 1.1 and TVR 4.4 appear to be localized and may be anomalous, as nitrate-nitrogen concentrations above the GCDWQ MAC guideline of 10 mg/L have not been identified in the other piezometers and interceptors at the TVR (Table E.8, **Appendix E**).

Barium

Barium concentrations have been below the referenced guidelines at all sampling locations and below the trigger level at most sampling locations. It should be noted that barium has not been sampled at piezometer or interceptor locations since 2021. The GCDWQ MAC guideline of dissolved barium increased from 1 mg/L to 2 mg/L after new guidelines came into effect in September 2020, resulting in concentrations that were historically above the guideline to only exceed the trigger level. Historical



concentrations of dissolved barium at TVR 1.4 (July 2010 and January 2012) and TVR 4.4R (November 2018 and July 2019 to November 2020) exceeded the GCDWQ MAC trigger level of 1 mg/L, with TVR 4.4R showing a statistically significant increasing trend between 2015 and 2020. TVR 1.4 is no longer required for sampling, as per the Approval, and hasn't been sampled since 2012. As described in the 2009 annual groundwater monitoring program (Stantec 2010b) and the 2010 interim groundwater report (Stantec 2010a), it was identified that elevated concentrations of barium detected at piezometer TVR 1.4 were likely due to low water volumes in the piezometer. Historically, elevated barium concentrations have been measured since the piezometer was developed in May 2008 to November 2009, with concentrations ranging from 0.91 to 1.5 mg/L (Table E.9, **Appendix E**). A correlation between historic barium concentrations and groundwater elevation was observed, with higher barium concentrations corresponding to lower groundwater elevations (Stantec 2012b).

Based on visual appearance, the trending of the data appears to indicate that concentrations at the TVR/TVSA piezometers, interceptor trenches and stored water are generally stable and below the trigger level, except for piezometer TVR 4.4R, which is completed in the bedrock, downgradient of the TVR and below the base of the TVR in a different stratigraphic zone. The elevated barium concentrations at TVR 4.4R appears to be localized and may be anomalous as elevated barium concentrations have not been detected in any other TVR/TVSA piezometers or the interceptors. Based on the above and there is no known anthropogenic source of barium present at the Site, an exceedance of the GCDWQ MAC for dissolved barium within the TVR is not expected. No further assessment to characterize potential barium impacts at TVR 4.4R is recommended at this time. However, the RAP outlines additional steps to be taken in the event concentrations within the TVR or stilling basin are significantly increasing and will likely lead to an exceedance (MPE and Stantec 2021).

Antimony, Selenium, Mercury

Dissolved antimony concentrations have generally been below the referenced guidelines and trigger level at most sampling locations. Concentrations observed in piezometers TVR 2.4 and TVR 5.4 have only exceeded the GCDWQ MAC guideline twice, occurring in 2007 (Table E.18, **Appendix E**). It should be noted that dissolved metals have not been sampled at piezometer or interceptor locations since 2021. A total of 54 sampling events since the last exceedance in September 2007 have taken place at TVR 2.4 with no exceedances recorded and has only exceeded the detection limit once since 2011. As previously reported, the antimony exceedances at TVR 2.4 from 2007 appear to be anomalous. Piezometer TVR 5.4 is no longer required for sampling, as per the Approval, and hasn't been sampled since 2014. Piezometer TVR 5.4 did not have any exceedances after September 2007 and frequently had insufficient water volume for sampling. The exceedances observed in TVR 5.4 appear to be a result of insufficient water volume for sampling (Table E.18, **Appendix E**). Antimony only exceeded once in destroyed piezometer TVR 4.4 in August 2007 and appears to be a result of insufficient water volume for sampling. No antimony exceedances were recorded at replacement piezometer TVR 4.4R from 2015 to 2020 and concentrations have been non-detect since 2016. Antimony also exceeded the guideline once at TVR 3.3 in August 2007 but was below the detection limit during every sampling event from November 2010 until the last time it was sampled in July 2015. An antimony exceedance at TVR 1.4 was noted in January 2012 and appears to be a result of insufficient water volume for sampling as a sample obtained on January 23, 2012 (collected prior to purging the groundwater) did not show an exceedance. No previous exceedance of



antimony was reported at TVR 1.4 and it has not been sampled since 2012. Dissolved antimony at TH-B1 exceeded the GCDWQ MAC guideline in May 2014 and April 2016 but has been non-detect since November 2016. Furthermore, TH-B1 is completed in the bedrock unit underlying the gravel aquifer within the TVSA. It should be noted that monthly samples of the stored water have generally been below laboratory detection limits and/or guidelines of dissolved antimony. Dissolved antimony concentrations for the TVSA piezometers have all been at or below the laboratory detection limits since the piezometers were first sampled in 2014 (Table E.9, **Appendix E**).

Dissolved selenium concentrations have generally been below the referenced guidelines and trigger level at most sampling locations. Concentrations have only exceeded the GCDWQ MAC once in TVR 1.4 and twice in TVR 3.3, occurring in 2008. Concentrations in TVR 3.3 have been below the detection limit during every sampling event (a total 31) from January 2010 until it was last sampled in July 2015. As previously reported, the dissolved selenium exceedances at TVR 3.3 in 2008 were considered anomalies. Piezometer TVR 1.4 did not experience any exceedances after November 2008 until it was last sampled in January 2012, and frequently had insufficient water volume for sampling. It can be assumed that any exceedances observed in TVR 1.4 were a result of insufficient water volume for sampling. Selenium only exceeded once at destroyed piezometer TVR 4.4 in August 2007 and appears to be a result of insufficient water volume for sampling. No selenium exceedances were recorded at replacement piezometer TVR 4.4R from 2015 to 2020. Dissolved selenium slightly exceeded the AEPA Tier 1 FAL guideline at the deep groundwater interceptor in November 2019, the first time since May 2008 and is likely anomalous (Table E.9, **Appendix E**).

Dissolved mercury concentrations have been non-detect at the deep groundwater interceptor since 2019 and has only exceeded the AEPA Tier 1 FAL guideline of 0.000005 mg/L in March 2014. Since no other exceedances have been reported since 2014, this exceedance is likely anomalous. It should also be noted that dissolved mercury was well below the GCDWQ MAC guideline of 0.001 mg/L (Table E.9, **Appendix E**).

The elevated concentrations of select dissolved metals in groundwater samples collected from the TVR piezometers, the deep groundwater interceptor, and the total metals collected from the deep groundwater interceptor, are likely related to sample turbidities of greater than 5 Nephelometric Turbidity Units (NTU). Sample turbidities from the groundwater piezometers have declined (Table E.8, **Appendix E**) with progressive piezometer development and sampling, a change to the sampling schedule in 2015 with a two-week waiting period between purging and sampling events, and implementation of low flow sampling methodology since July 2021. However, turbidity continues to be a potential issue at some piezometers due to the volume of water required to fill the sample bottles, the frequency of sampling, and the lack of available water in those groundwater piezometers.

PAH Parameters

PAH parameters have been below the laboratory detection limits in most samples collected since the redevelopment in 2008. It should be noted that PAHs have not been sampled at piezometer or interceptor locations since 2021. Benzo(a)pyrene and benzo(a)pyrene equivalency concentrations in all samples collected since the redevelopment in 2008 have been below the AEPA Tier 1 and GCDWQ guidelines except for concentrations at TVR 4.3 in 2018 and TW3 during all sampling events except for November



2018 (Table E.12, **Appendix E**). Based on the historical results (i.e., no previous PAH exceedances), low water volume and high turbidity values within TVR 4.3, the PAH results for TVR 4.3 in 2018 were considered to have low confidence (Table E.12, **Appendix E**).

Even with the ongoing piezometer development, residual fine silts from the drilling process continue to be present in the piezometers. The low permeability of the geologic units has limited the effectiveness of piezometer development methods to remove all the silt. Except for metals, the groundwater samples collected from the piezometers were not field or laboratory filtered. The laboratory typically extracts the unfiltered samples with an organic solvent prior to analysis. Chemical extraction causes the compounds selected for analysis to desorb from suspended solids and places them in solution. The likely scenario is a bias high for organic parameters such as PAHs when dealing with samples containing silt.

TDS, Iron

Some of the samples collected have historically exceeded the aesthetic objective for TDS and iron. It should be noted that TDS and iron have not been sampled at piezometer or interceptor locations since 2021. As previously reported, elevated TDS and iron is a common occurrence for the shallow groundwater in this area and are not considered to represent a concern; therefore, not included in Table E.18, **Appendix E**.

In southwest Alberta, TDS content of groundwater is reported to vary from less than 50 mg/L to slightly over 1,500 mg/L, with concentrations increasing further east (Borneuf 1980). Groundwater in southern Alberta is often naturally high in iron and manganese (AAFRD 2000) and both metals are common components of Alberta tills (Pawluk and Bayrock 1969).

Sodium

Some of the samples collected have historically exceeded the aesthetic objective for sodium. It should be noted that sodium has not been sampled at piezometer or interceptor locations since 2021. The high sodium concentrations were in the deeper piezometers (TVR 1.4, TVR 2.4, TVR 3.3, TVR 4.4, TVR 4.4R, and TVR 5.4) and likely a natural characteristic of the bedrock (Table E.8, **Appendix E**). The concentrations of sodium do not vary considerably with time for these deep piezometers. As previously reported, the concentration of sodium is not considered to represent a concern.

Turbidity

Although the turbidity concentrations in groundwater were initially high (> 200 NTU) in 2007 at the TVR, piezometer development activities conducted in 2007 and 2008, and the approximate two-week waiting period between purging and sampling that was implemented in 2015 have generally lowered the turbidity. It should be noted that turbidity has not been sampled for at piezometer or interceptor locations since 2021. Based on the charts of selected chemical parameters, the associated elevated concentrations of PAHs and dissolved metals such as antimony and selenium generally decrease with turbidity (Stantec 2022). A review of the average turbidity values between 2014 and 2021 indicated that from 2015 to 2021 average turbidity values were collectively lower in the TVR piezometers when compared to the 2014 average values (Table E.8, **Appendix E**). This is likely a result of the approximately two-week waiting period between purging and sampling. Furthermore, Stantec has concluded a 3-year low flow sampling



study at the Site to assess if changing sampling methodology will improve water quality characterization including turbidity. The results of the low flow sampling study concluded that low flow sampling methodology reduced the turbidity in most samples (Stantec 2021a).

Other Dissolved Metals

The groundwater analytical results for 2021 showed that the dissolved metal concentrations were generally stable compared to historical results obtained after piezometer development activities conducted in 2008. Dissolved metal parameters have not been sampled for at piezometer or interceptor locations since 2021. It was noted that since the development activities, some naturally occurring physical, routine, and dissolved metals parameters (pH, TDS, sodium, iron, and manganese) have exceeded the GCDWQ AO guidelines, and anomalous dissolved aluminum concentrations (TVR 1.2 – July 2009 and November 2018, TVR 2.2 – January 2010, January 2012 and November 2019, TVR 4.4 – August 2008, TVSA-03 – November 2015, TVSA-05 – November 2019, TVSA-07- March 2021, SB – May 2019, and the deep groundwater interceptor - July 2009) and a dissolved chromium concentration (TVR 7.3, a duplicate of TVR 7.2) in July 2017 exceeded the applicable guidelines (Table E.18, **Appendix E**).

B.4 Previous Environmental Work

Jacques Whitford AXYS Ltd. (JWA) prepared the reports for the stored raw water, groundwater, and well water monitoring programs for the TVR between 2007 and 2009 (JWA 2007a, 2007b, and 2009). JWA was acquired by Stantec in 2009, and Stantec completed the monitoring programs between 2009 and 2023 (Stantec 2010b, Stantec 2011, Stantec 2012a, Stantec 2013, Stantec 2014a, Stantec 2015, Stantec 2016, Stantec 2017, Stantec 2018, Stantec 2019c, Stantec 2020, Stantec 2021b, Stantec 2022, Stantec 2023, and Stantec 2024).

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2024 Annual Report for Stored Raw Water, Reservoir Site Groundwater, Well and Infiltration Gallery Water Monitoring Programs – Diamond Valley

Appendix B: Background

February 27, 2025

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2024 Annual Report for Stored Raw Water, Reservoir Site Groundwater, Well and Infiltration Gallery Water Monitoring Programs – Diamond Valley

Appendix B: Background

February 27, 2025

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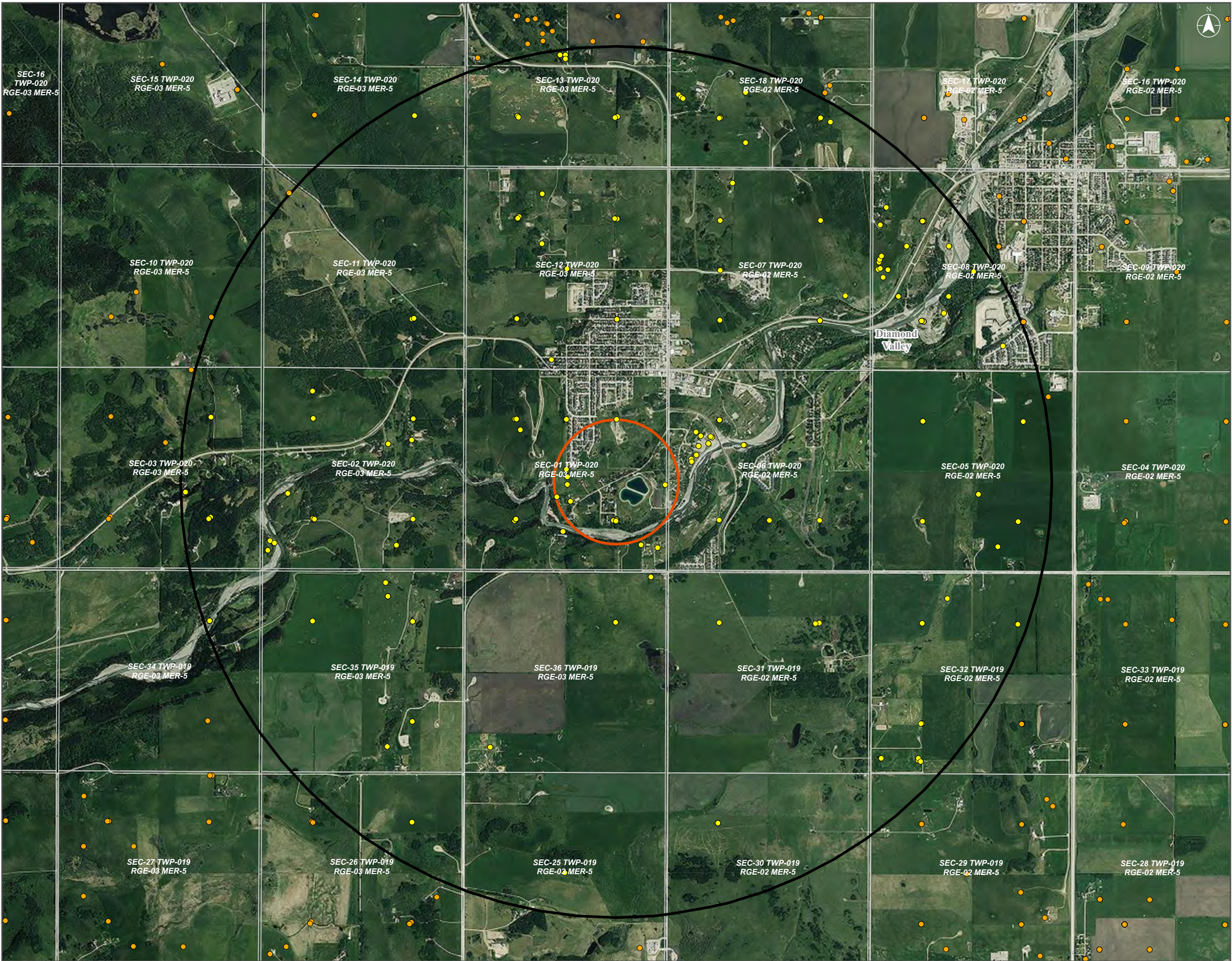
**2024 Annual Report for Stored Raw Water, Reservoir Site Groundwater, Well and Infiltration Gallery Water
Monitoring Programs – Diamond Valley**

Appendix B: Background

February 27, 2025

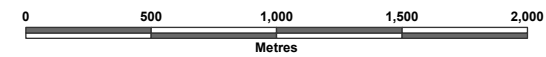
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and Well Water Monitoring Program, Turner Valley*. Project No. 123513703.





200 - 325 25TH ST. SE CALGARY, AB T2A 7H8
STANTEC DOES NOT CERTIFY THE ACCURACY OF THE DATA.
THIS MAP IS FOR REFERENCE ONLY AND SHOULD NOT BE
USED FOR CONSTRUCTION.

- Registered Water Well Outside the 3500 m Buffer
- Registered Water Well Within the 3500 m Buffer
- 500m Buffer
- 3500m Buffer
- Section



NAD 1983 3TM 114

Date: 2/11/2025

Project Location
Alberta
123513114-C1
Prepared by V.Montanez on 2/11/2025
Technical Review by L.Kennedy on 2/11/2025
Independent Review by D.Alberti on 2/11/2025

Client/Project
SRRUC
2024 Annual Report For Stored Raw Water, Reservoir
Site Groundwater, Well and Infiltration Gallery Water
Monitoring Programs
Diamond Valley, Alberta

Figure No.
B.1

Title
Registered Water Well Users



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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)
365553	8	1	20	3	5	BIG ROCK WATER WELL DRILLING	1992-06-14	280.00	New Well- Decommissioned	Domestic		2		MCCRAE, DARCEY			0.00
370222	SE	1	20	3	5	NIEMANS DRILLING (1980) LTD.	1993-08-06	82.00	New Well	Domestic		4		THOMPSON, ROBERT	12.40	5.00	6.62
370223	SE	1	20	3	5	NIEMANS DRILLING (1980) LTD.	1993-08-03	85.00	Test Hole- Decommissioned	Domestic		4		THOMPSON, ROBERT	0.00	0.25	0.00
370224	SE	1	20	3	5	NIEMANS DRILLING (1980) LTD.	1993-08-02	95.00	Test Hole- Decommissioned	Domestic		4		THOMPSON, ROBERT	0.00	0.25	0.00
380297	SE	1	20	3	5	UNKNOWN DRILLER		102.00	Chemistry	Domestic	1			STEL, H.G.	20.00		0.00
380303	SE	1	20	3	5	UNKNOWN DRILLER		65.00	Chemistry	Domestic	1			BROTRUD, H.E.	56.00		0.00
380307	1	1	20	3	5	NIEMANS DRILLING (1980) LTD.	1984-06-30	212.00	New Well- Decommissioned	Domestic		10		CHANDLER, JOHN			0.00
380314	1	1	20	3	5	NIEMANS DRILLING (1980) LTD.	1984-09-26	112.00	New Well- Decommissioned	Domestic		3		CHANDLER, JOHN			0.00
380315	SE	1	20	3	5	UNKNOWN DRILLER		0.00	Chemistry	Domestic	1			THOMPSON, R.W.			0.00
380318	SE	1	20	3	5	NIEMANS DRILLING (1980) LTD.	1986-10-14	106.00	New Well- Decommissioned	Domestic		3		CHANDLER, JOHN	10.00	0.50	5.56
380321	SE	1	20	3	5	NIEMANS DRILLING (1980) LTD.	1986-10-20	106.00	New Well	Domestic		3		CHANDLER, JOHN	25.00	3.00	5.56
380325	SE	1	20	3	5	UNKNOWN DRILLER		10.00	Chemistry	Unknown				YOUTH WITH A MISSION			0.00
380327	SE	1	20	3	5	KRIEGER DRILLING LTD.	1988-06-02	49.00	New Well	Domestic		5		YOUTH WITH A MISSION	35.00	15.00	6.63
1021770	SE	1	20	3	5	AARON DRILLING INC.		18.00	Existing Well- Decommissioned	Domestic		1		TURNER VALLEY, TOWN OF	16.00		
1021771	SE	1	20	3	5	AARON DRILLING INC.		10.00	Existing Well- Decommissioned	Domestic		1		TURNER VALLEY, TOWN OF	10.00		
1021772	SE	1	20	3	5	AARON DRILLING INC.		14.00	Existing Well- Decommissioned	Domestic		1		TURNER VALLEY, TOWN OF	12.40		
1021773	SE	1	20	3	5	AARON DRILLING INC.		16.00	Existing Well- Decommissioned	Domestic		1		TURNER VALLEY, TOWN OF	6.40		
1023337	1	1	20	3	5	AARON DRILLING INC.	2021-01-15	280.00	New Well	Domestic		8	24	NADEAU, STEVE	18.00	0.40	6.63
2096843	12	6	20	2	5	UNKNOWNDRILLINGCOMP11			Existing Well- Decommissioned	Unknown				UNKNOWN			
2096844	12	6	20	2	5	UNKNOWNDRILLINGCOMP11			Existing Well- Decommissioned	Unknown				UNKNOWN			



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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)
9546383	SE	1	20	3	5	AQUACLEAR DRILLING INC.	2019-08-14	120.00	New Well	Domestic		8	18	HOLLADAY, JAMES	25.55	6.00	6.62
9546473	SE	1	20	3	5	AQUACLEAR DRILLING INC.	2022-08-26	135.00	New Well	Domestic		5	18	HOLLADAY, JAMES & CINDY	13.52	1.50	6.62
9546474	SE	1	20	3	5	AQUACLEAR DRILLING INC.	2022-08-24	135.00	New Well	Domestic		4	18	HOLLADAY, JAMES & CINDY	11.63	2.00	6.62
9546475	SE	1	20	3	5	AQUACLEAR DRILLING INC.	2022-08-25	135.00	New Well	Domestic		4	18	HOLLADAY, JAMES & CINDY	11.53	3.00	6.62



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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)
340266	3	12	20	3	5	WEBSTER DRILLING	2002-03-26	40.00	New Well	Domestic & Stock		4	24	MCCLELLAND, JIM	3.60	8.00	6.62
341291	2	2	20	3	5	AARON DRILLING INC.	1999-12-21	110.00	New Well	Domestic		9		ANDERSON EXPL LTD	38.20	2.00	6.62
341291	2	2	20	3	5	AARON DRILLING INC.	1999-12-21	110.00	New Well	Domestic		9	25	ANDERSON EXPL LTD	38.20	2.02	6.62
341359	NW	1	20	3	5	AARON DRILLING INC.	2000-09-13	155.00	New Well	Domestic		11	4	HRUPP, JOE #4159	37.00	3.00	6.62
341594	SE	18	20	2	5	BLACKWOOD DRILLING LTD.	2002-11-02	400.00	New Well- Decommissioned	Domestic		11		HOFF, WES			0.00
341595	SE	18	20	2	5	BLACKWOOD DRILLING LTD.	2002-11-05	180.00	New Well	Domestic		9	23	HOFF, WES	91.80	5.00	6.62
341596	SW	1	20	3	5	NIEMANS DRILLING (1980) LTD.	2002-09-02	96.00	New Well	Domestic		2	25	CAMPKIN, TROY	10.00	4.80	6.62
341597	SW	1	20	3	5	NIEMANS DRILLING (1980) LTD.	2002-09-02	120.00	Test Hole- Decommissioned	Domestic		2		CAMPKIN, TROY			0.00
341598	SW	1	20	3	5	NIEMANS DRILLING (1980) LTD.	2002-09-02	120.00	Test Hole- Decommissioned	Domestic		2		CAMPKIN, TROY			0.00
349028	NW	2	20	3	5	AARON DRILLING INC.	1992-04-13	95.00	New Well	Domestic		5	4	CAMBELL, DON #1823	43.60	15.00	6.62
349029	NW	2	20	3	5	AARON DRILLING INC.	1992-04-14	300.00	New Well- Decommissioned	Other		7		CAMBELL, DON	200.00	0.10	0.00
349030	NW	2	20	3	5	AARON DRILLING INC.	1992-04-15	100.00	New Well- Decommissioned	Other		5		CAMBELL, DON	65.00	0.20	0.00
349031	NW	2	20	3	5	AARON DRILLING INC.	1992-04-15	120.00	New Well- Decommissioned	Other		6		CAMBELL, DON	65.00	0.10	0.00
349032	NW	2	20	3	5	AARON DRILLING INC.	1992-04-16	100.00	New Well- Decommissioned	Other		5		CAMBELL, DON	30.00	0.20	0.00
349033	NW	2	20	3	5	AARON DRILLING INC.	1992-04-17	140.00	New Well	Domestic		12	4	CAMPBELL, DON #1858	106.10	2.50	6.62
349034	NW	2	20	3	5	AARON DRILLING INC.	1992-04-17	135.00	New Well- Decommissioned	Other		5		CAMBELL, DON	105.00	1.00	0.00
349035	NW	2	20	3	5	AARON DRILLING INC.	1992-04-20	115.00	New Well	Domestic		6	4	CAMBELL, DON #1861	54.60	2.00	6.62
349036	NE	2	20	3	5	AARON DRILLING INC.	1992-04-21	140.00	New Well	Domestic		5	5	CAMBELL, DON #1857	40.40	2.00	6.62
349037	NE	2	20	3	5	AARON DRILLING INC.	1992-04-22	70.00	New Well	Domestic		6	5	CAMBELL, DON #1856	34.10	14.00	6.62
349042	SE	7	20	2	5	AARON DRILLING INC.	1992-05-13	280.00	New Well	Domestic		6	2	LAWTON JIM #1871	100.00	1.00	6.62



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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)
349042	SE	7	20	2	5	AARON DRILLING INC.	1996-10-17	120.00	Reconditioned	Domestic		1		LAWTON, JIM/JUDY #1871			6.62
349291	SE	11	20	3	5	AARON DRILLING INC.	1988-01-28	110.00	Test Hole- Decommissioned	Domestic		7		MUMBY, ROD	25.00	0.50	0.00
349354	NW	6	20	2	5	AARON DRILLING INC.	1993-12-31	30.00	New Well	Municipal		5	15	TURNER VALLEY, TOWN OF#2211	5.20	420.00	14.00
349518	SE	7	20	2	5	AARON DRILLING INC.	1981-06-19	130.00	New Well	Domestic		9		MILLER, S.D.	50.00	7.00	5.75
349560	SE	13	20	3	5	AARON DRILLING INC.	1985-09-19	40.00	New Well- Decommissioned	Domestic		4		RASOWSKY, H.	5.00	10.00	0.00
349691	NW	2	20	3	5	AARON DRILLING INC.	1994-11-22	150.00	New Well	Domestic		7	22	MCKAY, ROB #2583	71.50	2.00	6.62
349785	SE	11	20	3	5	AARON DRILLING INC.	1987-09-28	72.00	New Well	Domestic		7		FLEMMING, JANICE			6.62
350724	NW	12	20	3	5	BAKER WATER WELLS	1990-03-22	130.00	Dry Hole	Domestic		3		POWELL, LESTER			0.00
351170	14	32	19	2	5	GREEN-TEE WATER WELLS	1990-02-22	240.00	New Well	Domestic		6		MCRAY, DARCY	75.00	0.50	6.62
352247	SE	3	20	3	5	GREEN-TEE WATER WELLS	1990-08-30	95.00	New Well	Domestic		2		POTTER, CHRIS/URSULA	15.00	5.00	6.62
352657	NE	36	19	3	5	GOODISON WATER WELL DRILLING	1990-09-20	35.00	Deepened	Domestic		3		FERLAND, MORRIS	17.00	8.00	5.56
353391	SW	1	20	3	5	BAKER WATER WELLS	1988-02-25	130.00	Deepened	Stock		8		SANDEMAN, ALBERT	10.00	7.00	5.56
353391	SW	1	20	3	5	BAKER WATER WELLS	1988-02-25	130.00	Deepened	Stock		8		SANDEMAN, ALBERT	21.00	9.00	5.56
353392	SE	11	20	3	5	AARON DRILLING INC.	1989-06-19	85.00	New Well	Domestic		5		FLEMMING, JANICE	20.00	8.00	6.62
353392	SE	11	20	3	5	AARON DRILLING INC.	2001-02-27	102.00	Deepened	Domestic		6		FLEMMING, JANICE#1050	62.00	8.00	6.62
353392	SE	11	20	3	5	AARON DRILLING INC.	2001-08-16	200.00	Deepened	Domestic		14		FLEMMING, JANICE#1050	90.00	5.00	6.62
353727	SW	8	20	2	5	GOODISON WATER WELL DRILLING	1990-09-17	20.00	New Well	Municipal		3		BLACK DIAMOND, TOWN OF	4.00	95.00	10.75
353847	NE	36	19	3	5	UNKNOWN DRILLER		80.00	Chemistry	Domestic	<u>1</u>			JOHNS, JEFFREY			0.00
354654	SE	7	20	2	5	RRR DRILLING	1990-10-16	220.00	New Well	Domestic		5		SORGE, HGALMAR	150.00	4.50	5.56
354757	NE	2	20	3	5	UNKNOWN DRILLER		60.00	Chemistry	Domestic				MCGILL, M.E			0.00



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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)
354758	SE	11	20	3	5	UNKNOWN DRILLER		0.00	Chemistry	Domestic				CARVER, IAN			0.00
355575	SE	6	20	2	5	GREEN-TEE WATER WELLS	1990-12-17	80.00	New Well	Domestic		5		BOOTH, DARYL	45.00	7.00	6.62
357401	NW	32	19	2	5	GOODISON WATER WELL DRILLING	1991-05-05	55.00	New Well	Domestic		2		MCGREGOR, BOB	40.00	8.00	6.62
357955	NW	8	20	2	5	NIEMANS DRILLING (1980) LTD.	1993-11-10	205.00	Test Hole- Decommissioned	Domestic		13		CURRIE, ALLEN	0.00	0.50	0.00
361393	NE	36	19	3	5	UNKNOWN DRILLER		80.00	Chemistry	Domestic				LATTERY, TERESA			0.00
364150	NW	8	20	2	5	NIEMANS DRILLING (1980) LTD.	1993-11-11	165.00	Test Hole- Decommissioned	Domestic		10		CURRIE, ALLEN	0.00	0.50	0.00
365455	7	1	20	3	5	ACREAGE WATER SYSTEMS	1992-07-05	85.00	Deepened	Domestic		4		GRANT, T	57.00	30.00	5.56
365546	7	1	20	3	5	BIG ROCK WATER WELL DRILLING	1992-06-17	22.00	New Well	Domestic		2		MCCRAE, DARCY	12.00	5.00	6.62
365553	8	1	20	3	5	BIG ROCK WATER WELL DRILLING	1992-06-14	280.00	New Well- Decommissioned	Domestic		2		MCCRAE, DARCEY			0.00
365923	14	7	20	2	5	ACREAGE WATER SYSTEMS	1992-08-28	69.00	New Well	Domestic		7		ARMSTRONG, DONALD T.	47.80	35.00	6.62
366294	7	1	20	3	5	BIG ROCK WATER WELL DRILLING	1992-06-14	55.00	New Well	Domestic		3		MCCRAE, DARCEY	51.00	7.00	6.62
366846	SE	11	20	3	5	BAKER WATER WELLS	1992-08-31	100.00	New Well	Domestic		6		TOMLINSON, GORDON	29.00		5.56
366846	SE	11	20	3	5	BAKER WATER WELLS	1992-08-31	100.00	New Well	Domestic		6		TOMLINSON, GORDON	29.00	11.00	5.56
366912	6	18	20	2	5	DEL'S DRILLING	1977-09-18	45.00	New Well	Stock		4		POWELL, L	13.00	8.00	5.56
366912	6	18	20	2	5	BAKER WATER WELLS	1992-09-04	65.00	Deepened	Stock		2		POWELL, KEITH	24.00	6.00	0.00
367877		25	19	3	5	UNKNOWN DRILLER		0.00	Spring	Domestic				DENNING, FLORENCE			0.00
369032	NE	31	19	2	5	PETER NIEMANS WATER WELL DRILLING	1993-03-01	179.00	New Well	Stock		6		HEMUS, DON	47.00	7.00	6.00
370222	SE	1	20	3	5	NIEMANS DRILLING (1980) LTD.	1993-08-06	82.00	New Well	Domestic		4		THOMPSON, ROBERT	12.40	5.00	6.62
370223	SE	1	20	3	5	NIEMANS DRILLING (1980) LTD.	1993-08-03	85.00	Test Hole- Decommissioned	Domestic		4		THOMPSON, ROBERT	0.00	0.25	0.00
370224	SE	1	20	3	5	NIEMANS DRILLING (1980) LTD.	1993-08-02	95.00	Test Hole- Decommissioned	Domestic		4		THOMPSON, ROBERT	0.00	0.25	0.00



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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)
380241	2	5	20	2	5	GOODISON WATER WELL DRILLING	1972-05-01	65.00	New Well	Domestic		7		ERDMAN, W.	0.00	3.00	0.00
380242	NW	5	20	2	5	UNKNOWN DRILLER		0.00	Spring	Domestic & Stock				WEGENER, J.			0.00
380243	NW	5	20	2	5	UNKNOWN DRILLER		65.00	Chemistry	Domestic				GIDLICK, ADRIAN			0.00
380244	NE	5	20	2	5	UNKNOWN DRILLER		85.00	Chemistry	Unknown				ALTA TRANSP #SHOP			0.00
380245	NE	5	20	2	5	UNKNOWN DRILLER		55.00	Chemistry	Domestic				GOODINE, DOUG			0.00
380247	SH	6	20	2	5	UNKNOWN DRILLER	1965-01-01	0.00	Well Inventory	Stock				BECK BROS			0.00
380248	NW	6	20	2	5	UNKNOWN DRILLER		0.00	Spring	Unknown				MACKAY, DAN			0.00
380249	11	6	20	2	5	UNKNOWN DRILLER		9.00	Chemistry	Domestic				PEDERSON, R.	8.00		0.00
380250	SE	7	20	2	5	UNKNOWN DRILLER		13.00	Chemistry	Domestic				DELLAVIALA, M.	3.00		0.00
380251	SE	7	20	2	5	UNKNOWN DRILLER	1976-08-01	17.00	New Well	Domestic		2		MADSEN, JOHN	6.00	20.00	0.00
380252	SE	7	20	2	5	UNKNOWN DRILLER		19.00	Chemistry	Domestic				NYBOE, E.	3.00		0.00
380253	SE	7	20	2	5	UNKNOWN DRILLER	1969-07-16	110.00	New Well	Stock		7		SHAW, G.E.	0.00	15.00	0.00
380254	SE	7	20	2	5	UNKNOWN DRILLER		12.00	Chemistry	Domestic				MADSEN, JOHN	9.00		0.00
380255	SE	7	20	2	5	LOUSANA WATER WELLS (1987) LTD.		88.00	Test Hole- Decommissioned	Unknown		3		BLACK DIAMOND, TOWN OF #21			0.00
380256	SE	7	20	2	5	LOUSANA WATER WELLS (1987) LTD.	1984-02-23	15.00	Test Hole- Decommissioned	Unknown				BLACK DIAMOND, TOWN OF #22	0.00	60.00	0.00
380257	SE	7	20	2	5	LOUSANA WATER WELLS (1987) LTD.	1984-02-23	19.00	Test Hole- Decommissioned	Unknown				BLACK DIAMOND, TOWN OF #23	0.00	100.00	0.00
380258	SE	7	20	2	5	KRIEGER DRILLING LTD.	1985-02-21	136.00	New Well	Domestic		13		T.V. GOLF & COUNTRY CLUB	63.00	15.00	6.56
380259	SE	7	20	2	5	UNKNOWN DRILLER		17.00	Chemistry	Domestic				WARREN, KEVIN			0.00
380260	8	7	20	2	5	UNIVERSAL DRILLING		24.00	Test Hole	Unknown		5		BLACK DIAMOND, TOWN OF #21			0.00
380261	SW	7	20	2	5	UNKNOWN DRILLER		0.00	Spring	Domestic				STUART, W.J.			0.00



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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)
380262	SW	7	20	2	5	GOODISON WATER WELL DRILLING		40.00	New Well	Stock		1		GOING, G.	0.00	12.00	0.00
380263	SW	7	20	2	5	KRIEGER DRILLING LTD.	1988-06-01	335.00	New Well	Domestic		3		TURNER VALLEY GOLF COURSE	42.00	7.00	6.62
380264	WH	7	20	2	5	GOODISON WATER WELL DRILLING	1973-12-01	45.00	New Well	Domestic		2		WILLIS, P.J.	15.00	8.00	0.00
380265	NW	7	20	2	5	UNKNOWN DRILLER		45.00	Chemistry	Domestic				ARMSTRONG, DONALD T.			0.00
380266	NE	7	20	2	5	GOODISON WATER WELL DRILLING	1976-05-12	85.00	New Well	Irrigation		5		BLACK DIAMOND CEMETARY	21.00	20.00	0.00
380271	SW	8	20	2	5	UNKNOWN DRILLER		21.00	Chemistry	Municipal				BLACK DIAMOND WATER PLANT	6.00		0.00
380272	5	8	20	2	5	LOUSANA WATER WELLS (1987) LTD.	1984-03-12	15.00	Test Hole- Decommissioned	Municipal		3		BLACK DIAMOND, TOWN OF #25			0.00
380273	5	8	20	2	5	LOUSANA WATER WELLS (1987) LTD.	1984-03-12	8.00	Test Hole- Decommissioned	Municipal		3		BLACK DIAMOND, TOWN OF #26			0.00
380274	SW	8	20	2	5	LOUSANA WATER WELLS (1987) LTD.	1984-03-12	19.00	Test Hole	Municipal				BLACK DIAMOND, TOWN OF #27			0.00
380275	SW	8	20	2	5	UNKNOWN DRILLER	1984-02-23	15.00	Test Hole	Municipal		3		BLACK DIAMOND, TOWN OF #24			0.00
380297	SE	1	20	3	5	UNKNOWN DRILLER		102.00	Chemistry	Domestic	1			STEL, H.G.	20.00		0.00
380303	SE	1	20	3	5	UNKNOWN DRILLER		65.00	Chemistry	Domestic	1			BROTRUD, H.E.	56.00		0.00
380307	1	1	20	3	5	NIEMANS DRILLING (1980) LTD.	1984-06-30	212.00	New Well- Decommissioned	Domestic		10		CHANDLER, JOHN			0.00
380314	1	1	20	3	5	NIEMANS DRILLING (1980) LTD.	1984-09-26	112.00	New Well- Decommissioned	Domestic		3		CHANDLER, JOHN			0.00
380315	SE	1	20	3	5	UNKNOWN DRILLER		0.00	Chemistry	Domestic	1			THOMPSON, R.W.			0.00
380316	NW	6	20	2	5	AARON DRILLING INC.	1984-07-31	165.00	Deepened	Domestic		6		DEPAPE, GUS	95.00	13.00	5.56
380318	SE	1	20	3	5	NIEMANS DRILLING (1980) LTD.	1986-10-14	106.00	New Well- Decommissioned	Domestic		3		CHANDLER, JOHN	10.00	0.50	5.56
380321	SE	1	20	3	5	NIEMANS DRILLING (1980) LTD.	1986-10-20	106.00	New Well	Domestic		3		CHANDLER, JOHN	25.00	3.00	5.56
380324	SW	5	20	2	5	GOODISON WATER WELL DRILLING	1994-05-02	75.00	New Well	Domestic		5	26	SANDAU, ALEX	25.90	8.00	6.62
380325	SE	1	20	3	5	UNKNOWN DRILLER		10.00	Chemistry	Unknown				YOUTH WITH A MISSION			0.00



Reconnaissance Report

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380327	SE	1	20	3	5	KRIEGER DRILLING LTD.	1988-06-02	49.00	New Well	Domestic		5		YOUTH WITH A MISSION	35.00	15.00	6.63
380329	NW	8	20	2	5	NIEMANS DRILLING (1980) LTD.	1994-05-03	150.00	New Well	Domestic		6	28	CURRIE, ALLEN	45.60	4.00	6.62
380330	SW	1	20	3	5	FOOTHILLS DRLG	1971-03-01	80.00	New Well	Domestic		2		SANDERMAN, ALBERT	15.00	5.00	5.50
380333	SW	1	20	3	5	GOODISON WATER WELL DRILLING	1971-07-01	70.00	New Well	Domestic		4		MCRAE, M.	0.00	5.00	6.00
380336	SW	1	20	3	5	GOODISON WATER WELL DRILLING	1972-03-01	60.00	New Well	Domestic		2		MCRAE, M.			6.00
380337	SW	1	20	3	5	DEL'S DRILLING	1982-02-09	75.00	Deepened	Domestic		2		MCRAE, M.	31.00	15.00	0.00
380340	SW	1	20	3	5	BAKER WATER WELLS	1984-10-10	140.00	Dry Hole	Stock		5		SANDEMAN, ALBERT			0.00
380342	SW	1	20	3	5	UNKNOWN DRILLER		46.00	Chemistry	Domestic				PEGLER, JOHN			0.00
380362	SW	1	20	3	5	BAKER WATER WELLS	1989-03-14	130.00	New Well	Domestic & Stock		6		SANDEMAN, ALBERT	12.00	5.00	7.00
380367	NW	1	20	3	5	BAKER WATER WELLS	1989-08-21	90.00	New Well	Domestic		6		VANDERGRIFT, CLIFFORD	56.00	24.00	6.63
380368	NW	1	20	3	5	AARON DRILLING INC.	2001-10-16	340.00	Deepened	Domestic		5		GRIFFITHS, CONNIE#1507	117.30	1.00	5.56
380368	NW	1	20	3	5	BAKER WATER WELLS	1989-09-14	200.00	New Well	Domestic		7		VANDERGRIFT, CLIFFORD	75.00	5.00	5.56
380370	NE	1	20	3	5	HUSSEY BILL	1959-01-01	80.00	New Well	Unknown		4		BROWN, JIM	12.00	4.00	6.63
380372	SE	1	20	3	5	OTHER	1949-08-24	46.00	New Well	Stock		3		BROOMFIELD, J.L.			6.00
380374	SE	1	20	3	5	UNKNOWN DRILLER		100.00	Chemistry	Unknown	<u>1</u>			BALDING, A.H. #WELL 1			0.00
380376	SE	1	20	3	5	UNKNOWN DRILLER		0.00	Chemistry	Unknown	<u>1</u>			BALDING, A.H.			0.00
380377	SE	2	20	3	5	DEL'S DRILLING	1981-11-10	65.00	New Well	Domestic	<u>1</u>	8		HICKEY, PAT	11.00	7.00	5.56
380377	SE	2	20	3	5	AARON DRILLING INC.		65.00	Reconditioned	Domestic				REUSER, FRANK			
380380	SE	2	20	3	5	BAKER WATER WELLS	1989-10-23	60.00	New Well	Domestic		6		HICKEY, PAT	11.00	28.00	6.63
380382	SW	2	20	3	5	NIEMANS DRILLING (1980) LTD.	1978-10-19	173.00	New Well	Domestic		2		HAIGH, D.	36.00	2.00	5.50



Reconnaissance Report

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380470	SW	2	20	3	5	BAKER WATER WELLS	1985-05-15	125.00	Dry Hole			2		DOYLE, K.B.			0.00
380471	5	2	20	3	5	UNKNOWN DRILLER		11.00	Chemistry	Domestic	1			DOYLE, KEVIN B.			0.00
380473	NW	2	20	3	5	UNKNOWN DRILLER		400.00	Chemistry	Domestic	1			CAMPBELL, D.	368.00		0.00
380474	NW	2	20	3	5	UNKNOWN DRILLER		300.00	Chemistry	Domestic	1			CAMPBELL, DONALD M.			0.00
380476	NW	2	20	3	5	OTHER	1977-08-01	67.00	New Well	Domestic & Stock		5		CAMPBELL, DON	35.00	3.00	5.56
380477	NE	2	20	3	5	OTHER	1973-11-12	65.00	New Well	Domestic	1	4		DANIELS, ALEX			5.00
380479	NE	2	20	3	5	OTHER	1973-08-01	63.00	New Well	Domestic	1	5		DANIELS, MARTIN			0.00
380480	10	2	20	3	5	FOOTHILLS DRLG	1971-03-01	80.00	New Well	Domestic	2	2		PATTERSON, HOWARD	10.00	6.00	0.00
380482	NE	2	20	3	5	OTHER	1972-09-01	36.00	New Well	Domestic		6		DANIELS, A.			8.00
380483	NE	2	20	3	5	DIVERSIFIED DRILLING & EXPLORATION CO.	1989-07-05	45.00	New Well	Domestic		7		BROWN, R.	19.00	7.00	5.50
380485	10	2	20	3	5	FOOTHILLS DRLG	1971-03-01	200.00	Dry Hole	Domestic		3		PATTERSON, HOWARD			0.00
380486	SE	3	20	3	5	GEOSERVE DRLG	1974-06-26	140.00	New Well	Domestic		6		CROOKS, TED	16.00	3.50	5.50
380488	SE	3	20	3	5	BAKER WATER WELLS	1982-08-05	70.00	New Well	Domestic		6		CROOKS, TED	18.00	12.00	5.56
380493	NE	3	20	3	5	OTHER	1973-08-01	34.00	New Well	Domestic		5		WESTWAY, ROGER			0.00
380495	NE	3	20	3	5	ALLAN & SANDERSON	1968-07-08	60.00	New Well	Domestic	1	4		WESTWAY, R.	20.00	11.00	6.25
380614	SW	8	20	2	5	LOUSANA WATER WELLS (1987) LTD.	1984-03-09	20.00	New Well	Municipal		6		BLACK DIAMOND, TOWN OF #23	0.00	260.00	10.75
380616	5	8	20	2	5	UNIVERSAL DRILLING		35.00	Unknown	Municipal		9		BLACK DIAMOND, TOWN OF #11			0.00
380617	5	8	20	2	5	UNIVERSAL DRILLING	1978-03-23	20.00	Test Hole	Municipal		4		BLACK DIAMOND, TOWN OF #10			0.00
380619	5	8	20	2	5	UNIVERSAL DRILLING		37.00	Test Hole	Municipal		10		BLACK DIAMOND, TOWN OF #18			8.62
380620	5	8	20	2	5	UNIVERSAL DRILLING		24.00	Test Hole- Decommissioned	Municipal		6		BLACK DIAMOND, TOWN OF #17			0.00



Reconnaissance Report

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380621	5	8	20	2	5	UNIVERSAL DRILLING		20.00	Test Hole	Municipal		2		BLACK DIAMOND, TOWN OF #16			0.00
380623	5	8	20	2	5	UNIVERSAL DRILLING		19.00	Test Hole	Municipal		4		BLACK DIAMOND, TOWN OF #15			0.00
380625	6	8	20	2	5	UNIVERSAL DRILLING		14.00	Test Hole	Municipal		4		BLACK DIAMOND, TOWN OF #14			0.00
380627	NW	8	20	2	5	GOODISON WATER WELL DRILLING		120.00	Test Hole	Municipal		7		BLACK DIAMOND, TOWN OF	36.00	70.00	6.62
380629	NW	8	20	2	5	GOODISON WATER WELL DRILLING	1975-03-10	200.00	Test Hole	Municipal		15		BLACK DIAMOND, TOWN OF	0.00	70.00	0.00
380632	NW	8	20	2	5	WEBSTER DRILLING	1974-08-01	140.00	New Well	Domestic		11		CURRIE, ALLEN	0.00	3.00	0.00
380642	11	8	20	2	5	UNIVERSAL DRILLING		15.00	Test Hole	Municipal		2		BLACK DIAMOND, TOWN OF #4			0.00
380644	11	8	20	2	5	UNIVERSAL DRILLING		19.00	Test Hole	Municipal		3		BLACK DIAMOND, TOWN OF #3			0.00
380646	12	8	20	2	5	UNKNOWN DRILLER		60.00	Flowing Shot Hole	Industrial				NORTHERN GEOPH LTD			0.00
380655		8	20	2	5	ELGIN EXPLORATION COMPANY LIMITED	1984-08-01	65.00	New Well	Domestic		3		ROGERS, ESTER	32.00	5.00	5.56
381041	SW	18	20	2	5	UNKNOWN DRILLER	1982-12-15	90.00	Deepened	Domestic & Stock		4		STAV, KEN	41.00	10.00	0.00
381041	SW	18	20	2	5	UNKNOWN DRILLER	1982-12-15	90.00	Deepened	Domestic & Stock		4		STAV, KEN	69.00		0.00
381042	SW	18	20	2	5	BAKER WATER WELLS	1983-02-18	200.00	Deepened	Domestic & Stock		3		POWELL, KEITH	50.00	1.00	0.00
381043	SW	18	20	2	5	BAKER WATER WELLS	1985-03-15	130.00	New Well	Domestic & Stock		4		POWELL, KIETH	29.00	5.50	5.56
381044	SW	18	20	2	5	BAKER WATER WELLS	1986-02-26	160.00	Dry Hole	Stock		3		STAV, KEN			0.00
381045	SW	18	20	2	5	BAKER WATER WELLS	1986-02-13	130.00	Dry Hole	Stock		3		STAV, KEN			0.00
381046	SW	18	20	2	5	BAKER WATER WELLS	1986-02-07	260.00	Dry Hole	Stock		6		STAV, KEN			0.00
381047	SW	18	20	2	5	BAKER WATER WELLS	1988-09-20	160.00	Dry Hole	Domestic & Stock		4		STAV, KEN			0.00
381048	SW	18	20	2	5	BAKER WATER WELLS	1988-09-23	80.00	New Well	Domestic & Stock		5		STAV, KEN	28.00	7.00	5.56
381048	SW	18	20	2	5	BAKER WATER WELLS	2003-10-09	80.00	Reconditioned	Domestic		1		STAV, KEN	38.00	5.00	5.56



Reconnaissance Report

[View in Metric](#)[Export to Excel](#)

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381049	3	18	20	2	5	UNKNOWN DRILLER	1967-10-18	24.00	New Well	Stock		1		POWELL, L	4.00	8.00	0.00
381388	SE	11	20	3	5	BAKER WATER WELLS	1988-07-14	145.00	New Well	Domestic		9		TOMLINSON, GORDON	71.00	16.00	5.56
381390	SE	12	20	3	5	UNKNOWN DRILLER		20.00	Chemistry	Unknown	1						48.00
381391	SE	12	20	3	5	GOODISON WATER WELL DRILLING	1978-05-15	15.00	Test Hole	Unknown		3		TURNER VALLEY, TOWN OF#4			0.00
381392	SE	12	20	3	5	NIEMANS DRILLING (1980) LTD.	1980-07-25	43.00	New Well	Domestic & Stock		4		PRICE, BARRY	13.00	3.50	5.56
381393	SE	12	20	3	5	GOODISON WATER WELL DRILLING	1977-03-14	20.00	Test Hole	Unknown		2		TURNER VALLEY, TOWN OF#2			0.00
381394	SW	12	20	3	5	JAMES & SON	1974-06-01	76.00	New Well	Domestic		4		SMITH, C.	0.00	36.00	5.50
381395	SW	12	20	3	5	OTHER	1976-08-01	56.00	New Well	Domestic		3		BEALE, J.	47.00	6.00	0.00
381396	SW	12	20	3	5	GOODISON WATER WELL DRILLING	1978-03-13	15.00	Test Hole	Unknown		4		TURNER VALLEY, TOWN OF#1			0.00
381397	NW	12	20	3	5	JAMES & SON	1959-11-01	95.00	New Well	Domestic		4		RYMELL, J.	25.00	7.00	5.50
381397	NW	12	20	3	5	AARON DRILLING INC.	2013-07-04	95.00	Existing Well- Decommissioned	Unknown		1		CNRL			5.56
381398	NW	12	20	3	5	UNKNOWN DRILLER		40.00	Chemistry	Domestic	1			SWAN, F.	15.00		0.00
381399	NW	12	20	3	5	OTHER	1977-05-09	26.00	New Well	Unknown		9		TURNER VALLEY, VILL OF	11.50	60.00	0.00
381400	14	12	20	3	5	DEL'S DRILLING	1978-01-21	130.00	Dry Hole	Stock		3		POWELL, LESTER			0.00
381401	14	12	20	3	5	DEL'S DRILLING	1978-01-25	224.00	New Well	Stock		2		LESTER POWELL	41.00	0.33	5.56
381402	NW	12	20	3	5	GOODISON WATER WELL DRILLING	1978-03-15	15.00	New Well	Unknown		3		TURNER VALLEY, TOWN OF#3			0.00
381403	NW	12	20	3	5	WEBSTER & WEBSTER	1980-12-09	38.00	New Well	Domestic & Stock		3		PRICE	12.00	3.00	0.00
381403	NW	12	20	3	5	AARON DRILLING INC.	2013-07-04		Existing Well- Decommissioned	Unknown				CNRL			
381404	NW	12	20	3	5	BAKER WATER WELLS	1984-08-20	80.00	Dry Hole	Stock		3		POWELL, LESTER			0.00
381405	NW	12	20	3	5	BAKER WATER WELLS	1984-08-24	100.00	Dry Hole	Stock		3		POWELL, LESTER			0.00



Reconnaissance Report

[View in Metric](#)[Export to Excel](#)

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381406	11	12	20	3	5	ALBERTA ENVIRONMENT/EARTH SCIENCES DIVISION	1984-08-14	31.00	New Well	Unknown		5		RECLAMATION #3656-T			0.00
381407	14	12	20	3	5	ALBERTA ENVIRONMENT/EARTH SCIENCES DIVISION	1984-08-14	40.00	New Well	Unknown		4		RECLAMATION PROJECT			2.40
381408	NW	12	20	3	5	BAKER WATER WELLS	1985-07-05	100.00	Dry Hole	Domestic & Stock		2		POWELL, LESTER			0.00
381409	NW	12	20	3	5	UNKNOWN DRILLER		55.00	Chemistry	Domestic	<u>1</u>			POWELL, L.H.			0.00
381410	NW	12	20	3	5	UNKNOWN DRILLER		80.00	Chemistry	Domestic	<u>1</u>			POWELL, L.H.			0.00
381411	NW	12	20	3	5	UNKNOWN DRILLER		23.00	Chemistry	Domestic	<u>1</u>			LEMAN, W.D.	15.00		0.00
381412	NW	12	20	3	5	UNKNOWN DRILLER		0.00	Chemistry	Domestic				ROSVOLD, BARRY			0.00
381413	NE	12	20	3	5	DOUBLE S DRILLING	1972-06-01	312.00	New Well- Decommissioned	Domestic		6		CENTURY DEV			0.00
381414	NE	12	20	3	5	DOUBLE S DRILLING	1972-05-01	305.00	Dry Hole	Unknown		11		CENTURY DEV#1A			0.00
381415	NE	12	20	3	5	DOUBLE S DRILLING	1972-06-01	302.00	New Well- Decommissioned	Unknown		9		CENTURY DEV#1B			0.00
381436	NE	12	20	3	5	DOUBLE S DRILLING	1972-05-01	104.00	New Well- Decommissioned	Unknown		4		CENTURY DEV#2	30.00	4.00	5.50
381437	NE	12	20	3	5	DOUBLE S DRILLING	1972-05-01	95.00	New Well	Domestic		4		CENTURY DEV	28.00	3.50	5.50
381438	SE	12	20	3	5	PARSONS DRLG	1967-03-21	24.00	New Well	Domestic		6		HECTORS LTD	3.00	14.00	6.13
381439		12	20	3	5	WEBSTER DRILLING	1961-07-17	70.00	Dry Hole	Unknown		5		WILSON			7.00
381440	SE	13	20	3	5	PARSONS, DELBERT	1976-09-11	40.00	New Well- Decommissioned	Unknown		4		RUSKOWSKY, HARRY			0.00
381441	SE	13	20	3	5	PARSONS, DELBERT	1976-09-14	50.00	New Well	Domestic	<u>1</u>	5		RUSKOWSKY, HARRY	11.00	4.00	5.56
381442	SE	13	20	3	5	UNKNOWN DRILLER		60.00	Chemistry	Domestic	<u>1</u>			RUSKOWSKY, HARRY B.	40.00		0.00
381443	SE	13	20	3	5	NORTHERN WATER SUPPLY CO.	1978-11-07	35.00	New Well	Domestic & Stock		4		BLATZ, WAYNE	12.00	15.00	5.50
381444	SE	13	20	3	5	ELGIN EXPLORATION COMPANY LIMITED	1982-10-01	300.00	New Well- Decommissioned	Domestic		2		RISKOWSKY, HARRY	20.00	20.00	5.56
381445	SE	13	20	3	5	ELGIN EXPLORATION COMPANY LIMITED	1983-10-01	36.00	New Well	Domestic		2		RUSKOWSKY, HARRY	12.00	13.00	5.56



Reconnaissance Report

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381446	SE	13	20	3	5	AARON DRILLING INC.	1985-08-19	40.00	New Well- Decommissioned	Unknown		4		RASKOWSKY, H.	5.00	10.00	0.00
381447	SW	13	20	3	5	UNKNOWN DRILLER		18.00	Chemistry	Domestic	1			WASHINGTON, GLEN #WELL 4	8.00		0.00
381448	SW	13	20	3	5	UNKNOWN DRILLER		18.00	Chemistry	Domestic & Stock	1			WASHINGTON, GLEN	6.00		0.00
381449	SW	13	20	3	5	UNKNOWN DRILLER		16.00	Chemistry	Unknown	1			WASHINGTON, GLEN #WELL 3	6.00		0.00
381450	SW	13	20	3	5	UNKNOWN DRILLER		250.00	Chemistry	Domestic	1			SANDS, K.	122.00		0.00
381476	SE	14	20	3	5	GOODISON WATER WELL DRILLING	1978-03-15	15.00	Unknown	Unknown		2		TURNER VALLEY, TOWN OF#HOLE 6			0.00
383842	NE	7	20	2	5	GOODISON WATER WELL DRILLING	1976-08-30	90.00	New Well	Domestic		4		MILLAR, STEWART	30.00	8.00	0.00
383951	2	5	20	2	5	OWNER DRILLED	1956-01-01	50.00	Well Inventory	Unknown				MACGREGOR, R.J.	40.00		0.00
383953	NW	5	20	2	5	GOODISON WATER WELL DRILLING	1985-09-23	60.00	New Well	Domestic		3		WEGENER, JIM	29.00	25.00	6.63
383956	NW	8	20	2	5	UNKNOWN DRILLER		35.00	Chemistry	Domestic				CURRIE, KAYE			0.00
383970	SW	2	20	3	5	UNKNOWN DRILLER		50.00	Chemistry	Domestic	1			WEBB, T.J.			0.00
383971	SE	2	20	3	5	GOODISON WATER WELL DRILLING	1974-05-29	60.00	New Well	Domestic	1	2		WEBB, T.J.	8.00	4.00	6.63
383972	NH	1	20	3	5	UNKNOWN DRILLER		62.00	Chemistry	Municipal	1			TURNER VALLEY HOSPITAL	22.00		0.00
383973	SW	1	20	3	5	UNKNOWN DRILLER		60.00	Chemistry	Municipal	1			TURNER VALLEY HOSPITAL			0.00
383974	SE	12	20	3	5	UNKNOWN DRILLER		60.00	Chemistry	Municipal	1			TURNER VALLEY MUN. HOSPITAL	30.00		0.00
383975	NW	6	20	2	5	UNKNOWN DRILLER		23.00	Chemistry	Unknown	2			TURNER VALLEY, TOWN OF			0.00
383977	NW	6	20	2	5	UNKNOWN DRILLER		23.00	Chemistry	Municipal				TURNER VALLEY, TOWN OF#3			0.00
383979	NW	6	20	2	5	UNKNOWN DRILLER		26.00	Chemistry	Municipal				TURNER VALLEY, TOWN OF			0.00
383980	NW	6	20	2	5	UNKNOWN DRILLER		23.00	Chemistry	Municipal				TURNER VALLEY, TOWN OF			0.00
383981	NW	6	20	2	5	UNKNOWN DRILLER		23.00	Chemistry	Municipal				TURNER VALLEY, TOWN OF#2			0.00



Reconnaissance Report

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383982	NW	6	20	2	5	UNKNOWN DRILLER		30.00	Chemistry	Municipal				TURNER VALLEY, TOWN OF#79-3	15.00		0.00
384401	2	35	19	3	5	UNKNOWN DRILLER		90.00	Well Inventory	Domestic	1			CAMERON, STUART			5.00
384403	NW	35	19	3	5	UNKNOWN DRILLER		30.00	Chemistry	Domestic	1			THACKER, HARRY/MARG			0.00
384405	NE	35	19	3	5	UNKNOWN DRILLER		58.00	Old Well-Yield	Observation				ROYALITE OIL CO	58.00	200.00	0.00
384410	NE	35	19	3	5	BAKER WATER WELLS	1988-04-02	110.00	New Well	Domestic & Stock		6		THACKER, MARJ	44.00	22.00	0.00
384415	15	35	19	3	5	BIG INDIAN DRILLING CO. LTD.		90.00	New Well	Industrial		2		ROYALITE OIL CO	0.00	210.00	20.00
384426	15	35	19	3	5	BIG INDIAN DRILLING CO. LTD.		130.00	Test Hole	Observation		5	25	ROYALITE OIL CO #WELL 1	39.10	50.00	20.00
384432	15	35	19	3	5	UNKNOWN DRILLER	1961-05-02	115.00	Test Hole	Industrial		8	31	ROYALITE OIL CO#WELL 2	58.50	210.00	20.00
384448	15	35	19	3	5	BIG INDIAN DRILLING CO. LTD.		100.00	New Well	Industrial		4		ROYALITE OIL CO#3			20.00
384451	15	35	19	3	5	BIG INDIAN DRILLING CO. LTD.		140.00	New Well	Industrial		4		ROYALITE OIL CO#4			20.00
384453	15	35	19	3	5	BIG INDIAN DRILLING CO. LTD.		123.00	New Well	Industrial		3		ROYALITE OIL CO#5			20.00
384454	4	36	19	3	5	UNKNOWN DRILLER		0.00	Well Inventory	Unknown	1			LANSDALE, D.			0.00
384458	NE	36	19	3	5	UNKNOWN DRILLER		53.00	Chemistry	Domestic	1			DAVIES, QUENTIN			0.00
384816	NW	31	19	2	5	UNKNOWN DRILLER		130.00	Chemistry	Domestic	1			BRUCH, HENRY J.			0.00
384817	SW	32	19	2	5	PARSONS DRILLING	1970-11-01	60.00	New Well	Domestic		3		EDWARDS, RONALD L.	44.00	18.00	0.00
384817	SW	32	19	2	5	PARSONS DRILLING	1970-11-01	60.00	New Well	Domestic		3		EDWARDS, RONALD L.	44.00	6.00	0.00
384822	SW	32	19	2	5	GOODISON WATER WELL DRILLING	1977-05-03	76.00	New Well	Domestic		3		STOCKWELL, D.D.	55.00	5.00	5.56
384824	SW	32	19	2	5	UNKNOWN DRILLER		25.00	Chemistry	Domestic	1			SHEPERD, WALTER	10.00		0.00
384825	SW	32	19	2	5	UNKNOWN DRILLER		90.00	Chemistry	Domestic	1			STOCKWELL, JUDY	65.00		0.00
384828	SW	32	19	2	5	GOODISON WATER WELL DRILLING	1984-05-11	90.00	Deepened	Domestic		3		JOHNSON, RALPH	57.00	15.00	6.62



Reconnaissance Report

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388969		8	20	2	5	UNKNOWN DRILLER		147.00	Chemistry	Municipal	1			BLACK DIAMOND, TOWN OF#2	90.00		0.00
388980	NW	6	20	2	5	UNKNOWN DRILLER		26.00	Chemistry	Municipal	1			TURNER VALLEY, TOWN OF			0.00
388981	NW	6	20	2	5	UNKNOWN DRILLER		26.00	Chemistry	Municipal	1			TURNER VALLEY, TOWN OF#79-4			0.00
389838	NW	1	20	3	5	GOODISON WATER WELL DRILLING	1981-11-04	65.00	New Well	Domestic		4		RILEY, E.C.	56.00	7.00	5.56
390583	SE	11	20	3	5	UNKNOWN DRILLER		0.00	Spring	Domestic				FLEMING, JANICE/COLLIER,RANDY			0.00
394203	SE	12	20	3	5	UNKNOWN DRILLER	1971-08-30	24.00	Chemistry	Municipal	1			TURNER VALLEY, TOWN OF			0.00
394204		12	20	3	5	UNKNOWN DRILLER	1983-01-25	0.00	Chemistry	Municipal	1			TURNER VALLEY#WELL 3			0.00
394205		12	20	3	5	UNKNOWN DRILLER	1983-01-25	0.00	Chemistry	Municipal	1			TURNER VALLEY#WELL 2			0.00
394206		12	20	3	5	UNKNOWN DRILLER	1983-01-25	0.00	Chemistry	Municipal	1			TURNER VALLEY#WELL 1			0.00
394319	NW	6	20	2	5	WEBSTER DRILLING	1969-10-01	40.00	New Well	Stock		3		WEBB	15.00	15.00	6.00
399654	SE	35	19	3	5	AARON DRILLING INC.	2001-11-20	112.00	Existing Well- Decommissioned	Unknown		1		MATRIX SOLUTIONS INC			6.62
399654	SE	35	19	3	5	NIEMANS DRILLING (1980) LTD.	1994-10-23	112.00	New Well	Domestic		2	25	HOWE, ART	0.10	13.50	6.62
400290	NW	30	19	2	5	NIEMANS DRILLING (1980) LTD.	1995-01-18	130.00	Test Hole- Decommissioned	Domestic		3		ERDMAN, WILF			0.00
400291	NW	30	19	2	5	NIEMANS DRILLING (1980) LTD.	1995-01-19	150.00	Test Hole- Decommissioned	Domestic		2		ERDMAN, WILF			0.00
400292	NW	30	19	2	5	NIEMANS DRILLING (1980) LTD.	1995-01-20	130.00	Test Hole- Decommissioned	Domestic		2		ERDMAN, WILF			0.00
400293	NW	30	19	2	5	NIEMANS DRILLING (1980) LTD.	1995-01-23	106.00	New Well	Domestic		3	26	ERDMAN, WILF	75.60	10.00	6.62
405137	NE	35	19	3	5	GOODISON WATER WELL DRILLING	1994-08-06	125.00	New Well	Domestic		4		HICKEY, PAT	71.00	4.00	6.62
458872	NE	3	20	3	5	AARON DRILLING INC.	2001-07-03	275.00	New Well	Domestic		11	17	JUSTINICK, BOB#4458	35.40	8.00	6.62
458909	NW	8	20	2	5	AARON DRILLING INC.	2001-08-31	250.00	New Well	Domestic		19	20	FBC SOCIETY REGION 3#4510	27.00	2.00	6.62
466032	NW	8	20	2	5	NIEMANS DRILLING (1980) LTD.	1996-03-19	212.00	New Well	Domestic		11		CURRIE, ALLEN			6.62



Reconnaissance Report

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466032	NW	8	20	2	5	BLACKWOOD DRILLING LTD.	1996-09-16	200.00	Reconditioned	Domestic			33	CURRIE, A.	23.30	2.00	6.62
466033	NE	3	20	3	5	NIEMANS DRILLING (1980) LTD.	1996-07-15	175.00	Test Hole- Decommissioned	Domestic		3		COLLINS, JOHN/MARGARET			0.00
466034	NE	3	20	3	5	NIEMANS DRILLING (1980) LTD.	1996-07-13	275.00	Test Hole- Decommissioned	Domestic		6		COLLINS, JOHN/MARGARET			0.00
466035	NE	3	20	3	5	NIEMANS DRILLING (1980) LTD.	1996-07-17	200.00	New Well	Domestic		2	27	COLLINS, JOHN/MARGARET	55.90	5.00	6.62
466036	NW	8	20	2	5	NIEMANS DRILLING (1980) LTD.	1996-03-18	232.00	Test Hole- Decommissioned	Domestic		12		CURRIE, ALLEN			0.00
466037	NW	8	20	2	5	NIEMANS DRILLING (1980) LTD.	1996-04-03	332.00	Test Hole- Decommissioned	Domestic		8		CURRIE, ALLAN			0.00
466038	NW	8	20	2	5	NIEMANS DRILLING (1980) LTD.	1996-03-20	302.00	Test Hole- Decommissioned	Domestic		5		CURRIE, ALLEN			0.00
467045	3	1	20	3	5	WEBSTER DRILLING	1996-08-20	118.00	New Well	Domestic		7	20	CHANDLER	47.30	1.00	5.56
467046	13	2	20	3	5	WEBSTER DRILLING	1996-07-07	80.00	New Well	Domestic		10	17	SALINSKI, ARND WILAND	5.20	2.50	0.00
467047	NE	3	20	3	5	NIEMANS DRILLING (1980) LTD.	1997-02-20	255.00	New Well	Domestic		3	17	HARINK, BOB	33.00	3.00	6.62
467090	4	32	19	2	5	WEBSTER DRILLING	1996-08-23	62.00	New Well	Domestic		2	16	COLLINS, HOWARD	47.00	7.00	4.50
467791	NW	8	20	2	5	BLACKWOOD DRILLING LTD.	1997-07-03	340.00	New Well	Domestic		16	8	CURRIE, ALLAN	45.00	4.10	6.62
468476	12	8	20	2	5	BLACKWOOD DRILLING LTD.	1995-05-16	200.00	New Well	Domestic		7		CURRIE, DON			6.62
468477	12	8	20	2	5	BLACKWOOD DRILLING LTD.	1995-06-20	260.00	Test Hole- Decommissioned	Domestic		1		CURRIE, DON			0.00
468478	SW	18	20	2	5	NIEMANS DRILLING (1980) LTD.	1997-09-09	140.00	Test Hole- Decommissioned	Domestic		2		M&K RANCHES C/O STAVE, KEN			0.00
468479	SW	18	20	2	5	NIEMANS DRILLING (1980) LTD.	1997-09-10	150.00	New Well	Domestic		2	17	M&K RANCHES C/O STAV, KEN	20.50	4.00	6.62
469082	13	8	20	2	5	BLACKWOOD DRILLING LTD.	1996-08-31	200.00	New Well	Domestic		9	30	CURRIE, A.	31.80	2.20	6.62
469083	12	8	20	2	5	BLACKWOOD DRILLING LTD.	1995-06-13	240.00	New Well	Domestic		10	16	CURRIE, DON	7.00	4.00	6.62
469084	12	8	20	2	5	BLACKWOOD DRILLING LTD.	1995-06-23	180.00	New Well	Domestic		10	17	CURRIE, DON	7.60	4.00	6.62
469085	12	8	20	2	5	BLACKWOOD DRILLING LTD.	1995-06-19	170.00	New Well	Domestic		9	27	CURRIE, DON	7.40	4.00	6.62



Reconnaissance Report

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469089	SE	18	20	2	5	C.H. NELSON DRILLING LTD.	1997-10-10	140.00	New Well	Domestic		4	25	475195 ALTA LTD	24.50	4.98	5.56
469090	SE	18	20	2	5	C.H. NELSON DRILLING LTD.	1997-10-16	80.00	New Well	Domestic		4	13	475195 ALTA LTD	17.60	6.64	5.56
469091	SE	18	20	2	5	C.H. NELSON DRILLING LTD.	1997-10-23	120.00	New Well	Domestic		6	14	475195 ALTA LTD	36.00	4.98	5.56
469092	SE	18	20	2	5	C.H. NELSON DRILLING LTD.	1997-10-30	100.00	New Well	Domestic		6	12	475195 ALTA LTD	44.30	4.98	5.56
469093	SE	18	20	2	5	C.H. NELSON DRILLING LTD.	1997-11-05	100.00	New Well	Domestic		4	10	475195 ALTA LTD C/O HOFF, WES	14.00	4.98	5.56
469094	SE	18	20	2	5	C.H. NELSON DRILLING LTD.	1997-11-12	125.00	New Well	Domestic		4	18	475195 ALTA LTD C/O HOFF, WES	51.00	4.98	5.56
469097	NW	1	20	3	5	PETER NIEMANS WATER WELL DRILLING	1998-01-30	80.00	New Well	Domestic		8	11	BROWN, RALPH	21.40	17.00	6.00
469098	11	13	20	3	5	WEBSTER DRILLING	1996-01-09	60.00	Test Hole- Decommissioned	Domestic		2		BANDY, TOM			0.00
469099	11	13	20	3	5	WEBSTER DRILLING	1996-01-11	55.00	New Well	Domestic		5	14	BANDY, TOM	5.50	4.00	5.56
469100	11	13	20	3	5	WEBSTER DRILLING	1996-01-08	140.00	Test Hole- Decommissioned	Domestic		8		BANDY, TOM			0.00
491174	NE	26	19	3	5	C.H. NELSON DRILLING LTD.	1998-05-04	160.00	New Well	Domestic		6	25	LANSDELL, DOUG/PHYLLIS	46.50	3.32	5.56
492902	SE	35	19	3	5	NIEMANS DRILLING (1980) LTD.	1999-06-22	116.00	New Well	Domestic		4	15	HOWE, ART/MARY	57.00	14.50	6.62
492904	16	36	19	3	5	WEBSTER DRILLING	1999-03-12	80.00	New Well	Domestic		15	22	TAYLOR, STEVE	29.90	3.00	6.62
492909	SW	6	20	2	5	LAYNE CHRISTENSEN CANADA LIMITED	1998-11-28	23.00	New Well	Observation		1	16	SABATINI ENVIRONMENTAL CALGARY	8.00	100.00	10.62
492910	12	8	20	2	5	BLACKWOOD DRILLING LTD.	1999-06-07	80.00	New Well	Domestic		5	24	CURRIE, DON	16.60	2.25	6.62
493339	7	5	20	2	5	WEBSTER DRILLING	1995-07-21	123.00	New Well	Domestic & Stock		8	24	MCGREGOR, BRIAN	27.00	10.00	6.62
497662	SW	6	20	2	5	LAYNE CHRISTENSEN CANADA LIMITED	1998-12-28	23.00	Test Hole	Municipal		1	25	TURNER VALLEY, TOWN OF #98-1	8.00	100.00	10.62
498331	NW	8	20	2	5	BAKER WATER WELLS	2001-02-01	145.00	New Well	Domestic		4	25	WHALEY, GEORGE/BARBARA	17.30	3.00	6.62
498331	NW	8	20	2	5	BAKER WATER WELLS	2001-02-01	145.00	New Well	Domestic		4		WHALEY, GEORGE/BARBARA	17.30	5.00	6.62
498335	NE	2	20	3	5	BAKER WATER WELLS	2001-06-30	300.00	Dry Hole- Decommissioned	Domestic		10		BROWN, RALPH			0.00



Reconnaissance Report

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498336	NE	3	20	3	5	NIEMANS DRILLING (1980) LTD.	2001-03-28	180.00	Test Hole- Decommissioned	Domestic		2		JUSTNICK, BOB			0.00
1020221	SE	11	20	3	5	AARON DRILLING INC.	2003-04-19	235.00	New Well	Domestic		16	4	FLEMING, JANICE	22.90	1.50	6.62
1021192	SW	2	20	3	5	AARON DRILLING INC.	2006-05-26	255.00	New Well- Decommissioned	Domestic		3		HAIGH, DAVID	15.00	0.25	
1021193	SW	2	20	3	5	AARON DRILLING INC.	2006-06-13	175.00	New Well	Domestic		3	6	HAIGH, DAVID	13.50	1.30	6.62
1021194	SW	2	20	3	5	AARON DRILLING INC.	2006-06-09	220.00	New Well- Decommissioned	Domestic		4		HAIGH, DAVID	150.00	0.25	
1021770	SE	1	20	3	5	AARON DRILLING INC.		18.00	Existing Well- Decommissioned	Domestic		1		TURNER VALLEY, TOWN OF	16.00		
1021771	SE	1	20	3	5	AARON DRILLING INC.		10.00	Existing Well- Decommissioned	Domestic		1		TURNER VALLEY, TOWN OF	10.00		
1021772	SE	1	20	3	5	AARON DRILLING INC.		14.00	Existing Well- Decommissioned	Domestic		1		TURNER VALLEY, TOWN OF	12.40		
1021773	SE	1	20	3	5	AARON DRILLING INC.		16.00	Existing Well- Decommissioned	Domestic		1		TURNER VALLEY, TOWN OF	6.40		
1021803	NW	8	20	2	5	AARON DRILLING INC.	2008-09-10	115.00	New Well	Other		7	11	DIAMOND RIDGE DEV	61.80	4.00	6.62
1021804	NW	8	20	2	5	AARON DRILLING INC.	2008-08-28	250.00	New Well	Other		8	8	DIAMOND RIDGE DEV	28.20	4.00	6.62
1021818	NW	8	20	2	5	AARON DRILLING INC.	2008-08-26	280.00	Test Hole- Decommissioned	Domestic		17		DIAMOND RIDGE DEV	46.00	1.00	
1021819	NW	8	20	2	5	AARON DRILLING INC.	2008-09-02	382.00	Test Hole- Decommissioned	Domestic		15	1	DIAMOND RIDGE DEV	40.00	1.25	
1021821	NW	8	20	2	5	AARON DRILLING INC.	2008-08-25	250.00	Test Hole- Decommissioned	Domestic		14	1	DIAMOND RIDGE DEV	56.00	2.50	
1022216	11	6	20	2	5	AARON DRILLING INC.	2011-12-13	87.00	Piezometer	Monitoring		8		ALBERTA CULTURE AND COMMUNITY SERVICES			4.00
1022369	14	12	20	3	5	AARON DRILLING INC.	2013-07-04	63.00	New Well- Decommissioned	Unknown		1		CNRL			6.63
1022579	11	1	20	3	5	AARON DRILLING INC.	2015-08-21	80.00	New Well	Domestic		9	17	LEE & PEGGY SHULTZ	25.50	6.00	6.63
1023337	1	1	20	3	5	AARON DRILLING INC.	2021-01-15	280.00	New Well	Domestic		8	24	NADEAU, STEVE	18.00	0.40	6.63
1023349	6	1	20	3	5	AARON DRILLING INC.	2021-03-18	95.00	New Well	Domestic		20	17	OHLSON, DONNA	35.00	8.00	6.63
1023356	6	1	20	3	5	AARON DRILLING INC.			Existing Well- Decommissioned	Unknown				OHLSON, DONNA			



Reconnaissance Report

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1023425	15	35	19	3	5	AARON DRILLING INC.			Existing Well- Decommissioned	Unknown				CRESCENT POINT ENERGY			
1023932	5	8	20	2	5	AARON DRILLING INC.	2024-02-09	155.00	New Well	Domestic		11	24	GUSTAFSON, LESLIE	45.00	1.50	6.63
1023965	10	2	20	3	5	AARON DRILLING INC.	2024-06-24	115.00	New Well	Domestic		16	23	WAGNER, KEN	48.90	5.00	6.63
1115055	NE	32	19	2	5	BAKER WATER WELLS	2006-01-05	80.00	New Well	Domestic		6	38	G & G LAND AND CATTLE CO. LTD.	27.00	5.00	5.56
1115091	SW	32	19	2	5	BAKER WATER WELLS	2004-08-24	85.00	Reconditioned	Domestic		3		TRIPLE C OILFIELD RENTALS LTD	55.00	12.00	6.63
1115102	NW	8	20	2	5	BAKER WATER WELLS	2006-05-02	185.00	New Well	Domestic		6	25	CURRIE, ALLEN & GLENIS	18.58	15.00	5.56
1115107	NE	31	19	2	5	BAKER WATER WELLS	2006-07-31	90.00	New Well	Domestic		7	25	BELARIAN FARMS	33.50	5.00	5.56
1115117	NW	8	20	2	5	BAKER WATER WELLS	2006-07-14	35.00	Reconditioned	Domestic		2		SCHOOLEY, ART	11.00	15.00	6.63
1115122	2	8	20	2	5	BAKER WATER WELLS			Existing Well- Decommissioned	Unknown				WILLOW RIDGE ESTATES			
1115146	NW	8	20	2	5	BAKER WATER WELLS	2008-01-19	225.00	New Well	Domestic		6	2	CURRIE, ALLEN & GLENIS	30.00	7.00	5.56
1115146	NW	8	20	2	5	BAKER WATER WELLS	2008-01-19	225.00	New Well	Domestic		6	27	CURRIE, ALLEN & GLENIS	30.00	5.00	5.56
1115169	NW	12	20	3	5	BAKER WATER WELLS	2008-11-03	100.00	New Well	Domestic		7	25	L - L RANCH & STABLES LTD.	31.42	10.00	6.56
1140070	12	8	20	2	5	BLACKWOOD DRILLING LTD.	1999-06-03	280.00	Deepened	Domestic		11		CURRIE, DON			6.63
1140089	NW	7	20	2	5	BLACKWOOD DRILLING LTD.	2003-01-29	250.00	Test Hole- Decommissioned	Municipal		8	27	TURNER VALLEY, TOWN OF	0.00	3.00	6.63
1140144	1	18	20	2	5	BLACKWOOD DRILLING LTD.	2004-04-15	100.00	New Well	Domestic		7	27	HOFF, WES	42.09	4.50	6.63
1555118	NE	12	20	3	5	NIEMANS DRILLING (1980) LTD.	2003-10-20	120.00	Test Hole- Decommissioned	Stock		3		DUNHAM , RANDY			
1555126	NE	12	20	3	5	NIEMANS DRILLING (1980) LTD.	2003-10-19	160.00	Test Hole- Decommissioned	Stock		2		DUNHAM , RANDY			
1555172	NE	12	20	3	5	NIEMANS DRILLING (1980) LTD.	2003-10-21	140.00	Test Hole- Decommissioned	Stock		2		DUNHAM , RANDY			
1555356	SE	13	20	3	5	NIEMANS DRILLING (1980) LTD.	2004-10-29	76.00	New Well	Domestic		3	33	LADOUCEUR, DAVE	12.20	8.00	6.63
1555533	SE	3	20	3	5	NIEMANS DRILLING (1980) LTD.	2006-05-06	156.00	New Well	Domestic		4	25	SHANNON,ROSS	26.51	5.50	6.63



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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)
1555534	SE	3	20	3	5	NIEMANS DRILLING (1980) LTD.	2006-05-06	140.00	Test Hole	Domestic		4		SHANNON,ROSS			
1555535	SE	3	20	3	5	NIEMANS DRILLING (1980) LTD.	2006-05-01	140.00	Test Hole	Domestic		4		SHANNON,ROSS			
1555536	SE	3	20	3	5	NIEMANS DRILLING (1980) LTD.	2006-05-05	140.00	Test Hole	Domestic		4		SHANNON,ROSS			
1555537	SE	3	20	3	5	NIEMANS DRILLING (1980) LTD.	2006-04-28	140.00	Test Hole	Domestic		4		SHANNON,ROSS			
1555538	SE	3	20	3	5	NIEMANS DRILLING (1980) LTD.	2006-04-26	156.00	New Well	Domestic		5	26	MCCHESNEY, BRAD	15.72	2.00	6.63
1555538	SE	3	20	3	5	AARON DRILLING INC.	2009-03-06	156.00	Reconditioned	Municipal		1	7	LATAHROP, DOUG	18.50	3.00	6.62
1555711	SW	18	20	2	5	NIEMANS DRILLING (1980) LTD.	2007-10-18	80.00	New Well	Domestic		2	25	HATCHARD, LARRY	11.02	1.40	5.56
1556056	SW	8	20	2	5	NIEMANS DRILLING (1980) LTD.	2010-06-08	35.00	Test Hole- Decommissioned	Unknown		5		BLACK DIAMOND, TOWN OF			
1556057	SW	8	20	2	5	NIEMANS DRILLING (1980) LTD.	2010-06-07	35.00	Test Hole- Decommissioned	Municipal		4		BLACK DIAMOND, TOWN OF			
1556058	SW	8	20	2	5	NIEMANS DRILLING (1980) LTD.	2010-06-07	29.00	Test Hole- Decommissioned	Municipal		3		BLACK DIAMOND, TOWN OF			
1556059	SW	8	20	2	5	NIEMANS DRILLING (1980) LTD.	2010-06-08	17.50	Test Hole- Decommissioned	Municipal		4		BLACK DIAMOND, TOWN OF			
1556085	SW	8	20	2	5	NIEMANS DRILLING (1980) LTD.	2010-08-10	50.00	Test Hole- Decommissioned	Municipal		4		BLACK DIAMOND, TOWN OF			
1556164	6	8	20	2	5	NIEMANS DRILLING (1980) LTD.	2010-08-11	20.00	Test Hole	Municipal		4	3	BLACK DIAMOND, TOWN OF	8.33	90.00	6.00
1556460	12	6	20	2	5	NIEMANS DRILLING (1980) LTD.	2013-08-06	21.00	New Well	Monitoring		5	25	TOWN OF TURNER VALLEY	10.76	43.00	
1556461	12	6	20	2	5	NIEMANS DRILLING (1980) LTD.	2013-08-30	21.00	New Well- Decommissioned	Investigation		5	26	TOWN OF TURNER VALLEY	10.62	105.00	
1556462	12	6	20	2	5	NIEMANS DRILLING (1980) LTD.	2013-09-03	23.00	New Well	Monitoring		5	26	TOWN OF TURNER VALLEY	13.25	83.00	
1556490	12	6	20	2	5	NIEMANS DRILLING (1980) LTD.	2013-10-01	21.00	New Well	Observation		5	25	TOWN OF TURNER VALLEY	10.66	37.00	5.50
1556495	12	6	20	2	5	NIEMANS DRILLING (1980) LTD.		19.00	Test Hole- Decommissioned	Observation		5		TOWN OF TURNER VALLEY			
1556496	12	6	20	2	5	NIEMANS DRILLING (1980) LTD.	2013-09-30	23.00	New Well	Municipal		5	26	TOWN OF TURNER VALLEY	9.94	110.00	
1556497	12	6	20	2	5	NIEMANS DRILLING (1980) LTD.	2013-11-08	26.00	New Well	Municipal		5	26	TOWN OF TURNER VALLEY	9.18	208.00	



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1610001	SE	5	20	2	5	PETER NIEMANS WATER WELL DRILLING	2003-02-24	240.00	Test Hole- Decommissioned	Domestic		11		JAY GEE FARMS LTD		0.33	
1610059	NW	8	20	2	5	PETER NIEMANS WATER WELL DRILLING	2004-07-13	300.00	Deepened	Domestic		10	22	KOOPMAN ,GENO	135.00	3.50	6.63
1610089	SE	5	20	2	5	PETER NIEMANS WATER WELL DRILLING	2003-02-19	240.00	Test Hole- Decommissioned	Domestic		10		JAY GEE FARMS LTD		0.66	
1610116	SE	5	20	2	5	PETER NIEMANS WATER WELL DRILLING	2003-02-26	280.00	Test Hole- Decommissioned	Domestic		16		JAY GEE FARMS LTD		0.75	
1610121	SE	5	20	2	5	PETER NIEMANS WATER WELL DRILLING	2003-03-13	300.00	Test Hole- Decommissioned	Domestic		12		JAY GEE FARMS LTD		0.25	
1610290	SW	13	20	3	5	PETER NIEMANS WATER WELL DRILLING	2003-03-18	100.00	Deepened	Stock		4	12	HATCHARD, LARRY	40.00	8.50	6.00
2066151	SE	11	20	3	5	WELL DONE WATERWELLS INC.	2016-03-29	115.00	New Well	Domestic		5		CARVER, IAN & VELMA	9.20	10.00	6.63
2066172	SE	11	20	3	5	WELL DONE WATERWELLS INC.	2016-08-28	115.00	New Well	Domestic		9	25	CARVER IAN&VELMA	20.20	12.00	6.63
2095656	SW	18	20	2	5	UNKNOWNDRILLINGCOMP11		60.00	Well Inventory	Stock		1		POWELL, KEITH			
2095657	SW	18	20	2	5	UNKNOWNDRILLINGCOMP11		170.00	Well Inventory	Domestic		1		POWELL, KEITH			
2096843	12	6	20	2	5	UNKNOWNDRILLINGCOMP11			Existing Well- Decommissioned	Unknown				UNKNOWN			
2096844	12	6	20	2	5	UNKNOWNDRILLINGCOMP11			Existing Well- Decommissioned	Unknown				UNKNOWN			
2096982	7	1	20	3	5	UNKNOWNDRILLINGCOMP11			New Well	Domestic			21	WILLIAMSON, BARRY & SUE	60.00	12.00	6.63
9546383	SE	1	20	3	5	AQUACLEAR DRILLING INC.	2019-08-14	120.00	New Well	Domestic		8	18	HOLLADAY, JAMES	25.55	6.00	6.62
9546473	SE	1	20	3	5	AQUACLEAR DRILLING INC.	2022-08-26	135.00	New Well	Domestic		5	18	HOLLADAY, JAMES & CINDY	13.52	1.50	6.62
9546474	SE	1	20	3	5	AQUACLEAR DRILLING INC.	2022-08-24	135.00	New Well	Domestic		4	18	HOLLADAY, JAMES & CINDY	11.63	2.00	6.62
9546475	SE	1	20	3	5	AQUACLEAR DRILLING INC.	2022-08-25	135.00	New Well	Domestic		4	18	HOLLADAY, JAMES & CINDY	11.53	3.00	6.62
9681099	4	2	20	3	5	NIEMANS DRILLING & SONS LTD.	2015-12-15	20.00	New Well	Investigation		3		TOWN OF TURNER VALLEY			
9681100	4	2	20	3	5	NIEMANS DRILLING & SONS LTD.	2015-12-15	12.00	New Well	Investigation		3		TOWN OF TURNER VALLEY			
9681101	4	2	20	3	5	NIEMANS DRILLING & SONS LTD.			New Well- Decommissioned	Investigation		3		TOWN OF TURNER VALLEY			



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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)
9681415	5	18	20	2	5	NIEMANS DRILLING & SONS LTD.	2019-05-28	100.00	Test Hole- Decommissioned	Domestic		2		STAV, HARLEY			
9681416	5	18	20	2	5	NIEMANS DRILLING & SONS LTD.	2019-07-02	112.00	New Well	Domestic		4	26	STAV, HARLEY	12.99	1.50	5.56
9681417	5	18	20	2	5	NIEMANS DRILLING & SONS LTD.	2019-06-02	152.00	Test Hole- Decommissioned	Domestic		2		STAV, HARLEY			
9682118	4	32	19	2	5	NIEMANS DRILLING & SONS LTD.	2024-11-12	140.00	New Well- Decommissioned	Domestic		3		JOHNSON, SAM			
9682119	4	32	19	2	5	NIEMANS DRILLING & SONS LTD.	2024-11-13	140.00	New Well- Decommissioned	Domestic		3		JOHNSON, SAM			
9682120	4	32	19	2	5	NIEMANS DRILLING & SONS LTD.	2024-11-14	150.00	New Well- Decommissioned	Domestic		3		JOHNSON, SAM			



Appendix C

Borehole Logs



SHEEP RIVER REGIONAL UTILITY CORPORATION
2024 ANNUAL REPORT FOR STORED RAW WATER, RESERVOIR SITE GROUNDWATER,
WELL AND INFILTRATION GALLERY WATER MONITORING PROGRAMS - DIAMOND VALLEY
APPROVAL LICENSE NO. 1242-03-00
Appendix C - Borehole Logs
February 2025

Table C.1. Piezometer and Water Well Completion Details

Monitoring Well	Ground Elevation ¹ (masl)	Well Elevation ¹ (masl top)	Top of Screen (masl)	Top of Screen (m bgs)	Bottom of Screen (masl)	Bottom of Screen (m bgs)	Screened Lithology	Hydraulic Conductivity ² (m/s)
TVR 1.1	1214.902	1215.402	1213.175	1.727	1211.675	3.227	Gravel / Silt Till	1E-05
TVR 1.2	1214.834	1215.322	1205.528	9.306	1202.478	12.356	Silt and Clay Till	6E-08
TVR 1.3	1214.850	1215.318	1199.707	15.143	1198.187	16.663	Gravel / Silt / Clay	5E-07
TVR 1.4	1214.887	1215.270	1193.080	21.807	1190.030	24.857	Shale Bedrock	6E-08
TVR 2.1	1216.326	1216.981	1214.803	1.523	1213.303	3.023	Gravel / Silt Till	1E-06
TVR 2.2	1216.297	1216.923	1208.535	7.762	1205.485	10.812	Silt and Clay Till	8E-08
TVR 2.3	1216.260	1216.927	1198.688	17.572	1197.188	19.072	Gravel / Silt / Clay	2E-05
TVR 2.4	1216.232	1216.877	1193.020	23.212	1189.970	26.262	Shale Bedrock	3E-07
TVR 3.1	1215.983	1216.665	1214.495	1.488	1212.995	2.988	Gravel / Silt Till	1E-06
TVR 3.2	1215.943	1216.735	1208.095	7.848	1205.045	10.898	Silt and Clay Till	3E-08
TVR 3.3	1215.917	1216.646	1193.812	22.105	1190.762	25.155	Shale Bedrock	5E-07
TVR 4.1	1211.375	1211.581	1209.398	1.977	1207.898	3.477	Gravel / Silt Till	3E-06
TVR 4.2	1211.411	1211.612	1204.625	6.786	1201.575	9.836	Silt and Clay Till	5E-08
TVR 4.3	1211.373	1211.692	1200.179	11.194	1199.179	12.194	Gravel / Silt / Clay	9E-08
TVR 4.4 (destroyed)	1211.055	1211.701	1194.185	16.870	1192.685	18.370	Shale Bedrock	6E-08
TVR 4.4R	1211.568	1212.505	1194.786	16.782	1191.786	19.782	Shale Bedrock	-
TVR 5.1	1208.336	1209.106	1205.315	3.021	1203.815	4.521	Silt Till	6E-08
TVR 5.2 (decommissioned)	1208.171	1208.993	1202.321	5.850	1199.271	8.900	Silt and Clay Till	8E-08
TVR 5.2R	1208.300	1209.304	1204.456	3.844	1201.456	6.844	Silt and Clay Till	-
TVR 5.3 (decommissioned)	1208.018	1208.829	1198.208	9.810	1197.208	10.810	Gravel / Silt / Clay	2E-07
TVR 5.3R	1208.326	1208.909	1198.545	9.781	1196.345	11.981	Gravel / Silt / Clay	-
TVR 5.4	1208.396	1209.352	1194.278	14.118	1192.758	15.638	Shale Bedrock	7E-09
TVR 6.1 (decommissioned)	1215.071	1216.003	1213.571	1.500	1212.071	3.000	Silt Till	-
TVR 6.2 (decommissioned)	1215.073	1216.020	1208.073	7.000	1205.073	10.000	Clay Till	-
TVR 6.1R	-	-	-	1.900	-	3.400	Clay	-
TVR 6.2R	-	-	-	7.000	-	10.000	Clay	-
TVR 7.1	1214.746	1215.786	1212.279	2.467	1210.779	3.967	Cobbles / Clay Till	-
TVR 7.2	1214.811	1215.772	1207.792	7.019	1204.792	10.019	Silt and Clay Till	-
TVSA-01	1204.340	1204.270	1195.573	8.767	1194.073	10.267	Clay / Gravel	-
TVSA-02	1197.569	1198.419	1195.669	1.900	1192.669	4.900	Gravel / Cobble / Clay	-
TVSA-03	1196.810	1197.753	1195.810	1.000	1192.810	4.000	Gravel / Cobble / Clay	-
TVSA-04	1208.398	1208.279	1203.698	4.700	1200.698	7.700	Clay / Gravel	-
TVSA-05	1210.262	1211.151	1205.162	5.100	1202.162	8.100	Clay / Gravel	-
TVSA-06	1200.511	1200.442	1197.811	2.700	1194.811	5.700	Sand / Gravel	-
TVSA-07	1201.719	1201.631	1198.719	3.000	1195.719	6.000	Sand / Gravel	-
TVSA-08	1198.332	1199.223	1197.132	1.200	1194.132	4.200	Clay / Gravel	-
TH-B1	1197.435	1197.602	1190.235	7.200	1187.235	10.200	Sandstone Bedrock	-
TH-B2	1198.450	1199.262	1191.750	6.700	1188.750	9.700	Shale Bedrock	-
TH-B3	1198.414	1199.332	1191.714	6.700	1188.714	9.700	Shale/Siltstone Bedrock	-
TW3 ³ (decommissioned)	1200.160	1200.760	1194.980	5.180	1193.150	7.010	Unknown	-
TW7	1197.230	1199.620	1193.570	3.660	1191.130	6.100	Gravel	-
CW8	1199.709	1200.801	1193.600	5.869	1191.900	7.569	Sand / Gravel	-
TW5A	1198.791	1198.826	1193.831	4.720	1192.301	6.250	Gravel	-
VW5	1200.180	1200.781	1193.350	6.830	1192.750	7.430	Sand / Gravel	-

Notes:

" - " = not available

masl - metres above sea level

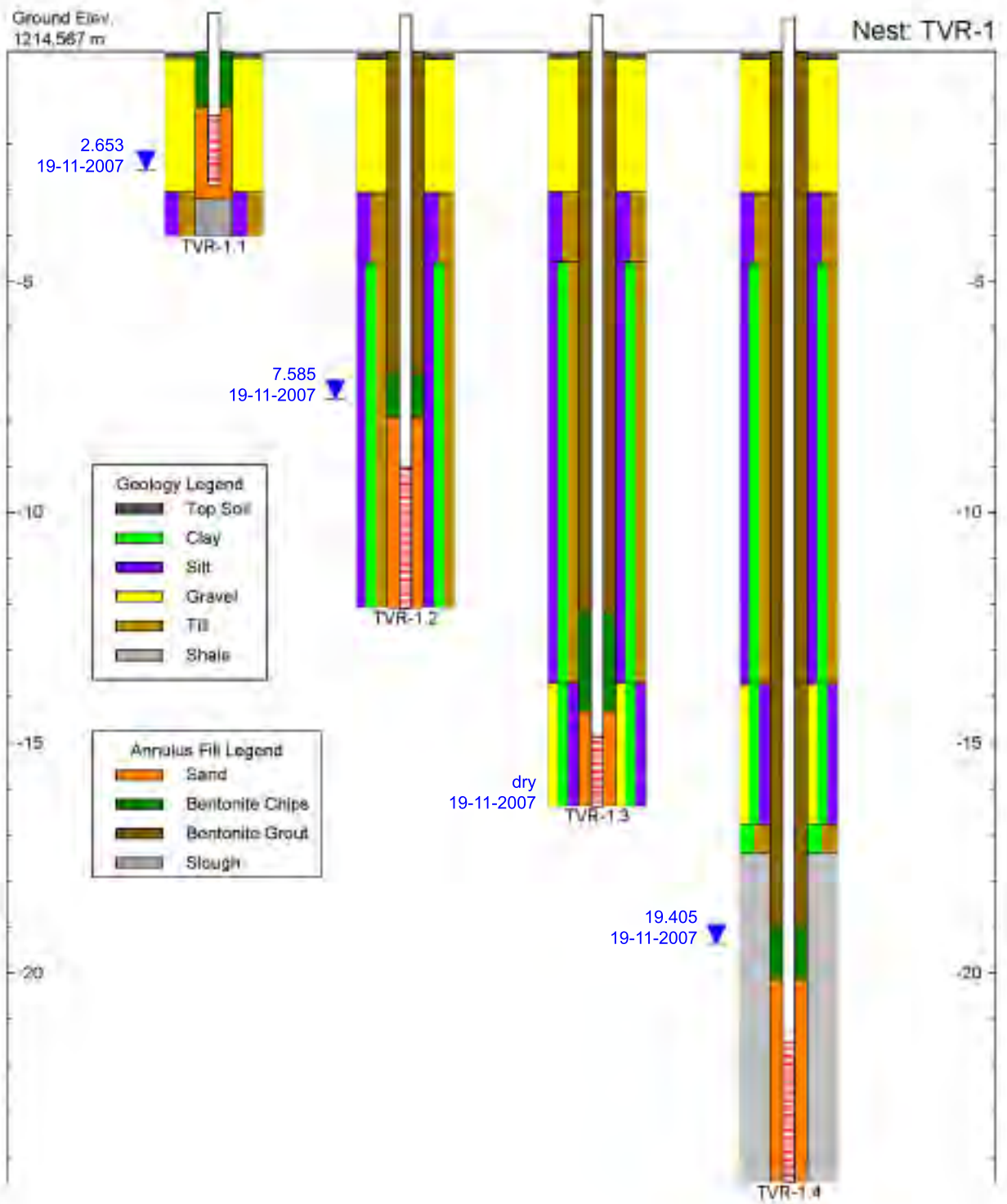
bgs - below ground surface

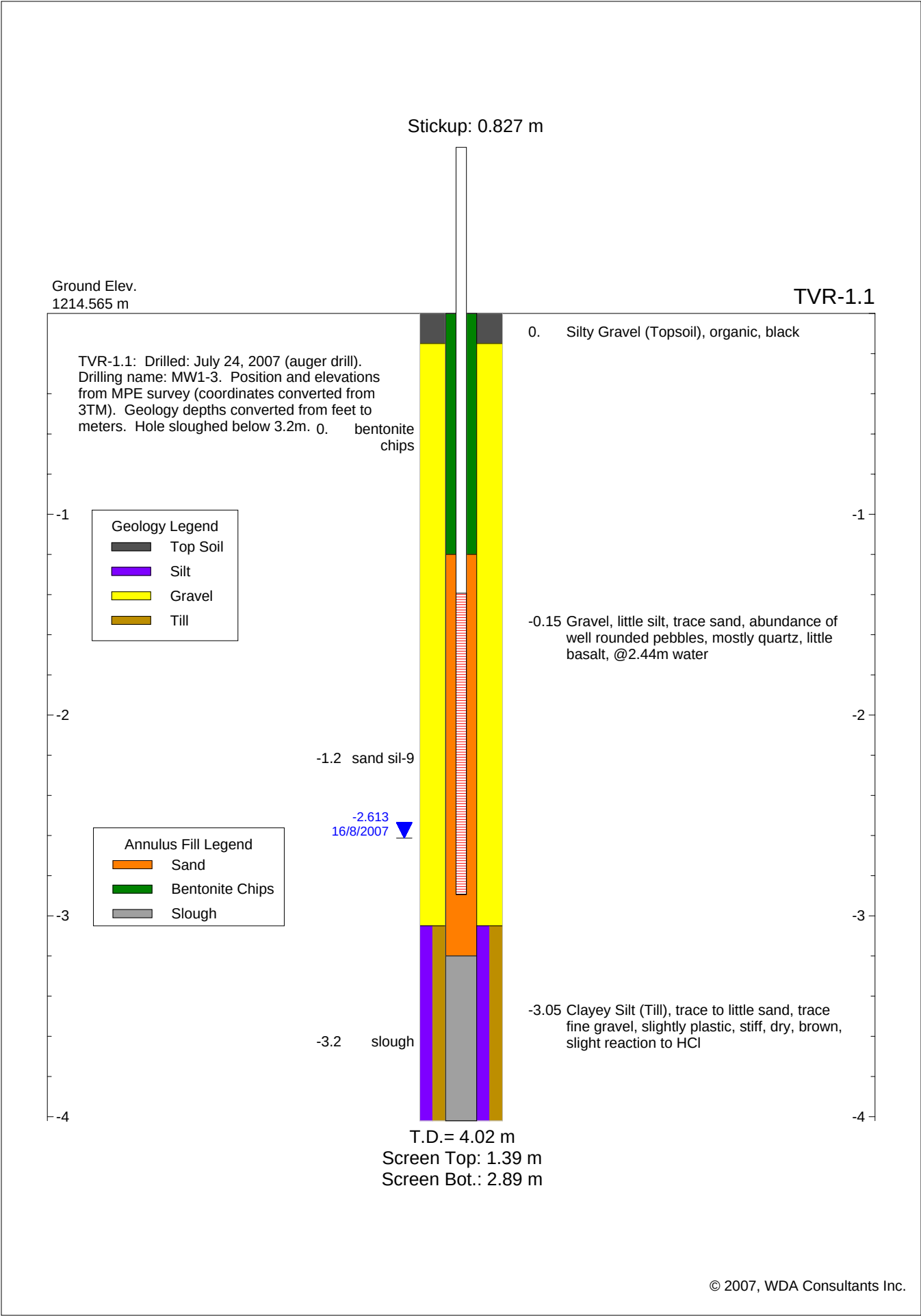
¹ - Survey elevations for TVR wells , TVSA wells, TH wells, and TW3 provided by MPE Engineering Ltd. and surveyed on November 20, 2019

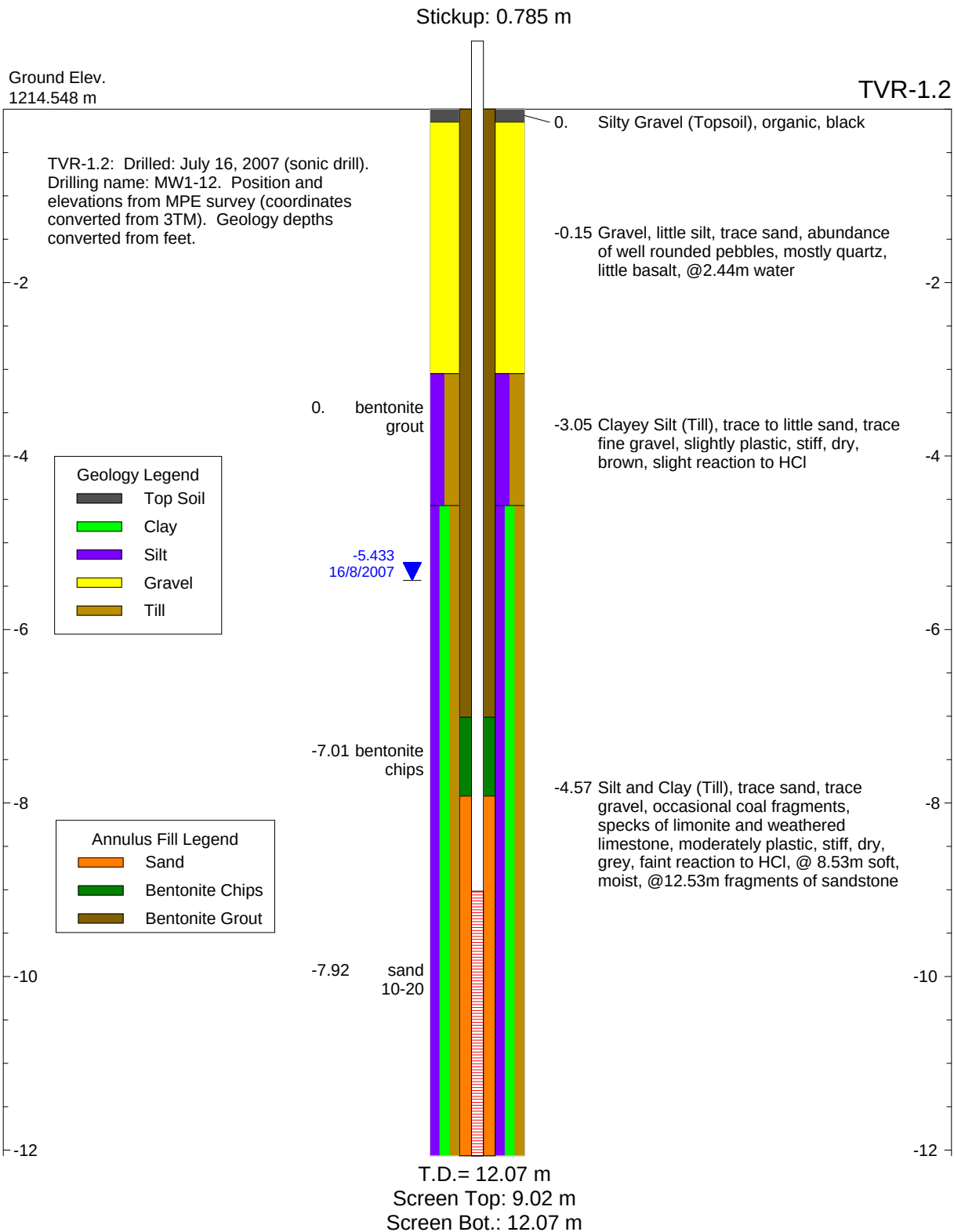
² - Hydraulic conductivity values as reported by WDA

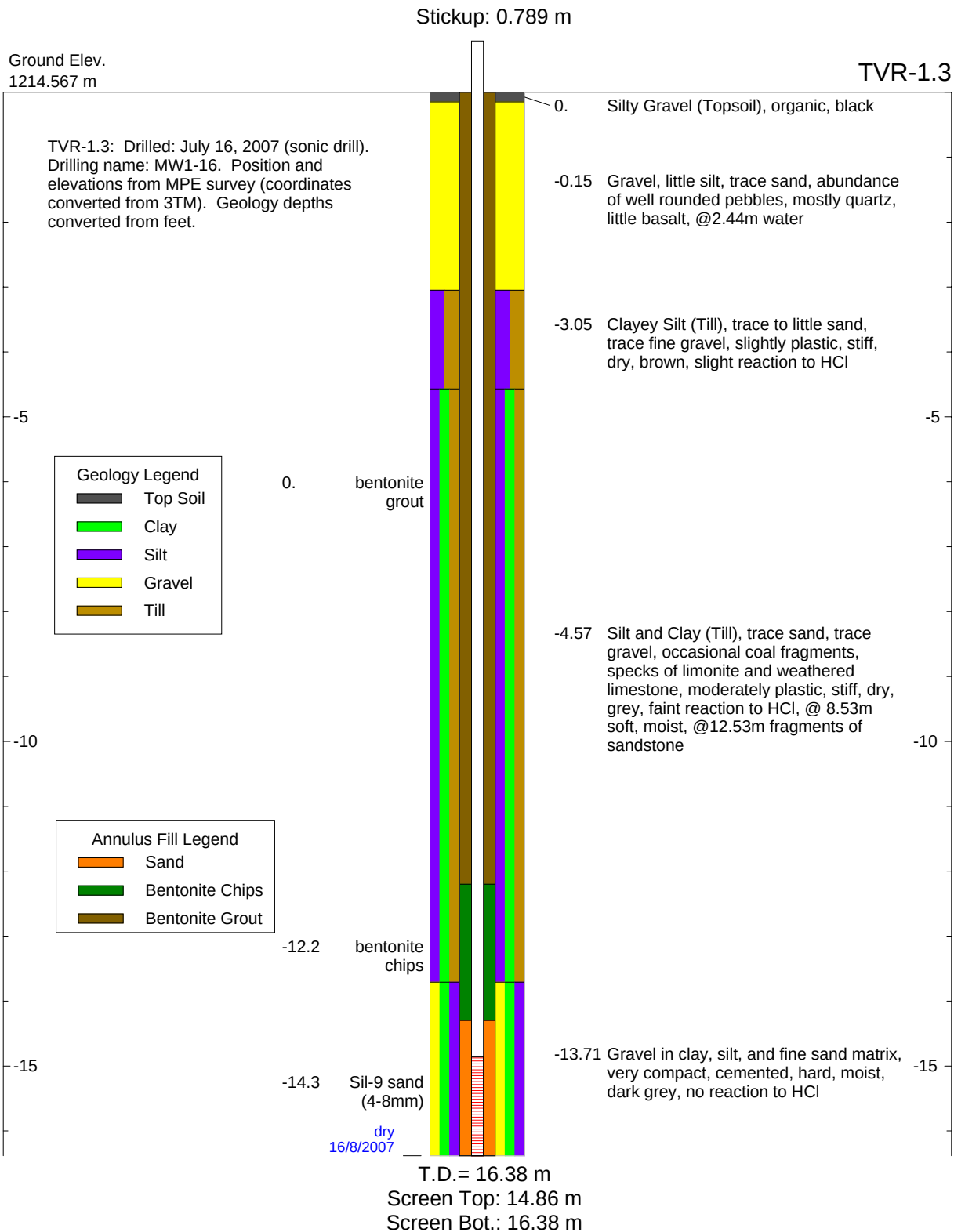
³ - Well log was unavailable

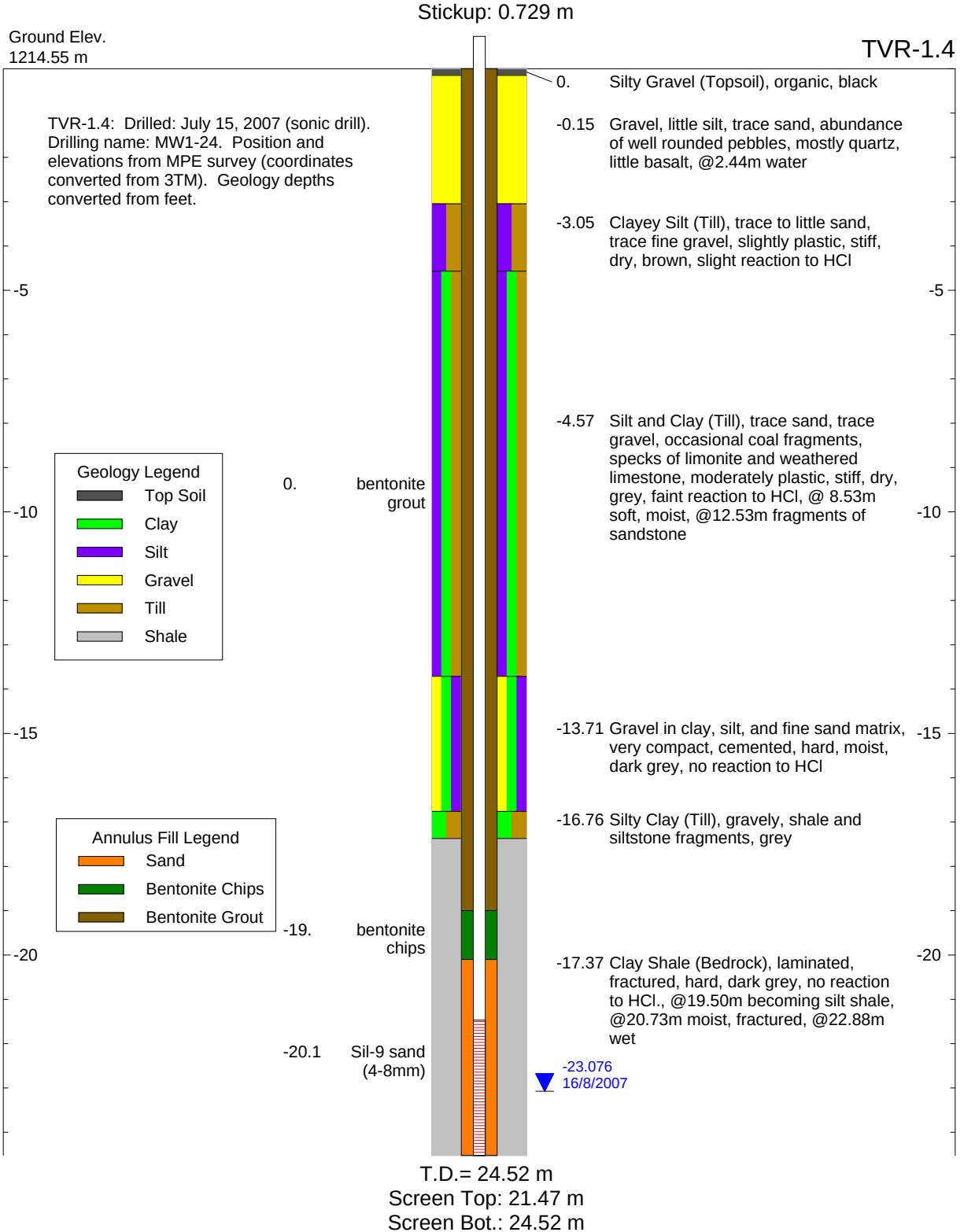






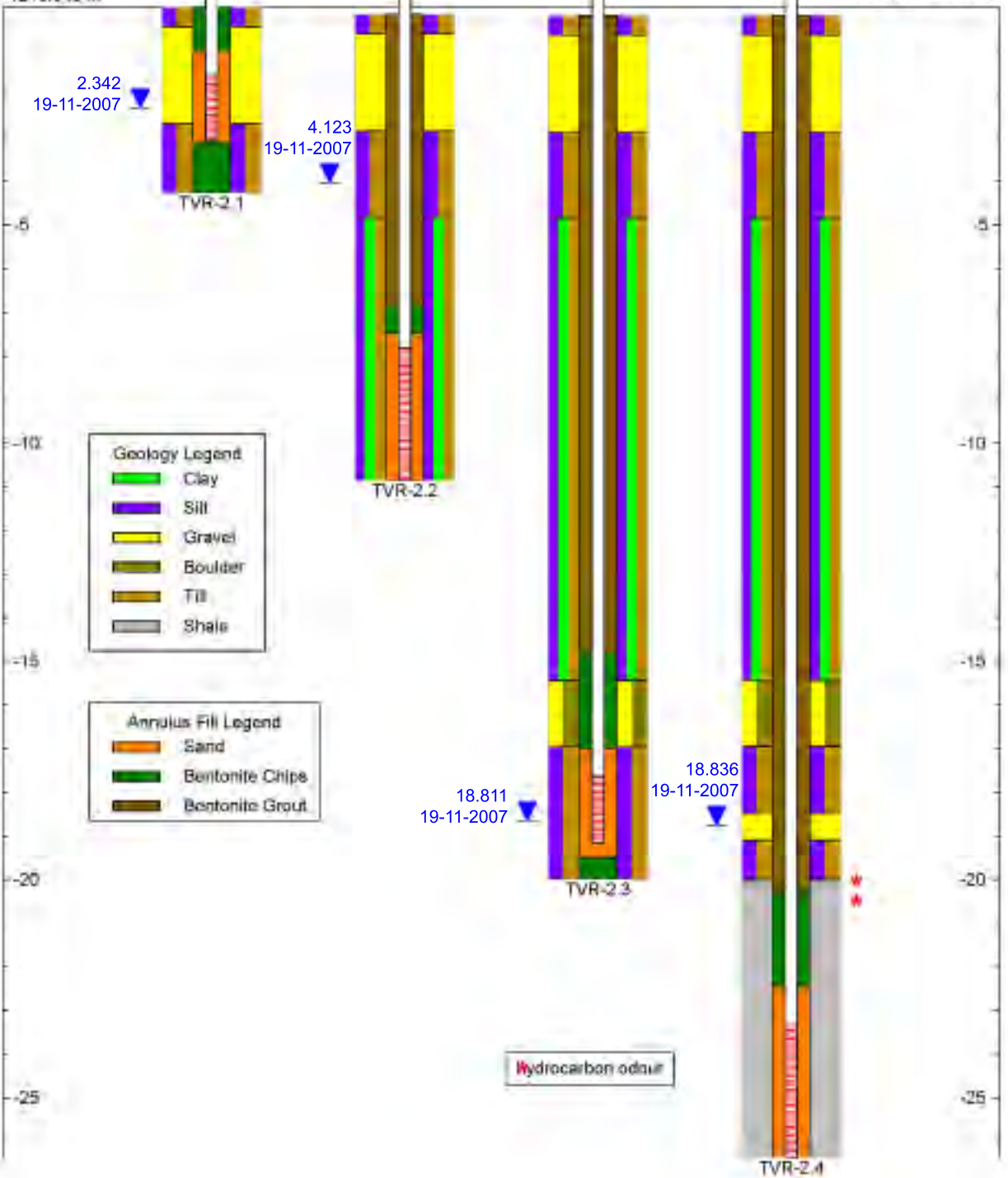


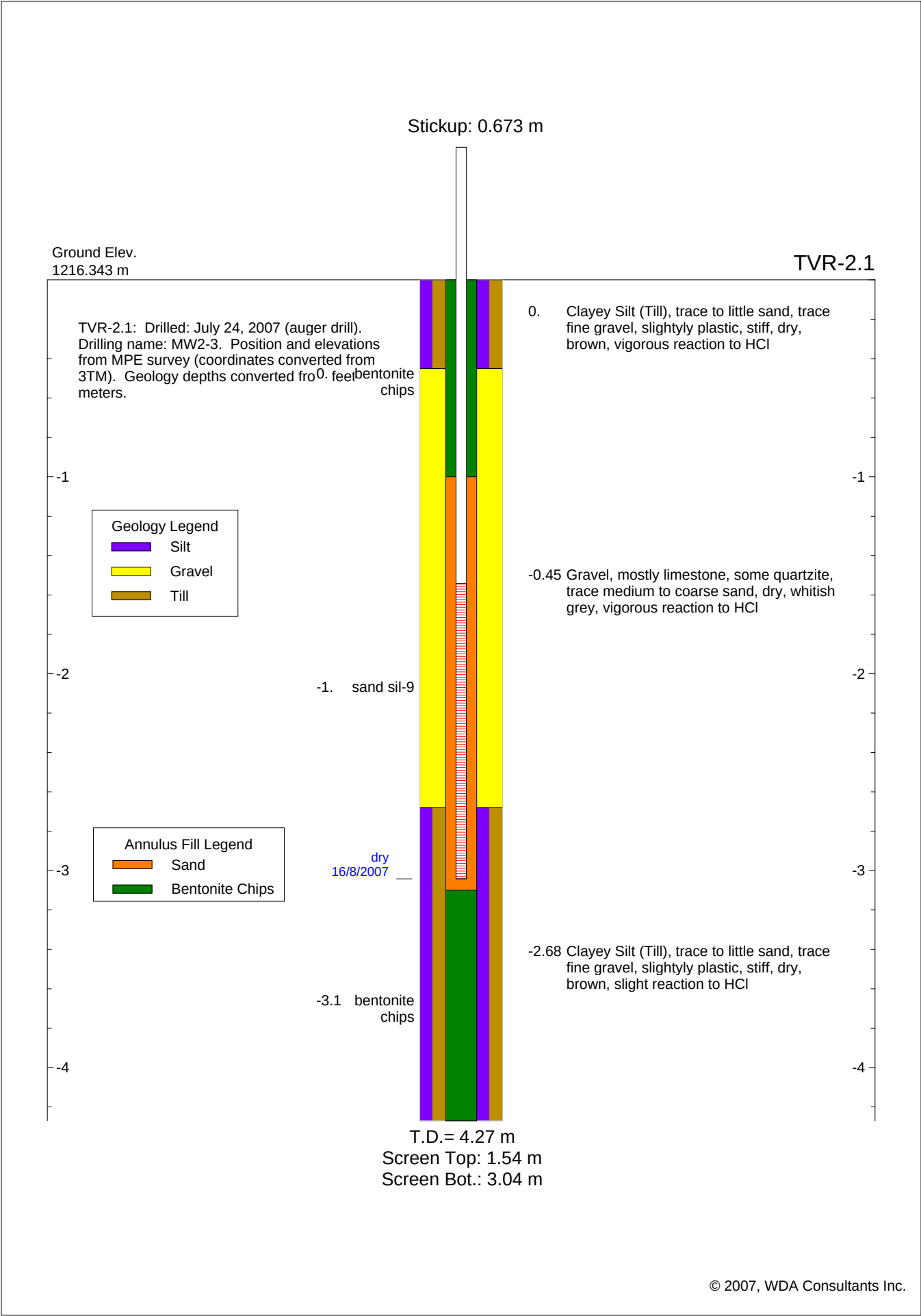


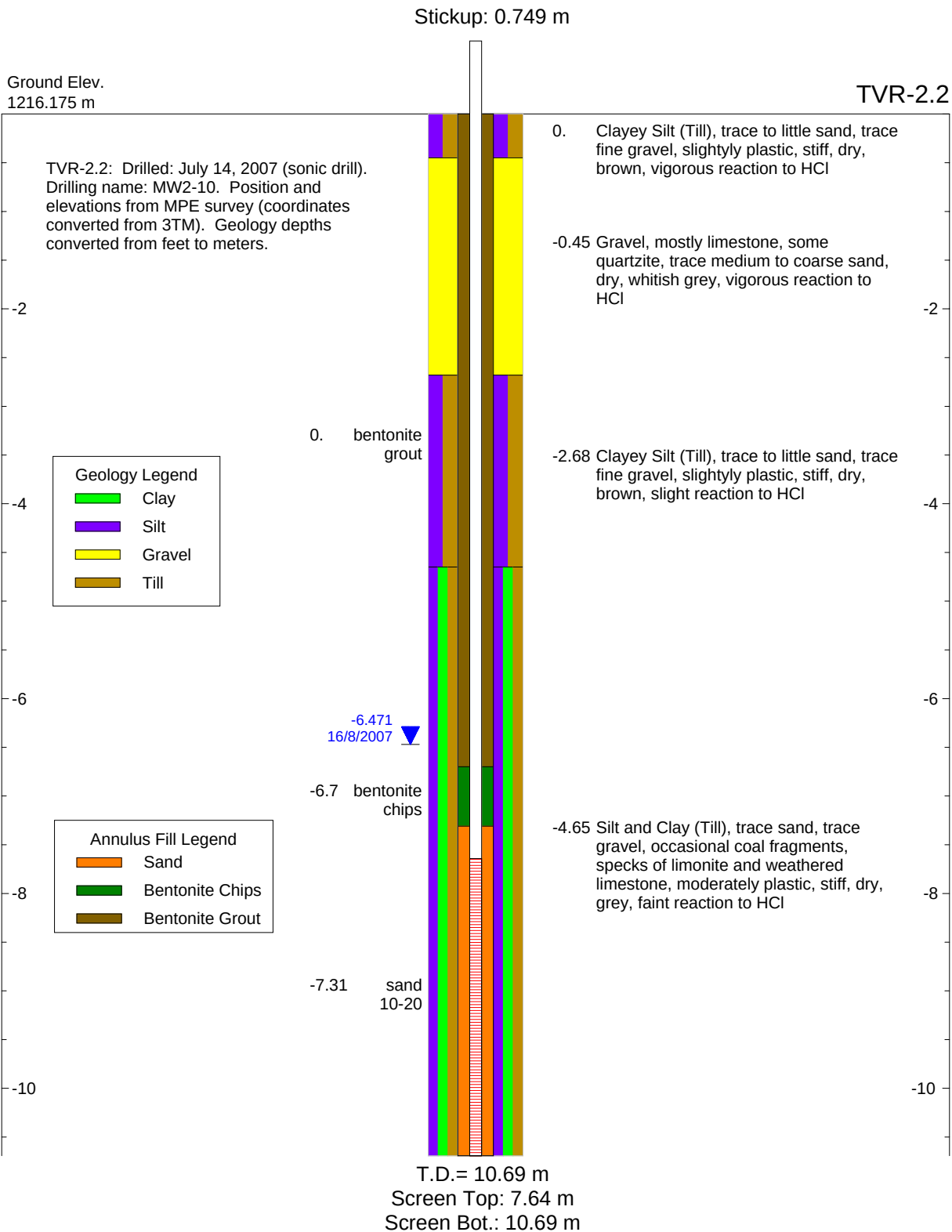


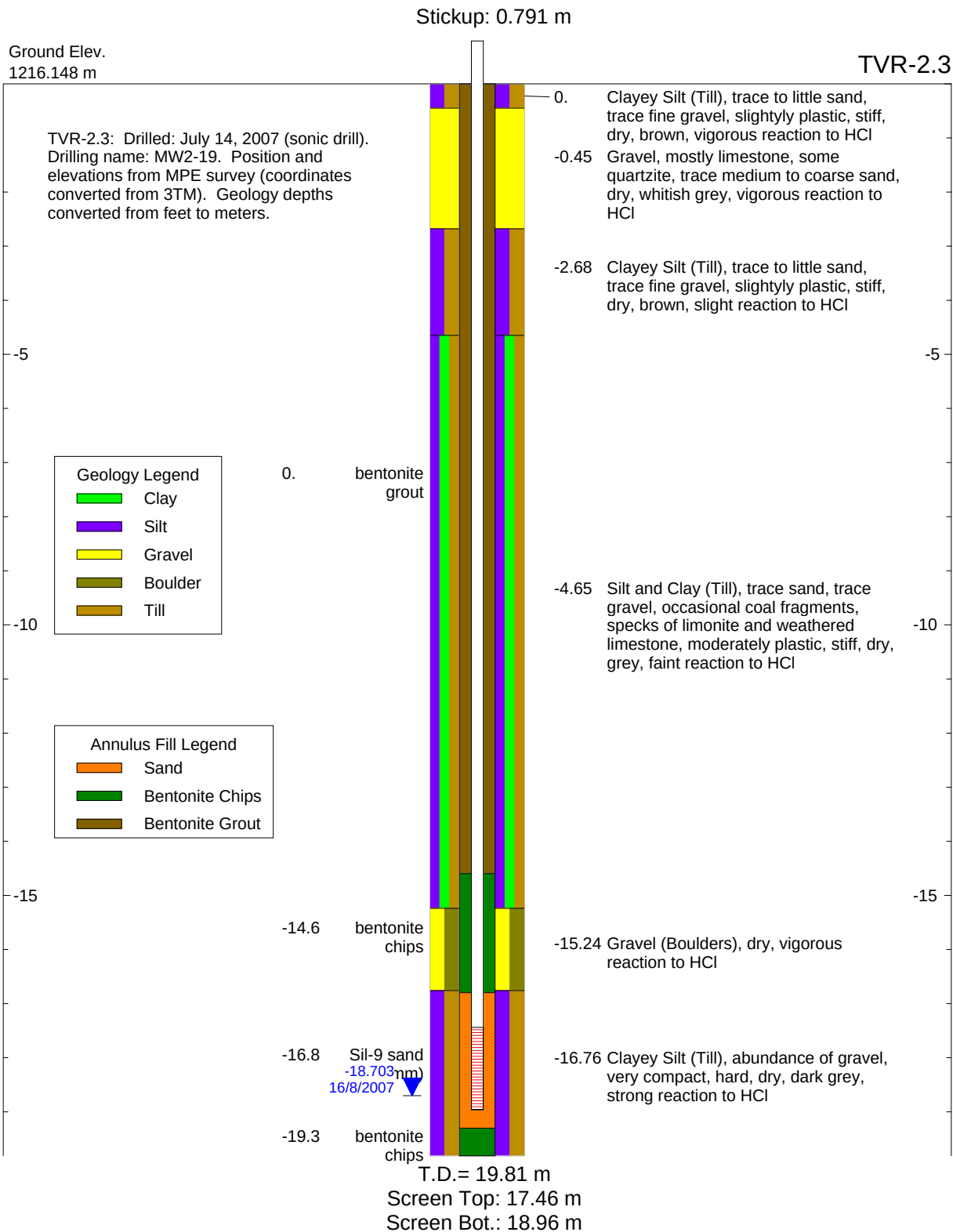
Ground Elev.
1216.343 m

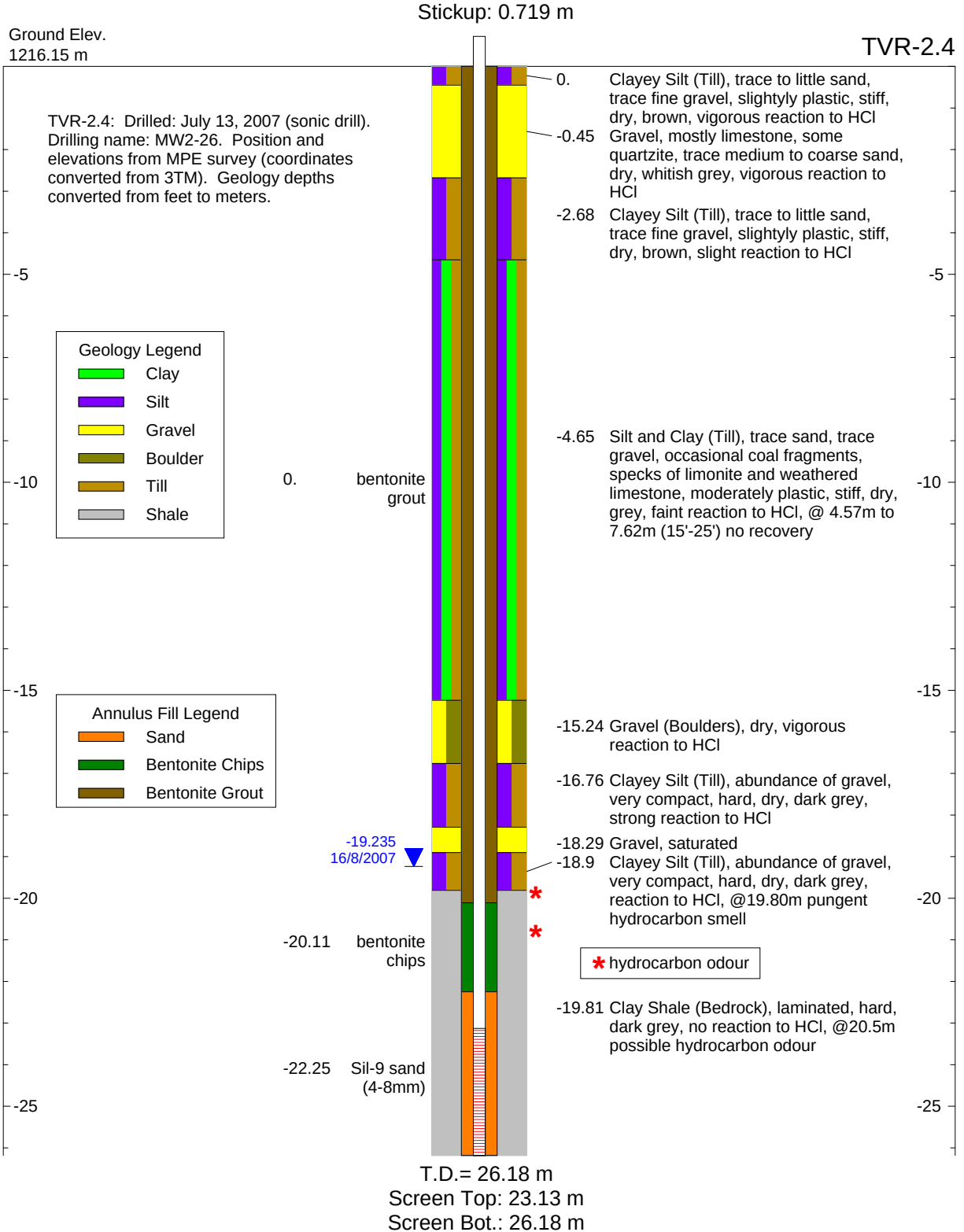
Nest: TVR-2





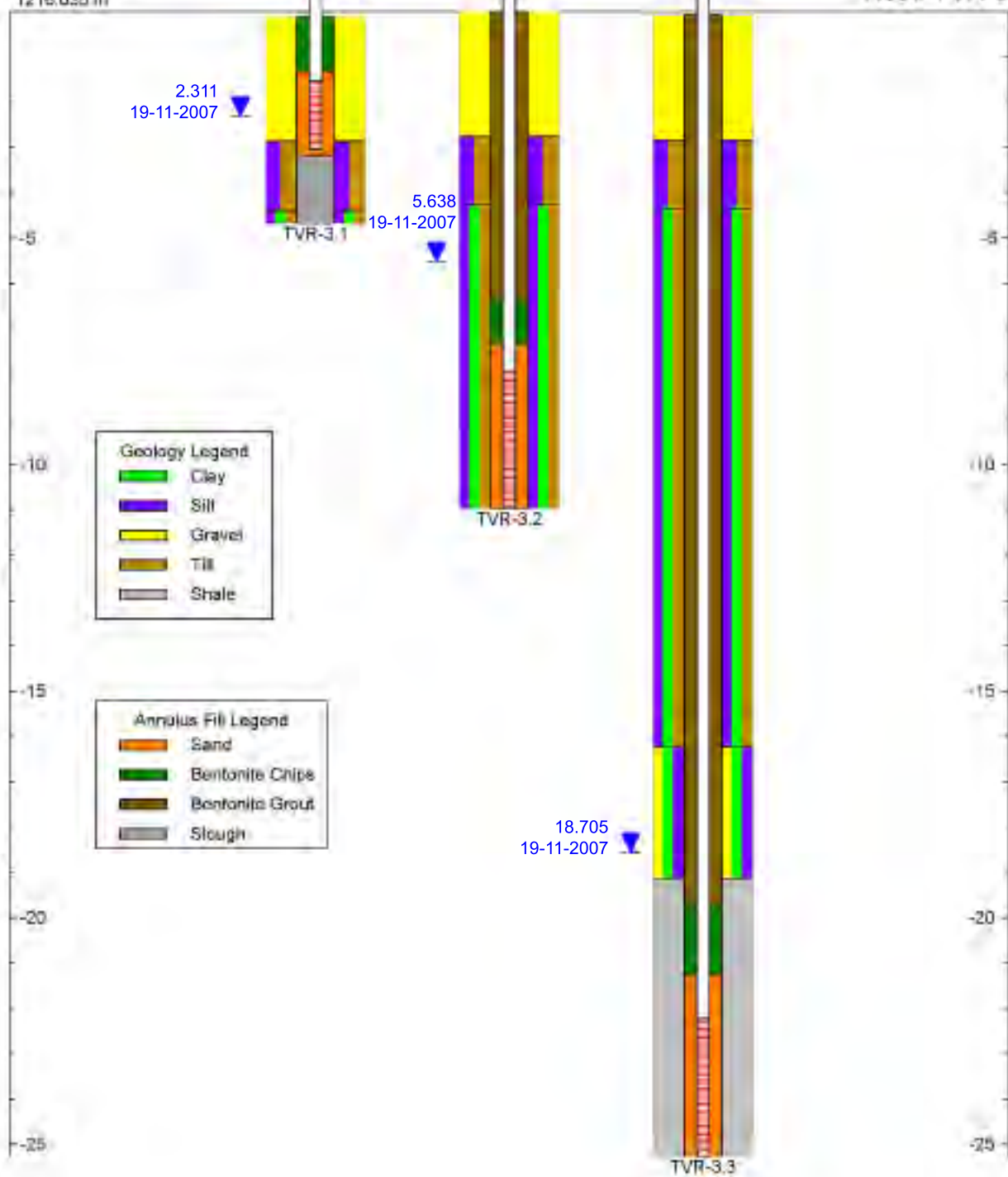


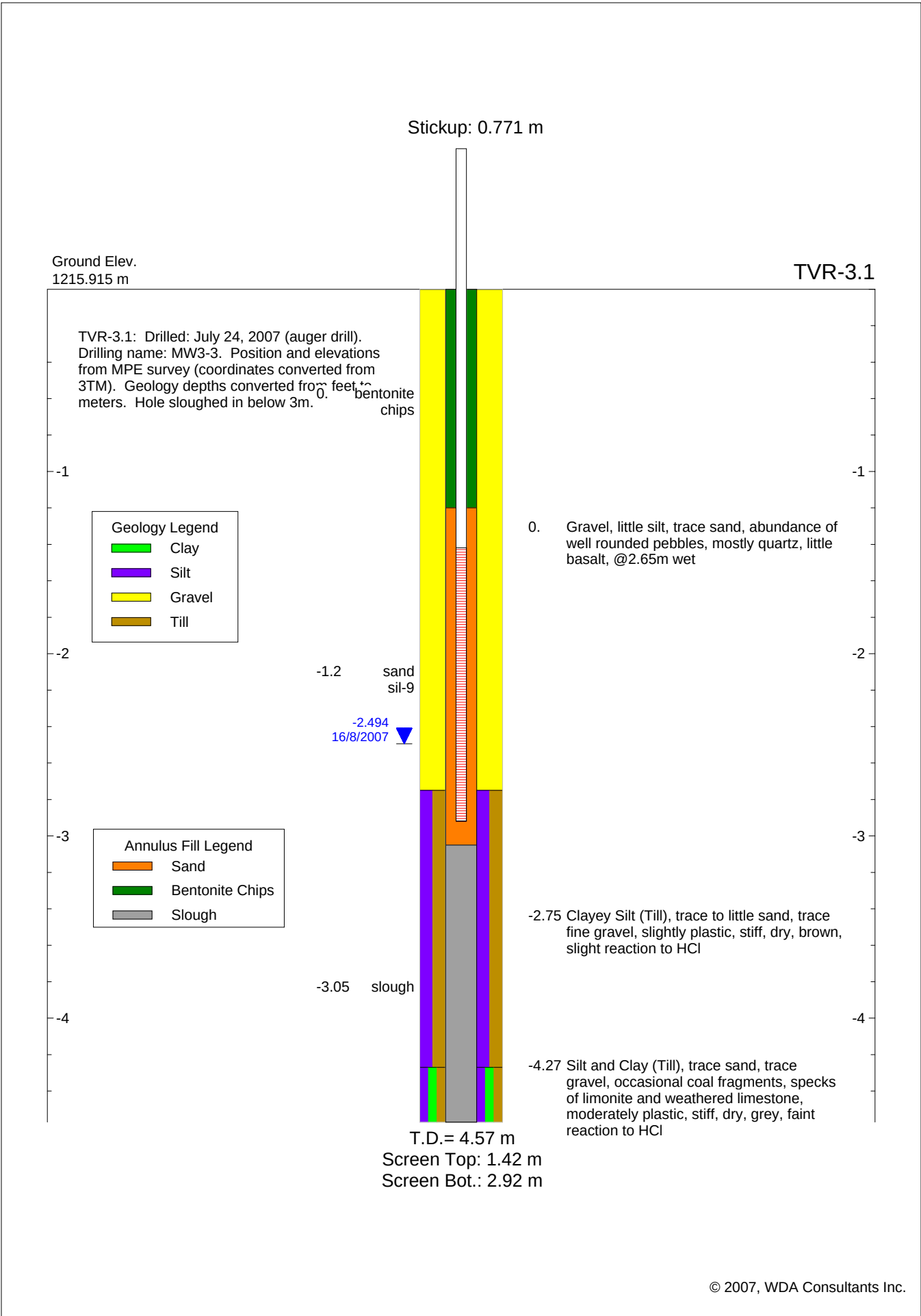


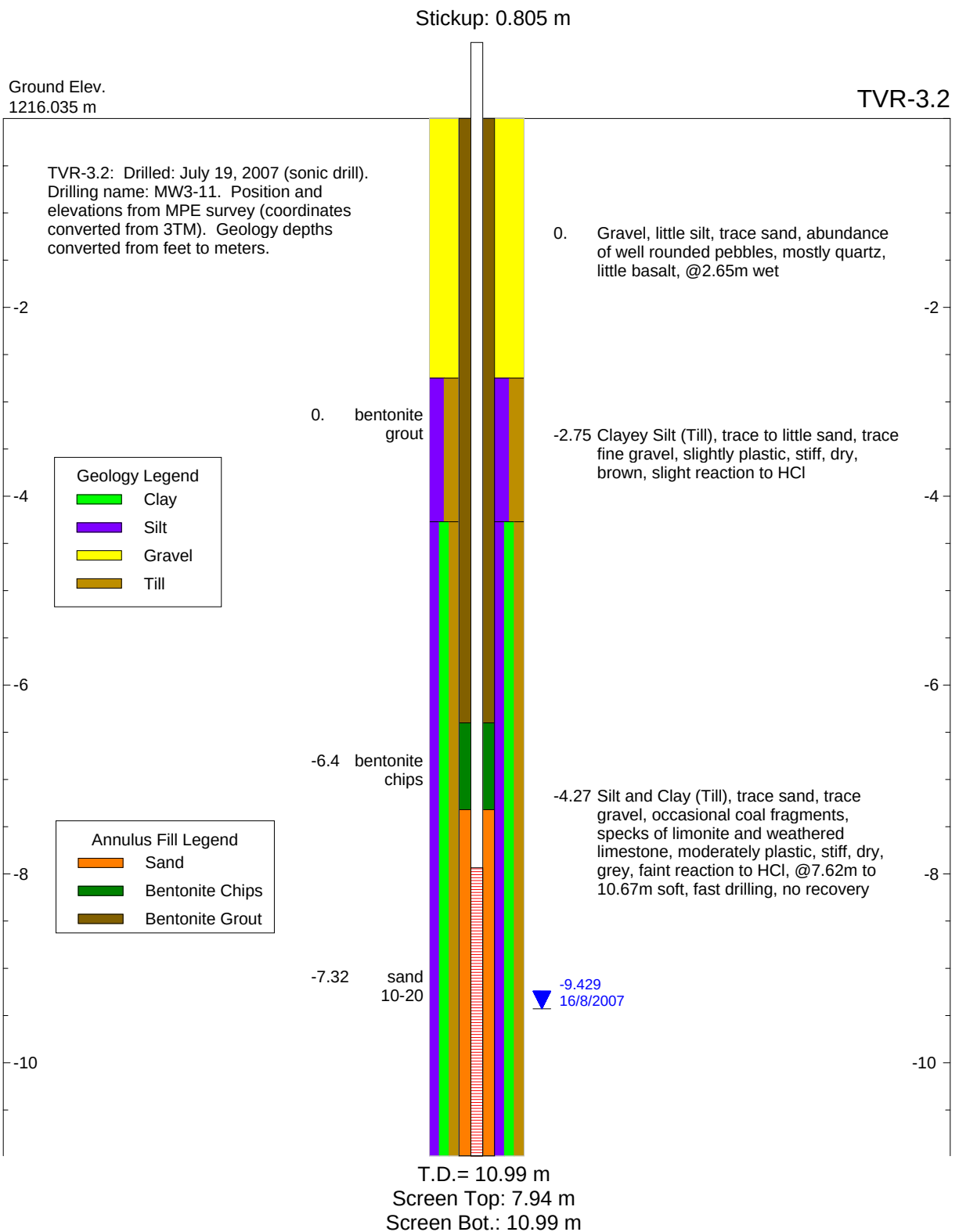


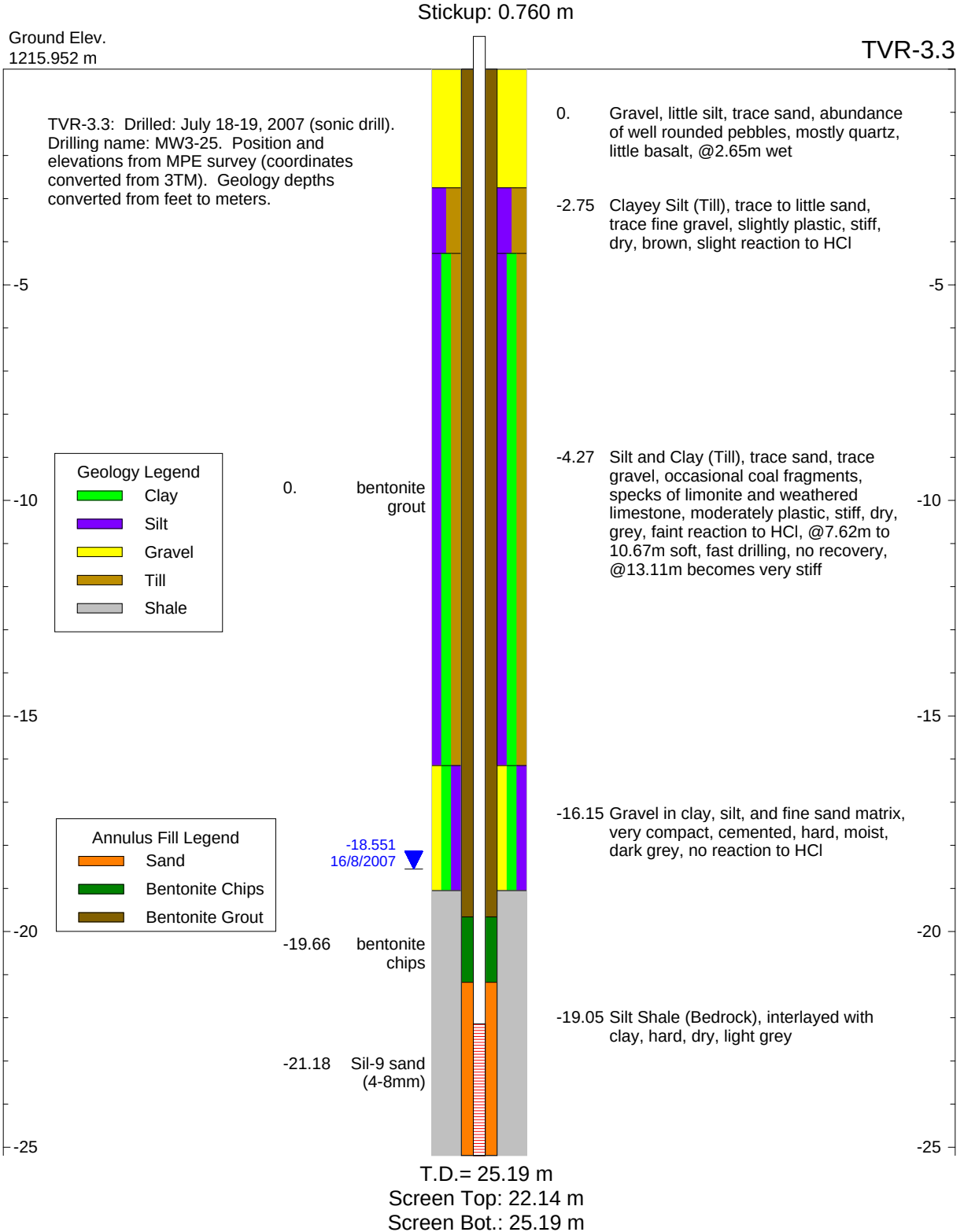
Ground Elev.
1218.035 m

Nest TVR-3



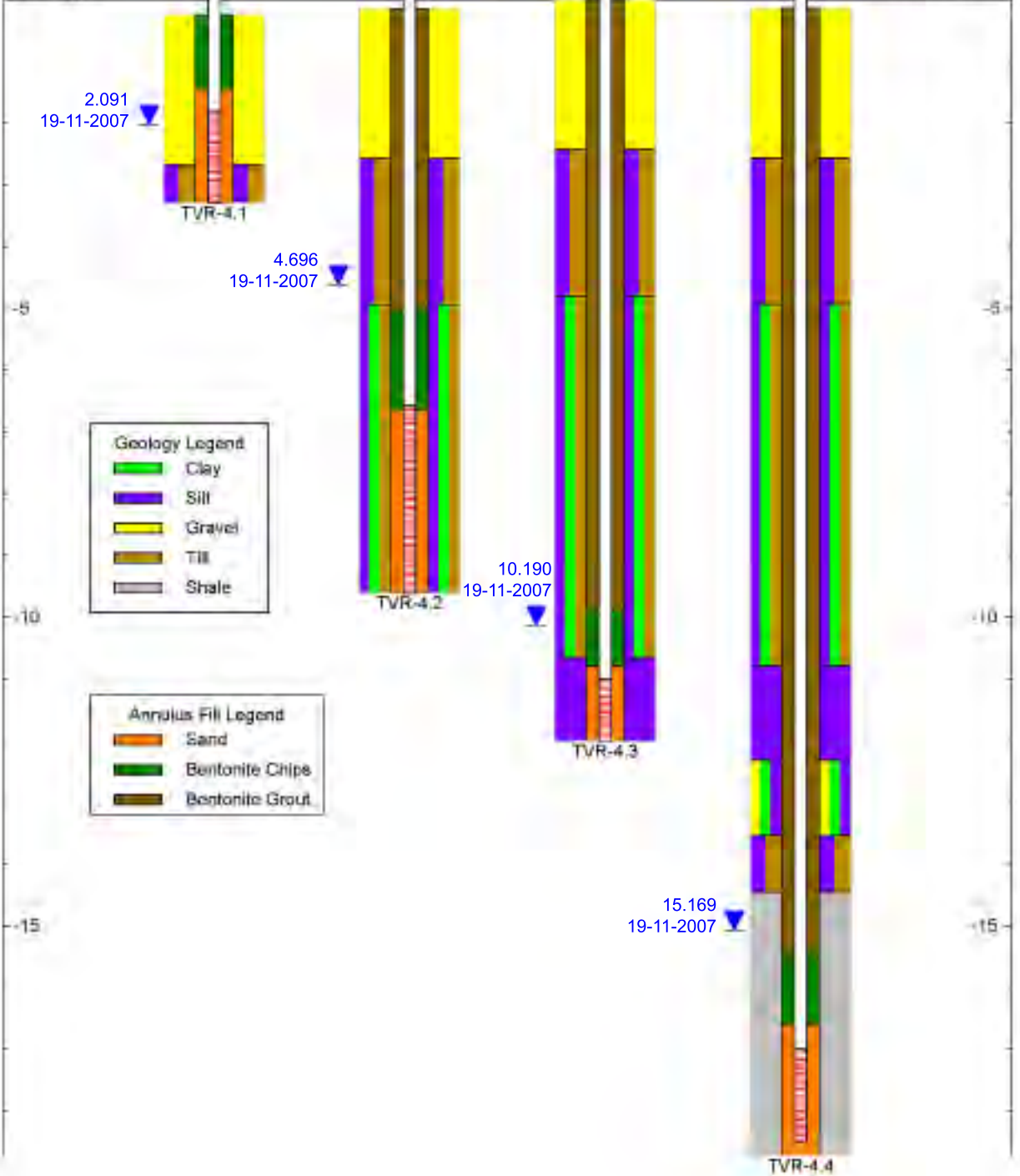


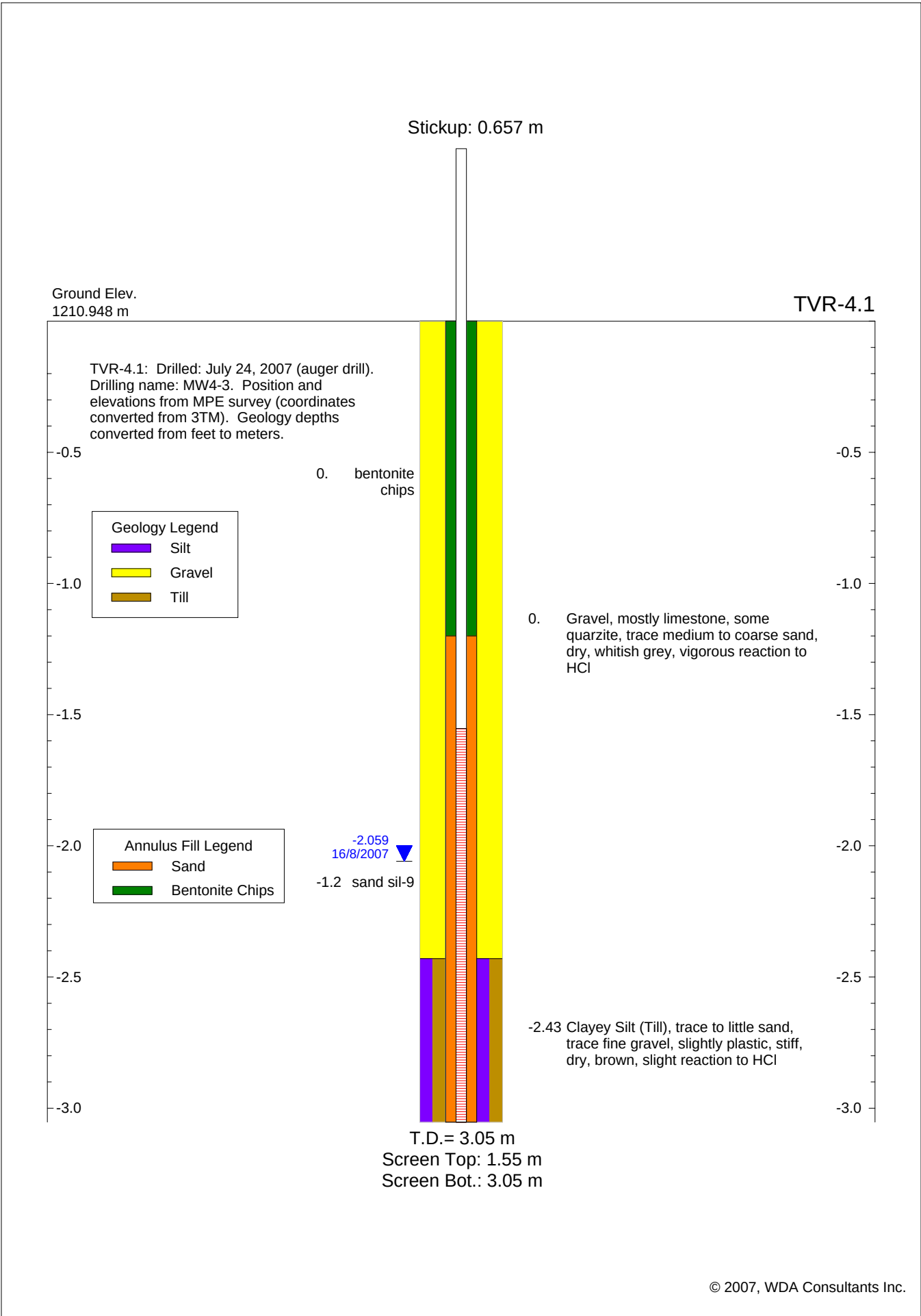


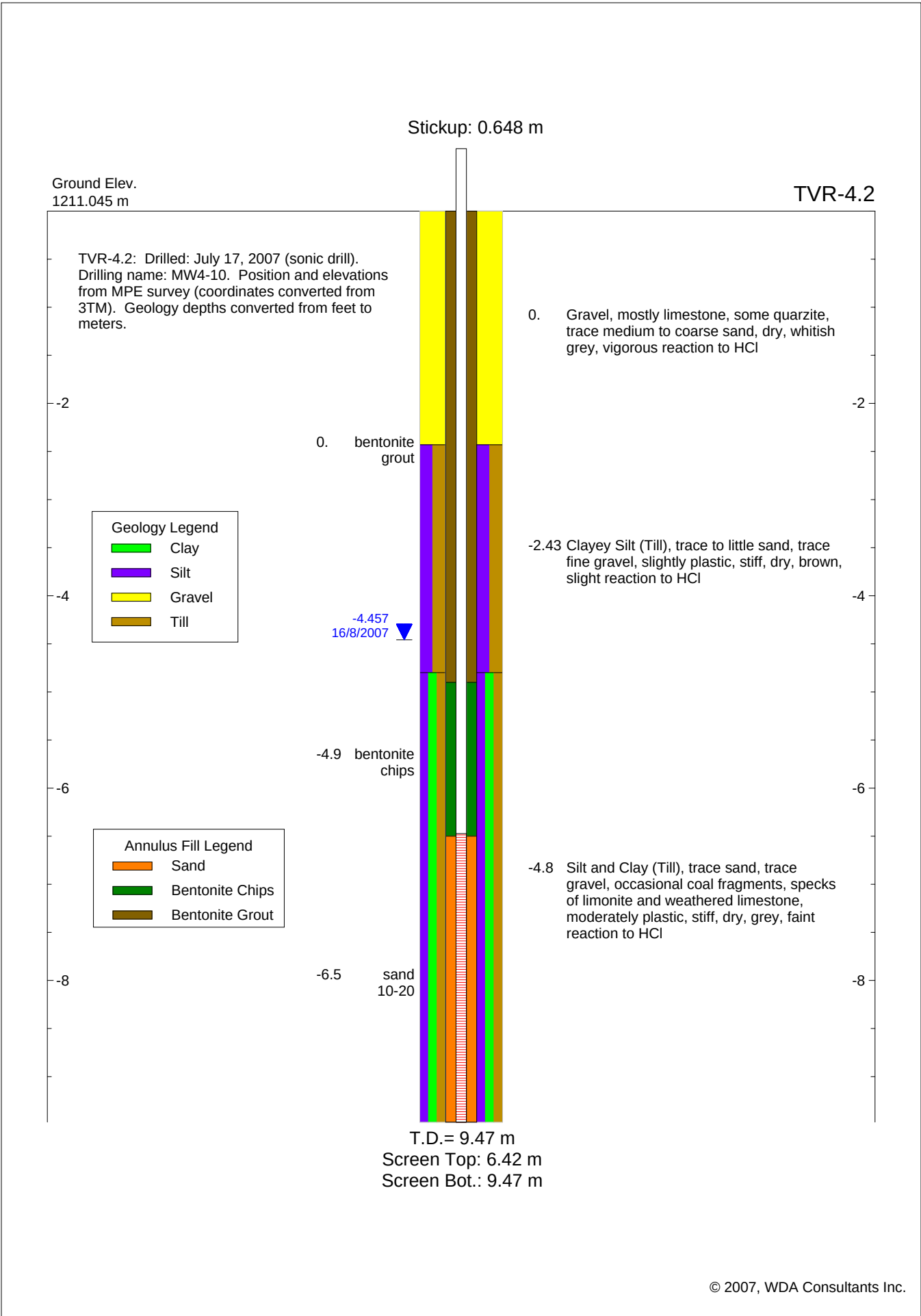


Ground Elev.
1211.189 m

Nest TVR-4







Ground Elev.
1211.189 m

Stickup: 0.626 m

TVR-4.3

TVR-4.3: Drilled: July 17, 2007 (sonic drill).
Drilling name: MW4-12. Position and
elevations from MPE survey (coordinates
converted from 3TM). Geology depths
converted from feet to meters.

-2

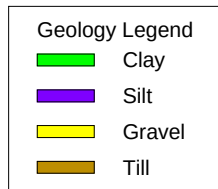
0. Gravel, mostly limestone, some
quartzite, trace medium to coarse sand,
dry, whitish grey, vigorous reaction to
HCl

-2

-4

-2.43 Clayey Silt (Till), trace to little sand,
trace fine gravel, slightly plastic, stiff,
dry, brown, slight reaction to HCl

-4



-6

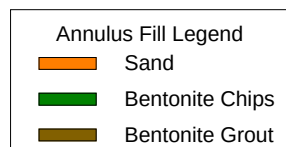
0. bentonite
grout

-6

-8

-4.8 Silt and Clay (Till), trace sand, trace
gravel, occasional coal fragments,
specks of limonite and weathered
limestone, moderately plastic, stiff, dry,
grey, faint reaction to HCl

-8



-10

-9.9 bentonite
chips

-10

▼ -10.865
16/8/2007

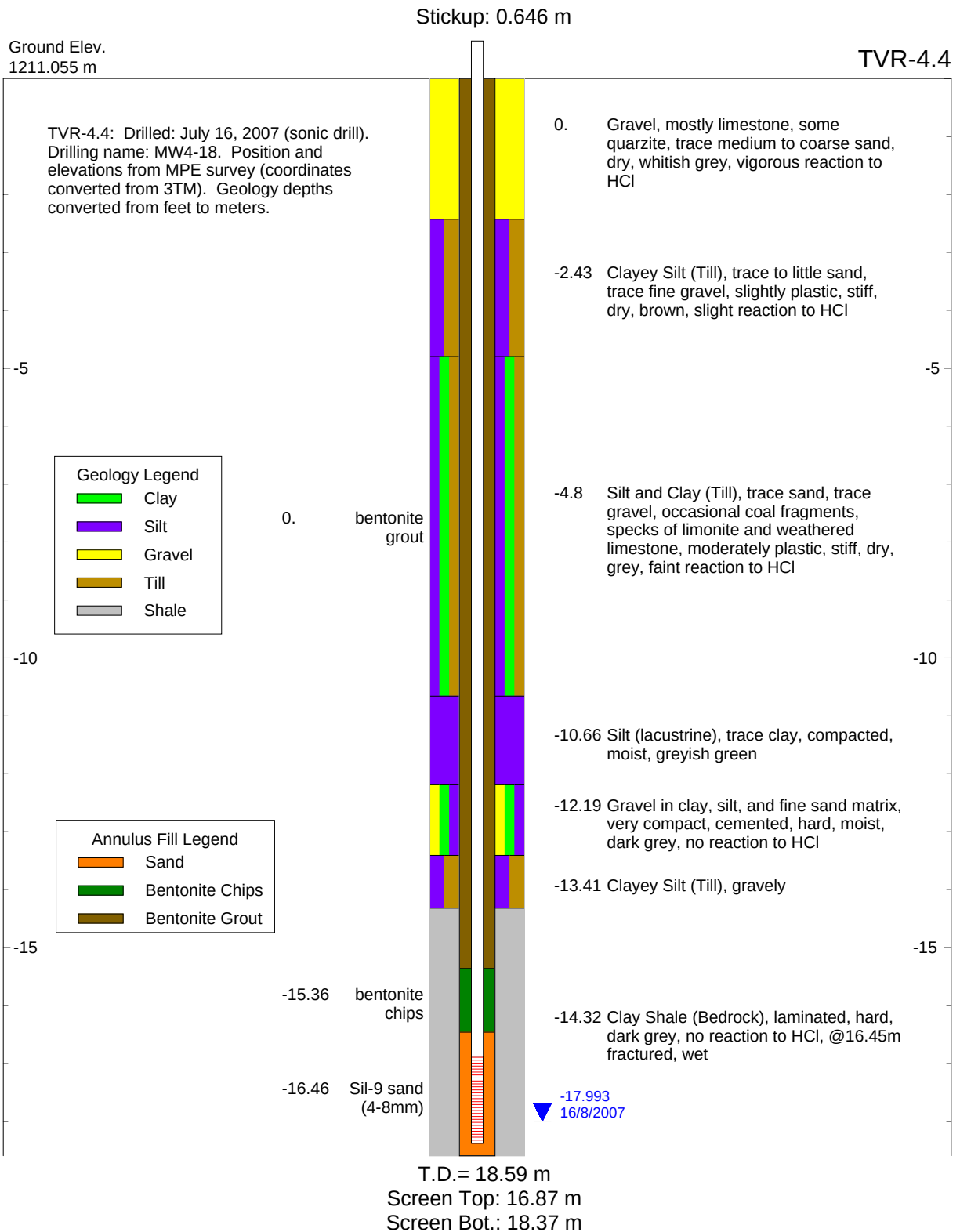
-12

-10.8
sand
10-20

-10.66 Silt (lacustrine), trace clay, compacted,
moist, greyish green

-12

T.D.= 12.01 m
Screen Top: 11.01 m
Screen Bot.: 12.01 m



Monitoring Well: TVR4.4R

Project:	Turner Valley Reservoir	Drilling method:	Hydrovac / Direct Push / Solid Stem Auger
Client:	Town of Turner Valley c/o MPE Engineering Ltd.	Date started/completed:	13-Jan-2015 / 15-Jan-2015
Location:	Turner Valley, AB	Ground surface elevation:	1,211.59 m AMSL
Number:	110861556	Top of casing elevation:	1,212.50 m AMSL
Field investigator:	R.Barlow	Easting:	692123
Contractor:	Ernco Environmental	Northing:	5616026

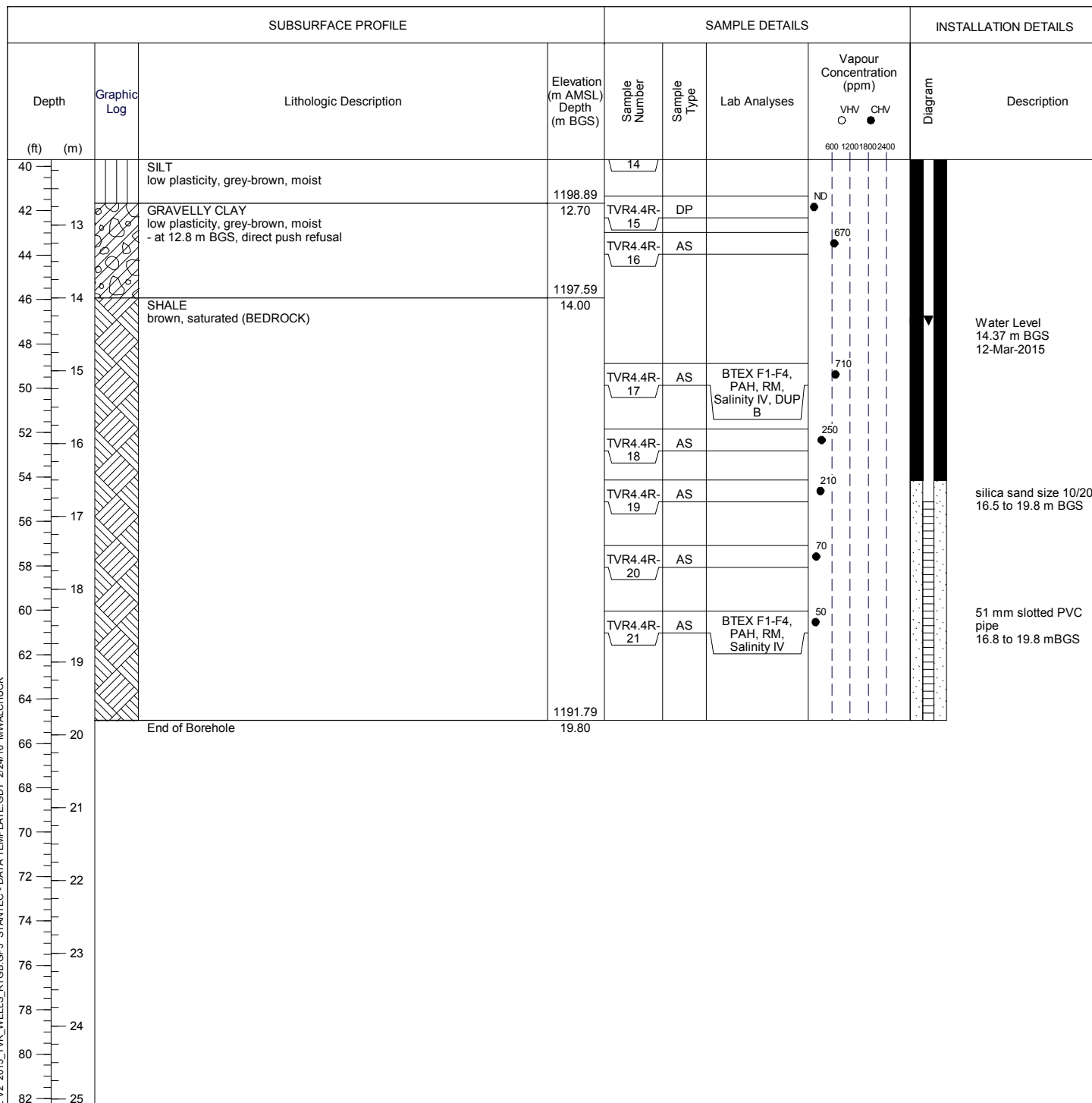
SUBSURFACE PROFILE					SAMPLE DETAILS				INSTALLATION DETAILS		
Depth (ft) (m)	Graphic Log	Lithologic Description	Elevation (m AMSL) Depth (m BGS)	Sample Number	Sample Type	Lab Analyses	Vapour Concentration (ppm)		Diagram	Description	
							VH O	CH V			
			1212.49				600	1200	1800	2400	
-2											Above ground well protector installed
0		Ground Surface	1211.59								
0		SILTY CLAY with gravel, low plasticity, brown, moist, frozen (FILL)	0.00								
2		CLAYEY SILT with cobbles, low plasticity, brown, moist	1211.29								
			0.30								
4				TVR4.4R-1	GB			ND			
6				TVR4.4R-2	GB			ND			
8											
10		- at 3.0 m BGS, with medium to coarse grained gravel, no cobbles									
12				TVR4.4R-3	DP			ND			
14				TVR4.4R-4	DP			ND			
16			1206.59								
16		SILTY CLAY with gravel, low plasticity, brown, dry, medium to coarse grained gravel	5.00	TVR4.4R-5	DP			15			
18											
20		- at 5.75 to 9.0 m BGS, some sandstone boulders		TVR4.4R-6	DP			25			
22				TVR4.4R-7	DP			5			
24				TVR4.4R-8	DP			ND			
26				TVR4.4R-9	DP			10			
28				TVR4.4R-10	DP			10			
30				TVR4.4R-11	DP			10			
32				TVR4.4R-12	DP			ND			
34											
36			1200.59								
36		SILT low plasticity, grey-brown, moist	11.00	TVR4.4R-13	DP			ND			
38											
40				TVR4.4R-14	DP			ND			

ND - not detected
CHV - combustible headspace vapour
VHV - volatile headspace vapour
BTEx F1-F4 - benzene, toluene, ethylbenzene, xylene,
petroleum hydrocarbon fractions F1 to F4
PAH - Polycyclic aromatic hydrocarbons
RM - regulated metals package
Salinity IV - soil salinity package
DUP B - duplicate sample of TVR.4R-17
Hydrovac method: 0.0 to 3.0 m BGS
Direct Push method: 3.0 to 12.8 m BGS
Solid Stem Auger method: 12.8 m to 19.8 m BGS

Monitoring Well: TVR4.4R

Project: Turner Valley Reservoir
Client: Town of Turner Valley c/o MPE Engineering Ltd.
Location: Turner Valley, AB
Number: 110861556
Field investigator: R.Barlow
Contractor: Ernco Environmental

Drilling method: Hydrovac / Direct Push / Solid Stem Auger
Date started/completed: 13-Jan-2015 / 15-Jan-2015
Ground surface elevation: 1,211.59 m AMSL
Top of casing elevation: 1,212.50 m AMSL
Easting: 692123
Northing: 5616026

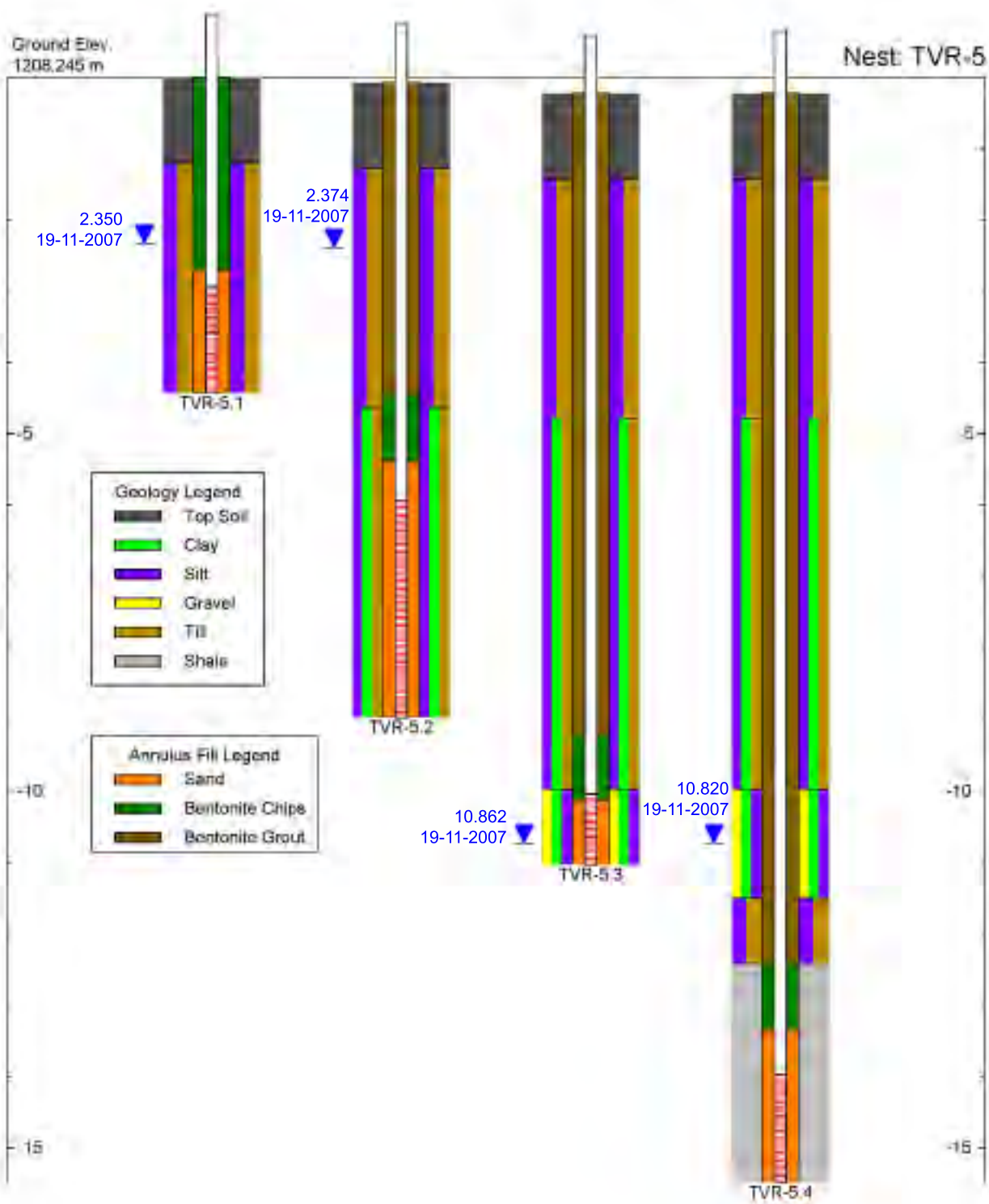


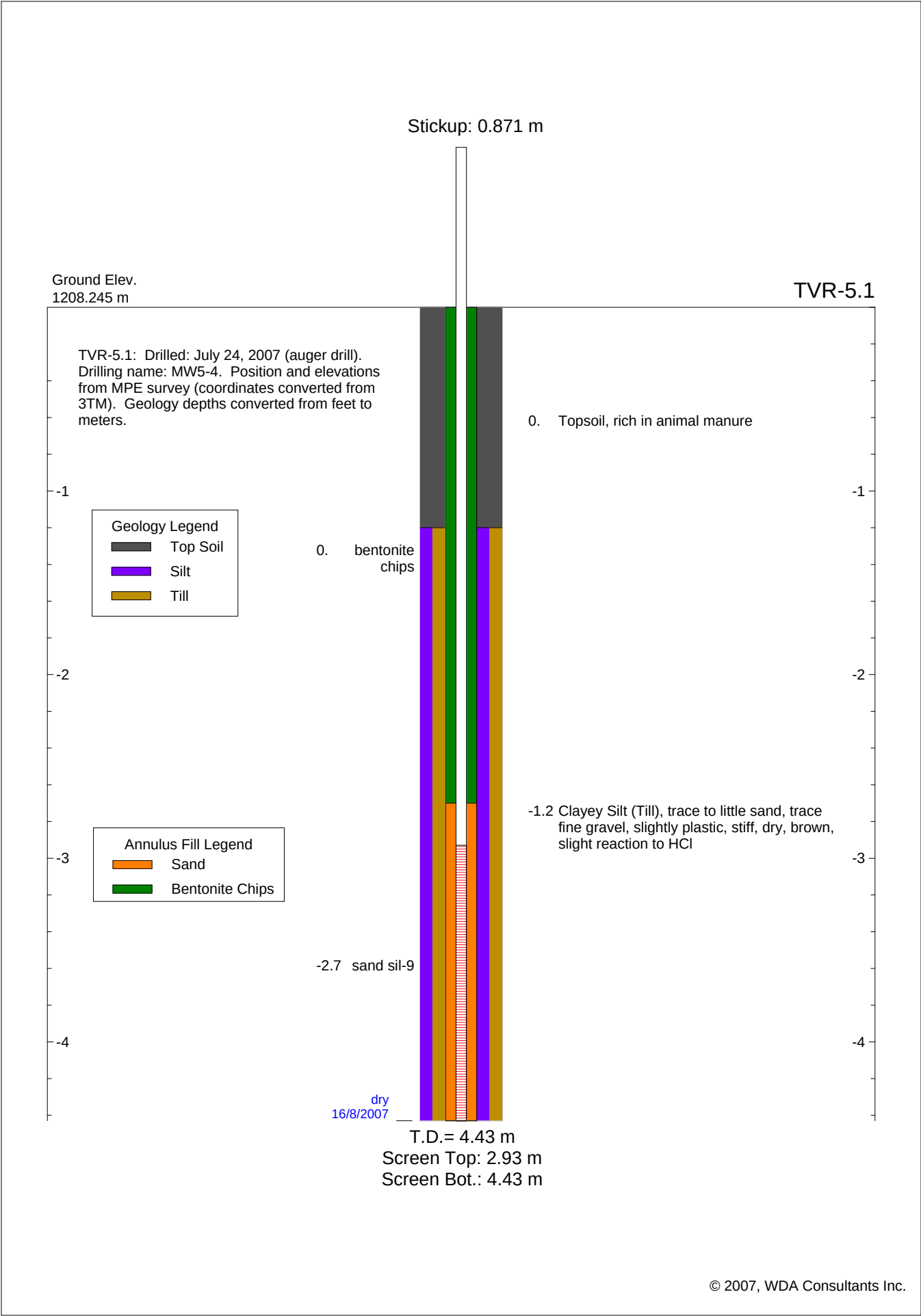
Screen Interval: 16.80 - 19.80 m BGS
 Sand Pack Interval: 16.50 - 19.80 m BGS
 Well Seal Interval: 0.30 - 16.50 m BGS

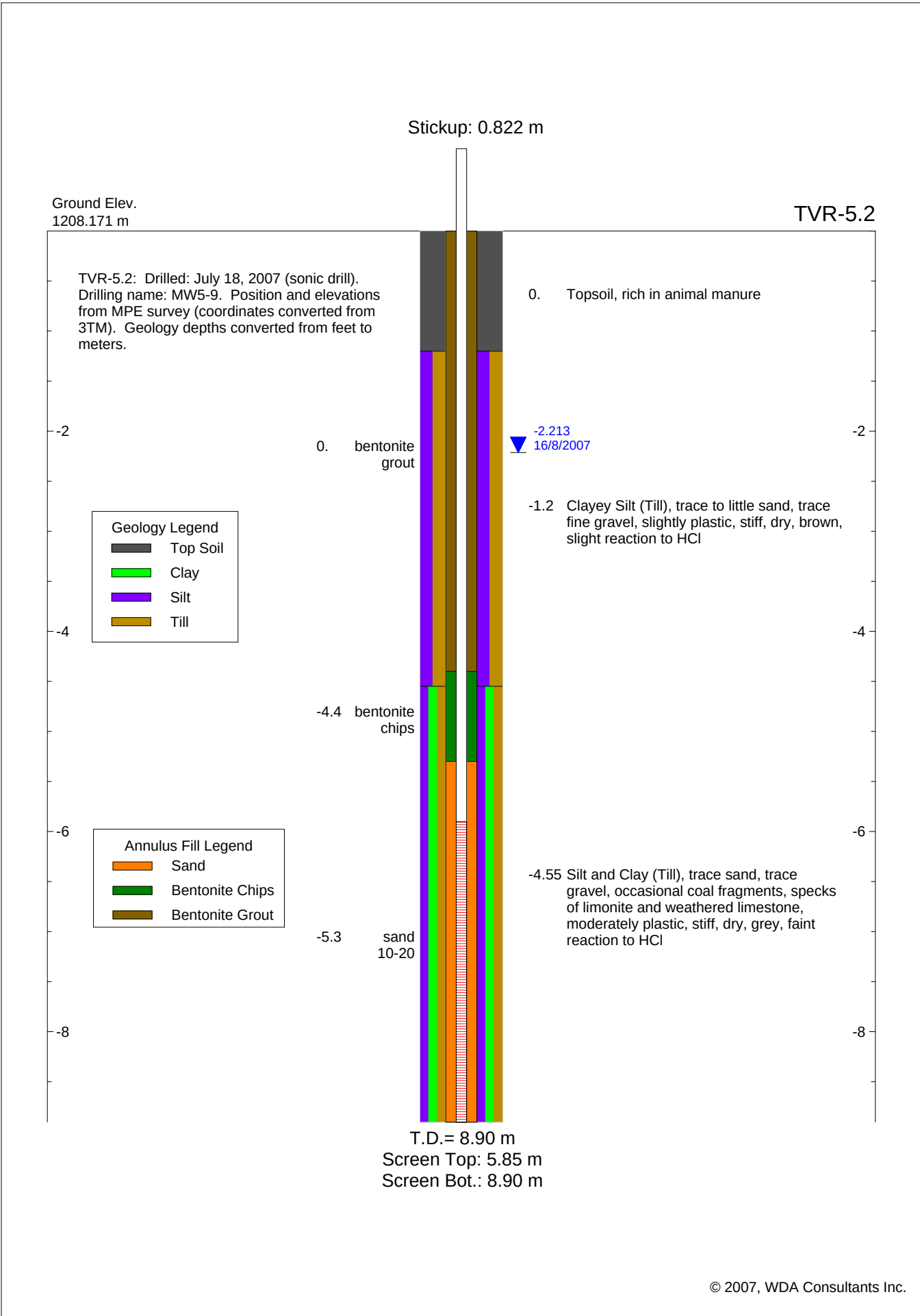


Notes:
 m AMSL - metres above mean sea level
 m BGS - metres below ground surface
 DP - direct push sample
 GB - grab sample
 AS - auger sample
 nd - not detected
 ppm - parts per million by volume
 n/a - not available
 Drawn By/Checked By: R.Barlow / L. Weller

ND - not detected
 CHV - combustible headspace vapour
 VHV - volatile headspace vapour
 BTEX F1-F4 - benzene, toluene, ethylbenzene, xylene,
 petroleum hydrocarbon fractions F1 to F4
 PAH - Polycyclic aromatic hydrocarbons
 RM - regulated metals package
 Salinity IV - soil salinity package
 DUP B - duplicate sample of TVR4.4R-17
 Hydrovac method: 0.0 to 3.0 m BGS
 Direct Push method: 3.0 to 12.8 m BGS
 Solid Stem Auger method: 12.8 m to 19.8 m BGS







Monitoring Well: TVR5.2R

Project: Turner Valley Reservoir
Client: Town of Turner Valley c/o MPE Engineering Ltd.
Location: Turner Valley, AB
Number: 110861556
Field investigator: R.Barlow
Contractor: Ernco Environmental

Drilling method: Hydrovac / Direct Push
Date started/completed: 12-Jan-2015
Ground surface elevation: 1,208.46 m AMSL
Top of casing elevation: 1,209.35 m AMSL
Easting: 692170
Northing: 5616068

SUBSURFACE PROFILE				SAMPLE DETAILS				INSTALLATION DETAILS	
Depth	Graphic Log	Lithologic Description	Elevation (m AMSL) Depth (m BGS)	Sample Number	Sample Type	Lab Analyses	Vapour Concentration (ppm) VHV CHV	Diagram	Description
(ft) (m)			1209.36				600 1200 1800 2400		
-2									
0		Ground Surface	1208.46						Above ground well protector installed
0		SILT WITH SAND high plasticity, dark brown, moist, rootlets (TOPSOIL)	0.00						
2		CLAYEY SILT low plasticity, brown, wet	1208.06						
2			0.40	TVR5.2R-1	GB		15		
4									
6									
8		- at 2.5 m BGS, saturated		TVR5.2R-2	GB		ND		51mm solid PVC pipe packed in bentonite 0.3 to 3.7 m BGS
10			1205.36						
12		SILTY SAND fine grained, dark brown, wet, poorly graded	3.10						
12			1204.46	TVR5.2R-3	DP	BTEX F1-F4, PAH, RM, Salinity IV	50		silica sand size 10/20 3.7 to 7.0 m BGS
14		SILT AND CLAY some gravel, high plasticity, brown, moist to wet, medium to coarse grained gravel (TILL)	4.00						
16				TVR5.2R-4	DP		35		
18									
20				TVR5.2R-5	DP		35		51 mm slotted PVC pipe 4.0 to 7.0 m BGS
22		- at 6.5 to 7.6 m BGS, some light brown mottling							
24				TVR5.2R-6	DP	BTEX F1-F4, PAH, RM, Salinity IV	35		
26			1200.86	TVR5.2R-7	DP		20		Water Level 6.84 m BGS 12-Mar-2015
26		End of Borehole	7.60						
28									
30									
32									
34									
36									
38									
40									
42									
44									
46									
48									
50									
52									
54									
56									
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62									
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72									
74									
76									
78									
80									
82									
84									
86									
88									
90									
92									
94									
96									
98									
100									

Screen Interval: 4.00 - 7.00 m BGS
Sand Pack Interval: 3.70 - 7.60 m BGS
Well Seal Interval: 0.30 - 3.70 m BGS

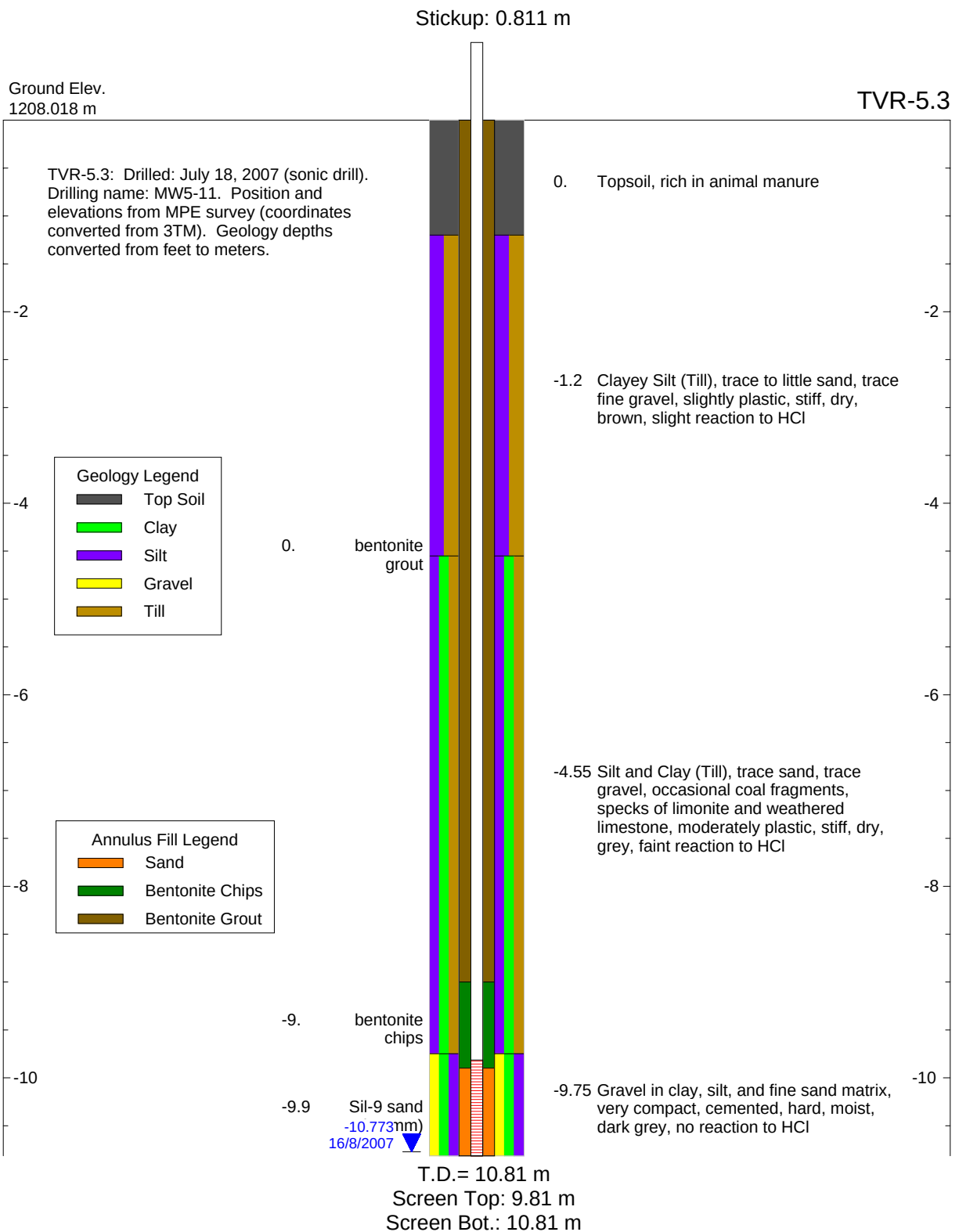
Notes:
m AMSL - metres above mean sea level
m BGS - metres below ground surface
DP - direct push sample
GB - grab sample
nd - not detected
ppm - parts per million by volume
n/a - not available

ND - not detected
CHV - combustible headspace vapour
VHV - volatile headspace vapour
BTEX F1-F4 - benzene, toluene, ethylbenzene, xylene, petroleum hydrocarbon fractions F1 to F4
PAH - Polycyclic aromatic hydrocarbons
RM - regulated metals package
Salinity IV - soil salinity package
Hydrovac method: 0.0 to 3.0 m BGS
Direct Push method: 3.0 to 7.6 m BGS



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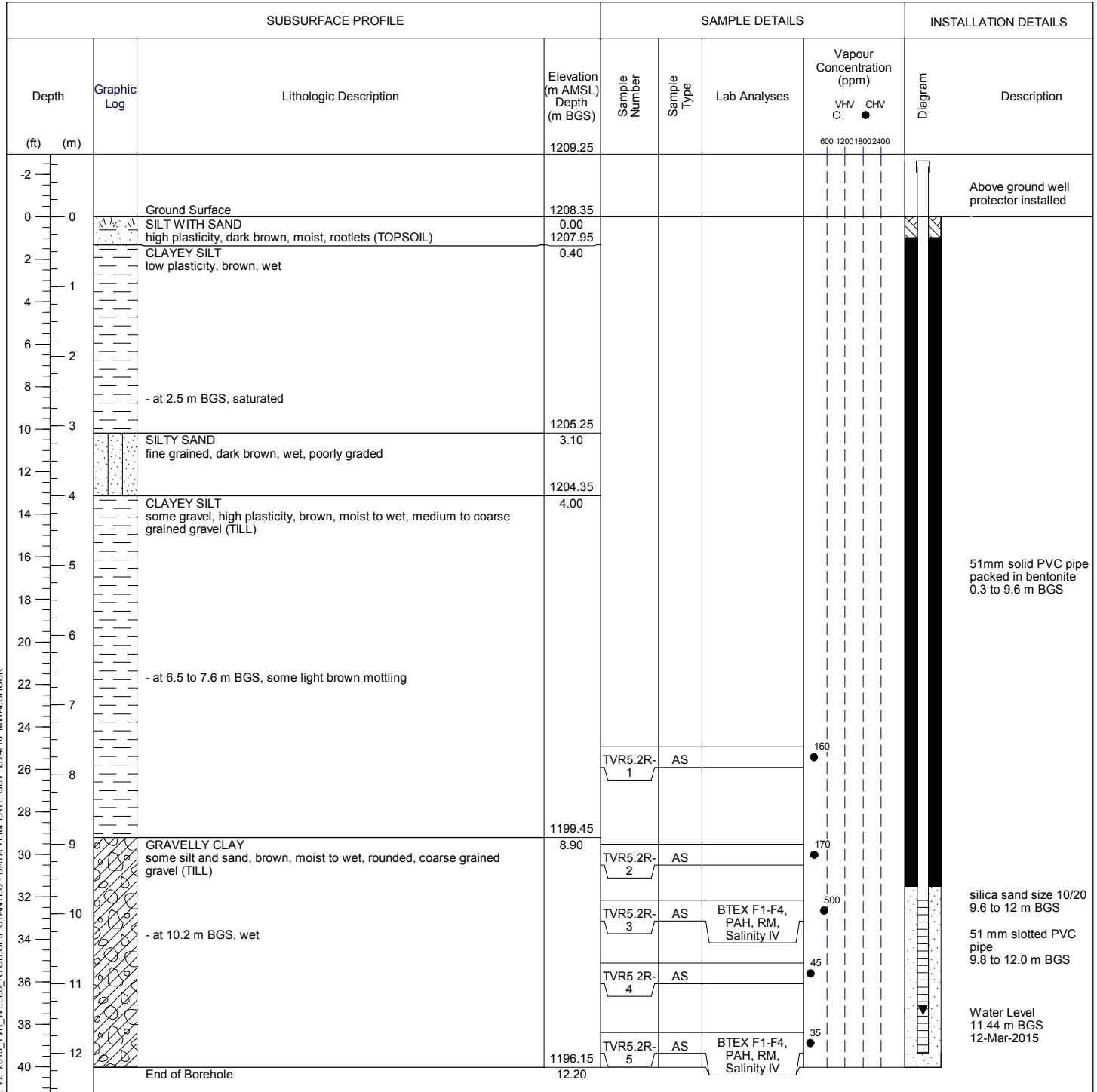
Sheet 1 of 1



Monitoring Well: TVR5.3R

Project: Turner Valley Reservoir
Client: Town of Turner Valley c/o MPE Engineering Ltd.
Location: Turner Valley, AB
Number: 110861556
Field investigator: R.Barlow
Contractor: Ernco Environmental

Drilling method: Solid Stem Auger
Date started/completed: 16-Jan-2015
Ground surface elevation: 1,208.35 m AMSL
Top of casing elevation: 1,209.29 m AMSL
Easting: 692172
Northing: 5616074



Screen Interval: 9.80 - 12.00 m BGS
 Sand Pack Interval: 9.60 - 12.20 m BGS
 Well Seal Interval: 0.30 - 9.60 m BGS

Notes:
 m AMSL - metres above mean sea level
 m BGS - metres below ground surface
 AS - auger sample
 ppm - parts per million by volume
 n/a - not available

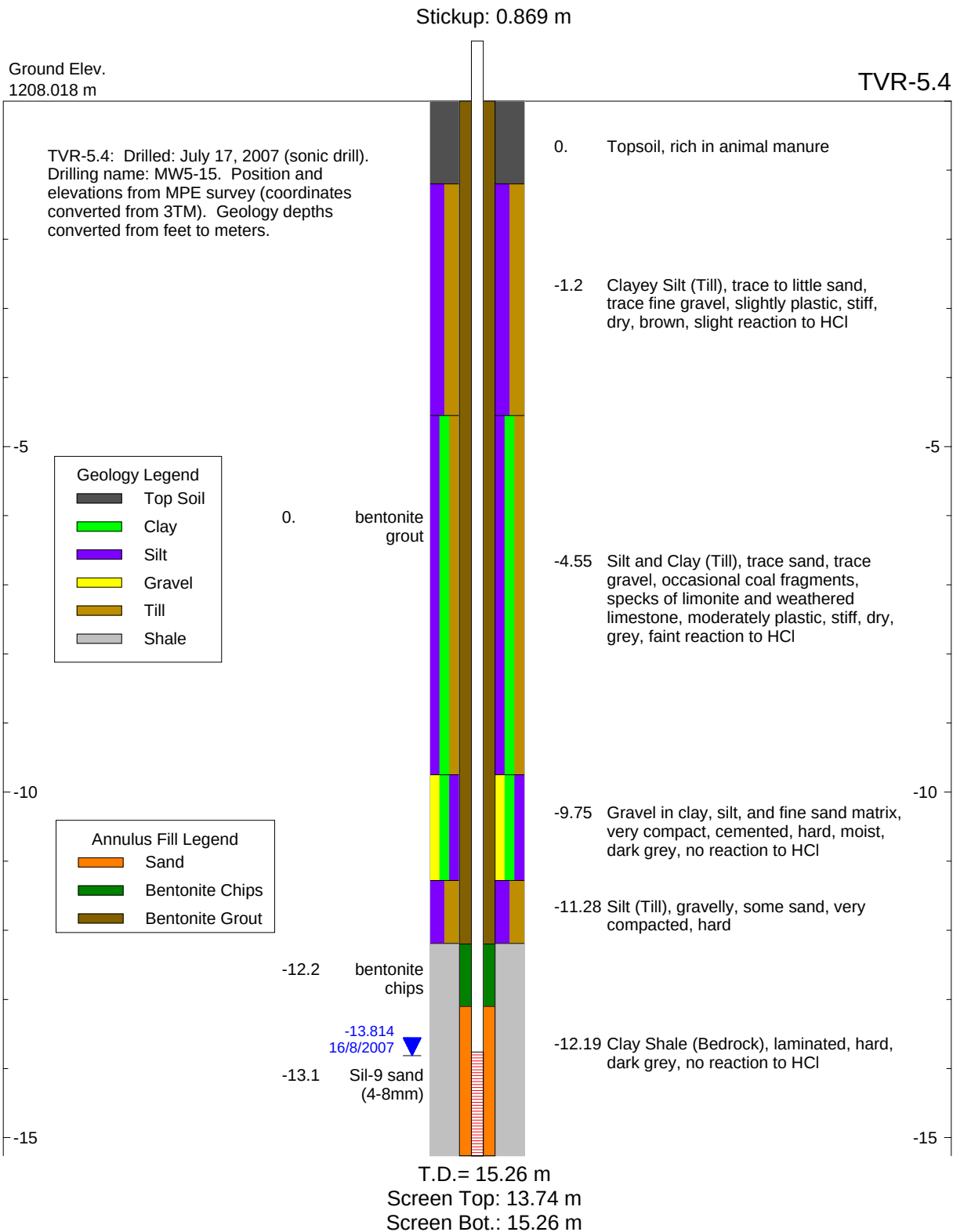
ND - not detected
 CHV - combustible headspace vapour
 VHV - volatile headspace vapour
 BTEX F1-F4 - benzene, toluene, ethylbenzene, xylene,
 petroleum hydrocarbon fractions F1 to F4
 PAH - Polycyclic aromatic hydrocarbons
 RM - regulated metals package
 Salinity IV - soil salinity package
 Hydrovac method: 0.0 to 3.0 m BGS
 Direct Push method: 3.0 to 7.6 m BGS



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Sheet 1 of 1

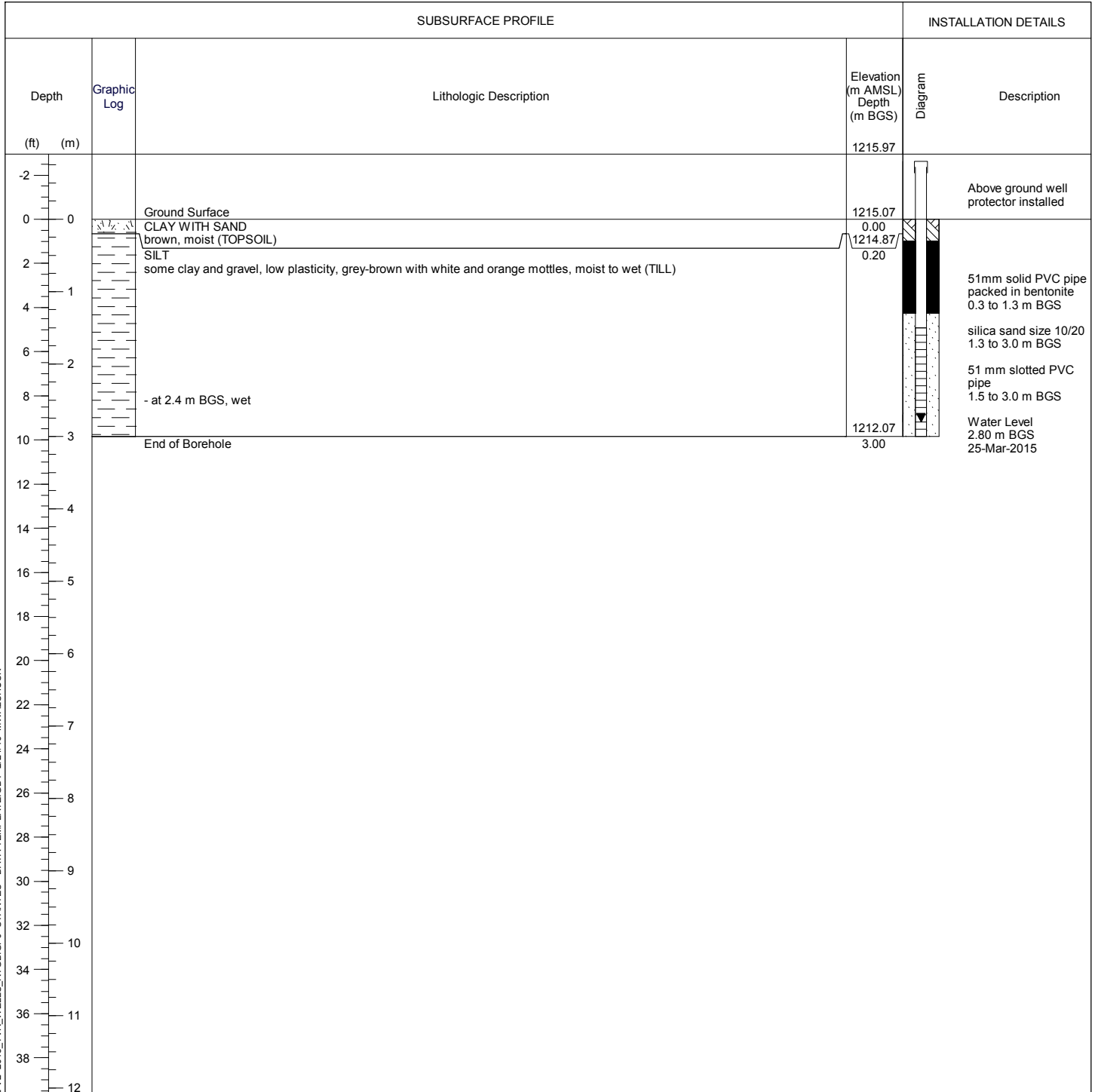
STANTEC BOREHOLE AND WELL V2 2015_TV_R_WELLS_RTGB.GPJ STANTEC - DATA TEMPLATE.GDT 2/24/16 MWALCHUCK



Monitoring Well: TVR6.1

Project: Turner Valley Reservoir
Client: Town of Turner Valley c/o MPE Engineering Ltd.
Location: Turner Valley, AB
Number: 110861556
Field investigator: R.Barlow
Contractor: Ernco Environmental

Drilling method: Hydrovac / Direct Push
Date started/completed: 15-Jan-2015
Ground surface elevation: 1,215.07 m AMSL
Top of casing elevation: 1,216.00 m AMSL
Easting: 691969
Northing: 5615981



Screen Interval: 1.50 - 3.00 m BGS
 Sand Pack Interval: 1.30 - 3.00 m BGS
 Well Seal Interval: 0.30 - 1.30 m BGS

Notes:
 m AMSL - metres above mean sea level
 m BGS - metres below ground surface
 n/a - not available

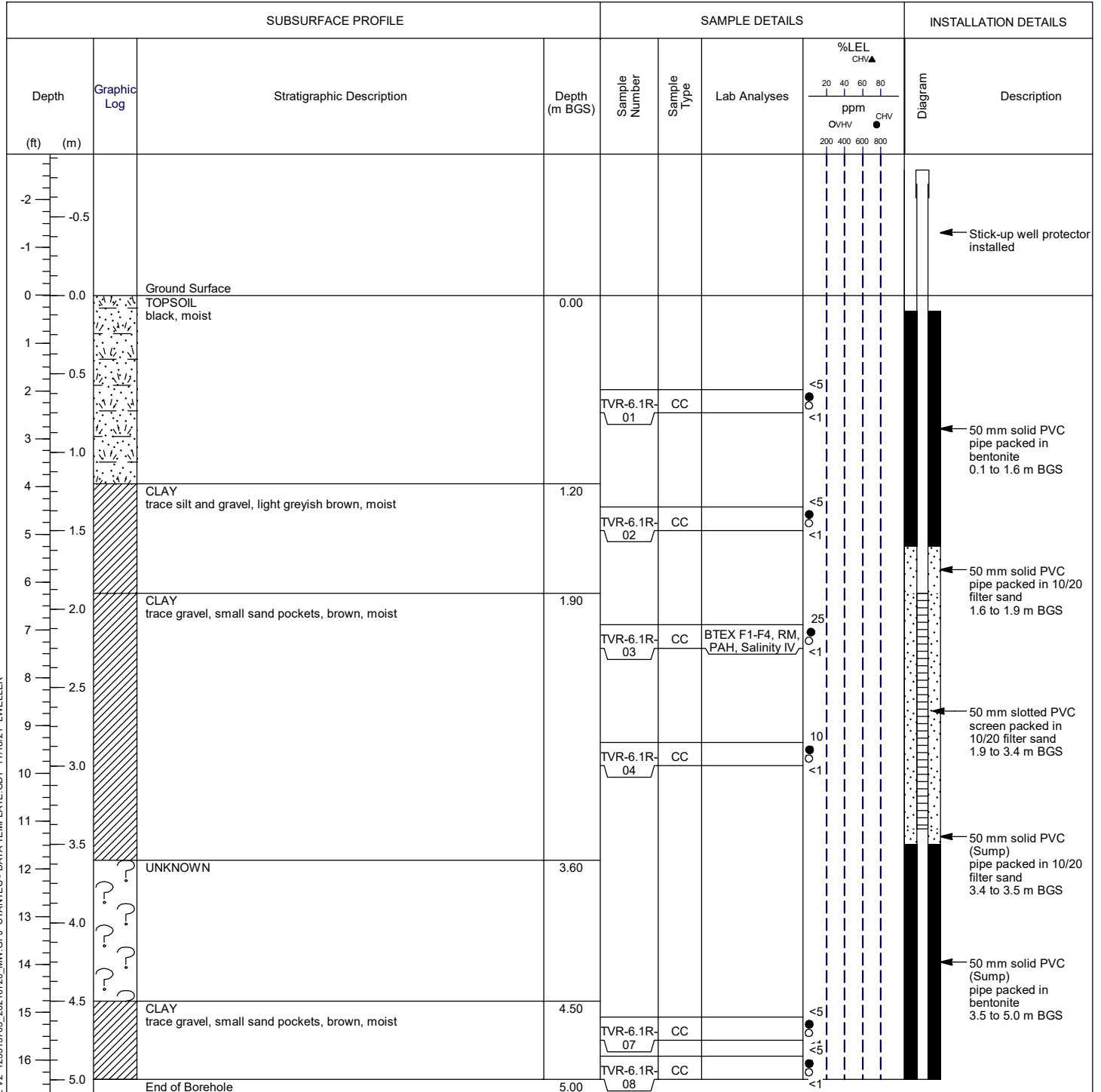
ND - not detected
 CHV - combustible headspace vapour
 VHV - volatile headspace vapour
 Hydrovac method: 0.0 to 2.8 m BGS
 Direct Push method: 2.8 to 3.0 m BGS



Monitoring Well: TVR 6.1R

Project: Background Bedrock Assessment - Turner Valley Stilling Basin
Client: Sheep River Regional Utility Corporation c/o MPE Engineering Ltd.
Location: Turner Valley, AB
Number: 123513703
Field investigator: J. Kilfoyle
Contractor: Big Country

Method: Sonic Drilling
Date started/completed: 09-Jun-2021
Ground surface elevation: n/a
Top of casing elevation: n/a
Easting: n/a
Northing: n/a



Screen Interval: 1.90 - 3.40 m BGS
 Sand Pack Interval: 1.60 - 3.50 m BGS
 Well Seal Interval: 3.50 - 5.00 m BGS

Notes:
 m AMSL - metres above mean sea level
 m BGS - metres below ground surface
 CC - continuous core sample
 ppm - parts per million by volume
 %LEL - percent lower explosive limit
 n/a - not available

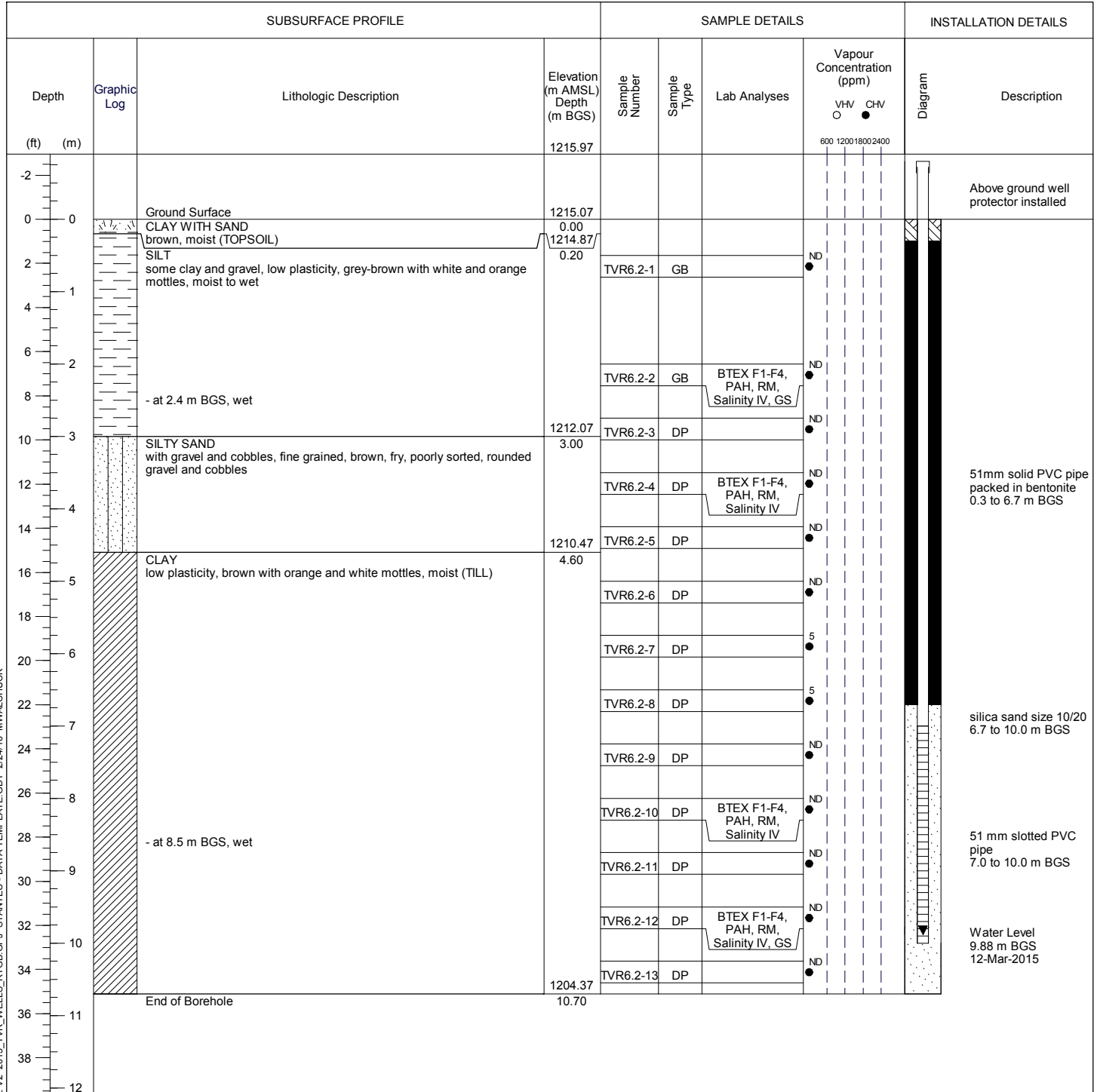
CHV - combustible headspace vapour
 VHV - volatile headspace vapour
 BTEX F1-F4 - benzene, toluene, ethylbenzene, xylene,
 petroleum hydrocarbon fractions F1 to F4
 PAH - polycyclic aromatic hydrocarbons
 RM - regulated metals package
 Coordinate system - 3TM-114



Monitoring Well: TVR6.2

Project: Turner Valley Reservoir
Client: Town of Turner Valley c/o MPE Engineering Ltd.
Location: Turner Valley, AB
Number: 110861556
Field investigator: R.Barlow
Contractor: Erncor Environmental

Drilling method: Hydrovac / Direct Push
Date started/completed: 15-Jan-2015
Ground surface elevation: 1,215.07 m AMSL
Top of casing elevation: 1,216.02 m AMSL
Easting: 691968
Northing: 5615982



Screen Interval: 7.00 - 10.00 m BGS
 Sand Pack Interval: 6.70 - 10.70 m BGS
 Well Seal Interval: 0.30 - 6.70 m BGS

Notes:
 m AMSL - metres above mean sea level
 m BGS - metres below ground surface
 DP - direct push sample
 GB - grab sample
 nd - not detected
 ppm - parts per million by volume
 n/a - not available

ND - not detected
 CHV - combustible headspace vapour
 VH-V - volatile headspace vapour
 BTEX F1-F4 - benzene, toluene, ethylbenzene, xylene,
 petroleum hydrocarbon fractions F1 to F4
 PAH - Polycyclic aromatic hydrocarbons
 RM - regulated metals package
 Salinity IV - soil salinity package
 GS - grain size analysis
 Hydrovac method: 0.0 to 2.7 m BGS
 Direct Push method: 2.7 to 10.7 m BGS



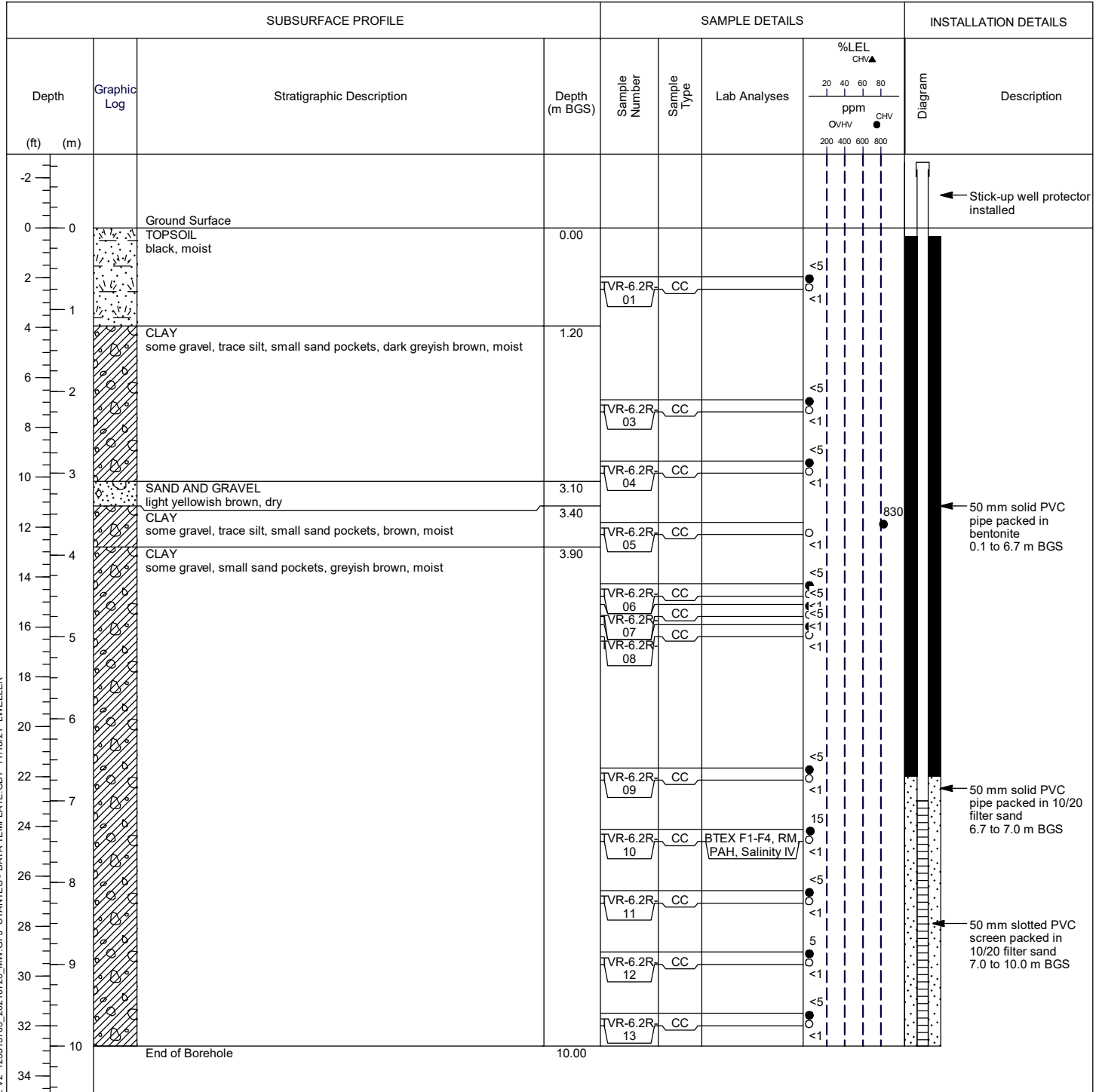
Drawn By/Checked By: R.Barlow / L. Weller

Sheet 1 of 1

Monitoring Well: TVR 6.2R

Project: Background Bedrock Assessment - Turner Valley Stilling Basin
Client: Sheep River Regional Utility Corporation c/o MPE Engineering Ltd.
Location: Turner Valley, AB
Number: 123513703
Field investigator: J. Kilfoyle
Contractor: Big Country

Method: Sonic Drilling
Date started/completed: 09-Jun-2021
Ground surface elevation: n/a
Top of casing elevation: n/a
Easting: n/a
Northing: n/a



Screen Interval: 7.00 - 10.00 m BGS
 Sand Pack Interval: 6.70 - 10.00 m BGS
 Well Seal Interval: 0.10 - 6.70 m BGS

Notes:
 m AMSL - metres above mean sea level
 m BGS - metres below ground surface
 CC - continuous core sample
 ppm - parts per million by volume
 %LEL - percent lower explosive limit
 n/a - not available

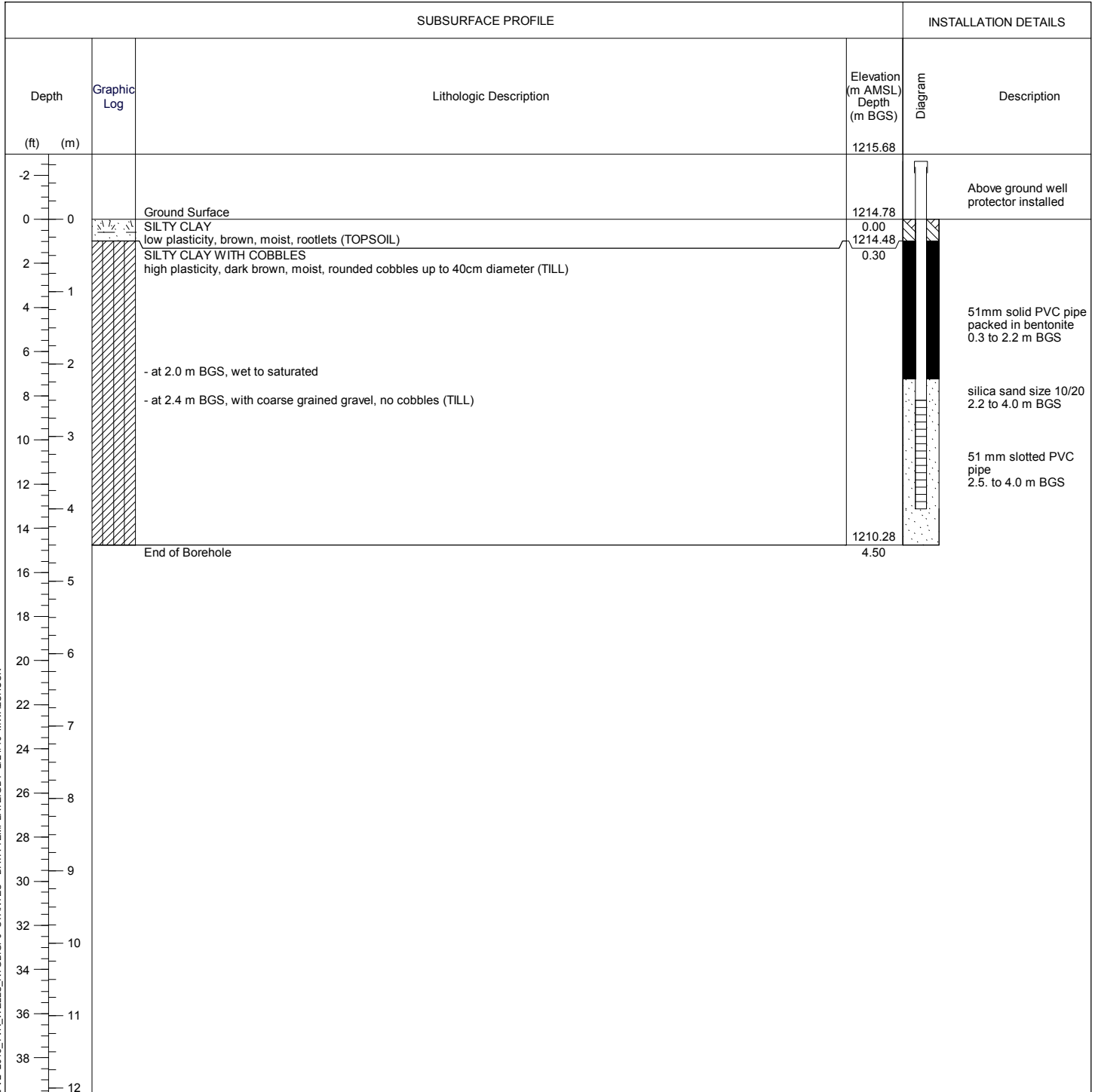
CHV - combustible headspace vapour
 VHV - volatile headspace vapour
 BTEX F1-F4 - benzene, toluene, ethylbenzene, xylene,
 petroleum hydrocarbon fractions F1 to F4
 PAH - polycyclic aromatic hydrocarbons
 RM - regulated metals package
 Coordinate system - 3TM-114



Monitoring Well: TVR7.1

Project: Turner Valley Reservoir
Client: Town of Turner Valley c/o MPE Engineering Ltd.
Location: Turner Valley, AB
Number: 110861556
Field investigator: R.Barlow
Contractor: Ernco Environmental

Drilling method: Hydrovac / Direct Push
Date started/completed: 12-Jan-2015
Ground surface elevation: 1,214.78 m AMSL
Top of casing elevation: 1,215.78 m AMSL
Easting: 692108
Northing: 5616255



Screen Interval: 2.50 - 4.00 m BGS
 Sand Pack Interval: 2.20 - 4.50 m BGS
 Well Seal Interval: 0.30 - 2.20 m BGS

Notes:
 m AMSL - metres above mean sea level
 m BGS - metres below ground surface
 n/a - not available

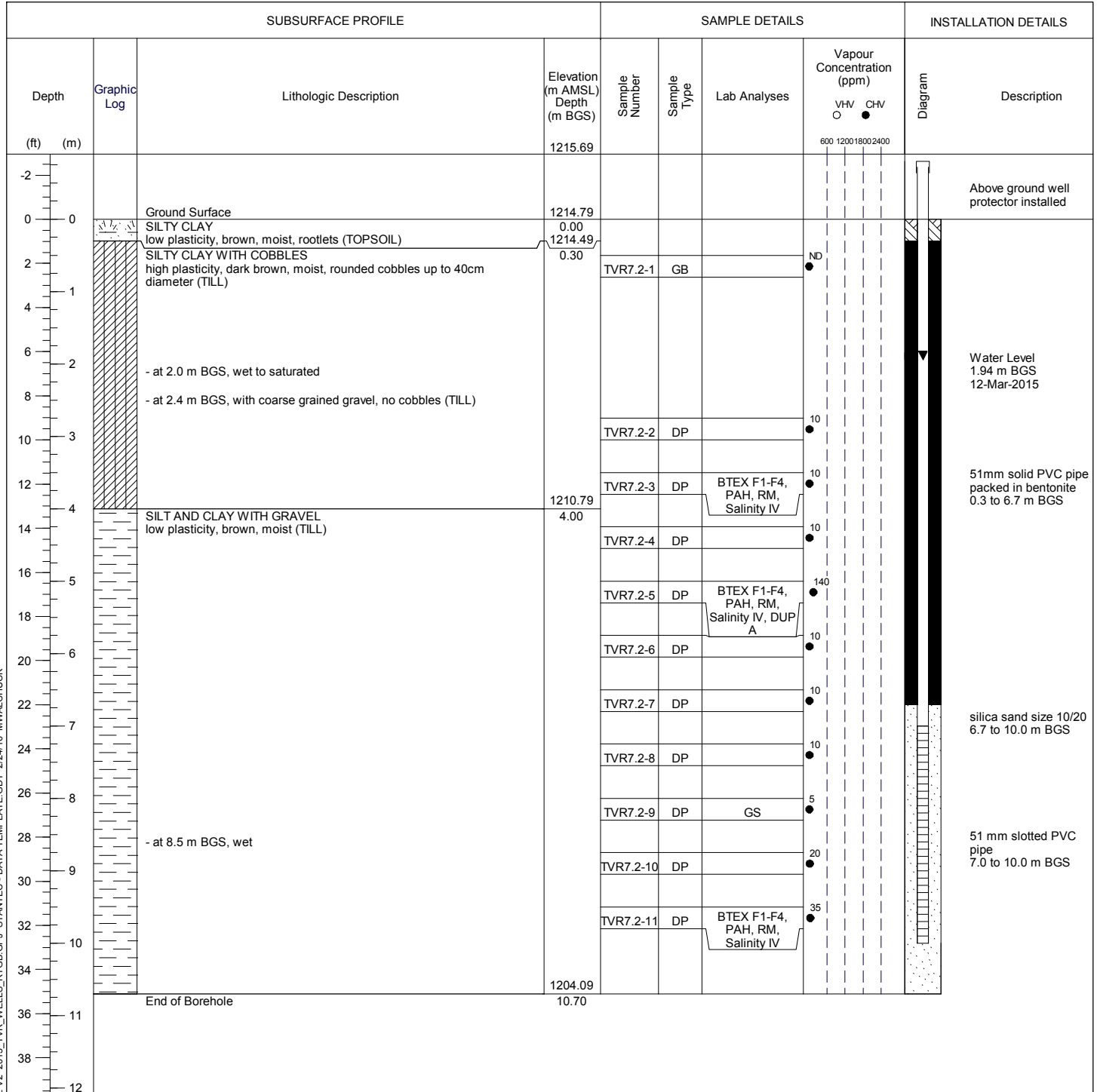
ND - not detected
 CHV - combustible headspace vapour
 VHV - volatile headspace vapour
 Hydrovac method: 0.0 to 1.2 m BGS
 Direct Push method: 1.2 to 4.0 m BGS
 Monitoring well was dry on March 12, 2015



Monitoring Well: TVR7.2

Project: Turner Valley Reservoir
Client: Town of Turner Valley c/o MPE Engineering Ltd.
Location: Turner Valley, AB
Number: 110861556
Field investigator: R.Barlow
Contractor: Ernco Environmental

Drilling method: Hydrovac / Direct Push
Date started/completed: 12-Jan-2015
Ground surface elevation: 1,214.79 m AMSL
Top of casing elevation: 1,215.76 m AMSL
Easting: 692108
Northing: 5616258



Screen Interval: 7.00 - 10.00 m BGS
 Sand Pack Interval: 6.70 - 10.70 m BGS
 Well Seal Interval: 0.30 - 6.70 m BGS

Notes:
 m AMSL - metres above mean sea level
 m BGS - metres below ground surface
 DP - direct push sample
 GB - grab sample
 nd - not detected
 ppm - parts per million by volume
 n/a - not available

ND - not detected
 CHV - combustible headspace vapour
 VHV - volatile headspace vapour
 BTEX F1-F4 - benzene, toluene, ethylbenzene, xylene,
 petroleum hydrocarbon fractions F1 to F4
 PAH - Polycyclic aromatic hydrocarbons
 RM - regulated metals package
 Salinity IV - soil salinity package
 GS - grain size analysis
 DUP A - duplicate sample of TVR7.2-5
 Hydrovac method: 0.0 to 2.4 m BGS
 Direct Push method: 2.4 to 10.7 m BGS



Drawn By/Checked By: R.Barlow / L. Weller

Sheet 1 of 1

Monitoring Well: TVSA-01

Project: Turner Valley Source Aquifer Program
Client: Town of Turner Valley c/o MPE Engineering Ltd.
Location: Turner Valley, AB
Number: 110861556
Field investigator: R.Barlow
Contractor: Ernco Environmental

Drilling method: Hydrovac / Direct Push
Date started/completed: 14-Jan-2015
Ground surface elevation: 1,204.34 m AMSL
Top of casing elevation: 1,204.27 m AMSL
Easting: 692657
Northing: 5616604

SUBSURFACE PROFILE				SAMPLE DETAILS				INSTALLATION DETAILS	
Depth	Graphic Log	Lithologic Description	Elevation (m AMSL) Depth (m BGS)	Sample Number	Sample Type	Lab Analyses	Vapour Concentration (ppm) VHV CHV	Diagram	Description
(ft) (m)							20 40 60 80		
		Ground Surface	1204.34						
2		CLAYEY GRAVEL WITH SAND medium to coarse grained, brown, moist, angular (FILL)	0.00						Flush mount well protector installed
4									
6		GRAVELLY CLAY low plasticity, brown, dry, medium to coarse grained, angular gravel (FILL)	1202.84	TVSA-01-01	GB		ND		
8			1.50						
10		- at 3.2 m BGS, pale brown and grey		TVSA-01-02	GB		ND		
12									
14				TVSA-01-03	DP		55		51mm solid PVC pipe packed in bentonite 0.2 to 8.5 m BGS
16				TVSA-01-04	DP		75		
18				TVSA-01-05	DP		80		
20			1197.84						
22		GRAVELLY CLAY some sand, low plasticity, brown, dry	6.50	TVSA-01-06	DP		30		
24				TVSA-01-07	DP	BTEX F1-F4, PAH, RM, Salinity IV	100		
26									
28									silica sand size 10/20 8.5 to 10.1 m BGS
30									
32		GRAVEL WITH CLAY medium to coarse grained, grey, rounded	1194.54	TVSA-01-08	DP	BTEX F1-F4, PAH, RM, Salinity IV	20		51 mm slotted PVC pipe 8.6. to 10.1 mBGS
34		CLAY WITH GRAVEL high plasticity, brown with grey mottles, fine to medium grained, rounded gravel (TILL)	1194.04	TVSA-01-09	DP	RM, Salinity IV	25		
		End of Borehole	1193.64	TVSA-01-10	DP		10		
			10.70						

Screen Interval: 8.60 - 10.10 m BGS
 Sand Pack Interval: 8.50 - 10.30 m BGS
 Well Seal Interval: 0.30 - 8.50 m BGS

Notes:
 m AMSL - metres above mean sea level
 m BGS - metres below ground surface
 DP - direct push sample
 GB - grab sample
 nd - not detected
 ppm - parts per million by volume
 n/a - not available

ND - not detected
 CHV - combustible headspace vapour
 VHV - volatile headspace vapour
 BTEX F1-F4 - benzene, toluene, ethylbenzene, xylene, petroleum hydrocarbon fractions F1 to F4
 PAH - Polycyclic aromatic hydrocarbons
 RM - regulated metals package
 Salinity IV - soil salinity package
 Hydrovac method: 0.0 to 3.0 m BGS
 Direct Push method: 3.0 to 10.7 m BGS
 Monitoring well was dry on March 12, 2015



Drawn By/Checked By: R.Barlow / L. Weller

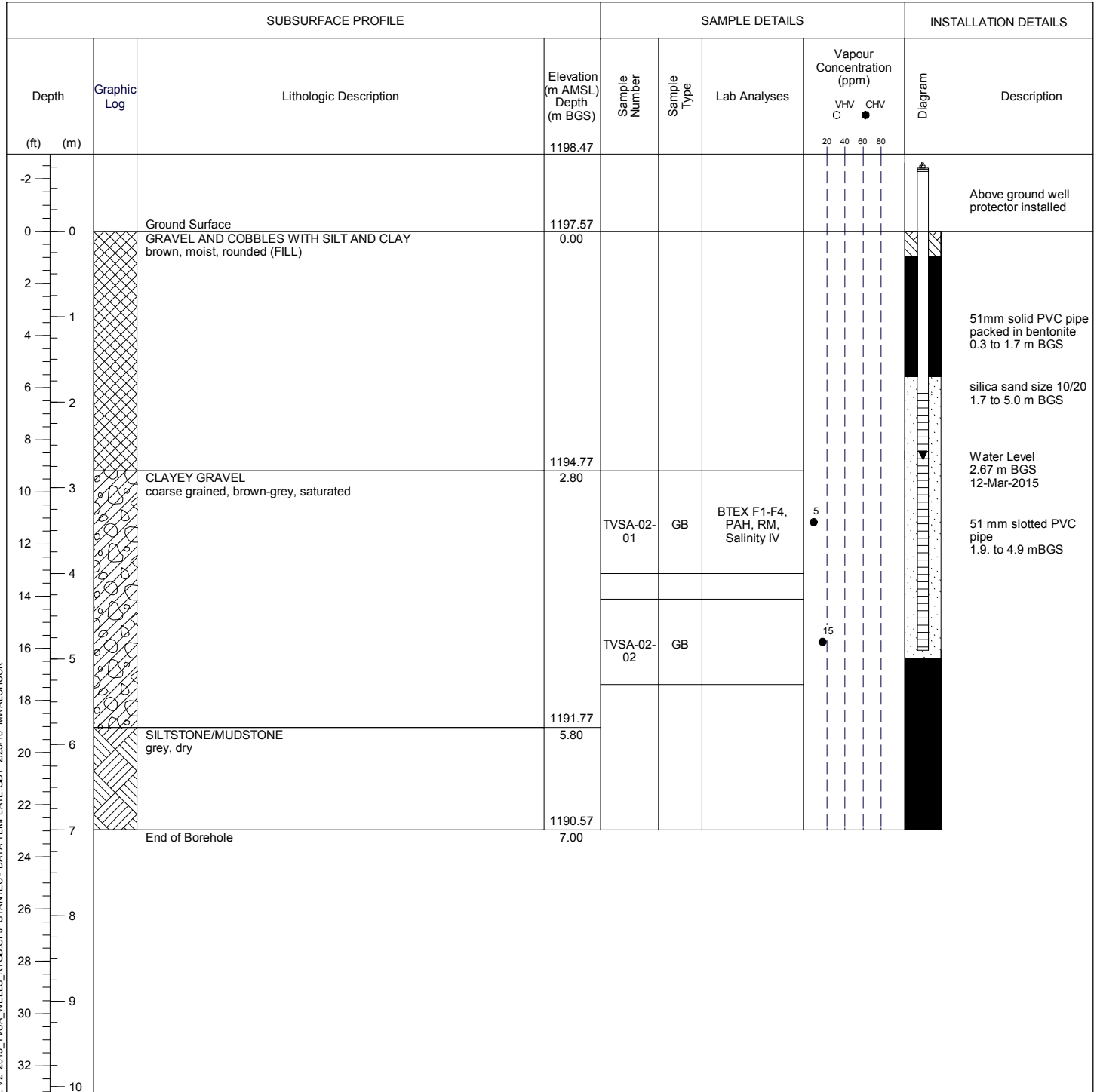
Sheet 1 of 1

STANTEC BOREHOLE AND WELL V2 2015_TVSA_WELLS_RTGB.GPJ STANTEC - DATA TEMPLATE.GDT 2/23/16 MMALCHUCK

Monitoring Well: TVSA-02

Project: Turner Valley Source Aquifer Program
Client: Town of Turner Valley c/o MPE Engineering Ltd.
Location: Turner Valley, AB
Number: 110861556
Field investigator: R.Barlow
Contractor: Ernco Environmental

Drilling method: Hydrovac / ODEX
Date started/completed: 14-Jan-2015
Ground surface elevation: 1,197.57 m AMSL
Top of casing elevation: 1,198.42 m AMSL
Easting: 692621
Northing: 5616522



Screen Interval: 1.90 - 4.90 m BGS
 Sand Pack Interval: 1.70 - 5.00 m BGS
 Well Seal Interval: 0.30 - 1.70 m BGS

Notes:
 m AMSL - metres above mean sea level
 m BGS - metres below ground surface
 GB - grab sample
 ppm - parts per million by volume
 n/a - not available

ND - not detected
 CHV - combustible headspace vapour
 VH-V - volatile headspace vapour
 BTEX F1-F4 - benzene, toluene, ethylbenzene, xylene,
 petroleum hydrocarbon fractions F1 to F4
 PAH - Polycyclic aromatic hydrocarbons
 RM - regulated metals package
 Salinity IV - soil salinity package
 Hydrovac method: 0.0 to 3.0 m BGS
 ODEX method: 3.0 to 7.0 m BGS



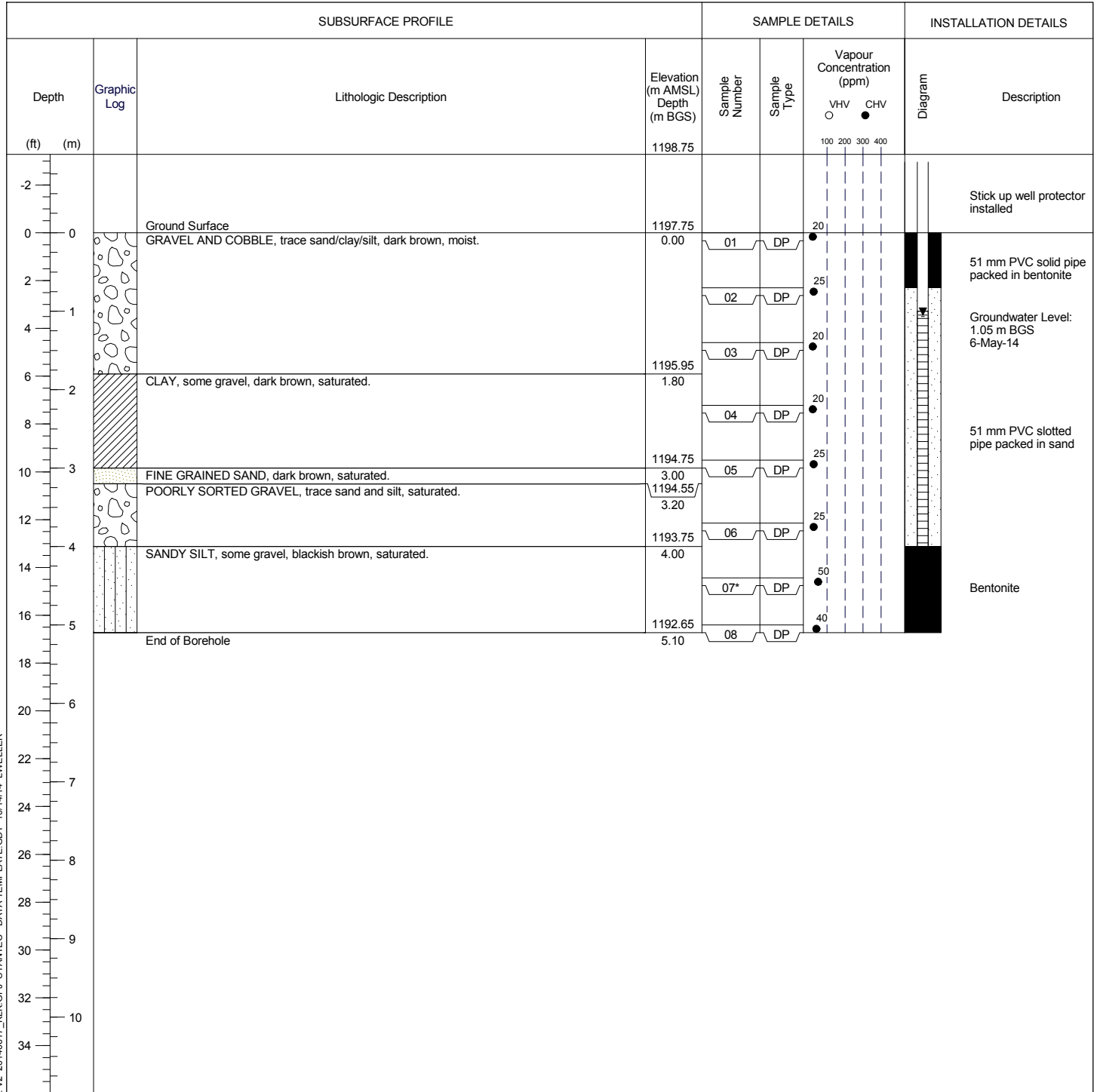
Drawn By/Checked By: R.Barlow / L. Weller

Sheet 1 of 1

Monitoring Well: TVSA-03

Project: Turner Valley Source Aquifer Program
Client: Town of Turner Valley c/o MPE Engineering Ltd.
Location: Turner Valley, AB
Number: 110861556
Field investigator: KK
Contractor: Emco Environmental

Drilling method: Direct Push
Date started/completed: 21-Apr-2014
Ground surface elevation: 1,196.81 m AMSL
Top of casing elevation: 1,197.75 m AMSL
Easting: -114.274215
Northing: 50.668914



Screen Interval: 1.00 - 4.00 m BGS
 Sand Pack Interval: 0.70 - 4.00 m BGS
 Well Seal Interval: 0.00 - 0.70 m BGS

Notes:
 m AMSL - metres above mean sea level
 m BGS - metres below ground surface
 DP - direct push sample
 ppm - parts per million by volume
 n/a - not available

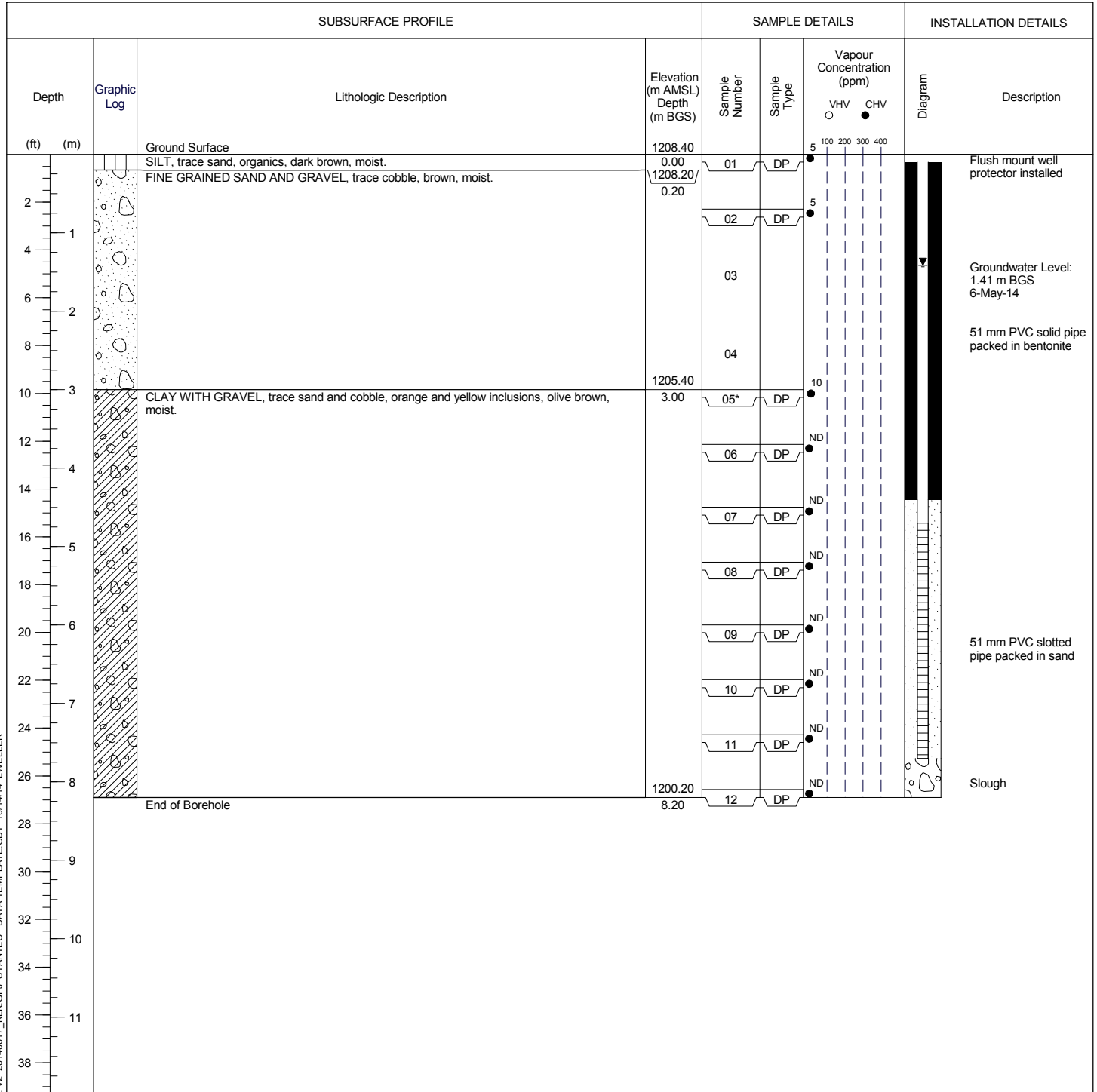
* - indicates sample submitted for laboratory analysis
 VHV - volatile headspace vapour
 CHV - combustible headspace vapour



Monitoring Well: TVSA-04

Project: Turner Valley Source Aquifer Program
Client: Town of Turner Valley c/o MPE Engineering Ltd.
Location: Turner Valley, AB
Number: 110861556
Field investigator: KK
Contractor: Emco Environmental

Drilling method: Direct Push
Date started/completed: 23-Apr-2014
Ground surface elevation: 1,208.40 m AMSL
Top of casing elevation: 1,208.28 m AMSL
Easting: -114.275152
Northing: 50.670816



Screen Interval: 4.70 - 7.70 m BGS
 Sand Pack Interval: 4.40 - 7.70 m BGS
 Well Seal Interval: 0.10 - 4.40 m BGS

Notes:
 m AMSL - metres above mean sea level
 m BGS - metres below ground surface
 DP - direct push sample
 nd - not detected
 ppm - parts per million by volume
 n/a - not available

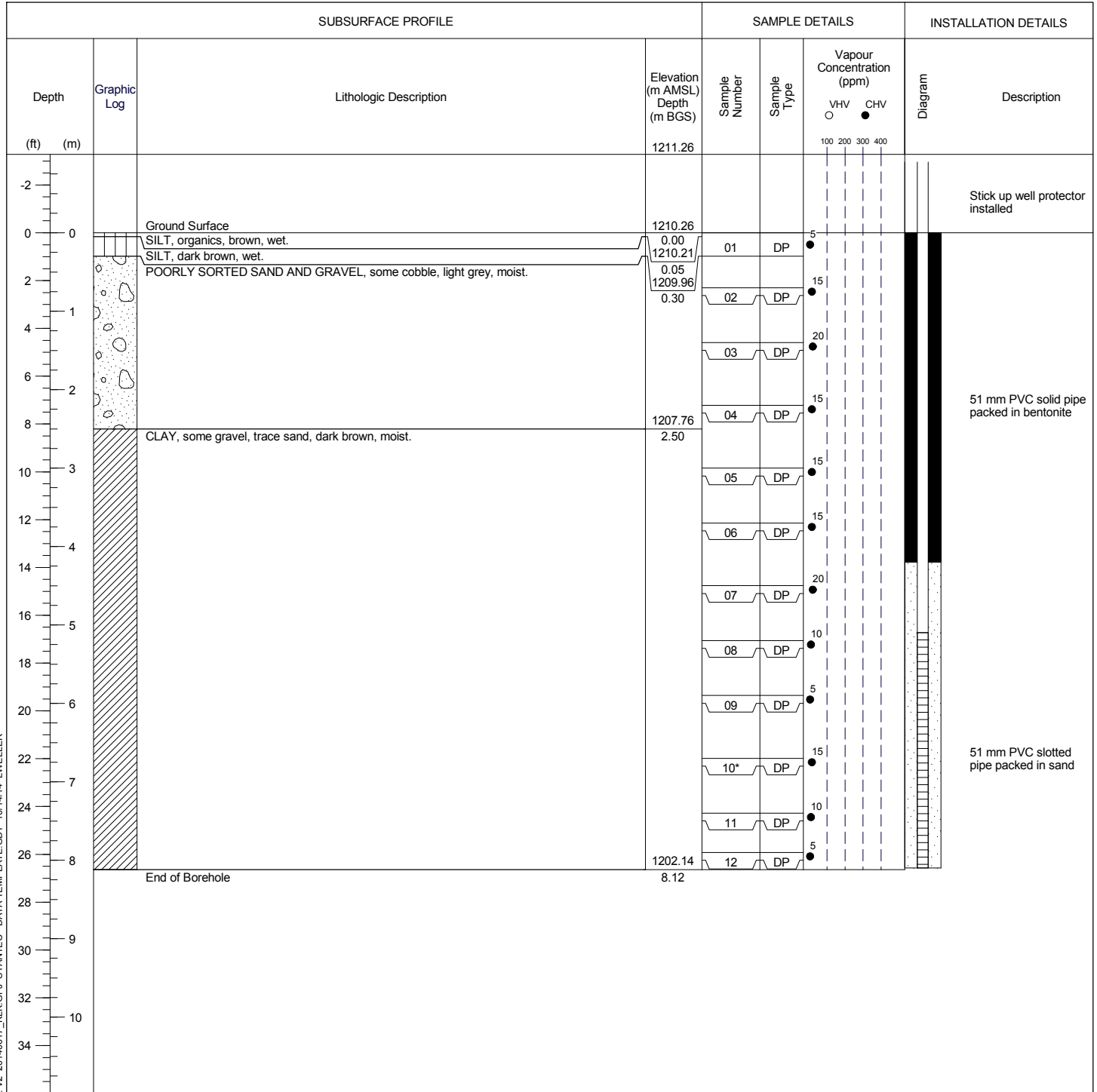
* - indicates sample submitted for laboratory analysis
 VHV - volatile headspace vapour
 CHV - combustible headspace vapour



Monitoring Well: TVSA-05

Project: Turner Valley Source Aquifer Program
Client: Town of Turner Valley c/o MPE Engineering Ltd.
Location: Turner Valley, AB
Number: 110861556
Field investigator: KK
Contractor: Emco Environmental

Drilling method: Direct Push
Date started/completed: 22-Apr-2014
Ground surface elevation: 1,210.26 m AMSL
Top of casing elevation: 1,211.15 m AMSL
Easting: -114.276937
Northing: 50.669814



Screen Interval: 5.10 - 8.10 m BGS
 Sand Pack Interval: 4.20 - 8.10 m BGS
 Well Seal Interval: 0.00 - 4.20 m BGS

Notes:
 m AMSL - metres above mean sea level
 m BGS - metres below ground surface
 DP - direct push sample
 ppm - parts per million by volume
 n/a - not available

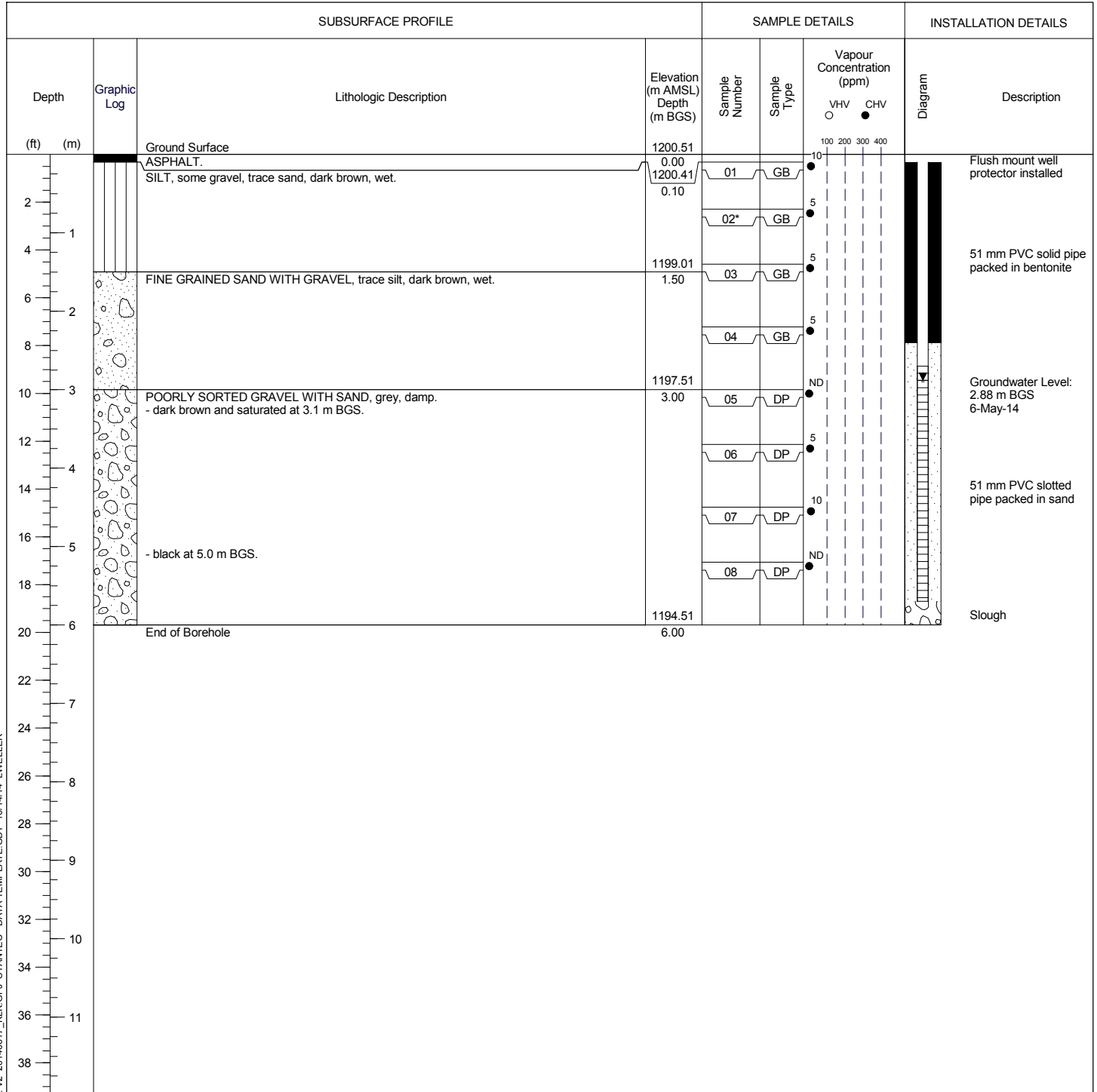
* - indicates sample submitted for laboratory analysis
 VHV - volatile headspace vapour
 CHV - combustible headspace vapour
 Monitoring well was dry on May 6, 2014



Monitoring Well: TVSA-06

Project: Turner Valley Source Aquifer Program
Client: Town of Turner Valley c/o MPE Engineering Ltd.
Location: Turner Valley, AB
Number: 110861556
Field investigator: KK
Contractor: Emco Environmental

Drilling method: Hydrovac/Direct Push
Date started/completed: 22-Apr-2014
Ground surface elevation: 1,200.51 m AMSL
Top of casing elevation: 1,200.44 m AMSL
Easting: -114.277668
Northing: 50.667708



Screen Interval: 2.70 - 5.70 m BGS
 Sand Pack Interval: 2.40 - 5.70 m BGS
 Well Seal Interval: 0.10 - 2.40 m BGS

Notes:
 m AMSL - metres above mean sea level
 m BGS - metres below ground surface
 DP - direct push sample
 GB - grab sample
 nd - not detected
 ppm - parts per million by volume
 n/a - not available

* - indicates sample submitted for laboratory analysis
 VHV - volatile headspace vapour
 CHV - combustible headspace vapour



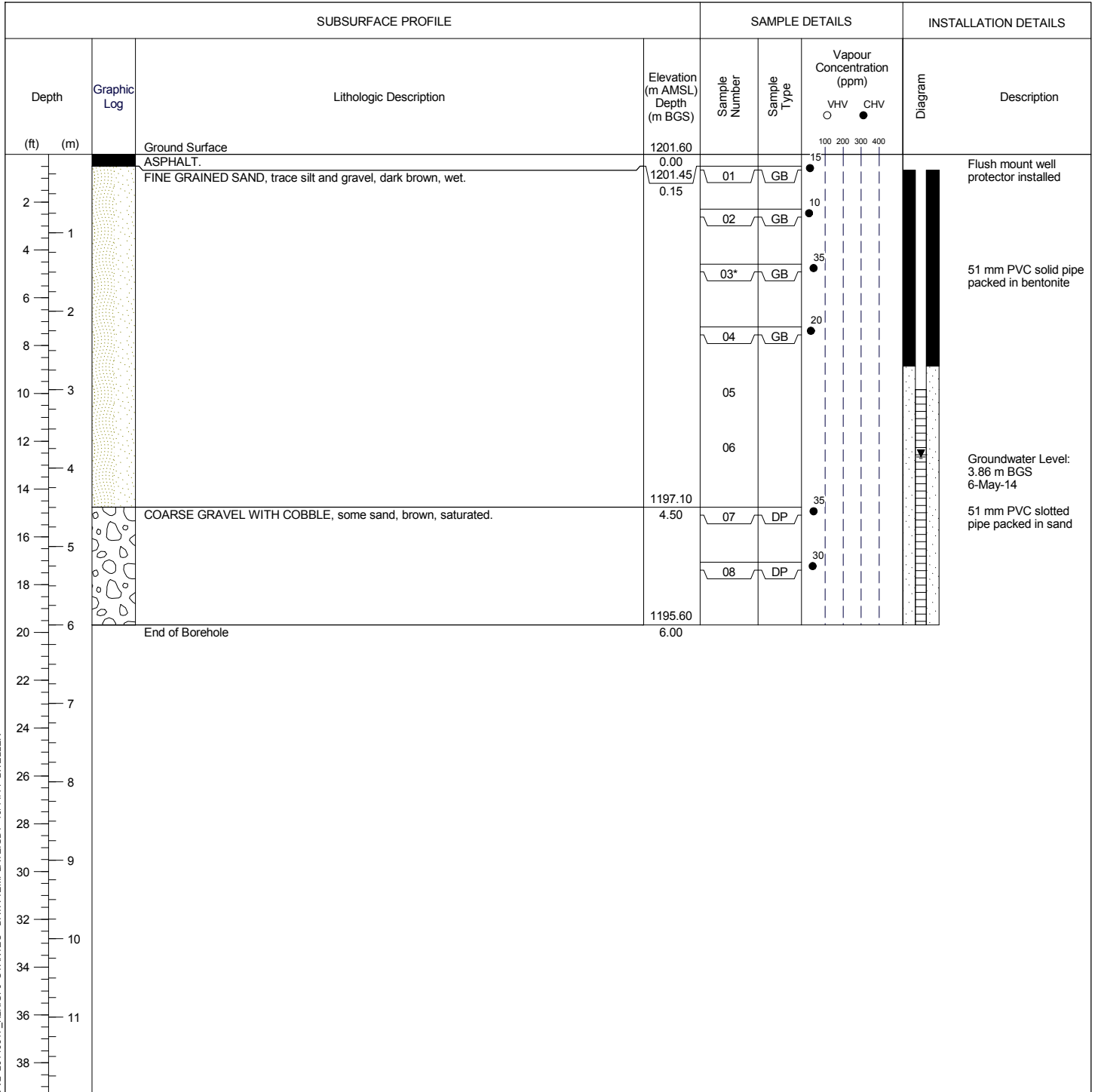
Drawn By/Checked By: Lincoln Weller

Sheet 1 of 1

Monitoring Well: TVSA-07

Project: Turner Valley Source Aquifer Program
Client: Town of Turner Valley c/o MPE Engineering Ltd.
Location: Turner Valley, AB
Number: 110861556
Field investigator: KK
Contractor: Emco Environmental

Drilling method: Hydrovac/Direct Push
Date started/completed: 22-Apr-2014
Ground surface elevation: 1,201.60 m AMSL
Top of casing elevation: 1,201.51 m AMSL
Easting: -114.27761
Northing: 50.666511



Screen Interval: 3.00 - 6.00 m BGS
 Sand Pack Interval: 2.70 - 6.00 m BGS
 Well Seal Interval: 0.20 - 2.70 m BGS

Notes:
 m AMSL - metres above mean sea level
 m BGS - metres below ground surface
 DP - direct push sample
 GB - grab sample
 ppm - parts per million by volume
 n/a - not available

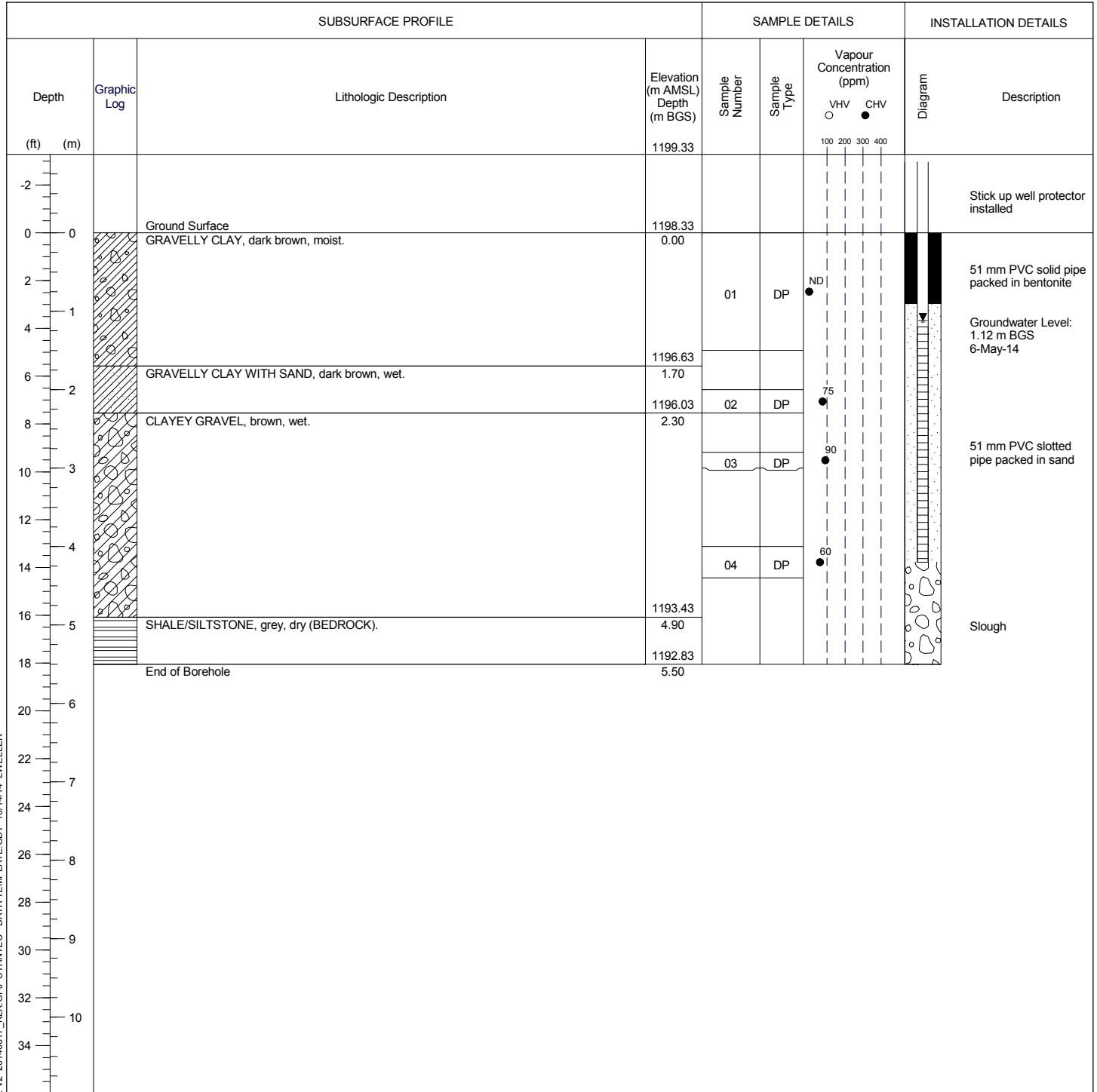
* - indicates sample submitted for laboratory analysis
 VHV - volatile headspace vapour
 CHV - combustible headspace vapour



Monitoring Well: TVSA-08

Project: Turner Valley Source Aquifer Program
Client: Town of Turner Valley c/o MPE Engineering Ltd.
Location: Turner Valley, AB
Number: 110861556
Field investigator: RB
Contractor: Emco Environmental

Drilling method: Direct Push
Date started/completed: 15-Apr-2014
Ground surface elevation: 1,198.33 m AMSL
Top of casing elevation: 1,199.22 m AMSL
Easting: -114.275721
Northing: 50.667348



Screen Interval: 1.20 - 4.20 m BGS
 Sand Pack Interval: 0.90 - 4.20 m BGS
 Well Seal Interval: 0.00 - 0.90 m BGS

Notes:
 m AMSL - metres above mean sea level
 m BGS - metres below ground surface
 DP - direct push sample
 nd - not detected
 ppm - parts per million by volume
 n/a - not available

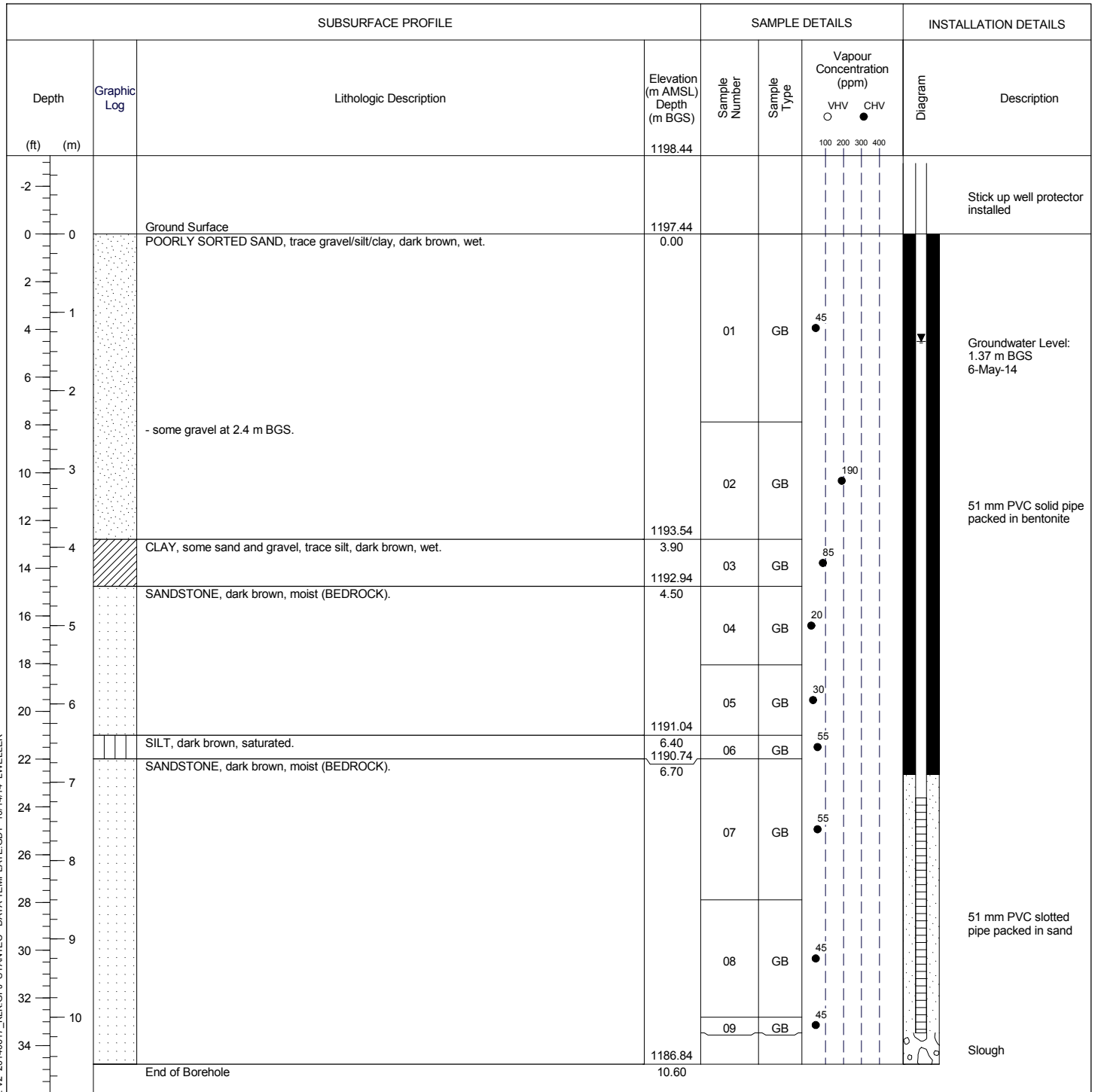
VHV - volatile headspace vapour
 CHV - combustible headspace vapour



Monitoring Well: TH-B1

Project: Turner Valley Proposed Infiltration Gallery
Client: Town of Turner Valley c/o MPE Engineering Ltd.
Location: Turner Valley, AB
Number: 110861556
Field investigator: KK
Contractor: Emco Environmental

Drilling method: Odex
Date started/completed: 17-Apr-2014
Ground surface elevation: 1,197.44 m AMSL
Top of casing elevation: 1,197.60 m AMSL
Easting: -114.274879
Northing: 50.668453



Screen Interval: 7.20 - 10.20 m BGS
 Sand Pack Interval: 6.90 - 10.20 m BGS
 Well Seal Interval: 0.00 - 6.90 m BGS

Notes:
 m AMSL - metres above mean sea level
 m BGS - metres below ground surface
 GB - grab sample
 ppm - parts per million by volume
 n/a - not available

VHV - volatile headspace vapour
 CHV - combustible headspace vapour



Monitoring Well: TH-B2

Project: Turner Valley Proposed Infiltration Gallery
Client: Town of Turner Valley c/o MPE Engineering Ltd.
Location: Turner Valley, AB
Number: 110861556
Field investigator: KK
Contractor: Emco Environmental

Drilling method: Odex
Date started/completed: 17-Apr-2014
Ground surface elevation: 1,198.45 m AMSL
Top of casing elevation: 1,199.26 m AMSL
Easting: -114.275701
Northing: 50.66867

SUBSURFACE PROFILE				SAMPLE DETAILS			INSTALLATION DETAILS	
Depth	Graphic Log	Lithologic Description	Elevation (m AMSL) Depth (m BGS)	Sample Number	Sample Type	Vapour Concentration (ppm) VHV CHV	Diagram	Description
(ft) (m)			1199.45			100 200 300 400		
-2								
0	0	Ground Surface	1198.45					Stick up well protector installed
2		POORLY SORTED SAND, trace gravel, brown, damp.	0.00					
4	1			01	GB	ND		
6	2							
8		- some clay and moist from 2.4 m BGS.						
10	3			02	GB	5		Groundwater Level: 2.15 m BGS 6-May-14
12								51 mm PVC solid pipe packed in bentonite
14	4							
16	5			03	GB	25		
18		- saturated at 5.5 m BGS.						
20	6		1192.35	04	GB	5		
22		SHALE, black, moist (BEDROCK).	6.10	05	GB	20		
24	7							
26	8			06	GB	20		
28								
30	9			07	GB	260		51 mm PVC slotted pipe packed in sand
32		End of Borehole	1188.75					
34	10		9.70					

Screen Interval: 6.70 - 9.70 m BGS
 Sand Pack Interval: 6.40 - 9.70 m BGS
 Well Seal Interval: 0.00 - 6.40 m BGS

Notes:
 m AMSL - metres above mean sea level
 m BGS - metres below ground surface
 GB - grab sample
 nd - not detected
 ppm - parts per million by volume
 n/a - not available

VHV - volatile headspace vapour
 CHV - combustible headspace vapour



Drawn By/Checked By: Lincoln Weller

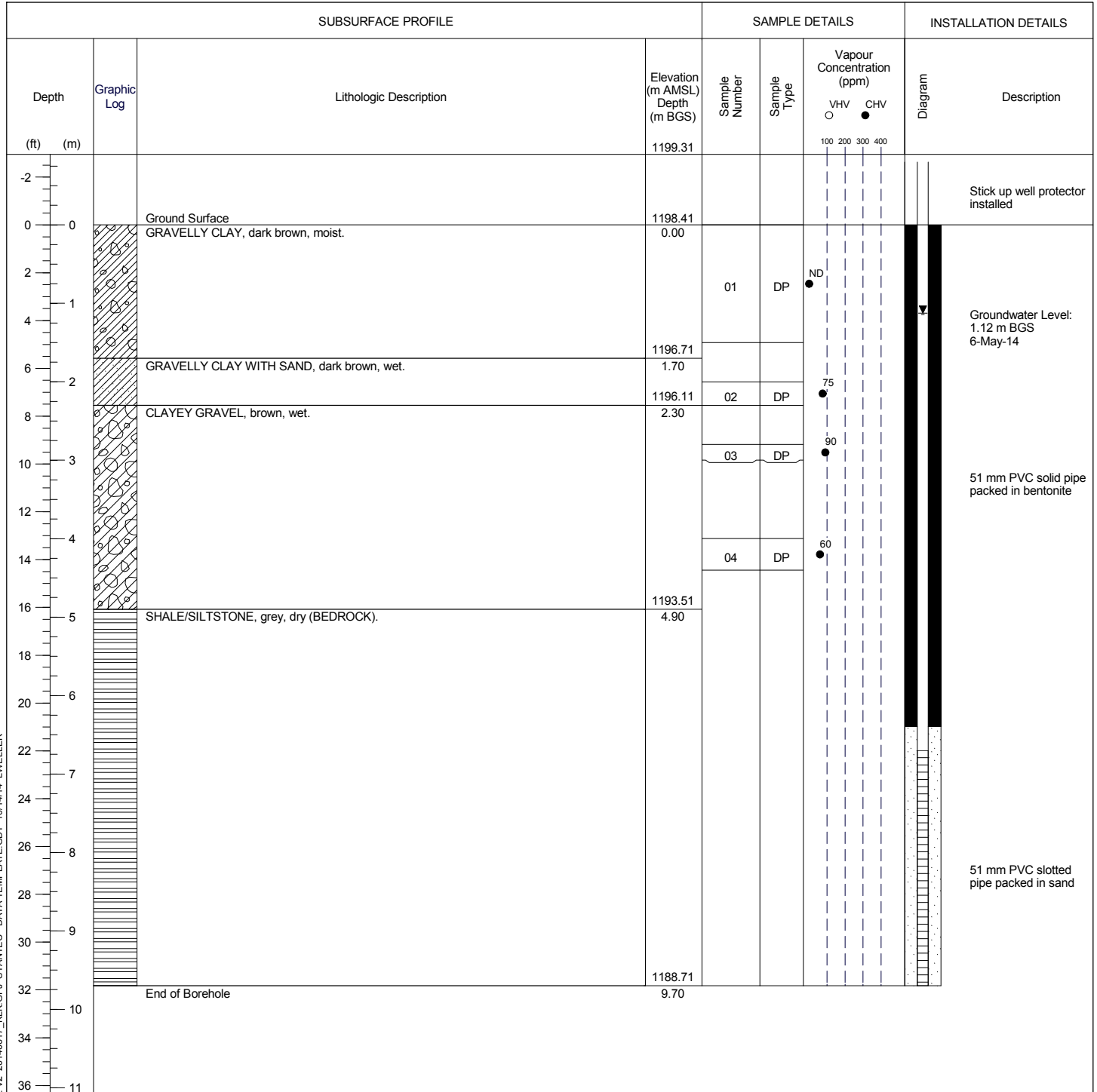
Sheet 1 of 1

STANTEC BOREHOLE AND WELL V2 20140617_KLK.GPJ STANTEC - DATA TEMPLATE.GDT 10/14/14 LWELLER

Monitoring Well: TH-B3

Project: Turner Valley Proposed Infiltration Gallery
Client: Town of Turner Valley c/o MPE Engineering Ltd.
Location: Turner Valley, AB
Number: 110861556
Field investigator: RB/KK
Contractor: Emco Environmental

Drilling method: Odex
Date started/completed: 15-Apr-2014 / 16-Apr-2014
Ground surface elevation: 1,198.41 m AMSL
Top of casing elevation: 1,199.33 m AMSL
Easting: -114.275692
Northing: 50.667356



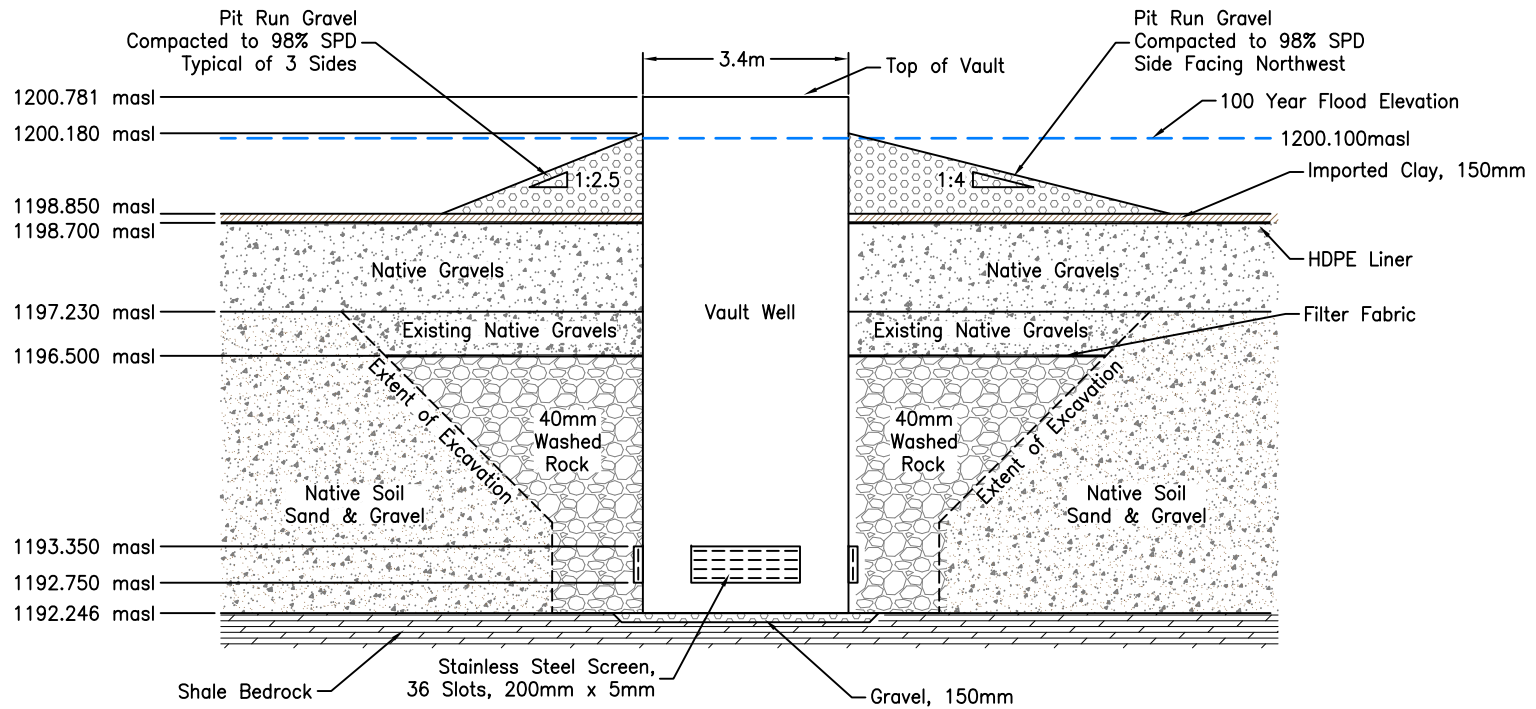
Screen Interval: 6.70 - 9.70 m BGS
 Sand Pack Interval: 6.40 - 9.70 m BGS
 Well Seal Interval: 0.00 - 6.40 m BGS

Notes:
 m AMSL - metres above mean sea level
 m BGS - metres below ground surface
 DP - direct push sample
 nd - not detected
 ppm - parts per million by volume
 n/a - not available

VHV - volatile headspace vapour
 CHV - combustible headspace vapour



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2021/02/25 8:08 AM By: Nastov, Zoran



ORIGINAL SHEET - ANSI A - COLOR

February, 2021
123513114

Note: Not to Scale

Source: Drawing detail based on MPE Engineering Ltd. design.

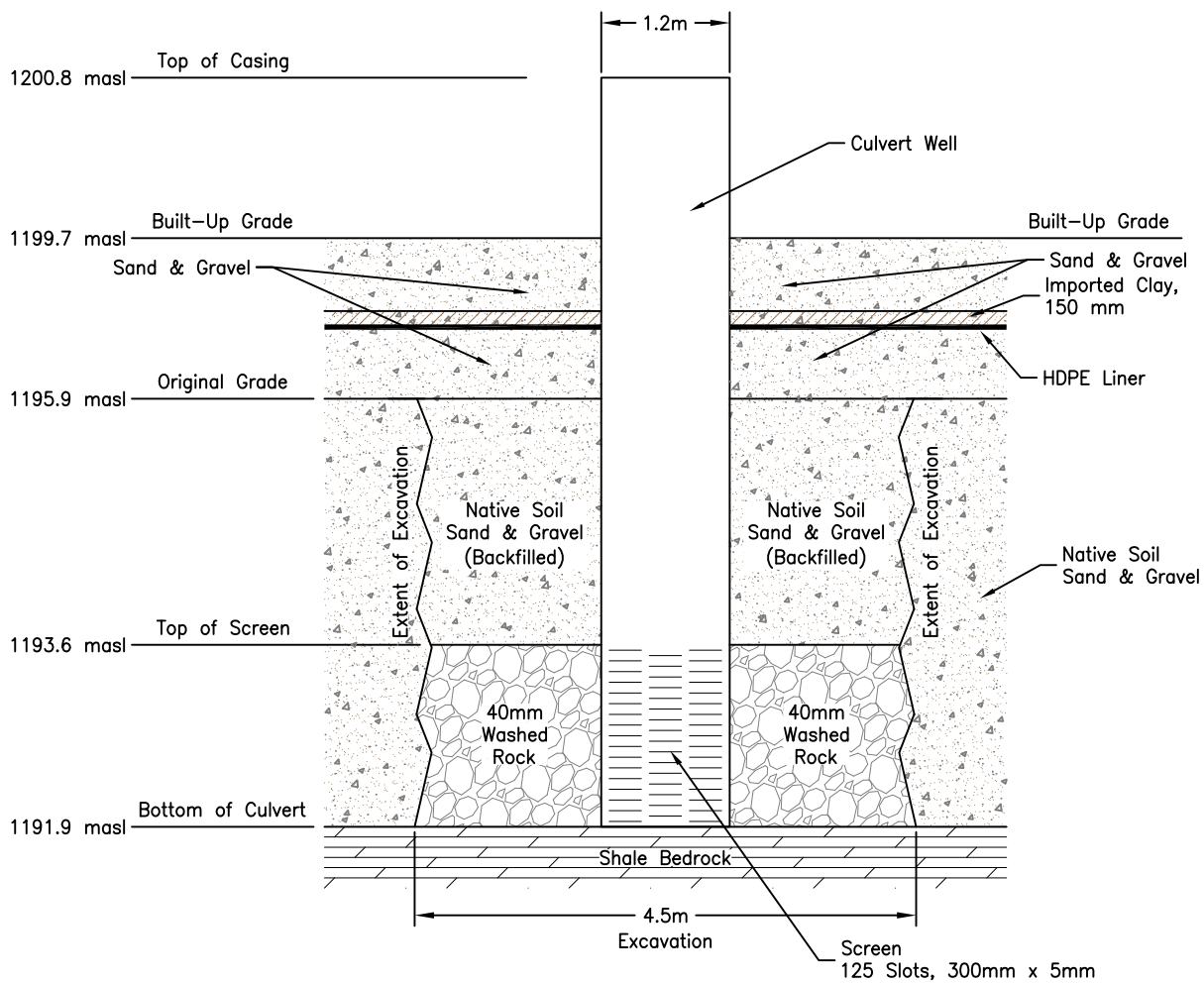
Title

Pumping Vault Well VW5 Completion Detail



200 - 325 25th St. SE Calgary, AB T2A 7H8
Stantec does not certify the accuracy of the data.
This drawing is for reference only and should not be used for construction.

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2021/02/25 10:19 AM By: Nastov, Zoran



ORIGINAL SHEET - ANSI A -COLOR

February, 2021
123513114

Note: Not to Scale

Title

Pumping Culvert Well CW8 Completion Detail



200 - 325 25th St. SE Calgary, AB T2A 7H8
Stantec does not certify the accuracy of the data.
This drawing is for reference only and should not be used for construction.

GIC Well ID 1556497
GoA Well Tag No.
Drilling Company Well ID
Date Report Received 2013/12/18

The driller supplies the data contained in this report. The Province disclaims responsibility for its accuracy. The information on this report will be retained in a public database.

Well Identification and Location										Measurement in Metric	
Owner Name TOWN OF TURNER VALLEY		Address P.O. BOX 330		Town TURNER VALLEY		Province ALBERTA		Country CANADA	Postal Code T0L 2A0		
Location	1/4 or LSD 12	SEC 6	TWP 20	RGE 2	W of MER 5	Lot	Block	Plan	Additional Description PRODUCTION WELL 5A		
Measured from Boundary of _____ m from _____ _____ m from _____					GPS Coordinates in Decimal Degrees (NAD 83) Latitude <u>50.668386</u> Longitude <u>-114.275386</u> How Location Obtained Differential corrected handheld GPS 5-10m					Elevation <u>1202.00 m</u> How Elevation Obtained Differential corrected handheld GPS 5-10m	

Drilling Information	
Method of Drilling Rotary - Mud	Type of Work New Well
Proposed Well Use Municipal	

Formation Log			Measurement in Metric		
Depth from ground level (m)	Water Bearing	Lithology Description			
0.61		Black Clay & Silt			
2.13		Gray Gravel			
3.35		Gray Clay & Silt			
6.55	Yes	Gray Gravel			
7.92		Black Shale			

Yield Test Summary			Measurement in Metric		
Recommended Pump Rate <u>909.22 L/min</u>					
Test Date	Water Removal Rate (L/min)	Static Water Level (m)			
2013/11/11	945.59	2.80			

Well Completion			Measurement in Metric		
Total Depth Drilled	Finished Well Depth	Start Date	End Date		
7.92 m	7.92 m	2013/11/08	2013/11/08		
Borehole					
Diameter (cm)	From (m)	To (m)			
32.70	0.00	7.92			
Surface Casing (if applicable)			Well Casing/Liner		
			Steel		
Size OD :	cm	Size OD :	21.91 cm		
Wall Thickness :	cm	Wall Thickness :	0.991 cm		
Bottom at :	m	Top at :	-0.30 m		
			Bottom at : 7.92 m		
Perforations					
From (m)	To (m)	Diameter or Slot Width (cm)	Slot Length (cm)	Hole or Slot Interval (cm)	
Perforated by					
Annular Seal Bentonite Chips/Tablets					
Placed from <u>0.00 m</u> to <u>3.66 m</u>					
Amount <u>250.00 Pounds</u>					
Other Seals					
Type			At (m)		
Shale Trap			3.66		
Screen Type Stainless Steel					
Size OD : <u>cm</u>					
From (m)	To (m)	Slot Size (cm)			
4.72	6.25	1.778			
Attachment <u>Attached To Casing</u>					
Top Fittings <u>Welded</u>			Bottom Fittings <u>Tail Pipe</u>		
Pack					
Type _____			Grain Size _____		
Amount _____					

Contractor Certification	
Name of Journeyman responsible for drilling/construction of well CHAD NIEMANS	Certification No 46340A
Company Name NIEMANS DRILLING (1980) LTD.	Copy of Well report provided to owner Date approval holder signed Yes 2013/12/18

Well Identification and Location										Measurement in Metric
Owner Name TURNER VALLEY, TOWN OF#2211		Address C/O 220 5403 CROWCHILD TRAIL NW,CALGARY		Town		Province		Country	Postal Code T3B 4Z1	
Location	1/4 or LSD NW	SEC 06	TWP 020	RGE 02	W of MER 5	Lot	Block	Plan	Additional Description	
Measured from Boundary of _____ m from _____ _____ m from _____					GPS Coordinates in Decimal Degrees (NAD 83) Latitude <u>50.670282</u> Longitude <u>-114.272979</u> Elevation _____ m How Elevation Obtained _____ Survey-Air					

Drilling Information	
Method of Drilling Rotary	Type of Work New Well
Proposed Well Use Municipal	

Formation Log			Measurement in Metric
Depth from ground level (m)	Water Bearing	Lithology Description	
0.61		Silty Till	
2.44		Dry Gravel	
6.10	Yes	Water Bearing Gravel	
7.92		Dark Gray Sandy Clay & Rocks	
9.14		Dark Gray Shale	

Yield Test Summary			Measurement in Metric
Recommended Pump Rate <u>0.00</u> L/min			
Test Date	Water Removal Rate (L/min)	Static Water Level (m)	
1993/12/13	1909.36	1.58	

Well Completion				Measurement in Metric
Total Depth Drilled	Finished Well Depth	Start Date	End Date	
9.14 m		1993/09/07	1993/12/31	
Borehole				
Diameter (cm)	From (m)	To (m)		
0.00	0.00	9.14		
Surface Casing (if applicable)		Well Casing/Liner		
Steel		Steel		
Size OD : <u>35.56</u> cm		Size OD : <u>31.75</u> cm		
Wall Thickness : <u>0.635</u> cm		Wall Thickness : <u>0.635</u> cm		
Bottom at : <u>3.66</u> m		Top at : <u>6.10</u> m		
		Bottom at : <u>8.53</u> m		
Perforations				
From (m)	To (m)	Diameter or Slot Width(cm)	Slot Length(cm)	Hole or Slot Interval(cm)
Perforated by				
Annular Seal Bentonite Chips/Tablets				
Placed from <u>0.00</u> m to <u>3.66</u> m				
Amount _____				
Other Seals				
Type		At (m)		
Screen Type Stainless Steel				
Size OD : <u>30.48</u> cm				
From (m)	To (m)	Slot Size (cm)		
3.66	6.10	0.203		
Attachment <u>Telescoped</u>				
Top Fittings <u>Neoprene (Figure K)</u>		Bottom Fittings <u>Plug</u>		
Pack				
Type _____		Grain Size _____		
Amount <u>0.00</u>				

Contractor Certification	
Name of Journeyman responsible for drilling/construction of well UNKNOWN NA DRILLER	Certification No 1
Company Name AARON DRILLING INC.	Copy of Well report provided to owner Date approval holder signed

The driller supplies the data contained in this report. The Province disclaims responsibility for its accuracy. The information on this report will be retained in a public database.

Well Identification and Location										Measurement in Metric	
Owner Name		Address		Town		Province		Country		Postal Code	
TURNER VALLEY, TOWN OF#2211		C/O 220 5403 CROWCHILD TRAIL NW,CALGARY								T3B 4Z1	
Location	1/4 or LSD	SEC	TWP	RGE	W of MER	Lot	Block	Plan	Additional Description		
	NW	06	020	02	5						
Measured from Boundary of				GPS Coordinates in Decimal Degrees (NAD 83)							
_____ m from				Latitude _____ Longitude _____				Elevation _____ m			
_____ m from				How Location Obtained				How Elevation Obtained			
				Field				Survey-Air			
Additional Information										Measurement in Metric	
Distance From Top of Casing to Ground Level _____ cm											
Is Artesian Flow _____										Is Flow Control Installed _____	
Rate _____ L/min										Describe _____	
Recommended Pump Rate _____ 0.00 L/min										Pump Installed _____ Depth _____ m	
Recommended Pump Intake Depth (From TOC) _____ 0.00 m										Type _____ Make _____ H.P. _____	
										Model (Output Rating) _____	
Did you Encounter Saline Water (>4000 ppm TDS) _____										Depth _____ m	
Gas _____										Depth _____ m	
										Well Disinfected Upon Completion _____	
										Geophysical Log Taken _____	
										Submitted to ESRD _____	
										Sample Collected for Potability _____	
										Submitted to ESRD _____	
Additional Comments on Well											
WELL SUSPECTED TO HAVE HYDROCARBONS AND APROPRIATE TEST SHOWED NO CONTAMINATION ON THIS DATE.											

Yield Test			Taken From Ground Level		Measurement in Metric
Test Date	Start Time	Static Water Level	Depth to water level		
1993/12/13	12:00 AM	1.58 m			
Method of Water Removal					
Type	Pump		Drawdown (m)	Elapsed Time Minutes:Sec	Recovery (m)
Removal Rate	1909.36 L/min		4.68	1:00	1.70
Depth Withdrawn From	7.01 m		4.71	2:00	1.69
If water removal period was < 2 hours, explain why			4.72	3:00	1.69
			4.74	4:00	1.68
			4.75	5:00	1.67
			4.75	6:00	1.66
			4.75	7:00	1.66
			4.75	8:00	1.66
			4.75	9:00	1.66
			4.75	10:00	1.65
			4.81	105:00	1.57
			4.81	210:00	1.57
			4.82	1080:00	1.57
			4.84	2160:00	1.57
			4.84	2880:00	1.57

Water Diverted for Drilling		
Water Source	Amount Taken	Diversion Date & Time
	L	

Contractor Certification	
<i>Name of Journeyman responsible for drilling/construction of well</i> UNKNOWN NA DRILLER	<i>Certification No</i> 1
<i>Company Name</i> AARON DRILLING INC.	<i>Copy of Well report provided to owner</i> <i>Date approval holder signed</i>



Appendix D

Methods



D.1 Monitoring and Sampling

D.1.1 Well Headspace Vapour Monitoring

Field screening for the presence of combustible vapours was conducted using an RKI EAGLE gas detector. The RKI EAGLE was calibrated to a hexane standard and set to methane elimination mode.

Concentrations of accumulated vapours were measured by inserting the probe of the RKI EAGLE gas detector into the headspace of the piezometer standpipe. Combustible vapour concentrations were measured in parts per million (ppm) relative to hexane. The instrument detection limits were 5 ppm for combustible vapour measurements.

D.1.2 Groundwater Levels

Due to the oil and gas activities in the area, presence of light and dense non-aqueous phase liquid (LNAPL and DNAPL) were monitored using a Heron oil/water interface probe that also measured depth to groundwater and total well depth with a 1 mm resolution. The interface probe was washed with phosphate-free solvents and rinsed with distilled water between piezometers.

D.1.3 Groundwater Purging & Sampling (Low Flow Methodology)

Groundwater purging and sampling using low flow methodology was conducted during the July monitoring and sampling event. The following steps were conducted:

1. Calculated the midpoint of the saturated screen and measured the appropriate tubing (based on pump-type). Connected tubing to pump (peristaltic or bladder pump), corresponding equipment (power source and tubing), multi-parameter instrument and flow through cell. Disposable bladders and tubing were used to reduce the potential for cross-contamination.
2. Lowered the sample intake location (bottom of tubing for peristaltic pump method or pump intake for bladder pump method) to the designated midpoint of the saturated screen. The sample intake location was lowered below the saturated screen midpoint at select piezometers, which was approved by AEP in a Letter of Authorization dated June 13, 2019 (AEP 2019), in an attempt to obtain a sample before the piezometer was purged dry due to slow recharge.
3. Started the pump at a low speed and increased the speed slowly until water discharge occurs. Purging was attempted to be conducted at a rate of 0.1 L/min to minimize sample aeration. However, certain piezometers had slow recharge and the purging rate of 0.1 L/min had to be lowered to 0.05 L/min, which was approved by AEP (AEP 2019), in an attempt to obtain a sample. The volume of water purged was measured by collecting the purge water in a calibrated bucket and was disposed of at surface, consistent with the current groundwater monitoring and sampling program conducted at the Site. Data describing the well purging rates (time interval between readings and the purge volumes) and observations of the physical appearance of the purge water were noted on field forms. The pump speed was adjusted until there was as little water level drawdown when possible.



4. Any groundwater that was highly turbid or coloured was discharged until the water cleared (relative to the beginning of pumping and using visual observations).
5. For wells that were sampled, depth to water and water quality indicator (field) parameters were measured every 30 seconds for the first 3 to 5 minutes during purging to assess the drawdown in the well and parameter stabilization. The drawdown was intended to not exceed 0.1 m (~0.3 feet) to reduce potential mixing of stagnant well water with fresh formation water during purging. However, select piezometers recharged slowly and the drawdown exceeded 0.1 m, which was approved by AEP (AEP 2019). The purge flow rate was reduced at these piezometers in an attempt to reduce the drawdown. It is important to note that, according to EPA 2010, “during pump start-up, drawdown may exceed the 0.3 feet (~9 centimetre) target, and ‘recover’ somewhat as pump flow adjustments are made” (EPA 2010). Water levels and purging volumes were noted on field forms.
6. Measured and recorded initial water quality parameters (i.e., field parameters): temperature, pH, EC, oxidation/reduction potential (ORP), dissolved oxygen (DO), and turbidity. The results of all field measurements of water quality parameters, observations of physical appearance of the purged water, volume removed, pumping rate and pump intake location were recorded on field forms.
7. Purging continued until the field parameters stabilized. Stabilization for this method was defined as three successive readings within ± 0.1 pH units, $\pm 3\%$ for specific conductance, ± 10 mV for ORP, and $\pm 10\%$ for DO and turbidity (as per the Stantec SOP, consistent with EPA [2010]). It should be noted that the EPA (2010) provides additional limits based on values for select field parameters as shown below:
 - a. Temperature: 3%
 - b. DO: 10% for values greater than 0.5 mg/L, if three DO values are less than 0.5 mg/L, consider the values stabilized
 - c. Turbidity: 10% for values greater than 5 Nephelometric Turbidity Unit (NTU); however, if three turbidity values are less than 5 NTU, then the values can be considered to be stabilized

As indicated in EPA 2010, stabilization of indicator field parameters is used to indicate that conditions are suitable for sampling to begin. Achievement of turbidity levels of less than 5 NTU, and stable drawdowns of less than 0.3 feet, while desirable, are not mandatory. Sample collection may still take place provided the indicator field parameter criteria in this procedure are met.

8. Prior to sampling, the pump’s tubing was removed from the flow through cell as the samples were collected directly from the tubing. Sampling occurred from the well that was expected to be least contaminated, based on historical results, to the well that was expected to be most contaminated to minimize the potential for cross-contamination.
9. Packed and stored samples in a cooler with adequate ice for delivery to the approved laboratory under chain-of-custody form(s).



10. Decontaminated sampling and measurement equipment following the sampling at each well according to SIR2.15 Decontamination (available upon request). The pumps and tubing were removed from the piezometers. The peristaltic and bladder pumps and flow through cell were decontaminated in a manner consistent with EPA 2010 Decontamination Procedure 1 (i.e., triple rinse decontamination). The flex tubing of the peristaltic pump was replaced between each well.
11. Repeated the abovementioned Steps 1 through 10 for each piezometer requiring sampling.
12. Transported the samples to the applicable laboratory for analysis of petroleum hydrocarbons (PHCs) (including benzene, toluene, ethylbenzene, xylenes [BTEX] and PHC fractions F1 and F2).

D.2 Quality Assurance/Quality Control (QA/QC)

All samples were collected following Stantec sampling procedures. Appropriate sampling QA/QC procedures were adhered to at all times. Samples were uniquely labelled, and control was maintained through use of chain of custody forms.

Groundwater field duplicate samples were collected at selected piezometer locations by filling concurrently two sets of sample containers and submitting one set of samples as a blind duplicate for laboratory analysis. Relative percent difference (RPD) values were calculated for the duplicate samples to assess the reliability of the analytical data provided for the assessment by verifying the reproducibility of the sample collection methodology and laboratory analytical procedures. Laboratory supplied trip blank water samples were transported with the coolers during each sampling event and submitted to the lab to confirm cross-contamination did not occur during transport.

D.3 Mann-Kendall Trend Analysis

The use of the Mann-Kendall statistical analysis method was used for key parameters sampled in 2024 for water supply wells and interceptors with sufficient data (at least 10 samples) and low turbidity values, and one of the following conditions: recent (in the last 2 years) reported concentrations that are greater than one half of the applicable guideline (trigger level), or if the concentration is found to have increased in three consecutive sampling events by more than three times the detection limit each time. The statistical analysis is focused on identifying increasing trends and will also support the visual trend observations. Requirements for statistical analysis are outlined in the Remedial Action Plan (RAP) for the TVR site.

The Mann-Kendall Test is a non-parametric test for zero slope of the linear regression of time-ordered data versus time. This analysis is very useful since missing values are allowed and the data need not conform to any particular distribution. Data reported as less than the detection limit was used by assigning them the value of the detection limit.



The Mann-Kendall test provides analytical trending information for a specific parameter at the specific sample location. The test compares the information collected in each of the events and then determines whether or not there is a statistically significant increasing or decreasing trend prevalent in the data. A significant trend is one that has a confidence value of 95% or greater. The Mann-Kendall analysis is a common method for analyzing trends in environmental data (Gilbert 1987).

D.4 References

AEP. 2019. *Letter of Authorization for Changes to the Authorized Low Flow Sampling Pilot Project – Raw Water Reservoir*. Dated June 13, 2019. File No. 1242.

EPA. 2010. *“Low Stress (Low Flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells”*. Number EQASOP-GW 001. Dated January 19, 2010.

Gilbert, R.O. 1987. *Statistical Methods for Environmental Polluting Monitoring*. John Wiley & Sons, New York.

MPE Engineering Ltd. & Stantec Consulting Ltd., 2018. *Sheep River Regional Utility Corporation (SRRUC) – Detailed Sampling and Analytical Protocol, Revision 3 – February 2018*.



Appendix E

Tables



Table E.1. 2024 Groundwater Elevations and Sampling Events

Well ID	Top Of Well Elevation (masl)	Bottom Of Well Elevation (masl)	Date	Groundwater Depth (mbtop)	LNAPL Depth (mbtop)	DNAPL Depth (mbtop)	Groundwater Elevation (masl)	Combustible Headspace Vapours ¹ (ppm)	pH	EC (µS/cm)	Temp (°C)	Sampling Summary
TVR 1.1	1,215.402	1,211.675	24-Jul-24	3.316	nd	nd	1,212.086	5	7.15	1,123	16.40	All parameters sampled
TVR 1.2	1,215.322	1,202.478	24-Jul-24	9.944	nd	nd	1,205.378	<5	7.08	1,019	21.50	All parameters sampled
TVR 1.3 ²	1,215.318	1,198.187	24-Jul-24	dry	nd	nd	dry	<5	nm	nm	nm	No sampling required
TVR 1.4 ²	1,215.270	1,190.030	24-Jul-24	17.516	nd	nd	1,197.754	<5	nm	nm	nm	No sampling required
TVR 2.1	1,216.981	1,213.303	23-Jul-24	2.88	nd	nd	1,214.101	<5	7.40	573	18.40	All parameters sampled
TVR 2.2	1,216.923	1,205.485	23-Jul-24	6.901	nd	nd	1,210.022	<5	7.26	1,040	13.80	All parameters sampled
TVR 2.3	1,216.927	1,197.188	23-Jul-24	19.466	nd	nd	1,197.461	<5	nm	nm	nm	Insufficient water volume for sampling
TVR 2.4	1,216.877	1,189.970	23-Jul-24	19.406	nd	nd	1,197.471	<5	8.82	751	26.50	All parameters sampled
TVR 3.1	1,216.665	1,212.995	23-Jul-24	3.106	nd	nd	1,213.559	<5	6.82	1,077	15.20	All parameters sampled
TVR 3.2	1,216.735	1,205.045	23-Jul-24	11.456	nd	nd	1,205.279	<5	nm	nm	nm	Insufficient water volume for sampling
TVR 3.3 ²	1,216.646	1,190.762	23-Jul-24	19.233	nd	nd	1,197.413	<5	nm	nm	nm	No sampling required
TVR 4.1	1,211.581	1,207.898	23-Jul-24	2.11	nd	nd	1,209.471	<5	6.94	835	14.80	All parameters sampled
TVR 4.2	1,211.612	1,201.575	23-Jul-24	9.95	nd	nd	1,201.662	<5	nm	nm	nm	Insufficient water volume for sampling
TVR 4.3	1,211.692	1,199.179	23-Jul-24	11.675	nd	nd	1,200.017	<5	7.31	734	28.50	All parameters sampled
TVR 4.4R (Replaced TVR 4.4)	1,212.505	1,191.786	23-Jul-24	15.107	nd	nd	1,197.398	<5	8.30	1,628	20.00	All parameters sampled
TVR 5.1	1,209.106	1,203.815	24-Jul-24	3.418	nd	nd	1,205.688	5	7.01	1,178	10.20	All parameters sampled
TVR 5.2R (Replaced TVR 5.2)	1,209.304	1,201.456	24-Jul-24	5.32	nd	nd	1,203.984	<5	6.59	1,952	15.70	All parameters sampled
TVR 5.3R (Replaced TVR 5.3) ²	1,208.909	1,196.345	24-Jul-24	12.1	nd	nd	1,196.809	<5	nm	nm	nm	No sampling required
TVR 5.4 ²	1,209.352	1,192.758	24-Jul-24	11.565	nd	nd	1,197.787	<5	nm	nm	nm	No sampling required
TVR 6.1R	NS	NS	24-Jul-24	dry	nd	nd	NS	<5	nm	nm	nm	Insufficient water volume for sampling
TVR 6.2R	NS	NS	24-Jul-24	10.061	nd	nd	NS	<5	7.02	1343	22.30	All parameters sampled
TVR 7.1	1,215.786	1,210.779	24-Jul-24	3	nd	nd	1,212.786	<5	6.87	1,250	16.90	All parameters sampled
TVR 7.2	1,215.772	1,204.792	24-Jul-24	2.874	nd	nd	1,212.898	<5	7.23	909	17.50	All parameters sampled
TVSA-02	1,198.419	1,192.669	25-Jul-24	3.441	nd	nd	1,194.978	<5	7.31	398	15.00	All parameters sampled
TVSA-03	1,197.753	1,192.810	25-Jul-24	2.921	nd	nd	1,194.832	<5	7.28	449	12.00	All parameters sampled
TVSA-04	1,208.279	1,200.698	25-Jul-24	1.966	nd	nd	1,206.313	<5	7.07	782	10.60	All parameters sampled
TVSA-05	1,211.151	1,202.162	25-Jul-24	4.804	nd	nd	1,206.347	<5	7.22	949	10.40	All parameters sampled
TVSA-06	1,200.423	1,194.811	25-Jul-24	4.38	nd	nd	1,196.043	<5	6.80	1,356	10.90	All parameters sampled
TVSA-07	1,201.596	1,195.719	25-Jul-24	5.181	nd	nd	1,196.415	<5	7.06	762	11.50	All parameters sampled
TVSA-08	1,199.223	1,194.132	25-Jul-24	3.496	nd	nd	1,195.727	<5	7.13	537	12.40	All parameters sampled
Deep GW Interceptor	N/A	N/A	25-Jul-24	N/A	N/A	N/A	N/A	nm	7.11	1,150	10.7	All parameters sampled (bailer)
Sheep River 1	N/A	N/A	24-Jul-24	N/A	N/A	N/A	N/A	nm	8.27	369	16.4	All parameters sampled (bailer)
Sheep River 2	N/A	N/A	25-Jul-24	N/A	N/A	N/A	N/A	nm	7.77	369	12.6	All parameters sampled (bailer)
SB	N/A	N/A	12-Jun-24	N/A	N/A	N/A	N/A	nm	nm	nm	nm	All parameters sampled (tap)
	N/A	N/A	11-Dec-24	N/A	N/A	N/A	N/A	nm	nm	nm	nm	All parameters sampled (tap)
PS Blend	N/A	N/A	10-Jan-24	N/A	N/A	N/A	N/A	nm	nm	nm	nm	All parameters sampled (tap)
	N/A	N/A	7-Feb-24	N/A	N/A	N/A	N/A	nm	nm	nm	nm	All parameters sampled (tap)
	N/A	N/A	20-Mar-24	N/A	N/A	N/A	N/A	nm	nm	nm	nm	All parameters sampled (tap)
	N/A	N/A	10-Apr-24	N/A	N/A	N/A	N/A	nm	nm	nm	nm	All parameters sampled (tap)
	N/A	N/A	8-May-24	N/A	N/A	N/A	N/A	nm	nm	nm	nm	All parameters sampled (tap)
	N/A	N/A	12-Jun-24	N/A	N/A	N/A	N/A	nm	nm	nm	nm	All parameters sampled (tap)
	N/A	N/A	10-Jul-24	N/A	N/A	N/A	N/A	nm	nm	nm	nm	All parameters sampled (tap)
	N/A	N/A	14-Aug-24	N/A	N/A	N/A	N/A	nm	nm	nm	nm	All parameters sampled (tap)
	N/A	N/A	11-Sep-24	N/A	N/A	N/A	N/A	nm	nm	nm	nm	All parameters sampled (tap)
	N/A	N/A	2-Oct-24	N/A	N/A	N/A	N/A	nm	nm	nm	nm	All parameters sampled (tap)
VW5	1200.781	1192.750	12-Jun-24	N/A	N/A	N/A	N/A	nm	nm	nm	nm	All parameters sampled (tap)
			11-Dec-24	N/A	N/A	N/A	N/A	nm	nm	nm	nm	All parameters sampled (tap)
CW8	1200.801	1191.900	12-Jun-24	N/A	N/A	N/A	N/A	nm	nm	nm	nm	All parameters sampled (tap)
TW5A	1198.826	1192.301	12-Jun-24	N/A	N/A	N/A	N/A	nm	nm	nm	nm	All parameters Sampled (tap)

Notes:

Locations sampled with low flow methods unless otherwise noted

¹ - well headspace vapour measured using an RKI Eagle detector calibrated to hexane, no methane response

² - monitoring wells not purged or sampled as not required to be sampled as per Approval

N/A - Not applicable

NS - Not surveyed

nd - non-detect

nm - Not measured

masl - Metres above sea level

mbtop - Metres below top of casing

µS/cm - Microsiemens per centimetre

°C - Degrees Celsius

LNAPL - light non-aqueous phase liquid

DNAPL - dense non-aqueous phase liquid

< - below instrument detection limit

Table E.2. 2024 Groundwater Analytical Results - Physical and Routine Parameters

		Colour	pH	Total Dissolved Solids	Turbidity	Electrical Conductivity (EC)	Carbonate (CO ₃)	Alkalinity (Total as CaCO ₃)	Hydroxide (OH)	Hardness (CaCO ₃)	Dissolved Nitrate (N)	Nitrate plus Nitrite (N)	Dissolved Nitrite (N)	Cyanide (CN)	Ion Balance	Total Organic Carbon (TOC)	Dissolved Fluoride (F)	Total Kjeldahl Nitrogen	Dissolved Calcium (Ca)	Dissolved Magnesium (Mg)	Dissolved Potassium (K)	Dissolved Sodium (Na)	Bicarbonate (HCO ₃)	Dissolved Sulphate (SO ₄)	Dissolved Chloride (Cl)	
Health Canada Guidelines ¹ - Potable		≤15 TCU ^{AO}	7.0-10.5 ^{AO}	≤500 ^{AO}	narrative ^{AO}	NG	NG	NG	NG	NG	10 ^{MAC}	NG	1 ^{MAC}	0.2 ^{MAC}	NG	NG	1.5 ^{MAC}	NG	NG	NG	NG	≤200 ^{AO}	NG	≤500 ^{AO}	≤250 ^{AO}	
Sample Location	Sample Date	PtCo units		mg/L	NTU	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	% difference	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
Stored Raw Water																										
PS BLEND	10-Jan-24	<4.0	6.8	298	0.20	486	<1.5	172.9	<0.5	252.3	0.045	0.045	<0.005	<0.003	-	1.08	0.45	<2.0	67.6	20.3	1.1	7.5	210.8	94.00	1.92	
	7-Feb-24	<4.0	6.9	294	0.32	515	<1.5	169.4	<0.5	247.5	0.065	0.065	<0.005	<0.003	-	0.80	0.31	<2.0	68.3	18.7	1.0	7.2	206.5	94.58	1.73	
	20-Mar-24	<4.0	7.7	293	0.21	497	<1.5	161.2	<0.5	262.9	0.067	0.067	<0.005	<0.003	-	<0.50	0.27	<2.0	73.0	19.6	1.0	6.9	196.6	93.85	1.54	
	10-Apr-24	<4.0	7.8	286	0.27	483	<1.5	153.8	<0.5	259.9	0.055	0.055	<0.005	<0.003	-	3.32	0.28	<2.0	72.0	19.5	1.0	7.1	187.5	92.03	1.57	
	8-May-24	<4.0	8.1	268	0.37	470	<1.5	138.3	<0.5	233.7	<0.010	<0.015	<0.005	<0.003	-	3.22	0.26	<2.0	63.4	18.3	0.9	6.9	168.7	93.39	2.02	
	12-Jun-24	<4.0	8.0	309	0.24	500	<1.5	158.6	<0.5	262.9	<0.010	<0.015	<0.005	<0.003	-	4.35	0.33	<2.0	71.0	20.8	1.0	9.1	193.4	107.6	3.99	
	10-Jul-24	<4.0	8.0	318	0.31	519	<1.5	157.4	<0.5	254.4	<0.010	<0.015	<0.005	<0.003	-	4.10	0.39	<2.0	66.6	21.4	1.1	10.2	192.0	117.6	5.78	
	14-Aug-24	<4.0	7.9	333	0.43	535	<1.5	162.6	<0.5	271.7	0.022	0.022	<0.005	<0.003	101.03	2.07	0.24	<2.0	72.9	21.8	1.1	10.7	198.2	122.4	6.33	
	11-Sep-24	<4.0	8.0	319	0.55	526	<1.5	157.2	<0.5	264.7	0.011	<0.015	<0.005	<0.003	98.69	1.86	0.18	<2.0	70.2	21.7	1.1	10.5	191.7	114.5	5.99	
	2-Oct-24	<4.0	8.1	326	0.51	524	<1.5	156.8	<0.5	276.9	<0.010	<0.015	<0.005	<0.003	94.68	2.08	<0.10	<2.0	72.5	23.3	1.2	11.4	191.1	117.7	5.69	
	6-Nov-24	<4.0	8.0	326	0.52	511	<1.5	157.1	<0.5	281.4	0.017	0.017	<0.005	<0.003	92.48	2.16	0.24	<2.0	75.7	22.5	2.3	10.9	191.6	114.9	5.15	
11-Dec-24	<4.0	8.0	333	0.55	527	<1.5	165.2	<0.5	296.4	0.010	<0.015	<0.005	<0.003	90.42	4.28	0.26	<2.0	81.1	22.8	1.3	10.5	201.4	113.2	4.71		
SB	12-Jun-24	5.0	8.2	173	0.94	299	<1.5	113.7	<0.5	160.5	0.034	0.034	<0.005	<0.003	-	5.95	0.30	<2.0	43.1	12.8	0.7	3.9	138.6	42.83	0.82	
	11-Dec-24	<4.0	7.8	259	3.12	424	<1.5	150.7	<0.5	232.9	0.147	0.147	<0.005	<0.003	95.85	1.35	0.32	<2.0	63.7	17.9	0.7	5.2	183.8	79.08	0.70	
Water Supply Wells																										
TW5A	12-Jun-24	<4.0	7.1	1,123	7.24	1,560	<1.5	321.2	<0.5	808.8	<0.010	<0.015	<0.005	<0.003	-	6.96	0.38	<2.0	209.6	69.3	3.9	48.8	391.7	542.9	55.1	
VW5	12-Jun-24	<4.0	7.2	388	<0.10	628	<1.5	205.7	<0.5	322.2	0.119	0.119	<0.005	<0.003	-	3.63	0.33	<2.0	90.9	23.1	1.2	12.4	250.8	128.6	7.27	
	11-Dec-24	<4.0	7.2	388	0.15	619	<1.5	203.1	<0.5	334.2	0.075	0.075	<0.005	<0.003	95.84	1.58	0.28	<2.0	95.6	23.2	1.3	11.6	247.7	128.9	5.19	
CW8	12-Jun-24	<4.0	7.3	398	2.86	637	<1.5	203.6	<0.5	324.4	0.030	0.030	<0.005	<0.003	-	3.13	0.37	<2.0	91.0	23.6	1.3	15.7	248.2	134.2	9.75	
Groundwater Interceptor																										
Health Canada Guidelines ¹ - Potable		≤15 TCU ^{AO}	7.0-10.5 ^{AO}	≤500 ^{AO}	narrative ^{AO}	NG	NG	NG	NG	NG	10 ^{MAC}	NG	1 ^{MAC}	0.2 ^{MAC}	NG	NG	1.5 ^{MAC}	NG	NG	NG	NG	≤200 ^{AO}	NG	≤500 ^{AO}	≤250 ^{AO}	
Alberta Tier 1 - Aquatic Life Guidelines ²		NG	6.5-9.0	NG	NG	NG	NG	NG	NG	NG	3	NG	0.06 ⁴	0.005	NG	NG	NG	NG	NG	NG	NG	NG	NG	429 ³	120	
Groundwater Interceptor																										
DEEP GW INT	25-Jul-24	-	-	-	-	-	-	-	-	-	6.6	6.6	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	

Notes:
< - less than laboratory method detection limit
Bold - most stringent guideline
NG - No Guideline
mg/L - milligrams per litre
µS/cm - microSiemens per centimetre
NTU - Nephelometric Turbidity Units
PtCo - Platinum Cobalt
"- " - Not Analyzed
AO - Aesthetic Objective
MAC - Maximum Allowable Concentration
Exceeds Guideline

¹ - Health Canada - Guidelines for Canadian Drinking Water Quality (Health Canada 2024)
² - Alberta Environment and Protected Areas - Alberta Tier 1 Soil and Groundwater Remediation Guidelines (AEPA 2024) for coarse-grained soils and residential/parkland land use
³ - Guideline based on an average hardness value of 200 mg/L in 2021, when last sampled (hardness average calculated from all 2021 Sheep River samples)
⁴ - Guideline based on an average chloride value of less than 2 mg/L in 2021, when last sampled (chloride average calculated from all 2021 Sheep River samples)

Table E.3. 2024 Groundwater Analytical Results - Dissolved Metals

		Dissolved Aluminum (Al)	Dissolved Antimony (Sb)	Dissolved Arsenic (As)	Dissolved Barium (Ba)	Dissolved Beryllium (Be)	Dissolved Bismuth (Bi)	Dissolved Boron (B)	Dissolved Cadmium (Cd)	Dissolved Chromium (Cr)	Dissolved Cobalt (Co)	Dissolved Copper (Cu)	Dissolved Iron (Fe)	Dissolved Lead (Pb)	Dissolved Lithium (Li)	Dissolved Manganese (Mn)	Dissolved Mercury (Hg)	Dissolved Molybdenum (Mo)	Dissolved Nickel (Ni)	Dissolved Selenium (Se)	Dissolved Silver (Ag)	Dissolved Strontium (Sr)	Dissolved Thallium (Tl)	Dissolved Tin (Sn)	Dissolved Titanium (Ti)	Dissolved Uranium (U)	Dissolved Vanadium (V)	Dissolved Zinc (Zn)
Health Canada Guidelines ¹ - Potable		0.1 ^{OG}	0.006 ^{MAC}	0.01 ^{ALARA}	2 ^{MAC}	NG	NG	5 ^{MAC}	0.007 ^{MAC}	0.05 ^{MAC}	NG	1 ^{AO,2^{MAC}}	≤0.3 ^{AO}	0.005 ^{ALARA}	NG	≤0.02 ^{AO} /0.12 ^{MAC}	0.001 ^{MAC}	NG	NG	0.05 ^{MAC}	NG	7 ^{MAC}	NG	NG	NG	0.02 ^{MAC}	NG	≤5 ^{AO}
Sample Location	Sample Date	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	mg/L	mg/L	mg/L	mg/L	mg/L
Stored Raw Water																												
PS BLEND	10-Jan-24	<0.003	<0.0002	0.00011	0.0621	<0.00006	<0.00006	0.021	<0.000015	<0.0002	<0.00003	0.0017	<0.004	<0.00007	0.008	<0.0004	<0.000001	0.00085	0.00039	0.0009	<0.000009	0.3152	<0.00008	0.0006	0.1	0.00041	<0.0001	0.006
	7-Feb-24	<0.003	<0.0002	0.00010	0.0654	<0.00006	<0.00006	0.019	<0.000015	<0.0002	<0.00003	0.0014	<0.004	<0.00007	0.008	<0.0004	<0.000001	0.00086	0.00034	0.00123	<0.000009	0.3212	<0.00008	0.0009	0.107	0.00048	<0.0001	0.005
	20-Mar-24	<0.003	<0.0002	0.00010	0.0647	<0.00006	<0.00006	0.015	<0.000015	<0.0002	<0.00003	0.0011	<0.004	<0.00007	0.007	<0.0004	<0.000001	0.00086	0.00030	0.00123	<0.000009	0.3146	<0.00008	<0.0006	0.110	0.00041	<0.0001	0.002
	10-Apr-24	<0.003	<0.0002	0.00009	0.0588	<0.00006	<0.00006	0.013	<0.000015	<0.0002	<0.00003	0.0014	<0.004	<0.00007	0.007	<0.0004	<0.000001	0.00078	0.00025	0.00116	<0.000009	0.3064	<0.00008	<0.0006	0.097	0.00047	<0.0001	0.003
	8-May-24	<0.003	<0.0002	0.00007	0.0585	<0.00006	<0.00006	0.014	<0.000015	<0.0002	<0.00003	0.001	<0.004	<0.00007	0.007	0.0006	<0.000001	0.00076	0.00032	0.00103	<0.000009	0.3066	<0.00008	<0.0006	0.099	0.00049	<0.0001	0.002
	12-Jun-24	<0.003	<0.0002	0.00011	0.0601	<0.00006	<0.00006	0.015	<0.000015	<0.0002	<0.00003	0.0012	<0.004	<0.00007	0.007	0.0015	<0.000001	0.00076	0.00035	0.00096	<0.000009	0.3339	<0.00008	<0.0006	0.108	0.00050	<0.0001	0.002
	10-Jul-24	<0.003	<0.0002	0.00013	0.0608	<0.00006	<0.00006	0.018	<0.000015	<0.0002	<0.00003	0.0010	<0.004	<0.00007	0.007	0.0008	<0.000001	0.00074	0.00043	0.00104	<0.000009	0.3319	<0.00008	<0.0006	0.106	0.00048	<0.0001	0.002
	14-Aug-24	<0.003	<0.0002	0.00017	0.0632	<0.00006	<0.00006	0.019	<0.000015	<0.0002	<0.00003	0.0006	<0.004	<0.00007	0.008	<0.0004	<0.000001	0.00073	0.00041	0.00092	<0.000009	0.3408	<0.00008	<0.0006	0.123	0.00051	<0.0001	0.002
	11-Sep-24	<0.003	<0.0002	0.00018	0.0610	<0.00006	-	0.021	<0.000015	<0.0002	<0.00003	0.0007	<0.004	<0.00007	-	0.0006	<0.000001	0.00085	0.00037	0.00089	<0.000009	0.3382	<0.00008	<0.0006	0.114	0.00051	<0.0001	0.002
	2-Oct-24	<0.003	<0.0002	0.00018	0.0584	<0.00006	<0.00006	0.021	<0.000015	<0.0002	<0.00003	0.0005	<0.004	<0.00007	0.008	<0.0004	<0.000001	0.0009	0.0003	0.00079	<0.000009	0.3372	<0.00008	<0.0006	0.109	0.00028	<0.0001	<0.002
	6-Nov-24	<0.003	<0.0002	0.00015	0.0652	<0.00006	<0.00006	0.020	<0.000015	<0.0002	<0.00003	0.0007	<0.004	<0.00007	0.008	<0.0004	<0.000001	0.00079	0.00044	0.00070	<0.000009	0.3517	<0.00008	<0.0006	0.123	0.00051	<0.0001	0.003
	11-Dec-24	<0.003	<0.0002	0.00012	0.0679	<0.00006	<0.00006	0.022	<0.000015	<0.0002	<0.00003	0.0005	<0.004	<0.00007	0.009	0.0006	<0.000001	0.00080	0.00034	0.00068	<0.000009	0.3474	<0.00008	<0.0006	0.122	0.00055	<0.0001	0.002
SB	12-Jun-24	0.007	<0.0002	0.00020	0.0551	<0.00006	<0.00006	0.010	<0.000015	<0.0002	0.00006	0.0006	<0.004	<0.00007	0.005	0.0004	<0.000001	0.00071	0.00064	0.00104	<0.000009	0.2020	<0.00008	<0.0006	0.066	0.00034	0.0001	<0.002
	11-Dec-24	<0.003	<0.0002	0.00012	0.0695	<0.00006	<0.00006	0.013	<0.000015	<0.0002	0.00008	0.0041	<0.004	<0.00007	0.006	0.0071	<0.000001	0.00088	0.00047	0.00152	<0.000009	0.3016	<0.00008	<0.0006	0.101	0.00054	<0.0001	0.003
Water Supply Wells																												
TW5A	12-Jun-24	<0.003	<0.0002	0.00009	0.0477	<0.00006	<0.00006	0.065	0.000075	<0.0002	0.00078	0.0023	0.014	<0.00007	0.022	0.2921	0.000002	0.00038	0.00183	0.00033	<0.000009	0.9654	<0.00008	<0.0006	0.334	0.00078	<0.0001	0.002
VW5	12-Jun-24	<0.003	<0.0002	0.00006	0.0681	<0.00006	<0.00006	0.021	<0.000015	<0.0002	<0.00003	0.0009	<0.004	0.00012	0.009	<0.0004	<0.000001	0.00078	0.00034	0.00098	<0.000009	0.3697	<0.00008	<0.0006	0.143	0.00058	<0.0001	0.011
	11-Dec-24	<0.003	<0.0002	0.00007	0.0679	<0.00006	<0.00006	0.019	<0.000015	<0.0002	<0.00003	0.0013	<0.004	0.00025	0.009	0.0006	<0.000001	0.00075	0.00034	0.00119	<0.000009	0.3642	<0.00008	<0.0006	0.144	0.00058	<0.0001	0.022
CW8	12-Jun-24	<0.003	<0.0002	0.00009	0.0445	<0.00006	<0.00006	0.022	0.000015	<0.0002	0.00013	0.0002	0.024	<0.00007	0.010	0.0880	<0.000001	0.00081	0.00055	0.00088	<0.000009	0.3822	<0.00008	<0.0006	0.141	0.00063	<0.0001	0.002

Notes:
< - less than laboratory method detection limit
Bold - most stringent guideline
NG - No Guideline
mg/L - milligrams per litre
"-": Not Analyzed
AO - Aesthetic Objective
MAC - Maximum Allowable Concentration
ALARA - As Low As Reasonable Achievable
OG - Operational Guidance Values
Italicized - Laboratory reporting limit was greater than the applicable standard
Exceeds Guideline

¹. Health Canada - Guidelines for Canadian Drinking Water Quality (Health Canada 2024)

Table E.4. 2024 Groundwater Analytical Results - Petroleum Hydrocarbons

		Benzene	Toluene	Ethylbenzene	Xylenes (Total)	F1 (C6-C10) - BTEX	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)
Alberta Tier 1 - Potable Guidelines ¹		0.005	0.024 ^{AO} /0.06 ^{MAC 2}	0.0016 ^{AO} /0.14 ^{MAC 2}	0.02 ^{AO} /0.09 ^{MAC 2}	2.2	1.1	NG	NG
Sample Location	Sample Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Piezometers									
TVR 1.1	24-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
TVR 1.2	24-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
TVR 2.1	23-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
TVR 2.2	23-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
TVR 2.4	23-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
TVR 3.1	23-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
TVR 4.1	23-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
TVR 4.3	23-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
TVR 4.4R	23-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
TVR 5.1	24-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
TVR 5.2R	24-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
TVR 6.2R	24-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
TVR 7.1	24-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
TVR 7.2	24-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
TVSA-02	25-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
TVSA-03	25-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	0.14	-	-
TVSA-04	25-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	0.11	-	-
TVSA-05	25-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	0.13	-	-
TVSA-06	25-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	0.16	-	-
TVSA-07	25-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	0.17	-	-
TVSA-08	25-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	0.11	-	-
Stored Raw Water									
PS BLEND	10-Jan-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
	7-Feb-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
	20-Mar-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
	10-Apr-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
	8-May-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
	12-Jun-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
	10-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
	14-Aug-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
	11-Sep-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
	2-Oct-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
	6-Nov-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
	11-Dec-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
SB	12-Jun-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	<1.0	<1.0
	11-Dec-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
Water Supply Wells									
TW5A	12-Jun-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	<1.0	<1.0
VW5	12-Jun-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	<1.0	<1.0
	11-Dec-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
CW8	12-Jun-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	<1.0	<1.0
Trip Blanks									
TVR 8.1 (Trip Blank)	23-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
TVR 8.2 (Trip Blank)	24-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
TVR 8.3 (Trip Blank)	25-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	0.11	-	-
Alberta Tier 1 - Potable Guidelines ¹		0.005	0.024 ^{AO} /0.06 ^{MAC 2}	0.0016 ^{AO} /0.14 ^{MAC 2}	0.02 ^{AO} /0.09 ^{MAC 2}	2.2	1.1	NG	NG
Alberta Tier 1 - Aquatic Life Guidelines ¹		0.074	0.021	41	2.9	9.8	1.3	NG	NG
Groundwater Interceptor									
DEEP GW INT	25-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	0.17	-	-
Alberta Tier 1 - Surface Water Quality Guidelines ³	Drinking Water	0.005	0.024	0.0016	0.02	NG	NG	NG	NG
	Aquatic Life	0.04	0.0005	0.09	0.03	0.15	0.11	NG	NG
	Livestock Water	0.088	4.91	3.20	13.1	53.6	49.2	79.7	42
	Wildlife Water	0.076	4.25	2.77	11.3	46.4	42.6	69	36.4
Sheep River									
Sheep River 1	24-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	-	-
Sheep River 2	25-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	0.11	-	-

Notes:

Bold - most stringent guideline
NG - No Guideline
AO - Aesthetic Objective
MAC - Maximum Allowable Concentration
mg/L - milligrams per litre
"- " - Not Analyzed
< - less than laboratory method detection limit

¹ - Alberta Environment and Protected Areas - Alberta Tier 1 Soil and Groundwater Remediation Guidelines (AEPA 2024) for coarse-grained soils and residential/parkland land use

² - Health Canada - Guidelines for Canadian Drinking Water Quality (Health Canada 2024)

³ - Alberta Environment and Protected Areas - Alberta Tier 1 Soil and Groundwater Remediation Guidelines (AEPA 2024) - Table C-11 Surface Water Quality Guidelines

Table E.5. 2024 Groundwater Analytical Results - Polycyclic Aromatic Hydrocarbons

		Benzo[a]pyrene equivalency	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) anthracene	Benzo(b&j) fluoranthene	Benzo(k) fluoranthene	Benzo(g,h,i) perylene	Benzo(a) pyrene	Chrysene	Dibenzo(a,h) anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd) pyrene	Naphthalene	Phenanthrene	Pyrene
Alberta Tier 1 - Potable Guidelines ¹		0.00004	1.4	NG	NG	NG	NG	NG	NG	0.00004 ²	NG	NG	NG	0.94	NG	0.47	NG	0.71
Sample Location	Sample Date	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
Stored Raw Water																		
PS BLEND	10-Jan-24	<0.000010	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004
	7-Feb-24	<0.000010	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004
	20-Mar-24	<0.00085	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004
	10-Apr-24	<0.00085	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004
	8-May-24	<0.00085	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004
	12-Jun-24	<0.00085	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004
	10-Jul-24	<0.00085	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004
	14-Aug-24	<0.00085	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004
	11-Sep-24	<0.00085	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	0.000005	<0.000004
	2-Oct-24	<0.00085	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004
	6-Nov-24	<0.00085	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004
	11-Dec-24	<0.00085	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004
SB	12-Jun-24	<0.00085	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004
	11-Dec-24	<0.00085	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004
Water Supply Wells																		
TW5A	12-Jun-24	<0.00085	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004
VW5	12-Jun-24	<0.00085	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004
	11-Dec-24	<0.00085	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004
CW8	12-Jun-24	<0.00085	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004	<0.000004

Notes:

< - less than laboratory method detection limit

¹ - Alberta Environment and Protected Areas - Alberta Tier 1 Soil and Groundwater Remediation Guidelines (AEPA 2024) for coarse-grained soils and residential/parkland land use

Bold - most stringent guideline

² - Health Canada - Guidelines for Canadian Drinking Water Quality (Health Canada 2024)

Italicized - Laboratory reporting limit was greater than the applicable standard

NG - No Guideline

mg/L - milligrams per litre

Exceeds Guideline

Table E.6. 2024 Groundwater Analytical Results - Polychlorinated Biphenyls

Alberta Tier 1 - Potable Guidelines ¹		Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Aroclor 1262	Aroclor 1268	Total PCBs
		NG	NG	NG	NG	NG	NG	NG	NG	NG	0.000094
Sample Location	Sample Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SB	12-Jun-24	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<u><0.00045</u>
TW5A	12-Jun-24	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<u><0.00045</u>
VW5	12-Jun-24	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<u><0.00045</u>
CW8	12-Jun-24	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<u><0.00045</u>

Notes:

Bold - most stringent guideline

Italicized - Laboratory reporting limit was greater than the applicable standard

mg/L - milligrams per litre

NG - no guideline

< - less than laboratory method detection limit

¹ - Alberta Environment and Protected Areas - Alberta Tier 1 Soil and Groundwater Remediation Guidelines (AEPA 2024) for coarse-grained soils, residential/parkland land use

SHEEP RIVER REGIONAL UTILITY CORPORATION
2024 ANNUAL REPORT FOR STORED RAW WATER, RESERVOIR SITE GROUNDWATER, WELL AND INFILTRATION
GALLERY WATER MONITORING PROGRAMS - DIAMOND VALLEY APPROVAL LICENSE NO. 1242-03-00

Appendix E - Tables
February 2025

Table E.7 2024 Groundwater Analytical Results of Duplicates

Parameters	Original and Duplicate Sample														
	TVR 4.4R	TVR 4.5	RPD	RDL	5(RDL)	TVR 7.2	TVR 7.3	RPD	RDL	5(RDL)	TVSA-06	TVSA-09	RPD	RDL	5(RDL)
Sample Date	23-Jul-24	23-Jul-24	%			24-Jul-24	24-Jul-24	%			25-Jul-24	25-Jul-24	%		
Benzene	<0.001	<0.001	nc	0.001	0.005	<0.001	<0.001	nc	0.001	0.005	<0.001	<0.001	nc	0.001	0.005
Toluene	<0.0005	<0.0005	nc	0.0005	0.0025	<0.0005	<0.0005	nc	0.0005	0.0025	<0.0005	<0.0005	nc	0.0005	0.0025
Ethylbenzene	<0.001	<0.001	nc	0.001	0.005	<0.001	<0.001	nc	0.001	0.005	<0.001	<0.001	nc	0.001	0.005
Xylenes (Total)	<0.003	<0.003	nc	0.003	0.015	<0.003	<0.003	nc	0.003	0.015	<0.003	<0.003	nc	0.003	0.015
F1 (C6-C10) - BTEX	<0.05	<0.05	nc	0.05	0.25	<0.05	<0.05	nc	0.05	0.25	<0.05	<0.05	nc	0.05	0.25
F2 (C10-C16 Hydrocarbons)	<0.10	<0.10	nc	0.1	0.5	<0.10	<0.10	nc	0.1	0.5	0.16	0.13	nc	0.1	0.5

Notes:

all results expressed in mg/L

< - less than laboratory method detection limit

RPD - relative percent difference

RDL - reportable detection limit

nc - not calculated as one or both concentrations less than 5 times RDL

Red - RPD exceeds 30% and both concentrations exceed 5 times RDL

Table E.8. Historical Groundwater Analytical Results - Physical and Routine Parameters

		Colour	pH	Total Dissolved Solids	Turbidity	Electrical Conductivity (EC)	Carbonate (CO ₃)	Alkalinity (Total as CaCO ₃)	Hydroxide (OH)	Hardness (CaCO ₃)	Dissolved Nitrate-N	Nitrate plus Nitrite-N	Dissolved Nitrite-N	Cyanide (CN)	Ion Balance	Ion Balance	Total Organic Carbon (TOC)	Dissolved Fluoride (F)	Total Kjeldahl Nitrogen	Dissolved Calcium (Ca)	Dissolved Magnesium (Mg)	Dissolved Potassium (K)	Dissolved Sodium (Na)	Bicarbonate (HCO ₃)	Dissolved Sulphate (SO ₄)	Dissolved Chloride (Cl)	E. Coli DST	Fecal Coliforms	Total Coliforms DST	Orthophosphate	Total Phosphorus (P)	Total Ammonia (N)	Total Chemical Oxygen Demand	
Health Canada Guidelines ¹ - Potable		≤15 TCU ^{AO}	7.0-10.5 ^{AO}	≤500 ^{AO}	narrative ^{AO}	NG	NG	NG	NG	NG	10 ^{MAC}	NG	1 ^{MAC}	0.2 ^{MAC}	NG		NG	1.5 ^{MAC}	NG	NG	NG	NG	NG	≤200 ^{AO}	NG	≤500 ^{AO}	≤250 ^{AO}	nd/100 mL	NG	nd/100 mL	NG	NG	NG	NG
Sample Location	Sample Date	PtCo units		mg/L	NTU	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		% difference	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	
TVR 1.1	23-May-08				340															140	32	2	19											
	19-Jan-09																Insufficient Water Volume for Sampling																	
	24-Mar-09				2.7															120	27	1.9	17											
	26-Mar-09										9.6	9.6	<0.003												81	31								
	19-May-09				190															140	31	2.2	21											
	21-May-09	3	7.92	580		980	<0.5	300	<0.5	440	6.1	6.1	<0.003	<0.002	0.90		3.1	0.17	0.69	130	26	2.2	20	360	130	57								
	20-Jul-09 to 10-May-10																Insufficient Water Volume for Sampling																	
	14-Jul-10	4	7.71	598	56	990	<0.5	370	<0.5	494	11	11	<0.003	<0.002	0.99		4.7	0.2	0.48	150	31	2.3	23	450	79	42								
	15-Sep-10 to 18-Apr-18																Insufficient Water Volume for Sampling																	
	23-Jul-18	3.0	7.99	450	600	810	<1.0	310	<1.0	380	6.5	6.5	<0.010	<0.0020		1.2	3.0	0.17	1.9	110	26	1.8	19	370	52	34								
20-Nov-18 to 28-Mar-19																Insufficient Water Volume for Sampling																		
16-Jul-19	3.2	7.86	620	97	1000	<1.0	330	<1.0	450	8.8	8.8	<0.010	<0.0020		5.2	1.6	0.18	0.87	130	28	4.2	31	400	130	57									
20-Nov-19 to 30-Mar-21																Insufficient Water Volume for Sampling																		
TVR 1.2	22-Aug-07		7.94	534	750	823	<0.5	361	<0.5	290	0.037	0.084	0.047		1.01		3.0	0.21	2.1	73.1	25.6	3.3	92.8	440	118	3.2								
	4-Mar-08	<5	8.01	583	200	905	<0.5	371	<0.5	290	0.011	0.011	<0.003	<0.002	1.0		2.4	0.22	0.54	73	26	3	110	453	147	2.4								
	23-May-08		7.9	600	72	940	<0.5	360	<0.5	300	0.44	0.47	0.033	<0.002	0.91		2.8	0.2	0.76	76	27	2.3	93	440	180	2								
	28-Jul-08	2	8	620	7.0	940	<0.5	390	<0.5	340	0.4	0.41	0.015	<0.002	1.1		3.0	0.21	0.07	84	32	2.4	120	480	140	1.6								
	20-Jan-09	<2	8	570	1.6	940	<0.5	370	<0.5	270	0.47	0.48	0.003	<0.002	0.89		1.1	0.2	0.12	67	25	1.8	95	450	160	<1								
	24-Mar-09				1.7															67	26	1.9	100											
	26-Mar-09	<2	8	590		960	<0.5	370	<0.5	260	0.74	0.75	0.008		0.88		3.7	0.19	0.15	67	24	2.1	100	450	170	3								
	19-May-09	11	7.97	580	2.5	940	<0.5	380	<0.5	280	0.65	0.65	<0.003	<0.002	0.97		1.2	0.20	0.25	69	27	1.9	110	460	140	2								
	20-Jul-09	<2	7.93	620	2.7	920	<0.5	380	<0.5	290	0.94	0.94	<0.003	<0.002	0.92		1.0	0.20	0.35	70	28	2.6	110	460	180	2								
	25-Sep-09	<2	8.12	570	6.7	910	<0.5	380	<0.5	280	0.58	0.58	<0.003	<0.002	0.95		3.1	0.23	0.25	68	27	1.9	99	470	130	2								
	16-Nov-09	<2	7.98	600	5.8	940	<0.5	380	<0.5	290	0.63	0.63	<0.003	<0.002	0.96		2.4	0.21	0.32	70	28	2.1	110	460	160	3								
	18-Jan-10	<2	7.78	620	3.4	990	<0.5	380	<0.5	300	0.73	0.73	<0.003	<0.002	0.94		4.7	0.21	0.07	75	28	2.3	110	460	180	4								
	19-Mar-10	<2	7.77	627	2.9	980	<0.5	380	<0.5	310	0.630	0.630	<0.003	<0.002	1.0		6.6	0.18	0.12	76	29	2.1	110	470	170	1								
	10-May-10	<2	7.47	594	4.1	950	<0.5	380	<0.5	290	0.52	0.52	<0.003		0.94			0.18		69	28	2	100	460	160	2								
	12-Jul-10	<2	8.01	594	20	960	<0.5	380	<0.5	301	0.67	0.67	<0.003	<0.002	0.99		2.4	0.25	0.1	74	28	2.1	110	460	150	1								
	15-Sep-10				1.4															76	30	2.2	120											
	17-Sep-10	<2	7.91	584		930	<0.5	380	<0.5	284	0.38	0.38	<0.003		0.95			0.22		70	26	2.1	100	460	150	1								
	7-Nov-10				1.6															69	28	2.0	110											
	12-Nov-10	<2	8.07	550		930	<0.5	380	<0.5	250	0.50	0.50	<0.003	<0.002	0.87		2.4	0.21	0.29	63	23	1.7	92	460	140	2								
	24-Jan-11																			72	28	2.1	100											
	26-Jan-11	<2	7.87	570		930	<0.5	380	<0.5	260	0.54	0.54	<0.003	<0.002	0.87		0.6	0.24	0.12	63	24	1.9	96	460	150	2								
	16-Mar-11																			69	27	2.0	110											
	18-Mar-11	2	8.07	570		940	<0.5	380	<0.5	260	0.57	0.57	<0.003	<0.002	0.91		<0.5	0.21	0.35	66	24	1.9	100	460	150	1								
	20-May-11																			69	27	2.0	99											
	24-May-11	<2	7.																															


https://stantec.sharepoint.com/teams/123513703/Shared Documents/General/05_deliv/123513703/11_2024_annual_rpt/App E - Tables/b_Master_Analytical_tables2to17_2024_fin.xlsx
2 of 17

Table E.8. Historical Groundwater Analytical Results - Physical and Routine Parameters

		Colour	pH	Total Dissolved Solids	Turbidity	Electrical Conductivity (EC)	Carbonate (CO ₃)	Alkalinity (Total as CaCO ₃)	Hydroxide (OH)	Hardness (CaCO ₃)	Dissolved Nitrate-N	Nitrate plus Nitrite-N	Dissolved Nitrite-N	Cyanide (CN)	Ion Balance	Ion Balance	Total Organic Carbon (TOC)	Dissolved Fluoride (F)	Total Kjeldahl Nitrogen	Dissolved Calcium (Ca)	Dissolved Magnesium (Mg)	Dissolved Potassium (K)	Dissolved Sodium (Na)	Bicarbonate (HCO ₃)	Dissolved Sulphate (SO ₄)	Dissolved Chloride (Cl)	E. Coli DST	Fecal Coliforms	Total Coliforms DST	Orthophosphate	Total Phosphorus (P)	Total Ammonia (N)	Total Chemical Oxygen Demand					
Health Canada Guidelines ¹ - Potable		≤15 TCU ^{AO} PICO units	7.0-10.5 ^{AO}	≤500 ^{AO} mg/L	narrative ^{AO} NTU	NG	NG	NG	NG	NG	10 ^{MAC} mg/L	NG	1 ^{MAC} mg/L	0.2 ^{MAC} mg/L	NG		NG	1.5 ^{MAC} mg/L	NG	NG	NG	NG	≤200 ^{AO} mg/L	NG	≤500 ^{AO} mg/L	≤250 ^{AO} mg/L	nd/100 mL	NG	nd/100 mL	NG	NG	NG	NG					
Sample Location	Sample Date					µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	% difference		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mpn/100 mL	mpn/100 mL	mpn/100 mL	mg/L	mg/L	mg/L	mg/L				
TVR 2.2 (cont)	24-Jul-14	3.7	7.84	710	130	1.100	<0.50	330	<0.50	410	0.66	0.66	<0.010	<0.0020	1.0		1.3	0.12	0.34	110	36	2.7	100	410	260	3.0												
	11-Sep-14	<2.0	7.97	680	150	1.100	<0.50	330	<0.50	390	0.58	0.58	<0.010	<0.0020	1.0		0.86	0.13	0.37	99	35	2.4	100	410	240	1.4												
	19-Nov-14	<2.0	7.71	690	380	1.100	<0.50	340	<0.50	400	0.66	0.66	<0.010	<0.0020	1.0		0.99	0.19	<0.25	100	36	2.8	99	410	250	2.2												
	27-Mar-15	<2.0	7.76	670	84	1.100	<0.50	350	<0.50	400	0.71	0.71	<0.010	<0.0020	1.0		1.2	0.13	0.55	100	36	2.7	95	420	220	1.9												
	14-Jul-15	<2.0	7.84	670	73	1.100	<0.50	330	<0.50	380	0.74	0.74	<0.010	<0.0020	0.96		1.2	0.14	0.51	98	33	2.2	85	410	240	1.4												
	18-Nov-15	<2.0	8.02	650	90	1.100	<0.50	330	<0.50	370	0.66	0.66	<0.010	<0.0020	0.97		1.4	0.13	0.30	94	32	2.5	86	400	230	2.0												
	29-Mar-16	<2.0	7.67	680	31	1.100	<0.50	350	<0.50	390	0.79	0.79	<0.010	<0.0020	1.0		0.87	0.13	0.31	96	36	2.6	95	430	230	<1.0												
	20-Jul-16	<2.0	7.80	670	34	1.100	<0.50	370	<0.50	380	0.68	0.68	<0.010	<0.0020	0.98		1.2	0.13	0.19	96	35	2.3	92	450	220	1.9												
	18-Nov-16	<2.0	7.71	680	16	1.100	<0.50	340	<0.50	390	0.79	0.79	<0.010	<0.0020	1.0		1.1	0.13	0.12	94	36	2.7	100	410	230	1.3												
	28-Mar-17	<2.0	7.80	650	23	1.100	<0.50	330	<0.50	360	0.79	0.79	<0.010	<0.0020		0.52	<0.50	0.13	0.17	90	34	2.5	97	410	220	1.4												
	19-Jul-17	<2.0	8.01	660	53	1.100	<0.50	340	<0.50	390	0.77	0.77	<0.010	<0.0020		1.1	<2.0	0.13	0.66	100	35	2.5	92	420	230	1.8												
	17-Nov-17	2.5	7.85	650	28	1.100	<1.0	340	<1.0	350	0.71	0.71	<0.010	0.0021		4.0	1.1	0.13	0.21	88	33	2.3	87	420	230	1.8												
	18-Apr-18	<2.0	7.91	660	33	1.100	<1.0	340	<1.0	400	0.73	0.73	<0.010	<0.0020		3.4	<0.50	0.12	0.13	100	37	2.6	94	410	220	2.3												
	24-Jul-18	<2.0	7.95	650	85	1.100	<1.0	340	<1.0	370	0.63	0.63	<0.010	<0.0020		0.67	0.83	0.12	0.20	93	35	2.4	89	420	220	2.1												
	20-Nov-18	<2.0	8.06	690	93	1.100	<1.0	350	<1.0	410	0.53	0.53	<0.010	<0.0020		3.3	<2.5	0.15	0.49	100	37	2.6	100	430	230	2.2												
	28-Mar-19	<2.0	7.93	640	0.90	1.100	<1.0	340	<1.0	370	0.73	0.73	<0.010	<0.0020		0.21	1.3	0.14	0.17	93	33	2.5	90	420	210	1.9												
	16-Jul-19	<2.0	7.88	660	140	1.100	<1.0	340	<1.0	350	0.50	0.50	<0.010	<0.0020		1.9	<1.0	0.13	0.49	88	33	2.4	94	410	230	2.0												
	20-Nov-19	<2.0	7.79	660	17	1.100	<1.0	340	<1.0	380	0.60	0.60	<0.010	<0.0020		1.2	5.7	0.13	2.5	95	33	2.5	87	410	230	2.4												
	31-Mar-20	2.3	7.82	660	61	1.100	<1.0	330	<1.0	390	0.73	0.73	<0.010	<0.0020		3.6	0.78	0.13	<0.050	98	36	2.9	99	410	220	1.8												
	27-Jul-20	4.8	7.83	660	100	1.100	<1.0	330	<1.0	400	0.59	0.59	<0.010	<0.0020		4.0	0.56	0.13	0.27	99	36	2.4	99	400	220	2.1												
	24-Nov-20	4.3	7.93	690	72	1.100	<1.0	360	<1.0	380	0.61	0.61	<0.010	<0.0020		0.57	<0.50	0.14	0.22	95	33	2.5	100	440	240	2.2												
	30-Mar-21	<2.0	7.93	650	3.9	1.100	<1.0	340	<1.0	380	0.73	0.73	<0.010	<0.0020		0.21	0.72	0.14	0.17	94	35	2.8	89	420	220	2.6												
TVR 2.3	28-Jul-08 to 10-May-10															Insufficient Water Volume for Sampling																						
	12-Jul-10		7.86	370	1.3	650	<0.5	310	<0.5	303	<0.003	<0.003	<0.003		1.0					80	25	1.4	29	380	42	6												
	15-Sep-10 to 16-May-11																Insufficient Water Volume for Sampling																					
	11-Jul-11	<2	7.68	820	21	1.200	<0.5	310	<0.5	690	0.008	0.008	<0.003	<0.002	1.1		0.7	0.15	0.66	200	48	2.3	32	380	340	6												
	14-Sept-11 to 8-May-13																Insufficient Water Volume for Sampling																					
	11-Jul-13	<2.0	7.67	820	140	1.200	<0.50	310	<0.50	690	0.013	0.013	<0.0030	<0.0020	1.1		0.73	0.19	0.38	190	53	1.8	33	380	350	5.0												
5-Sep-13 to 13-May-14																Insufficient Water Volume for Sampling																						
24-Jul-14	<2.0	7.69	970	320	1.300	<0.50	380	<0.50	900	0.011	0.011	<0.010	<0.0020	1.3		0.86	0.13	<0.50	240	73	1.9	38	470	380	5.3													
11-Sep-14 to 30-Mar-21																Insufficient Water Volume for Sampling																						
TVR 2.4	22-Aug-07		8.26	563	230	915	<0.5	446	<0.5	40	0.012	0.012	<0.003		0.99		8.1	0.83	1.4	12.9	2	2	216	545	52.7	9												
	7-Sep-07		8.39	510	110	842	7.8	431	<0.5	24	0.039	0.039	<0.003		0.94					7.3	1.4	1.1	197	510</														

Table E.8. Historical Groundwater Analytical Results - Physical and Routine Parameters

		Colour	pH	Total Dissolved Solids	Turbidity	Electrical Conductivity (EC)	Carbonate (CO ₃)	Alkalinity (Total as CaCO ₃)	Hydroxide (OH)	Hardness (CaCO ₃)	Dissolved Nitrate-N	Nitrate plus Nitrite-N	Dissolved Nitrite-N	Cyanide (CN)	Ion Balance	Ion Balance	Total Organic Carbon (TOC)	Dissolved Fluoride (F)	Total Kjeldahl Nitrogen	Dissolved Calcium (Ca)	Dissolved Magnesium (Mg)	Dissolved Potassium (K)	Dissolved Sodium (Na)	Bicarbonate (HCO ₃)	Dissolved Sulphate (SO ₄)	Dissolved Chloride (Cl)	E. Coli DST	Fecal Coliforms	Total Coliforms DST	Orthophosphate	Total Phosphorus (P)	Total Ammonia (N)	Total Chemical Oxygen Demand	
Health Canada Guidelines ¹ - Potable		≤15 TCU ^{AO}	7.0-10.5 ^{AO}	≤500 ^{AO}	narrative ^{AO}	NG	NG	NG	NG	NG	10 ^{MAC}	NG	1 ^{MAC}	0.2 ^{MAC}	NG		NG	1.5 ^{MAC}	NG	NG	NG	NG	≤200 ^{AO}	NG	≤500 ^{AO}	≤250 ^{AO}	nd/100 mL	NG	nd/100 mL	NG	NG	NG	NG	
Sample Location	Sample Date	PiCo units		mg/L	NTU	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	% difference		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mpn/100 mL	mpn/100 mL	mpn/100 mL	mg/L	mg/L	mg/L	mg/L	
TVR 2.4 (cont)	14-Jul-15	<2.0	8.62	380	5.4	720	9.7	350	<0.50	5.5	<0.010	<0.020	<0.010	<0.0020	0.91		0.66	0.95	0.30	1.6	0.38	<0.30	150	410	8.6	4.5								
	18-Nov-15	<2.0	8.62	380	7.9	700	8.9	340	<0.50	6.4	0.016	<0.020	<0.010	<0.0020	0.91		0.57	0.92	0.55	1.9	0.39	0.51	150	400	9.4	6.1								
	20-Jul-16	2.6	8.62	390	5.1	680	9.1	360	<0.50	5.4	<0.010	<0.020	<0.010	<0.0020	0.92		0.66	0.89	0.25	1.5	0.39	<0.30	160	420	9.3	5.4								
	17-Nov-16	2.1	8.61	390	2.8	690	9.0	340	<0.50	5.6	<0.010	<0.020	<0.010	<0.0020	1.0		<0.50	0.93	0.21	1.6	0.42	0.46	170	400	8.6	4.5								
	19-Jul-17	<2.0	8.67	380	2.9	690	12	340	<0.50	5.3	<0.010	<0.014	<0.010	<0.0020		1.2	0.81	0.94	0.23	1.5	0.40	0.34	160	390	8.7	5.0								
	17-Nov-17	2.2	8.63	380	6	690	13	350	<1.0	5.3	<0.010	<0.014	<0.010	0.0022		3.5	0.70	0.89	0.32	1.4	0.42	<0.30	160	400	7.8	4.4								
	24-Jul-18	4.2	8.69	390	16	710	12	350	<1.0	5.2	0.057	0.057	<0.010	<0.0020		3.7	1.3	0.8	0.62	1.4	0.40	0.42	160	410	9.2	6.1								
	20-Nov-18	4.8	8.61	410	7.2	680	12	360	<1.0	5.8	<0.010	<0.014	<0.010	<0.0020		0.59	<0.50	1.0	0.34	1.6	0.46	0.36	170	420	6.0	5.7								
	16-Jul-19	3.5	8.47	380	2.9	690	6.4	340	<1.0	4.8	<0.010	<0.014	<0.010	<0.0020		1.0	0.52	0.91	0.28	1.3	0.39	0.32	170	410	5.4	4.9								
	20-Nov-19	<2.0	8.36	370	2.0	680	4.1	350	<1.0	5.4	<0.010	<0.014	<0.010	<0.0020		5.0	<0.50	0.91	0.27	1.4	0.44	0.30	150	420	8.6	4.8								
	27-Jul-20	<2.0	8.68	390	2.7	720	13	340	<1.0	6.1	0.017	0.017	<0.010	<0.0020		3.7	<0.50	0.79	0.30	1.5	0.56	0.39	170	390	7.7	4.9								
	24-Nov-20	<2.0	8.56	420	3.3	700	13	370	<1.0	5.1	0.012	<0.014	<0.010	<0.0020		1.6	<0.50	0.97	0.29	1.4	0.39	0.36	180	430	6.9	4.6								
TVR 3.1	4-Mar-08	6	7.8	663	550	1,080	<0.5	518	<0.5	580	0.018	0.018	<0.003	<0.002	1.01		4.8	0.14	1.49	180	30	3	32	633	33.2	67.7								
	23-May-08		7.8	470	170	830	<0.5	320	<0.5	380	0.89	0.89	<0.003		0.97		6.6	0.2	1.1	120	18	1	27	400	41	62								
	28-Jul-08	13	7.7	750	110	1,200	<0.5	460	<0.5	670	2.7	2.7	0.025	<0.002	1.1		10.4	0.16	0.17	210	32	1.7	41	560	87	88								
	24-Nov-08				170															170	26	1.7	33											
	26-Nov-08	11	7.5	730		1,300	<0.5	600	<0.5	610	0.009	0.009	<0.003	<0.002	0.93					210	31	1.8	36	730	37	74								
	19-Jan-09																Insufficient Water Volume for Sampling																	
	26-Mar-09																			130	20	1.4	37											
	19-May-09				80															110	16	0.8	27											
	21-May-09	8	7.91	430		800	<0.5	270	<0.5	320	0.19	0.19	<0.003	<0.002	0.90		5.5	0.17	0.53	110	15	0.9	26	330	49	71								
	20-Jul-09				0.7												5.9		0.47	160	23	1.2	29											
	22-Jul-09	9	7.90	610		1,000	<0.5	470	<0.5	350	0.55	0.55	<0.003	<0.002	0.90			0.13		86	32	2.3	94	570	37	73								
	25-Sep-09 to 21-Jan-10																Insufficient Water Volume for Sampling																	
	19-Mar-10	8	7.74	511	20	920	<0.5	320	<0.5	410	0.21	0.21	<0.003	<0.002	0.99		9.8	0.16	0.36	130	20	0.9	32	390	56	79								
	10-May-10	8	7.63	404	5.6	710	<0.5	290	<0.5	340	0.19	0.19	<0.003		1.0			0.19		110	16	0.9	25	350	29	52								
	12-May-10										0.92	0.21	<0.01	<0.002			5.5		0.35															
	12-Jul-10	9	7.54	945	25	950	<0.5	420	<0.5	471	0.26	0.26	<0.003	<0.002	1.0		7.0	0.17	0.23	150	21	1	33	520	29	51								
	15-Sep-10	7	7.52	907	6.9	850	<0.5	440	<0.5	470	0.10	0.10	<0.003	<0.002	1.1		5.8	0.17	0.35	150	22	1.2	26	530	18	25								
	7-Nov-10				17															170	24	1.2	28											
	12-Nov-10	8	7.59	550		1,000	<0.5	480	<0.5	470	0.33	0.33	0.005	<0.002	0.92		7.6	0.15	0.32	150	20	0.8	24	580	20	48								
	24-Jan-11				10															160	23	0.9	25											
	26-Jan-11	7	7.63	540		1,000	<0.5	490	<0.5	430	<0.003	<0.003	<0.003	<0.002	0.86		4.4	0.17	0.29	140	20	1.0	24	600	2	55								
	16-Mar-11				16															160	22	0.9	28											
	18-Mar-11	7	7.73	460		840	<0.5	360	<0.5	380	0.028	0.028	<0.003	<0.002	0.93		3.2	0.15	0.54	120	16	0.6	23	440	29	46								
	20-May-11				0.3															110	16	0.7	26											
	24-May-11	10	7.66	400		700	<0.5	300	<0.5	340	0.11	0.11	<0.003	<0.002	1.0		4.9	0.19	0.48	110	17	0.8	27	360	30	42								
	11-Jul-11				7.6															220	31	1.5	47											
	13-Jul-11	12	7.61	580	12	880	<0.5	300	<0.5	430	3.6	3.6	<0.003	<0.002	0.97		7.1	0.21	0.77	140	19	1.2	32	360	160									

Table E.8. Historical Groundwater Analytical Results - Physical and Routine Parameters

		Colour	pH	Total Dissolved Solids	Turbidity	Electrical Conductivity (EC)	Carbonate (CO ₃)	Alkalinity (Total as CaCO ₃)	Hydroxide (OH)	Hardness (CaCO ₃)	Dissolved Nitrate-N	Nitrate plus Nitrite-N	Dissolved Nitrite-N	Cyanide (CN)	Ion Balance	Ion Balance	Total Organic Carbon (TOC)	Dissolved Fluoride (F)	Total Kjeldahl Nitrogen	Dissolved Calcium (Ca)	Dissolved Magnesium (Mg)	Dissolved Potassium (K)	Dissolved Sodium (Na)	Bicarbonate (HCO ₃)	Dissolved Sulphate (SO ₄)	Dissolved Chloride (Cl)	E. Coli DST	Fecal Coliforms	Total Coliforms DST	Orthophosphate	Total Phosphorus (P)	Total Ammonia (N)	Total Chemical Oxygen Demand	
Health Canada Guidelines ¹ - Potable		≤15 TCU ^{AO}	7.0-10.5 ^{AO}	≤500 ^{AO}	narrative ^{AO}	NG	NG	NG	NG	NG	10 ^{MAC}	NG	1 ^{MAC}	0.2 ^{MAC}	NG		NG	1.5 ^{MAC}	NG	NG	NG	NG	≤200 ^{AO}	NG	≤500 ^{AO}	≤250 ^{AO}	nd/100 mL	NG	nd/100 mL	NG	NG	NG	NG	
Sample Location	Sample Date	PiCo units		mg/L	NTU	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	% difference		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mpn/100 mL	mpn/100 mL	mpn/100 mL	mg/L	mg/L	mg/L	mg/L
TVR 3.2	22-Aug-07		7.98	591	800	888	<0.5	278	<0.5	320	0.011	0.19	0.179		1.07		4.6	0.26	2.1	83.1	28.2	3.6	95.3	339	206	6.4								
	23-Nov-07		8.04	544	600	808	<0.5	294	<0.5	280	0.058	0.058	<0.003	<0.002	0.93		3.6	0.2	5.08	70	24	2.8	82	359	171	15.8								
	4-Mar-08	<5	8.08	698	180	1,020	<0.5	305	<0.5	380	1.52	1.53	0.008	<0.002	1.06		2.6	0.16	0.91	98	33	4	110	372	262	2.2								
	23-May-08				400															98	34	2.8	92											
	24-Nov-08	<2	7.9	720	7.4	1,200	<0.5	410	<0.5	270	2	2	0.004	<0.002	0.88		1.9	0.22	1	69	24	2.2	140	490	230	5								
	20-Jan-09				1.3												2.7	0.72	0.16	94	33	2.5	100											
	24-Mar-09 to 23-Jan-12	Insufficient Water Volume for Sampling																																
	20-Mar-12				86															110	39	3.1	110											
	22-Mar-12	<2.0	8.20	740		1,200	<0.50	320	<0.50	430	1.3	1.3	<0.0030	<0.0020	1.1		0.57	0.14	0.32	110	38	2.9	110	390	290	1.3								
	16-May-12	Insufficient Water Volume for Sampling																																
	19-Jul-12				140															110	36	2.6	99											
	20-Jul-12	<2.0	7.95	610		940	<0.50	270	<0.50	350	1.2	1.2	<0.0030	<0.0020	1.0		2.1	0.12	<0.50	91	29	2	84	330	240	1.7								
	20-Sept-12 to 24-Jul-14	Insufficient Water Volume for Sampling																																
	11-Sep-14	<2.0	7.90	720	78	1,110	<0.50	310	<0.50	400	1.0	1.0	<0.010	<0.0020	1.0		0.58	0.12	0.40	100	35	2.4	100	380	280	1.4								
	19-Nov-14 to 18-Nov-15	Insufficient Water Volume for Sampling																																
	29-Mar-16	<2.0	7.63	690	30	1,100	<0.50	320	<0.50	380	1.0	1	<0.010	<0.0020	1.0		0.67	0.12	0.36	95	35	2.6	100	390	270	<1.0								
	22-Jul-16	<2.0	7.71	720	22	1,100	<0.50	360	<0.50	410	0.92	0.92	<0.010	<0.0020	0.99		0.55	0.13	0.11	110	35	2.6	98	440	250	1.1								
	18-Nov-16	<2.0	7.83	700	100	1,100	<0.50	310	<0.50	400	1.1	1.1	0.0110	<0.0020	1.1		1.40	0.13	0.074	100	36	2.6	110	380	260	1.3								
	29-Mar-17 to 19-Jul-17	Insufficient Water Volume for Sampling																																
	17-Nov-17	12	7.95	680	29	1,100	<1.0	330	<1.0	350	0.90	0.90	<0.010	<0.0020		4.3	0.89	0.13	0.19	88	32	2.2	92	400	260	1.4								
	18-Apr-18 to 23-Jul-18	Insufficient Water Volume for Sampling																																
	20-Nov-18	<2.0	8.11	710	71	1,100	<1.0	320	<1.0	410	0.86	0.86	<0.010	<0.0020		3.0	<1.0	0.15	0.26	100	36	2.5	100	400	270	1.3								
	15-Mar-19 to 20-Nov-19	Insufficient Water Volume for Sampling																																
	31-Mar-20	2.0	7.79	690	73	1,100	<1.0	310	<1.0	390	0.80	0.80	<0.010	<0.0020		4.1	<0.50	0.12	<0.25	99	36	2.8	110	380	250	1.6								
	27-Jul-20 to 30-Mar-21	Insufficient Water Volume for Sampling																																
TVR 3.3	22-Aug-07		8.31	735	31	1,220	2.7	602	<0.5	69	0.196	0.202	0.006		0.95		4.4	0.6	0.48	20.7	4.1	2.6	268	729	57	19.2								
	7-Sep-07		8.31	750	39	1,260	2.6	660	<0.5	47	0.068	0.078	0.01		0.87					14.2	2.8	2	272	800	44.7	18.2								
	23-Nov-07		8.5	715	170	1,190	18.3	654	<0.5	19	0.005	0.005	<0.003	<0.002	0.93		3	0.74	0.88	5.5	1.3	0.8	280	760	14.1	16.2								
	4-Mar-08	<5	8.47	687	55	1,150	15.6	626	<0.5	20	0.012	0.015	0.003	<0.002	0.93		1.4	0.66	0.57	5.4	1.5	0.8	270	732	13.6	16.1								
	23-May-08		8.4	710	80	1,200	10	680	<0.5	16	0.005	0.005	<0.003	<0.002	0.85		3.3	0.72	0.72	4.6	1.1	0.9	270	810	9.2	17								
	1-Aug-08	<2	8.3	780	22	1,200	7	710	<0.5	23	0.007	0.011	0.004	<0.002	0.94		1.7	0.65	0.67	6.1	1.9	0.9	310	850	15	18								
	9-Sep-08	<2	8.4	670	51	1,100	13	600	<0.5	18	0.005	0.013	0.008	<0.002	0.97		1.6		0.52	2.1	0.4	0.4	190	700	10	19								
	24-Nov-08	<2	8.3	670	53	1,100	<0.5	620	<0.5	14	0.012	0.026	0.014	<0.002	0.94		3.4	0.67	0.8	3.7	1.2	0.7	270	760	<1	15								
	20-Jan-09	<2	8.3	680	20	1,100	4.7	640	<0.5	13	<0.003	<0.003	<0.003	<0.002	0.88		3.4	0.64	0.48	3.7	1	0.7	260	770	9	16								
	24-Mar-09	<2	8.36	650	24	1,100	9.1	590	<0.5	15	0.021	0.036	0.015	<0.002	0.9		1.4	0.15	0.53	3.9	1.3	0.7	260	710	16	16								
	21-May-09	<2	8.36	700	30	1,200	9.8	650	<0.5	20	0.41	0.41	<0.003	<0.002	0.88		1.4	0.58	0.11	5.2	1.8	0.7	270	770	15	17								
	20-Jul-09	<2	8.35	700	35	1,100	7.4	640	<0.5	16	0.26	0.26	<0.003	<0.002	0.92		1.7	0.62	0.37	4.2	1.3	0.6	280	770	12	17								
	25-Sep-09	<2	8.33	720	46	1,200	4.9	640	<0.5	16	<0.003	<0.003	<0.003	<0.002	0.98		8.0	0.71	0.50	4.3	1.3	0.7	300	780	12	16								
	16-Nov-09	2	8.31	720	58	1,200	1.4	630	<0.5	15	<0.003	<0.003	<0.003	<0.002	1.0		5.4	0.70	0.58	3.8	1.3	0.7	310	760	12	16								
	18-Jan-10	<2	8.28	670	23	1,100	<0.5	610	<0.5	16	0.14	0.15	0.01	<0.002	0.94		6.4	0.67	0.4	4.2	1.4	1	270	750	10	16								
	17-Mar-10	<2	8.21	651	23	1,100	<0.5	610	<0.5	14	0.640	0.150	0.03	<0.002	0.9		3.9	0.61	0.3	3.7	1.1	0.7	260	740	9	14								
	10-May-10	<2	7.93	636	17	1,100	<0.5	580	<0.5	13	0.27	0.27	<0.003	<0.002	0.94		11.3	0.62	<0.05	3.4	1.1	0.6	260	700	11	15								
	12-Jul-10	<2	8.34	699	13	1,200	5.8	630	<0.5	19.7	0.44	0.44	<0.003	<0.002	0.96		3.4	0.68	0.08	5.1	1.7	0.7	280	760	11	15								
	15-Sep-10	<2	8.34	675	15	1,100	6.3	580	<0.5	16.4	0.014	0.018	0.004	<0.002	1.1		3.1	0.69	0.40	4.3	1.4	0.7	290	700	11	13								
	7-Nov-10	<2	8.37	620	73	1,100	7.6	570	<0.5	14	0.035	0.038	0.003	<0.002	0.91		2.8	0.60	0.63	3.6	1.2	0.7	240	670	13	15								
	24-Jan-11	<2	8.37	670	42	1,100	9.4	610	<0.5	14	0.037	0.037	<0.003	<0.002	0.94		<0.5	0.70	0.46	3.6	1.2	0.6	270	720	15	15								
	16-Mar-11	<2	8.51	660	40	1,100	22	590	<0.5	13	0.004	0.004	<0.003	<0.002	0.98		<0.5	0.65	0.49	3.4	1.0	0.6	270	680	12									

Table E.8. Historical Groundwater Analytical Results - Physical and Routine Parameters

		Colour	pH	Total Dissolved Solids	Turbidity	Electrical Conductivity (EC)	Carbonate (CO ₃)	Alkalinity (Total as CaCO ₃)	Hydroxide (OH)	Hardness (CaCO ₃)	Dissolved Nitrate-N	Nitrate plus Nitrite-N	Dissolved Nitrite-N	Cyanide (CN)	Ion Balance	Ion Balance	Total Organic Carbon (TOC)	Dissolved Fluoride (F)	Total Kjeldahl Nitrogen	Dissolved Calcium (Ca)	Dissolved Magnesium (Mg)	Dissolved Potassium (K)	Dissolved Sodium (Na)	Bicarbonate (HCO ₃)	Dissolved Sulphate (SO ₄)	Dissolved Chloride (Cl)	E. Coli DST	Fecal Coliforms	Total Coliforms DST	Orthophosphate	Total Phosphorus (P)	Total Ammonia (N)	Total Chemical Oxygen Demand	
Health Canada Guidelines ¹ - Potable		≤15 TCU ^{AO}	7.0-10.5 ^{AO}	≤500 ^{AO}	narrative ^{AO}	NG	NG	NG	NG	NG	10 ^{MAC}	NG	1 ^{MAC}	0.2 ^{MAC}	NG	% difference	NG	1.5 ^{MAC}	NG	NG	NG	NG	≤200 ^{AO}	NG	≤500 ^{AO}	≤250 ^{AO}	nd/100 mL	NG	nd/100 mL	NG	NG	NG	NG	
Sample Location	Sample Date	PtCo units		mg/L	NTU	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	mpn/100 mL	mpn/100 mL	mpn/100 mL	mg/L	mg/L	mg/L	mg/L	
TVR 4.1	22-Aug-07		7.43	697	800	1,140	<0.5	491	<0.5	600	<0.003	<0.003	<0.003		0.99		6.4	0.13	2.7	176	39	4	23.5	599	136	22.4								
	23-Nov-07		7.72	691	100	1,090	<0.5	478	<0.5	590	<0.003	<0.003	<0.003	<0.002	0.99		5.2	0.12		170	39	3.3	26	583	163	2.3								
	4-Mar-08																			180	42	3.4	26											
	1-Aug-08	7	7.4	1,100	3.8	1,600	<0.5	860	<0.5	870	0.016	0.016	<0.003	<0.002	0.88		8.3	0.1	0.67	260	54	4.7	29	1100	180	19								
	9-Sep-08	9	7.5	930	0.7	1,500	<0.5	710	<0.5	720	0.18	0.18	0.005	<0.002	0.85		8.1		2	220	41	3.9	30	860	180	23								
	Insufficient Water Volume for Sampling																																	
	19-Jan-09 to 19-May-09																																	
	20-Jul-09	6	7.52	910	0.5	1,300	<0.5	600	<0.5	700	5.0	5.0	<0.003		0.86			0.09		200	46	2.8	26	730	230	16								
	22-Jul-09												<0.002				5.2		0.55															
	Insufficient Water Volume for Sampling																																	
	25-Sep-09 to 10-May-10																																	
	14-Jul-10	8	7.24	1,010	0.5	1,600	<0.5	790	<0.5	818	0.2	0.2	<0.003	<0.002	0.87		9.6	0.14	0.52	250	44	3.3	26	960	190	17								
	15-Sep-10	8	7.48	1,080	0.6	1,600	<0.5	740	<0.5	978	1.1	1.1	<0.003	<0.002	1.0		8.0	0.13	0.41	290	63	3.9	30	910	220	16								
	Insufficient Water Volume for Sampling																																	
	7-Nov-10 to 16-Mar-11																																	
	20-May-11	8	7.29	1,100	0.8	1,800	<0.5	800	<0.5	980	0.24	0.26	0.013	<0.002	1.0		5.7	0.09	0.86	300	56	4.3	23	980	200	13								
	13-Jul-11	10	7.15	990	0.6	1,500	<0.5	690	<0.5	850	<0.003	<0.003	<0.003	<0.002	1.0		6.6	0.11	0.67	260	48	4.8	21	850	230	11								
	14-Sep-11				0.3															280	58	3.7	25											
	16-Sep-11	8	7.9	990		1,600	<0.5	670	<0.5	870	0.41	0.41	<0.003	<0.002	1.0		5.6	0.11	0.39	260	50	3.2	23	820	230	11								
	16-Nov-11				0.7															250	54	3.3	26											
	18-Nov-11	7	7.73	890		1,400	<0.5	600	<0.5	750	<0.003	<0.003	<0.003	<0.002	1.0		4.6	0.12	0.14	220	48	3.1	24	730	220	10								
	Insufficient Water Volume for Sampling																																	
	23-Jan-12 to 20-Mar-12																																	
	16-May-12	9.2	7.74	840	24	1,300	<0.50	450	<0.50	720	5.5	5.5	<0.0030	<0.0020	1.0		7.4	0.12	0.58	220	43	3.3	22	550	250	9.6								
	19-Jul-12	11	7.51	1,100	33	1,600	<0.50	700	<0.50	960	0.075	0.075	<0.0030	<0.0020	1.0		8.5	0.1	0.58	290	55	5.4	23	860	250	11								
	20-Sep-12	7	7.41	960	20	1,500	<0.50	680	<0.50	850	0.14	0.14	<0.0030	<0.0020	1.0		6.1	0.11	0.52	250	53	3.6	24	830	210	10								
	20-Nov-12	6.4	7.53	920	47	1,400	<0.50	610	<0.50	830	0.18	0.18	<0.0030	<0.0020	1.0		5.8	0.12	0.85	240	54	3.3	25	740	220	9.2								
	Insufficient Water Volume for Sampling																																	
	25-Jan-13 to 21-Mar-13																																	
	8-May-13	5.4	7.75	870	57	1,400	<0.50	540	<0.50	810	0.86	0.86	<0.0030	<0.0020	1.1		5.0	0.11	0.58	240	51	2.7	23	660	210	12								
	12-Jul-13	9.8	7.26	980	49	1,500	<0.50	680	<0.50	840	0.009	0.0090	<0.0030	<0.0020	0.96		6.5	0.097	0.65	260	48	4.3	21	820	220	16								
	5-Sep-13	7.4	7.62	940	81	1,500	<0.50	610	<0.50	870	0.190	0.1900	<0.0030	<0.0020	1.1		5.1	0.11	0.48	260	54	3.4	23	740	220	13								
	23-Jan-14	5.5	7.61	890	53	1,500	<0.50	510	<0.50	750	1.1	1.1	<0.010		0.98		4.2	0.13	0.61	210	52	2.9	22	620	270	14								
	Insufficient Water Volume for Sampling																																	
	25-Mar-14																																	
	13-May-14	11	7.68	840	38	1,400	<0.50	540	<0.50	670	2.0	2.0	<0.010	<0.0020	0.89		6.7	0.095	0.75	200	43	3.5	19	660	240	8.9								
	24-Jul-14	5.6	7.27	960	73	1,500	<0.50	590	<0.50	870	0.063	0.063	<0.010	<0.0020	1.1		5.5	0.081	0.49	260	51	3.7	22	720	260	7.8								
	11-Sep-14	3.8	7.45	960	44	1,500	<0.50	570	<0.50	850	0.12	0.12	<0.010	<0.0020	1.0		5	0.097	<0.50	250	54	3.2	25	700	280	9.3								
	19-Nov-14	5.2	7.39	1000	250	1,500	<0.50	590	<0.50	870	0.39	0.39	<0.010	<0.0020	0.99		4.6	0.11	0.63	250	57	3.4	25	720	320	10								
	25-Mar-15	3.4	7.43	860	190	1,400	<0.50	440	<0.50	770	1.9	1.9	<0.010	0.0021	1.1		5.1	0.10	0.90	220	51	2.6	23	530	280	9.5								
	14-Jul-15	5.7	7.44	960	87	1,500	<0.50	490	<0.50	810	2.4	2.4	<0.010	<0.0020	1.0		5.5	0.10	0.66	240	51	3.2	22	600	330	9.6								
	19-Nov-15	4.1	7.64	930	39	1,400	<0.50	510	<0.50	820	1.5	1.5	<0.010	<0.0020	1.1		4.5	0.097	0.48	240	54	3.2	24	620	290	9.7								
	Insufficient Water Volume for Sampling																																	
	29-Mar-16																																	
	20-Jul-16	12	7.25	720	12	1,100	<0.50	490	<0.50	580	1.2	1.2	<0.010	<0.0020	0.9		6.8	0.11	0.43	170	38	3.6	19	600	180	6.3								
	17-Nov-16	6.2	7.40	960	5.0	1,500	<0.50	630	<0.50	870	0.31	0.31	<0.010	<0.0020	1.0		5.4	0.11	0.28	250	57	3.3	26	770	230	11								
	28-Mar-17	3.5	7.61	830	18	1,400	<0.50	540	<0.50	680	0.56	0.56	<0.010	<0.0020		3.8		3.5	0.10	0.38	200	46	2.4	25	660	220	11							
19-Jul-17	2.2	7.67	970	18	1,500	<0.50	690	<0.50	850	0.71	0.71	<0.010	<0.0020		0.74		4.6	0.099	0.42	250	54	3.2	25	840	200	15								
16-Nov-17	5.4	7.63	920	12	1,400	<1.0	610	<1.0	790	0.74	0.74	<0.010	<0.0020		0.90		4.1	0.12	0.55	230	52	3.0	25	740	230	13								
Could not access/frozen																																		
18-Apr-18																																		
23-Jul-18	2.6	7.43	880	10	1,500	<1.0	630	<1.0	760	0.59	0.59	<0.010	<0.0020		2.5		4.6	0.10	0.51	220	49	2.7	22	770	180	16								
22-Nov-18	<2.0	7.69	870	20	1,400	<1.0	590	<1.0	760	0.83	0.83	<0.010	<0.0020		0.29		3.4	0.12	0.34	220	51	2.6	23	720	200	16								
Could not access/frozen																																		
28-Mar-19																																		
16-Jul-19	<2.0	7.62	470	26	780	<1.0	330	<1.0	390																									

Table E.8. Historical Groundwater Analytical Results - Physical and Routine Parameters

Health Canada Guidelines ¹ - Potable		Colour	pH	Total Dissolved Solids	Turbidity	Electrical Conductivity (EC)	Carbonate (CO ₃)	Alkalinity (Total as CaCO ₃)	Hydroxide (OH)	Hardness (CaCO ₃)	Dissolved Nitrate-N	Nitrate plus Nitrite-N	Dissolved Nitrite-N	Cyanide (CN)	Ion Balance	Ion Balance	Total Organic Carbon (TOC)	Dissolved Fluoride (F)	Total Kjeldahl Nitrogen	Dissolved Calcium (Ca)	Dissolved Magnesium (Mg)	Dissolved Potassium (K)	Dissolved Sodium (Na)	Bicarbonate (HCO ₃)	Dissolved Sulphate (SO ₄)	Dissolved Chloride (Cl)	E. Coli DST	Fecal Coliforms	Total Coliforms DST	Orthophosphate	Total Phosphorus (P)	Total Ammonia (N)	Total Chemical Oxygen Demand	
		≤15 TCU ^{AO}	7.0-10.5 ^{AO}	≤500 ^{AO}	narrative ^{AO}	NG	NG	NG	NG	NG	10 ^{MAC}	NG	1 ^{MAC}	0.2 ^{MAC}	NG	% difference	NG	1.5 ^{MAC}	NG	NG	NG	NG	NG	≤200 ^{AO}	NG	≤500 ^{AO}	≤250 ^{AO}	nd/100 mL	NG	nd/100 mL	NG	NG	NG	NG
Sample Location	Sample Date	PtCo units		mg/L	NTU	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	mpn/100 mL	mpn/100 mL	mpn/100 mL	mg/L	mg/L	mg/L	mg/L	
TVR 4.2	22-Aug-07		7.89	688	260	1,020	<0.5	350	<0.5	410	0.016	0.062	0.046	<0.002	1.01		1.6	0.22	0.28	104	35.8	3.6	90.3	427	241	2.3								
	23-Nov-07		8.05	681	550	1,080	<0.5	396	<0.5	370	0.005	0.005	<0.003	<0.002	0.90		2.2	0.2	1.58	100	37	3.3	100	483	222	2.6								
	6-Mar-08	7	7.95	739	65	1,060	<0.5	388	<0.5	380	0.022	0.025	0.003	<0.002	1.0		1.9	0.18	0.63	95	35	<3	120	473	249	2.9								
	23-May-08		7.9	710	170	1,100	<0.5	390	<0.5	390	0.11	0.12	0.007	<0.002	0.88		2.8	0.17	0.76	100	35	2.6	83	470	250	4								
	1-Aug-08	<2	7.9	690	120	1,100	<0.5	420	<0.5	370	0.038	0.038	<0.003	<0.002	0.88		2.4	0.16	0.53	91	36	2.8	91	510	210	4.9								
	9-Sep-08	<2	7.9	700	36	1,100	<0.5	380	<0.5	400	0.079	0.079	<0.003	<0.002	0.94		2	0.24	100	35	2.7	91	460	240	8.2									
	24-Nov-08	<2	7.6	710	2	1,100	<0.5	400	<0.5	400	0.022	0.022	<0.003	<0.002	0.95		2.9	0.14	0.8	100	37	2.9	95	490	230	4								
	19-Jan-09	<2	7.9	690	1.1	1,200	<0.5	400	<0.5	390	0.17	0.17	<0.003	<0.002	0.89		3.1	0.15	0.45	99	36	2.7	80	490	230	4								
	24-Mar-09	<2	8.07	670	2	1,100	<0.5	420	<0.5	390	0.28	0.28	<0.003	<0.002	0.87		1.9	0.46	97	35	2.5	76	510	200	5									
	19-May-09	<2	7.80	690	3.5	1,100	<0.5	420	<0.5	450	0.15	0.15	<0.003	<0.002	1.0		2.2	0.15	0.42	110	41	2.7	83	510	190	6								
	20-Jul-09																																	
	25-Sep-09	<2	7.77	710	0.5	1,100	<0.5	410	<0.5	470	0.33	0.33	<0.003	<0.002	1.0		2.4	0.16	0.20	120	42	3.0	88	500	210	5								
	18-Nov-09	<2	7.81	720	95	1,100	<0.5	410	<0.5	460	0.19	0.19	<0.003	<0.002	1.0		2.1	0.16	0.30	110	43	3.0	91	510	220	5								
	21-Jan-10	<2	7.71	680	2.3	1,100	<0.5	420	<0.5	400	0.28	0.28	<0.003	<0.002	0.89		2.1	0.13	0.25	100	35	2.5	79	510	210	6								
	19-Mar-10	<2	7.72	705	13	1,100	<0.5	410	<0.5	450	0.17	0.17	<0.003	<0.002	1.0		6.6	0.14	0.16	110	41	2.9	91	500	210	5								
	12-May-10	<2	7.85	697	0.9	1,100	<0.5	410	<0.5	460	0.07	0.07	<0.003	<0.002	1.0		3.6	0.17	0.35	110	43	3	90	500	200	7								
	14-Jul-10	<2	7.78	699	0.5	1,100	<0.5	410	<0.5	454	0.15	0.15	<0.003	<0.002	1.0		4	0.16	0.07	110	41	2.8	89	500	200	7								
	15-Sep-10	<2	7.74	750	1.8	1,100	<0.5	400	<0.5	496	0.29	0.29	<0.003	<0.002	1.1		3.1	0.15	0.18	120	47	3.1	97	490	230	6								
	7-Nov-10	<2	7.78	710	0.8	1,100	<0.5	410	<0.5	470	0.26	0.26	<0.003	<0.002	1.1		2.9	0.13	0.12	120	43	3.0	89	500	200	6								
	24-Jan-11	<2	7.79	700	2.2	1,100	<0.5	430	<0.5	450	0.29	0.29	<0.003	<0.002	0.99		1.4	0.18	0.32	110	41	2.8	85	530	200	6								
	16-Mar-11	<2	8.05	690	1.5	1,100	<0.5	420	<0.5	440	0.14	0.14	<0.003	<0.002	0.96		1.0	0.15	0.50	110	39	2.7	81	520	200	6								
	20-May-11	<2	7.99	700	0.9	1,200	<0.5	410	<0.5	480	0.21	0.21	<0.003	<0.002	1.1		1.0	0.14	0.36	120	45	3.0	84	500	190	6								
	13-Jul-11	<2	7.69	730	0.1	1,100	<0.5	420	<0.5	470	0.22	0.22	<0.003	<0.002	0.99		1.6	0.17	0.24	120	42	2.8	81	510	220	6								
	16-Sep-11	<2	8.08	720	0.2	1,200	<0.5	410	<0.5	480	0.19	0.19	<0.003	<0.002	1.0		1.8	0.15	0.22	120	42	2.6	80	500	220	5								
	16-Nov-11	<2	7.97	740	5	1,200	<0.5	410	<0.5	500	0.22	0.22	<0.003	<0.002	1.1		1.5	0.16	0.12	130	44	3.1	87	510	220	5								
	23-Jan-12	<2.0	7.67	720	0.60	1,200	<0.50	400	<0.50	440	0.24	0.24	<0.0030	<0.0020	0.98		1.3	0.21	0.15	110	41	2.9	88	490	240	4.5								
	20-Mar-12	<2.0	7.79	740	55	1,200	<0.50	400	<0.50	490	0.15	0.15	<0.0030	<0.0020	1.0		1.3	0.17	0.11	120	43	3.0	85	490	240	4.7								
	16-May-12	<2.0	7.91	730	11	1,200	<0.50	390	<0.50	480	0.23	0.23	<0.0030	<0.0020	1.0		1.6	0.17	<0.0050	120	43	2.9	87	480	240	4.8								
	19-Jul-12	<2.0	7.99	750	11	1,200	<0.50	410	<0.50	510	0.13	0.13	<0.0030	<0.0020	1.1		1.4	0.14	0.2	130	45	2.8												

Table E.8. Historical Groundwater Analytical Results - Physical and Routine Parameters

		Colour	pH	Total Dissolved Solids	Turbidity	Electrical Conductivity (EC)	Carbonate (CO ₃)	Alkalinity (Total as CaCO ₃)	Hydroxide (OH)	Hardness (CaCO ₃)	Dissolved Nitrate-N	Nitrate plus Nitrite-N	Dissolved Nitrite-N	Cyanide (CN)	Ion Balance	Ion Balance	Total Organic Carbon (TOC)	Dissolved Fluoride (F)	Total Kjeldahl Nitrogen	Dissolved Calcium (Ca)	Dissolved Magnesium (Mg)	Dissolved Potassium (K)	Dissolved Sodium (Na)	Bicarbonate (HCO ₃)	Dissolved Sulphate (SO ₄)	Dissolved Chloride (Cl)	E. Coli DST	Fecal Coliforms	Total Coliforms DST	Orthophosphate	Total Phosphorus (P)	Total Ammonia (N)	Total Chemical Oxygen Demand	
Health Canada Guidelines ¹ - Potable		≤15 TCU ^{AO} PtCo units	7.0-10.5 ^{AO}	≤500 ^{AO} mg/L	narrative ^{AO} NTU	NG	NG	NG	NG	NG	10 ^{MAC} mg/L	NG	1 ^{MAC} mg/L	0.2 ^{MAC} mg/L	NG	% difference	NG	1.5 ^{MAC} mg/L	NG	NG	NG	NG	≤200 ^{AO} mg/L	NG	≤500 ^{AO} mg/L	≤250 ^{AO} mg/L	nd/100 mL	NG	nd/100 mL	NG	NG	NG	NG	
Sample Location	Sample Date	PtCo units		mg/L	NTU	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	mpn/100 mL	mpn/100 mL	mpn/100 mL	mg/L	mg/L	mg/L	mg/L	
TVR 4.4R	14-Jul-15	5.3	8.37	580	51	1,000	4.4	480	<0.50	41	<0.010	<0.020	<0.010	<0.0020	0.9		2.8	0.88	0.71	11	3.2	2.7	220	570	37	21								
	19-Nov-15	6.5	8.33	650	760	1,200	2.1	560	<0.50	44	<0.010	<0.020	<0.010	<0.0020	0.91		2.3	0.77	1.6	12	3.6	3.0	240	670	31	29								
	20-Jul-16	2.7	7.98	790	77	1,300	<0.50	700	<0.50	47	<0.010	<0.020	<0.010	<0.0020	0.9		2.3	0.45	0.36	12	3.8	2.4	290	850	29	32								
	17-Nov-16	4.1	7.90	760	86	1,300	<0.50	640	<0.50	67	<0.010	<0.020	<0.010	<0.0020	1.0		1.7	0.52	0.92	18	5.5	2.7	300	780	16	30								
	19-Jul-17	2.0	8.13	690	89	1,200	<0.50	600	<0.50	68	<0.010	<0.014	<0.010	<0.0020		2.0	1.1	0.51	0.77	18	5.4	2.0	260	740	7.0	32								
	16-Nov-17	3.2	8.04	700	33	1,200	<1.0	630	<1.0	70	<0.010	<0.014	<0.010	<0.0020		3.2	1.0	0.52	0.55	19	5.7	2.0	260	770	5.2	30								
	23-Jul-18	2.2	8.16	660	9.4	1,200	<1.0	600	<1.0	62	<0.010	<0.014	<0.010	<0.0020		4.8	0.80	0.48	0.30	16	5.2	1.7	240	730	4.0	31								
	21-Nov-18	<2.0	8.20	790	26	1,300	<1.0	690	<1.0	63	0.015	0.015	<0.010	<0.0020		0.99	1.2	0.65	0.36	16	5.3	1.8	300	840	7.5	31								
	7-Dec-18																			14	4.2	1.3	220											
	16-Jul-19	2.8	8.05	670	2.5	1,200	<1.0	590	<1.0	57	<0.010	<0.014	<0.010	<0.0020		0.0050	1.1	0.55	0.37	14	5.1	1.5	260	720	1.4	30								
	20-Nov-19	3.7	7.91	680	62	1,200	<1.0	600	<1.0	61	<0.010	<0.014	<0.010	<0.0020		4.2	<0.50	0.48	0.48	16	5.2	1.9	250	730	17	28								
	27-Jul-20	2.9	7.96	670	4.0	1,200	<1.0	570	<1.0	65	<0.010	<0.010	<0.010	<0.0020		3.8	0.78	0.50	0.37	17	5.6	1.4	270	700	1.2	30								
	24-Nov-20	5.6	8.09	960	5.9	1,500	<1.0	750	<1.0	43	<0.010	<0.014	<0.010	<0.0020		12	<0.50	0.69	0.14	11	3.7	2.7	450	920	15	30								
Dry / Insufficient Water Volume For Sampling																																		
TVR 5.1	22-Aug-07 to 20-Nov-19																																	
	31-Mar-20	3.4	7.77	940	68	1,400	<1.0	420	<1.0	760	3.8	3.8	<0.010	<0.0020		4.3	4.2	0.082	0.65	180	76	4.2	57	510	350	6.4								
	27-Jul-20 to 30-Mar-21																																	
Dry / Insufficient Water Volume For Sampling																																		
TVR 5.2	23-Nov-07		7.92	975	5.2	1,370	<0.5	523	<0.5	680	0.074	0.074	<0.003	<0.002	1.02		2.4	0.11	0.21	160	66	4.2	95	638	324	6.9								
	6-Mar-08	<5	7.87	970	19	1,400	<0.5	499	<0.5	620	0.012	0.012	<0.003	<0.002	0.93		1.9	0.1	0.17	150	60	3.6	89	609	361	5								
	28-Jul-08	3	7.7	810	1.7	1,300	<0.5	520	<0.5	550	0.69	0.69	<0.008	<0.002	0.93		3.5	0.11	0.27	130	54	3.2	76	630	230	9.9								
	9-Sep-08	<2	7.8	860	3.6	1,400	<0.5	480	<0.5	550	0.42	0.42	<0.003	<0.002	0.93		2.4		0.24	130	52	3.3	85	590	280	10								
	26-Nov-08	3	7.4	920	3.4	1,400	<0.5	510	<0.5	600	0.15	0.16	0.007	<0.002	0.98		2.5		0.19	140	58	3.6	96	620	300	6								
	19-Jan-09	<2	7.8	920	1.1	1,500	<0.5	490	<0.5	570	0.004	0.004	<0.003	<0.002	0.93		3.2	0.10	0.2	138	58	3.6	200	600	330	5								
	24-Mar-09	<2	7.79	950	2.4	1,400	<0.5	480	<0.5	590	0.034	0.034	<0.003	<0.002	0.92		1.7	0.11	0.24	140	59	3.4	93	590	360	4								
	21-May-09	4	7.61	830	2.5	1,300	<0.5	570	<0.5	580	6.2	6.2	<0.003	<0.002	0.86		5.7	0.09	0.83	140	53	2.9	57	700	200	12								
	22-Jul-09	3	7.87	820	2.0	1,300	<0.5	540	<0.5	530	0.70	0.70	<0.003	<0.002	0.85		2.6	0.09	0.22	130	49	2.9	67	660	240	8								
	25-Sep-09	2	7.65	870	1.4	1,300	<0.5	550	<0.5	640	0.54	0.54	<0.003	<0.002	1.0		2.9	0.11	0.23	150	63	3.4	77	670	240	7								
	18-Nov-09	2	7.65	920	0.8	1,400	<0.5	540	<0.5	650	0.21	0.21	<0.003	<0.002	1.0		3.7	0.10	0.14	150	66	3.8	86	660	280	7								
	21-Jan-10	<2	7.55	890	7.7	1,400	<0.5	520	<0.5	550	0.21	0.21	<0.003	<0.002	0.85		2.6	0.09	0.16	140	52	3	76	640	300	7								
	17-Mar-10	<2	7.65	922	5	1,400	<0.5	510	<0.5	610	0.130	0.130	<0.003	<0.002	1.0		3.7	0.09	0.13	150	59	3.3	88	620	310	5								
	12-May-10	9	7.55	770	1.7	1,200	<0.5	480	<0.5	590	8.8	8.8	<0.003	<0.002	1.0		8.1	0.12	0.44	140	58	3.3	57	580	180	10								
	14-Jul-10	6	7.6	719	2.6	1,100	<0.5	510	<0.5	572	2.60	2.60	<0.003	<0.002	1.0		6.8	0.12	0.35	140	55	3.1	51	620	140	10								
	17-Sep-10	5	7.65	752	1.8	1,200	<0.5	540	<0.5	566	<0.003	<0.003	<0.003	<0.002	0.93		5.4	0.11	0.50	140	53	3.0	51	660	170	10								
	12-Nov-10	4	7.62	850	0.7	1,300	<0.5	570	<0.5	690	2.0	2.0	<0.003	<0.002	1.1		5.4	0.09	0.30	170	68	3.7	68	690	180	10								
	26-Jan-11	2	7.63	750	1.6	1,300	<0.5	500	<0.5	500	0.79	0.79	<0.003	<0.002	0.87		2.2	0.12	0.30	120	49	2.8	59	610	200	8								
	18-Mar-11	4	7.61	740	1.1	1,300	<0.5	530	<0.5	510	0.76	0.76	<0.003	<0.002	0.87		2.9	0.10	0.35	130	48	3.0	57	650	180	8								
	24-May-11	6	7.49	720	2.3	1,100	<0.5	530	<0.5	580	1.6	1.6	<0.003	<0.002	0.96		2.9	0.11	0															

Table E.8. Historical Groundwater Analytical Results - Physical and Routine Parameters

		Colour	pH	Total Dissolved Solids	Turbidity	Electrical Conductivity (EC)	Carbonate (CO ₃)	Alkalinity (Total as CaCO ₃)	Hydroxide (OH)	Hardness (CaCO ₃)	Dissolved Nitrate-N	Nitrate plus Nitrite-N	Dissolved Nitrite-N	Cyanide (CN)	Ion Balance	Ion Balance	Total Organic Carbon (TOC)	Dissolved Fluoride (F)	Total Kjeldahl Nitrogen	Dissolved Calcium (Ca)	Dissolved Magnesium (Mg)	Dissolved Potassium (K)	Dissolved Sodium (Na)	Bicarbonate (HCO ₃)	Dissolved Sulphate (SO ₄)	Dissolved Chloride (Cl)	E. Coli DST	Fecal Coliforms	Total Coliforms DST	Orthophosphate	Total Phosphorus (P)	Total Ammonia (N)	Total Chemical Oxygen Demand	
Health Canada Guidelines ¹ - Potable		≤15 TCU ^{AO}	7.0-10.5 ^{AO}	≤500 ^{AO}	narrative ^{AO}	NG	NG	NG	NG	NG	10 ^{MAC}	NG	1 ^{MAC}	0.2 ^{MAC}	NG		NG	1.5 ^{MAC}	NG	NG	NG	NG	≤200 ^{AO}	NG	≤500 ^{AO}	≤250 ^{AO}	nd/100 mL	NG	nd/100 mL	NG	NG	NG	NG	
Sample Location	Sample Date	PtCo units		mg/L	NTU	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	% difference		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mpn/100 mL	mpn/100 mL	mpn/100 mL	mg/L	mg/L	mg/L	mg/L
TVR 5.2R	25-Mar-15 to 22-Jul-16																Insufficient Water Volume for Sampling																	
	18-Nov-16	8.3	7.25	1,200	1100	1,800	<0.50	680	<0.50	850	<0.010	<0.020	0.011	<0.0020	1.0		5.0	0.14	1.4	210	80	4.5	100	820	410	7								
	29-Mar-17 to 18-Apr-18																Insufficient Water Volume for Sampling																	
	23-Jul-18	360	7.28	1,300	100	2,100	<1.0	760	<1.0	970	0.015	0.015	<0.010	<0.0020		2.0	21	0.13	4.6	250	81	3.8	64	930	410	11								
	21-Nov-18 to 31-Mar-20																Insufficient Water Volume for Sampling																	
	27-Jul-20	620	7.00	1,300	170	2,000	<1.0	710	<1.0	1100	0.022	0.039	0.018	<0.0020		5.0	16	0.11	4.5	270	94	4.6	79	870	400	11								
24-Nov-20 to 30-Mar-21																Insufficient Water Volume for Sampling																		
TVR 5.3	28-Jul-08	<2	8	610	280	880	<0.5	320	<0.5	390	0.011	0.014	0.003	<0.002	1.1		5.1	0.22	0.09	110	29	2.3	90	390	180	12								
	19-Jan-09				15															190	55	2.2	51											
	24-Mar-09																Insufficient Water Volume for Sampling																	
	21-May-09	<2	7.87	950		1,400	<0.5	310	<0.5	650	0.008	0.008	<0.003		0.92			0.15		180	47	2.2	49	380	470	11								
	20-Jul-09																Insufficient Water Volume for Sampling																	
	25-Sep-09																Insufficient Water Volume for Sampling																	
	16-Nov-09 to 24-May-11																Dry																	
	11-Jul-11				32															470	130	4.1	110											
	13-Jul-11	<2	7.27	2,400	26	2,700	<0.5	300	<0.5	1600	0.01	0.015	0.005	<0.002	0.97		7.4	0.16	1.7	450	110	3.7	96	370	1500	10								
	14-Sept-11 to 8-May-13																Insufficient Water Volume for Sampling																	
	12-Jul-13	<2.0	7.61	2,700	25	3,000	<0.50	310	<0.50	2,000	0.0070	0.0070	<0.0030	<0.0020	1.0		1.7	0.13	0.44	540	150	4.4	79	370	1,700	12								
5-Sep-13 to 12-Jan-15																Insufficient Water Volume for Sampling/Decommissioned January 2015																		
TVR 5.4	22-Aug-07		8.08	909	>1000	1,460	<0.5	589	<0.5	100	0.027	0.027	<0.003		0.97		11.2	0.35	5.5	31.2	6.4	3.4	913	718	169	32.1								
	7-Sep-07		7.97	1,040	500	1,680	<0.5	693	<0.5	91	0.093	0.093	<0.003		0.89					27.4	5.6	3.1	947	846	206	32.7								
	23-Nov-07													<0.002																				
	6-Mar-08	<5	8.25	1,250	550	1,790	<0.5	760	<0.5	68	0.005	0.005	<0.003	<0.002	1.13		6.4	0.34	3.5	19	5	<3	510	927	223	33.8								
	28-Jul-08	<2	8	1,000	24	1,500	<0.5	760	<0.5	130	<0.003	0.024	0.024	<0.002	1.0		5.3	0.38	0.12	33	11	2	370	920	100	37								
	9-Sep-08				32															15	4.4	1.6	410											
	24-Nov-08	38									0.027	0.007	0.034								5.3	1.5	340											
	19-Jan-09	3	8.1	1,100	9.3	1,800	<0.5	760	<0.5	82	<0.003	<0.003	<0.003	<0.002	0.9		5.9	0.31	0.81	21	7	1.6	380	930	200	37								
	24-Mar-09																Insufficient Water Volume for Sampling																	
	19-May-09				20																													
	21-May-09				20																													
	20-Jul-09																	Insufficient Water Volume for Sampling																
	25-Sep-09																	Insufficient Water Volume for Sampling																
	16-Nov-09	<2	8.08	1,100	10	1,800	<0.5	800	<0.5	110	0.90	1.1	0.22	<0.002	0.96		4.2	0.31	0.95	29	8.9	1.6	410	970	180	35								
	21-Jan-10																	Insufficient Water Volume for Sampling																
	17-Mar-10	<2	7.79	1,070	22	1,700	<0.5	770	<0.5	92	0.85	0.88	0.033	<0.002	0.92		6.3	0.29	0.53	25	7	1.4	370	940	160	33								
	12-May-10 to 24-May-11																	Insufficient Water Volume for Sampling																
	11-Jul-11				13															23	6.4	1.3	340											
	13-Jul-11	<2	8.01	960	12	1,600	<0.5	780	<0.5	78	1.7	1.7	0.015	<0.002	0.88		1.1	0.36	0.57	22	5.8	1.6	340	950	86	32								
	14-Sept-11 to 20-May-12																	Insufficient Water Volume for Sampling																
	19-Jul-12	<2.0	8.17	940	47	1,600	<0.50	750	<0.50	120	0.93	0.95	0.021	<0.0020	0.91		1.0	0.37	0.27	33	9.8	1.9	310	920	89	32								
	20-Sept-12 to 12-Jul-13																	Insufficient Water Volume for Sampling																
	5-Sep-13	<2.0	7.98	940	59	1,700	<0.50	750	<0.50	110	0.88	0.92	0.04	<0.0020	0.95		0.93	0.41	0.43	29	8.4	1.5	330	910	82	33								
	13-Nov-13	<2.0	8.21	930	<0.10	1,600	<0.50	750	<0.50	100	0.56	0.59	0.028	<0.0020	0.98		0.79	0.43	0.42	28	8.8	1.7	340	910	66	33								
	23-Jan-14	<2.0	7.90	890	37	1,600	<0.50	720	<0.50	100	0.57	0.59	0.024		0.96		1.1	0.45	0.25	26	9.0	1.9	320	880	65	32								
	21-Mar-14	<2.0	8.23	900	44	1,600	<0.50	710	<0.50	91	0.54	0.55	0.018	<0.0020	0.96		0.95	0.44	0.64	24	7.3	1.5	330	870	81	32								
	13-May-14	<2.0	8.16	890	230	1,500	<0.50	710	<0.50	70	0.61	0.65	0.041	<0.0020	0.93		0.92	0.40	0.14	19	5.5	1.3	320	860	77	30								
	24-Jul-14	<2.0	8.07	880	67	1,500	<0.50	720	<0.50	80	0.32	0.33	0.011	<0.0020	0.97		0.70	0.45	0.39	22	6.2	1.1	330	870	61	30								
	11-Sep-14	<2.0	7.97	920	110	1,600	<0.50	750	<0.50	68	0.18	0.22	0.043	<0.0020	0.96		0.65	0.44	0.78	18	5.5	1.1	350	910	72	31								
	19-Nov-14 to 30-Mar-21																	Insufficient Water Volume for Sampling																
TVR 7.1	25-Mar-15 to 22-Jul-16																Insufficient Water Volume for Sampling																	
	18-Nov-16	4.2	7.76	720	63	1,100	<0.50	270	<0.50	520	0.24	0.24	<0.010	<0.0020	0.98		2.9	0.20	0.20	130	47	3.2	37	320	320	14								
	28-Mar-17 to 18-Apr-18																Insufficient Water Volume for Sampling																	
	23-Jul-18	2.2	8.21	620	20	1,000	<1.0	270	<1.0	460	0.80	0.82	0.020	<0.0020		0.024	<1.0	0.16	0.34	120	42	2.6	36	330	250	10								
	16-Nov-18 to 28-Mar-19																Insufficient Water Volume for Sampling																	

Table E.8. Historical Groundwater Analytical Results - Physical and Routine Parameters

		Colour	pH	Total Dissolved Solids	Turbidity	Electrical Conductivity (EC)	Carbonate (CO ₃)	Alkalinity (Total as CaCO ₃)	Hydroxide (OH)	Hardness (CaCO ₃)	Dissolved Nitrate-N	Nitrate plus Nitrite-N	Dissolved Nitrite-N	Cyanide (CN)	Ion Balance	Ion Balance	Total Organic Carbon (TOC)	Dissolved Fluoride (F)	Total Kjeldahl Nitrogen	Dissolved Calcium (Ca)	Dissolved Magnesium (Mg)	Dissolved Potassium (K)	Dissolved Sodium (Na)	Bicarbonate (HCO ₃)	Dissolved Sulphate (SO ₄)	Dissolved Chloride (Cl)	E. Coli DST	Fecal Coliforms	Total Coliforms DST	Orthophosphate	Total Phosphorus (P)	Total Ammonia (N)	Total Chemical Oxygen Demand	
Health Canada Guidelines ¹ - Potable		≤15 TCU ^{AO}	7.0-10.5 ^{AO}	≤500 ^{AO}	narrative ^{AO}	NG	NG	NG	NG	NG	10 ^{MAC}	NG	1 ^{MAC}	0.2 ^{MAC}	NG		NG	1.5 ^{MAC}	NG	NG	NG	NG	≤200 ^{AO}	NG	≤500 ^{AO}	≤250 ^{AO}	nd/100 mL	NG	nd/100 mL	NG	NG	NG	NG	
Sample Location	Sample Date	PtCo units		mg/L	NTU	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		% difference	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	
TVSA-02	26-Mar-15	<2.0	8.00	240	120	420	<0.50	140	<0.50	220	0.11	0.11	<0.010	<0.0020	1.1		1.1	0.23	<0.50	64	15	0.54	4.6	170	65	2.1								
	20-Nov-15	<2.0	7.99	230	25	400	<0.50	140	<0.50	220	0.12	0.12	<0.010	<0.0020	1.1		0.88	0.24	0.12	65	15	0.69	3.3	170	65	1.1								
	28-Mar-16	<2.0	7.86	240	43	410	<0.50	140	<0.50	210	0.11	0.11	<0.010	<0.0020	1.0		0.93	0.23	0.21	60	15	0.48	3.7	170	72	1.2								
	21-Nov-16	<2.0	7.87	220	22	390	<0.50	130	<0.50	190	0.13	0.13	<0.010	<0.0020	1.0		1.0	0.25	0.14	55	13	0.58	2.8	160	68	1.1								
	30-Mar-17	<2.0	8.06	220	80	400	<0.50	140	<0.50	190	0.21	0.21	<0.010	<0.0020		2.7	0.87	0.24	0.39	53	14	0.40	3.8	170	63	2.9								
	15-Nov-17	<2.0	7.99	280	30	470	<1.0	150	<1.0	250	0.23	0.23	<0.010	<0.0020		0.60	<1.0	0.22	0.24	70	18	0.84	3.8	190	95	1.1								
	19-Apr-18	2.6	7.97	320	26	520	<1.0	140	<1.0	260	0.46	0.46	<0.010	<0.0020		0.86	0.69	0.20	0.13	75	19	0.68	4.5	170	130	2.5								
	22-Nov-18	<2.0	8.00	230	62	390	<1.0	140	<1.0	210	0.12	0.12	<0.010	<0.0020		3.4	2.5	0.25	0.10	60	15	0.65	3.5	170	66	<1.0								
	28-Mar-19	<2.0	8.02	310	85	530	<1.0	130	<1.0	270	0.59	0.59	<0.010	<0.0020		2.0	1.3	0.25	0.50	76	19	0.74	4.3	160	120	2.5								
	20-Nov-19	<2.0	7.35	210	4.3	360	<1.0	130	<1.0	200	0.096	0.096	<0.010	<0.0020		3.4	<2.5	0.22	0.69	55	14	0.60	3.7	160	52	1.1								
	30-Mar-20	<2.0	7.95	240	47	420	<1.0	150	<1.0	220	0.16	0.16	<0.010	<0.0020		1.7	<0.50	0.22	0.34	60	16	0.60	5.0	180	67	1.6								
	25-Nov-20	2.6	7.44	250	41	410	<1.0	160	<1.0	200	0.13	0.13	<0.010	<0.0020		7.0	0.57	0.23	0.080	57	14	0.60	3.9	190	73	1.5								
	31-Mar-21	3.4	8.00	240	1.3	430	<1.0	140	<1.0	200	0.12	0.12	<0.010	<0.0020		1.9	<0.50	0.27	0.43	56	16	0.63	4.1	180	71	1.9								
TVSA-03	14-May-14	<2.0	7.86	310	0.81	610	<0.50	190	<0.50	280	0.16	0.16	<0.010	<0.0020	1.0		1.7	0.24	0.094	78	20	0.91	9.1	240	76	6.6								
	12-Sep-14	<2.0	7.84	260	92	470	<0.50	170	<0.50	240	0.027	0.027	<0.010	<0.0020	1.0		1.0	0.29	0.16	69	16	0.85	4.8	210	69	1.7								
	26-Mar-15	<2.0	7.97	250	370	440	<0.50	150	<0.50	240	0.058	0.058	<0.010	<0.0020	1.1		1.3	0.23	<0.50	70	16	0.42	4.5	180	72	2.2								
	20-Nov-15	<2.0	8.00	250	57	430	<0.50	150	<0.50	250	0.043	0.043	<0.010	<0.0020	1.1		0.79	0.27	0.63	72	16	0.78	3.7	180	71	1.6								
	28-Mar-16	<2.0	7.86	250	88	450	<0.50	140	<0.50	230	0.064	0.064	<0.010	<0.0020	1.0		1.4	0.22	0.42	65	16	0.46	3.3	170	82	1.3								
	21-Nov-16	<2.0	7.86	240	100	430	<0.50	150	<0.50	210	0.070	0.07	<0.010	<0.0020	0.95		1.1	0.28	0.37	60	14	0.71	2.8	180	76	<1.0								
	30-Mar-17	<2.0	8.03	260	90	460	<0.50	150	<0.50	220	0.17	0.17	<0.010	<0.0020		2.7	0.67	0.23	0.60	62	15	0.52	3.5	180	81	3.7								
	16-Nov-17	<2.0	7.94	280	52	450	<1.0	150	<1.0	230	0.070	0.070	<0.010	<0.0020	0.95	1.3	0.74	0.28	0.24	67	17	0.91	3.9	180	98	<1.0								
	19-Apr-18	5.1	8.02	350	4.0	560	<1.0	150	<1.0	280	0.41	0.41	<0.010	<0.0020		2.2	0.56	0.23	0.13	81	19	0.84	4.8	180	140	5.4								
	22-Nov-18	4.5	8.02	250	62	410	<1.0	140	<1.0	230	0.065	0.065	<0.010	<0.0020		1.9	2.6	0.29	0.27	64	16	0.83	3.3	170	78	1.5								
	28-Mar-19																Could not access/frozen																	
	20-Nov-19	<2.0	7.56	230	32	400	<1.0	150	<1.0	190	0.061	0.061	<0.010	<0.0020		5.7	<2.5	0.28	0.72	54	13	0.70	3.0	180	67	1.7								
	30-Mar-20	3.7	7.79	250	110	440	<1.0	150	<1.0	230	0.099	0.099	<0.010	<0.0020		1.9	2.6	0.23	0.69	65	16	0.69	4.7	180	74	1.6								
	25-Nov-20	<2.0	7.31	240	0.6	420	<1.0	150	<1.0	200	0.068	0.068	<0.010	<0.0020		4.2	0.89	0.27	0.14	59	14	0.76	3.7	180	75	1.3								
	31-Mar-21	<2.0	7.77	250	17	450	<1.0	150	<1.0	220	0.10	0.10	<0.010	<0.0020		0.0090	0.62	0.24	3.40	61	16	0.70	4.0	180	75	2.1								
TVSA-04	15-May-14	4.9	7.88	1,000	4.4	1,600	<0.50	280	<0.50	780	0.11	0.15	0.042	<0.0020	1.1		4.7	0.25	0.13	190	72	4.9	65	340	500	42								
	12-Sep-14	<2.0	7.71	810	8.1	1,300	<0.50	380	<0.50	600	0.67	0.69	0.019	<0.0020	1.0		4.2	0.24	0.41	150	56	3.7	60	470	250	61								
	26-Mar-15	3.1	7.72	910	1.8	1,500	<0.50	320	<0.50	700	0.54	0.54	<0.010	<0.0020	1.1		3.7	0.21	0.24	180	64	3.1	68	390	370	35								
	20-Nov-15	20	8.04	840	28	1,300	<0.50	330	<0.50	610	0.29	0.30	0.018	<0.0020	1.1		5.6	0.15	1.7	170	47	7.7	69	400	320	26								
	28-Mar-16	16	7.86	800	40	1,200	<0.50	310	<0.50	540	0.58	0.																						

Table E.8. Historical Groundwater Analytical Results - Physical and Routine Parameters

Health Canada Guidelines ¹ - Potable		Colour	pH	Total Dissolved Solids	Turbidity	Electrical Conductivity (EC)	Carbonate (CO ₃)	Alkalinity (Total as CaCO ₃)	Hydroxide (OH)	Hardness (CaCO ₃)	Dissolved Nitrate-N	Nitrate plus Nitrite-N	Dissolved Nitrite-N	Cyanide (CN)	Ion Balance	Ion Balance	Total Organic Carbon (TOC)	Dissolved Fluoride (F)	Total Kjeldahl Nitrogen	Dissolved Calcium (Ca)	Dissolved Magnesium (Mg)	Dissolved Potassium (K)	Dissolved Sodium (Na)	Bicarbonate (HCO ₃)	Dissolved Sulphate (SO ₄)	Dissolved Chloride (Cl)	E. Coli DST	Fecal Coliforms	Total Coliforms DST	Orthophosphate	Total Phosphorus (P)	Total Ammonia (N)	Total Chemical Oxygen Demand	
		≤15 TCU ^{AO}	7.0-10.5 ^{AO}	≤500 ^{AO}	narrative ^{AO}	NG	NG	NG	NG	NG	10 ^{MAC}	NG	1 ^{MAC}	0.2 ^{MAC}	NG		NG	1.5 ^{MAC}	NG	NG	NG	NG	NG	≤200 ^{AO}	NG	≤500 ^{AO}	≤250 ^{AO}	nd/100 mL	NG	nd/100 mL	NG	NG	NG	NG
Sample Location	Sample Date	PtCo units		mg/L	NTU	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		% difference	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	
TVSA-07	15-May-14	<2.0	7.77	480	670	800	<0.50	310	<0.50	410	0.68	0.69	<0.010	<0.0020	1.1		1.4	0.21	0.60	120	28	1.3	23	370	110	10								
	12-Sep-14	<2.0	7.72	390	850	700	<0.50	290	<0.50	340	0.23	0.24	<0.010	<0.0020	1.0		2.3	0.21	0.94	98	23	1.2	19	350	70	7.2								
	26-Mar-15 to 28-Mar-16	Insufficient Water Volume for Sampling																																
	21-Nov-16	<2.0	7.62	490	3,200	840	<0.50	340	<0.50	390	0.29	0.29	<0.010	<0.0020	0.94		0.98	0.22	0.11	110	27	1.3	24	420	110	8.5								
	29-Mar-17	Could not access/frozen																																
	15-Nov-17	<2.0	7.74	530	19	870	<1.0	350	<1.0	460	0.55	0.55	<0.010	<0.0020		0.0070	<2.0	0.16	0.82	130	32	1.5	20	430	130	9.2								
	19-Apr-18	Could not access/frozen																																
	21-Nov-18	2.5	7.95	490	3600	780	<1.0	330	<1.0	400	0.061	0.061	<0.010	<0.0020		4.0	<10	0.22	0.81	120	27	1.2	15	410	120	5.9								
	28-Mar-19	Insufficient Water Volume for Sampling																																
	20-Nov-19 to 31-Mar-20	Could not locate																																
25-Nov-20	Could not locate																																	
30-Mar-21	<2.0	7.45	480	1700	830	<1.0	320	<1.0	410	0.32	0.32	<0.010	<0.0020		0.052	1.2	0.21	3.8	120	27	1.5	17	390	120	7.4									
TVSA-08	14-May-14	13	7.93	230	290	430	<0.50	150	<0.50	190	0.12	0.12	<0.010	<0.0020	0.9		4.8	0.21	0.25	52	14	1.3	5.7	180	60	4.1								
	12-Sep-14	3.3	7.79	280	270	470	<0.50	160	<0.50	250	0.07	0.07	<0.010	<0.0020	1.0		5.1	0.22	<0.50	74	15	1.1	3.7	190	86	2								
	25-Mar-15	<2.0	7.63	320	960	550	<0.50	170	<0.50	290	0.11	0.12	<0.010	<0.0020	1.1		1.4	0.21	<0.25	83	19	0.77	6.5	210	99	3.2								
	19-Nov-15	2.9	7.82	300	47	510	<0.50	180	<0.50	270	0.082	0.082	<0.010	<0.0020	1.0		1.3	0.22	1.1	80	17	0.81	5.1	220	87	2.3								
	28-Mar-16	<2.0	7.63	330	870	570	<0.50	200	<0.50	290	0.11	0.11	<0.010	<0.0020	1.0		2.0	0.20	1.0	85	20	0.66	5.6	250	99	1.9								
	21-Nov-16	2.1	7.63	370	1,400	640	<0.50	230	<0.50	320	0.086	0.086	<0.010	<0.0020	1.0		1.1	0.20	0.10	95	20	0.81	5.6	280	110	2.4								
	29-Mar-17	3.7	7.96	260	64	460	<0.50	150	<0.50	240	0.16	0.16	<0.010	<0.0020		2.8	<1.0	0.23	0.54	68	17	0.63	5.5	190	76	2.9								
	15-Nov-17	<2.0	7.86	320	5.0	520	<1.0	180	<1.0	280	0.14	0.14	<0.010	<0.0020		0.20	<0.50	0.23	0.056	84	17	0.87	4.6	220	100	1.8								
	19-Apr-18	<2.0	7.84	430	1800	740	<1.0	260	<1.0	360	0.16	0.16	<0.010	<0.0020		5.1	<2.5	0.16	1.5	100	25	0.81	5.8	320	140	2.8								
	22-Nov-18	2.7	8.01	270	980	440	<1.0	170	<1.0	230	0.094	0.094	<0.010	<0.0020		2.0	7.4	0.26	0.52	66	16	0.60	3.9	200	77	2.2								
	28-Mar-19	Could not access/frozen																																
	21-Nov-19	<2.0	7.87	290	960	480	<1.0	160	<1.0	250	0.061	0.061	<0.010	<0.0020		0.13	3.1	0.22	0.68	70	17	0.91	5.8	190	94	3.2								
	31-Mar-20	<2.0	7.93	320	73	560	<1.0	170	<1.0	280	0.11	0.11	<0.010	<0.0020		0.82	<0.50	0.20	<0.25	79	20	0.79	8.2	210	110	4.9								
	25-Nov-20	2.7	7.53	300	97	510	<1.0	180	<1.0	240	0.065	0.065	<0.010	<0.0020		5.0	0.70	0.21	0.29	70	17	0.84	6.9	220	99	3.6								
	31-Mar-21	9.3	7.81	280	57	500	<1.0	200	<1.0	250	0.15	0.15	<0.010	<0.0020		0.4	2.20	0.23	0.38	73	17	1.1	3.8	240	60	1.4								
	TH-B1	14-May-14	<2.0	8.01	530	2.6	910	<0.50	320	<0.50	310	0.01	0.01	<0.010	<0.0020	1.0		1.8	0.37	0.44	83	24	2	74	400	130	16							
6-Apr-16		2.7	8.22	790	1,800	1,400	<0.50	650	<0.50	19	<0.010	<0.020	<0.010	<0.0020	1.0		2.8	0.81	2.7	5.3	1.4	0.96	320	800	37	30								
21-Nov-16		<2.0	7.86	450	2.0	790	<0.50	320	<0.50	180	<0.010	<0.020	<0.010	<0.0020	0.9		2.1	0.43	0.36	46	16	1.2	97	390	85	9.0								
30-Mar-17		<2.0	8.12	370	5.6	650	<0.50	240	<0.50	160	<0.010	<0.010	<0.010	<0.0020		3.9	0.87	0.40	0.52	40	15	0.89	72	290	95	3.8								
16-Nov-17		<2.0	8.07	340	6.8	580	<1.0	230	<1.0	150	<0.010	<0.014	<0.010	<0.0020		1.4	1.1	0.45	0.39	38	14	1.2	71	280	75	2.6								
19-Apr-18		<2.0	8.16	310	1.1	560	<1.0	220	<1.0	140	<0.010	<0.014	<0.010	<0.0020		0.60	<0.50	0.39	0.44	36	13	0.97	64	270	62	2.8								
22-Nov-18		<2.0	8.07	350	2.3	600	<1.0	270	<1.0	150	0.019	0.019	<0.010	<0.0020		2.3	1.9	0.46	0.36	36	13	0.99	77	330	52	3.5								
28-Mar-19		<2.0	8.15	320	2.5	560	<1.0	230	<1.0	140	0.022	0.022	<0.010	<0.0020		1.3	1.4	0.41	0.34	35	13	0.96	67	280	60	2.7								
20-Nov-19		3.2	7.83	300	0.55	530	<1.0	220	<1.0	110	<0.010	<0.014	<0.010	<0.0020		4.3	1.4	0.46	0.34	29	11	1.0	67	270	57	2.4								
30-Mar-20		<2.0	7.90	290	1.4	500	<1.0	200	<1.0	130	0.011	<0.014	<0.010	<0.0020		4.0	0.88	0.44	0.38	32	12	1.0	69	240	55	1.7								
25-Nov-20		<2.0	7.68	320	1.1	530	<1.0	230	<1.0	120	<0.010	<0.014	<0.010	<0.0020		2.3	1.0	0.45	0.42	31	11	1.0	75	280	65	3.6								
31-Mar-21		3.7	8.17	290	0.84	530	<1.0	200	<1.0	120	<0.010	<0.010	<0.010	<0.0020		1.3	0.8	0.45	0.35	30	12	1.0	63	250	59	2.4								

Table E.8. Historical Groundwater Analytical Results - Physical and Routine Parameters

		Colour	pH	Total Dissolved Solids	Turbidity	Electrical Conductivity (EC)	Carbonate (CO ₃)	Alkalinity (Total as CaCO ₃)	Hydroxide (OH)	Hardness (CaCO ₃)	Dissolved Nitrate-N	Nitrate plus Nitrite-N	Dissolved Nitrite-N	Cyanide (CN)	Ion Balance	Ion Balance	Total Organic Carbon (TOC)	Dissolved Fluoride (F)	Total Kjeldahl Nitrogen	Dissolved Calcium (Ca)	Dissolved Magnesium (Mg)	Dissolved Potassium (K)	Dissolved Sodium (Na)	Bicarbonate (HCO ₃)	Dissolved Sulphate (SO ₄)	Dissolved Chloride (Cl)	E. Coli DST	Fecal Coliforms	Total Coliforms DST	Orthophosphate	Total Phosphorus (P)	Total Ammonia (N)	Total Chemical Oxygen Demand	
Health Canada Guidelines ¹ - Potable		≤15 TCU ^{AO} Pico units	7.0-10.5 ^{AO}	≤500 ^{AO} mg/L	narrative ^{AO} NTU	NG	NG	NG	NG	NG	10 ^{MAC} mg/L	NG	1 ^{MAC} mg/L	0.2 ^{MAC} mg/L	NG	% difference	NG	1.5 ^{MAC} mg/L	NG	NG	NG	NG	≤200 ^{AO} mg/L	NG	≤500 ^{AO} mg/L	≤250 ^{AO} mg/L	nd/100 mL	NG	nd/100 mL	NG	NG	NG	NG	
Sample Location	Sample Date					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	mpn/100 mL	mpn/100 mL	mpn/100 mL	mg/L	mg/L	mg/L	mg/L	
SW CELL 2	4-Mar-08	<5	8.07	374	2.8	584	<0.5	225	<0.5	310	0.223	0.223	<0.003	<0.002	0.97		0.09	0.27	0.06	92	20	1.4	11	274	109	4.9								
	22-Apr-08	<2	8.2	310	0.9	527	<0.5	194	<0.5	260	0.169	0.17	<0.003	<0.002	0.99		1.4	0.23	<0.05	75	19	2	11	236	86	4.9								
	23-May-08	3	8.1	320	3.9	490	<0.5	74	<0.5	190	2.7	2.8	0.021	<0.002	0.94		3.5	0.31	0.34	50	16	3.8	22	90	170	4								
	24-Jun-08	<2	8.3	250	2.1	410	<0.5	130	<0.5	200	0.34	0.34	<0.003	<0.002	0.97		1.6	0.34	0.23	55	16	1.8	1.8	160	86	4.1								
	17-Jul-08	2	8.4	200	0.8	350	3.2	130	<0.5	160	0.15	0.15	<0.003	<0.002	0.9		1.8	0.23	0.17	42	13	1.2	6.1	150	58	3.2								
	28-Jul-08	<2	8.3	200	1.8	330	0.9	130	<0.5	190	0.081	0.096	0.015	<0.002	1.1		2.3	0.25	0.13	53	15	1	4.9	160	46	2.1								
	20-Aug-08	4	8.3	190	0.8	330	<0.5	130	<0.5	180	0.001	0.001	<0.003	<0.002	1.1		1.8	0.22	0.16	50	13	1.1	4.6	160	43	2.2								
	12-Sep-08	<2	8.3	190	0.5	330	<0.5	120	<0.5	170	<0.003	<0.003	<0.003	<0.002	1.1		2.3		0.26	48	13	0.9	4.2	150	43	1.5								
	23-Oct-08	<2	8.1	180	1	330	<0.5	130	<0.5	170	0.059	0.059	<0.003	<0.002	1		1.6		0.15	46	13	1.1	4.2	160	39	2								
	26-Nov-08	<2	8.2	180	0.4	340	<0.5	130	<0.5	160	0.05	0.05	<0.003	<0.002	0.97		1.5		0.12	42	12	1.2	4.5	150	43	<1								
	8-Dec-08	<2	8.2	190	1.7	330	<0.5	130	<0.5	170	<0.003	<0.003	<0.003	<0.002	1		1.7	0.28	0.11	48	12	1.2	4.3	160	44	<1								
	19-Jan-09	<2	8.2	190	5.9	350	<0.5	130	<0.5	150	0.034	0.034	<0.003	<0.002	0.86		1.9	0.23	0.09	41	12	0.9	3.7	160	51	<1								
	18-Feb-09	<2	8.2	200	1.1	330	<0.5	140	<0.5	170	0.056	0.056	<0.003	<0.002	0.93		1.4	0.32	0.14	44	13	0.8	4.2	170	52	<1								
	26-Mar-09													<0.002						70	17	1.0	8.4											
	20-Jul-09	<2	8.25	290	0.7	480	<0.5	170	<0.5	240	0.097	0.097	<0.003	<0.002	0.93		1.8	0.21	0.28	64	18	1.1	9.3	210	91	8								
	PS CELL 1	10-Mar-09	<2	8.01	240	0.3	400	<0.5	160	<0.5	210	0.003	0.003	<0.003	<0.002	1.0		1.7	0.23	0.10	60	15	1.0	6.3	190	58	3							
	PS CELL 2	16-Apr-09	<2	8.05	220	0.3	380	<0.5	150	<0.5	190	0.074	0.074	<0.003	<0.002	0.96		1.7	0.27	0.07	52	14	1.2	5.8	180	55	2							
10-Mar-09			7.95	290	0.4	490	<0.5	180	<0.5	250	0.009	0.009	<0.003		1.0				<0.05	72	17	1.0	8.6	220	74	5								
16-Apr-09	<2	7.91	280	0.8	470	<0.5	170	<0.5	230	0.13	0.13	<0.003	<0.002	0.95		1.8	0.26	0.05	66	16	1.3	8.6	210	84	4									
PS WSL BLEND	6-Mar-08	<5	8.1	302	0.8	503	<0.5	195	<0.5	240	0.14	0.14	<0.003	<0.002	0.9		0.8	0.25	<0.05	69	16	1.1	9.5	238	84.4	4.2								
PS BLEND	19-May-09	8	8.08	210	0.4	350	<0.5	130	<0.5	180	0.05	0.050	<0.003	<0.002	1.0		1.4	0.23	0.07	51	13	1.0	5.2	160	53	2								
	18-Jun-09	<2	8.31	240	0.9	410	1.5	150	<0.5	210	0.044	0.044	<0.003	<0.002	1.0		1.5	0.22	0.12	58	16	1.2	6.9	180	67	4								
	20-Jul-09	<2	8.33	230	0.6	380	1.9	140	<0.5	200	0.010	0.010	<0.003	<0.002	1.0		1.8	0.22	0.22	54	16	1.2	7.3	170	67	4								
	20-Aug-09	<2	8.39	250	0.3	410	4.3	140	<0.5	210	0.010	0.010	<0.003	<0.002	0.99		1.9	0.22	0.17	55	17	1.2	8.1	160	75	6								
	25-Sep-09	<2	8.20	260	0.6	420	<0.5	160	<0.5	220	0.031	0.031	<0.003	<0.002	0.97		2.3	0.25	0.19	61	17	1.2	7.4	190	76	7								
	28-Oct-09	<2	8.20	290	0.8	500	<0.5	170	<0.5	250	0.079	0.079	<0.003	<0.002	1.0		2.3	0.23	0.18	69	19	1.4	10	210	83	8								
	16-Nov-09	<2	8.19	320	0.5	510	<0.5	180	<0.5	250	0.079	0.079	<0.003	<0.002	0.92		2.0	0.23	0.20	69	20	1.2	11	220	110	9								
	3-Dec-09	<2	8.14	330	0.5	500	<0.5	<0.5	<0.5	280	0.069	0.069	<0.003	<0.002	1.1		1.7	0.23	0.15	79	21	1.4	11	230	92	9								

Table E.8. Historical Groundwater Analytical Results - Physical and Routine Parameters

		Colour	pH	Total Dissolved Solids	Turbidity	Electrical Conductivity (EC)	Carbonate (CO ₃)	Alkalinity (Total as CaCO ₃)	Hydroxide (OH)	Hardness (CaCO ₃)	Dissolved Nitrate-N	Nitrate plus Nitrite-N	Dissolved Nitrite-N	Cyanide (CN)	Ion Balance	Ion Balance	Total Organic Carbon (TOC)	Dissolved Fluoride (F)	Total Kjeldahl Nitrogen	Dissolved Calcium (Ca)	Dissolved Magnesium (Mg)	Dissolved Potassium (K)	Dissolved Sodium (Na)	Bicarbonate (HCO ₃)	Dissolved Sulphate (SO ₄)	Dissolved Chloride (Cl)	E. Coli DST	Fecal Coliforms	Total Coliforms DST	Orthophosphate	Total Phosphorus (P)	Total Ammonia (N)	Total Chemical Oxygen Demand	
Health Canada Guidelines ¹ - Potable		≤15 TCU ^{AO} PICO units	7.0-10.5 ^{AO}	≤500 ^{AO} mg/L	narrative ^{AO} NTU	NG µS/cm	NG mg/L	NG mg/L	NG mg/L	NG mg/L	10 ^{MAC} mg/L	NG mg/L	1 ^{MAC} mg/L	0.2 ^{MAC} mg/L	NG		% difference	NG mg/L	1.5 ^{MAC} mg/L	NG mg/L	NG mg/L	NG mg/L	NG mg/L	≤200 ^{AO} mg/L	NG mg/L	≤500 ^{AO} mg/L	≤250 ^{AO} mg/L	nd/100 mL	NG mpn/100 mL	nd/100 mL	NG mg/L	NG mg/L	NG mg/L	NG mg/L
Sample Location	Sample Date																																	
PS BLEND (cont)	11-Dec-14	<2.0	7.99	360	0.74	610	<0.50	200	<0.50	330	0.033	0.033	<0.010	<0.0020	1.1		2.0	0.24	<0.050	95	23	1.2	12	250	100	4.6								
	22-Jan-15	2.3	7.78	360	0.35	600	<0.50	200	<0.50	310	0.06	0.06	<0.010	<0.0020	1.1		1.3	0.23	0.081	89	22	1.3	10	240	110	4.4								
	11-Feb-15	<2.0	7.81	360	0.49	600	<0.50	190	<0.50	330	0.047	0.047	<0.010	<0.0020	1.1		1.5	0.23	0.21	93	23	1.1	11	240	110	3.7								
	25-Mar-15	<2.0	7.87	330	0.25	580	<0.50	190	<0.50	290	0.052	0.052	<0.010	<0.0020	1.0		1.6	0.23	0.062	83	20	1.1	9.4	230	100	5.0								
	15-Apr-15	<2.0	8.16	310	0.3	530	<0.50	180	<0.50	280	0.029	0.029	<0.010	<0.0020	1.1		0.72	0.22	0.069	79	19	0.99	8.7	220	92	4.1								
	20-May-15	4.6	8.22	300	0.2	520	<0.50	170	<0.50	250	0.011	0.011	<0.010	<0.0020	0.98		1.4	0.22	0.10	73	17	0.79	7.5	210	99	3.6								
	17-Jun-15	2.2	8.37	280	0.19	490	1.7	160	<0.50	240	<0.010	<0.020	<0.010	<0.0020	0.99		1.3	0.22	0.074	67	17	0.88	7.9	190	88	3.4								
	14-Jul-15	<2.0	8.23	280	<0.10	490	<0.50	150	<0.50	240	<0.010	<0.020	<0.010	<0.0020	1.0		1.6	0.23	0.11	67	18	0.93	8.2	190	92	3.4								
	26-Aug-15	7.1	8.23	290	0.27	470	<0.50	160	<0.50	260	<0.010	<0.020	<0.010	<0.0020	1.1		1.5	0.24	0.12	72	20	1.1	8.2	200	84	3.4								
	23-Sep-15	<2.0	8.3	260	0.2	470	<0.50	160	<0.50	240	<0.010	<0.020	<0.010	<0.0020	1.1		1.2	0.25	0.98	67	<0.0020	1.1	7.0	200	71	3.2								
	14-Oct-15	<2.0	8.31	280	0.2	490	<0.50	160	<0.50	240	<0.010	<0.020	<0.010	<0.0020	1.0		1.3	0.25	0.13	67	19	1.1	7.2	200	86	3.2								
	20-Nov-15	2.9	8.23	330	0.16	520	<0.50	190	<0.50	290	<0.010	<0.020	<0.010	<0.0020	1.0		0.97	0.24	0.16	82	20	1.2	7.9	240	98	3.6								
	14-Dec-15	<2.0	8.13	320	0.47	550	<0.50	180	<0.50	280	0.025	0.025	<0.010	<0.0020	1.0		1	0.26	0.098	78	20	1.1	8.2	220	100	3.2								
	13-Jan-16	<2.0	7.88	330	0.16	550	<0.50	180	<0.50	280	0.046	0.05	<0.010	<0.0020	1.00		1.2	0.24	<0.050	79	20	1.1	8.2	220	100	3.0								
	17-Feb-16	<2.0	7.89	330	0.24	600	<0.50	180	<0.50	290	0.049	0.049	<0.010	<0.0020	1.0		1.3	0.25	0.090	84	20	0.95	7.8	220	100	3.4								
	29-Mar-16	<2.0	7.98	310	0.10	510	<0.50	180	<0.50	260	0.031	0.031	<0.010	<0.0020	1.0		0.98	0.21	0.49	72	19	0.96	7.4	220	96	3.0								
	20-Apr-16	<2.0	8.26	300	0.30	510	<0.50	170	<0.50	280	0.011	<0.020	<0.010	<0.0020	1.1		1.3	0.23	<0.050	79	20	0.92	7.6	200	93	3.0								
	18-May-16	<2.0	8.24	290	0.29	500	<0.50	150	<0.50	250	0.014	<0.020	<0.010	<0.0020	1.0		0.79	0.23	0.39	68	19	0.99	8.1	180	96	3.3								
	8-Jun-16	<2.0	8.34	280	0.15	470	<0.50	150	<0.50	250	0.013	<0.020	<0.010	<0.0020	1.0		1.7	0.23	0.12	68	19	0.94	7.4	180	94	2.3								
	22-Jul-16	3	8.28	280	0.20	450	<0.50	150	<0.50	240	0.023	0.023	<0.010	<0.0020	1.0		0.83	0.24	0.15	67	18	0.98	7.2	190	90	2.8								
	15-Aug-16	<2.0	8.34	280	0.30	460	<0.50	150	<0.50	230	<0.010	<0.020	<0.010	<0.0020	0.95		1.5	0.24	0.19	63	18	0.95	7.3	190	97	3.1								
	14-Sep-16	2.4	8.22	290	0.19	490	<0.50	150	<0.50	250	<0.010	<0.020	<0.010	<0.0020	1.0		1.6	0.25	0.17	68	19	0.62	8.0	190	100	4.0								
	13-Oct-16	2.3	8.22	310	0.22	510	<0.50	160	<0.50	260	<0.010	<0.020	<0.010	<0.0020	1.0		1.3	0.26	0.77	70	22	1.3	9.7	190	110	4.4								
	21-Nov-16	<2.0	8.19	310	<0.10	520	<0.50	160	<0.50	250	0.015	<0.020	<0.010	<0.0020	0.9		1.5	0.25	0.12	70	19	1.0	7.5	200	110	3.3								
	13-Dec-16	2.2	8.10	350	0.16	550	<0.50	200	<0.50	300	0.046	0.046	<0.010	<0.0020	1.0		1.2	0.25	0.17	84	21	1.0	8.4	250	110	3.8								
	16-Jan-17	3.5	7.86	340	0.23	580	<0.50	180	<0.50	290	0.088	0.088	<0.010	<0.0020		1.0	1.3	0.25	0.11	81	21	1.1	8.4	220	120	3.4								
	15-Feb-17	<2.0	8.02	340	0.48	590	<0.50	180	<0.50	290	0.070	0.070	<0.010	<0.0020		1.0	0.77	0.26	0.058	82	22	1.2	8.8	220	120	3.7								
	30-Mar-17	<2.0	8.04	320	0.15	540	<0.50	170																										

Table E.8. Historical Groundwater Analytical Results - Physical and Routine Parameters

		Colour	pH	Total Dissolved Solids	Turbidity	Electrical Conductivity (EC)	Carbonate (CO ₃)	Alkalinity (Total as CaCO ₃)	Hydroxide (OH)	Hardness (CaCO ₃)	Dissolved Nitrate-N	Nitrate plus Nitrite-N	Dissolved Nitrite-N	Cyanide (CN)	Ion Balance	Ion Balance	Total Organic Carbon (TOC)	Dissolved Fluoride (F)	Total Kjeldahl Nitrogen	Dissolved Calcium (Ca)	Dissolved Magnesium (Mg)	Dissolved Potassium (K)	Dissolved Sodium (Na)	Bicarbonate (HCO ₃)	Dissolved Sulphate (SO ₄)	Dissolved Chloride (Cl)	E. Coli DST	Fecal Coliforms	Total Coliforms DST	Orthophosphate	Total Phosphorus (P)	Total Ammonia (N)	Total Chemical Oxygen Demand
Health Canada Guidelines ¹ - Potable		≤15 TCU ^{AO} Pico units	7.0-10.5 ^{AO}	≤500 ^{AO} mg/L	narrative ^{AO} NTU	NG	NG	NG	NG	NG	10 ^{MAC} mg/L	NG	1 ^{MAC} mg/L	0.2 ^{MAC} mg/L	NG	% difference	NG	1.5 ^{MAC} mg/L	NG	NG	NG	NG	≤200 ^{AO} mg/L	NG	≤500 ^{AO} mg/L	≤250 ^{AO} mg/L	nd/100 mL	NG	nd/100 mL	NG	NG	NG	NG
Sample Location	Sample Date					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	mpn/100 mL	mpn/100 mL	mpn/100 mL	mg/L	mg/L	mg/L	mg/L
PS BLEND (cont)	22-Jul-21	6.9	8.22	270	0.33	410	<1.0	190	<1.0	210	0.086	0.086	<0.010	<0.0020		10	<5.0	0.22	0.031	55	16	0.73	6.7	230	71	3.0							
	11-Aug-21	<2.0	8.21	270	0.30	390	<1.0	190	<1.0	200	0.012	0.012	<0.010	<0.0020		12	1.7	1.1	0.13	53	17	0.73	5.9	240	70	2.8							
	22-Sep-21	6.6	8.22	250	0.47	410	<1.0	180	<1.0	200	<0.010	<0.010	<0.010	<0.0020		9.3	1.2	0.31	0.17	53	16	0.88	5.5	220	65	2.6							
	20-Oct-21	<2.0	8.30	260	0.35	430	<1.0	150	<1.0	240	<0.010	<0.010	<0.010	<0.0020		4.3	1.1	0.24	0.14	63	19	0.91	6.5	180	74	3.0							
	10-Nov-21	<2.0	8.33	260	0.32	430	<1.0	150	<1.0	220	0.54	0.54	<0.010	<0.0020		1.3	1.4	0.22	<0.10	59	17	0.87	5.8	180	81	<1.0							
	15-Dec-21	<2.0	8.02	290	0.38	470	<1.0	170	<1.0	270	0.011	0.011	<0.010	<0.0020		6.5	0.67	0.23	0.12	76	21	1.0	7.1	210	79	1.7							
	12-Jan-22	<2.0	7.64	300	0.37	500	<1.0	180	<1.0	270	0.036	0.036	<0.010	<0.0020		3.3	0.86	0.23	0.07	75	21	1.0	7.4	210	87	2.1							
	17-Feb-22	<2.0	8.14	300	0.23	520	<1.0	180	<1.0	270	0.056	0.056	<0.010	<0.0020		1.5	0.85	0.24	0.09	74	20	0.9	7	210	90	2.3							
	9-Mar-22	2.5	8.13	300	0.18	510	<1.0	180	<1.0	250	0.066	0.066	<0.010	<0.0020		1.7	0.76	0.28	0.11	70	19	0.8	6.7	220	91	2.1							
	13-Apr-22	<2.0	8.16	280	0.45	470	<1.0	160	<1.0	240	0.034	0.034	<0.010	<0.00050		1.5	<0.50	0.099	0.09	65	18	0.9	6.3	200	89	2.2							
	11-May-22	<2.0	8.14	270	1.2	470	<1.0	150	<1.0	250	<0.010	<0.010	<0.010	<0.00050		4.2	1.3	0.098	0.12	68	19	0.9	7.1	180	86	2.2							
	9-Jun-22	<2.0	8.25	270	0.55	450	<1.0	160	<1.0	230	<0.010	<0.010	<0.010	<0.00050		0.91	0.67	0.25	0.15	63	18	0.9	6.9	190	87	2.6							
	6-Jul-22	<2.0	7.91	260	0.60	420	<1.0	150	<1.0	230	0.016	0.016	<0.010	0.0006		2.3	0.96	0.23	0.16	61	18	0.9	6.8	180	78	2.5							
	3-Aug-22	<2.0	8.06	230	0.30	410	<1.0	140	<1.0	200	<0.010	<0.010	<0.010	<0.00050		1.3	1.4	0.19	0.15	54	16	0.7	6	170	71	1.7							
	14-Sep-22	<2.0	7.96	230	0.52	370	<1.0	140	<1.0	190	<0.010	<0.010	<0.010	<0.00050		3.1	1.2	0.2	0.14	50	16	0.7	5.4	170	70	2.3							
	5-Oct-22	<2.0	7.68	220	0.36	370	<1.0	130	<1.0	190	<0.010	<0.010	<0.010	<0.00050		0.54	1.4	0.23	0.14	49	16	0.7	4.8	150	71	1.4							
	9-Nov-22	2.2	7.97	220	0.46	380	<1.0	130	<1.0	200	<0.010	<0.010	<0.010	0.00133		1.1	1.5	0.27	0.45	52	16	0.7	4.7	160	67	1.5							
	7-Dec-22	<2.0	8.11	270	0.51	440	<1.0	180	<1.0	210	0.018	0.018	<0.010	<0.00050		7.2	0.73	0.24	0.13	58	17	0.8	5.5	210	79	2.6							
	11-Jan-23	<2.0	8.01	280	0.30	470	<1.0	170	<1.0	250	0.054	0.054	<0.010	<0.00050		1.8	0.75	0.26	0.108	68	20	0.87	5.9	200	83	2.3							
	8-Feb-23	<2.0	8.03	290	0.30	480	<1.0	170	<1.0	260	0.078	0.078	<0.010	<0.00050		1.6	0.7	0.27	0.034	71	20	0.75	7.4	210	89	1.8							
	8-Mar-23	<2.0	8.00	280	0.23	470	<1.0	170	<1.0	240	0.10	0.10	<0.010	0.00068		1.7	<0.50	0.29	<0.020	67	18	0.71	5.5	210	87	1.0							
	12-Apr-23	<2.0	7.88	280	0.28	450	<1.0	180	<1.0	250	0.044	0.044	<0.010	<0.00050		1.1	0.55	0.28	0.147	68	20	0.71	5.6	210	78	1.4							
	10-May-23	<2.0	7.99	270	0.11	440	<1.0	160	<1.0	250	0.036	0.036	<0.010	<0.00050		3.7	0.88	0.26	0.078	68	19	0.68	6.1	190	81	1.2							
	26-Jun-23	<2.0	8.34	290	<0.10	460	2.7	170	<1.0	240	<0.010	<0.010	<0.010	<0.00050		2.0	1.4	0.26	0.155	64	20	0.83	7.4	200	92	2.9							
	25-Jul-23	<2.0	7.75	280	<0.10	450	<1.0	170	<1.0	230	<0.010	<0.010	<0.010	<0.00050		3.8	1.7	0.25	0.146	60	18	0.83	7.5	210	85	2.5							
	29-Aug-23	<2.0	7.70	270	<0.10	430	<1.0	170	<1.0	220	<0.010	<0.010	<0.010	<0.00050		5.8	1.3	0.23	0.118	58	18	0.81	6.8	200	86	3.0							
	13-Sep-23	<2.0	7.55	270	0.28	430	<1.0	160	<1.0	210	<0.010	<0.010	<0.010	<0.00050		5.5	0.98	0.24	0.131	56	18	0.79	6.5	190	89	2.4							
	11-Oct-23	<2.0	8.19	260	<0.10	430	<1.0	140	<1.0	220	<0.010	<0.010	<0.010	0.00058		0.42	0.65	0.28	0.091	59	18	0.87	6.5	170	88	3.0							
	22-Nov-23	<4.0	7.5	279	0.21	442	<1.5	155.4	&lt																								

Table E.8. Historical Groundwater Analytical Results - Physical and Routine Parameters

		Colour	pH	Total Dissolved Solids	Turbidity	Electrical Conductivity (EC)	Carbonate (CO ₃)	Alkalinity (Total as CaCO ₃)	Hydroxide (OH)	Hardness (CaCO ₃)	Dissolved Nitrate-N	Nitrate plus Nitrite-N	Dissolved Nitrite-N	Cyanide (CN)	Ion Balance	Ion Balance	Total Organic Carbon (TOC)	Dissolved Fluoride (F)	Total Kjeldahl Nitrogen	Dissolved Calcium (Ca)	Dissolved Magnesium (Mg)	Dissolved Potassium (K)	Dissolved Sodium (Na)	Bicarbonate (HCO ₃)	Dissolved Sulphate (SO ₄)	Dissolved Chloride (Cl)	E. Coli DST	Fecal Coliforms	Total Coliforms DST	Orthophosphate	Total Phosphorus (P)	Total Ammonia (N)	Total Chemical Oxygen Demand	
Health Canada Guidelines ¹ - Potable		≤15 TCU ^{AO}	7.0-10.5 ^{AO}	≤500 ^{AO}	narrative ^{AO}	NG	NG	NG	NG	NG	10 ^{MAC}	NG	1 ^{MAC}	0.2 ^{MAC}	NG			NG	1.5 ^{MAC}	NG	NG	NG	NG	≤200 ^{AO}	NG	≤500 ^{AO}	≤250 ^{AO}	nd/100 mL	NG	nd/100 mL	NG	NG	NG	NG
Sample Location	Sample Date	PiCo units		mg/L	NTU	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	% difference			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mpn/100 mL	mpn/100 mL	mpn/100 mL	mg/L	mg/L	mg/L	mg/L	
TW5	12-Jun-08		8.2	340		570	<0.5	200	<0.5	290	1.3	1.3	0.01		1.0		2.1	0.6	5.2	86	<0.004	0.6	6.7	240	89	7.4								
	23-Oct-08	<2	8.1	240	<0.1	400	<0.5	150	<0.5	210	0.2	0.2	0.003	<0.002	0.96		0.6	0.28	0.11	58	15	0.7	4.7	190	63	3								
	24-Nov-08	<2	7.8	220	<0.1	390	<0.5	150	<0.5	190	0.063	0.063	<0.003	<0.002	0.92		0.6	0.25	0.08	53	13	0.6	4.5	180	59	2								
	8-Dec-08	<2	7.9	240	<0.1	410	<0.5	150	<0.5	210	<0.003	<0.003	<0.003	<0.002	1.0		0.7	0.3	<0.05	62	14	0.7	4.7	190	63	1								
	21-Jan-09	<2	7.9	240	<0.1	420	<0.5	160	<0.5	190	0.082	0.082	<0.003	<0.002	0.87		0.7	0.24	0.05	54	14	0.6	4.1	190	69	1								
	18-Feb-09	<2	8.0	240	0.1	390	<0.5	150	<0.5	200	0.17	0.17	<0.003	<0.002	0.93		<0.5	0.28	0.09	55	15	<0.3	4.1	180	69	<1								
	26-Mar-09	<2	8.08	230	0.2	410	<0.5	150	<0.5	190	0.16	0.16	<0.003	<0.002	0.90		1.3	0.26	0.07	54	13	0.5	4.1	180	66	2								
	20-Aug-09	<2	8.03	230	<0.1	400	<0.5	180	<0.5	210	0.11	0.11	<0.003	<0.002	0.98		0.9	0.28	<0.05	60	15	0.7	5.1	210	46	2								
	3-Dec-09	<2	7.92	230	0.4	370	<0.5	<0.5	<0.5	220	0.064	0.064	<0.003	<0.002	1.1		0.7	0.25	0.08	61	15	0.7	4.0	180	61	2								
	28-Jun-10	<2	7.95	345	<0.1	570	<0.5	210	<0.5	304	0.88	0.88	<0.003	<0.002	1.0		2.4	0.26	<0.05	88	20	0.5	8.9	260	88	8								
	30-Jul-10	<5	7.97	270	0.3	453	<6	190	<5	246	0.4	<0.005	0.4					0.17		71.1	16.8	0.8	6.8	232	57.3	3.5								
	30-Aug-10	<2	8.03	238	<0.1	430	<0.5	170	<0.5	214	0.076	0.076	<0.003	<0.002	0.99		1.9	0.27	<0.05	61	15	0.9	4.6	210	51	2								
	28-Sep-10	<2	7.80	223	<0.1	390	<0.5	160	<0.5	208	0.19	0.19	<0.003	<0.002	1.0		1.7	0.29	<0.05	60	14	0.7	4.4	200	44	2								
	13-Dec-10	<2	8.07	230	0.2	410	<0.5	150	<0.5	210	0.12	0.12	<0.003	<0.002	1.0		1.1	0.24	0.08	59	15	0.6	3.6	190	55	2								
	14-Jun-11	2	7.66	770	0.2	1,200	<0.5	310	<0.5	610	1.5	1.5	<0.003	<0.002	0.99		2.6	0.18	0.24	180	40	1.4	29	380	290	38								
	14-Dec-11	<2	8.09	280	<0.1	480	<0.5	180	<0.5	250	0.17	0.17	<0.003	<0.002	1.0		1	0.26	<0.050	73	17	0.78	6.5	220	66	2.7								
	14-Jun-12	<2.0	7.78	430	<0.10	710	<0.50	240	<0.50	360	0.67	0.67	<0.0030	<0.0020	1.0		1.3	0.23	0.12	110	23	0.88	14	290	120	7.7								
	11-Dec-12	2.6	7.87	270	<0.10	460	<0.50	170	<0.50	250	0.14	0.14	<0.0030	<0.0020	1.1		1.1	0.26	0.058	74	17	0.85	6.8	210	62	4.8								
	TW5A (TW-5A, TW5-A)	9-Jan-14	3.3	7.71	600	25.00	1,000	<0.50	320	<0.50	470	0.47	0.47	<0.0030	<0.0050	0.9		2.8	0.23	0.15	130	36	2.4	26	410	200	16.0							
		23-Jan-14	<2.0	7.56	540	<0.10	890	<0.50	290	<0.50	440	0.18	0.19	<0.010	<0.0050	1.0		2.1	0.24	0.27	120	32	2	22	350	170	12.0	<1.0	<1.0	6.3	0.0030			
30-Jan-14		2.7	7.64	460	<0.10	800	<0.50	230	<0.50	390	0.15	0.15	<0.010	<0.0050	1.1		1.7	0.25	0.11	110	28	2	20	280	160	9.7								
6-Feb-14		<2.0	7.68	470	<0.10	770	<0.50	240	<0.50	390	0.17	0.17	<0.010	<0.0050	1.1		1.7	0.25	0.11	110	27	2	19	300	150	8.7				0.0130	0.003	<0.050		
13-Feb-14		2.7	7.76	470	0.27	790	<0.50	250	<0.50	380	0.14	0.14	<0.010	<0.0050	1.0		1.7	0.26	0.12	110	27	1.8	19	300	160	10.0	<1.0	<1.0	3.1	0.0030	0.010	<0.050		
20-Feb-14		<2.0	7.77	470	0.18	770	<0.50	250	<0.50	370	0.23	0.23	<0.010	<0.0050	1.0		1.5	0.25	0.12	110	26	1.7	18	310	160	9.3	<1.0	<1.0	1.0	0.0030	<0.0030	0.057		
27-Feb-14		<2.0	7.64	470	<0.10	760	<0.50	240	<0.50	420	0.21	0.21	<0.010	<0.0050	1.1		1.6	0.31	0.18	120	28	1.9	20	300	150	8.2	<1.0	<1.0	<1.0	0.0030	<0.0030	<0.050		
6-Mar-14			7.72	440	<0.10	730	<0.50	230	<0.50	370	0.16	0.16	<0.010		1.1		1.7	na	0.11	110	26	1.7	17	280	140	7.5	<1.0	<1.0	<1.0	0.0030	<0.0030	<0.050		
13-Mar-14			7.85	460	0.42	750	<0.50	240	&																									

Table E.8. Historical Groundwater Analytical Results - Physical and Routine Parameters

		Colour	pH	Total Dissolved Solids	Turbidity	Electrical Conductivity (EC)	Carbonate (CO ₃)	Alkalinity (Total as CaCO ₃)	Hydroxide (OH)	Hardness (CaCO ₃)	Dissolved Nitrate-N	Nitrate plus Nitrite-N	Dissolved Nitrite-N	Cyanide (CN)	Ion Balance	Ion Balance	Total Organic Carbon (TOC)	Dissolved Fluoride (F)	Total Kjeldahl Nitrogen	Dissolved Calcium (Ca)	Dissolved Magnesium (Mg)	Dissolved Potassium (K)	Dissolved Sodium (Na)	Bicarbonate (HCO ₃)	Dissolved Sulphate (SO ₄)	Dissolved Chloride (Cl)	E. Coli DST	Fecal Coliforms	Total Coliforms DST	Orthophosphate	Total Phosphorus (P)	Total Ammonia (N)	Total Chemical Oxygen Demand	
Health Canada Guidelines ¹ - Potable		≤15 TCU ^{AO}	7.0-10.5 ^{AO}	≤500 ^{AO}	narrative ^{AO}	NG	NG	NG	NG	NG	10 ^{MAC}	NG	1 ^{MAC}	0.2 ^{MAC}	NG	% difference	NG	1.5 ^{MAC}	NG	NG	NG	NG	≤200 ^{AO}	NG	≤500 ^{AO}	≤250 ^{AO}	nd/100 mL	NG	nd/100 mL	NG	NG	NG	NG	
Sample Location	Sample Date	PtCo units		mg/L	NTU	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	mpn/100 mL	mpn/100 mL	mpn/100 mL	mg/L	mg/L	mg/L	mg/L
TW7 (cont)	23-Jun-21	<2.0	7.89	230	0.38	400	<1.0	160	<1.0	200	0.089	0.089	<0.010	<0.0020		2.1	1.1	0.28	0.13	57	14	0.84	3.9	200	53	1.9								
	15-Dec-21	<2.0	7.64	300	3.4	480	<1.0	170	<1.0	310	0.088	0.088	<0.010	<0.0020		9.8	<0.50	0.23	0.096	88	21	1.0	5.2	210	80	2.1								
	9-Jun-22	<2.0	7.99	240	0.21	430	<1.0	160	<1.0	200	0.130	0.130	<0.010	<0.00050		3.7	<0.50	0.27	0.034	58	14	0.7	4.2	200	62	<1.0								
	7-Dec-22	<2.0	7.87	290	0.25	500	<1.0	190	<1.0	250	0.120	0.120	<0.010	<0.00050		2.8	0.51	0.26	0.041	72	17	1.0	5.7	230	84	2.0								
	26-Jun-23	3.6	8.13	280	<0.10	470	<1.0	190	<1.0	250	0.120	0.120	<0.010	<0.00050		0.12	0.71	0.28	0.03	71	17	1.0	6.3	230	68	2.5								
VW5	14-Apr-14	<2.0	7.92	320	0.50	540	<0.50	180	<0.50	260	0.30	0.3	<0.010	<0.0020	1.0		1.4	0.21	0.08	75	19	1.3	9	220	95	5.3	<1.0	<1.0	11	0.0040	<0.0030	<0.050		
	9-Jul-14	2.5	7.61	470	3.70	770	<0.50	260	<0.50	440	0.76	0.76	<0.010	<0.0020	1.1		1.6	0.19	0.14	130	28	1.1	14	320	130	9.5								
	24-Jul-14	2.5	7.77	310	0.15	540	<0.50	200	<0.50	280	0.15	0.15	<0.010	<0.0020	1.1		1.2	0.22	0.087	83	19	0.91	8.2	240	76	3.5	<1.0	<1.0	1	0.005		<5.0		
	1-Aug-14	na	8.07	250	0.15	460	<0.50	180	<0.50	230	0.062	0.062	<0.010		1.1				68	16	1.1	5.6	210	55	2.1	<1.0	<1.0	2	<0.0030		<5.0			
	8-Aug-14	na	8.00	250	0.21	450	<0.50	170	<0.50	230	0.052	0.052	<0.010		1.0				68	15	1.2	5.2	210	57	2.0	<1.0	<1.0	1	0.005		<5.0			
	15-Aug-14	na	7.88	260	<0.10	470	<0.50	180	<0.50	230	0.018	0.018	<0.010		1.0				68	16	1.1	5.3	220	61	2.2	<1.0	<1.0	2	0.003		<5.0			
	22-Aug-14	na	7.98	260	<0.10	460	<0.50	170	<0.50	220	0.054	0.054	<0.010		1.0				62	16	1.3	5.7	210	67	1.9	<1.0	<1.0	<1.0	0.003		<5.0			
	29-Aug-14	na	7.91	250	0.12	440	<0.50	160	<0.50	240	0.081	0.081	<0.010		1.1				69	15	1.3	5.5	200	60	1.4	<1.0	<1.0	<1.0	0.003		<5.0			
	4-Sep-14	na	7.96	250	0.15	430	<0.50	160	<0.50	240	0.079	0.079	<0.010		1.1				71	16	0.95	5.2	200	63	1.9	<1.0	<1.0	<1.0	0.003		<5.0			
	12-Sep-14	na	8.14	210	0.10	390	<0.50	140	<0.50	200	0.056	0.056	<0.010		1.0				57	13	1.1	3.4	180	53	<1.0	<1.0	<1.0	<0.0030			<5.0			
	11-Dec-14	2.5	7.91	320	0.28	540	<0.50	190	<0.50	290	0.12	0.12	<0.010	<0.0020	1.1		1.3	0.22	<0.050	83	19	0.9	7.3	230	88	3.0								
	17-Jun-15	<2.0	8.17	220	0.18	410	<0.50	160	<0.50	200	0.14	0.14	<0.010	<0.0020	1.0		1.0	0.26	<0.050	59	13	0.74	4.1	200	47	1.5								
	14-Dec-15	<2.0	7.96	280	0.23	480	<0.50	160	<0.50	240	0.12	0.12	<0.010	<0.0020	1.0		0.6	0.23	<0.050	69	17	0.86	5.6	200	85	1.6								
	8-Jun-16	4.8	7.99	230	<0.10	410	<0.50	150	<0.50	220	0.12	0.12	<0.010	<0.0020	1.1		1.2	0.29	0.058	62	15	0.89	4.5	180	59	1.3								
	13-Dec-16	<2.0	7.96	290	0.13	490	<0.50	160	<0.50	260	0.16	0.16	<0.010	<0.0020	1.0		0.8	0.23	0.11	75	18	0.64	4.8	190	93	1.5								
	14-Jun-17	3.3	8.08	230	<0.10	410	<0.50	150	<0.50	210	0.063	0.063	<0.010	<0.0020		3.1	0.90	0.29	0.052	60	15	0.88	4.7	180	53	1.8								
	13-Dec-17	<2.0	7.78	280	0.13	460	<1.0	160	<1.0	250	0.13	0.13	<0.010	<0.0020	1.0		0.88	1.2	0.24	0.057	71	18	0.66	4.4	190	89	1.1							
	13-Jun-18	<2.0	8.06	260	0.16	450	<1.0	160	<1.0	240	0.092	0.092	<0.010	<0.0020		3.3	<0.50	0.24	0.056	70	17	0.73	5.6	200	69	2.4								
	19-Dec-18	<2.0	7.96	290	0.16	510	<1.0	170	<1.0	230	0.11	0.11	<0.010	<0.0020		4.5	<0.50	0.22	0.067	67	16	0.59	4.8	200	94	2.0								
	24-Jun-19	<2.0	8.21	290	0.33	500	<1.0	180	<1.0	240	0.16	0.16	<0.010	<0.0020		4.5	1.6	0.29	0.10	68	17	0.82	6.2	220	90	2.5								
	6-Dec-19	5.0	7.85	300	<0.10	520	<1.0	170	<1.0	260	0.081	0.081	<0.010	<0.0020		0.48	1.4	0.24	0.067	74	19	0.87	7.4	210	93	3.7								
	23-Jun-20	<2.0	7.86	420	<0.10	710	<1.0	210	<1.0	350	0.15	0.15	<0.010	<0.0020		2.1	1.4	0.21	0.13	100	25	1.2	15	250	140	10								
	15-Dec-20	<2.0	7.06	330	<0.10	500	<1.0	220	<1.0	27																								

Table E.8. Historical Groundwater Analytical Results - Physical and Routine Parameters

		Colour	pH	Total Dissolved Solids	Turbidity	Electrical Conductivity (EC)	Carbonate (CO ₃)	Alkalinity (Total as CaCO ₃)	Hydroxide (OH)	Hardness (CaCO ₃)	Dissolved Nitrate-N	Nitrate plus Nitrite-N	Dissolved Nitrite-N	Cyanide (CN)	Ion Balance	Ion Balance	Total Organic Carbon (TOC)	Dissolved Fluoride (F)	Total Kjeldahl Nitrogen	Dissolved Calcium (Ca)	Dissolved Magnesium (Mg)	Dissolved Potassium (K)	Dissolved Sodium (Na)	Bicarbonate (HCO ₃)	Dissolved Sulphate (SO ₄)	Dissolved Chloride (Cl)	E. Coli DST	Fecal Coliforms	Total Coliforms DST	Orthophosphate	Total Phosphorus (P)	Total Ammonia (N)	Total Chemical Oxygen Demand	
Health Canada Guidelines ¹ - Potable		≤15 TCU ^{AO}	7.0-10.5 ^{AO}	≤500 ^{AO}	narrative ^{AO}	NG	NG	NG	NG	NG	10 ^{MAC}	NG	1 ^{MAC}	0.2 ^{MAC}	NG		NG	1.5 ^{MAC}	NG	NG	NG	NG	NG	≤200 ^{AO}	NG	≤500 ^{AO}	≤250 ^{AO}	nd/100 mL	NG	nd/100 mL	NG	NG	NG	NG
Sample Location	Sample Date	PtCo units		mg/L	NTU	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	% difference		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mpn/100 mL	mpn/100 mL	mpn/100 mL	mg/L	mg/L	mg/L	mg/L	
Health Canada Guidelines ¹ - Potable		NG	6.5-10.5 ^{AO}	≤500 ^{AO}	narrative ^{AO}	NG	NG	NG	NG	NG	10 ^{MAC}	NG	1 ^{MAC}	0.2 ^{MAC}	NG		NG	1.5 ^{MAC}	NG	NG	NG	NG	NG	≤200 ^{AO}	NG	≤500 ^{AO}	≤250 ^{AO}	nd/100 mL	NG	nd/100 mL	NG	NG	NG	NG
Alberta Tier 1 - Aquatic Life Guidelines ²		NG	6.5-9.0	NG	NG	NG	NG	NG	NG	NG	3	NG	0.12	0.005	NG		NG	NG	NG	NG	NG	NG	NG	NG	429	120	NG	NG	NG	NG	0.875 ⁵	NG	NG	
SHALLOW GW INT		22-Aug-07 to current																																
DEEP GW INT	23-Nov-07		7.97	747	150	1,100	<0.5	323	<0.5	610	2.67	2.67	<0.003	<0.002	1.03		3.8	0.16	0.36	180	36	3	27	394	255	37.4								
	6-Mar-08	<5	8.03	1,020	0.4	1,420	<0.5	309	<0.5	730	3.74	3.74	<0.003	<0.01	0.93		4	0.15	0.38	220	45	3.2	39	377	454	56.7								
	23-May-08		8.10	320	3.9	490	<0.5	74	<0.5	190	2.7	2.8	0.021	<0.002	0.94		3.5	0.31	0.34	50	16	3.8	22	90	170	4.0								
	12-Sep-08	4	8.10	670	0.2	1,100	<0.5	270	<0.5	570	1.3	1.3	<0.003	<0.002	1.1		4.4	0.13	0.35	170	34	3	28	330	230	28.0								
	26-Nov-08	5	7.4	720	0.2	1,100	<0.5	320	<0.5	560	2.4	2.4	<0.003	<0.002	0.96		3.4	0.15	0.30	170	33	2.6	27	390	240	43								
	20-Jan-09	4	7.8	820	0.5	1,300	<0.5	310	<0.5	620	4.1	4.1	<0.003	<0.002	0.97		4.2	0.14	0.22	160	32	2.3	40	370	310	51								
	26-Mar-09	4	7.84	740	0.3	1,300	<0.5	290	<0.5	520	4.8	4.8	<0.003	<0.002	0.9		4.5	0.16	0.26	190	38	2.8	32	360	200	110								
	19-May-09	4	7.57	640	0.2	1,000	<0.5	290	<0.5	460	3.3	3.3	<0.003	<0.002	0.92		3.8	0.17	0.37	140	28	2.1	34	350	190	60								
	22-Jul-09	5	7.72	680	<0.1	1,000	<0.5	330	<0.5	490	2.3	2.3	<0.003	<0.002	0.92		3.4	0.13	0.30	150	29.00	2.6	33	400	220	37								
	16-Nov-09	4	7.63	770	0.1	1,200	<0.5	350	<0.5	620	2.7	2.7	<0.003	<0.002	1.0		3.9	0.17	0.23	180	39	2.9	31	420	250	40								
	19-Mar-10	4	7.49	1,030	0.3	1,600	<0.5	270	<0.5	730	4.3	4.3	<0.003	<0.002	0.97		6.7	0.14	0.35	230	45	2.7	60	330	360	160								
	14-Jul-10	5	7.55	652	0.2	1,000	<0.5	310	<0.5	523	4.0	4.0	<0.003	<0.002	1.0		5.1	0.21	0.32	150	33	2.9	34	380	180	42								
	12-Nov-10	4	7.61	720	0.1	1,100	<0.5	390	<0.5	570	5.0	5.0	<0.003	<0.002	0.98		4.2	0.22	0.17	170	35	2.8	31	470	180	49								
	18-Apr-11	6	7.76	630	0.6	1,100	<0.5	300	<0.5	460	6.3	6.3	<0.003	<0.002	0.95		3.7	0.17	0.33	140	30	2.4	35	360	150	67								
	11-Jul-11	8	7.76	590	0.9	970	<0.5	350	<0.5	480	6.5	6.5	0.005	<0.002	0.99		5.5	0.19	0.46	140	28	2.2	27	420	110	37								
	17-May-12	6.1	7.73	600	0.24	990	<0.50	300	<0.50	470	5.0	5.0	<0.0030	<0.0020	1.0		4.7	0.18	0.13	140	28	2.3	34	360	140	53								
	20-Jul-12	<2.0	7.62	600	<0.10	990	<0.50	360	<0.50	480	6.2	6.2	<0.0030	<0.0020	1.0		5.5	0.17	0.47	150	28	2.4	26	440	120	36								
	21-Sep-12	5.6	7.3	670	<0.10	1,100	<0.50	410	<0.50	540	3.5	3.5	<0.0030	<0.0020	0.9		4.4	0.17	0.32	160	32	2.7	25	510	150	33								
	23-Nov-12	5	7.57	710	<0.10	1,000	<0.50	370	<0.50	600	4.3	4.3	<0.0030	<0.0020	1.1		2.3	0.16	0.42	180	38	3.8	36	460	170	40								
	8-May-13	4.8	7.42	740	<0.10	1,200	<0.50	270	<0.50	570	4.8	4.8	<0.0030	<0.0020	1.1		3.8	0.15	0.4	170	35	2.8	56	330	180	120								
	12-Jul-13	7.4	7.63	570	<0.10	940	<0.50	340	<0.50	470	5.0	5.0	<0.0030	<0.0020	1.0		4.8	0.18	0.63	140	27	2.6	29	420	97	40								
	5-Sep-13	5.8	7.43	630	0.13	1,100	<0.50	380	<0.50	490	3.9	3.9	<0.0030	<0.0020	0.93		4.4	0.15	0.34	150	29	2.7	28	460	150	35								
	13-Nov-13	5.2	7.68	620	<0.10	1,100	<0.50	350	<0.50	470	4.0	4.0	<0.0030	<0.0020	0.93		3.3	0.16	0.25	140	28	2.5	29	430	150	41								
	25-Mar-14	5.4	7.65	520	0.17	960	<0.50	290	<0.50	420	<0.010	<0.010	<0.010	<0.0020	1.0		3.6	0.15	0.31	130	27	2.4	30	350	100	57								
	24-Jul-14	4.0	7.48	580	<0.10	990	<0.50	350	<0.50	450	4.7	4.7	<0.010	<0.0020	0.94		3.6	0.14	0.22	140	28	2.6	24	420	120	33								
	6-Aug-14		7.57	690		1,000	<0.50	360	<0.50	480	4.5	4.5	<0.010		0.97					150	29	2.5	24	440	130	31								
	20-Jul-16	3.7	7.48	620	0.29	1000	<0.50	350	<0.50	470	4.9	4.9	<0.010	<0.0020	0.94		4.1	0.17	0.50	140	29	2.7	28	430	140	35								
	16-Jul-19	2.4	7.72	620	0.17	1,000	<1.0	290	<1.0	450	3.3	3.3	<0.010	<0.0020		3.7	3.0	0.17	0.48	130	29	2.9	33	350	190	49								
	20-Nov-19	3.9	7.53	750	<0.10	1,200	<1.0	290	<1.0	550	2.5	2.5	<0.010	<0.0020		4.0	3.0	0.16	0.36	160	34	3.5	29	350	290	51								
	28-Jul-																																	

Table E.9. Historical Groundwater Analytical Results - Dissolved Metals

Health Canada Guidelines ¹ - Potable		Dissolved Aluminum (Al)	Dissolved Antimony (Sb)	Dissolved Arsenic (As)	Dissolved Barium (Ba)	Dissolved Beryllium (Be)	Dissolved Bismuth (Bi)	Dissolved Boron (B)	Dissolved Cadmium (Cd)	Dissolved Chromium (Cr)	Dissolved Cobalt (Co)	Dissolved Copper (Cu)	Dissolved Iron (Fe)	Dissolved Lead (Pb)	Dissolved Lithium (Li)	Dissolved Manganese (Mn)	Dissolved Mercury (Hg)	Dissolved Molybdenum (Mo)	Dissolved Nickel (Ni)	Dissolved Phosphorus (P)	Dissolved Selenium (Se)	Dissolved Silicon (Si)	Dissolved Silver (Ag)	Dissolved Strontium (Sr)	Dissolved Sulphur (S)	Dissolved Thallium (Tl)	Dissolved Tin (Sn)	Dissolved Titanium (Ti)	Dissolved Uranium (U)	Dissolved Vanadium (V)	Dissolved Zinc (Zn)
Sample Location	Sample Date	0.05 ^{MAC} mg/L	0.005 ^{MAC} mg/L	0.01 ^{MAC} mg/L	2 ^{MAC} mg/L	NG	NG	5 ^{MAC} mg/L	0.007 ^{MAC} mg/L	0.05 ^{MAC} mg/L	NG	1 ^{MAC} ² mg/L	50.3 ^{MAC} mg/L	0.005 ^{MAC} mg/L	NG	20.02 ^{MAC} ² mg/L	0.001 ^{MAC} mg/L	NG	NG	NG	0.02 ^{MAC} mg/L	NG	1 ^{MAC} mg/L	NG	NG	NG	0.02 ^{MAC} mg/L	NG	0.02 ^{MAC} mg/L		
TVR 1.1	23-May-08	<0.04	<0.0002	<0.001	0.18	<0.001	<0.005	0.02	<0.0002	<0.01	0.0017	0.0096	<0.06	<0.0002	<0.02	<0.004	<0.0005	0.0003	0.0061	<0.1	0.0006	5.8	<0.0001	0.58	23	<0.0002	<0.001	<0.001	0.0008	<0.001	0.019
	19-Jan-09															Insufficient Water Volume for Sampling															
	24-Mar-09	0.002	<0.0002	<0.0002	0.17	<0.001	<0.005	0.02	0.000034	<0.001	<0.0003	0.0041	<0.06	<0.0002	<0.02	<0.004	0.00003	0.0003	0.0061	<0.1	0.0006	5.8	<0.0001	0.56	23	<0.0002	<0.001	<0.001	0.0008	<0.001	0.011
	19-May-09	<0.001	<0.0002	<0.0002	0.17			0.03	0.00004	<0.001	<0.0003	0.0064		<0.0002	<0.02	<0.004		0.0007	0.0010	<0.1	0.0008	5.7	<0.0001	0.60	42	<0.0002	<0.001	<0.001	0.0010	<0.001	0.012
	21-May-09												0.14			<0.004															
	20-Jul-09 to 10-May-10															Insufficient Water Volume for Sampling															
	14-Jul-10	<0.001	<0.0002	<0.0002	0.19	<0.001	<0.005	0.03	0.000015	<0.001	<0.0003	0.0009	0.09	<0.0002	<0.02	0.01	<0.000002	0.0003	0.0012	0.1	0.0006	6.2	<0.0001	0.67	23	<0.0002	<0.001	<0.001	0.0012	<0.001	<0.003
	15-Sep-10 to 18-Apr-18															Insufficient Water Volume for Sampling															
	23-Jul-18	0.014	<0.00060	0.00024	0.18	<0.0010	<0.0050	0.032	<0.000020	<0.0010	<0.00030	0.0015	<0.060	<0.00020	<0.020	<0.0040	0.0000027	0.00041	0.00097	<0.10	0.00067	6.5	<0.00010	0.54	15	<0.00020	<0.0010	<0.0010	0.0010	<0.0010	<0.0030
	20-Nov-18 to 28-Mar-19															Insufficient Water Volume for Sampling															
	16-Jul-19	<0.0030	<0.00060	<0.00020	0.21	<0.0010	<0.0050	0.092	0.000026	<0.0010	<0.00030	0.0014	<0.060	<0.00020	<0.020	<0.0040	<0.0000020	0.00044	0.0012	<0.10	0.00073	6.2	<0.00010	0.64	40	<0.00020	<0.0010	<0.0010	0.0011	<0.0010	0.0050
20-Nov-19 to 30-Mar-21															Insufficient Water Volume for Sampling																
TVR 1.2	22-Aug-07	<0.04	0.0049	<0.001	0.09	<0.001	<0.005	0.12	<0.0002	<0.01	0.0009	0.0029	<0.06	<0.0002	<0.02	0.011	0.000005	0.00028	0.0029	0.1	0.0002	4.7	<0.0001	0.86	37.8	<0.0002	0.002	0.002	0.0046	<0.001	0.012
	4-Mar-08	<0.04	<0.0002	<0.001	0.08	<0.001	<0.005	0.13	<0.0002	<0.01	0.0006	0.0005	<0.06	<0.0002	<0.02	0.02	<0.00005	0.014	0.0018	0.1	<0.001	4.8	<0.0001	0.94	42	<0.0002	<0.001	0.002	0.0042	<0.001	0.043
	23-May-08	<0.04	<0.0002	<0.001	0.06	<0.001	<0.005	0.12	<0.0002	<0.01	0.0012	0.0055	0.11	<0.0002	<0.02	0.02	<0.00005	0.0091	0.009	<0.1	0.002	4.4	<0.0001	0.98	50	<0.0002	<0.001	0.006	0.0037	<0.001	0.014
	28-Jul-08	<0.04	<0.0002	<0.001	0.06	<0.001	<0.005	0.15	0.0003	<0.01	0.0018	0.0095	<0.06	<0.0002	<0.02	0.02	<0.00005	0.0087	0.017	<0.1	<0.001	5	<0.0001	1.1	58	<0.0002	0.002	0.0036	<0.001	0.009	
	20-Jan-09	<0.04	<0.0002	<0.001	0.08	<0.001	<0.005	0.12	0.0003	<0.01	<0.0003	0.0037	<0.06	<0.0002	<0.02	0.003	<0.00005	0.0059	0.0011	<0.1	<0.001	3.9	<0.0001	0.82	45	<0.0002	<0.001	<0.001	0.0029	<0.001	0.013
	24-Mar-09	0.008	<0.0002	<0.0002	0.07	<0.001	<0.005	0.12	0.00018	<0.001	<0.0003	0.0067	<0.06	<0.0002	<0.02	0.013	<0.00001	0.0055	0.0013	<0.0009	4.1	<0.0001	0.90	45	<0.0002	<0.001	<0.001	0.0032	<0.001	0.013	
	19-May-09	0.003	<0.0002	<0.0002	0.09	<0.001	<0.005	0.13	0.00014	<0.001	<0.0003	0.0047	<0.06	<0.0002	<0.02	0.016		0.0043	0.0008	<0.1	0.0008	4.2	<0.0001	0.92	45	<0.0002	<0.001	<0.001	0.0024	<0.001	0.011
	20-Jul-09	1.5	<0.0002	<0.0002	0.09	<0.001	<0.005	0.13	0.000072	0.004	0.0021	0.0047	0.11	<0.0002	<0.02	0.041	0.000002	0.0040	0.0041	<0.1	0.0012	4.0	<0.0001	1.0	51	<0.0002	<0.001	0.16	0.0028	<0.001	0.017
	25-Sep-09	<0.001	<0.0002	<0.0002	0.07	<0.001	<0.005	0.13	0.000081	<0.001	<0.0003	0.0007	0.07	<0.0002	<0.02	0.13	0.000001	0.0045	0.0015	<0.1	0.0012	4.0	<0.0001	0.87	47	<0.0002	<0.001	0.0028	<0.001	0.008	
	16-Nov-09	0.033	<0.0002	<0.0002	0.07	<0.001	<0.005	0.14	0.000074	<0.001	<0.0003	0.0013	0.10	<0.0002	<0.02	0.30	0.000002	0.0042	0.0015	0.2	0.0010	4.2	<0.0001	0.95	49	<0.0002	<0.001	0.001	0.0028	<0.001	0.007
	18-Jan-10	0.02	<0.0002	<0.0002	0.07	<0.001	<0.005	0.13	0.000063	<0.001	<0.0003	0.0008	0.15	<0.0002	<0.02	0.003		0.0003	0.0005	<0.1	0.0011	4.6	<0.0001	1	53	<0.0002	<0.001	<0.001	0.0025	<0.001	<0.003
	21-Jan-10															0.000005															
	19-Mar-10	0.022	<0.0002	<0.0002	0.07	<0.001	<0.005	0.14	0.000033	0.005	<0.0003	0.0004	<0.06	<0.0002	<0.02	0.015	0.000005	0.00028	<0.0005	<0.1	0.0009	4.2	<0.0001	1	54	<0.0002	<0.001	<0.001	0.003	<0.001	<0.003
	10-May-10	0.006	<0.0002	<0.0002	0.07	<0.001	<0.005	0.13	0.000057	<0.001	<0.0003	0.0007	<0.06	<0.0002	<0																

Table E.9. Historical Groundwater Analytical Results - Dissolved Metals

Sample Location	Sample Date	Dissolved Aluminum (Al)	Dissolved Antimony (Sb)	Dissolved Arsenic (As)	Dissolved Barium (Ba)	Dissolved Beryllium (Be)	Dissolved Bismuth (Bi)	Dissolved Boron (B)	Dissolved Cadmium (Cd)	Dissolved Chromium (Cr)	Dissolved Cobalt (Co)	Dissolved Copper (Cu)	Dissolved Iron (Fe)	Dissolved Lead (Pb)	Dissolved Lithium (Li)	Dissolved Manganese (Mn)	Dissolved Mercury (Hg)	Dissolved Molybdenum (Mo)	Dissolved Nickel (Ni)	Dissolved Phosphorus (P)	Dissolved Selenium (Se)	Dissolved Silicon (Si)	Dissolved Silver (Ag)	Dissolved Strontium (Sr)	Dissolved Sulphur (S)	Dissolved Thallium (Tl)	Dissolved Tin (Sn)	Dissolved Titanium (Ti)	Dissolved Uranium (U)	Dissolved Vanadium (V)	Dissolved Zinc (Zn)
		0.05 ^{MAC} mg/L	0.005 ^{MAC} mg/L	0.01 ^{MAC} mg/L	2 ^{MAC} mg/L	NG	NG	5 ^{MAC} mg/L	0.007 ^{MAC} mg/L	0.05 ^{MAC} mg/L	NG	1 ^{MAC} mg/L	50.3 ^{MAC} mg/L	0.005 ^{MAC} mg/L	NG	50.02 ^{MAC} mg/L	0.001 ^{MAC} mg/L	NG	NG	0.08 ^{MAC} mg/L	NG	mg/L	mg/L	mg/L	NG	NG	mg/L	mg/L	mg/L	mg/L	
Health Canada Guidelines ¹ - Potable	22-Aug-07	<0.04	<0.0002	<0.001	0.05	<0.001	<0.001	0.13	<0.0002	<0.01	0.0007	0.0021	<0.06	<0.0002	0.03	0.342	<0.000002	0.00077	0.0048	<0.1	0.006	5.1	<0.0001	1.09	73.5	<0.0002	<0.001	0.003	0.0056	0.004	0.012
	23-Nov-07	<0.04	0.0003	<0.001	0.05	<0.001	<0.005	0.12	<0.0002	<0.01	0.0016	0.0053	<0.06	<0.0002	0.02	0.43	<0.000002	0.011	0.0068	<0.1	<0.001	5	<0.0001	1.1	62	<0.0002	<0.001	0.004	0.0048	<0.001	0.011
	4-Mar-08	<0.04	<0.0002	<0.001	0.04	<0.001	<0.005	0.14	<0.0002	<0.01	0.0006	0.0007	<0.06	<0.0002	0.03	0.41	<0.000005	0.007	0.0017	<0.1	<0.001	4.9	<0.0001	1.2	74	<0.0002	<0.001	<0.001	0.0044	<0.001	0.005
	23-May-08	<0.04	<0.0002	<0.001	0.04	<0.001	<0.005	0.12	<0.0002	<0.01	0.0011	0.0074	<0.06	<0.0002	0.03	0.054	<0.000005	0.0047	0.011	<0.1	0.003	4.4	<0.0001	1.2	75	<0.0002	<0.001	0.006	0.0042	<0.001	0.014
	28-Jul-08	<0.04	<0.0002	<0.001	0.03	<0.001	<0.005	0.15	<0.0002	<0.01	0.0029	0.0089	0.06	<0.0002	0.03	0.31	<0.000005	0.0057	0.025	<0.1	0.003	5.2	<0.0001	1.3	97	<0.0002	<0.001	0.016	0.0051	0.001	0.008
	9-Sep-08	<0.04	<0.0002	<0.001	0.03	<0.001	<0.005	0.13	<0.0002	<0.01	0.0012	0.013	<0.06	<0.0002	0.02	0.02	<0.000005	0.0038	<0.1	0.003	4.1	<0.0001	1.2	83	<0.0002	<0.001	0.005	0.0041	<0.001	0.017	
	24-Nov-08	<0.001	0.0002	<0.001	0.03	<0.001	<0.005	0.13	<0.0002	<0.01	<0.0003	0.0051	<0.06	<0.0002	0.03	0.01	<0.000005	0.0025	0.0036	0.1	0.002	4	<0.0001	1.2	82	<0.0002	<0.001	0.0035	<0.001	0.015	
	20-Jan-09	<0.04	<0.0002	<0.001	0.04	<0.001	<0.005	0.13	<0.0002	<0.01	<0.0003	0.004	<0.06	<0.0002	0.03	0.064	<0.000005	0.0027	0.0017	<0.1	0.002	4.1	<0.0001	1.1	79	<0.0002	<0.001	<0.001	0.0038	<0.001	0.014
	24-Mar-09	0.002	<0.0002	<0.0002	0.03	<0.001	<0.005	0.12	0.000061	<0.001	0.0004	0.0046	<0.06	<0.0002	0.03	0.054	0.000003	0.003	0.0022	<0.01	0.0017	4.2	<0.0001	1.2	81	<0.0002	<0.001	<0.001	0.0046	<0.001	0.016
	19-May-09	0.009	<0.0002	<0.0002	0.02	<0.001	<0.005	0.14	0.000044	<0.001	<0.0003	0.0064	0.08	<0.0002	0.03	0.006		0.0024	0.0011	<0.1	0.0015	4.5	<0.0001	1.2	91	<0.0002	<0.001	<0.001	0.0038	<0.001	0.017
	20-Jul-09	0.003	<0.0002	<0.0002	0.02	<0.001	<0.005	0.12	0.000025	<0.001	<0.0003	0.0044	0.08	<0.0002	0.03	0.06	0.000002	0.0019	0.0010	<0.1	0.0011	4.0	<0.0001	1.2	79	<0.0002	<0.001	<0.001	0.0034	<0.001	0.017
	25-Sep-09	0.021	<0.0002	<0.0002	0.03	<0.001	<0.005	0.13	0.000042	<0.001	<0.0003	0.0013	0.07	<0.0002	0.02	0.066	<0.000001	0.0024	0.0019	<0.1	0.0016	4.2	<0.0001	1.2	85	<0.0002	<0.001	<0.001	0.0043	<0.001	0.007
	16-Nov-09	0.004	<0.0002	0.0002	0.02	<0.001	<0.005	0.12	0.000041	<0.001	<0.0003	0.0004	0.08	<0.0002	0.02	0.067	0.000002	0.0018	0.0009	0.2	0.0023	3.8	<0.0001	1.2	82	<0.0002	<0.001	<0.001	0.0028	<0.001	<0.003
	19-Jan-10	0.004	<0.0002	0.0003	0.03	<0.001	<0.005	0.14	0.000049	<0.001	0.0008	0.0016	0.21	0.0002	0.03	0.044		0.0018	0.0024	<0.1	0.001	4.8	<0.0001	1.3	88	<0.0002	<0.001	0.016	0.0033	<0.001	<0.003
	21-Jan-10																	0.000009													
	17-Mar-10																														
	10-May-10	0.083	<0.0002	<0.0002	0.03	<0.001	<0.005	0.13	0.00009	<0.001	<0.0003	0.0014	<0.06	<0.0002	0.02	0.026	0.000003	0.0018	0.0009	0.1	0.0012	4.1	<0.0001	1.2	87	<0.0002	<0.001	0.002	0.0052	<0.001	0.004
	12-Jul-10	0.002	<0.0002	<0.0002	0.02	<0.001	<0.005	0.13	0.000057	<0.001	<0.0003	0.0012	<0.06	<0.0002	0.02	0.026	0.000002	0.0017	0.0009	<0.1	0.0012	4.0	<0.0001	1.2	91	<0.0002	<0.001	<0.001	0.0043	<0.001	0.004
	15-Sep-10																														
	7-Nov-10	0.003	<0.0002	<0.0002	0.02	<0.001	<0.005	0.13	0.000034	<0.001	<0.0003	0.0016	<0.06	<0.0002	0.02	<0.004	<0.000002	0.0019	0.0010	0.1	0.0016	3.9	<0.0001	1.2	91	<0.0002	<0.001	<0.001	0.0046	<0.001	0.005
	24-Jan-11	<0.001	<0.0002	<0.0002	0.02	<0.001	<0.005	0.13	0.000044	<0.001	<0.0003	0.0038	0.08	<0.0002	0.03	<0.004	0.000003	0.0017	0.0008	<0.1	0.0017	3.8	<0.0001	1.3	90	<0.0002	<0.001	<0.001	0.0051	<0.001	0.008
	26-Jan-11													0.26																	
	18-Mar-11																														
	20-May-11	0.004	<0.0006	<0.0002	0.02	<0.001	<0.005	0.13	0.000089	<0.001	<0.0003	0.0028	<0.06	<0.0002	0.02	<0.004	<0.000002	0.0015	0.0009	<0.1	0.0025	4	<0.0001	1.2	88	<0.0002	<0.001	<0.001	0.004	<0.001	0.008
	24-May-11												<0.06																		
	11-Jul-11	0.001	<0.0006	<0.0002	0.02	<0.001	<0.005	0.13	0.000038	<0.001	<0.0003	0.0011	<0.06	<0.0002	0.02	<0.004	<0.000002	0.0014	0.0013	<0.1	0.0028	4	<0.0001	1.2	88	<0.0002	<0.001	<0.001	0.0043	<0.001	0.005
	14-Sep-11	0.004	<0.0006	<0.0002	0.02	<0.001	<0.005	0.13	0.000072	<0.001	<0.0003	0.0062	0.08	<0.0002	0.03	<0.004	<0.000002	0.0014	0.0005	<0.1	0.0029	4	<0.0001	1.2	91	<0.0002	<0.001	<0.001	0.0045	<0.001	0.007
	16-Sep-11				0.03			0.13					0.25																		
	16-Nov-11	<0.001	<0.0006	<0.0002	0.02	<0.001	<0.005	0.14	0.000023	<0.001	<0.0003	0.0005	0.09	<0.0002	0.02	<0.004	0.000003	0.0012	<0.0005	<0.1	0.0028	4.1	<0.0001	1.4	89	<0.0002	<0.001	<0.001	0.0041	<0.001	0.003
	18-Nov-11													0.007		</															

Table E.9. Historical Groundwater Analytical Results - Dissolved Metals

Health Canada Guidelines ¹ - Potable																																
Sample Location	Sample Date	Dissolved Aluminum (Al)	Dissolved Antimony (Sb)	Dissolved Arsenic (As)	Dissolved Barium (Ba)	Dissolved Beryllium (Be)	Dissolved Bismuth (Bi)	Dissolved Boron (B)	Dissolved Cadmium (Cd)	Dissolved Chromium (Cr)	Dissolved Cobalt (Co)	Dissolved Copper (Cu)	Dissolved Iron (Fe)	Dissolved Lead (Pb)	Dissolved Lithium (Li)	Dissolved Manganese (Mn)	Dissolved Mercury (Hg)	Dissolved Molybdenum (Mo)	Dissolved Nickel (Ni)	Dissolved Phosphorus (P)	Dissolved Selenium (Se)	Dissolved Silicon (Si)	Dissolved Silver (Ag)	Dissolved Strontium (Sr)	Dissolved Sulphur (S)	Dissolved Thallium (Tl)	Dissolved Tin (Sn)	Dissolved Titanium (Ti)	Dissolved Uranium (U)	Dissolved Vanadium (V)	Dissolved Zinc (Zn)	
		0.2 ^{MAC} mg/L	0.005 ^{MAC} mg/L	0.01 ^{MAC} mg/L	2 ^{MAC} mg/L	NG	NG	5 ^{MAC} mg/L	0.007 ^{MAC} mg/L	0.05 ^{MAC} mg/L	NG	1 ^{MAC} mg/L	50.3 ^{MAC} mg/L	0.005 ^{MAC} mg/L	NG	50.02 ^{MAC} to 12 ^{MAC} mg/L	0.001 ^{MAC} mg/L	NG	NG	0.02 ^{MAC} mg/L	0.05 ^{MAC} mg/L	NG	0.001 ^{MAC} mg/L	NG	NG	NG	0.02 ^{MAC} mg/L	0.001 ^{MAC} mg/L	0.02 ^{MAC} mg/L	0.001 ^{MAC} mg/L	0.02 ^{MAC} mg/L	0.001 ^{MAC} mg/L
TWR 2.4	22-Aug-07	<0.04	0.0073	0.007	0.06	<0.001		0.31	<0.0002	<0.01	0.0004	0.0019	<0.06	<0.0002	0.05	0.019	0.0467	0.0038	0.2	0.003	2.5	<0.0001	0.06	16.5	<0.0002	<0.001	0.005	0.0069	0.003	0.011		
	7-Sep-07	<0.04	0.0073	0.009	0.05	<0.001		0.36	<0.0002	<0.01	0.0004	0.001	<0.06	<0.0002	0.07	0.019	0.0323	0.0025	0.3	0.002	2.2	<0.0001	0.05	10.9	<0.0002	<0.001	0.005	0.0034	0.001	0.008		
	23-Nov-07	<0.04	0.0027	0.005	0.06	<0.001	<0.005	0.45	0.0003	<0.01	0.0004	0.0068	<0.06	0.001	0.1	0.014	0.000002	0.0059	0.0011	0.1	0.001	2.7	<0.0001	0.04	2.9	<0.0002	0.001	0.003	0.0009	0.001	0.011	
	4-Mar-08	<0.04	<0.0002	0.002	0.05	<0.001	<0.005	0.45	<0.0002	<0.01	<0.0003	0.001	<0.06	<0.0002	0.11	0.013	<0.00005	0.0036	0.0006	0.1	<0.001	2.6	<0.0001	0.03	2.6	<0.0002	<0.001	0.0003	<0.001	0.014		
	23-May-08	<0.04	0.0002	0.004	0.04	<0.001	<0.005	0.42	<0.0002	<0.01	<0.0003	0.0033	<0.06	<0.0002	0.09		<0.00005	0.0066	0.0014	0.5	0.003	2.2	<0.0001	0.02	1.8	<0.0002	<0.001	0.004	0.001	<0.001	0.009	
	1-Aug-08	<0.04	<0.0002	0.002	0.02	<0.001	<0.005	0.46	0.0003	<0.01	<0.0003	0.0058	<0.06	<0.0002	0.1	0.016	<0.00005	0.0048	0.0006	<0.1	<0.001	2.2	<0.0001	0.02	1.8	<0.0002	<0.001	0.0003	0.002	0.007		
	9-Sep-08	<0.04	<0.0002	0.001	0.06	<0.001	<0.005	0.44	<0.0002	<0.01	<0.0003	0.0005	<0.06	<0.0002	0.11	0.017	<0.00005	0.0031	0.0013	<0.1	<0.001	2.2	<0.0001	0.03	1.9	<0.0002	<0.001	0.0003	0.002	0.007		
	26-Nov-08	0.014	0.0003	0.003	0.04	<0.001	<0.005	0.39	<0.0002	0.004	<0.0003	0.001	<0.06	<0.0002	0.08	0.021	<0.00005	0.004	0.0013	0.3	<0.001	2	<0.0001	0.03	2.3	<0.0002	<0.001	<0.001	0.0006	0.001	0.004	
	20-Jan-09	<0.04	0.0004	0.002	0.05	<0.001	<0.005	0.4	<0.0002	<0.01	<0.0003	0.0005	<0.06	<0.0002	0.45	0.018	<0.00005	0.0047	<0.0005	0.2	0.001	2.2	<0.0001	0.02	2.6	<0.0002	<0.001	<0.001	0.0004	<0.001	0.007	
	26-Mar-09	0.011	0.0004	0.0014	0.05	<0.001	<0.005	0.45	0.000036	<0.001	<0.0003	0.0021	<0.06	<0.0002	0.10	0.021	0.00002	0.0032	0.0007	0.2	0.0002	2.2	<0.0001	0.03	2.0	<0.0002	<0.001	<0.001	0.0005	<0.001	0.007	
	19-May-09	0.009	<0.0002	0.0006	0.06	<0.001	<0.005	0.46	0.000016	<0.001	<0.0003	0.0003	<0.06	<0.0002	0.11	0.016	0.000004	0.0021	<0.0005	<0.1	<0.0002	2.6	<0.0001	0.04	2.4	<0.0002	<0.001	<0.001	0.0002	<0.001	<0.003	
	22-Jul-09	0.016	0.0002	0.0015	0.05	<0.001	<0.03	0.43	0.000013	<0.001	<0.0003	0.0003	<0.06	<0.0002	0.10	0.017	0.000004	0.0035	<0.0005	0.1	<0.0002	2.2	<0.0001	0.03	1.5	<0.0002	<0.001	<0.001	0.0003	<0.001	<0.003	
	28-Sep-09	0.013	0.0003	0.0012	0.04	<0.001	<0.005	0.46	0.000048	<0.001	<0.0003	0.0002	<0.06	<0.0002	0.10	0.019	<0.00001	0.0042	<0.0005	0.1	0.0006	2.5	<0.0001	0.04	1.6	<0.0002	<0.001	<0.001	0.0004	<0.001	<0.003	
	19-Nov-09	0.034	<0.0002	0.0013	0.05	<0.001	<0.005	0.47	0.000055	<0.001	<0.0003	0.0005	<0.06	<0.0002	0.11	0.023	0.000002	0.0035	0.0006	<0.1	0.0005	2.6	<0.0001	0.03	1.9	<0.0002	<0.001	<0.001	0.0004	<0.001	<0.003	
	21-Jan-10	0.012	0.0003	0.0012	0.06	<0.001	<0.005	0.44	0.000017	<0.001	<0.0003	0.0011	<0.06	<0.0002	0.1	0.024	0.000001	0.002	<0.0005	0.3	<0.0002	2.2	<0.0001	0.03	4.1	<0.0002	<0.001	<0.001	0.0003	<0.001	<0.003	
	19-Mar-10	0.022	0.0004	0.0008	0.06	<0.001	<0.005	0.49	0.000039	0.004	<0.0003	0.0003	<0.06	<0.0002	0.11	0.02	0.000002	0.002	<0.0005	0.2	<0.0002	2.5	<0.0001	0.04	2.2	<0.0002	<0.001	<0.001	0.0002	<0.001	<0.003	
	12-May-10	0.023	<0.0002	0.0011	0.06	<0.001	<0.005	0.47	0.000035	<0.001	<0.0003	<0.0002	<0.06	<0.0002	0.11	0.019	0.000004	0.0021	<0.0005	0.1	0.0006	2.2	<0.0001	0.03	2.7	<0.0002	<0.001	<0.001	0.0004	<0.001	<0.003	
	14-Jul-10	0.009	0.0002	0.0004	0.07	<0.001	<0.005	0.45	0.000029	<0.001	<0.0003	0.0002	<0.06	<0.0002	0.10	0.017	0.000003	0.0023	<0.0005	<0.1	<0.0002	2.4	<0.0001	0.04	2.8	<0.0002	<0.001	<0.001	0.0002	<0.001	<0.003	
	17-Sep-10	0.016	0.0005	0.0008	0.07	<0.001	<0.005	0.43	0.000016	<0.001	<0.0003	0.0007	<0.06	<0.0002	0.10	0.016	<0.000005	0.0024	<0.0005	0.2	0.0002	2.4	<0.0001	0.04	1.7	<0.0002	<0.001	<0.001	0.0003	<0.001	0.011	
	12-Nov-10	0.017	0.0002	0.0009	0.06	<0.001	<0.005	0.45	0.000024	<0.001	<0.0003	0.0003	<0.06	<0.0002	0.11	0.018	0.000005	0.0021	<0.0005	0.3	<0.0002	2.5	<0.0001	0.04	2.0	<0.0002	<0.001	<0.001	0.0005	<0.001	<0.003	
	26-Jan-11	0.036	<0.0002	0.001	0.06	<0.001	<0.005	0.46	<0.000050	<0.001	<0.0003	0.0004	<0.06	<0.0002	0.1	0.016	<0.000002	0.0018	<0.0005	0.1	0.0004	2.4	<0.0001	0.04	2.4	<0.0002	<0.001	<0.001	0.0003	<0.001	<0.003	
	18-Mar-11	0.017	<0.0002	0.0005	0.07	<0.001	<0.005	0.42	0.000011	<0.001	<0.0003	<0.0002	<0.06	<0.0002																		

Table E.9. Historical Groundwater Analytical Results - Dissolved Metals

Sample Location	Sample Date	Dissolved Aluminum (Al)	Dissolved Antimony (Sb)	Dissolved Arsenic (As)	Dissolved Barium (Ba)	Dissolved Beryllium (Be)	Dissolved Bismuth (Bi)	Dissolved Boron (B)	Dissolved Cadmium (Cd)	Dissolved Chromium (Cr)	Dissolved Cobalt (Co)	Dissolved Copper (Cu)	Dissolved Iron (Fe)	Dissolved Lead (Pb)	Dissolved Lithium (Li)	Dissolved Manganese (Mn)	Dissolved Mercury (Hg)	Dissolved Molybdenum (Mo)	Dissolved Nickel (Ni)	Dissolved Phosphorus (P)	Dissolved Selenium (Se)	Dissolved Silicon (Si)	Dissolved Silver (Ag)	Dissolved Strontium (Sr)	Dissolved Sulphur (S)	Dissolved Thallium (Tl)	Dissolved Tin (Sn)	Dissolved Titanium (Ti)	Dissolved Uranium (U)	Dissolved Vanadium (V)	Dissolved Zinc (Zn)
		0.05 ^{MAC} mg/L	0.002 ^{MAC} mg/L	0.01 ^{MAC} mg/L	2 ^{MAC} mg/L	NG	NG	5 ^{MAC} mg/L	0.007 ^{MAC} mg/L	0.05 ^{MAC} mg/L	NG	1 ^{MAC} mg/L	50.3 ^{MAC} mg/L	0.005 ^{MAC} mg/L	NG	20.02 ^{MAC} mg/L	0.001 ^{MAC} mg/L	NG	NG	NG	0.05 ^{MAC} mg/L	NG	NG	7 ^{MAC} mg/L	NG	NG	NG	0.02 ^{MAC} mg/L	NG	5 ^{MAC} mg/L	
TVR 3.2	23-Nov-07	<0.04	0.0004	<0.001	0.08	<0.001	<0.005	0.1	<0.0002	<0.01	0.0026	0.0049	<0.06	<0.0002	<0.02	0.000004	0.012	0.0055	<0.1	0.002	4.4	<0.0001	0.88	51	<0.0002	<0.001	0.003	0.0044	<0.001	0.089	
	4-Mar-08	<0.04	<0.0002	<0.001	0.06	<0.001	<0.005	0.13	0.0005	<0.01	0.0012	0.0017	<0.06	<0.0002	0.02	0.37	<0.00005	0.0074	0.004	<0.1	0.003	4.7	<0.0001	1.2	89	<0.0002	<0.001	<0.001	0.0042	<0.001	0.05
	23-May-08	0.08	<0.0002	<0.001	0.05	<0.001	<0.005	0.12	0.0003	<0.01	0.0025	0.0078	0.06	<0.0002	0.02	0.8	<0.00005	0.0057	0.013	0.1	0.003	4.4	<0.0001	1.2	88	<0.0002	<0.001	0.007	0.0043	<0.001	0.039
	24-Nov-08	<0.04	<0.0002	<0.001	0.06	<0.001	<0.005	0.21	0.0003	0.001	<0.0003	0.0047	<0.06	<0.0002	0.05	0.006	<0.00005	0.0028	0.0034	0.2	0.003	3.2	<0.0001	0.9	64	<0.0002	<0.001	<0.001	0.003	<0.001	0.027
	20-Jan-09	<0.04	<0.0002	<0.001	0.05	<0.001	<0.005	0.14	0.0008	<0.01	0.0006	0.0046	<0.06	<0.0002	0.02	0.5	<0.00005	0.0035	0.0022	<0.1	0.002	3.9	<0.0001	1.1	84	<0.0002	<0.001	<0.001	0.0042	<0.001	0.031
	24-Mar-09 to 25-Jan-12															Insufficient Water Volume for Sampling															
	20-Mar-12	0.0057	<0.00060	<0.00020	0.028	<0.0010	<0.0050	0.12	0.00013	<0.010	<0.00030	0.0015	<0.060	<0.00020	0.026	<0.0040	0.0000032	0.0013	0.00057	<0.10	0.0036	3.7	<0.00010	1.4	110	<0.00020	<0.0010	<0.0010	0.0046	<0.0010	0.078
	22-Mar-12				0.026			0.13						<0.060		0.026	<0.0040				<0.10		3.6	<0.00010	1.4	100					
	16-May-12																Insufficient Water Volume for Sampling														
	19-Jul-12	0.0062	<0.00060	<0.00020	0.023	<0.0010	<0.0050	0.13	0.0001	<0.010	<0.00030	0.0014	0.068	<0.00020	0.024	<0.0040	0.0000042	0.0014	0.00071	<0.10	0.0029	3.8	<0.00010	1.2	100	<0.00020	<0.0010	<0.0010	0.0045	<0.0010	0.033
	20-Jul-12				0.019			0.11		<0.010	<0.00030		0.063	<0.00020	<0.020	<0.0040					<0.10		3.2		1.0	81					
	20-Sep-12 to 24-Jul-14																Insufficient Water Volume for Sampling														
	11-Sep-14	<0.0030	<0.00060	<0.00020	0.021	<0.0010	<0.0050	0.13	0.000045	<0.010	<0.00030	0.0024	<0.060	<0.00020	<0.020	<0.0040	0.0000046	0.0011	<0.00050	<0.10	0.0028	3.6	<0.00010	1.2	91	<0.00020	<0.0010	<0.0010	0.0039	<0.0010	0.0270
	19-Nov-14 to 18-Nov-15																Insufficient Water Volume for Sampling														
	29-Mar-16	0.0054	<0.00060	<0.00020	0.019	<0.0010	<0.0050	0.13	0.000051	<0.010	<0.00030	0.0044	<0.060	<0.00020	0.021	<0.0040	<0.0000020	0.00097	0.00065	<0.10	0.0032	3.5	<0.00010	1.2	86	<0.00020	<0.0010	<0.0010	0.0046	<0.0010	0.090
22-Jul-16	0.0038	<0.00060	<0.00020	0.019	<0.0010	<0.0050	0.13	0.000052	<0.010	<0.00030	0.0083	<0.060	<0.00020	0.024	<0.0040	0.0000039	0.0011	<0.00050	<0.10	0.0029	3.6	<0.00010	1.2	89	<0.00020	<0.0010	<0.0010	0.0043	<0.0010	0.10	
18-Nov-16	0.0054	<0.00060	<0.00020	0.019	<0.0010	<0.0050	0.13	0.000083	<0.010	<0.00030	0.012	<0.060	<0.00020	0.024	<0.0040	0.000089	<0.00050	<0.10	0.0036	<0.00010	1.2	89	<0.00020	<0.0010	<0.0010	0.0040	<0.0010	0.19			
21-Nov-16																<0.0000020															
29-Mar-17 to 19-Jul-17																Insufficient Water Volume for Sampling															
17-Nov-17	0.013	<0.00060	<0.00020	0.018	<0.0010	<0.0050	0.13	0.000067	<0.010	<0.00030	0.022	<0.060	<0.00020	0.021	<0.0040	<0.0000020	0.0011	0.00061	<0.10	0.0030	3.3	<0.00010	1.1	78	<0.00020	<0.0010	<0.0010	0.0042	<0.0010	0.30	
18-Apr-18 to 23-Jul-18																Insufficient Water Volume for Sampling															
20-Nov-18	<0.0030	<0.00060	<0.00020	0.023	<0.0010	<0.0050	0.13	0.000041	<0.010	<0.00030	0.0094	<0.060	<0.00020	0.020	<0.0040	<0.0000020	0.0012	0.00059	<0.10	0.0029	3.6	<0.00010	1.2	97	<0.00020	<0.0010	<0.0010	0.0044	<0.0010	0.088	
15-Mar-19 to 20-Nov-19																Insufficient Water Volume for Sampling															
31-Mar-20	<0.0030	<0.00060	<0.00020	0.021	<0.0010	<0.0050	0.15	0.000035	<0.010	<0.00030	0.0066	<0.060	<0.00020	0.024	<0.0040	<0.0000019	0.0011	<0.00050	<0.10	0.0028	3.7	<0.00010	1.2	93	<0.00020	<0.0010	<0.0010	0.0046	<0.0010	0.056	
27-Jul-20 to 30-Mar-21																Insufficient Water Volume for Sampling															
TVR 3.3	22-Aug-07	<0.04	0.0035	0.007	0.11	<0.001		0.34	<0.0002	<0.01	0.0005	0.0025	<0.06	<0.0002	0.1	0.017		0.0279	0.0073	0.1	0.005	2.7	<0.0001	0.16	20.4	<0.0002	<0.001	0.005	0.0052	0.006	0.033
	7-Sep-07	<0.04	0.0048	0.004	0.08	<0.001		0.38	<0.0002	<0.01	0.0006	0.0033	<0.06	<0.0002	0.11	0.013		0.0151	0.0048	0.3	0.001	2.4	<0.0001	0.12	11.3	<0.0002	<0.001	0.005	0.0035	0.002	0.017
	23-Nov-07	<0.04	0.0012	0.003	0.08	<0.001	<0.005	0.44	<0.0002	<0.01	0.0003	0.0016	<0.06	<0.0002	0.12	0.015	<0.000002	0.0041	0.0012	0.2	0.002	2.4	<0.0001	0.08	3.2	<0.0002	<0.001	0.003	0.0012	0.001	0.005
	4-Mar-08	<0.0002	0.002	0.002	0.14	<0.001	<0.005	0.47	<0.0002	<0.01	<0.0003	0.0038	<0.06	<0.0002	0.17	0.01	<0.00005	0.0031	0.0005	0.3	<0.001	2.6	<0.0001	0.13	3.3	<0.0002	<0.001	0.0002	<0.001	<0.003	
	23-May-08	<0.04	0.0003	0.003	0.11	<0.001	<0.005	0.45	<0.0002	<0.01	0.0003	0.0024	<0.06	<0.0002	0.17	0.067	<0.00005	0.0032	0.0013	0.5	0.004	2.4	<0.0001	0.09	2.8	<0.0002	<0.001	0.004	0.0009	<0.001	0.009
	1-Aug-08	<0.04	0.0023	0.002	0.13	<0.001	<0.005	0.49	<0.0002	<0.01	<0.0003	0.0062	<0.06	<0.0002	0.17	0.017	<0.00005	0.0042	<0.0005	<0.1	<0.001	2.6	<0.0001	0.14	3	<0.0002	<0.001	0.003	0.0005	<0.001	<0.003
	9-Sep-08	0.04	<0.0002	0.001	0.16	<0.001	<0.005	0.45	<0.0002	<0.01	<0.0003	0.0067	<0.06	<0.0002	0.16	0.012	<0.00005	0.0029	0.0017	<0.1	0.6	0.002	<0.0001	0.13	2.8	<0.0002	<0.001	0.006	0.0003	0.002	0.012
	24-Nov-08	<0.0002	<0.0002	0.002	0.15	<0.001	<0.005	0.43	<0.0002	<0.01	<0.0003	0.0014	<0.06	<0.0002	0.16	0.007	<0.00005	0.0021	0.0007	<0.1	0.7	<0.0001	0.1	2.3	<0.0002	<0.001	0.002	0.000			

Table E.9. Historical Groundwater Analytical Results - Dissolved Metals

Health Canada Guidelines ¹ - Potable	Sample Location	Sample Date	Dissolved Aluminum (Al)	Dissolved Antimony (Sb)	Dissolved Arsenic (As)	Dissolved Barium (Ba)	Dissolved Beryllium (Be)	Dissolved Bismuth (Bi)	Dissolved Boron (B)	Dissolved Cadmium (Cd)	Dissolved Chromium (Cr)	Dissolved Cobalt (Co)	Dissolved Copper (Cu)	Dissolved Iron (Fe)	Dissolved Lead (Pb)	Dissolved Lithium (Li)	Dissolved Manganese (Mn)	Dissolved Mercury (Hg)	Dissolved Molybdenum (Mo)	Dissolved Nickel (Ni)	Dissolved Phosphorus (P)	Dissolved Selenium (Se)	Dissolved Silicon (Si)	Dissolved Silver (Ag)	Dissolved Strontium (Sr)	Dissolved Sulphur (S)	Dissolved Thallium (Tl)	Dissolved Tin (Sn)	Dissolved Titanium (Ti)	Dissolved Uranium (U)	Dissolved Vanadium (V)	Dissolved Zinc (Zn)	
			0.1 ^{MAC} mg/L	0.005 ^{MAC} mg/L	0.01 ^{MAC} mg/L	2 ^{MAC} mg/L	NG	NG	5 ^{MAC} mg/L	0.005 ^{MAC} mg/L	0.05 ^{MAC} mg/L	NG	1 ^{MAC} mg/L	50.3 ^{MAC} mg/L	0.005 ^{MAC} mg/L	0.2 ^{MAC} mg/L	0.05 ^{MAC} mg/L	0.005 ^{MAC} mg/L	0.001 ^{MAC} mg/L	NG	NG	NG	0.05 ^{MAC} mg/L	NG	NG	0.001 ^{MAC} mg/L	NG	NG	0.001 ^{MAC} mg/L	0.005 ^{MAC} mg/L	0.001 ^{MAC} mg/L	0.005 ^{MAC} mg/L	
TVR 4.1		22-Aug-07	<0.04	<0.0002	0.001	0.14	<0.001	<0.001	0.06	<0.0002	<0.01	0.0063	0.0028	0.06	<0.0002	<0.02	0.0028	0.000004	0.0028	0.0017	0.1	<0.001	0.0001	0.2	<0.0001	0.73	46.8	<0.0002	<0.001	0.006	0.0042	0.003	0.016
		23-Nov-07	<0.04	<0.0002	<0.001	0.1	<0.001	<0.005	0.04	<0.0002	<0.01	0.0025	0.0001	<0.06	<0.0002	<0.02	0.000004	0.0029	0.0059	<0.1	0.0001	5.2	<0.0001	0.8	55	<0.0002	<0.001	<0.001	0.0032	<0.001	0.008	0.008	
		4-Mar-08	<0.04	<0.0002	<0.001	0.09	<0.001	<0.005	0.04	<0.0002	<0.01	0.0033	0.0013	0.11	<0.0002	<0.02	0.000004	0.0024	0.0081	<0.1	<0.001	4.8	<0.0001	0.83	55	<0.0002	<0.001	<0.001	0.004	<0.001	0.006	0.006	
		1-Aug-08	<0.04	0.0004	<0.001	0.22	<0.001	<0.005	0.04	<0.0002	<0.01	0.0063	0.0091	0.55	<0.0002	<0.02	0.000004	0.0012	0.025	<0.1	<0.001	6.7	<0.0001	0.8	52	<0.0002	<0.001	0.013	0.0026	<0.001	<0.003	0.003	
		9-Sep-08	<0.04	<0.0002	<0.001	0.16	<0.001	<0.005	0.04	<0.0002	<0.01	0.0044	0.012	0.38	<0.0002	<0.02	0.000004	0.0016	0.025	0.025	0.002	5.5	<0.0001	0.84	52	<0.0002	<0.001	0.008	0.0034	0.002	0.013		
		19-Jan-09 to 19-May-09	0.001	<0.0002	0.0002	0.09	<0.001	<0.005	0.04	0.00022	<0.001	<0.0003	0.0043	0.09	<0.0002	<0.02	Insufficient Water Volume for Sampling	0.014	0.000002	0.0010	0.0036	<0.1	0.0007	5.3	<0.0001	0.93	62	<0.0002	<0.001	<0.001	0.0031	<0.001	0.008
		25-Sep-09 to 10-May-10	0.002	0.0003	<0.0002	0.18	<0.001	<0.005	0.03	0.00012	<0.001	<0.0003	0.0027	0.1	<0.0002	<0.02	Insufficient Water Volume for Sampling	0.005	0.000005	0.0010	0.0051	0.2	0.0002	5.3	<0.0001	0.81	54	<0.0002	<0.001	<0.001	0.003	<0.001	<0.003
		14-Jul-10	0.010	<0.0002	0.0003	0.14	<0.001	<0.005	0.05	0.00012	<0.001	<0.0003	0.0028	0.12	<0.0002	<0.02	Insufficient Water Volume for Sampling	0.005	<0.000002	0.0012	0.0039	<0.1	0.0003	6.8	<0.0001	1.0	75	<0.0002	<0.001	<0.001	0.0040	<0.001	0.003
		7-Nov-10 to 16-Mar-11	0.003	<0.0006	0.0003	0.2	<0.001	<0.005	0.03	0.000068	<0.001	<0.0003	0.001	<0.06	<0.0002	<0.02	Insufficient Water Volume for Sampling	0.005	0.000003	0.0005	0.0038	<0.1	0.0002	6.3	<0.0001	0.74	73	<0.0002	<0.001	<0.001	0.0021	<0.001	<0.003
		13-Jul-11	0.004	<0.0006	0.0004	0.24	<0.001	<0.005	0.02	0.000067	<0.001	<0.0003	0.0015	0.0012	0.14	<0.0002	<0.02	0.000004	0.0004	0.0066	0.2	<0.0002	6.4	<0.0001	0.65	66	<0.0002	<0.001	<0.001	0.0013	<0.001	<0.003	
		14-Sep-11	0.01	<0.0006	0.0003	0.12	<0.001	<0.005	0.04	0.000067	<0.001	<0.0003	0.0032	0.11	<0.0002	<0.02	<0.004	<0.000002	0.0009	0.0044	<0.1	0.0003	6.9	<0.0001	0.89	85	<0.0002	<0.001	<0.001	0.0025	<0.001	0.003	
		16-Sep-11	0.002	<0.0006	0.0003	0.12	<0.001	<0.005	0.04	0.000067	<0.001	<0.0003	0.0019	0.12	<0.0002	<0.02	<0.004	<0.000002	0.0001	0.0026	<0.1	0.0003	6.1	<0.0001	0.86	72	<0.0002	<0.001	<0.001	0.0029	<0.001	<0.003	
		16-Nov-11	0.002	<0.0006	0.0003	0.1	<0.001	<0.005	0.04	0.000027	<0.001	<0.0003	0.0019	0.12	<0.0002	<0.02	<0.004	<0.000002	0.0001	0.0026	<0.1	0.0003	5.7	<0.0001	0.97	78	<0.0002	<0.001	<0.001	0.0029	<0.001	<0.003	
		18-Nov-11	0.002	<0.0006	0.0003	0.1	<0.001	<0.005	0.04	0.000027	<0.001	<0.0003	0.0019	0.12	<0.0002	<0.02	<0.004	<0.000002	0.0001	0.0026	<0.1	0.0003	5.7	<0.0001	0.97	78	<0.0002	<0.001	<0.001	0.0029	<0.001	<0.003	
		23-Jan-12 to 22-Mar-12	0.0013	<0.00060	0.00027	0.12	<0.0010	<0.0050	0.021	0.000072	<0.0010	<0.00030	0.0022	0.088	<0.00020	<0.020	Insufficient Water Volume for Sampling	0.000022	0.000004	0.000005	<0.1	0.00008	5.0	<0.00010	0.56	87	<0.00020	<0.0010	<0.0010	0.0019	<0.0010	0.0042	
		16-May-12	0.0098	<0.00060	0.00024	0.26	<0.0010	<0.0050	0.024	0.000095	<0.0010	0.000031	0.002	0.11	<0.00020	<0.020	<0.0040	0.0000054	0.00039	0.0052	<0.10	<0.00020	7.4	<0.00010	0.65	82	<0.00020	<0.0010	<0.0010	0.0014	<0.0010	0.004	
		19-Jul-12	0.0098	<0.00060	0.00024	0.26	<0.0010	<0.0050	0.024	0.000095	<0.0010	0.000031	0.002	0.11	<0.00020	<0.020	<0.0040	0.0000054	0.00039	0.0052	<0.10	<0.00020	7.4	<0.00010	0.65	82	<0.00020	<0.0010	<0.0010	0.0014	<0.0010	0.004	
		20-Sep-12	0.0024	<0.00060	0.00028	0.11	<0.0010	<0.0050	0.04	0.000072	<0.0010	<0.00030	0.002	0.080	<0.00020	<0.020	0.0092	0.000006	0.00073	0.0029	<0.10	<0.00020	6.7	<0.00010	0.85	73	<0.00020	<0.0010	<0.0010	0.0024	<0.0010	<0.0030	
		20-Nov-12	0.0028	<0.00060	0.00026	0.095	<0.0010	<0.0050	0.04	0.000044	<0.0010	<0.00030	0.0027	<0.060	<0.00020	<0.020	<0.0040	<0.0000020	0.00087	0.0023	<0.10	0.00024	6	<0.00010	0.94	81	<0.00020	<0.0010	<0.0010	0.0028	<0.0010	<0.0030	
		25-Jan-13 to 21-Mar-13	0.0013	<0.00060	0.00027	0.12	<0.0010	<0.0050	0.021	0.000072	<0.0010	<0.00030	0.0022	0.088	<0.00020	<0.020	Insufficient Water Volume for Sampling	0.000022	0.000004	0.000005	<0.1	0.00008	5.0	<0.00010	0.56	87	<0.00020	<0.0010	<0.0010	0.0019	<0.0010	0.0042	
		8-May-13	<0.0030	<0.00060	<0.00020	0.079	<0.0010	<0.0050	0.020	0.000031	<0.0010	<0.00030	0.001	<0.060	<0.00020	<0.020	<0.0040	0.0000057	0.00087	0.0014	<0.10	0.00056	4.9	<0.00010	0.79	79	<0.00020	<0.0010	<0.0010	0.0028	<0.0010	<0.0030	

Table E.9. Historical Groundwater Analytical Results - Dissolved Metals

		Dissolved Aluminum (Al)	Dissolved Antimony (Sb)	Dissolved Arsenic (As)	Dissolved Barium (Ba)	Dissolved Beryllium (Be)	Dissolved Bismuth (Bi)	Dissolved Boron (B)	Dissolved Cadmium (Cd)	Dissolved Chromium (Cr)	Dissolved Cobalt (Co)	Dissolved Copper (Cu)	Dissolved Iron (Fe)	Dissolved Lead (Pb)	Dissolved Lithium (Li)	Dissolved Manganese (Mn)	Dissolved Mercury (Hg)	Dissolved Molybdenum (Mo)	Dissolved Nickel (Ni)	Dissolved Phosphorus (P)	Dissolved Selenium (Se)	Dissolved Silicon (Si)	Dissolved Silver (Ag)	Dissolved Strontium (Sr)	Dissolved Sulphur (S)	Dissolved Thallium (Tl)	Dissolved Tin (Sn)	Dissolved Titanium (Ti)	Dissolved Uranium (U)	Dissolved Vanadium (V)	Dissolved Zinc (Zn)
Health Canada Guidelines ¹ - Potable		0.1 ²⁵ mg/L	0.005 ²⁵ mg/L	0.01 ²⁵ mg/L	2 ²⁵ mg/L	NG	NG	5 ²⁵ mg/L	0.007 ²⁵ mg/L	0.05 ²⁵ mg/L	NG	1 ²⁵ mg/L	50.3 ²⁵ mg/L	0.005 ²⁵ mg/L	NG	50.2 ²⁵ mg/L	0.001 ²⁵ mg/L	NG	NG	NG	0.02 ²⁵ mg/L	NG	NG	NG	NG	NG	NG	0.02 ²⁵ mg/L	NG	56 ²⁵ mg/L	
Sample Location		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	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
TVR 4.3	22-Aug-07	<0.04	0.0003	<0.001	0.13	<0.001	<0.001	0.15	<0.0002	<0.01	0.001	0.0028	<0.06	<0.0002	0.02	0.263	<0.0005	0.0033	0.0048	<0.1	0.005	4.6	<0.0001	0.82	52.2	<0.0002	<0.001	0.003	0.0087	<0.001	0.012
	6-Mar-08	<0.4	<0.0002	<0.001	<0.1	<0.001	<0.005	<0.2	<0.0005	<0.1	0.0012	0.013	<0.6	<0.0002	<0.2	0.39	<0.0005	0.0097	0.0032	1	<0.001	4	<0.0001	0.9	0.001	<0.0002	<0.001	<0.003	0.0053	<0.001	0.063
	9-Sep-08	<0.04	0.0008	<0.001	0.06	<0.001	<0.005	0.16	0.0004	<0.01	0.0011	0.013	<0.06	<0.0002	<0.02	0.074	<0.0005	0.0051	0.0087	<0.1	0.001	4	<0.0001	1	60	<0.0002	<0.001	0.005	0.0056	<0.001	0.022
	24-Nov-08	0.004	<0.0002	<0.001	0.04	<0.001	<0.005	0.16	0.0003	0.001	0.0006	0.0039	0.08	<0.0002	<0.02	0.25	<0.0005	0.0043	0.0048	0.1	<0.001	3.8	<0.0001	0.95	53	<0.0002	<0.001	<0.001	0.0045	<0.001	0.021
	26-Nov-08												<0.06			0.25															
	19-Jan-09															0.19															
	24-Mar-09	0.002	<0.0002	<0.0002	0.05	<0.001	<0.005	0.15	0.00016	<0.001	0.0003	0.0034	<0.06	<0.0002	<0.02	0.13	<0.0001	0.0051	0.0019	<0.1	0.0005	4.0	<0.0001	1.0	59	<0.0002	<0.001	<0.001	0.0061	<0.001	0.011
	19-May-09	0.004	<0.0002	<0.0002	0.04	<0.001	<0.005	0.16	0.0001	<0.001	<0.0003	0.0040	0.11	<0.0002	0.02	0.13	0.000002	0.0047	0.0012	<0.1	0.0009	4.2	<0.0001	1.1	68	<0.0002	<0.001	<0.001	0.0051	<0.001	0.012
	21-May-09												<0.06			0.053															
	22-Jul-09	0.001	<0.0002	<0.0002	0.05	<0.001	<0.03	0.15	0.00017	<0.001	<0.0003	0.0041	<0.06	<0.0002	0.03	0.012	0.000002	0.0061	0.0011	<0.1	0.0012	3.9	<0.0001	1.0	63	<0.0002	<0.001	<0.001	0.0038	<0.001	0.020
	25-Sep-09	<0.001	<0.0002	<0.0002	0.04	<0.001	<0.005	0.18	0.00021	<0.001	<0.0003	0.0013	0.07	<0.0002	0.02	0.051	<0.000001	0.0039	0.0018	<0.1	0.0008	4.3	<0.0001	1.1	66	<0.0002	<0.001	<0.001	0.0058	<0.001	0.010
	16-Nov-09	<0.001	<0.0002	<0.0002	0.04	<0.001	<0.005	0.18	0.00014	<0.001	<0.0003	0.0017	0.06	<0.0002	0.02	0.054	0.000003	0.0033	0.0020	<0.1	0.0006	4.2	<0.0001	1.2	66	<0.0002	<0.001	<0.001	0.0049	<0.001	0.010
	18-Jan-10	0.002	<0.0002	<0.0002	0.04	<0.001	<0.005	0.18	0.00019	<0.001	<0.0003	0.001	<0.06	<0.0002	0.03	0.06		0.0036	0.0014	<0.1	0.0007	4.5	<0.0001	1.2	71	<0.0002	<0.001	<0.001	0.0045	<0.001	0.005
	21-Jan-10															0.00006															
	21-Jan-10 to 24-May-11															Insufficient Water Volume for Sampling															
	13-Jul-11	0.08	<0.0006	0.001	0.05	<0.001	<0.005	0.04	0.00010	<0.001	0.0019	0.0037	0.10	<0.0002	<0.02	0.12	0.00003	0.0040	0.0095	<0.1	0.0003	6.7	<0.0001	0.59	81	<0.0002	<0.001	<0.001	0.0021	<0.001	0.007
	14-Sept-11 to 16-May-12															Insufficient Water Volume for Sampling															
	19-Jul-12	0.018	<0.00060	0.00066	0.073	<0.0010	<0.0050	0.056	0.00008	<0.0010	0.00032	0.0028	0.097	<0.00020	<0.020	0.45	0.0000045	0.0025	0.0067	<0.10	0.00021	7	<0.00010	0.68	87	<0.00020	<0.0010	<0.0010	0.0026	<0.0010	0.093
	20-Sep-12	0.0021	<0.00060	0.00036	0.045	<0.0010	<0.0050	0.1	0.00004	<0.0010	<0.00030	0.0041	<0.060	<0.00020	<0.020	<0.0040	0.0000049	0.0015	0.0016	<0.10	0.00045	5.4	<0.00010	1.1	76	<0.00020	<0.0010	<0.0010	0.005	<0.0010	<0.0030
	20-Nov-12 to 8-May-13															Insufficient Water Volume for Sampling															
	12-Jul-13	0.0030	<0.00060	0.00038	0.12	<0.0010	<0.0050	0.041	0.00014	<0.0010	<0.00030	0.0028	<0.060	<0.00020	<0.020	0.59	<0.000020	0.0017	0.0070	<0.10	<0.00020	6.7	<0.00010	0.59	76	<0.00020	<0.0010	<0.0010	0.0021	<0.0010	0.0034
	5-Sep-13 to 16-Nov-17															Insufficient Water Volume for Sampling															
	23-Jul-18	0.0038	<0.00060	<0.00020	0.026	<0.0010	<0.0050	0.17	0.000029	<0.0010	0.00039	0.0037	<0.060	0.00027	0.022	0.80	<0.000020	0.0025	0.0011	<0.10	0.00037	3.7	<0.00010	1.1	62	<0.00020	<0.0010	<0.0010	0.0085	<0.0010	0.0075
	21-Nov-18	0.0034	<0.00060	<0.00020	0.029	<0.0010	<0.0050	0.16	<0.00020	<0.0010	<0.00030	0.0011	<0.060	<0.00020	0.024	0.010	0.0000022	0.0022	<0.00050	<0.10	0.00097	3.6	<0.00010	1.2	70	<0.00020	<0.0010	<0.0010	0.0082	<0.0010	0.0038
	16-Jul-19 to 26-Nov-19															Insufficient Water															

Table E.9. Historical Groundwater Analytical Results - Dissolved Metals

Sample Location	Dissolved Aluminum (Al)	Dissolved Antimony (Sb)	Dissolved Arsenic (As)	Dissolved Barium (Ba)	Dissolved Beryllium (Be)	Dissolved Bismuth (Bi)	Dissolved Boron (B)	Dissolved Cadmium (Cd)	Dissolved Chromium (Cr)	Dissolved Cobalt (Co)	Dissolved Copper (Cu)	Dissolved Iron (Fe)	Dissolved Lead (Pb)	Dissolved Lithium (Li)	Dissolved Manganese (Mn)	Dissolved Mercury (Hg)	Dissolved Molybdenum (Mo)	Dissolved Nickel (Ni)	Dissolved Phosphorus (P)	Dissolved Selenium (Se)	Dissolved Silicon (Si)	Dissolved Silver (Ag)	Dissolved Strontium (Sr)	Dissolved Sulphur (S)	Dissolved Thallium (Tl)	Dissolved Tin (Sn)	Dissolved Titanium (Ti)	Dissolved Uranium (U)	Dissolved Vanadium (V)	Dissolved Zinc (Zn)
	0.1 ^{MAC} mg/L	0.005 ^{MAC} mg/L	0.01 ^{MAC} mg/L	2 ^{MAC} mg/L	NG mg/L	NG mg/L	5 ^{MAC} mg/L	0.007 ^{MAC} mg/L	0.05 ^{MAC} mg/L	NG mg/L	1 ^{MAC} mg/L	50.3 ^{MAC} mg/L	0.005 ^{MAC} mg/L	NG mg/L	20.02 ^{MAC} to 12 ^{MAC} mg/L	0.001 ^{MAC} mg/L	NG mg/L	NG mg/L	NG mg/L	0.02 ^{MAC} mg/L	NG mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	NG mg/L	0.02 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L		
22-Aug-07	<0.04	0.0078	0.007	0.18	<0.001	0.17	<0.001	<0.002	<0.01	0.0006	0.0033	0.09	<0.002	0.11	0.19	<0.0005	0.0142	0.006	0.2	0.009	3.5	<0.0001	0.25	55.6	<0.002	<0.001	0.005	0.0094	0.005	0.009
7-Sep-07	<0.04	0.0078	0.007	0.17	<0.001	0.17	<0.001	<0.002	<0.01	0.0016	0.005	<0.06	<0.002	0.11	0.111	<0.0005	0.0106	0.0082	0.2	0.004	3.4	<0.0001	0.25	52.5	<0.002	<0.001	0.007	0.0078	0.002	0.011
6-Mar-08	<0.4	0.0007	0.004	0.1	<0.001	<0.005	0.7	<0.002	<0.1	0.0012	0.0013	<0.6	<0.002	<0.2	0.19	<0.0005	0.0076	0.0045	<1	<0.001	4	<0.0001	0.3	66	<0.002	<0.001	<0.001	0.0047	<0.001	0.006
28-Jul-08	<0.04	<0.0002	0.003	0.14	<0.001	0.0023	0.78	<0.002	<0.01	0.0005	0.003	0.19	<0.002	0.2	0.36	<0.0005	0.005	0.011	<0.001	0.006	3.4	<0.0001	0.43	37	<0.002	<0.001	0.008	0.0029	0.003	<0.003
9-Sep-08	<0.04	0.0003	0.004	0.12	<0.001	<0.005	0.69	<0.002	<0.01	0.0012	0.012	0.55	0.0002	0.18	0.23	<0.0005	0.0077	0.0058	0.1	0.004	3.2	<0.0001	0.31	38	<0.002	<0.001	0.004	0.0037	0.001	0.015
24-Nov-08	0.003	0.0004	0.003	0.12	<0.001	<0.005	0.64	<0.002	0.003	0.0018	0.0028	0.28	<0.002	0.15	0.28	<0.0005	0.0054	0.0062	0.5	0.002	2.9	<0.0001	0.33	39	<0.002	<0.001	<0.001	0.0031	0.001	0.016
19-Jun-09	<0.04	0.0005	0.003	0.13	<0.001	<0.005	0.66	<0.002	<0.01	0.0018	0.0004	0.26	<0.002	0.74	0.45	<0.0005	0.0058	0.0047	<0.1	<0.001	3.3	<0.0001	0.39	48	<0.002	<0.001	<0.001	0.0029	<0.001	0.011
24-Mar-09															Insufficient Water Volume for Sampling															
21-May-09	0.012	0.0014	0.0011	0.15	<0.001	<0.005	0.76	0.000057	<0.001	0.0018	0.0044	0.15	<0.002	0.24	0.41	0.00048	0.0038	<0.1	0.0018	2.5	<0.0001	0.52	71	<0.002	<0.001	<0.001	0.0026	<0.001	0.009	
20-Jul-09															Insufficient Water Volume for Sampling															
25-Sep-09															Insufficient Water Volume for Sampling															
16-Nov-09	0.059	0.0006	0.0014	0.15	<0.001	<0.005	0.75	0.000054	<0.001	0.0011	0.0011	0.21	0.0003	0.22	0.27	0.000004	0.0027	0.0023	0.1	0.0007	3.2	<0.0001	0.54	54	<0.002	<0.001	0.002	0.0022	<0.001	<0.003
21-Jan-10															Insufficient Water Volume for Sampling															
17-Mar-10	0.004	0.0007	0.0011	0.17	<0.001	<0.005	0.7	0.000029	0.007	0.0007	0.0007	0.28	<0.002	0.24	0.35	0.000003	0.0027	0.0022	0.3	0.0008	2.7	<0.0001	0.56	44	<0.002	<0.001	<0.001	0.0029	<0.001	<0.003
12-May-10 to 24-May-11															Insufficient Water Volume for Sampling															
11-Jul-11	0.003	0.0009	0.0004	0.11	<0.001	<0.005	0.65	0.000065	<0.001	<0.0003	0.0021	<0.06	<0.002	0.2	0.023	<0.00002	0.0015	0.0017	<0.1	0.0019	2.5	<0.0001	0.46	27	<0.002	<0.001	<0.001	0.0019	<0.001	0.008
13-Jul-11	0.004	0.001	0.0006	0.13	<0.001	<0.005	0.66	0.000048	<0.001	<0.0003	0.0005	0.14	<0.002	0.2	0.021	<0.00002	0.0017	0.0011	0.2	0.0016	2.9	<0.0001	0.48	25	<0.002	<0.001	<0.001	0.002	<0.001	<0.003
14-Sept-11 to 16-May-12															Insufficient Water Volume for Sampling															
19-Jul-12	0.0054	0.00062	0.00042	0.1	<0.0010	<0.0050	0.67	0.00011	<0.0010	<0.00030	0.0012	<0.060	<0.0020	0.2	0.0044	0.0000043	0.0012	0.00083	<0.10	0.00062	2.5	<0.00010	0.52	27	<0.00020	<0.0010	<0.0010	0.0018	<0.0010	0.0062
20-Sept-12 to 12-Jul-13															Insufficient Water Volume for Sampling															
5-Sep-13	<0.0030	<0.00060	0.0004	0.099	<0.0010	<0.0050	0.69	0.000049	<0.0010	<0.00030	0.0068	<0.060	<0.0020	0.21	0.01	<0.000020	0.0011	0.00092	<0.10	0.001	2.5	<0.00010	0.5	24	<0.00020	<0.0010	<0.0010	0.0019	<0.0010	0.006
13-Nov-13	0.004	<0.00060	0.0003	0.09	<0.0010	<0.0050	0.69	0.000031	<0.0010	<0.00030	0.0015	<0.060	<0.0020	0.2	<0.0040	<0.000020	0.0011	0.00053	<0.10	0.00069	2.5	<0.00010	0.48	24	<0.00020	<0.0010	<0.0010	0.0019	<0.0010	0.0079
23-Jan-14	<0.0030	<0.00060	0.00032	0.082	<0.0010	<0.0050	0.63	0.000042	<0.0010	<0.00030	0.0052	<0.060	0.00023	0.19	0.0048	0.0000035	0.0011	0.00079	<0.10	0.00051	2.2	<0.00010	0.43	21	<0.00020	<0.0010	<0.0010	0.0017	<0.0010	0.021
21-Mar-14	0.0056	0.00047	0.00047	0.65	<0.0010	<0.0050	0.65	0.000016	<0.0010	<0.00030	0.00047	<0.060	<0.0020	0.20	0.019	<0.000037	0.0014	0.00051	<0.10	0.00062	2.5	<0.00010	0.44	21	<0.00020	<0.0010	<0.0010	0.0021	<0.0010	<0.0030
13-May-14	0.0033	<0.00060	0.00055	0.11	<0.0010	<0.0050	0.56	0.000076	<0.0010	0.00045	0.00041	<0.060	<0.0020	0.19	0.0048	<0.000020	0.0015	0.0010	<0.10	0.00050	1.9	<0.00010	0.37	19	<0.00020	<0.0010	<0.0010	0.0019	<0.0010	0.0096
24-Jul-14	0.010	<0.00060	0.00049	0.10	<0.0010	<0.0050	0.63	0.000057	<0.0010	<0.00030	0.0028	<0.060	<0.0020	0.20	<0.0040	0.0000023	0.0014	0.00071	<0.10	0.00044	2.2	<0.00010	0.42	18	<0.00020	<0.0010	<0.0010	0.0019	<0.0010	<0.0030
11-Sept-14	<0.0030	<0.00060	0.00042	0.14	<0.0010	<0.0050	0.67	0.000047	<0.0010	<0.00030	0.0012	<0.060	<0.0020	0.21	0.027	0.0000117	0.0012	0.00069	0.17	0.00056	2.2	<0.00010	0.44	23	<0.00020	<0.0010	<0.0010	0.0019	<0.0010	<0.0030
19-Nov-14 to 30-Mar-21															Insufficient Water Volume for Sampling															
25-Mar-15 to 22-Jul-16															Insufficient Water Volume for Sampling															
18-Nov-16	0.0046	<0.00060	0.00041	0.029	<0.0010	<0.0050	0.11	0.000054	<0.0010	0.00044	0.0033	<0.060	0.00041	<0.020	0.27	0.0000029	0.0017	0.00250	<0.10	0.00036	4.8	<0.00010	1.1	100	<0.00020	<0.0010	<0.0010	0.0044	<0.0010	<0.0030
28-Mar-17 to 18-Apr-18															Insufficient Water Volume for Sampling															
23-Jul-18	0.0040	<0.00060	0.00029	0.025	<0.0010	<0.0050	0.10	<0.000020	<0.0010	<0.00030	0.00063	<0.060	<0.0020	<0.020	0.0047	<0.000020	0.0011	0.00068	<0.10	0.0022	4.0	<0.00010	1.1	81	<0.00020	<0.0010	<0.0010	0.0039	<0.0010	<0.0030
16-Nov-18 to 28-Mar-19															Insufficient Water Volume for Sampling															
16-Jul-19	<0.0030	<0.00060	0.00021	0.027	<0.0010	<0.0050	0.094	0.000032	<0.0010	<0.00030	0.00084	0.062	<0.0020	<0.020	<0.0040	<0.000020	0.00075	0.00080	<0.10	0.0016	4.2	<0.00010	1.2	76	<0.00020	<0.0010	<0.0010	0.0059	<0.0010	<0.0030
20-Nov-19 to 30-Mar-21															Insufficient Water Volume for Sampling															
26-Mar-15	0.0051	<0.00060	0.00055	0.079	<0.0010	<0.0050	0.073	<0.000020	<0.0010	<0.00030	0.002	0.00029	0.06	<0.0020	<0.020	0.0000045	0.0015	0.00028	<0.10	<0.00020	6.9	<0.00010	0.86	68	<0.00020	<0.0010	<0.0010	0.0015	<0.0010	<0.0030
14-Jul-15	<0.0030	0.00066	0.0023	0.11	<0.0010	<0.0050	0.086	0.000032	<0.0010	0.0015	<0.0020	0.075	<0.0020	<0.020	0.87	0.0000039	0.05300	0.0052	<0.10	0.00044	4.6	<0.00010	1.4	100	<0.00020	0.0011	<0.0010	0.01	<0.0010	<0.0030
19-Nov-15	0.0054	<0.00060	0.00096	0.11	<0.0010	<0.0050	0.092	0.000059	<0.0010	0.00085	0.001	0.06	<0.0020	<0.020	0.84	0.0000024	0.026	0.0039	<0.10	0.00027	4.6	<0.00010	1.4	98	<0.00020	<0.0010	<0.0010	0.0077	<0.0010	0.004
29-Mar-16	0.0049	<0.00060	0.00048	0.063	<0.0010	<0.0050	0.090	<0.000020	<0.0010	0.0011	0.00028	<0.060	<0.0020	<0.020	0.45	<0.000020	0.0120	0.00290	<0.10	<0.00020	4.5	<0.00010	1.3	72	<0.00020	<0.0010	<0.0010	0.0065	<0.0010	<0.0030
22-Jul-16	0.0041	<0.00060	0.00029	0.056	<0.0010	<0.0050	0.092	0.000110	<0.0010	<0.00030</																				

Table E.9. Historical Groundwater Analytical Results - Dissolved Metals

Health Canada Guidelines ¹ - Potable		Dissolved Aluminum (Al)		Dissolved Antimony (Sb)		Dissolved Arsenic (As)		Dissolved Barium (Ba)		Dissolved Beryllium (Be)		Dissolved Bismuth (Bi)		Dissolved Boron (B)		Dissolved Cadmium (Cd)		Dissolved Chromium (Cr)		Dissolved Cobalt (Co)		Dissolved Copper (Cu)		Dissolved Iron (Fe)		Dissolved Lead (Pb)		Dissolved Lithium (Li)		Dissolved Manganese (Mn)		Dissolved Mercury (Hg)		Dissolved Molybdenum (Mo)		Dissolved Nickel (Ni)		Dissolved Phosphorus (P)		Dissolved Selenium (Se)		Dissolved Silicon (Si)		Dissolved Silver (Ag)		Dissolved Strontium (Sr)		Dissolved Sulphur (S)		Dissolved Thallium (Tl)		Dissolved Tin (Sn)		Dissolved Titanium (Ti)		Dissolved Uranium (U)		Dissolved Vanadium (V)		Dissolved Zinc (Zn)																																																																																																																																																																																																																																																																																																																																						
		0.1 ^{MAC} mg/L	0.005 ^{MAC} mg/L	0.01 ^{MAC} mg/L	2 ^{MAC} mg/L	NG mg/L	NG mg/L	5 ^{MAC} mg/L	0.007 ^{MAC} mg/L	0.05 ^{MAC} mg/L	NG mg/L	1 ^{MAC} mg/L	50.3 ^{MAC} mg/L	0.005 ^{MAC} mg/L	NG mg/L	20.02 ^{MAC} 0.12 ^{MAC} mg/L	0.001 ^{MAC} mg/L	NG mg/L	NG mg/L	NG mg/L	0.05 ^{MAC} mg/L	NG mg/L	1 ^{MAC} mg/L	NG mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L

Table E.9. Historical Groundwater Analytical Results - Dissolved Metals

Sample Date	Dissolved Aluminum (Al)	Dissolved Antimony (Sb)	Dissolved Arsenic (As)	Dissolved Barium (Ba)	Dissolved Beryllium (Be)	Dissolved Bismuth (Bi)	Dissolved Boron (B)	Dissolved Cadmium (Cd)	Dissolved Chromium (Cr)	Dissolved Cobalt (Co)	Dissolved Copper (Cu)	Dissolved Iron (Fe)	Dissolved Lead (Pb)	Dissolved Lithium (Li)	Dissolved Manganese (Mn)	Dissolved Mercury (Hg)	Dissolved Molybdenum (Mo)	Dissolved Nickel (Ni)	Dissolved Phosphorus (P)	Dissolved Selenium (Se)	Dissolved Silicon (Si)	Dissolved Silver (Ag)	Dissolved Strontium (Sr)	Dissolved Sulphur (S)	Dissolved Tantalum (Ta)	Dissolved Tin (Sn)	Dissolved Titanium (Ti)	Dissolved Uranium (U)	Dissolved Vanadium (V)	Dissolved Zinc (Zn)
Sample Location	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	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
21-Apr-10	0.014	<0.0002	<0.0002	0.07	<0.001	<0.005	<0.02	<0.00005	<0.001	<0.003	0.0028	<0.06	0.0004	<0.02	<0.004	<0.00002	0.0014	<0.005	<0.1	0.0007	1.8	<0.0001	0.32	29	<0.0002	<0.001	<0.001	0.0008	<0.001	<0.003
10-May-10	<0.001	<0.0002	<0.0002	0.07	<0.001	<0.005	<0.02	0.000009	<0.001	<0.003	0.0019	<0.06	<0.0002	<0.02	<0.004	<0.00002	0.0008	<0.0005	<0.1	0.0007	1.7	<0.0001	0.31	29	<0.0002	<0.001	<0.001	0.0007	<0.001	<0.003
28-Jun-10	0.001	<0.0002	<0.0002	0.07	<0.001	<0.005	<0.02	0.00002	<0.001	<0.003	0.0036	<0.06	0.0011	<0.02	<0.004	<0.00002	0.0008	<0.0005	<0.1	0.0008	1.6	<0.0001	0.33	32	<0.0002	<0.001	<0.001	0.0007	<0.001	<0.003
12-Jul-10	<0.001	0.0004	<0.0002	0.08	<0.001	<0.005	<0.02	<0.000006	<0.001	<0.003	0.0023	<0.06	0.0006	<0.02	<0.004	0.000018	0.0008	<0.0005	<0.1	0.0007	1.7	<0.0001	0.33	36	<0.0002	<0.001	<0.001	0.0008	<0.001	<0.003
15-Sep-10	0.054	<0.0002	<0.0002	0.09	<0.001	<0.005	0.02	0.000006	<0.001	<0.003	0.0017	<0.06	0.0004	<0.02	<0.004	<0.000002	0.0008	<0.0005	<0.1	0.0007	2.3	<0.0001	0.37	40	<0.0002	<0.001	<0.001	0.0008	<0.001	0.003
31-Oct-10	<0.0002	<0.0002	<0.0002	0.40	<0.001	<0.005	0.02	<0.000006	<0.001	<0.003	0.0018	0.17	0.0005	0.03	<0.000002	0.0009	<0.0005	<0.1	0.0007	6.6	<0.0001	0.36	10	<0.0002	<0.001	<0.001	0.0010	<0.001	<0.003	
7-Nov-10	<0.001	<0.0002	<0.0002	0.06	<0.001	<0.005	0.02	<0.000005	<0.001	<0.003	0.0013	<0.06	<0.0002	<0.02	<0.004	<0.000002	0.0009	<0.0005	<0.1	0.0008	2.2	<0.0001	0.36	43	<0.0002	<0.001	0.0009	<0.001	<0.003	
13-Dec-10	0.002	<0.0002	<0.0002	0.07	<0.001	<0.005	0.02	0.000022	<0.001	<0.003	0.0016	<0.06	0.0002	<0.02	<0.004	<0.000002	0.0008	<0.0005	<0.1	0.0007	2.2	<0.0001	0.36	41	<0.0002	<0.001	<0.001	0.0009	<0.001	<0.003
26-Jan-11	0.002	<0.0002	<0.0002	0.06	<0.001	<0.005	<0.02	<0.000006	<0.001	<0.003	0.0021	<0.06	0.0002	<0.02	<0.004	<0.000002	0.0008	0.0006	<0.1	0.0009	2.1	<0.0001	0.35	36	<0.0002	<0.001	<0.001	0.0009	<0.001	<0.003
23-Feb-11	0.001	<0.0002	<0.0002	0.06	<0.001	<0.005	0.02	<0.000006	<0.001	<0.003	0.0035	<0.06	0.0005	<0.02	<0.004	<0.000002	0.0005	0.0005	0.1	0.0007	2.2	<0.0001	0.35	37	<0.0002	<0.001	<0.001	0.0007	<0.001	0.005
16-Mar-11	<0.001	<0.0002	<0.0002	0.06	<0.001	<0.005	<0.02	<0.000006	<0.001	<0.003	0.0015	<0.06	<0.0002	<0.02	<0.004	<0.000002	0.0005	0.0006	<0.1	0.0008	2.2	<0.0001	0.37	38	<0.0002	<0.001	<0.001	0.0008	<0.001	<0.003
18-Apr-11	0.002	<0.0002	<0.0002	0.06	<0.001	<0.005	0.02	0.000008	<0.001	<0.003	0.0021	<0.06	0.0002	<0.02	<0.004	<0.000002	0.0008	0.0007	<0.1	0.0008	2.1	<0.0001	0.36	40	<0.0002	<0.001	<0.001	0.0008	<0.001	<0.003
20-May-11	0.001	<0.0002	<0.0002	0.06	<0.001	<0.005	0.02	0.000011	<0.001	<0.003	0.0018	<0.06	0.0004	<0.02	<0.004	<0.000002	0.0008	<0.0005	<0.1	0.0008	2.1	<0.0001	0.35	40	<0.0002	<0.001	<0.001	0.0008	<0.001	<0.003
14-Jun-11	<0.001	<0.0006	<0.0002	0.06	<0.001	<0.005	0.03	0.000008	<0.001	<0.003	0.0026	<0.06	0.0008	<0.02	<0.004	0.000004	0.0006	<0.0005	<0.1	0.0007	1.7	<0.0001	0.3	40	<0.0002	<0.001	<0.001	0.0007	<0.001	0.005
13-Jul-11	0.004	<0.0006	<0.0002	0.07	<0.001	<0.005	<0.02	0.000006	<0.001	<0.003	0.0015	<0.06	0.0003	<0.02	<0.004	<0.000002	0.0007	0.0006	<0.1	0.0007	1.8	<0.0001	0.4	47	<0.0002	<0.001	<0.001	0.0008	<0.001	<0.003
16-Aug-11	0.01	<0.0006	<0.0002	0.07	<0.001	<0.005	0.02	0.000011	<0.001	<0.003	0.0017	<0.06	0.0004	<0.02	<0.004	<0.000002	0.0006	0.0005	<0.1	0.0005	1.7	<0.0001	0.4	56	<0.0002	<0.001	<0.001	0.0008	<0.001	<0.003
14-Sep-11	0.002	<0.0006	<0.0002	0.08	<0.001	<0.005	0.03	<0.000006	<0.001	<0.003	0.0012	<0.06	<0.0002	<0.02	<0.004	<0.000002	0.0005	<0.0005	<0.1	0.0005	1.8	<0.0001	0.4	60	<0.0002	<0.001	<0.001	0.0009	<0.001	<0.003
25-Oct-11	0.003	<0.0006	<0.0002	0.08	<0.001	<0.005	0.02	0.000008	<0.001	<0.003	0.0006	<0.06	0.0004	<0.02	<0.004	<0.000002	0.0007	0.0005	<0.1	0.0006	1.7	<0.0001	0.5	63	<0.0002	<0.001	<0.001	0.001	<0.001	<0.003
16-Nov-11	0.002	<0.0006	<0.0002	0.08	<0.001	<0.005	0.02	<0.000005	<0.001	<0.003	0.0018	0.06	<0.0002	<0.02	<0.004	<0.000002	0.0006	<0.0005	<0.1	0.0006	1.8	<0.0001	0.5	61	<0.0002	<0.001	<0.001	0.0009	<0.001	<0.003
14-Dec-11	0.0013	<0.0006	<0.0002	0.071	<0.001	<0.005	0.029	0.0000091	<0.001	<0.003	0.0014	<0.06	0.00026	<0.02	<0.004	<0.000002	0.0006	0.00051	<0.1	0.00048	1.9	<0.0001	0.4	59	<0.0002	<0.001	<0.001	0.00098	<0.001	0.0052
23-Jan-12	0.0064	<0.0006	<0.0002	0.068	<0.001	<0.000006	0.026	<0.000012	<0.001	<0.003	0.0016	<0.06	<0.0002	<0.02	<0.004	<0.000002	0.00069	0.00074	<0.1	0.00052	1.9	<0.0001	0.42	56	<0.0002	<0.001	<0.001	0.0011	<0.001	0.0036
22-Feb-12	0.0029	<0.0006	<0.0002	0.067	<0.001	<0.005	0.022	<0.000050	<0.001	<0.003	0.0019	<0.06	<0.0002	<0.02	<0.004	0.0000036	0.00061	<0.00050	<0.1	0.00098	1.8	<0.0001	0.42	53	<0.0002	<0.001	<0.001	0.00099	<0.001	<0.003
22-Mar-12	<0.0010	<0.0006	<0.0002	0.071	<0.001	<0.005	0.023	<0.000050	<0.001	<0.003	0.0012	<0.06	<0.0002	<0.02	<0.004	<0.000002	0.00058	<0.00050	<0.1	0.00047	2.2	<0.0001	0.00093	58	<0.0002	<0.001	<0.001	<0.00093	<0.001	<0.003
25-Apr-12	0.0017	<0.0006	<0.0002	0.061	<0.001	<0.005	0.021	0.000011	<0.001	<0.003	0.0015	<0.06	<0.0002	<0.02	<0.004	<0.000002	0.00067	0.00058	<0.1	0.00054	1.8	<0.0001	0.39	49	<0.0002	<0.001	<0.001	0.0010	<0.001	<0.003
17-May-12	0.0010	<0.0006	<0.0002	0.063	<0.001	<0.005	0.024	<0.000050	<0.001	<0.003	0.0015	<0.06	<0.0002	<0.02	<0.004	<0.000002	0.00059	<0.00050	<0.1	0.00054	1.8	<0.0001	0.39	50	<0.0002	<0.001	<0.001	0.00093	<0.001	<0.003
14-Jun-12	<0.0010	<0.0006	<0.0002	0.061	<0.001	<0.005	0.025	<0.000050	<0.001	<0.003	0.0011	<0.06	<0.0002	<0.02	<0.004	<0.000002	0.00058	<0.00050	<0.1	0.00059	1.5	<0.0001	0.38	48	<0.0002	<0.001	<0.001	0.00089	<0.001	<0.003
20-Jul-12	0.0012	<0.0006	<0.0002	0.061	<0.001	<0.005	0.026	<0.000050	<0.001	<0.003	0.0019	0.061	<0.0002	<0.02	<0.004	<0.000002	0.0006	<0.00050	<0.1	0.00053	1.6	<0.0001	0.38	52	<0.0002	<0.001	<0.001	0.00092	<0.001	<0.003
15-Aug-12	0.0025	<0.0006	<0.0002	0.06	<0.001	<0.005	0.023	0.0000074	<0.001	<0.003	0.0017	0.064	0.00024	<0.02	<0.004	<0.000002	0.0006	0.00093	<0.1	0.00044	1.7	<0.0001	0.37	51	<0.0002	<0.001	<0.001	0.00093	<0.001	0.004
21-Sep-12	0.0005	<0.0006	<0.0002	0.065	<0.001	<0.005	<0.02	0.000016	<0.001	<0.003	0.0014	<0.06	<0.0002	<0.02	<0.004	<0.000002	0.00058	<0.00050	<0.1	0.00042	1.8	<0.0001	0.40	58	<0.0002	<0.001	<0.001	0.0011	<0.001	<0.003
24-Oct-12	0.0012	<0.0006	<0.0002	0.062	<0.001	<0.005	0.026	0.000013	<0.001	<0.003	0.0017	<0.06	<0.0002	<0.02	<0.004	<0.000002	0.00051	<0.00050	<0.1	0.00044	2	<0.0001	0.42	59	<0.0002	<0.001	<0.001	0.00092	<0.001	<0.003
23-Nov-12	<0.0010	<0.0006	<0.0002	0.061	<0.001	<0.005	0.03	<0.000050	<0.001	<0.003	0.001	<0.06	<0.0002	<0.02	<0.004	0.0000026	0.00059	<0.00050	<0.1	0.00039	2.1	<0.0001	0.43	59	<0.0002	<0.001	<0.001	0.001	<0.001	<0.003
11-Dec-12	0.001	<0.0006	<0.0002	0.06	<0.001	<0.005	0.023	<0.000050	<0.001	<0.003	0.001	<0.06	<0.0002	<0.02	<0.004	<0.000002	0.00058	<0.00050	<0.1	0.00041	2.2	<0.0001	0.44	59	<0.0002	<0.001	<0.001	0.001	<0.001	<0.003
25-Jan-13	0.0023	<0.0006	<0.0002	0.056	<0.001	<0.005	0.030	0.0000054	<0.001	<0.003	0.0022	<0.06	<0.0002	<																

Table E.9. Historical Groundwater Analytical Results - Dissolved Metals

Sample Location	Sample Date	Dissolved Aluminum (Al)	Dissolved Antimony (Sb)	Dissolved Arsenic (As)	Dissolved Barium (Ba)	Dissolved Beryllium (Be)	Dissolved Bismuth (Bi)	Dissolved Boron (B)	Dissolved Cadmium (Cd)	Dissolved Chromium (Cr)	Dissolved Cobalt (Co)	Dissolved Copper (Cu)	Dissolved Iron (Fe)	Dissolved Lead (Pb)	Dissolved Lithium (Li)	Dissolved Manganese (Mn)	Dissolved Mercury (Hg)	Dissolved Molybdenum (Mo)	Dissolved Nickel (Ni)	Dissolved Phosphorus (P)	Dissolved Selenium (Se)	Dissolved Silicon (Si)	Dissolved Silver (Ag)	Dissolved Strontium (Sr)	Dissolved Sulphur (S)	Dissolved Thallium (Tl)	Dissolved Tin (Sn)	Dissolved Titanium (Ti)	Dissolved Uranium (U)	Dissolved Vanadium (V)	Dissolved Zinc (Zn)
		0.1 ^{MAC} mg/L	0.005 ^{MAC} mg/L	0.01 ^{MAC} mg/L	2 ^{MAC} mg/L	NG mg/L	NG mg/L	5 ^{MAC} mg/L	0.007 ^{MAC} mg/L	0.05 ^{MAC} mg/L	0.05 ^{MAC} mg/L	NG mg/L	10 ^{MAC} mg/L	50.3 ^{NO} mg/L	0.005 ^{MAC} mg/L	NG mg/L	50.02 ^{MAC} to 12 ^{MAC} mg/L	0.001 ^{MAC} mg/L	NG mg/L	NG mg/L	0.05 ^{MAC} mg/L	NG mg/L	1 ^{MAC} mg/L	NG mg/L	NG mg/L	0.02 ^{MAC} mg/L	NG mg/L	NG mg/L	5 ^{MAC} mg/L	NG mg/L	
PS BLEND (cont)	22-Jan-20	<0.0030	<0.00060	<0.00020	0.062	<0.010	<0.0050	0.021	<0.00020	<0.010	<0.0030	0.0018	<0.060	<0.0020	<0.020	<0.0040	<0.000020	0.00085	<0.00050	<0.10	0.00086	2.4	<0.00010	0.33	35	<0.00020	<0.010	<0.010	0.00073	<0.010	0.0037
	21-Feb-20	<0.0030	<0.00060	<0.00020	0.062	<0.010	<0.0050	<0.020	<0.00020	<0.010	<0.0030	0.0016	<0.060	<0.0020	<0.020	<0.0040	<0.000019	0.00085	<0.00050	<0.10	0.00086	2.4	<0.00010	0.34	36	<0.00020	<0.010	<0.010	0.00065	<0.010	0.0044
	18-Mar-20	<0.0030	<0.00060	<0.00020	0.063	<0.010	<0.0050	<0.020	<0.00020	<0.010	<0.0030	0.0027	<0.060	<0.0020	<0.020	<0.0040	<0.000019	0.00071	0.0021	<0.10	0.00086	2.4	<0.00010	0.36	37	<0.00020	<0.010	<0.010	0.00067	<0.010	0.0048
	14-Apr-20	<0.0030	<0.00060	<0.00020	0.061	<0.010	<0.0050	0.025	<0.00020	<0.010	<0.0030	0.0052	<0.060	<0.0020	<0.020	<0.0040	<0.000019	0.0011	0.0017	<0.10	0.00091	2.2	<0.00010	0.34	35	<0.00020	0.0026	<0.010	<0.00097	<0.010	0.0078
	13-May-20	0.0042	<0.00060	<0.00020	0.062	<0.010	<0.0050	0.029	<0.00020	<0.010	<0.0030	0.0014	<0.060	<0.0020	<0.020	<0.0040	<0.000019	0.00084	<0.00050	<0.10	0.0010	0.9	<0.00010	0.36	40	<0.00020	<0.010	<0.010	0.00081	<0.010	0.0048
	23-Jun-20	0.0032	<0.00060	<0.00020	0.062	<0.010	<0.0050	0.022	<0.00020	<0.010	<0.0030	0.0028	<0.060	<0.0020	<0.020	<0.0040	<0.000019	0.00088	0.00094	<0.10	0.00068	1.4	<0.00010	0.36	46	<0.00020	<0.010	<0.010	0.00082	<0.010	0.0042
	28-Jul-20	<0.0030	<0.00060	<0.00020	0.068	<0.010	<0.0050	0.024	0.000023	<0.010	<0.0030	0.014	<0.060	0.00042	<0.020	<0.0040	<0.000019	0.00090	0.0027	<0.10	0.00073	2.3	<0.00010	0.34	41	<0.00020	<0.010	<0.010	0.00087	<0.010	0.022
	10-Aug-20	<0.0030	<0.00060	0.00022	0.058	<0.010	<0.0050	<0.020	0.000020	<0.010	<0.0030	0.0050	<0.060	<0.0020	<0.020	<0.0040	<0.000019	0.00096	0.0014	<0.10	0.00053	2.4	<0.00010	0.32	36	<0.00020	<0.010	<0.010	0.00083	<0.010	0.0056
	30-Sep-20	0.0076	0.0011	<0.00020	0.066	<0.010	<0.0050	<0.020	<0.00020	<0.010	<0.0030	0.0031	<0.060	<0.0020	<0.020	<0.0040	0.000002	0.0010	0.00061	<0.10	0.00040	2.4	<0.00010	0.34	31	<0.00020	0.0012	<0.010	0.00076	<0.010	0.017
	26-Oct-20	<0.0030	<0.00060	<0.00020	0.060	<0.010	<0.0050	<0.020	<0.00020	<0.010	<0.0030	0.0016	<0.060	<0.0020	<0.020	<0.0040	<0.000019	0.00094	<0.00050	<0.10	0.00056	2.1	<0.00010	0.29	29	<0.00020	0.0011	<0.010	0.00079	<0.010	<0.030
	24-Nov-20	<0.0030	<0.00060	<0.00020	0.059	<0.010	<0.0050	<0.020	<0.00020	<0.010	<0.0030	0.0015	<0.060	<0.0020	<0.020	<0.0040	<0.000019	0.0010	<0.00050	<0.10	0.00056	2.1	<0.00010	0.29	30	<0.00020	<0.010	<0.010	0.00067	<0.010	0.0044
	15-Dec-20	<0.0030	<0.00060	<0.00020	0.071	<0.010	<0.0050	<0.020	<0.00020	<0.010	<0.0030	0.0018	<0.060	<0.0020	<0.020	<0.0040	<0.000019	0.00078	0.00050	<0.10	0.00046	2.5	<0.00010	0.35	33	<0.00020	<0.010	<0.010	0.00055	<0.010	0.0069
	25-Jan-21	<0.0030	<0.00060	0.00021	0.060	<0.010	<0.0050	<0.020	<0.00020	<0.010	<0.0030	0.00042	<0.060	<0.0020	<0.020	<0.0040	<0.000019	0.00085	<0.00050	<0.10	0.00074	2.2	<0.00010	0.31	30	<0.00020	<0.010	<0.010	0.00068	<0.010	0.0057
	17-Feb-21	<0.0030	<0.00060	<0.00020	0.060	<0.010	<0.0050	<0.020	<0.00020	<0.010	<0.0030	0.0012	<0.060	<0.0020	<0.020	0.00046	0.0000023	0.00084	<0.00050	<0.10	0.00099	2.3	0.00012	0.33	31	<0.00020	<0.010	0.001	0.00073	<0.010	0.0043
	18-Mar-21	<0.0030	<0.00060	<0.00020	0.058	<0.010	<0.0050	<0.020	<0.00020	<0.010	<0.0030	0.00095	<0.060	<0.0020	<0.020	<0.0040	<0.000019	0.00075	<0.00050	<0.10	0.00062	2.2	<0.00010	0.31	32	<0.00020	<0.010	<0.010	0.00081	0.0010	<0.030
	13-Apr-21	<0.0030	<0.00060	<0.00020	0.055	<0.010	<0.0050	<0.020	<0.00020	<0.010	<0.0030	0.003	<0.060	<0.0020	<0.020	<0.0040	<0.000019	0.00088	0.00060	<0.10	0.00099	2.2	<0.00010	0.30	33	<0.00020	<0.010	<0.010	0.00067	<0.010	0.0063
	19-May-21	<0.0030	<0.00060	<0.00020	0.052	<0.010	<0.0050	<0.020	<0.00020	<0.010	<0.0030	0.0026	<0.060	<0.0020	<0.020	<0.0040	<0.000019	0.00077	<0.00050	<0.10	0.00035	1.7	<0.00010	0.28	29	<0.00020	<0.010	<0.010	0.00056	<0.010	<0.030
	23-Jun-21	0.0033	<0.00060	<0.00020	0.051	<0.010	<0.0050	<0.020	<0.00020	<0.010	<0.0030	0.0011	0.13	<0.0020	<0.020	<0.0040	<0.000019	0.00078	0.00053	<0.10	<0.00020	1.8	<0.00010	0.26	27	<0.00020	<0.010	0.001	0.00055	<0.010	<0.030
	22-Jul-21	<0.0030	<0.00060	<0.00020	0.054	<0.010	<0.0050	<0.020	<0.00020	<0.010	<0.0030	0.0016	<0.060	<0.0020	<0.020	<0.0040	<0.000019	0.00077	<0.00050	<0.10	0.00072	1.8	<0.00010	0.25	22	<0.00020	<0.010	<0.010	0.		

Table E.9. Historical Groundwater Analytical Results - Dissolved Metals

		Dissolved Aluminum (Al)	Dissolved Antimony (Sb)	Dissolved Arsenic (As)	Dissolved Barium (Ba)	Dissolved Beryllium (Be)	Dissolved Bismuth (Bi)	Dissolved Boron (B)	Dissolved Cadmium (Cd)	Dissolved Chromium (Cr)	Dissolved Cobalt (Co)	Dissolved Copper (Cu)	Dissolved Iron (Fe)	Dissolved Lead (Pb)	Dissolved Lithium (Li)	Dissolved Manganese (Mn)	Dissolved Mercury (Hg)	Dissolved Molybdenum (Mo)	Dissolved Nickel (Ni)	Dissolved Phosphorus (P)	Dissolved Selenium (Se)	Dissolved Silicon (Si)	Dissolved Silver (Ag)	Dissolved Strontium (Sr)	Dissolved Sulphur (S)	Dissolved Thallium (Tl)	Dissolved Tin (Sn)	Dissolved Titanium (Ti)	Dissolved Uranium (U)	Dissolved Vanadium (V)	Dissolved Zinc (Zn)
		0.1 ^{MAC} mg/L	0.005 ^{MAC} mg/L	0.01 ^{MAC} mg/L	2 ^{MAC} mg/L	NG mg/L	NG mg/L	5 ^{MAC} mg/L	0.007 ^{MAC} mg/L	0.05 ^{MAC} mg/L	NG mg/L	1 ^{MAC} mg/L	50.3 ^{MAC} mg/L	0.005 ^{MAC} mg/L	NG mg/L	50.02 ^{MAC} 0.12 ^{MAC} mg/L	0.001 ^{MAC} mg/L	NG mg/L	NG mg/L	NG mg/L	0.05 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	NG mg/L	NG mg/L	0.02 ^{MAC} mg/L	NG mg/L	0.001 ^{MAC} mg/L	0.001 ^{MAC} mg/L	0.001 ^{MAC} mg/L	
Health Canada Guidelines ¹ - Potable	Sample Date																														
	9-Jan-14	<0.0030	<0.00060	<0.00020	0.039	<0.0010	<0.0050	0.051	0.000026	<0.0010	<0.00030	0.00054	0.15	<0.0020	<0.020	0.0098	<0.000020	0.00034	0.001	<0.10	0.00032	3.5	<0.00010	0.52	55	<0.00020	<0.0010	<0.0010	0.0013	<0.00010	0.0047
	23-Jan-14	<0.0030	<0.00060	<0.00020	0.037	<0.0010	<0.0050	0.034	0.000021	<0.0010	<0.00030	0.00086	<0.060	0.00087	<0.020	<0.0040	0.0000042	0.00047	0.00075	<0.10	0.00021	3.4	<0.00010	0.44	54	<0.00020	<0.0010	<0.0010	0.001	<0.00010	0.014
	30-Jan-14	<0.0030	<0.00060	<0.00020	0.032	<0.0010	<0.0050	0.039	0.000025	<0.0010	<0.00030	0.00021	<0.060	0.00061	<0.020	0.0069	0.0000093	0.00047	0.00075	<0.10	0.0003	3	<0.00010	0.4	47	<0.00020	<0.0010	<0.0010	0.00092	<0.00010	0.015
	6-Feb-14	<0.0030	<0.00060	<0.00020	0.032	<0.0010	<0.0050	0.045	0.000019	<0.0010	<0.00030	0.002	<0.060	0.00045	<0.020	0.0021	<0.0000020	0.00049	0.00099	<0.10	0.00034	3.3	<0.00010	0.41	47	<0.00020	<0.0010	<0.0010	0.00093	<0.00010	0.015
	13-Feb-14	<0.0030	<0.00060	<0.00020	0.031	<0.0010	<0.0050	0.037	0.000019	<0.0010	<0.00030	0.00021	<0.060	0.00044	<0.020	0.002	0.0000063	0.00053	0.00094	<0.10	0.00039	3	<0.00010	0.4	45	<0.00020	<0.0010	<0.0010	0.00089	<0.00010	0.014
	20-Feb-14	<0.0030	<0.00060	<0.00020	0.03	<0.0010	0.000045	0.027	0.000028	<0.0010	<0.00030	0.00069	<0.060	0.00016	<0.020	0.0043	<0.0000020	0.00058	0.00078	<0.10	0.00036	2.9	<0.00010	0.38	45	<0.00020	<0.0010	<0.0010	0.00086	<0.00010	0.035
	27-Feb-14	<0.0030	<0.00060	<0.00020	0.031	<0.0010	<0.0050	0.033	0.000028	<0.0010	<0.00030	0.0043	<0.060	<0.00020	<0.020	0.0055	<0.0000020	0.00055	0.00082	<0.10	0.00034	3.2	<0.00010	0.41	48	<0.00020	<0.0010	<0.0010	0.00083	<0.00010	0.013
	6-Mar-14	<0.0030	<0.00060	<0.00020	0.029	<0.0010	<0.0050	0.028	0.000019	<0.0010	<0.00030	0.00018	<0.060	0.00035	<0.020	0.0055	0.00000171	0.0005	0.00066	<0.10	0.00034	3	<0.00010	0.38	44	<0.00020	<0.0010	<0.0010	0.00069	<0.00010	0.006
	13-Mar-14	0.0049	<0.00060	<0.00020	0.029	<0.0010	<0.0050	0.023	0.000026	<0.0010	<0.00030	0.00026	<0.060	0.00043	<0.020	0.0059	0.00000222	0.00054	0.00088	<0.10	0.00034	3.1	<0.00010	0.38	44	<0.00020	<0.0010	<0.0010	0.00075	<0.00010	0.023
	21-Mar-14	<0.0030	<0.00060	<0.00020	0.047	<0.0010	<0.0050	0.025	0.000036	<0.0010	<0.00030	0.0044	<0.060	0.00013	<0.020	0.005	0.00000101	0.00054	<0.00050	<0.10	0.00042	3.4	<0.00010	0.42	48	<0.00020	<0.0010	<0.0010	0.00093	<0.00010	0.011
	23-Apr-14												<0.060				0.0075														
	30-May-14												<0.060				0.005														
	18-Jun-14												<0.060				0.004														
	18-Jun-14	0.0041	<0.00060	<0.00020	0.037	<0.0010	<0.0050	0.031	0.000041	<0.0010	<0.00030	0.012	<0.060	0.0018	<0.020	0.0063	0.0000045	0.00055	0.00013	0.1	0.00036	3.2	<0.00010	0.46	55	<0.00020	<0.0010	<0.0010	0.0011	<0.00010	0.029
	12-Sep-14												<0.060				0.002														
	11-Dec-14	<0.0030	<0.00060	<0.00020	0.049	<0.0010	<0.0050	0.05	0.000026	<0.0010	<0.00030	0.0085	0.066	0.0011	<0.020	<0.0040	0.0000028	0.00047	0.00098	<0.10	0.00025	3.9	<0.00010	0.59	68	<0.00020	<0.0010	<0.0010	0.0013	<0.00010	<0.0030
	17-Jun-15	<0.0030	<0.00060	<0.00020	0.039	<0.0010	<0.0050	0.038	0.00002	<0.0010	<0.00030	0.0036	0.07	0.0007	<0.020	<0.0040	0.0000021	0.00037	0.00096	<0.10	0.00052	3.4	<0.00010	0.55	75	<0.00020	<0.0010	<0.0010	0.0011	<0.00010	<0.0030
	14-Dec-15	<0.0030	<0.00060	<0.00020	0.041	<0.0010	<0.0050	0.049	0.00007	<0.0010	<0.00030	0.0036	<0.060	0.00069	<0.020	0.0064	0.0000058	0.00063	0.00012	<0.10	0.00011	3.8	<0.00010	0.59	93	<0.00020	<0.0010	<0.0010	0.0012	<0.00010	<0.0030
	8-Jun-16	0.0077	<0.00020	<0.00020	0.034	<0.0010	<0.0050	0.043	0.000068	<0.0010	<0.00030	0.0053	<0.060	0.00082	<0.020	0.0018	0.0000032	0.00058	0.00021	<0.10	0.00049	3.5	<0.00010	0.54	84	<0.00020	<0.0010	<0.0010	0.0010	<0.00010	0.0052
	13-Dec-16	<0.0030	<0.00060	0.00020	0.044	<0.0010	<0.0050	0.051	0.000070	<0.0010	0.00088	0.012	0.13	0.00043	0.020	0.29	0.0000070	0.00052	0.00020	<0.10	0.00082	4.0	<0.00010	0.66	93	0.00027	0.0025	<0.0010	0.0011	<0.00010	<0.0030
	14-Jun-17	<0.0030	<0.00060	<0.00020	0.040	<0.0010	<0.0050	0.059	0.000054	<0.0010	0.00086	0.0097	0.46	0.00045	<0.020	0.29	0.0000040	0.00041	0.00021	<0.10	0.00036	3.8	<0.00010	0.67	98	<0.00020	<0.0010	<0.0010	0.00094	<0.00010	0.0036
	13-Dec-17	0.0038	<0.00060	<0.00020	0.032	<0.0010	<0.0050	0.039	0.000032	<0.0010	0.00046	0.011	0.15	0.00039	<0.020	0.30	0.0000042	0.00048	0.00017	<0.10	0.00048	3.3	<0.00010	0.46	50	<0.00020	<0.0010	<0.0010	0.00068	<0.00010	0.0049
	13-Jun-18	<0.0030	<0.00060	<0.00020	0.047	<0.0010	<0.0050	0.042	0.000036	<0.0010	0.00037	0.016	0.27	0.00059	<0.020	0.13	0.0000021	0.00042	0.00015	<0.10	0.00036	3.5	<0.00010	0.63	100	<0.00020	<0.0010	<0.0010	0.0010	<0.00010	0.0057
	19-Dec-18																														

Table E.9. Historical Groundwater Analytical Results - Dissolved Metals

Health Canada Guidelines ² - Potable																															
Sample Location	Sample Date	Dissolved Aluminum (Al)	Dissolved Antimony (Sb)	Dissolved Arsenic (As)	Dissolved Barium (Ba)	Dissolved Beryllium (Be)	Dissolved Bismuth (Bi)	Dissolved Boron (B)	Dissolved Cadmium (Cd)	Dissolved Chromium (Cr)	Dissolved Cobalt (Co)	Dissolved Copper (Cu)	Dissolved Iron (Fe)	Dissolved Lead (Pb)	Dissolved Lithium (Li)	Dissolved Manganese (Mn)	Dissolved Mercury (Hg)	Dissolved Molybdenum (Mo)	Dissolved Nickel (Ni)	Dissolved Phosphorus (P)	Dissolved Selenium (Se)	Dissolved Silicon (Si)	Dissolved Silver (Ag)	Dissolved Strontium (Sr)	Dissolved Sulphur (S)	Dissolved Thallium (Tl)	Dissolved Tin (Sn)	Dissolved Titanium (Ti)	Dissolved Uranium (U)	Dissolved Vanadium (V)	Dissolved Zinc (Zn)
		0.1 ^{MAC} mg/L	0.005 ^{MAC} mg/L	0.01 ^{MAC} mg/L	2 ^{MAC} mg/L	NG	NG	5 ^{MAC} mg/L	0.007 ^{MAC} mg/L	0.05 ^{MAC} mg/L	NG	1 ^{MAC} mg/L	50.3 ^{NO} mg/L	0.005 ^{MAC} mg/L	0.05 ^{MAC} mg/L	NG	50.02 ^{NO} 0.12 ^{MAC} mg/L	0.001 ^{MAC} mg/L	NG	NG	0.05 ^{MAC} mg/L	NG	NG	1 ^{MAC} mg/L	NG	NG	0.02 ^{MAC} mg/L	NG	50 ^{NO} mg/L		
VWS	14-Apr-14	<0.0030	<0.00060	<0.0020	0.048	<0.010	<0.0050	<0.020	0.000018	<0.010	<0.0030	0.002	<0.060	<0.0020	<0.020	<0.040	<0.000020	0.00094	0.00059	<0.10	0.00071	1.9	<0.00010	0.29	29	<0.00020	<0.010	<0.010	0.00082	<0.010	0.0065
	9-Jul-14	0.0068	<0.00060	<0.0020	0.10	<0.010	<0.0050	0.023	<0.000059	<0.010	<0.0030	0.00088	<0.060	<0.00020	<0.020	<0.040	<0.000020	0.00063	0.0012	<0.10	0.00041	3	<0.00010	0.49	41	<0.00020	<0.010	<0.010	0.0012	<0.010	0.0032
	24-Jul-14	<0.0030	<0.00060	<0.00020	0.068	<0.010	<0.0050	0.026	0.000012	<0.010	<0.0030	<0.00020	<0.060	0.0054	<0.020	<0.040	<0.000020	0.00091	0.00074	0.11	<0.00020	2.6	<0.00010	0.32	23	<0.00020	<0.010	<0.010	0.00082	<0.010	0.0032
	1-Aug-14												<0.060			<0.040															
	8-Aug-14												<0.060			<0.040															
	15-Aug-14												<0.060			<0.040															
	22-Aug-14												<0.060			<0.040															
	29-Aug-14												<0.060			<0.040															
	4-Sep-14												<0.060			<0.040															
	12-Sep-14												<0.060			<0.040															
	11-Dec-14	<0.0030	<0.00060	<0.00020	0.065	<0.010	<0.0050	0.021	<0.000020	<0.010	<0.0030	0.00098	<0.060	0.0011	<0.020	<0.040	<0.0000020	0.00085	<0.00050	<0.10	0.00069	2.3	<0.00010	0.34	29	<0.00020	<0.010	<0.010	0.00083	<0.010	0.16
	10-Jun-15	0.0034	<0.00060	<0.0020	0.046	<0.010	<0.0050	<0.020	<0.000020	<0.010	<0.0030	0.0014	<0.060	0.00092	<0.020	<0.040	<0.000020	0.0012	<0.00050	<0.10	0.00075	2	<0.00010	0.24	15	<0.00020	<0.010	<0.010	0.00057	<0.010	0.21
	14-Dec-15	0.0048	<0.00060	<0.0020	0.05	<0.010	<0.0050	<0.020	0.000087	<0.010	<0.0030	0.0013	<0.060	0.00026	<0.020	<0.040	<0.000020	0.00094	<0.00050	<0.10	0.0014	1.8	0.00014	0.27	27	<0.00020	<0.010	<0.010	0.00066	<0.010	0.022
	8-Jun-16	0.0040	<0.00020	<0.0020	0.048	<0.010	<0.0050	<0.020	<0.000020	<0.010	<0.0030	0.0020	<0.060	0.00060	<0.020	<0.040	<0.0000020	0.0013	0.00058	<0.10	0.0011	2.0	<0.00010	0.25	20	<0.00020	<0.010	<0.010	0.00057	<0.010	0.060
	13-Dec-16	<0.0030	<0.00060	0.00034	0.095	<0.010	<0.0050	<0.020	<0.000020	<0.010	<0.0030	0.0019	<0.060	0.00042	<0.020	<0.040	0.0000032	0.00098	<0.00050	<0.10	0.0014	1.9	<0.00010	0.29	29	0.00027	0.0018	<0.010	0.00079	<0.010	0.014
	14-Jun-17	<0.0030	<0.00060	<0.00020	0.049	<0.010	<0.0050	0.022	<0.000020	<0.010	<0.0030	0.0020	<0.060	0.00048	<0.020	<0.040	<0.0000020	0.0010	<0.00050	<0.10	0.00073	2.1	<0.00010	0.25	18	<0.00020	<0.010	<0.010	0.00060	<0.010	0.071
	13-Dec-17	0.0030	<0.00060	<0.00020	0.056	<0.010	<0.0050	<0.020	<0.000020	<0.010	<0.0030	0.0027	<0.060	0.00043	<0.020	<0.040	<0.0000020	0.00085	<0.00050	<0.10	0.0011	1.8	<0.00010	0.28	28	<0.00020	<0.010	<0.010	0.00065	<0.010	0.082
	13-Jun-18	0.0060	<0.00060	<0.00020	0.051	<0.010	<0.0050	<0.020	<0.000020	<0.010	<0.0030	0.0021	<0.060	0.00049	<0.020	<0.040	<0.0000020	0.00096	<0.00050	<0.10	0.00074	2.0	<0.00010	0.26	22	<0.00020	<0.010	<0.010	0.00059	<0.010	0.072
	19-Dec-18	<0.0030	<0.00060	<0.00020	0.050	<0.010	<0.0050	<0.020	<0.000020	<0.010	<0.0030	0.0045	<0.060	0.00052	<0.020	<0.040	<0.0000020	0.00088	<0.00050	<0.10	0.0012	1.6	<0.00010	0.26	28	<0.00020	<0.010	<0.010	0.00074	<0.010	0.071
	24-Jun-19	<0.0030	<0.00060	<0.00020	0.051	<0.010	<0.0050	<0.020	<0.000020	<0.010	<0.0030	0.004	<0.060	0.0008	<0.020	<0.040	0.0000029	0.0011	<0.00050	<0.10	0.00080	2.0	<0.00010	0.28	27	<0.00020	<0.010	<0.010	0.00072	<0.010	0.36
	6-Dec-19	<0.0030	<0.00060	<0.00020	0.059	<0.010	<0.0050	<0.020	<0.000020	<0.010	<0.0030	0.0020	<0.060	0.00064	<0.020	<0.040	0.0000044	0.00071	<0.00050	<0.10	0.00079	2.0	<0.00010	0.29	30	<0.00020	<0.010	<0.010	0.00078	<0.010	0.37
	23-Jun-20	<0.0030	<0.00060	<0.00020	0.071	<0.010	<0.0050	0.028	<0.000020	<0.010	<0.0030	0.0042	<0.060	0.00085	<0.020	<0.040	<0.0000019	0.00091	0.00085	<0.10	0.00061	2.5	<0.00010	0.39	47	<0.00020	<0.010	<0.010	0.00086	<0.010	0.089
	15-Dec-20	<0.0030	<0.00060	<0.00020	0.060	<0.010	<0.0050	<0.020	<0.000020	<0.010	<0.0030	0.0036	<0.060	<0.00020	<0.020	<0.040	<0.0000019	0.00083	<0.00050	<0.10	0.00097	2.3	<0.00010	0.31	33	<0.00020	<0.010	<0.010	0.00058	<0.010	0.15
	23-Jun-21	0.0032	<0.00060	<0.00020	0.052	<0.010	<0.0050	<0.020	<0.000020	<0.010	<0.0030	0.0023	<0.060	0.00059	<0.020	<0.040	0.0000028	0.0010	<0.00050	<0.10	0.00054	2.1	<0.00010	0.27	26	<0.00020	<0.010	<0.010	0.00059	<0.010	0.33
	15-Dec-21	<0.0030	<0.00060	<0.00020	0.065	<0.010	<0.0050	<0.020	<0.000020	<0.010	<0.0030	0.015	<0.060	0.00068	<0.020	<0.040	<0.0000019	0.00090	<0.00050	<0.10	0.0013	2	<0.00010	0.34	32	<0.00020	<0.010	<0.010	0.00067	<0.010	0.025
	9-Jun-22	<0.0030	<0.00060	<0.00020	0.055	<0.010	<0.0050	<0.020	<0.000020	<0.010	<0.0030	0.005	<0.060	0.00062	<0.020	<0.040	<0.0000019	0.00094	<0.00050	<0.10	0.0010	1.7	<0.00010	0.29	23	<0.00020	<0.010	<0.010	0.00064	<0.010	0.170
	7-Dec-22	<0.0030	<0.00060	<0.00020	0.063	<0.010	<0.0050	<0.020	<0.000020	<0.010	<0.0030	0.005	<0.060	0.00052	<0.020	<0.040	<0.0000019	0.00130	<0.00050	<0.10	0.0009	2.0	<0.00010	0.32	30	<0.00020	<0.010	<0.010	0.00060	<0.010	0.034
	26-Jun-23	0.0047	<0.00060	0.00025	0.065	<0.010	<0.0050	0.024	<0.00002	<0.010	<0.0030	<0.0010	<0.060	<0.00020	0.035	<0.040	<0.0000019	0.00089	<0.00050	<0.10	0.00084	2.6	<0.00010	0.3	27	<0.00020	<0.010	<0.010	0.00061	<0.010	0.015
	13-Dec-23	<0.004	<0.0002	0.00006	0.0625	<0.00006	<0.00006	0.017	<0.00002	<0.0005	<0.0001	0.0018	<0.004	0.00025	0.007	<0.0004	<0.000001	0.00068	0.0003	0.0016	<0.00007	0.3178	<0.00008	<0.0006	0.138	0.00033	<0.0001	0.182			

Table E.9. Historical Groundwater Analytical Results - Dissolved Metals

		Dissolved Aluminum (Al)	Dissolved Antimony (Sb)	Dissolved Arsenic (As)	Dissolved Barium (Ba)	Dissolved Beryllium (Be)	Dissolved Bismuth (Bi)	Dissolved Boron (B)	Dissolved Cadmium (Cd)	Dissolved Chromium (Cr)	Dissolved Cobalt (Co)	Dissolved Copper (Cu)	Dissolved Iron (Fe)	Dissolved Lead (Pb)	Dissolved Lithium (Li)	Dissolved Manganese (Mn)	Dissolved Mercury (Hg)	Dissolved Molybdenum (Mo)	Dissolved Nickel (Ni)	Dissolved Phosphorus (P)	Dissolved Selenium (Se)	Dissolved Silicon (Si)	Dissolved Silver (Ag)	Dissolved Strontium (Sr)	Dissolved Sulphur (S)	Dissolved Thallium (Tl)	Dissolved Tin (Sn)	Dissolved Titanium (Ti)	Dissolved Uranium (U)	Dissolved Vanadium (V)	Dissolved Zinc (Zn)
Health Canada Guidelines ¹ - Potable		0.1 ^{MAC}	0.006 ^{MAC}	0.01 ^{MAC}	2 ^{MAC}	NG	NG	5 ^{MAC}	0.007 ^{MAC}	0.05 ^{MAC}	NG	1 ^{MAC}	50.3 ^{MAC}	0.005 ^{MAC}	NG	50.02 ^{MAC}	0.001 ^{MAC}	NG	NG	NG	0.05 ^{MAC}	NG	NG	7 ^{MAC}	NG	NG	NG	0.02 ^{MAC}	NG	50	
Sample Location	Sample Date	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	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
Alberta Tier 1 - Surface Water Quality Guidelines ²	Drinking Water	NG	0.006	0.01	1	NG	NG	5	0.005	0.05	NG	1	0.3	0.01	NG	0.02	0.001	NG	NG	NG	0.05	NG	NG	NG	NG	NG	NG	0.02	NG	5	
	Aquatic Life	0.050	NG	0.005	NG	NG	NG	1.5	0.00028 ⁴	0.0089 ⁵	NG	0.007	0.3	0.007 ⁴	NG	NG	0.000005	NG	0.004 ⁴	narrative	0.002	NG	0.0001	NG	NG	NG	NG	NG	0.015	NG	0.03
	Irrigation	5	NG	0.16	NG	NG	NG	0.5	0.0082	0.008	NG	0.2	5	0.2	NG	0.2	NG	NG	0.2	NG	0.02	NG	0.02	NG	NG	NG	NG	NG	0.01	NG	1
	Livestock Water	5	NG	0.025	NG	NG	NG	5	0.08	0.05	NG	0.5	NG	0.1	NG	NG	0.003	NG	1	NG	0.05	NG	0.05	NG	NG	NG	NG	NG	0.2	NG	50
River	30-May-08																														
Sheep River 1 (Sheep-1)	14-May-14	0.017	<0.00060	<0.00020	0.059	<0.0010	0.005	<0.020	0.0000081	<0.0010	<0.00030	0.0018	<0.060	<0.00020	<0.020	<0.0040	0.0000026	0.00068	0.0014	<0.10	0.00052	2.2	<0.00010	0.17	8.2	<0.00020	<0.0010	<0.0010	0.00038	<0.0010	0.013
	12-Sep-14	0.018	<0.00060	<0.00020	0.058	<0.0010	<0.0050	<0.020	<0.0000020	<0.0010	<0.00030	0.00064	<0.060	<0.00020	<0.020	<0.0040	0.0000032	0.00073	0.0008	<0.10	0.00069	2.1	<0.00010	0.20	13	<0.00020	<0.0010	<0.0010	0.00047	<0.0010	<0.0030
	27-Mar-15	0.0048	<0.00060	<0.00020	0.067	<0.0010	<0.0050	<0.020	<0.0000020	<0.0010	<0.00030	0.00078	<0.060	<0.00020	<0.020	<0.0040	0.0000027	0.00077	0.0007	<0.10	0.00067	1.9	<0.00010	0.24	14	<0.00020	<0.0010	<0.0010	0.00039	<0.0010	0.0033
	19-Nov-15	0.0049	<0.00060	<0.00020	0.066	<0.0010	<0.0050	<0.020	<0.0000020	<0.0010	<0.00030	0.0021	<0.060	<0.00020	<0.020	<0.0040	0.0000028	0.0011	0.0009	<0.10	0.0010	1.9	<0.00010	0.26	21	<0.00020	<0.0010	0.0021	0.00059	<0.0010	0.0031
	29-Mar-16	0.0069	<0.00060	<0.00020	0.062	<0.0010	<0.0050	<0.020	<0.0000020	<0.0010	<0.00030	0.00083	<0.060	<0.00020	<0.020	<0.0040	<0.0000020	0.00082	0.00064	<0.10	0.00085	1.7	<0.00010	0.26	19	<0.00020	<0.0010	<0.0010	0.00057	<0.0010	0.0042
	21-Nov-16	0.0040	<0.00060	<0.00020	0.058	<0.0010	<0.0050	<0.020	<0.0000020	<0.0010	<0.00030	0.0014	<0.060	<0.00020	<0.020	<0.0040	<0.0000020	0.00077	<0.00050	<0.10	0.00088	1.6	<0.00010	0.24	19	<0.00020	<0.0010	<0.0010	0.00053	<0.0010	<0.0030
	30-Mar-17	0.0096	<0.00060	<0.00020	0.059	<0.0010	<0.0050	<0.020	<0.0000020	<0.0010	<0.00030	0.0055	<0.060	0.00029	<0.020	<0.0040	<0.0000020	0.0012	<0.00050	<0.10	0.0019	1.6	<0.00010	0.22	16	<0.00020	<0.0010	<0.0010	0.00039	<0.0010	<0.0030
	21-Nov-18	0.0031	<0.00060	<0.00020	0.062	<0.0010	<0.0050	<0.020	<0.0000020	<0.0010	<0.00030	0.00056	<0.060	<0.00020	<0.020	<0.0040	<0.0000020	0.00088	0.00060	<0.10	0.00096	1.6	<0.00010	0.26	20	<0.00020	<0.0010	<0.0010	0.00052	<0.0010	<0.0030
	29-Mar-19	0.0075	<0.00060	0.00023	0.063	<0.0010	<0.0050	<0.020	<0.0000020	<0.0010	<0.00030	0.0033	<0.060	<0.00020	<0.020	<0.0040	<0.0000020	0.00087	0.00082	<0.10	0.00087	1.9	<0.00010	0.26	20	<0.00020	<0.0010	<0.0010	0.00056	<0.0010	<0.0030
	20-Nov-19															Could not access/frozen															
30-Mar-20	0.0046	0.00063	<0.00020	0.075	<0.0010	<0.0050	<0.020	<0.0000020	<0.0010	<0.00030	0.00044	<0.060	<0.00020	<0.020	<0.0040	<0.0000019	0.0010	0.00056	<0.10	0.00099	2.2	<0.00010	0.31	22	<0.00020	<0.0010	<0.0010	0.00064	<0.0010	<0.0030	
26-Nov-20	<0.0030	<0.00060	<0.00020	0.066	<0.0010	<0.0050	<0.020	<0.0000020	<0.0010	<0.00030	0.00042	<0.060	<0.00020	<0.020	<0.0040	<0.0000019	0.0010	<0.00050	<0.10	0.0010	1.8	<0.00010	0.28	22	<0.00020	<0.0010	<0.0010	0.00063	<0.0010	<0.0030	
31-Mar-21	0.0049	<0.00060	<0.00020	0.062	<0.0010	<0.0050	<0.020	<0.0000020	<0.0010	<0.00030	0.00063	<0.060	<0.00020	<0.020	<0.0040	<0.0000019	0.00084	<0.00050	<0.10	0.00087	1.9	<0.00010	0.26	22	<0.00020	<0.0010	<0.0010	0.00059	<0.0010	<0.0030	
Sheep River 2	20-May-14	0.015	<0.00060	<0.00020	0.053	<0.0010	0.005	<0.020	0.0000062	<0.0010	<0.00030	0.00095	<0.060	<0.00020	<0.020	<0.0040	0.0000047	0.00065	0.0009	<0.10	0.00061	2	<0.00010	0.18	6.9	<0.00020	<0.0010	<0.0010	0.00031	<0.0010	<0.0030
	12-Sep-14	0.016	<0.00060	<0.00020	0.057	<0.0010	<0.0050	<0.020	<0.0000020	<0.0010	<0.00030	0.00065	<0.060	<0.00020	<0.020	<0.0040	0.0000029	0.00073	0.0008	<0.10	0.00066	2	<0.00010	0.20	13	<0.00020	<0.0010	<0.0010	0.00045	<0.0010	<0.0030
	25-Mar-15	0.006	<0.00060	<0.00020	0.071	<0.0010	<0.0050	<0.020	<0.0000020	<0.0010	<0.00030	0.00084	<0.060	<0.00020	<0.020	<0.0040	0.0000027	0.00079	0.0007	<0.10	0.00065	2.1	<0.00010	0.27	17	<0.00020	<0.0010	<0.0010	0.00054	<0.0010	0.015
	20-Nov-15	0.005	<0.00060	<0.00020	0.06	<0.0010	<0.0050	<0.020	0.0000031	<0.0010	<0.00030	0.0010	<0.060	<0.00020	<0.020	<0.0040	0.0000036	0.00072	0.0018	<0.10	0.0012	2	<0.00010	0.28	22	<0.00020	<0.0010	<0.0010	0.00069	<0.0010	0.0061
	29-Mar-16	0.0057	<0.00060	<0.00020	0.064	<0.0010	<0.0050	<0.020	<0.0000020	<0.0010	<0.00030	0.00083	<0.060	<0.00020	<0.020	<0.0040	<0.0000020	0.0011	0.00070	<0.10	0.00096	1.7	<0.00010	0.27	20	<0.00020	<0.0010	<0.0010	0.00057	<0.0010	<0.0030
	18-Nov-16	<0.0030	<0.00060	<0.00020	0.065	<0.0010	<0.0050	<0.020	<0.0000020	<0.0010	<0.00030	0.0048	<0.060	0.00026	<0.020	<0.0040	<0.0000020	0.0012	<0.00050	<0.10	0.00083	1.6	<0.00010	0.26	20	<0.00020	<0.0010	<0.0010	0.00059	<0.0010	<0.0030
	29-Mar-17	0.0040	<0.00060	<0.00020	0.067	<0.0010	<0.0050	<0.020	<0.0000020	<0.0010	<0.00030	0.0037	<0.060	<0.00020	<0.020	<0.0040	0.0000025	0.00076	0.00073	<0.10	0.00073	2.0	<0.00010	0.25	17	<0.00020	<0.0010	<0.0010	0.00042	<0.0010	0.014
	17-Nov-17	0.0043	<0.00060	<0.00020	0.063	<0.0010	<0.0050	<0.020	<0.0000020	<0.0010	<0.00030	0.0028	<0.060	<0.00020	<0.020	<0.0040	0.0000098	0.0020	0.00057	<0.10	0.0012	1.6	<0.00010	0.27	22	<0.00020	<0.0010	<0.0010	0.00065	<0.0010	<0.0030
	21-Nov-18	0.0036	<0.00060	<0.00020	0.063	<0.0010	<0.0050	<0.020	<0.0000020	<0.0010	<0.00030	0.00066	<0.060	<0.00020	<0.020	<0.0040	<0.0000020	0.00097	0.00052	<0.10	0.0011	1.6	<0.00010	0.26	20	<0.00020	<0.0010	<0.0010	0.00058	<0.0010	<0.0030
	29-Mar-19	0.0047	<0.00060	0.00023	0.061	<0.0010	<0.0050	<0.020	<0.0000020	<0.0010	<0.00030	0.0035	<0.060	<0.00020	<0.020	<0.0040	<0.0000020	0.00079	0.0012	<0.10	0.00094	1.9	<0.00010	0.26	20	<0.00020	<0.0010	<0.0010	0.00050	<0.0010	0.0036
21-Nov-19	0.0040	<0.00060	0.00022	0.079	<0.0010	<0.0050	<0.020	<0.0000020	<0.0010	<0.00030	0.0042	<0.060	<0.00020	<0.020	<0.0040	<0.0000020	0.00078	0.00070	<0.10	0.00060	2.2	<0.00010	0.27	16	<0.00020	<0.0010	<0.0010	0.00052	<0.0010	<0.0030	
30-Mar-20	0.0041	0.00091	<0.00020	0.074	<0.0010	<0.0050	<0.020	<0.0000020	<0.0010	<0.00030	0.00036	<0.060	<0.00020	<0.020	<0.0040	<0.0000019	0.0007	0.00069	<0.10	0											

Table E.10. Historical Groundwater Analytical Results - Total Metals

		Total Aluminum (Al)	Total Antimony (Sb)	Total Arsenic (As)	Total Barium (Ba)	Total Beryllium (Be)	Total Bismuth (Bi)	Total Boron (B)	Total Cadmium (Cd)	Total Calcium (Ca)	Total Chromium (Cr)	Total Cobalt (Co)	Total Copper (Cu)	Total Iron (Fe)	Total Lanthanum (La)	Total Lead (Pb)	Total Lithium (Li)	Total Magnesium (Mg)	Total Manganese (Mn)	Total Mercury (Hg)	Total Molybdenum (Mo)	Total Nickel (Ni)	Total Phosphorus (P)	Total Potassium (K)	Total Selenium (Se)	Total Silicon (Si)	Total Silver (Ag)	Total Sodium (Na)	Total Strontium (Sr)	Total Sulphur (S)	Total Thallium (Tl)	Total Tin (Sn)	Total Titanium (Ti)	Total Tungsten (W)	Total Uranium (U)	Total Vanadium (V)	Total Zinc (Zn)	Total Zirconium (Zr)	
Health Canada Guidelines ¹ - Potable		0.1 ^{OG}	0.006 ^{MAC}	0.01 ^{ALARA}	2 ^{MAC}	NG	NG	5 ^{MAC}	0.007 ^{MAC}	NG	0.05 ^{MAC}	NG	1 ^{AO} 2 ^{MAC}	50.3 ^{AO}	NG	0.005 ^{ALARA}	NG	NG	50.02 ^{AO} 0.12 ^{MAC}	0.001 ^{MAC}	NG	NG	NG	NG	0.05 ^{MAC}	NG	NG	≤200 ^{NO}	2 ^{MAC}	NG	NG	NG	NG	NG	NG	0.02 ^{MAC}	NG	≤5 ^{AO}	NG
Alberta Tier 1 - Aquatic Life Guidelines ²		0.050 ³	NG	0.005	NG	NG	NG	1.5	0.00028 ^{3,4}	NG	0.0089 ⁵	NG	0.007	0.3	NG	0.007 ^{3,4}	NG	NG	NG	0.000005	NG	0.094 ^{3,4}	NG	NG	NG	0.002	NG	0.0001	NG	NG	NG	NG	NG	NG	NG	0.015	NG	0.03	NG
Sample Location	Sample Date	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	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	
River	30-May-08	3.5	<0.0002	0.0027	0.16	<0.001	<0.003	<0.02	0.00009		0.005	0.002	0.0056	6.6		0.0036	<0.02		0.065	0.000019	0.0011	0.0076	0.2		0.0005	6.9	<0.0001		0.17	9	<0.0002	<0.001	0.018		0.0004	0.011	0.21		
DEEP GW INT	12-Sep-08	0.011	0.0011	<0.0002	0.12	<0.001	<0.03	0.070	0.00002	170	<0.001	<0.0003	0.0013	<0.06		<0.0002	<0.02	34	<0.004	0.000002	0.0004	0.0012	<0.1	3.0	0.00050	4.7	<0.0001	28	0.5	87	<0.0002	<0.001	<0.001		0.0014	<0.001	<0.003		
	3-Dec-08	0.008	0.0003	0.00060	0.12	<0.001	<0.005	0.060	0.00004	170	<0.001	<0.0003	0.0017	<0.06		0.0003	<0.02	34	<0.004	<0.000002	0.0003	0.0013	<0.1	2.7	0.00060	4.7	<0.0001	27	0.5	79	<0.0002	<0.001	<0.001		0.0014	0.001	0.003		
	20-Jan-09	0.002	0.0003	0.0011	0.12	<0.001	<0.005	0.060	0.00005	180	<0.001	<0.0003	0.0014	<0.06		<0.0002	<0.02	39	<0.004	0.000001	0.0003	0.0015	<0.1	2.7	0.00090	4.1	<0.0001	32	0.54	100	<0.0002	<0.001	<0.001		0.0018	0.002	<0.003		
	26-Mar-09	0.005	0.0002	0.0021	0.13	<0.001	<0.005	0.050	0.000052	160	0.002	<0.0003	0.0017	<0.06		<0.0002	<0.02	34	<0.004	0.000005	0.0004	0.0019	<0.1	2.4	0.0011	3.6	<0.0001	41	0.48	63	<0.0002	<0.001	<0.001		0.0019	0.006	0.012		
	19-May-09	0.004	0.0002	0.0019	0.12	<0.001	<0.005	0.050	0.000034	140	<0.001	<0.0003	0.0014	0.06		<0.0002	<0.02	31	<0.004	0.000005	0.0004	0.0016	<0.1	2.3	0.0016	4.1	<0.0001	37	0.45	60	<0.0002	<0.001	<0.001		0.0013	0.004	<0.003		
	22-Jul-09	0.009	0.0006	0.0008	0.12	<0.001	<0.005	0.10	0.00005	160	<0.001	<0.0003	0.0014	<0.06		<0.0002	<0.02	35	<0.004	0.000001	0.0003	0.0011	<0.1	2.9	0.00070	4.7	<0.0001	36	0.52	77	<0.0002	<0.001	<0.001		0.0012	0.002	0.012		
	16-Nov-09	0.004	<0.0002	0.0011	0.12	<0.001	<0.005	0.060	0.000041	170	<0.001	<0.0003	0.0012	0.08		<0.0002	<0.02	35	<0.004	0.000005	0.0003	0.0015	<0.1	2.6	0.00060	4.5	<0.0001	28	0.51	78	<0.0002	<0.001	<0.001		0.0014	0.002	<0.003		
	19-Mar-10	0.11	<0.0002	0.0010	0.14	<0.001	<0.005	0.050	<0.000005	230	0.005	<0.0003	0.001	0.10		<0.0002	<0.02	49	<0.004	0.000004	0.0003	0.0015	<0.1	3.0	0.0014	3.7	<0.0001	64	0.65	130	<0.0002	<0.001	0.002		0.0015	0.002	<0.003		
	14-Jul-10	0.004	<0.0002	0.0015	0.11	<0.001	<0.005	0.060	0.000037	150	<0.001	<0.0003	0.0014	<0.06		<0.0002	<0.02	33	<0.004	0.000004	0.0004	0.0015	<0.1	2.9	0.00090	4.3	<0.0001	34	0.46	59	<0.0002	<0.001	<0.001		0.0016	0.002	<0.003		
	12-Nov-10	0.005	<0.0002	0.0004	0.14	<0.001	<0.005	0.070	0.000034	170	<0.001	<0.0003	0.0012	<0.06		<0.0002	<0.02	37	<0.004	<0.000002	0.0004	0.0016	<0.1	3.0	0.00060	5	<0.0001	31	0.54	52	<0.0002	<0.001	<0.001		0.0017	<0.001	0.006		
	18-Apr-11	0.004	0.00030	0.0033	0.12	<0.001		0.050	0.000031	150	<0.001	<0.0003	0.0013	<0.06		<0.0002	<0.02	30	<0.004		0.0004	0.0016	<0.1	2.4	0.00060	3.7	<0.0001	35	0.45	47	<0.0002	<0.001	<0.001		0.0017	0.004	<0.003		
	11-Jul-11	0.009	<0.0006	0.0012	0.17	<0.001	<0.005	0.030	0.000034	140	<0.001	<0.0003	0.0017	0.07		<0.0002	<0.02	28	<0.004	<0.000002	0.0005	0.0014	<0.1	2.3	0.00080	4.9	<0.0001	26	0.49	37	<0.0002	<0.001	<0.001		0.0015	0.002	<0.003		
	17-May-12	0.0057	<0.00060	<0.00020	0.14	<0.0010	<0.0050	0.035	0.000027	140	<0.0010	<0.00030	0.0016	<0.060		<0.00020	<0.020	28	<0.0040	0.0000026	0.00033	0.0011	<0.10	2.3	0.00067	4.3	<0.00010	34	0.44	44	<0.00020	<0.0010	<0.0010		0.0014	<0.0010	<0.0030		
	20-Jul-12	0.0055	<0.00060	0.00024	0.17	<0.0010	<0.0050	0.042	0.000024	140	<0.0010	<0.00030	0.0015	<0.060		<0.00020	<0.020	28	<0.0040	<0.0000020	0.00027	0.0011	<0.10	2.4	0.00053	5.0	<0.00010	26	0.47	35	<0.00020	<0.0010	<0.0010		0.0013	<0.0010	0.0045		
	21-Sep-12	0.0041	<0.00060	<0.00020	0.18	<0.0010	<0.0050	0.054	0.000040	170	<0.0010	<0.00030	0.0012	<0.060		<0.00020	<0.020	35	0.0051	0.0000024	0.00029	0.0011	<0.10	2.7	0.00064	5.9	<0.00010	26	0.61	47	<0.00020	<0.0010	<0.0010		0.0016	<0.0010	<0.0030		
	23-Nov-12	0.0047	<0.00060	<0.00020	0.17	<0.0010	<0.0050	0.055	0.000034	170	<0.0010	<0.00030	0.0015	<0.060		<0.00020	<0.020	36	<0.0040	0.0000029	0.00028	0.0013	<0.10	3.5	0.00066	6.1	<0.00010	34	0.6	56	<0.00020	<0.0010	<0.0010		0.0015	<0.0010	<0.0030		
	8-May-13	<0.0030	<0.00060	0.00025	0.13	<0.0010	<0.0050	0.034	0.000035	160	<0.0010	<0.00030	0.0011	<0.060		<0.00020	<0.020	34	<0.0040	0.0000026	0.00034	0.0012	<0.10	2.6	0.00072	3.9	<0.00010	54	0.51	64	<0.00020	<0.0010	<0.0010		0.0018	<0.0010	<0.0030		
	12-Jul-13	0.0044	<0.00060	0.00023	0.15	<0.0010		<0.020	0.000037	140	<0.0010	<0.00030	0.0018	<0.060		<0.00020	<0.020	28	<0.0040	<0.0000020	0.00042	0.0013	<0.10	2.6	0.00052	5.2	<0.00010	29	0.47	31	<0.00020	<0.0010	<0.0010		0.0014	<0.0010	<0.0030		
	5-Sep-13	<0.0030	<0.00060	0.0003	0.16	<0.0010	<0.0050	0.053	0.000037	150	<0.0010	<0.00030	0.0017	<0.060		<0.00020	<0.020	31	<0.0040	0.0000024	0.00041	0.0012	<0.10	2.8	0.00057	5.6	<0.00010	29	0.51	41	<0.00020	<0.0010	<0.0010		0.0016	<0.0010	<0.0030		
	13-Nov-13	0.0032	<0.00060	0.0002	0.15	<0.0010		0.050	0.000023	140	<0.0010	<0.00030	0.0015	<0.060		<0.00020	<0.020	30	<0.0040	<0.0000020	0.00026	0.0012	<0.10	2.6	0.00059	4.8	<0.00010	31	0.51	43	<0.00020	<0.0010	<0.0010		0.0014	<0.0010	<0.0030		
	25-Mar-14	0.0047	<0.00060	0.00029	0.13	<0.0010	<0.0050	0.023	0.000012	140	<0.0010	<0.00030	0.0015	<0.060		<0.00020	<0.020	27	<0.0040	0.0000114	0.00025	0.0013	<0.10	2.7	0.00049	4.5	<0.00010	30	0.43	30	<0.00020	<0.0010	<0.0010		0.0014	<0.0010	<0.0030		
	24-Jul-																																						

Table E.11. Historical Groundwater Analytical Results - Petroleum Hydrocarbons

Alberta Tier 1 - Potable Guidelines ¹		Benzene	Toluene	Ethylbenzene	Xylenes (Total)	F1 (C6-C10) - BTEX	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)
		0.005	0.024 ^{AO} /0.06 ^{MAC 2}	0.0016 ^{AO} /0.14 ^{MAC 2}	0.02 ^{AO} /0.09 ^{MAC 2}	2.2	1.1	NG	NG
Sample Location	Sample Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
TVR 1.1	23-May-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	19-Jan-09	Insufficient Water Volume for Sampling							
	24-Mar-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	19-May-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	20-Jul-09 to 10-May-10	Insufficient Water Volume for Sampling							
	14-Jul-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	15-Sep-10 to 18-Apr-18	Insufficient Water Volume for Sampling							
	23-Jul-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	20-Nov-18 to 28-Mar-19	Insufficient Water Volume for Sampling							
	16-Jul-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	20-Nov-19 to 30-Mar-21	Insufficient Water Volume for Sampling							
	19-Jul-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	26-Jul-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	26-Jul-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
TVR 1.2	24-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		
	22-Aug-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.12		
	4-Mar-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.15		
	23-May-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	28-Jul-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	20-Jan-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	24-Mar-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	19-May-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	20-Jul-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	25-Sep-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	16-Nov-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	18-Jan-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	19-Mar-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	10-May-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	12-Jul-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	15-Sep-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	7-Nov-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	24-Jan-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	16-Mar-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	20-May-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	11-Jul-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	14-Sep-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	16-Nov-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	23-Jan-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Mar-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	16-May-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	19-Jul-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Sep-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Nov-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	24-Jan-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Mar-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	8-May-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	11-Jul-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	5-Sep-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	12-Nov-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	23-Jan-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	21-Mar-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	13-May-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	24-Jul-14	Insufficient Water Volume for Sampling							
	11-Sep-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	20-Nov-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	25-Mar-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	14-Jul-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	18-Nov-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	28-Mar-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	20-Jul-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	17-Nov-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	28-Mar-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	19-Jul-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	17-Nov-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	18-Apr-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	23-Jul-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	20-Nov-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	28-Mar-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	16-Jul-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	20-Nov-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	30-Mar-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	27-Jul-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	24-Nov-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	30-Mar-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	19-Jul-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	26-Jul-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	26-Jul-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	24-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		
TVR 1.3	22-Aug-07 to current	Dry / Insufficient Water Volume for Sampling / No Sampling Required							
TVR 1.4	22-Aug-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.12		
	7-Sep-07								
	23-Nov-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.15		
	4-Mar-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.15		
	23-May-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	28-Jul-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	9-Sep-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	26-Nov-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	20-Jan-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	24-Mar-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	26-Mar-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100			
	19-May-09						<0.1		
	21-May-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	20-Jul-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	25-Sep-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	16-Nov-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	18-Jan-10	Insufficient Water Volume for Sampling							
	17-Mar-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	10-May-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	12-Jul-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	23-Jan-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	25-Jan-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Mar-12 to current	Insufficient Water Volume for Sampling / No Sampling Required							

Table E.11. Historical Groundwater Analytical Results - Petroleum Hydrocarbons

Alberta Tier 1 - Potable Guidelines ¹		Benzene	Toluene	Ethylbenzene	Xylenes (Total)	F1 (C6-C10) - BTEX	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)
Sample Location		0.005	0.024 ^{AO} /0.06 ^{MAC 2}	0.0016 ^{AO} /0.14 ^{MAC 2}	0.02 ^{AO} /0.09 ^{MAC 2}	2.2	1.1	NG	NG
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
TVR 2.1	22-Aug-07 to 24-May-11	Insufficient Water Volume for Sampling							
	11-Jul-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	14-Sept-11 to 16-May-12	Insufficient Water Volume for Sampling							
	19-Jul-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Sep-12 to 8-May-13	Insufficient Water Volume for Sampling							
	11-Jul-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	5-Sep-13 to 21-Mar-14	Insufficient Water Volume for Sampling							
	13-May-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	24-Jul-14 to 29-Mar-16	Insufficient Water Volume for Sampling							
	20-Jul-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	18-Nov-16 to 19-Jul-21	Insufficient Water Volume for Sampling							
TVR 2.2	26-Jul-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	23-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		
	22-Aug-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.15		
	23-Nov-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.15		
	4-Mar-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.15		
	23-May-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	28-Jul-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	9-Sep-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	24-Nov-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	20-Jan-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	24-Mar-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	19-May-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	20-Jul-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	25-Sep-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	16-Nov-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	18-Jan-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	17-Mar-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	10-May-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	12-Jul-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	17-Sep-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	7-Nov-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	24-Jan-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	16-Mar-11	Insufficient Water Volume for Sampling							
	20-May-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	11-Jul-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	14-Sep-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	16-Nov-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	23-Jan-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Mar-12	Insufficient Water Volume for Sampling							
	16-May-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	19-Jul-12	Insufficient Water Volume for Sampling							
	20-Sep-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Nov-12	Insufficient Water Volume for Sampling							
	24-Jan-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Mar-13	Insufficient Water Volume for Sampling							
	8-May-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	11-Jul-13	Insufficient Water Volume for Sampling							
	5-Sep-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	12-Nov-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	23-Jan-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	21-Mar-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	13-May-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	24-Jul-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	11-Sep-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	19-Nov-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	27-Mar-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	14-Jul-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	18-Nov-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	29-Mar-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	20-Jul-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	18-Nov-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	28-Mar-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	19-Jul-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	17-Nov-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	18-Apr-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	24-Jul-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	20-Nov-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	28-Mar-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	16-Jul-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	20-Nov-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	31-Mar-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	27-Jul-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	24-Nov-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	30-Mar-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	19-Jul-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	26-Jul-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	26-Jul-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	23-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		
TVR 2.3	23-May-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	28-Jul-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	19-Jan-09 to 10-May-10	Insufficient Water Volume for Sampling							
	12-Jul-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	15-Sep-10 to 24-May-11	Insufficient Water Volume for Sampling							
	11-Jul-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	14-Sept-11 to 8-May-13	Insufficient Water Volume for Sampling							
	11-Jul-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	5-Sep-13 to 13-May-14	Insufficient Water Volume for Sampling							
	24-Jul-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	11-Sep-14 to current	Insufficient Water Volume for Sampling							

Table E.11. Historical Groundwater Analytical Results - Petroleum Hydrocarbons

Alberta Tier 1 - Potable Guidelines ¹		Benzene	Toluene	Ethylbenzene	Xylenes (Total)	F1 (C6-C10) - BTEX	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)
		0.005	0.024 ^{AO} /0.06 ^{MAC 2}	0.0016 ^{AO} /0.14 ^{MAC 2}	0.02 ^{AO} /0.09 ^{MAC 2}	2.2	1.1	NG	NG
Sample Location	Sample Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
TVR 2.4	22-Aug-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.12		
	7-Sep-07								
	23-Nov-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.15		
	4-Mar-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.15		
	23-May-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	1-Aug-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	9-Sep-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	26-Nov-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	20-Jan-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	26-Mar-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	19-May-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	22-Jul-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	28-Sep-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	18-Nov-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	21-Jan-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	19-Mar-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	12-May-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	14-Jul-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	17-Sep-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	12-Nov-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	26-Jan-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	18-Mar-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	24-May-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	13-Jul-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	16-Sep-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	18-Nov-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	25-Jan-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Mar-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	16-May-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	19-Jul-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Sep-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Nov-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	24-Jan-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Mar-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	8-May-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	11-Jul-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	5-Sep-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	12-Nov-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	23-Jan-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	21-Mar-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	13-May-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	24-Jul-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	11-Sep-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	19-Nov-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	14-Jul-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	18-Nov-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	20-Jul-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	17-Nov-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	19-Jul-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	17-Nov-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	24-Jul-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	20-Nov-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	16-Jul-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	20-Nov-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	27-Jul-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	24-Nov-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	21-Jul-21	<0.00040	0.00069	<0.00040	<0.00089	<0.10	<0.10		
	26-Jul-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	26-Jul-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	23-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		
TVR 3.1	4-Mar-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.15		
	23-May-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	28-Jul-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	24-Nov-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	20-Jan-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	24-Mar-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	19-May-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	20-Jul-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	25-Sep-09 to 21-Jan-10	Insufficient Water Volume for Sampling							
	19-Mar-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	10-May-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	12-Jul-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	15-Sep-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	7-Nov-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	24-Jan-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	16-Mar-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	20-May-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	11-Jul-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	14-Sep-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	16-Nov-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	23-Jan-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Mar-12	Insufficient Water Volume for Sampling							
	16-May-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	19-Jul-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Sep-12 to 18-Nov-15	Insufficient Water Volume for Sampling							
	29-Mar-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	18-Nov-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	29-Mar-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	19-Jul-17 to 17-Nov-17	Insufficient Water Volume for Sampling							
	18-Apr-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	23-Jul-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	20-Nov-18 to 28-Mar-19	Insufficient Water Volume for Sampling							
	16-Jul-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	20-Aug-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	20-Nov-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	31-Mar-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	27-Jul-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	24-Nov-20	Insufficient Water Volume for Sampling							
	30-Mar-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	20-Jul-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	27-Jul-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	26-Jul-23	Insufficient Water Volume for Sampling							
	23-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		

Table E.11. Historical Groundwater Analytical Results - Petroleum Hydrocarbons

Alberta Tier 1 - Potable Guidelines ¹		Benzene	Toluene	Ethylbenzene	Xylenes (Total)	F1 (C6-C10) - BTEX	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)
		0.005	0.024 ^{AO} /0.06 ^{MAC 2}	0.0016 ^{AO} /0.14 ^{MAC 2}	0.02 ^{AO} /0.09 ^{MAC 2}	2.2	1.1	NG	NG
Sample Location	Sample Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
TVR 3.2	22-Aug-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.15		
	23-Nov-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.15		
	4-Mar-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.15		
	23-May-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	24-Nov-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	20-Jan-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	24-Mar-09 to 23-Jan-12	Insufficient Water Volume for Sampling							
	20-Mar-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	16-May-12	Insufficient Water Volume for Sampling							
	19-Jul-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Sep-12 to 24-Jul-14	Insufficient Water Volume for Sampling							
	11-Sep-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	19-Nov-14 to 18-Nov-15	Insufficient Water Volume for Sampling							
	29-Mar-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	22-Jul-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	18-Nov-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	29-Mar-17 to 19-Jul-17	Insufficient Water Volume for Sampling							
	17-Nov-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	18-Apr-18 to 23-Jul-18	Insufficient Water Volume for Sampling							
	20-Nov-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	15-Mar-19 to 20-Nov-19	Insufficient Water Volume for Sampling							
	31-Mar-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	27-Jul-20 to 30-Mar-21	Insufficient Water Volume for Sampling							
	20-Jul-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	27-Jul-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	26-Jul-23	Insufficient Water Volume for Sampling							
TVR 3.3	22-Aug-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.15		
	7-Sep-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.15		
	23-Nov-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.15		
	4-Mar-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.15		
	23-May-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	1-Aug-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	9-Sep-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	24-Nov-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	20-Jan-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	24-Mar-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	21-May-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	20-Jul-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	25-Sep-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	16-Nov-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	18-Jan-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	17-Mar-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	10-May-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	12-Jul-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	15-Sep-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	7-Nov-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	24-Jan-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	16-Mar-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	20-May-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	11-Jul-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	14-Sep-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	16-Nov-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	23-Jan-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	22-Mar-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	17-May-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Jul-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	21-Sep-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	23-Nov-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	25-Jan-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	21-Mar-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	10-May-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	12-Jul-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	6-Sep-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	13-Nov-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	24-Jan-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	25-Mar-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	14-May-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	25-Jul-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	11-Sep-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	20-Nov-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	14-Jul-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		

Table E.11. Historical Groundwater Analytical Results - Petroleum Hydrocarbons

Alberta Tier 1 - Potable Guidelines ¹		Benzene	Toluene	Ethylbenzene	Xylenes (Total)	F1 (C6-C10) - BTEX	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)
		0.005	0.024 ^{AO} /0.06 ^{MAC 2}	0.0016 ^{AO} /0.14 ^{MAC 2}	0.02 ^{AO} /0.09 ^{MAC 2}	2.2	1.1	NG	NG
Sample Location	Sample Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
TVR 4.1	22-Aug-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.15		
	23-Nov-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.15		
	4-Mar-08								
	1-Aug-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	9-Sep-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	19-Jan-09	Insufficient Water Volume for Sampling							
	24-Mar-09	Insufficient Water Volume for Sampling							
	19-May-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	20-Jul-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	25-Sep-09 to 10-May-10	Insufficient Water Volume for Sampling							
	14-Jul-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	15-Sep-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	7-Nov-10 to 16-Mar-11	Insufficient Water Volume for Sampling							
	20-May-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	13-Jul-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	14-Sep-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	16-Nov-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	23-Jan-12 to 22-Mar-12	Insufficient Water Volume for Sampling							
	16-May-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	19-Jul-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Sep-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Nov-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	25-Jan-13 to 21- Mar-13	Insufficient Water Volume for Sampling							
	8-May-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	12-Jul-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	5-Sep-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	12-Nov-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	23-Jan-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	25-Mar-14	Insufficient Water Volume for Sampling							
	13-May-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	24-Jul-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	11-Sep-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	19-Nov-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	25-Mar-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	14-Jul-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	19-Nov-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	20-Jul-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	17-Nov-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	28-Mar-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	19-Jul-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	16-Nov-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	18-Apr-18	Could not access/frozen							
	23-Jul-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	22-Nov-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	28-Mar-19	Could not access/frozen							
	16-Jul-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	20-Aug-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	20-Nov-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	31-Mar-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	27-Jul-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	24-Nov-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	30-Mar-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	20-Jul-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	27-Jul-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	27-Jul-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	23-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		
TVR 4.2	22-Aug-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.15		
	23-Nov-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.15		
	6-Mar-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.15		
	23-May-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	1-Aug-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	9-Sep-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	24-Nov-08	0.0007	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	19-Jan-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	24-Mar-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	19-May-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	20-Jul-09								
	25-Sep-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	18-Nov-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	21-Jan-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	19-Mar-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	12-May-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	14-Jul-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	15-Sep-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	7-Nov-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	24-Jan-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	16-Mar-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	20-May-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	13-Jul-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	16-Sep-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	18-Nov-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	23-Jan-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Mar-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	16-May-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	19-Jul-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Sep-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Nov-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	24-Jan-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	21-Mar-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	8-May-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	11-Jul-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	5-Sep-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	12-Nov-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	24-Jan-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	25-Mar-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	13-May-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	0.29		
	24-Jul-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	11-Sep-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	19-Nov-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	25-Mar-15 to current	Insufficient Water Volume For Sampling							

Table E.11. Historical Groundwater Analytical Results - Petroleum Hydrocarbons

Alberta Tier 1 - Potable Guidelines ¹		Benzene	Toluene	Ethylbenzene	Xylenes (Total)	F1 (C6-C10) - BTEX	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)
		0.005	0.024 ^{AO} /0.06 ^{MAC 2}	0.0016 ^{AO} /0.14 ^{MAC 2}	0.02 ^{AO} /0.09 ^{MAC 2}	2.2	1.1	NG	NG
Sample Location	Sample Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
TVR 4.3	22-Aug-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.12		
	6-Mar-08	<0.0009	<0.0009	<0.0009	<0.002	<0.2	<0.15		
	19-Jan-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	24-Mar-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	19-May-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	20-Jul-09						<0.1		
	22-Jul-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	25-Sep-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	16-Nov-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	18-Jan-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	19-Mar-10 to 24-May-11	Insufficient Water Volume for Sampling							
	13-Jul-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	14-Sept-11 to 16-May-12	Insufficient Water Volume for Sampling							
	19-Jul-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Sep-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Nov-12 to 8-May-13	Insufficient Water Volume for Sampling							
	12-Jul-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	5-Sep-13 to 16-Nov-17	Insufficient Water Volume for Sampling							
	23-Jul-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	21-Nov-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	16-Jul-19 to 20-Nov-19	Insufficient Water Volume for Sampling							
	27-Jul-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	24-Nov-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	30-Mar-21	Insufficient Water Volume for Sampling							
	21-Jul-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	27-Jul-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	27-Jul-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	23-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		
TVR 4.4	22-Aug-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.12		
	7-Sep-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	na		
	23-Nov-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	na		
	6-Mar-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.15		
	1-Aug-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	19-Jan-09 to 25-Sep-09	Insufficient Water Volume for Sampling							
	16-Nov-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
TVR 4.4R	21-Jan-10 to Jan-11	Insufficient Water Volume for Sampling / Destroyed January 2011							
	14-Jul-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	19-Nov-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	20-Jul-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	17-Nov-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	19-Jul-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	16-Nov-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	23-Jul-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	21-Nov-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	16-Jul-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	20-Aug-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	20-Nov-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	27-Jul-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	24-Nov-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	21-Jul-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	27-Jul-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
TVR 5.1	27-Jul-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	27-Jul-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	24-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		
	22-Aug-07 to current	Dry/Insufficient Water Volume for Sampling							
	31-Mar-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	27-Jul-20 to 30-Mar-21	Dry/Insufficient Water Volume for Sampling							
	20-Jul-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
TVR 5.2	27-Jul-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	27-Jul-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	22-Aug-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.12		
	23-Nov-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.15		
	6-Mar-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.15		
	28-Jul-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	9-Sep-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	26-Nov-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	19-Jan-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	24-Mar-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	21-May-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	22-Jul-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	25-Sep-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	18-Nov-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	21-Jan-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	17-Mar-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	12-May-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	14-Jul-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	17-Sep-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	12-Nov-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	26-Jan-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	18-Mar-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	24-May-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	13-Jul-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	16-Sep-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	18-Nov-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	25-Jan-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	22-Mar-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	16-May-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	19-Jul-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Sep-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Nov-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	25-Jan-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Mar-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	8-May-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	12-Jul-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	5-Sep-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	13-Nov-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	24-Jan-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	25-Mar-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	13-May-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	24-Jul-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	11-Sep-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	19-Nov-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	12-Jan-15	Decommissioned January 2015							

Table E.11. Historical Groundwater Analytical Results - Petroleum Hydrocarbons

Alberta Tier 1 - Potable Guidelines ¹		Benzene	Toluene	Ethylbenzene	Xylenes (Total)	F1 (C6-C10) - BTEX	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)
Sample Location		0.005	0.024 ^{AO} /0.06 ^{MAC 2}	0.0016 ^{AO} /0.14 ^{MAC 2}	0.02 ^{AO} /0.09 ^{MAC 2}	2.2	1.1	NG	NG
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
TVR 5.2R	25-Mar-15 to 22-Jul-16	Insufficient Water Volume for Sampling							
	18-Nov-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	29-Mar-17 to 18-Apr-18	Insufficient Water Volume for Sampling							
	23-Jul-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	21-Nov-18 to 31-Mar-20	Insufficient Water Volume for Sampling							
	27-Jul-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	24-Nov-20 to 27-Jul-23	Insufficient Water Volume for Sampling							
TVR 5.3	24-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		
	28-Jul-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	19-Jan-09	Insufficient Water Volume for Sampling							
	24-Mar-09	Insufficient Water Volume for Sampling							
	19-May-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	20-Jul-09	Insufficient Water Volume for Sampling							
	25-Sep-09	Insufficient Water Volume for Sampling							
	16-Nov-09 to 24-May-11	Dry / Insufficient Water Volume for Sampling							
	11-Jul-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	14-Sept-11 to 8-May-13	Insufficient Water Volume for Sampling							
	12-Jul-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	5-Sept-13 to 12-Jan-15	Insufficient Water Volume for Sampling/Decommissioned January 2015							
TVR 5.4	22-Aug-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.12		
	7-Sep-07								
	23-Nov-07								
	6-Mar-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.15		
	28-Jul-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	24-Nov-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	19-Jan-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	24-Mar-09	Insufficient Water Volume for Sampling							
	19-May-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	21-May-09					<0.1			
	20-Jul-09	Insufficient Water Volume for Sampling							
	25-Sep-09	Insufficient Water Volume for Sampling							
	16-Nov-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	21-Jan-10	Insufficient Water Volume for Sampling							
	17-Mar-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	12-May-10 to 24-May-11	Insufficient Water Volume for Sampling							
	11-Jul-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	14-Sept-11 to 16-May-12	Insufficient Water Volume for Sampling							
	19-Jul-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Sep-12 to 12-Jul-13	Insufficient Water Volume for Sampling							
	5-Sep-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	13-Nov-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	23-Jan-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	21-Mar-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	0.13		
	13-May-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	24-Jul-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	0.13		
	11-Sep-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	19-Nov-14 to current	Insufficient Water Volume for Sampling / No Sampling Required							
TVR 6.2R	19-Jul-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	26-Jul-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	26-Jul-23	<0.00040	<0.00043	<0.00040	<0.00089	<0.10	<0.10		
	24-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		
TVR 7.1	25-Mar-15 to 22-Jul-16	Insufficient Water Volume for Sampling							
	18-Nov-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	28-Mar-17 to 18-Apr-18	Insufficient Water Volume for Sampling							
	23-Jul-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	16-Nov-18 to 28-Mar-19	Insufficient Water Volume for Sampling							
	16-Jul-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	20-Nov-19 to 19-Jul-21	Insufficient Water Volume for Sampling							
	27-Jul-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	27-Jul-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
TVR 7.2	24-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		
	26-Mar-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	14-Jul-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	19-Nov-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10	<0.20	<0.20
	29-Mar-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	22-Jul-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	18-Nov-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	28-Mar-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	20-Jul-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	16-Nov-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	18-Apr-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	23-Jul-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	21-Nov-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	28-Mar-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	16-Jul-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	20-Nov-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	31-Mar-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	28-Jul-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	24-Nov-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	30-Mar-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
TVSA-02	22-Jul-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	27-Jul-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	27-Jul-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	24-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		
	26-Mar-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	20-Nov-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10	<0.20	<0.20
	28-Mar-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	21-Nov-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10	<0.20	<0.20
	30-Mar-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	15-Nov-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	19-Apr-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	22-Nov-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	28-Mar-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	20-Nov-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	30-Mar-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	25-Nov-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	31-Mar-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	22-Jul-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	28-Jul-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	28-Jul-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	25-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		

Table E.11. Historical Groundwater Analytical Results - Petroleum Hydrocarbons

Alberta Tier 1 - Potable Guidelines ¹		Benzene	Toluene	Ethylbenzene	Xylenes (Total)	F1 (C6-C10) - BTEX	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)
		0.005	0.024 ^{AO} /0.06 ^{MAC 2}	0.0016 ^{AO} /0.14 ^{MAC 2}	0.02 ^{AO} /0.09 ^{MAC 2}	2.2	1.1	NG	NG
Sample Location	Sample Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
TVSA-03	14-May-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10	<0.20	<0.20
	12-Sep-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	0.13	<0.20	<0.20
	26-Mar-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	20-Nov-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	28-Mar-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	21-Nov-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	30-Mar-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	16-Nov-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	19-Apr-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	22-Nov-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	28-Mar-19	Could not access/frozen							
	20-Nov-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	30-Mar-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	25-Nov-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	31-Mar-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	22-Jul-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	28-Jul-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	28-Jul-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	25-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	0.14		
TVSA-04	15-May-14	<0.00040	<0.00045	<0.00040	<0.00080	<0.100	<0.10	<0.20	<0.20
	12-Sep-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10	<0.20	<0.20
	26-Mar-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	20-Nov-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	28-Mar-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	21-Nov-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	30-Mar-17	Could not access/frozen							
	15-Nov-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	19-Apr-18	Could not access/frozen							
	22-Nov-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	28-Mar-19	Could not access/frozen							
	21-Nov-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	30-Mar-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	25-Nov-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	31-Mar-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	21-Jul-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	28-Jul-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	28-Jul-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	25-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	0.11		
TVSA-05	26-Mar-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	20-Nov-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10	<0.20	<0.20
	28-Mar-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	21-Nov-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10	<0.20	<0.20
	30-Mar-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	16-Nov-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	19-Apr-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	22-Nov-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	28-Mar-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	20-Nov-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	31-Mar-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	25-Nov-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	30-Mar-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	21-Jul-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	28-Jul-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	28-Jul-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	25-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	0.13		
TVSA-06	15-May-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10	<0.20	<0.20
	12-Sep-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10	<0.20	<0.20
	26-Mar-15	Insufficient Water Volume for Sampling							
	20-Nov-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	28-Mar-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	21-Nov-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	29-Mar-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	15-Nov-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	19-Apr-18 to 28-Mar-19	Could not access/frozen							
	20-Nov-19	Could not access/Well filled with asphalt							
	31-Mar-20 to 25-Nov-20	Could not locate							
	30-Mar-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	21-Jul-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	28-Jul-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	28-Jul-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	25-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	0.16		
TVSA-07	15-May-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10	<0.20	<0.20
	12-Sep-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10	<0.20	<0.20
	26-Mar-15 to 28-Mar-16	Insufficient Water Volume for Sampling							
	21-Nov-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10	<0.20	<0.20
	29-Mar-17	Could not access/frozen							
	15-Nov-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	19-Apr-18	Could not access/frozen							
	21-Nov-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	28-Mar-19	Insufficient Water Volume for Sampling							
	20-Nov-19 to 25-Nov-20	Could not locate							
	30-Mar-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	21-Jul-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	28-Jul-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	28-Jul-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	25-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	0.17		

Table E.11. Historical Groundwater Analytical Results - Petroleum Hydrocarbons

Alberta Tier 1 - Potable Guidelines ¹		Benzene	Toluene	Ethylbenzene	Xylenes (Total)	F1 (C6-C10) - BTEX	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)
		0.005	0.024 ^{AO} /0.06 ^{MAC 2}	0.0016 ^{AO} /0.14 ^{MAC 2}	0.02 ^{AO} /0.09 ^{MAC 2}	2.2	1.1	NG	NG
Sample Location	Sample Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
TVSA-08	14-May-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10	<0.20	<0.20
	12-Sep-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10	<0.20	<0.20
	25-Mar-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	19-Nov-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	28-Mar-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	21-Nov-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	29-Mar-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	15-Nov-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	19-Apr-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	22-Nov-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	28-Mar-19	Insufficient Water Volume for Sampling							
	21-Nov-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	31-Mar-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	25-Nov-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	31-Mar-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	22-Jul-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	28-Jul-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	28-Jul-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	25-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	0.11		
TH-B1	14-May-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	0.11		
	18-Jun-14							0.22	<0.20
	6-Apr-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	21-Nov-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	30-Mar-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	16-Nov-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	19-Apr-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	22-Nov-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	28-Mar-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	20-Nov-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	30-Mar-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	25-Nov-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
TH-B2	31-Mar-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	14-May-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	18-Jun-14							<0.20	<0.20
	6-Apr-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	30-Mar-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	16-Nov-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	19-Apr-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	22-Nov-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	28-Mar-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	20-Nov-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	30-Mar-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	25-Nov-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
TH-B3	31-Mar-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	14-May-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	18-Jun-14							<0.20	<0.20
	6-Apr-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	29-Mar-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	15-Nov-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	19-Apr-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	22-Nov-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	28-Mar-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	20-Nov-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	31-Mar-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	25-Nov-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
SW CELL 1	31-Mar-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	17-Jul-08	<0.0004	<0.0004	<0.0004	0.0041	<0.1	<0.1		
	28-Jul-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	20-Aug-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	12-Sep-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	23-Oct-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	26-Nov-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	8-Dec-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	19-Jan-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
SW CELL 2	18-Feb-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	20-Jul-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	4-Mar-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.15		
	22-Apr-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	23-May-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	24-Jun-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	17-Jul-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	28-Jul-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	20-Aug-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	12-Sep-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	23-Oct-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	26-Nov-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	8-Dec-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	19-Jan-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	18-Feb-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
PS CELL 1	26-Mar-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	20-Jul-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	10-Mar-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
PS CELL 2	16-Apr-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	16-Apr-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
PS WSL BLEND	6-Mar-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.15		

Table E.11. Historical Groundwater Analytical Results - Petroleum Hydrocarbons

Alberta Tier 1 - Potable Guidelines ¹		Benzene	Toluene	Ethylbenzene	Xylenes (Total)	F1 (C6-C10) - BTEX	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)
		0.005	0.024 ^{AO} /0.06 ^{MAC 2}	0.0016 ^{AO} /0.14 ^{MAC 2}	0.02 ^{AO} /0.09 ^{MAC 2}	2.2	1.1	NG	NG
Sample Location	Sample Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
PS BLEND	19-May-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	18-Jun-09	<0.0004	<0.0004	<0.0004	0.0011	<0.100	<0.1		
	20-Jul-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	20-Aug-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	25-Sep-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	28-Oct-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	16-Nov-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	3-Dec-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	18-Jan-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	18-Feb-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	19-Mar-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	21-Apr-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	10-May-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	28-Jun-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	12-Jul-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	15-Sep-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	31-Oct-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	5-Nov-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	7-Nov-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	13-Dec-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	26-Jan-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	23-Feb-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	16-Mar-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	18-Apr-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	20-May-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	14-Jun-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	13-Jul-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	16-Aug-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	14-Sep-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	25-Oct-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	16-Nov-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	14-Dec-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	23-Jan-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	22-Feb-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	22-Mar-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	25-Apr-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	17-May-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	14-Jun-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Jul-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	15-Aug-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	21-Sep-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	24-Oct-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	23-Nov-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	11-Dec-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	19-Dec-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	0.12		
	25-Jan-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	27-Feb-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	21-Mar-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	17-Apr-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	10-May-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	26-Jun-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	12-Jul-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	15-Aug-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	6-Sep-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	18-Oct-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	13-Nov-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	11-Dec-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	24-Jan-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	20-Feb-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	25-Mar-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	23-Apr-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	14-May-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	18-Jun-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	25-Jul-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	20-Aug-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	11-Sep-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	22-Oct-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	20-Nov-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	11-Dec-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	22-Jan-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	11-Feb-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	25-Mar-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	15-Apr-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	20-May-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	17-Jun-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	14-Jul-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	26-Aug-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	11-Sep-15								
	23-Sep-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	14-Oct-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	20-Nov-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	14-Dec-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	13-Jan-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	17-Feb-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	29-Mar-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	20-Apr-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	18-May-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	8-Jun-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	22-Jul-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	15-Aug-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	14-Sep-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	13-Oct-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	21-Nov-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	13-Dec-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	16-Jan-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	15-Feb-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	30-Mar-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	12-Apr-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	16-May-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	14-Jun-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	20-Jul-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	14-Aug-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	14-Sep-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	11-Oct-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	17-Nov-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	13-Dec-17	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		

Table E.11. Historical Groundwater Analytical Results - Petroleum Hydrocarbons

Alberta Tier 1 - Potable Guidelines ¹		Benzene	Toluene	Ethylbenzene	Xylenes (Total)	F1 (C6-C10) - BTEX	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)
		0.005	0.024 ^{AO} /0.06 ^{MAC 2}	0.0016 ^{AO} /0.14 ^{MAC 2}	0.02 ^{AO} /0.09 ^{MAC 2}	2.2	1.1	NG	NG
Sample Location	Sample Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
PS BLEND (cont)	15-Jan-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	13-Feb-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	3-Apr-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	18-Apr-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	15-May-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	13-Jun-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	24-Jul-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	8-Aug-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	12-Sep-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	18-Oct-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	21-Nov-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	19-Dec-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	16-Jan-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	25-Feb-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	15-Mar-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	17-Apr-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	23-May-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	24-Jun-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	16-Jul-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	28-Aug-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	25-Sep-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	23-Oct-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	20-Nov-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	6-Dec-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	22-Jan-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	21-Feb-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	18-Mar-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	14-Apr-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	13-May-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	23-Jun-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	28-Jul-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	10-Aug-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	30-Sep-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	26-Oct-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	24-Nov-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	15-Dec-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	25-Jan-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	17-Feb-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	18-Mar-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	13-Apr-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	19-May-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	23-Jun-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	22-Jul-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	11-Aug-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	22-Sep-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	20-Oct-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	10-Nov-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	15-Dec-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	12-Jan-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	17-Feb-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	9-Mar-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	13-Apr-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	11-May-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	9-Jun-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	6-Jul-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	3-Aug-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	14-Sep-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	5-Oct-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	9-Nov-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	7-Dec-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	11-Jan-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	8-Feb-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	8-Mar-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	12-Apr-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	10-May-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	26-Jun-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	25-Jul-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	29-Aug-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	13-Sep-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.14	<0.10		
	11-Oct-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.0003	<0.10		
	22-Nov-23	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		
	13-Dec-23	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		
	10-Jan-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		
	7-Feb-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		
	20-Mar-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		
	10-Apr-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		
	8-May-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		
	12-Jun-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		
	10-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		
	14-Aug-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		
	11-Sep-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		
	2-Oct-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		
	6-Nov-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		
	11-Dec-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		

Table E.11. Historical Groundwater Analytical Results - Petroleum Hydrocarbons

Alberta Tier 1 - Potable Guidelines ¹		Benzene	Toluene	Ethylbenzene	Xylenes (Total)	F1 (C6-C10) - BTEX	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)
		0.005	0.024 ^{AO} /0.06 ^{MAC 2}	0.0016 ^{AO} /0.14 ^{MAC 2}	0.02 ^{AO} /0.09 ^{MAC 2}	2.2	1.1	NG	NG
Sample Location	Sample Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SB	16-Jan-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	25-Feb-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	15-Mar-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	30-Apr-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	23-May-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	16-Jul-19	<0.00040	0.0023	<0.00040	<0.00089	1.9	<0.10		
	9-Aug-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	28-Aug-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	25-Sep-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	23-Oct-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	23-Jun-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	28-Jul-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	10-Aug-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	30-Sep-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	18-Mar-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	13-Apr-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	19-May-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	9-Jun-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	7-Dec-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	26-Jun-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	13-Dec-23	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	<1.0	<1.0
	12-Jun-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	<1.0	<1.0
	11-Dec-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		
TW3	16-Dec-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Dec-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	5-Feb-14	<0.00040	<0.00050	<0.00040	<0.00080	<0.10	<0.10		
	6-Apr-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	21-Nov-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	30-Mar-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	15-Nov-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	19-Apr-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	6-Nov-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	9-Nov-18	Decommissioned November 2018							
TW5	12-Jun-08								
	23-Oct-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	24-Nov-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	8-Dec-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	21-Jan-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	18-Feb-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	26-Mar-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	20-Aug-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	3-Dec-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	28-Jun-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	30-Jul-10	<0.001	<0.001	<0.001	<0.001	<0.2	<0.1		
	30-Aug-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	28-Sep-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	13-Dec-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	14-Jun-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	14-Dec-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	14-Jun-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	11-Dec-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
TW5A (TW-5A, TW5-A)	9-Jan-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	23-Jan-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	30-Jan-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	6-Feb-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	13-Feb-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	20-Feb-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	27-Feb-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	6-Mar-14								
	13-Mar-14								
	21-Mar-14								
	8-Apr-14							<0.20	<0.20
	23-Apr-14								
	30-May-14								
	18-Jun-14								
	18-Jun-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	12-Sep-14								
	11-Dec-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	17-Jun-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	14-Dec-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	8-Jun-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	13-Dec-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	14-Jun-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	13-Dec-17	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	13-Jun-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	19-Dec-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	24-Jun-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	6-Dec-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	15-Dec-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	23-Jun-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	15-Dec-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	9-Jun-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	7-Dec-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	26-Jun-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	13-Dec-23	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	<1.0	<1.0
	12-Jun-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	<1.0	<1.0

Table E.11. Historical Groundwater Analytical Results - Petroleum Hydrocarbons

Alberta Tier 1 - Potable Guidelines ¹		Benzene	Toluene	Ethylbenzene	Xylenes (Total)	F1 (C6-C10) - BTEX	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)
		0.005	0.024 ^{AO} /0.06 ^{MAC 2}	0.0016 ^{AO} /0.14 ^{MAC 2}	0.02 ^{AO} /0.09 ^{MAC 2}	2.2	1.1	NG	NG
Sample Location	Sample Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
TW7	12-Jun-08								
	23-Oct-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	24-Nov-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	8-Dec-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	21-Jan-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	18-Feb-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	26-Mar-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	28-Sep-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	3-Dec-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	28-Jun-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	30-Jul-10	<0.001	<0.001	<0.001	<0.001	<0.2	<0.1		
	30-Aug-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	28-Sep-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.3		
	13-Dec-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	14-Jun-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	14-Dec-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	14-Jun-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	11-Dec-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	29-Jul-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	11-Dec-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	18-Jun-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	11-Dec-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	17-Jun-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	14-Dec-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	8-Jun-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	13-Dec-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	14-Jun-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	13-Dec-17	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	13-Jun-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	19-Dec-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	24-Jun-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	6-Dec-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	23-Jun-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	15-Dec-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	23-Jun-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	15-Dec-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	9-Jun-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	7-Dec-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	26-Jun-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
VW5	12-Apr-14								
	13-Apr-14								
	14-Apr-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10	<0.20	<0.20
	9-Jul-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	24-Jul-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	1-Aug-14								
	8-Aug-14								
	15-Aug-14								
	22-Aug-14								
	29-Aug-14								
	4-Sep-14								
	12-Sep-14								
	11-Dec-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	17-Jun-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	14-Dec-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	8-Jun-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	13-Dec-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	14-Jun-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	13-Dec-17	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	13-Jun-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	19-Dec-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	24-Jun-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	6-Dec-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	23-Jun-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	15-Dec-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	23-Jun-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	15-Dec-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	9-Jun-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	7-Dec-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	26-Jun-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	13-Dec-23	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	<1.0	<1.0
	12-Jun-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	<1.0	<1.0
	11-Dec-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		
TW8	12-Jun-08								
	23-Oct-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	24-Nov-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	8-Dec-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	21-Jan-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	18-Feb-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	26-Mar-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	20-Aug-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	3-Dec-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	28-Jun-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	30-Jul-10	<0.001	<0.001	<0.001	<0.001	<0.2	<0.1		
	30-Aug-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	28-Sep-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	13-Dec-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	14-Jun-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	14-Dec-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	14-Jun-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	11-Dec-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		

Table E.11. Historical Groundwater Analytical Results - Petroleum Hydrocarbons

Alberta Tier 1 - Potable Guidelines ¹		Benzene	Toluene	Ethylbenzene	Xylenes (Total)	F1 (C6-C10) - BTEX	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)
		<u>0.005</u>	<u>0.024^{AO}/0.06^{MAC 2}</u>	<u>0.0016^{AO}/0.14^{MAC 2}</u>	<u>0.02^{AO}/0.09^{MAC 2}</u>	<u>2.2</u>	<u>1.1</u>	NG	NG
Sample Location	Sample Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
CW8 (Culvert 8)	1-Mar-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	27-Mar-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	25-Jul-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	11-Dec-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	17-Jun-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	14-Dec-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	8-Jun-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	13-Dec-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	14-Jun-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	13-Dec-17	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	13-Jun-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	19-Dec-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	24-Jun-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	6-Dec-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	23-Jun-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	15-Dec-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	23-Jun-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	15-Dec-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	9-Jun-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	7-Dec-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	26-Jun-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	13-Dec-23	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	<1.0	<1.0
	12-Jun-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10	<1.0	<1.0
TVR Pit #1 (TVR PIT)	4-Jun-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10	<0.20	<0.20
	30-Jun-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	25-Jul-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	22-Oct-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
TR DIS	19-Dec-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		

Alberta Tier 1 - Potable Guidelines ¹		<u>0.005</u>	0.024 ^{AO} /0.06 ^{MAC 2}	<u>0.0016^{AO}/0.14^{MAC 2}</u>	<u>0.02^{AO}/0.09^{MAC 2}</u>	<u>2.2</u>	<u>1.1</u>	NG	NG
Alberta Tier 1 - Aquatic Life Guidelines ¹		0.074	<u>0.021</u>	41	2.9	9.8	1.3	NG	NG
SHALLOW GW INT	22-Aug-07 to Current	Dry							
DEEP GW INT	23-Nov-07	<0.0004	0.0007	<0.0004	<0.0008	<0.1	<0.15		
	6-Mar-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.15		
	23-May-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	12-Sep-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	26-Nov-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	20-Jan-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	26-Mar-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	19-May-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	22-Jul-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	16-Nov-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.100	<0.1		
	19-Mar-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	14-Jul-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	12-Nov-10	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	18-Apr-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	11-Jul-11	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
	17-May-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	20-Jul-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	21-Sep-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	23-Nov-12	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	8-May-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	12-Jul-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	5-Sep-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	13-Nov-13	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10		
	25-Mar-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	24-Jul-14	0.00082	0.0014	<0.00040	<0.00080	<0.100	<0.10		
	6-Aug-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	20-Jul-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	16-Jul-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	20-Nov-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	28-Jul-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	21-Jul-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	26-Jul-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	25-Jul-23	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	25-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	0.17		

Table E.11. Historical Groundwater Analytical Results - Petroleum Hydrocarbons

		Benzene	Toluene	Ethylbenzene	Xylenes (Total)	F1 (C6-C10) - BTEX	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)
Alberta Tier 1 - Potable Guidelines ¹		0.005	0.024 ^{AO} /0.06 ^{MAC 2}	0.0016 ^{AO} /0.14 ^{MAC 2}	0.02 ^{AO} /0.09 ^{MAC 2}	2.2	1.1	NG	NG
Sample Location	Sample Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Alberta Tier 1 - Surface Water Quality Guidelines ³	Drinking Water	0.005	0.024	0.0016	0.02	NG	NG	NG	NG
	Aquatic Life	0.04	0.0005	0.09	0.03	0.15	0.11	NG	NG
	Livestock Water	0.088	4.91	3.20	13.1	53.6	49.2	79.7	42.0
	Wildlife Water	0.076	4.25	2.77	11.3	46.4	42.6	69.0	36.4
River	30-May-08	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1		
Sheep River 1 (Sheep-1)	14-May-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10	<0.20	<0.20
	12-Sep-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10	<0.20	<0.20
	27-Mar-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	19-Nov-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	29-Mar-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	21-Nov-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	30-Mar-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	21-Nov-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	29-Mar-19	Could not access/frozen							
	21-Nov-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	30-Mar-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	26-Nov-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	31-Mar-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	22-Jul-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	28-Jul-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	24-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	<0.10		
Sheep River 2	20-May-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10	<0.20	<0.20
	12-Sep-14	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10	<0.20	<0.20
	25-Mar-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	20-Nov-15	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	29-Mar-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	18-Nov-16	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	29-Mar-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	17-Nov-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.100	<0.10		
	21-Nov-18	<0.00040	<0.00040	<0.00040	<0.00089	<0.100	<0.10		
	29-Mar-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	21-Nov-19	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	30-Mar-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	25-Nov-20	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	31-Mar-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	22-Jul-21	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	28-Jul-22	<0.00040	<0.00040	<0.00040	<0.00089	<0.10	<0.10		
	25-Jul-24	<0.001	<0.0005	<0.001	<0.003	<0.05	0.11		

Notes:

< - less than laboratory method detection limit

mg/L - milligrams per litre

NG - No Guideline

Bold - most stringent guideline

AO - Aesthetic Objective

MAC - Maximum Allowable Concentration

¹ - Alberta Environment and Protected Areas - Alberta Tier 1 Soil and Groundwater Remediation Guidelines (AEPA 2024) for coarse-grained soils and residential/parkland land use

² - Health Canada - Guidelines for Canadian Drinking Water Quality (Health Canada 2024)

³ - Alberta Environment and Protected Areas - Alberta Tier 1 Soil and Groundwater Remediation Guidelines (AEPA 2024) - Table C-11 Surface Water Quality Guidelines

Table E.12. Historical Groundwater Analytical Results - Polycyclic Aromatic Hydrocarbons

Alberta Tier 1 - Potable Guidelines ¹		Benzo(a)pyrene equivalency 0.00004	Acenaphthene 1.4	Acenaphthylene NG	Acridine NG	Anthracene NG	Benzo(a)anthracene NG	Benzo(b)fluoranthene NG	Benzo(k)fluoranthene NG	Benzo(g,h,i)perylene NG	Benzo(c)phenanthrene NG	Benzo(a)pyrene 0.000004 ² NG	Benzo(e)pyrene NG	Chrysene NG	Dibenz(a,h)anthracene NG	Dibenzo(a,e)pyrene NG	Dibenzo(a,h)pyrene NG	Dibenzo(a,i)pyrene NG	Dibenzo(a,j)pyrene NG	Fluoranthene NG	Fluorene 0.94 NG	Indeno(1,2,3-cd)pyrene NG	1-Methylnaphthalene NG	2-Methylnaphthalene NG	Naphthalene 0.47 mg/L	Phenanthrene NG	Perylene NG	Pyrene 0.71 mg/L	Quinoline NG	
Sample Location	Sample Date	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	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
TVR 1.1	23-May-08 19-Jan-09		<0.0001	<0.0001	<0.0002	<0.0001	<0.00009	<0.00009	<0.00009	<0.00009	<0.0005	<0.00008	<0.0005	<0.00009	Insufficient Water Volume for Sampling				<0.00008	<0.0001	<0.0001	<0.0004	<0.0005	<0.00009	<0.0001	<0.0001	<0.0005	<0.0005	<0.0002	<0.0002
	24-Mar-09		<0.00010	<0.00010	<0.00020	<0.00010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000088	<0.000075	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00040	<0.00050	<0.000088	<0.00010	<0.00010	<0.00050	<0.00050	<0.00020	<0.00020	
	19-May-09		<0.00010	<0.00010	<0.00020	<0.00010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000088	<0.000075	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00040	<0.00050	<0.000088	<0.00010	<0.00010	<0.00050	<0.00050	<0.00020	<0.00020	
	20-Jul-09 to 10-May-10														Insufficient Water Volume for Sampling															
	14-Jul-10		<0.00010	<0.00010	<0.00020	<0.00010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000088	<0.000075						<0.00040	<0.00050	<0.000088		<0.00010	<0.00010	<0.00050	<0.00050	<0.00020	<0.00020
	15-Sep-10 to current														Insufficient Water Volume for Sampling															
	23-Jul-18	<0.000010	<0.00010	<0.00010	<0.00050	<0.00010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000088	<0.000075						<0.00010	<0.00050	<0.000088		<0.00010	<0.00010	<0.00050	<0.00050	<0.00020	<0.00020
	20-Nov-18 to 28-Mar-19														Insufficient Water Volume for Sampling															
	16-Jul-19	<0.000010	<0.00010	<0.00010	<0.00040	<0.00010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000088	<0.000075						<0.00010	<0.00050	<0.000088		<0.00010	<0.00010	<0.00050	<0.00050	<0.00020	<0.00020
20-Nov-19 to 30-Mar-21														Insufficient Water Volume for Sampling																
TVR 1.2	22-Aug-07		<0.0002		<0.0004	<0.00020	<0.00020		<0.00010		<0.00050	<0.00020	<0.00010	<0.00010	<0.00050	<0.0002	<0.0002		<0.00010	<0.00020	<0.000080	<0.00010			<0.00020	<0.00020	0.00022	<0.00010	0.000146	<0.00040
	4-Mar-08		<0.00010	<0.0001	<0.0002	<0.00010	<0.00001	<0.00010	<0.00010		<0.00050	<0.00010	<0.00050	<0.00050	<0.00050	<0.0001	<0.0001	<0.00010	<0.00010	<0.00040	<0.00050	<0.00010		<0.00010	<0.00010	<0.00050	<0.00050	0.000043	<0.00020	
	23-May-08		<0.0001	<0.0001	<0.0002	<0.00001	<0.00009	<0.00009	<0.00009	0.000012	<0.0005	<0.00008	<0.0005	<0.00009	0.000012	<0.0001	<0.0001	<0.0001	<0.0001	<0.0004	<0.0005	0.000019	<0.0001	<0.0001	<0.0005	<0.0005	<0.0002	<0.0002		
	28-Jul-08		<0.0001	<0.0001	<0.0002	<0.00001	<0.00009	<0.00009	<0.00009	<0.00009	<0.0005	<0.00008	<0.0005	<0.00009	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.0004	<0.0005	<0.00009	<0.0001	<0.0001	<0.0005	<0.0005	<0.0002	<0.0002		
	20-Jan-09		<0.00010	<0.00010	<0.00020	<0.00010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000088	<0.000075	<0.00010	<0.00010	<0.00010	<0.00010	<0.00040	<0.00050	<0.000088		<0.00010	<0.00010	<0.00050	<0.00050	<0.00020	<0.00020	
	24-Mar-09		<0.00010	<0.00010	<0.00020	<0.00010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000088	<0.000075	<0.00010	<0.00010	<0.00010	<0.00010	<0.00040	<0.00050	<0.000088		<0.00010	<0.00010	<0.00050	<0.00050	<0.00020	<0.00020	
	19-May-09		<0.00010	<0.00010	<0.00020	<0.00010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000088	<0.000075	<0.00010	<0.00010	<0.00010	<0.00010	<0.00040	<0.00050	<0.000088		<0.00010	<0.00010	<0.00050	<0.00050	<0.00020	<0.00020	
	20-Jul-09		<0.00010	<0.00010	<0.00020	<0.00010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000088	<0.000075	<0.00010	<0.00010	<0.00010	<0.00010	<0.00040	<0.00050	<0.000088		<0.00010	<0.00010	<0.00050	<0.00050	<0.00020	<0.00020	
	25-Sep-09		<0.00010	<0.00010	<0.00020	<0.00010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000088	<0.000075	<0.00010	<0.00010	<0.00010	<0.00010	<0.00040	<0.00050	<0.000088		<0.00010	<0.00010	<0.00050	<0.00050	0.000028	<0.00020	
	16-Nov-09		<0.00010	<0.00010	<0.00020	<0.00010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000088	<0.000075	<0.00010	<0.00010	<0.00010	<0.00010	<0.00040	<0.00050	<0.000088		<0.00010	<0.00010	<0.00050	<0.00050	<0.00020	<0.00020	
	18-Jan-10		<0.00010	<0.00010	<0.00020	<0.00010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000088	<0.000075	<0.00010	<0.00010	<0.00010	<0.00010	<0.00040	<0.00050	<0.000088		<0.00010	<0.00010	<0.00050	<0.00050	<0.00020	<0.00020	
	19-Mar-10		<0.00010	<0.00010	<0.00020	<0.00010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000088	<0.000075					<0.00040	<0.00050	<0.000088		<0.00010	<0.00010	<0.00050	<0.00050	<0.00020	<0.00020	

Table E.12. Historical Groundwater Analytical Results - Polycyclic Aromatic Hydrocarbons

Alberta Tier 1 - Potable Guidelines ¹		Benzo(a)pyrene equivalency 0.00004	Acenaphthene 1.4	Acenaphthylene NG	Acridine NG	Anthracene NG	Benzo(a) anthracene NG	Benzo(b)k fluoranthene NG	Benzo(k) fluoranthene NG	Benzo(h,i) perylene NG	Benzo(c) phenanthrene NG	Benzo(a) pyrene 0.00004 ²	Benzo(e) pyrene NG	Chrysene NG	Dibenz(a,h) anthracene NG	Dibenzo(a,e) pyrene NG	Dibenzo(a,h) pyrene NG	Dibenzo(a,i) pyrene NG	Dibenzo(a,j) pyrene NG	Fluoranthene NG	Fluorene 0.94	Indeno(1,2,3-cd) pyrene NG	1-Methyl naphthalene NG	2-Methyl naphthalene NG	Naphthalene 0.47	Phenanthrene NG	Perylene NG	Pyrene 0.71	Quinoline NG	
Sample Location	Sample Date	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	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
TVR 2.2	22-Aug-07		<0.0001		<0.0002	<0.000010	<0.000010		<0.00010	<0.000050	<0.000050	<0.000010	<0.000050	<0.000050	<0.000050	<0.0001	<0.0001	<0.00010	<0.00010	<0.000040	<0.00010		<0.00020	<0.00020	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020
	23-Nov-07		<0.0001	<0.0001	<0.0002	<0.000010	<0.000010		<0.00010	<0.000050	<0.000050	<0.000010	<0.000050	<0.000050	<0.000050	<0.0001	<0.0001	<0.00010	<0.00010	<0.000040	<0.000050	<0.00010	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020		
	4-Mar-08		<0.0001	<0.0001	<0.0002	<0.000010	<0.000010	<0.00001	<0.00010	<0.000050	<0.000050	<0.000010	<0.000050	<0.000050	<0.000050	<0.0001	<0.0001	<0.00010	<0.00010	<0.000050	<0.000050		<0.00010	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020	
	23-May-08		<0.0001	<0.0001	<0.0002	<0.00001	<0.000009	<0.000009	<0.000009	<0.000009	<0.00005	<0.000008	<0.00005	<0.000009	<0.000008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00004	<0.00005	<0.000009		<0.0001	<0.0001	<0.00005	<0.00005	<0.00002	<0.0002	
	28-Jul-08		<0.0001	<0.0001	<0.0002	<0.00001	<0.000009	<0.000009	<0.000009	<0.000009	<0.00005	<0.000008	<0.00005	<0.000009	<0.000008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00004	<0.00005	<0.000009	<0.0001	<0.0001	<0.00005	<0.00005	<0.00002	<0.0002		
	9-Sep-08		<0.0001	<0.0001	<0.0002	<0.00001	<0.000009	<0.000009	<0.000009	<0.000009	<0.00005	<0.000008	<0.00005	<0.000009	<0.000008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00004	<0.00005	<0.000009	<0.0001	<0.0001	<0.00005	<0.00005	<0.00002	<0.0002		
	24-Nov-08		<0.0001	<0.0001	<0.0002	<0.00001	<0.000009	<0.000009	<0.000009	<0.000009	<0.00005	<0.000008	<0.00005	<0.000009	<0.000008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00004	0.000068	<0.000009	0.00026	0.00019	0.00014	<0.00005	0.000037	<0.00020		
	20-Jan-09		<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.00010	<0.00010	<0.00010	<0.00010	<0.000040	<0.000050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020		
	24-Mar-09		<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.00010	<0.00010	<0.00010	<0.00010	<0.000040	<0.000050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020		
	19-May-09		<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.00010	<0.00010	<0.00010	<0.00010	<0.000040	<0.000050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020		
	20-Jul-09		<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.00010	<0.00010	<0.00010	<0.00010	<0.000040	<0.000050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020		
	25-Sep-09		<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.00010	<0.00010	<0.00010	<0.00010	<0.000040	<0.000050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020		
	16-Nov-09		<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.00010	<0.00010	<0.00010	<0.00010	<0.000040	<0.000050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020		
	18-Jan-10		<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.00010	<0.00010	<0.00010	<0.00010	<0.000040	<0.000050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020		
	17-Mar-10		<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075					<0.000040	<0.000050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020		
	12-May-10														Insufficient Water Volume for Sampling															
	12-Jul-10		<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075					<0.000040	<0.000050	<0.000085		<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020	
	15-Sep-10 to 7-Nov-10														Insufficient Water Volume for Sampling															
	24-Jan-11		<0.00001	<0.00010	<0.00010	<0.00020	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075					<0.000040	<0.000050	<0.000085		<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020	
	16-Mar-11														Insufficient Water Volume for Sampling															
	20-May-11		<0.00001	<0.00010																										

Table E.12. Historical Groundwater Analytical Results - Polycyclic Aromatic Hydrocarbons

Alberta Tier 1 - Potable Guidelines ²		Benz(a)pyrene equivalency	Acenaphthene	Acenaphthylene	Acridine	Anthracene	Benz(a)anthracene	Benz(b)fluoranthene	Benz(k)fluoranthene	Benz(a,h,i)perylene	Benz(c)phenanthrene	Benz(a)pyrene	Benz(e)pyrene	Chrysene	Dibenz(a,h)anthracene	Dibenz(a,e)pyrene	Dibenz(a,h)pyrene	Dibenz(a,i)pyrene	Dibenz(a,j)pyrene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1-Methyl naphthalene	2-Methyl naphthalene	Naphthalene	Phenanthrene	Perylene	Pyrene	Quinoline		
Sample Location		0.00004	1.4	NG	NG	NG	NG	NG	NG	NG	NG	0.00004 ²	NG	NG	NG	NG	NG	NG	NG	NG	0.94	NG	NG	NG	0.47	NG	NG	0.71	NG		
		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	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		
TVR 2.4 (cont)	23-Jan-14	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000085					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020		
	21-Mar-14	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000085					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020		
	13-May-14	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000085					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020		
	24-Jul-14	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000085					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020		
	11-Sep-14	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000085					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020		
	19-Nov-14	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000085					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020		
	14-Jul-15	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000085					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020		
	18-Nov-15	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000085					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020		
	20-Jul-16	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000085					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020		
	17-Nov-16	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000085					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020		
	17-Jul-17	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000085					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020		
	17-Nov-17	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000085					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020		
	24-Jul-18	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000085					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020		
	20-Nov-18	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000085					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020		
	16-Jul-19	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000085					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020		
	20-Nov-19	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000085					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020		
	27-Jul-20	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000085					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020		
	24-Nov-20	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000085					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020		
	4-Mar-08	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000085			<0.0001	<0.0001	<0.00010	<0.00010	<0.00040	<0.00050	<0.00010	<0.00010	<0.00050	<0.000085	0.00024	<0.00020		
	23-May-08	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000085			<0.0001	<0.0001	<0.0001	<0.0001	<0.0004	<0.0005	<0.00009	<0.0001	<0.0001	<0.0005	<0.0002	<0.0002		
	28-Jul-08	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000085			<0.0001	<0.0001	<0.0001	<0.0001	<0.0004	<0.0005	<0.00009	<0.0001	<0.0001	<0.0005	<0.0002	<0.0002		
	26-Nov-08	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000085			<0.0001	<0.0001	<0.0001	<0.0001	<0.0004	<0.0005	<0.00009	<0.0001	<0.0001	<0.0005	<0.0002	<0.0002		
	20-Jan-09	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000085			<0.0001	<0.0001	<0.0001	<0.0001	<0.0004	<0.0005	<0.00009	<0.0001	<0.0001	<0.0005	<0.0002	<0.0002		
	24-Mar-09	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000085			<0.0001	<0.0001	<0.0001	<0.0001	<0.0004	<0.0005	<0.00009	<0.0001	<0.0001	<0.0005	<0.0002	<0.0002		
26-Mar-09	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000085			<0.0001	<0.0001	<0.0001	<0.0001	<0.0004	<0.0005	<0.00009	<0.0001	<0.0001	<0.0005	<0.0002	<0.0002			
19-May-09	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000085			<0.0001	<0.0001	<0.0001	<0.0001	<0.0004	<0.0005	<0.00009	<0.0001	<0.0001	<0.0005	<0.0002	<0.0002			
20-Jul-09	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000085			<0.0001	<0.0001	<0.0001	<0.0001	<0.0004	<0.0005	<0.00009	<0.0001	<0.0001	<0.0005	<0.0002	<0.0002			
25-Sep-09 to 21-Jan-10		Insufficient Water Volume for Sampling																				<0.000040	<0.000050	<0.000085		<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020
19-Mar-10		<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075							<0.000040	<0.000050	<0.000085		<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020	
12-May-10		<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075							<0.000040	<0.000050	<0.000085		<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020	
12-Jul-10		<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075							<0.000040	<0.000050	<0.000085		<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020	
15-Sep-10		<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085</																							

Table E.12. Historical Groundwater Analytical Results - Polycyclic Aromatic Hydrocarbons

[illegible]

Table E.12. Historical Groundwater Analytical Results - Polycyclic Aromatic Hydrocarbons

TVR 5.1	22-Aug-07 to current																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																

Table E.12. Historical Groundwater Analytical Results - Polycyclic Aromatic Hydrocarbons

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Table E.12. Historical Groundwater Analytical Results - Polycyclic Aromatic Hydrocarbons

Table E.12. Historical Groundwater Analytical Results - Polycyclic Aromatic Hydrocarbons

		Benzo(a)pyrene equivalency	Acenaphthene	Acenaphthylene	Acridine	Anthracene	Benzo(a) anthracene	Benzo(b&g) fluoranthene	Benzo(k) fluoranthene	Benzo(a,h,i) perylene	Benzo(c) phenanthrene	Benzo(a) pyrene	Benzo(e) pyrene	Chrysene	Dibenz(a,h) anthracene	Dibenz(a,e) pyrene	Dibenz(a,h) pyrene	Dibenz(a,j) pyrene	Dibenz(a,l) pyrene	Fluoranthene	Fluorene	Indeno(1,2,3-cd) pyrene	1-Methyl naphthalene	2-Methyl naphthalene	Naphthalene	Phenanthrene	Perylene	Pyrene	Quinoline
		0.00004	1.4	NG	NG	NG	NG	NG	NG	NG	NG	0.00004	NG	NG	NG	NG	NG	NG	NG	NG	0.94	NG	NG	NG	0.47	NG	NG	0.71	NG
Sample Location	Sample Date	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	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
TVSA-08	14-May-14	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	0.000058	<0.000050	<0.000020	<0.00020
	12-Sep-14	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.000050	<0.000020	<0.00020	
	15-Mar-15	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.000050	<0.000020	<0.00020	
	19-Nov-15	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.000050	<0.000020	<0.00020	
	28-Mar-16	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.000050	<0.000020	<0.00020	
	21-Nov-16	0.000029	<0.00010	<0.00010	<0.00050	0.000021	0.000021	0.000019	<0.000085	0.000011	<0.000050	0.00002	<0.000050	0.000019	<0.000075	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.000050	<0.000020	<0.00020	
	2-Dec-16	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.000050	<0.000020	<0.00020	
	29-Mar-17	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.000050	<0.000020	<0.00020	
	15-Nov-17	0.000036	<0.00010	<0.00010	<0.00050	0.000020	0.000023	0.000021	<0.000085	0.000015	<0.000050	0.000026	<0.000050	0.000022	<0.000075	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00050	0.000012	<0.00010	<0.00010	<0.00010	0.000010	<0.000050	0.000096	<0.00020
	30-Nov-17	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.000050	<0.000020	<0.00020	
19-Apr-18	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.000050	<0.000020	<0.00020		
1-May-18	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.000050	<0.000020	<0.00020		
22-Nov-18	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.000050	<0.000020	<0.00020		
28-Mar-19	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	Could not access/frozen													
21-Nov-19	<0.00010	<0.00010	<0.00010	<0.00040	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.000050	<0.000020	<0.00020		
21-Mar-20	<0.00010	<0.00010	<0.00010	<0.00040	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.000050	<0.000020	<0.00020		
25-Nov-20	<0.00010	<0.00010	<0.00010	<0.00040	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.000050	<0.000020	<0.00020		
31-Mar-21	<0.00010	<0.00010	<0.00010	<0.00040	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.000050	<0.000020	<0.00020		
14-May-14	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.000050	<0.000020	<0.00020		
6-Apr-16	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00050	0.000015	0.000012	<0.000085	0.000091	0.000049	0.000032	<0.000050	0.000042	<0.00020
21-Nov-16	0.000023	<0.00010	<0.00010	<0.00050	0.00002	0.000015	0.000014	<0.000085	<0.000085	0.000015	<0.000050	0.000015	<0.000050	0.000014	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00050	0.000037	0.0001	<0.000085	0.00001	<0.00010	<0.00010	<0.000050	0.000077	<0.00020
2-Dec-16	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.000050	<0.000020	<0.00020		
30-Mar-17	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.000050	<0.000020	<0.00020		
16-Nov-17	0.000017	<0.00010	<0.00010	<0.00050	<0.00010	0.000009	0.0000092	<0.000085	<0.000085	<0.000085	<0.000050	0.000010	<0.000050	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00050	0.000027	<0.000050	<0.000085	<0.00010	<0.00010	0.000059	<0.000050	0.000054	<0.00020
30-Nov-17	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00050	0.000017	<0.000050	<0.000085	<0.00010	<0.00010	<0.000050	0.000036	<0.00020	
19-Apr-18	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.000050	<0.000020	<0.00020		
22-Nov-18	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00010	<0.000050	<0.000020	<0.00020		
28-Mar-19	0.000025	<0.00010	<0.00010	<0.00040	0.000014	0.000018	0.000013	<0.000085	0.0000094	<0.000050	0.000017	<0.000050	0.000010	<0.000075	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00050	0.000033	<0.000050	<0.000085	<0.00010	<0.00010	0.000069	<0.000050	0.000066	<0.00020
20-Nov-19	<0.00010	<0.00010	<0.00010	<0.00040	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.00007													

Table E.12. Historical Groundwater Analytical Results - Polycyclic Aromatic Hydrocarbons

Alberta Tier 1 - Potable Guidelines ¹ Sample LocationSample Date		Benz(a)pyrene equivalency		Acenaphthene	Acenaphthylene	Acridine	Anthracene	Benz(a)a anthracene	Benz(b)a fluoranthene	Benz(k) fluoranthene	Benz(a,h) perylene	Benz(c) phenanthrene	Benz(a)pyrene	Benz(e)pyrene	Chrysene	Dibenz(a,h) anthracene	Dibenz(a,e) pyrene	Dibenz(a,h) pyrene	Dibenz(a,j) pyrene	Dibenz(a,j) pyrene	Fluoranthene	Fluorene	Indeno(1,2,3-cd) pyrene	1-Methyl naphthalene	2-Methyl naphthalene	Naphthalene	Phenanthrene	Perylene	Pyrene	Quinoline
		0.0004		1.4	NG	NG	NG	NG	NG	NG	NG	NG	NG	0.00002 ²	NG	NG	NG	NG	NG	NG	NG	0.94	NG	NG	NG	NG	NG	NG	0.71	NG
		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	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
PS Blend (cont)	16-Nov-11	<0.0001	<0.0010	<0.0010	<0.0020	<0.000010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000040	<0.000050	<0.000085	<0.000010	<0.000010	<0.000050	<0.000050	<0.000020	<0.000020	
	14-Dec-11	<0.0001	<0.0010	<0.0010	<0.0010	<0.000010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000040	<0.000050	<0.000085	<0.000010	<0.000010	<0.000050	<0.000050	<0.000020	<0.000020	
	23-Jan-12	<0.00010	<0.0010	<0.0010	<0.0010	<0.000010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000040	<0.000050	<0.000085	<0.000010	<0.000010	<0.000050	<0.000050	<0.000020	<0.000020	
	22-Feb-12	<0.00010	<0.0010	<0.0010	<0.0010	<0.000010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000040	<0.000050	<0.000085	<0.000010	<0.000010	<0.000050	<0.000050	<0.000020	<0.000020	
	22-Mar-12	<0.00010	<0.0010	<0.0010	<0.0010	<0.000010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000040	<0.000050	<0.000085	<0.000010	<0.000010	<0.000050	<0.000050	<0.000020	<0.000020	
	25-Apr-12	<0.00010	<0.0010	<0.0010	<0.0010	<0.000010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000040	<0.000050	<0.000085	<0.000010	<0.000010	<0.000050	<0.000050	<0.000020	<0.000020	
	17-May-12	<0.00010	<0.0010	<0.0010	<0.0010	<0.000010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000040	<0.000050	<0.000085	<0.000010	<0.000010	<0.000050	<0.000050	<0.000020	<0.000020	
	14-Jun-12	<0.00010	<0.0010	<0.0010	<0.0010	<0.000010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000040	<0.000050	<0.000085	<0.000010	<0.000010	<0.000050	<0.000050	<0.000020	<0.000020	
	20-Jul-12	<0.00010	<0.0010	<0.0010	<0.0010	<0.000010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000040	<0.000050	<0.000085	<0.000010	<0.000010	<0.000050	<0.000050	<0.000020	<0.000020	
	15-Aug-12	<0.00010	<0.0010	<0.0010	<0.0010	<0.000010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000040	<0.000050	<0.000085	<0.000010	<0.000010	<0.000050	<0.000050	<0.000020	<0.000020	
	21-Sep-12	<0.00010	<0.0010	<0.0010	<0.0010	<0.000010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000040	<0.000050	<0.000085	<0.000010	<0.000010	<0.000050	<0.000050	<0.000020	<0.000020	
	24-Oct-12	<0.00010	<0.0010	<0.0010	<0.0010	<0.000010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000040	<0.000050	<0.000085	<0.000010	<0.000010	<0.000050	<0.000050	<0.000020	<0.000020	
	23-Nov-12	<0.00010	<0.0010	<0.0010	<0.0010	<0.000010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000040	<0.000050	<0.000085	<0.000010	<0.000010	<0.000050	<0.000050	<0.000020	<0.000020	
	11-Dec-12	<0.00010	<0.0010	<0.0010	<0.0010	<0.000010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000040	<0.000050	<0.000085	<0.000010	<0.000010	<0.000050	<0.000050	<0.000020	<0.000020	
	25-Jan-13	<0.00010	<0.0010	<0.0010	<0.0010	<0.000010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000040	<0.000050	<0.000085	<0.000010	<0.000010	<0.000050	<0.000050	<0.000020	<0.000020	
	27-Feb-13	<0.00010	<0.0010	<0.0010	<0.0010	<0.000010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000040	<0.000050	<0.000085	<0.000010	<0.000010	<0.000050	<0.000050	<0.000020	<0.000020	
	21-Mar-13	<0.00010	<0.0010	<0.0010	<0.0010	<0.000010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000040	<0.000050	<0.000085	<0.000010	<0.000010	<0.000050	<0.000050	<0.000020	<0.000020	
	17-Apr-13	<0.00010	<0.0010	<0.0010	<0.0010	<0.000010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000040	<0.000050	<0.000085	<0.000010	<0.000010	<0.000050	<0.000050	<0.000020	<0.000020	
	10-May-13	<0.00010	<0.0010	<0.0010	<0.0010	<0.000010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000040	<0.000050	<0.000085	<0.000010	<0.000010	<0.000050	<0.000050	<0.000020	<0.000020	
	26-Jun-13	<0.00010	<0.0010	<0.0010	<0.0010	<0.000010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000040	<0.000050	<0.000085	<0.000010	<0.000010	<0.000050	<0.000050	<0.000020	<0.000020	
	12-Jul-13	<0.00010	<0.0010	<0.0010	<0.0010	<0.000010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000040	<0.000050	<0.000085	<0.000010	<0.000010	<0.000050	<0.000050	<0.000020	<0.000020	
	15-Aug-13	<0.00010	<0.0010	<0.0010	<0.0010	<0.000010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000040	<0.000050	<0.000085	<0.000010	<0.000010	<0.000050	<0.000050	<0.000020	<0.000020	
	6-Sep-13	<0.00010	<0.0010	<0.0010	<0.0010	<0.000010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000040	<0.000050	<0.000085	<0.000010	<0.000010	<0.000050	<0.000050	<0.000020	<0.000020	
	18-Oct-13	<0.00010	<0.0010	<0.0010	<0.0010	<0.000010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000040	<0.000050	<0.000085	<0.000010	<0.000010	<0.000050	<0.000050	<0.000020	<0.000020	
	13-Nov-13	<0.00010	<0.0010	<0.0010	<0.0010	<0.000010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000040	<0.000050	<0.000085	<0.000010	<0.000010	<0.000050	<0.000050	<0.000020	<0.000020	
	11-Dec-13	<0.00010	<0.0010	<0.0010	<0.0010	<0.000010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000040	<0.000050	<0.000085	<0.000010	<0.000010	<0.000050	<0.000050	<0.000020	<0.000020	
	24-Jan-14	<0.00010	<0.0010	<0.0010	<0.0010	<0.000010	<0.000088	<0.000088	<0.000088	<0.000088	<0.000088	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000010	<0.000050	<0.000085	<0.000010	<0.000010	<0.000050	<0.000050	<0.000020	<0.000020	
	20-Feb-14	<0.00010	<0.0010	<0.0010	<0.0010	<0.00																								

Table E.12. Historical Groundwater Analytical Results - Polycyclic Aromatic Hydrocarbons

9-Nov-18	Decommissioned November 2018

Table E.12. Historical Groundwater Analytical Results - Polycyclic Aromatic Hydrocarbons

[illegible]

Table E.12. Historical Groundwater Analytical Results - Polycyclic Aromatic Hydrocarbons

	Benzo[a]pyrene equivalency	Acenaphthene	Acenaphthylene	Acridine	Anthracene	Benzo[a] naphrene	Benzo[b]k fluoranthene	Benzo[k] fluoranthene	Benzo[ghi] perylene	Benzo[c] phenanthrene	Benzo[a] pyrene	Benzo[e] pyrene	Chrysene	Dibenzo[a,h] anthracene	Dibenzo[a,e] pyrene	Dibenzo[a,h] pyrene	Dibenzo[a,i] pyrene	Dibenzo[a,j] pyrene	Fluoranthene	Fluorene	Indeno[1,2,3-cd] pyrene	1-Methyl naphthalene	2-Methyl naphthalene	Naphthalene	Phenanthrene	Perylene	Pyrene	Quinoline	
Alberta Tier 1 - Potable Guidelines ¹	8.00004	1.4	NG	NG	NG	NG	NG	NG	NG	NG	0.00004 ²	NG	NG	NG	NG	NG	NG	NG	NG	9.94	NG	NG	NG	9.47	NG	NG	9.71	NG	
Sample Location	Sample Date	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	mg/L	mg/L	mg/L	mg/L	mg/L	
VW5	12-Apr-14																												
	13-Apr-14																												
	14-Apr-14	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020		
	9-Jul-14	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020		
	24-Jul-14	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020		
	1-Aug-14																			<0.00010	<0.00050	<0.000085		<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020
	8-Aug-14																												
	15-Aug-14																												
	22-Aug-14																												
	29-Aug-14																												
	4-Sep-14																												
	12-Sep-14																												
	11-Dec-14	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020	
	17-Jun-15	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000085	<0.000075	<0.000085	<0.000085	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020	
	14-Dec-15	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000085	<0.000075	<0.000085	<0.000085	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020	
	8-Jun-16	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000085	<0.000075	<0.000085	<0.000085	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020	
	13-Dec-16	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000085	<0.000075	<0.000085	<0.000085	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020	
	14-Jun-17	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000085	<0.000075	<0.000085	<0.000085	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020	
	13-Dec-17	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000085	<0.000075	<0.000085	<0.000085	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020	
	13-Jun-18	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000085	<0.000075	<0.000085	<0.000085	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020	
	19-Dec-18	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000085	<0.000075	<0.000085	<0.000085	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020	
	24-Jun-19	<0.00010	<0.00010	<0.00010	<0.00040	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000085	<0.000075	<0.000085	<0.000085	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020	
	6-Dec-19	<0.00010	<0.00010	<0.00010	<0.00040	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000085	<0.000075	<0.000085	<0.000085	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020	
	23-Jun-20	<0.00010	<0.00010	<0.00010	<0.00040	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000085	<0.000075	<0.000085	<0.000085	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020	
	15-Dec-20	<0.00010	<0.00010	<0.00010	<0.00040	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000085	<0.000075	<0.000085	<0.000085	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020	
	23-Jun-21	<0.00010	<0.00010	<0.00010	<0.00040	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000085	<0.000075	<0.000085	<0.000085	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020	
	15-Dec-21	<0.00010	<0.00010	<0.00010	<0.00040	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000085	<0.000075	<0.000085	<0.000085	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020	
	9-Jun-22	<0.00010	<0.00010	<0.00010	<0.00040	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000085	<0.000075	<0.000085	<0.000085	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020	
	7-Dec-22	<0.00010	<0.00010	<0.00010	<0.00040	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000085	<0.000075	<0.000085	<0.000085	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020	
	26-Jun-23	<0.00010	<0.00010	<0.00010	<0.00040	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000085	<0.000075	<0.000085	<0.000085	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020	
	13-Dec-23	<0.00010	<0.00004	<0.00004	<0.00004	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000085	<0.000075	<0.000085	<0.000085	<0.00010	<0.00004	<0.00004	<0.00004	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020
	12-Jun-24	<0.00085	<0.00004	<0.00004	<0.00004	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000085	<0.000075	<0.000085	<0.000085	<0.00010	<0.00004	<0.00004	<0.00004	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020
	11-Dec-24	<0.00085	<0.00004	<0.00004	<0.00004	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000085	<0.000075	<0.000085	<0.000085	<0.00010	<0.00004	<0.00004	<0.00004	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020
	CW8 (Culvert 8)	1-Mar-14	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000085	<0.000075	<0.000085	<0.000085	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.000020	<0.00020	
		27-Mar-14	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000050	<0.000085	<0.0000														

Alberta Tier 1 - Potable Guidelines ¹				0.00004	1.4	NG	NG	NG	NG	NG	NG	NG	NG	NG	0.00004 ²	NG	NG	NG	NG	NG	NG	0.94	NG	NG	NG	0.47	NG	0.71	NG						
Alberta Tier 1 - Aquatic Life Guidelines ¹				NG	0.0059	NG	NG	0.000012	0.000015 ²	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	0.00004 ²	0.003	NG	NG	0.001	0.0004	0.00025 ²	NG						
SHALLOW GW INT				22-Aug-07 to current																															
DEEP GW INT	23-Nov-07	<0.00010	<0.00010	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00040	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00020						
	6-Mar-08	<0.0001	<0.0001	<0.0002	<0.00001	<0.00001	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0004	<0.0005	<0.0001	<0.0001	<0.0001	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002						
	23-May-08	<0.0001	<0.0001	<0.0002	<0.00001	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0004	<0.0005	<0.00009	<0.0001	<0.0001	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002						
	12-Sep-08	<0.0001	<0.0001	<0.0002	<0.00001	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0004	<0.0005	<0.00009	<0.0001	<0.0001	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002						
	26-Nov-08	<0.0001	<0.0001	<0.0002	<0.00001	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.0001	<0.0001	<0.0001	<0.0001	<0.0004	<0.0005	<0.000085	<0.0001	<0.0001	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002						
	20-Jan-09	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00010	<0.00010	<0.00010	<0.00040	<0.00050	<0.000085	<0.00010	<0.00010	0.000056	<0.00050	<0.00020	<0.00020	<0.00020						
	26-Mar-09	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00010	<0.00010	<0.00010	<0.00040	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00020	<0.00020	<0.00020	<0.00020						
	19-May-09	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00010	<0.00010	<0.00010	<0.00040	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00020	<0.00020	<0.00020	<0.00020						
	22-Jul-09	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00010	<0.00010	<0.00010	<0.00040	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00020	<0.00020	<0.00020	<0.00020						
	16-Nov-09	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00010	<0.00010	<0.00010	<0.00040	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00020	<0.00020	<0.00020	<0.00020						
	19-Mar-10	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.000075	<0.00010	<0.00010	<0.00010	<0.00010	<0.00040	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00020	<0.00020	<0.00020	<0.00020						
	14-Jul-10																Insufficient Water Volume for Sampling																		
	12-Nov-10		<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.000085	<0.000075	<0.000075	<0.000075	<0.00040	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020	<0.00020						
	18-Apr-11	<0.00001	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000075	<0.000075	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00040	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020	<0.00020						
	11-Jul-11	<0.00001	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000075	<0.000075	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00040	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020	<0.00020						
	17-May-12	<0.000010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000075	<0.000075	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00040	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020	<0.00020						
	20-Jul-12	<0.000010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000075	<0.000075	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00040	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020	<0.00020						
	21-Sep-12	<0.000010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000075	<0.000075	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00040	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020	<0.00020						
	23-Nov-12	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000075	<0.000075	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00040	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020	<0.00020						
	8-May-13	<0.000010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000075	<0.000075	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00040	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020	<0.00020						
	12-Jul-13	<0.000010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000075	<0.000075	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00040	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020	<0.00020						
	5-Sep-13	<0.000010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000075	<0.000075	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00040	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020	<0.00020						
	13-Nov-13	<0.000010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000075	<0.000075	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00040	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020	<0.00020						
	25-Mar-14	<0.000010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000075	<0.000075	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00040	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020	<0.00020						
	24-Jul-14	<0.000010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000075	<0.000075	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00040	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020	<0.00020						
	20-Jul-16	<0.000010	<0.00010	<0.00010	<0.00020	<0.00010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000085	<0.000075	<0.000075	<0.000075	<0.000085	<0.000075	<0.000075	<0.000075	<0.000075	<0.00040	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.000085	<0.00020	<0.00020	<0.00020						
	20-Jul-16 to 28-Mar-19																																		
	DEEP GW INT	16-Jul-19	<0.000010	<0.00010	<0.00010	<0.00040	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075					<0.000010	<0.000050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.00020	<0.00020						
		20-Nov-19	<0.000010	<0.00010	<0.00010	<0.00040	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075					<0.000010	<0.000050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.00020	<0.00020						
		28-Jul-20	<0.000010	<0.00010	<0.00010	<0.00040	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075					<0.000010	<0.000050	<0.000085	<0.00010	<0.00010	<0.000050	<0.000050	<0.00020	<0.00020						

Table E.12. Historical Groundwater Analytical Results - Polycyclic Aromatic Hydrocarbons

		Benzo(a)pyrene equivalency	Acenaphthene	Acenaphthylene	Acridine	Anthracene	Benzo(a)anthracene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(e,h,i)perylene	Benzo(g,h,i)phenanthrene	Benzo(a)pyrene	Benzo(e)pyrene	Chrysene	Dibenz(a,h)anthracene	Dibenz(a,e)pyrene	Dibenz(a,h)pyrene	Dibenz(a,i)pyrene	Dibenz(a,j)pyrene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Phenanthrene	Perylene	Pyrene	Quinoline	
Alberta Tier 1 - Potable Guidelines ¹		0.00004	1.4	NG	NG	NG	NG	NG	NG	NG	NG	0.00004 ²	NG	NG	NG	NG	NG	NG	NG	NG	0.94	NG	NG	NG	0.47	NG	NG	0.71	NG	
Sample Location	Sample Date	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	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
Alberta Tier 1 - Surface Water Quality Guidelines ³	Drinking Water	NG	1.414	NG	NG	7.07	NG	NG	NG	NG	NG	0.00004	NG	NG	NG	NG	NG	NG	NG	0.94	0.94	NG	NG	NG	0.47	NG	NG	0.707	NG	
	Aquatic Life	NG	0.0058	NG	NG	0.000012	0.000018	NG	NG	NG	NG	0.000015	NG	NG	NG	NG	NG	NG	NG	0.00004	0.003	NG	NG	NG	0.001	0.0004	NG	0.00025	NG	
	River	30-May-08	<0.0001	<0.0001	<0.0002	<0.00001	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00008	<0.00005	<0.00009	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	0.00004	0.003	NG	NG	NG	0.001	0.0004	<0.0006	<0.0002	<0.0002
Sheep River 1 (Sheep-1)	14-May-14	<0.00010	<0.00010	<0.00010	<0.00020	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00010	<0.00050	<0.00020	<0.00020	
	12-Sep-14	<0.00010	<0.00010	<0.00010	<0.00020	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00010	<0.00050	<0.00020	<0.00020	
	27-Mar-15	<0.00010	<0.00010	<0.00010	<0.00020	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00010	<0.00050	<0.00020	<0.00020	
	19-Nov-15	<0.00010	<0.00010	<0.00010	<0.00020	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00010	<0.00050	<0.00020	<0.00020	
	29-Mar-16	<0.00010	<0.00010	<0.00010	<0.00020	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00010	<0.00050	<0.00020	<0.00020	
	21-Nov-16	<0.00010	<0.00010	<0.00010	<0.00050	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00010	<0.00050	<0.00020	<0.00020	
	30-Mar-17	<0.00010	<0.00010	<0.00010	<0.00050	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00010	<0.00050	<0.00020	<0.00020	
	21-Nov-18	<0.00010	<0.00010	<0.00010	<0.00050	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.000085	<0.000075	<0.000050	<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00010	<0.00050	<0.00020	<0.00020	
	29-Mar-19																													
	21-Nov-19	<0.00010	<0.00010	<0.00010	<0.00040	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00010	<0.00050	<0.00020	<0.00020	
	30-Mar-20	<0.00010	<0.00010	<0.00010	<0.00040	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00010	<0.00050	<0.00020	<0.00020	
	26-Nov-20	<0.00010	<0.00010	<0.00010	<0.00040	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00010	<0.00050	<0.00020	<0.00020	
	31-Mar-21	<0.00010	<0.00010	<0.00010	<0.00040	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00010	<0.00050	<0.00020	<0.00020	
	Sheep River 2	20-May-14	<0.00010	<0.00010	<0.00010	<0.00020	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00010	<0.00050	<0.00020	<0.00020
		12-Sep-14	<0.00010	<0.00010	<0.00010	<0.00020	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00010	<0.00050	<0.00020	<0.00020
		25-Mar-15	<0.00010	<0.00010	<0.00010	<0.00020	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00010	<0.00050	<0.00020	<0.00020
		20-Nov-15	<0.00010	<0.00010	<0.00010	<0.00020	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00010	<0.00050	<0.00020	<0.00020
		29-Mar-16	<0.00010	<0.00010	<0.00010	<0.00020	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00010	<0.00050	<0.00020	<0.00020
		18-Nov-16	<0.00010	<0.00010	<0.00010	<0.00050	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00010	<0.00050	<0.00020	<0.00020
		29-Mar-17	<0.00010	<0.00010	<0.00010	<0.00050	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00010	<0.00050	<0.00020	<0.00020
		17-Nov-17	<0.00010	<0.00010	<0.00010	<0.00050	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00010	<0.00050	<0.00020	<0.00020
		21-Nov-18	<0.00010	<0.00010	<0.00010	<0.00050	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00010	<0.00050	<0.00020	<0.00020
		29-Mar-19	<0.00010	<0.00010	<0.00010	<0.00040	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00010	<0.00050	<0.00020	<0.00020
21-Nov-19		<0.00010	<0.00010	<0.00010	<0.00040	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00010	<0.00050	<0.00020	<0.00020	
30-Mar-20		<0.00010	<0.00010	<0.00010	<0.00040	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00010	<0.00050	<0.00020	<0.00020	
25-Nov-20		<0.00010	<0.00010	<0.00010	<0.00040	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00010	<0.00050	<0.00020	<0.00020	
31-Mar-21		<0.00010	<0.00010	<0.00010	<0.00040	<0.000010	<0.000085	<0.000085	<0.000085	<0.000085	<0.000050	<0.000075	<0.000050	<0.000085	<0.000075					<0.00010	<0.00050	<0.000085	<0.00010	<0.00010	<0.00050	<0.00010	<0.00050	<0.00020	<0.00020	

< - less than laboratory method detection limit
Bold - most stringent guideline
Exceeds Guideline
 mg/L - milligrams per litre
 NG - No Guideline

¹ Alberta Environment and Protected Areas - Alberta Tier 1 Soil and Groundwater Remediation Guidelines (AEPA 2024) for coarse-grained soils and residential/parkland
² Health Canada - Guidelines for Canadian Drinking Water Quality (Health Canada 2024)
³ Alberta Environment and Protected Areas - Alberta Tier 1 Soil and Groundwater Remediation Guidelines (AEPA 2024) - Table C-11 Surface Water Quality Guidelines

Table E.13. Historical Groundwater Analytical Results - Naturally Occurring Radioactive Materials

Alberta Tier 1 - Potable Guidelines ¹		Beryllium-7	Bismuth-210	Lead-210	Polonium-210	Radium-224 *	Radium-226	Radium-228	Thorium-228	Thorium-230	Thorium-232	Thorium-234	Uranium	Uranium-234	Uranium-235	Uranium-238
		4,000	70	0.2	0.2	2	0.5	0.5	2	0.4	0.1	20	20	4	4	4
Sample Location	Sample Date	Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	Bq/L	µg/L	Bq/L	Bq/L	Bq/L
TVR 1.1	14-Jul-10	<0.4	<0.02	<0.02	<0.005	<0.02	0.01	<0.2	<0.02	<0.02	<0.02	<0.9	1.2	0.015	0.0007	0.015
TVR 1.2	26-Aug-09		0.02	0.02	<0.005	<0.01	0.01		<0.01	<0.01	<0.01		3.1	0.038	0.0018	0.038
	18-Sep-09	<0.6						<0.2				<1				
TVR 1.3	24-Jun-08 to Current	Dry														
TVR 1.4	26-Jun-08	<0.3	<0.02	<0.03	0.007	<0.01	0.006	<0.1	<0.01	<0.01	<0.01	<3	4.4	0.054	0.0025	0.054
TVR 2.1	24-Jun-08 to Current	Insufficient Water Volume for Sampling														
TVR 2.2	24-Jun-08	<0.1	0.02	0.03	0.04	0.08	0.05	<0.1	0.08	0.06	0.06	<2	4.1	0.051	0.0024	0.051
TVR 2.3	12-Jul-10	<0.3	<0.02	<0.02	<0.005	<0.01	0.01	<0.2	<0.01	<0.01	<0.01	<3	0.5	0.006	0.0003	0.006
TVR 2.4	24-Jun-08	<0.2	<0.02	<0.03	<0.005	<0.01	<0.005	<0.1	<0.01	0.01	<0.01	<2	0.9	0.011	0.0005	0.011
TVR 3.1	12-May-10	<0.2	<0.02	<0.02	<0.005	<0.01	<0.005	<0.1	<0.01	<0.01	<0.01	<3	0.7	0.009	0.0004	0.009
TVR 3.2	24-Jun-08 to Current	Insufficient Water Volume for Sampling														
TVR 3.3	24-Jun-08	<0.2	<0.02	<0.03	<0.005	<0.01	<0.005	<0.1	<0.01	0.02	<0.01	<2	1	0.012	0.0006	0.012
TVR 4.1	14-Jul-10	<0.4	<0.02	<0.02	0.005	<0.02	<0.01	<0.2	<0.02	<0.02	<0.02	<0.8	2.6	0.032	0.0015	0.032
TVR 4.2	26-Jun-08	<0.2	<0.02	<0.03	0.02	0.02	0.02	<0.2	0.02	0.01	0.02	<0.9	3.1	0.038	0.0018	0.038
TVR 4.3	7-Jul-09					0.04			0.04	0.05	0.03					
	29-Jun-09		<0.04	<0.04	0.08											
	26-Aug-09	<0.3					<0.005	<0.1				<0.7	5.4	0.067	0.0031	0.067
TVR 4.4	24-Jun-08 to Current	Destroyed January 2011														
TVR 4.4R	15-Dec-20	<1,000		<0.10	<0.010	<0.010	<0.010	<0.50	<0.010	<0.010	<0.010	0.011	<2	0.011	<0.010	0.011
TVR 5.1	24-Jun-08 to Current	Insufficient Water Volume for Sampling														
TVR 5.2	26-Jun-08	<0.5	<0.02	<0.03	<0.005	<0.01	<0.005	<0.2	<0.01	<0.01	<0.01	<0.9	3.8	0.047	0.0022	0.047
TVR 5.3	24-Jun-08 to Current	Insufficient Water Volume for Sampling														
TVR 5.4	26-Jun-08	<0.4	<0.02	<0.03	<0.005	<0.01	<0.005	<0.2	<0.01	<0.01	<0.01	<0.7	1.8	0.022	0.001	0.022
TVR 7.2	26-Mar-15	<1,000	<40	<0.10	<0.010	<0.010	<0.010	<0.50	<0.010	<0.010	<0.010	<1.0	2	0.013	<0.010	<0.010
TVSA-02	26-Mar-15	<1,000	<40	<0.10	<0.010	<0.010	<0.010	<0.50	<0.010	<0.010	<0.010	<1.0	<1	0.012	<0.010	<0.010
TVSA-03	14-May-14	<1,000	<40	<0.10	<0.010	<0.010	<0.010	<0.50	<0.010	<0.010	<0.010	<1.0	1	0.028	<0.010	0.017
	12-Sep-14	<1,000	<40	<0.10	<0.010	<0.010	<0.010	<0.50	<0.010	<0.010	<0.010	<1.0	1	0.029	<0.010	0.017
	26-Mar-15	<1,000	<40	<0.10	<0.010	<0.010	<0.010	<0.50	<0.010	<0.010	<0.010	<1.0	<1	0.011	<0.010	<0.010
TVSA-04	15-May-14	<1,000	<40	<0.10	<0.010	<0.010	<0.010	<0.50	<0.010	0.014	<0.010	<1.0	4	0.093	<0.010	0.019
	12-Sep-14	<1,000	<40	<0.10	<0.010	<0.010	<0.010	<0.50	<0.010	<0.010	<0.010	<1.0	3	0.049	<0.010	0.034
	26-Mar-15	<1,000	<40	<0.10	<0.010	<0.010	<0.010	<0.50	<0.010	<0.010	<0.010	<1.0	4	0.101	<0.010	0.052
TVSA-06	15-May-14	<1,000	<40	<0.10	<0.010	<0.010	<0.010	<0.50	<0.010	<0.012	<0.010	<1.0	1	<0.010	0.012	<0.010
	12-Sep-14	<1,000	<40	0.10	<0.010	<0.010	<0.012	<0.50	0.011	0.017	<0.010	<1.0	5	0.034	<0.010	0.022
TVSA-07	15-May-14	<1,000	<40	<0.10	<0.010	<0.010	<0.010	<0.50	<0.010	<0.010	<0.010	<1.0	<1	<0.010	<0.010	<0.010
	12-Sep-14	<1,000	<40	<0.10	<0.010	<0.010	0.027	<0.50	<0.010	0.010	<0.010	<1.0	4	0.021	<0.010	0.019
TVSA-08	14-May-14	<1,000	<40	<0.10	<0.010	<0.010	<0.010	<0.50	<0.010	<0.010	<0.010	<1.0	<1	0.031	<0.010	0.015
	12-Sep-14	<1,000	<40	<0.10	<0.010	<0.010	<0.011	<0.50	<0.010	<0.010	<0.010	<1.0	2	0.037	<0.010	0.020
	25-Mar-15	<1,000	<40	<0.10	<0.010	<0.010	<0.010	<0.50	<0.010	<0.010	<0.010	<1.0	1	0.036	<0.010	0.017
TH-B1	18-Jun-14	<1,000	<40	<0.10	<0.010	<0.010	<0.010	<0.50	<0.010	0.016	<0.010	<1.0	4	0.15	0.012	0.033
TH-B2	18-Jun-14	<1,000	<40	<0.10	<0.010	<0.010	<0.010	<0.50	<0.010	0.01	<0.010	<1.0	<1	0.068	<0.010	<0.010
TH-B3	18-Jun-14	<1,000	<40	<0.10	<0.010	<0.010	<0.010	<0.50	<0.010	0.01	<0.010	<1.0	<1	0.046	<0.010	<0.010
SHALLOW GW INT	24-Jun-08 to Current	Dry														
DEEP GW INT	26-Jun-08	<0.3	<0.02	<0.03	<0.005	<0.01	0.01	<0.1	<0.01	<0.01	<0.01	<2	1.3	0.016	0.0007	0.016
TW5	23-Oct-08	<0.3	<0.02	<0.02	<0.005	<0.01	<0.005	<0.1	<0.01	<0.01	<0.01	<2	0.7	0.009	0.0004	0.009
TW7	23-Oct-08	<0.3	<0.02	<0.02	<0.005	<0.01	<0.005	<0.1	<0.01	<0.01	<0.01	<2	1.1	0.014	0.0006	0.014
TW8	23-Oct-08	<0.2	<0.02	<0.02	<0.005	<0.01	<0.005	<0.1	<0.01	<0.01	<0.01	<3	1	0.012	0.0006	0.012
	3-Dec-08	<0.2	<0.02	<0.05	<0.005	<0.01	<0.005	<0.2	<0.01	<0.01	<0.01	<0.7	0.8	0.01	0.0005	0.01
TW5A (TW-5A, TW5-A)	13-Feb-14	<1,000	<40	<0.10	<0.010	<0.010	<0.010	<0.50	0.012	0.011	<0.010	<1.0	na	0.028	<0.010	<0.010
VW5	14-Apr-14	<1,000	<40	<0.10	0.012	<0.010	<0.010	<0.50	0.012	0.017	<0.010	<1.0	<1	0.028	<0.010	0.012
CW8 (Culvert 8)	8-Apr-14	<1,000	<40	<0.10	<0.010	<0.010	<0.010	<0.50	<0.010	0.016	<0.010	<1.0	2	0.047	<0.010	0.022
TVR Pit #1 (TVR PIT)	4-Jun-14	<1,000	na	<0.10	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<1.0	<1	0.025	0.017	<0.010

Alberta Tier 1 - Surface Water Quality Guidelines ²	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG
Sheep River																
Sheep River 1 (Sheep-1)	14-May-14	<1,000	<40	<0.10	<0.010	<0.010	<0.010	<0.50	<0.010	<0.010	<0.010	<1.0	<1	<0.010	<0.010	<0.010
	12-Sep-14	<1,000	<40	<0.10	<0.010	<0.010	<0.010	<0.50	<0.010	0.014	<0.010	<1.0	<1	<0.010	<0.010	<0.010
	26-Mar-15	<1,000	<40	<0.10	<0.010	<0.010	<0.010	<0.50	<0.010	<0.010	<0.010	<1.0	<1	0.020	<0.010	0.011
Sheep River 2	12-Sep-14	<1,000	<40	<0.10	<0.010	<0.010	<0.010	<0.50	<0.010	<0.010	<0.010	<1.0	<1	0.020	<0.010	<0.010
	26-Mar-15	<1,000	<40	<0.10	<0.010	<0.010	<0.010	<0.50	<0.010	<0.010	<0.010	<1.0	<1	<0.010	<0.010	<0.010

Notes:
Bold - most stringent guideline
¹ - Alberta Environment and Protected Areas - Alberta Tier 1 Soil and Groundwater Remediation Guidelines (AEPA 2024) for coarse-grained soil, residential/parkland land use
² - Alberta Environment and Protected Areas - Alberta Tier 1 Soil and Groundwater Remediation Guidelines (AEPA 2024) - Table C-11 Surface Water Quality Guidelines
< - less than laboratory method detection limit
Bq/L - Becquerel Per Litre
µg/L - micrograms per litre
NG - no guideline
* Due to short half-life of Radium-224, Radium-224 is equal to or less than Thorium-228 for data from 2008 to 2010

Appendix E - Tables
February 2025[illegible]

Bold - most stringent guideline

mg/L - milligrams per litre

NG - no guideline

Italicized - Laboratory reporting limit was greater than the applicable standard

< - less than laboratory method detection limit

¹ - Alberta Environment and Protected Areas - Alberta Tier 1 Soil and Groundwater Remediation Guidelines (AEPA 2024) for coarse-grained soils, residential/parkland land use

² - Alberta Environment and Protected Areas - Alberta Tier 1 Soil and Groundwater Remediation Guidelines (AEPA 2024) - Table C-11 Surface Water Quality Guidelines

Table E.15. Historical Groundwater Analytical Results - Phenols

		Total Phenols	Phenol	3 & 4-chloro phenol	2,3,5,6-tetrachloro phenol	2,3,4,6 + 2,3,4,5-Tetrachloro phenol	2,4,5-trichloro phenol	2,4,6-trichloro phenol	2,3,5-trichloro phenol	2,3,4-trichloro phenol	2,4-dichloro phenol	2,4-dimethyl phenol	2,4-dinitro phenol	2,6-dichlorophe nol	2-chloro phenol	2-methyl phenol	3 & 4-methyl phenol	4,6-dinitro-2-methyl phenol	4-chloro-3-methyl phenol	4-nitro phenol	Pentachloro phenol
Alberta Tier 1 - Potable Guidelines ¹		NG	0.57	NG	NG	0.001	NG	0.002	NG	NG	0.0003	NG	NG	NG	NG	NG	NG	NG	NG	NG	0.03
Sample Location	Sample Date	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
TVR 1.1	22-Aug-07	Insufficient Water Volume for Sampling																			
TVR 1.2	22-Aug-07	0.002																			
TVR 1.3	22-Aug-07	Dry																			
TVR 1.4	23-Nov-07		0.00058	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.0010	<0.00010
TVR 2.1	22-Aug-07	Insufficient Water Volume for Sampling																			
TVR 2.2	22-Aug-07	<0.002																			
	23-Nov-07		0.0019	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.0010	<0.00010
TVR 2.3	22-Aug-07	Insufficient Water Volume for Sampling																			
TVR 2.4	23-Nov-07		0.0029	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.0010	<0.00010
TVR 3.1	22-Aug-07	Insufficient Water Volume for Sampling																			
TVR 3.2	22-Aug-07	0.003																			
	23-Nov-07		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.004	<0.00010	<0.00010	<0.00010	<0.00010	0.006	<0.00010	<0.00010	<0.0010	<0.00010
TVR 3.3	23-Nov-07		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.0010	<0.00010
TVR 4.1	23-Nov-07		0.00048	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.0010	<0.00010
TVR 4.2	23-Nov-07		0.001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.0010	<0.00010
TVR 4.3	22-Aug-07	Insufficient Water Volume for Sampling																			
TVR 4.4	23-Nov-07		<0.00014	<0.00014	<0.00014	<0.00014	<0.00014	<0.00014	<0.00014	<0.00014	<0.00014	<0.00014	<0.00014	<0.00014	<0.00014	<0.00014	<0.00014	<0.00014	<0.00014	<0.0014	<0.00014
TVR 5.1	22-Aug-07	Insufficient Water Volume for Sampling																			
TVR 5.2	23-Nov-07		0.002	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.0010	<0.00010
TVR 5.3	22-Aug-07	Insufficient Water Volume for Sampling																			
TVR 5.4	22-Aug-07	Insufficient Water Volume for Sampling																			

Alberta Tier 1 - Aquatic Life Guidelines ¹		NG	0.004	NG	NG	0.001	NG	0.018	NG	NG	0.0002	NG	NG	NG	NG	NG	NG	NG	NG	NG	0.0005
SHALLOW GW INT	22-Aug-07	Dry																			
DEEP GW INT	23-Nov-07		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.0010	<0.00010

Notes:

< - less than laboratory method detection limit

¹ - Alberta Environment and Protected Areas - Alberta Tier 1 Soil and Groundwater Remediation Guidelines (AEPA 2024) for coarse-grained soils, residential/parkland land use

Table E.16. Historical Groundwater Analytical Results - Volatile Organic Compounds

		Benzene	2-Butanone (MEK)	Carbon disulfide	Carbon tetrachloride	Chloro benzene	Dichlorom ethane	Cyclo hexanone	Ethyl acetate	Ethyl benzene	Ethyl ether	4-Methyl- pentanone (MIBK)	2-Nitro propane	Tetra chloroethene	Toluene	1, 1, 1- trichloroethane	1,1,2-trichloroethane	Tri chloroethene	m & p- Xylene	o-Xylene
Alberta Tier 1 - Potable Guidelines ¹		0.005	NG	NG	0.002	0.03	0.05	NG	NG	0.0016	NG	NG	NG	0.005	0.024	NG	NG	0.005	NG	NG
Sample Location	Sample Date	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
TVR 1.1	23-Nov-07	Insufficient Water Volume for Sampling																		
TVR 1.2	23-Nov-07	Insufficient Water Volume for Sampling																		
TVR 1.3	23-Nov-07	Dry																		
TVR 1.4	23-Nov-07	<0.0004	<0.050	<0.0040	<0.00040	<0.00040	<0.0040	<0.50	<0.010	<0.00040	<0.00040	<0.025	<0.25	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00080	<0.00040
TVR 2.1	23-Nov-07	Insufficient Water Volume for Sampling																		
TVR 2.2	23-Nov-07	0.00059	<0.050	<0.0040	<0.00040	<0.00040	<0.0040	<0.50	<0.010	<0.00040	<0.00040	<0.025	<0.25	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00080	<0.00040
TVR 2.3	23-Nov-07	Insufficient Water Volume for Sampling																		
TVR 2.4	23-Nov-07	<0.0004	<0.050	<0.0040	<0.00040	<0.00040	<0.0040	<0.50	<0.010	<0.00040	<0.00040	<0.025	<0.25	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00080	<0.00040
TVR 3.1	23-Nov-07	Insufficient Water Volume for Sampling																		
TVR 3.2	23-Nov-07	<0.0004	<0.050	<0.0040	<0.00040	<0.00040	<0.0040	<0.50	<0.010	<0.00040	<0.00040	<0.025	<0.25	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00080	<0.00040
TVR 3.3	23-Nov-07	<0.0004	<0.050	<0.0040	<0.00040	<0.00040	<0.0040	<0.50	<0.010	<0.00040	<0.00040	<0.025	<0.25	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00080	<0.00040
TVR 4.1	23-Nov-07	<0.0004	<0.050	<0.0040	<0.00040	<0.00040	<0.0040	<0.50	<0.010	<0.00040	<0.00040	<0.025	<0.25	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00080	<0.00040
TVR 4.2	23-Nov-07	<0.0004	<0.050	<0.0040	<0.00040	<0.00040	<0.0040	<0.50	<0.010	<0.00040	<0.00040	<0.025	<0.25	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00080	<0.00040
TVR 4.3	23-Nov-07	Insufficient Water Volume for Sampling																		
TVR 4.4	23-Nov-07	<0.0004	<0.050	<0.0040	<0.00040	<0.00040	<0.0040	<0.50	<0.010	<0.00040	<0.00040	<0.025	<0.25	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00080	<0.00040
TVR 5.1	23-Nov-07	Insufficient Water Volume for Sampling																		
TVR 5.2	23-Nov-07	<0.0004	<0.050	<0.0040	<0.00040	<0.00040	<0.0040	<0.50	<0.010	<0.00040	<0.00040	<0.025	<0.25	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00080	<0.00040
TVR 5.3	23-Nov-07	Insufficient Water Volume for Sampling																		
TVR 5.4	23-Nov-07	Insufficient Water Volume for Sampling																		
Alberta Tier 1 - Potable Guidelines ¹		0.005	NG	NG	0.002	0.03	0.05	NG	NG	0.0016	NG	NG	NG	0.005	0.024	NG	NG	0.005	NG	NG
Alberta Tier 1 - Aquatic Life Guidelines ¹		0.074	NG	NG	0.013	0.0013	0.098	NG	NG	41	NG	NG	NG	0.11	0.021	NG	NG	0.029	NG	NG
SHALLOW GW INT	23-Nov-07	Dry																		
DEEP GW INT	23-Nov-07	<0.0004	<0.050	<0.0040	<0.00040	<0.00040	<0.0040	<0.50	<0.010	<0.00040	<0.00040	<0.025	<0.25	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00080	<0.00040

Notes:
< - less than laboratory method detection limit
¹ - Alberta Environment and Protected Areas, formerly Alberta Environment and Parks - Alberta Tier 1 Soil and Groundwater Remediation Guidelines (AEPA 2024) for coarse-grained soils, residential/parkland land use

SHEEP RIVER REGIONAL UTILITY CORPORATION
2024 ANNUAL REPORT FOR STORED RAW WATER, RESERVOIR SITE GROUNDWATER, WELL AND INFILTRATION
GALLERY WATER MONITORING PROGRAMS - DIAMOND VALLEY APPROVAL LICENSE NO. 1242-03-00

Appendix E - Tables
February 2025

Table E.17. Historical Groundwater Analytical Results - Solvents

		Acetone	Methanol	Isopropanol	n-Butyl Alcohol	Isobutanol	Nitrobenzene	Pyridine
Alberta Tier 1 - Potable Guidelines ¹		NG	19	NG	NG	NG	NG	NG
Sample Location	Sample Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
TVR 1.1	23-Nov-07	Insufficient Water Volume for Sampling						
TVR 1.2	23-Nov-07	Insufficient Water Volume for Sampling						
TVR 1.3	23-Nov-07	Dry						
TVR 1.4	23-Nov-07	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
TVR 2.1	23-Nov-07	Insufficient Water Volume for Sampling						
TVR 2.2	23-Nov-07	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
TVR 2.3	23-Nov-07	Insufficient Water Volume for Sampling						
TVR 2.4	23-Nov-07	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
TVR 3.1	23-Nov-07	Insufficient Water Volume for Sampling						
TVR 3.2	23-Nov-07	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
TVR 3.3	23-Nov-07	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
TVR 4.1	23-Nov-07	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
TVR 4.2	23-Nov-07	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
TVR 4.3	23-Nov-07	Insufficient Water Volume for Sampling						
TVR 4.4	23-Nov-07	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
TVR 5.1	23-Nov-07	Insufficient Water Volume for Sampling						
TVR 5.2	23-Nov-07	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
TVR 5.3	23-Nov-07	Insufficient Water Volume for Sampling						
TVR 5.4	23-Nov-07	Insufficient Water Volume for Sampling						

Alberta Tier 1 - Potable Guidelines ¹		NG	19	NG	NG	NG	NG	NG
Alberta Tier 1 - Aquatic Life Guidelines ¹		NG	32	NG	NG	NG	NG	NG
SHALLOW GW INT	23-Nov-07	Dry						
DEEP GW INT	23-Nov-07	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

Notes:

< - less than laboratory method detection limit

¹ - Alberta Environment and Protected Areas, formerly Alberta Environment and Parks - Alberta Tier 1 Soil and Groundwater Remediation Guidelines (AEPA 2024) for coarse-grained soils, residential/parkland land use

Table E.18. Select* Historical Parameters Exceedances In TVR/TVSA Wells - More Than Once or Last Sampling Event

Well	Parameter	Units	Health Canada Guidelines ¹ - Potable	Date	Value	Status
TVR 1.2	Dissolved Manganese	mg/L	0.12 ^{MAC}	22-Aug-07	0.31	Adequate Water
				4-Mar-08	0.32	
				23-May-08	0.14	
				28-Jul-08	0.21	
				24-Mar-09	0.13	
				25-Sep-09	0.13	
				20-Nov-18	0.25	
TVR 1.4	Colour	PtCo	≤15 TCU ^{AO}	4-Mar-08	18	Low Water Volume
	Dissolved Manganese	mg/L	0.12 ^{MAC}	28-Jul-08	18	
				7-Sep-07	0.208	
				23-Nov-07	0.28	
				4-Mar-08	0.35	
				23-May-08	0.53	
				28-Jul-08	0.49	
				9-Sep-08	0.64	
				26-Nov-08	2.7	
				20-Jan-09	0.45	
				24-Mar-09	0.53	
				19-May-09	0.5	
				21-May-09	0.5	
				20-Jul-09	0.53	
				25-Sep-09	0.55	
				16-Nov-09	0.93	
				10-May-10	0.68	
				12-May-10	0.63	
				12-Jul-10	0.63	
				23-Jan-12	1.1	
TVR 2.2	Dissolved Aluminum	mg/L	0.1 ^{OG}	18-Jan-10	0.33	Adequate Water
				25-Jan-12	0.29	
				20-Nov-19	0.52	
	Dissolved Manganese	mg/L	0.12 ^{MAC}	22-Aug-07	0.34	
				23-Nov-07	0.43	
				4-Mar-08	0.41	
				28-Jul-08	0.31	
TVR 2.3	Dissolved Manganese	mg/L	0.12 ^{MAC}	11-Sep-14	0.14	Typically Dry
				20-Nov-19	0.27	
				28-Jul-08	0.70	
				11-Jul-11	0.57	
TVR 2.4	Dissolved Antimony	mg/L	0.006 ^{MAC}	11-Jul-13	0.31	Adequate Water
				24-Jul-14	0.66	
TVR 3.1	Dissolved Aluminum	mg/L	0.1 ^{OG}	22-Aug-07	0.0104	Low Water Volume
	Dissolved Manganese	mg/L	0.12 ^{MAC}	7-Sep-07	0.0073	
				24-Nov-08	0.14	
				20-Nov-19	0.11	
				4-Mar-08	0.56	
				28-Jul-08	0.12	
				24-Nov-08	0.35	
				26-Nov-08	0.28	
				20-Jan-09	0.43	
				7-Nov-10	0.18	
				24-Jan-11	0.30	
				26-Jan-11	0.22	
				16-Mar-11	0.21	
				23-Jan-12	0.12	
				29-Mar-16	0.53	
				18-Nov-16	0.35	
				23-Jul-18	1.4	
				16-Jul-19	0.38	
				20-Aug-19	1.6	
				20-Nov-19	0.98	
				6-Dec-19	1.8	
				27-Jul-20	0.66	
				10-Aug-20	1.7	
				30-Mar-21	0.47	

Table E.18. Select* Historical Parameters Exceedances In TVR/TVSA Wells - More Than Once or Last Sampling Event

Well	Parameter	Units	Health Canada Guidelines ¹ - Potable	Date	Value	Status
TVR 3.2	Dissolved Manganese	mg/L	0.12 ^{MAC}	22-Aug-07	0.34	Low Water Volume
				23-Nov-07	0.48	
				4-Mar-08	0.37	
				23-May-08	0.6	
				20-Jan-09	0.3	
TVR 3.3	Dissolved Selenium	mg/L	0.05 ^{MAC}	9-Sep-08	0.8	Adequate Water
				24-Nov-08	0.7	
TVR 4.1	Dissolved Manganese	mg/L	0.12 ^{MAC}	22-Aug-07	1.27	Adequate Water
				23-Nov-07	0.52	
				4-Mar-08	0.8	
				1-Aug-08	0.69	
				9-Sep-08	0.38	
				13-Jul-11	0.51	
				19-Jul-12	0.29	
				12-Jul-13	0.13	
				24-Jul-14	0.20	
				16-Jul-19	0.32	
				20-Nov-19	0.12	
				6-Dec-19	0.25	
				31-Mar-20	0.47	
				14-Apr-20	0.23	
				27-Jul-20	0.19	
				10-Aug-20	0.20	
				24-Nov-20	0.61	
				15-Dec-20	0.97	
				30-Mar-21	1.1	
				13-Apr-21	1.8	
TVR 4.2	Dissolved Manganese	mg/L	0.12 ^{MAC}	22-Aug-07	0.47	Typically Dry
				23-Nov-07	0.53	
				23-May-08	0.25	
				6-Mar-08	0.43	
				24-Nov-08	0.20	
				24-Mar-09	0.19	
				19-May-09	0.13	
TVR 4.3	Dissolved Manganese	mg/L	0.12 ^{MAC}	22-Aug-07	0.26	Low Water Volume
				6-Mar-08	0.39	
				24-Nov-08	0.25	
				26-Nov-08	0.25	
				19-Jan-09	0.19	
				24-Mar-09	0.13	
				19-May-09	0.13	
				13-Jul-11	1.2	
				19-Jul-12	0.45	
				12-Jul-13	0.59	
				23-Jul-18	0.60	
				27-Jul-20	0.98	
				10-Aug-20	1.10	
	Benzo(a)pyrene equivalency	mg/L	0.00004 ²	23-Jul-18	0.00021	
				9-Aug-18	0.00022	
				21-Nov-18	0.000066	
	Benzo(a)pyrene	mg/L	0.00004 ^{MAC}	23-Jul-18	0.00016	
				9-Aug-18	0.00016	
				21-Nov-18	0.000049	
TVR 4.4	Dissolved Aluminum	mg/L	0.1 ^{OG}	6-Mar-08	0.2	Typically Dry (Destroyed)
				1-Aug-08	2.1	
	Dissolved Nitrate-N	mg/L	10 ^{MAC}	6-Mar-08	17.7	
				1-Aug-08	21	
				16-Nov-09	18	

Table E.18. Select* Historical Parameters Exceedances In TVR/TVSA Wells - More Than Once or Last Sampling Event

Well	Parameter	Units	Health Canada Guidelines ¹ - Potable	Date	Value	Status
TVR 4.4R	Dissolved Manganese	mg/L	0.12 ^{MAC}	16-Nov-17	0.12	Adequate Water
				23-Jul-18	0.16	
				21-Nov-18	0.20	
				7-Dec-18	0.19	
				16-Jul-19	0.28	
				20-Aug-19	0.24	
				20-Nov-19	0.16	
				6-Dec-19	0.21	
				27-Jul-20	0.23	
				10-Aug-20	0.25	
				24-Nov-20	0.15	
				15-Dec-20	0.41	
TVR 5.2	Dissolved Manganese	mg/L	0.12 ^{MAC}	23-Nov-07	0.76	Adequate Water (Decommissioned)
				6-Mar-08	0.54	
				28-Jul-08	0.13	
				26-Nov-08	0.28	
				19-Jan-09	0.20	
				24-Mar-09	0.13	
TVR 5.2R	Dissolved Manganese	mg/L	0.12 ^{MAC}	18-Nov-16	5.7	Typically Dry
				23-Jul-18	5.0	
				27-Jul-20	4.5	
	Colour	PtCo	≤15 TCU ^{AO}	23-Jul-18	360	
				27-Jul-20	620	
TVR 5.3	Dissolved Manganese	mg/L	0.12 ^{MAC}	28-Jul-08	0.26	Typically Dry
				19-May-09	0.27	
				21-May-09	0.16	
				11-Jul-11	7.2	
				13-Jul-11	6.7	
				12-Jul-13	0.8	
	Dissolved Sulphate	mg/L	≤500 ^{AO}	13-Jul-11	1,500	
				12-Jul-13	1,700	
TVR 5.4	Dissolved Manganese	mg/L	0.12 ^{MAC}	6-Mar-08	0.19	Typically Dry
				28-Jul-08	0.36	
				9-Sep-08	0.23	
				24-Nov-08	0.28	
				19-Jan-09	0.35	
				21-May-09	0.31	
				16-Nov-09	0.17	
				17-Mar-10	0.13	
	Dissolved Antimony	mg/L	0.006 ^{MAC}	22-Aug-07	0.0089	
				7-Sep-07	0.0078	
TVR 7.2	Dissolved Manganese	mg/L	0.12 ^{MAC}	26-Mar-15	1.5	Adequate Water
				14-Jul-15	0.97	
				19-Nov-15	0.64	
				29-Mar-16	0.45	
				22-Jul-16	0.30	
				18-Nov-16	0.28	
TVSA-04	Dissolved Manganese	mg/L	0.12 ^{MAC}	15-May-14	0.93	Adequate Water
				12-Sep-14	0.72	
				20-Nov-15	1.0	
				28-Mar-16	1.9	
				21-Nov-16	2.3	
				15-Nov-17	2.0	
				22-Nov-18	1.1	
				21-Nov-19	1.3	
				6-Dec-19	1.1	
				30-Mar-20	1.1	
				25-Nov-20	0.79	
				31-Mar-21	0.90	
TVSA-06	Dissolved Manganese	mg/L	0.12 ^{MAC}	12-Sep-14	0.16	Adequate Water
				20-Nov-15	0.42	
				28-Mar-16	0.33	
				21-Nov-16	0.39	
				29-Mar-17	0.34	
				30-Mar-21	0.14	

Table E.18. Select* Historical Parameters Exceedances In TVR/TVSA Wells - More Than Once or Last Sampling Event

Well	Parameter	Units	Health Canada Guidelines ¹ - Potable	Date	Value	Status
TVSA-08	Benzo(a)pyrene equivalency	mg/L	0.00004 ²	21-Nov-16	0.000029	Adequate Water
				15-Nov-17	0.000036	
TH-B1	Dissolved Antimony	mg/L	0.006 ^{MAC}	14-May-14	0.0086	Adequate Water
				6-Apr-16	0.010	
	Benzo(a)pyrene equivalency	mg/L	0.00004 ²	21-Nov-16	0.000023	
				16-Nov-17	0.000017	
TH-B2	Dissolved Manganese	mg/L	0.12 ^{MAC}	14-May-14	0.30	Adequate Water
				6-Apr-16	0.25	
				30-Mar-17	0.20	
				16-Nov-17	0.20	
				19-Apr-18	0.17	
				22-Nov-18	0.17	
				28-Mar-19	0.17	
				20-Nov-19	0.14	
				6-Dec-19	0.15	
				30-Mar-20	0.18	
				14-Apr-20	0.14	
				25-Nov-20	0.15	
				31-Mar-21	0.14	
	Dissolved Sulphate	mg/L	≤500 ^{AO}	6-Apr-16	560	
				30-Mar-17	570	
TW3 (decommissioned)	Benzo[a]pyrene equivalency	mg/L	0.00004 ²	16-Dec-13	0.0028	Adequate Water
				20-Dec-13	0.0039	
				5-Feb-14	0.0026	
				6-Apr-16	0.00055	
				21-Nov-16	0.00035	
				30-Mar-17	0.0024	
				15-Nov-17	0.00031	
				30-Nov-17	0.000090	
				19-Apr-18	0.00047	
				1-May-18	0.00018	
	Benzo(a)pyrene	mg/L	0.00004 ^{MAC}	16-Dec-13	0.002	
				20-Dec-13	0.0029	
				5-Feb-14	0.0019	
				6-Apr-16	0.0004	
				21-Nov-16	0.00026	
				30-Mar-17	0.0018	
				15-Nov-17	0.00023	
				30-Nov-17	0.000071	
				19-Apr-18	0.00034	
				1-May-18	0.00013	
TW5A	Dissolved Manganese	mg/L	0.12 ^{MAC}	8-Jun-16	0.18	Adequate Water
				13-Dec-16	0.29	
				14-Jun-17	0.28	
				13-Jun-18	0.13	
				24-Jun-19	0.23	
				6-Dec-19	0.26	
				16-Dec-19	0.28	
				15-Dec-20	0.17	
				23-Jun-21	0.27	
				9-Jun-22	0.25	
				21-Jun-22	0.27	
				13-Dec-23	0.1323	
				12-Jun-24	0.2921	
	Dissolved Sulphate	mg/L	≤500 ^{AO}	12-Jun-24	542.9	

Notes:

AO - Aesthetic Objective
MAC - Maximum Allowable Concentration
PtCo - Platinum-Cobalt Units
OG - Operational Guidance Values

¹- Health Canada - Guidelines for Canadian Drinking Water Quality (Health Canada 2024)

²- Alberta Environment and Protected Areas (formerly Alberta Environment and Parks) Guidelines - Alberta Tier 1 Soil and Groundwater Remediation Guidelines (AEPA 2024) for coarse-grained soils and residential/parkland use - potable use

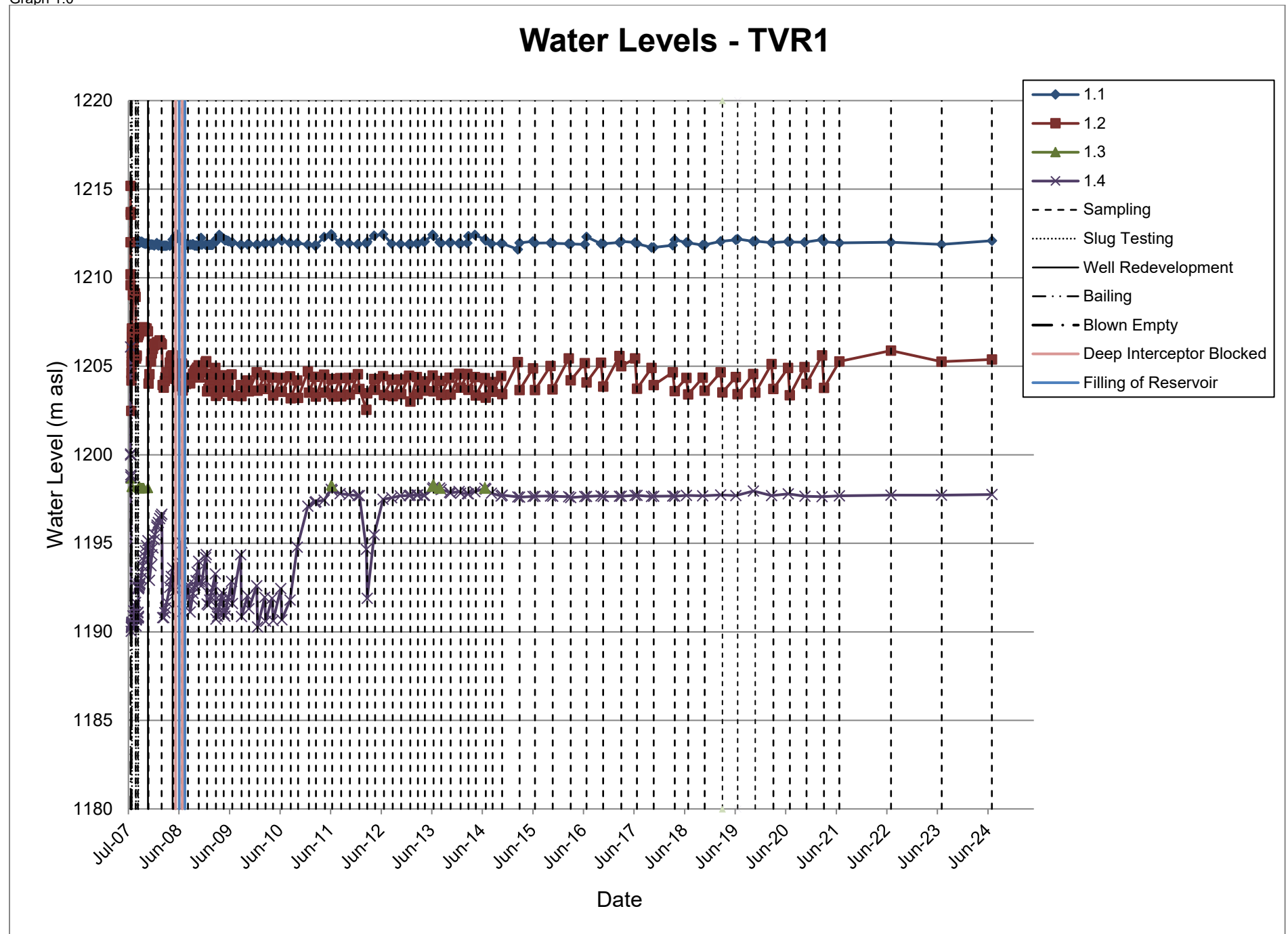
*- AO exceedances of pH, TDS, iron and manganese were not included in the table since elevated concentrations are a common occurrence for the shallow groundwater in this area
Sodium was not included in the table since elevated concentrations are likely a natural occurrence of bedrock in this area

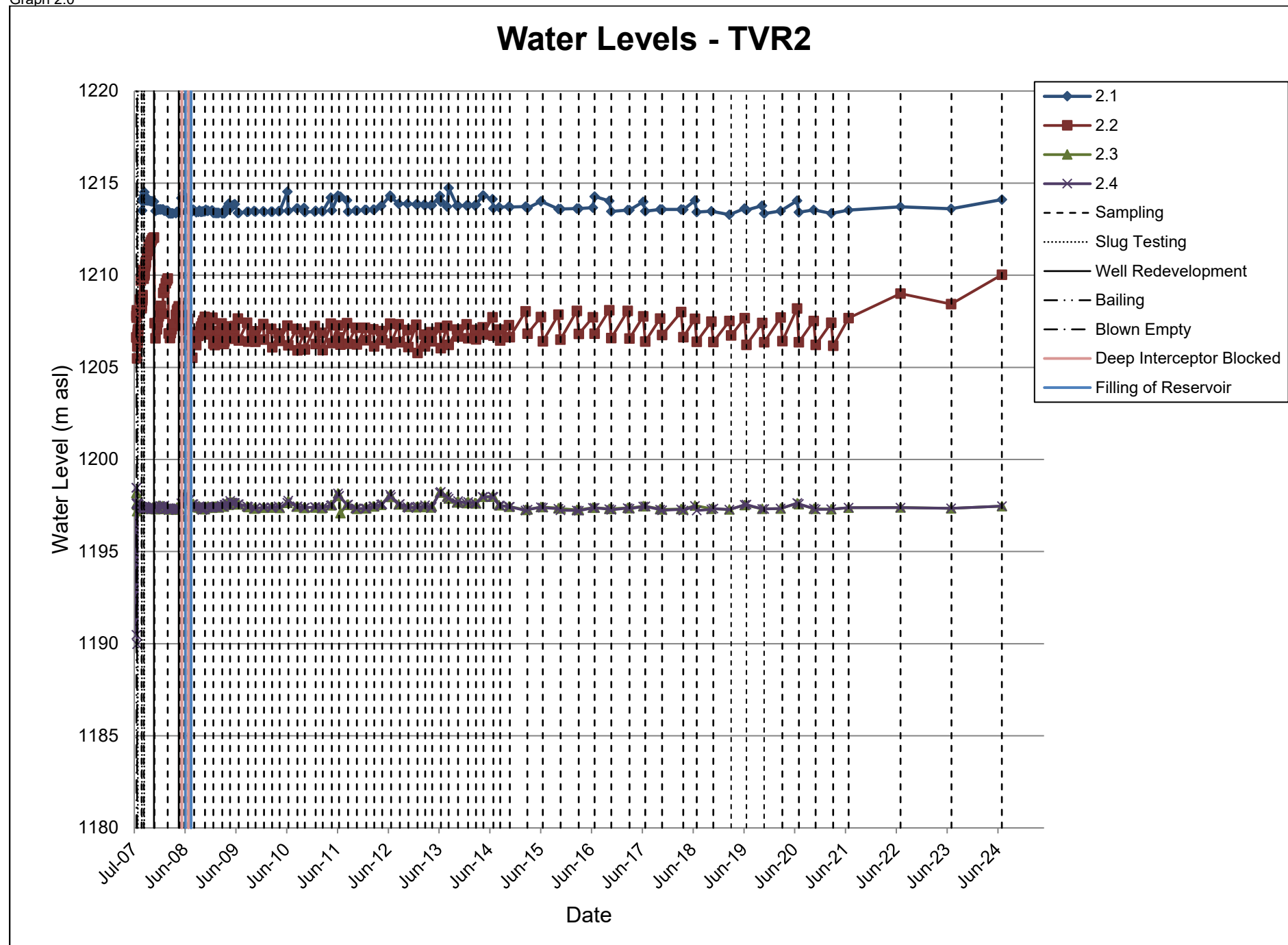


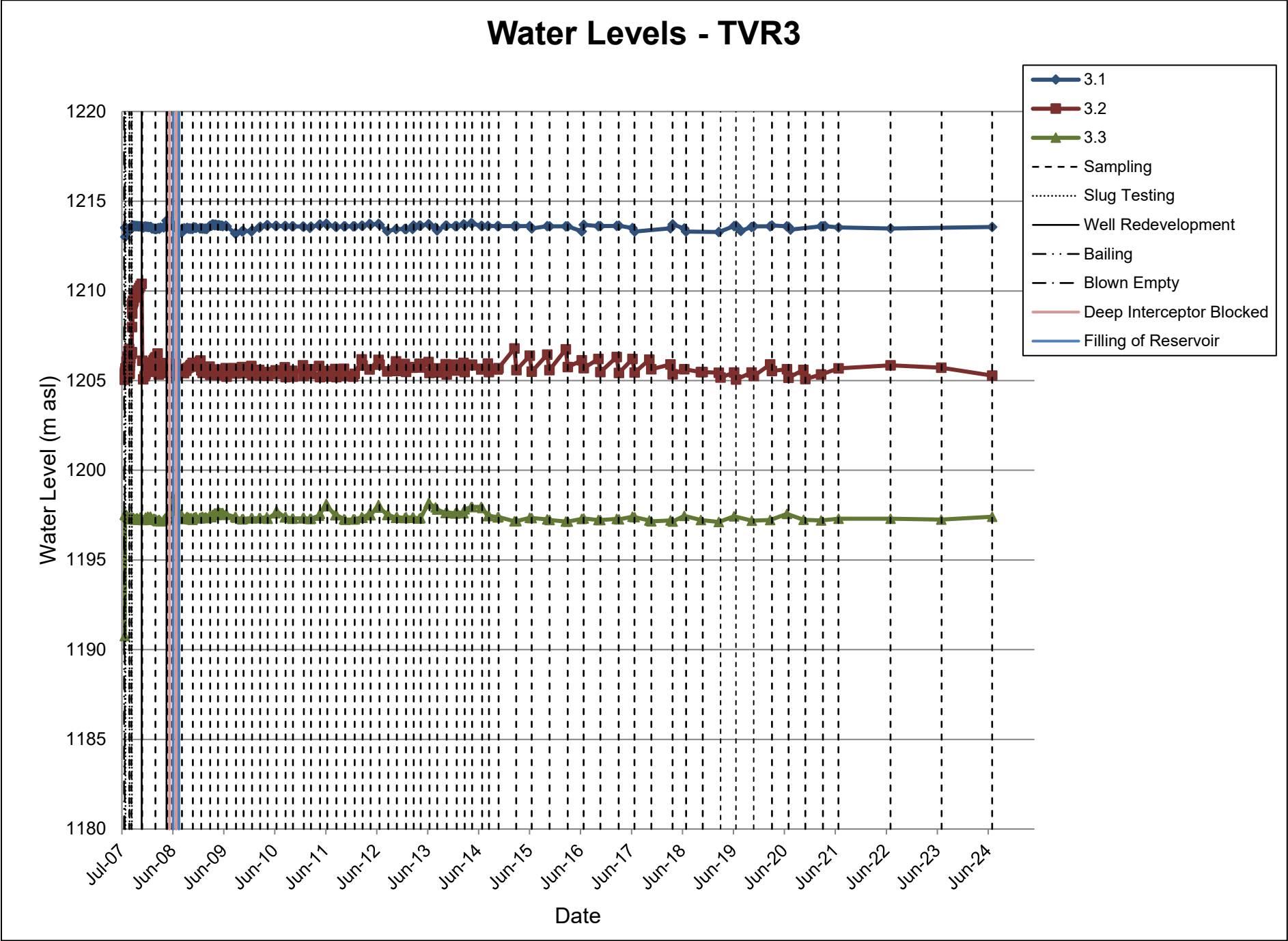
Appendix F

Water Level Charts

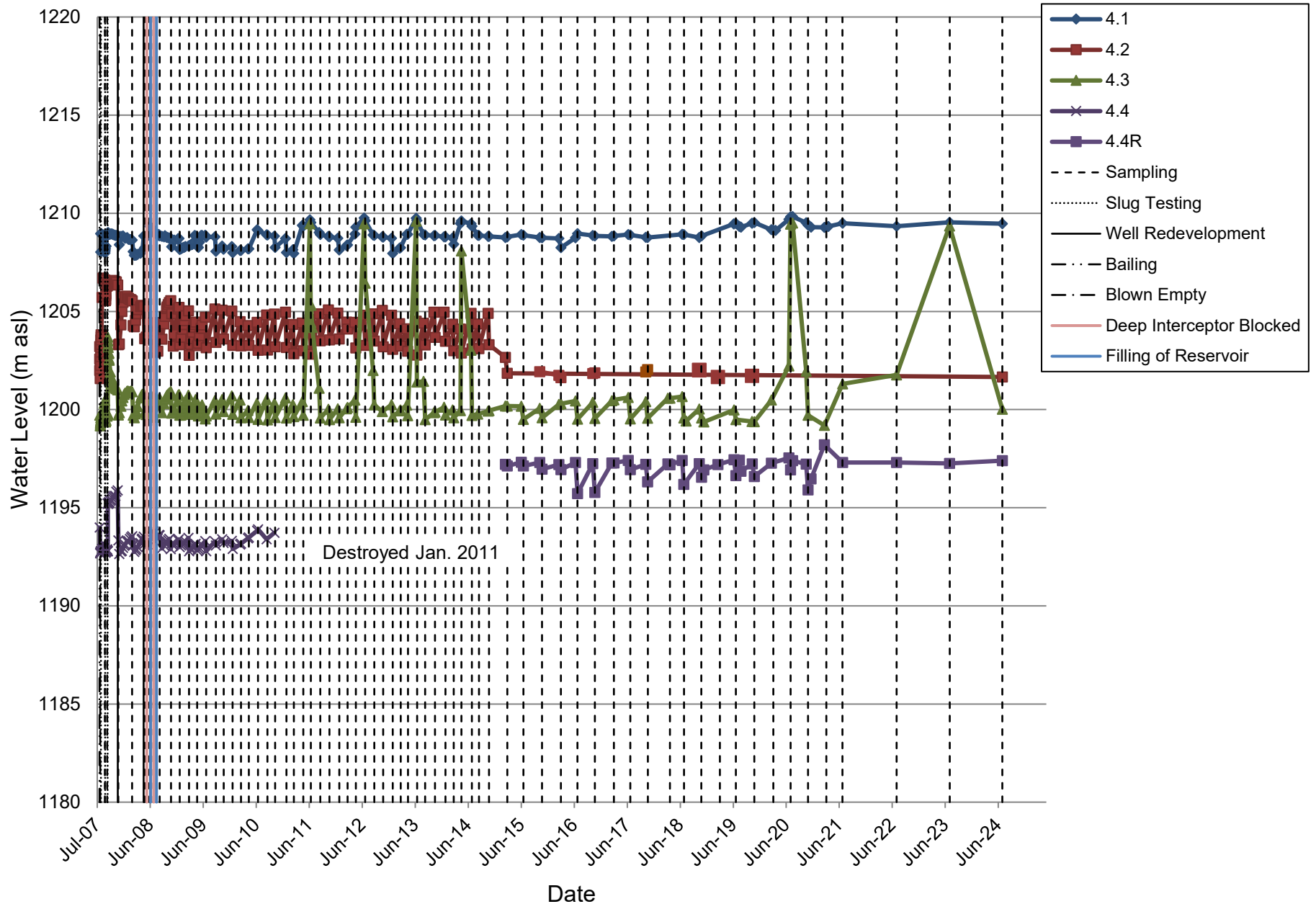




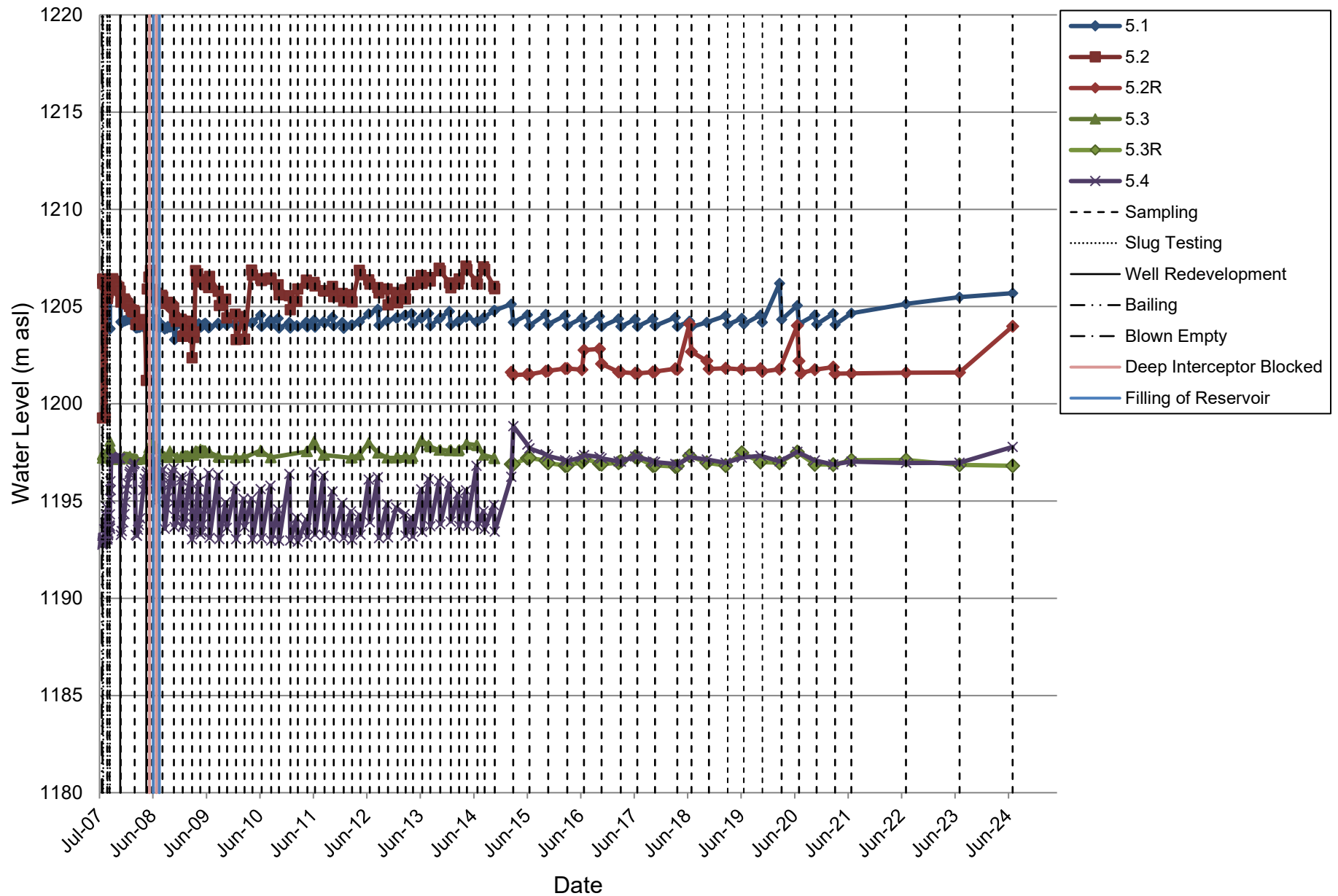




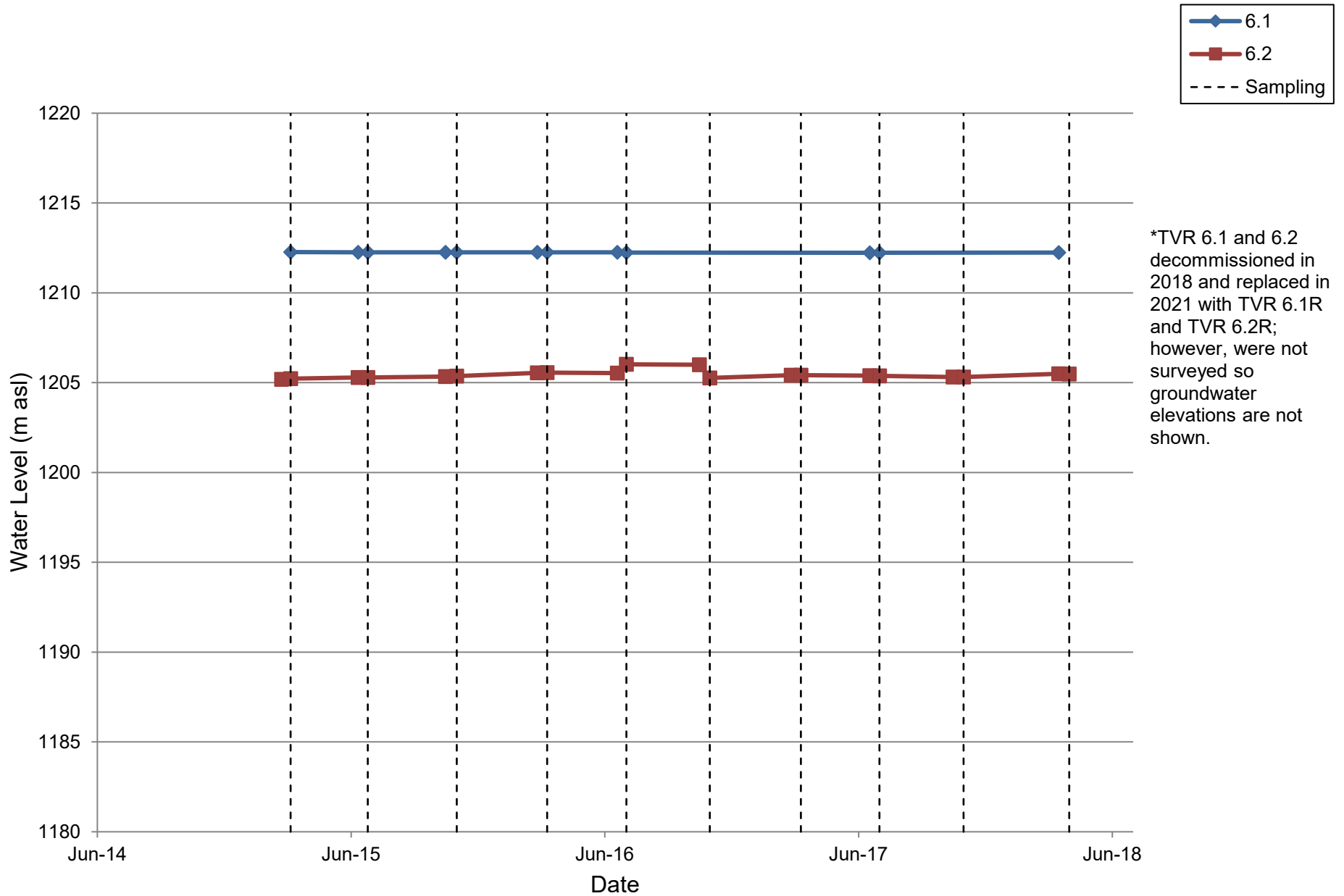
Water Levels - TVR4

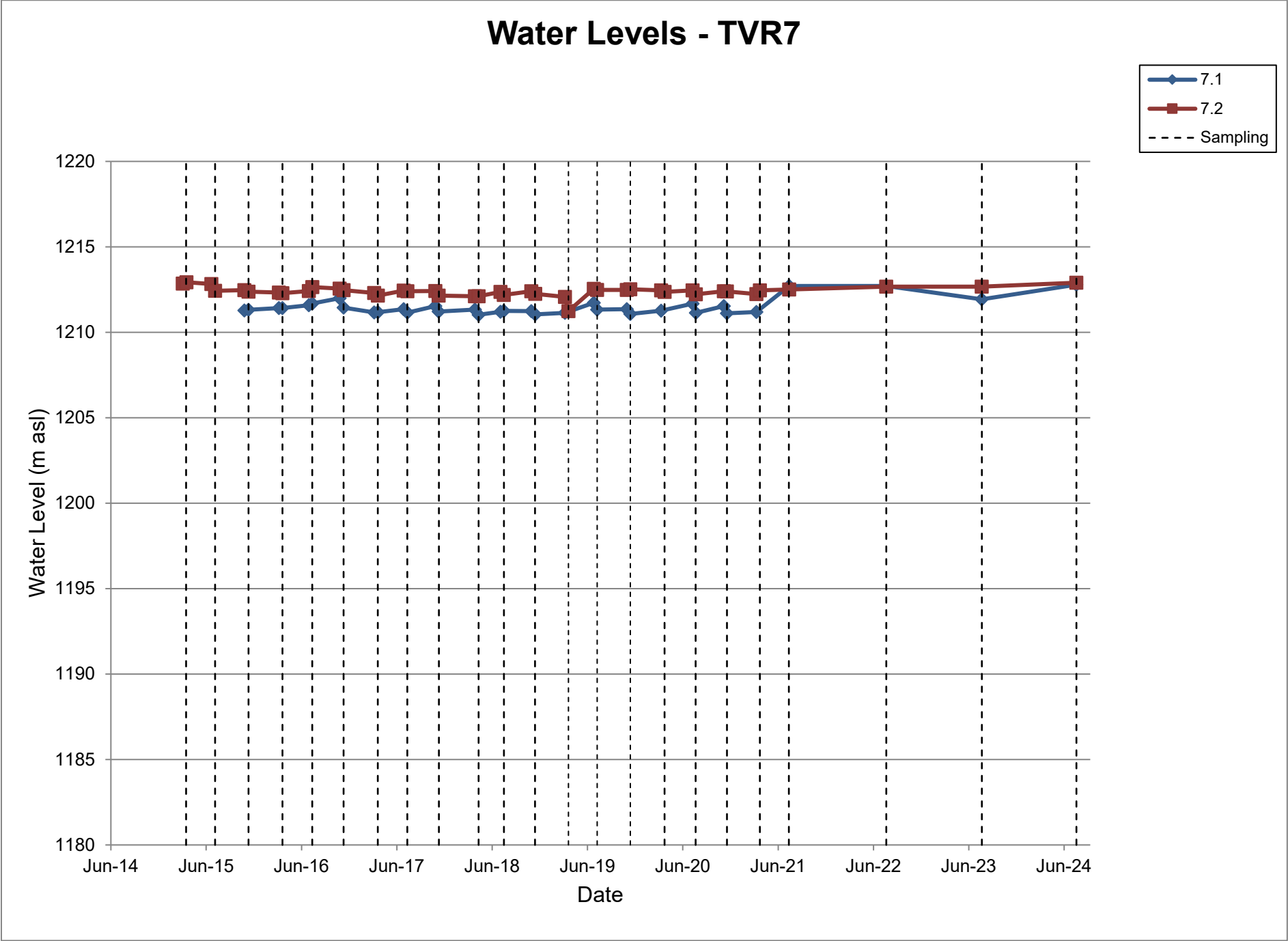


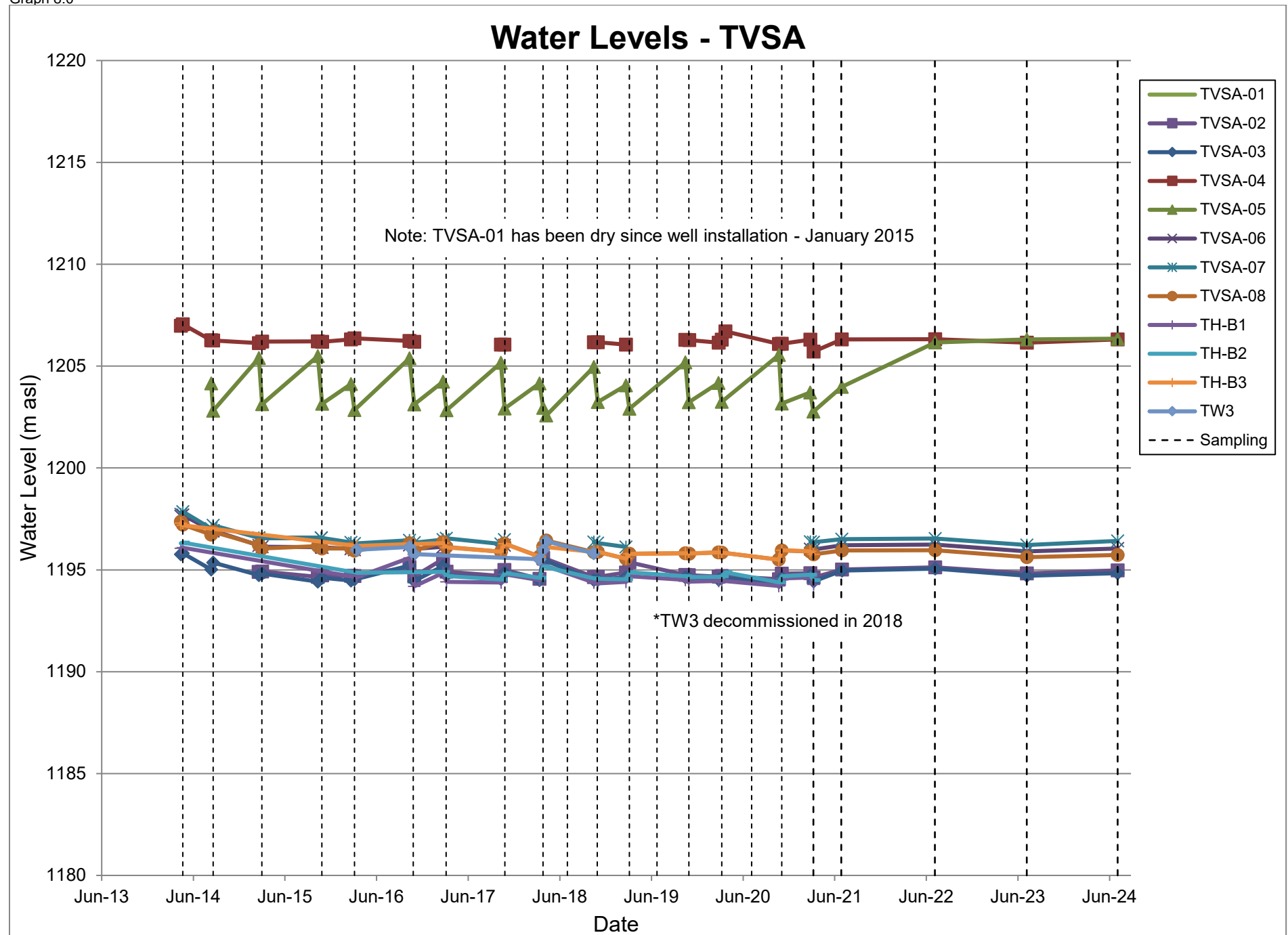
Water Levels - TVR5



Water Levels - TVR6







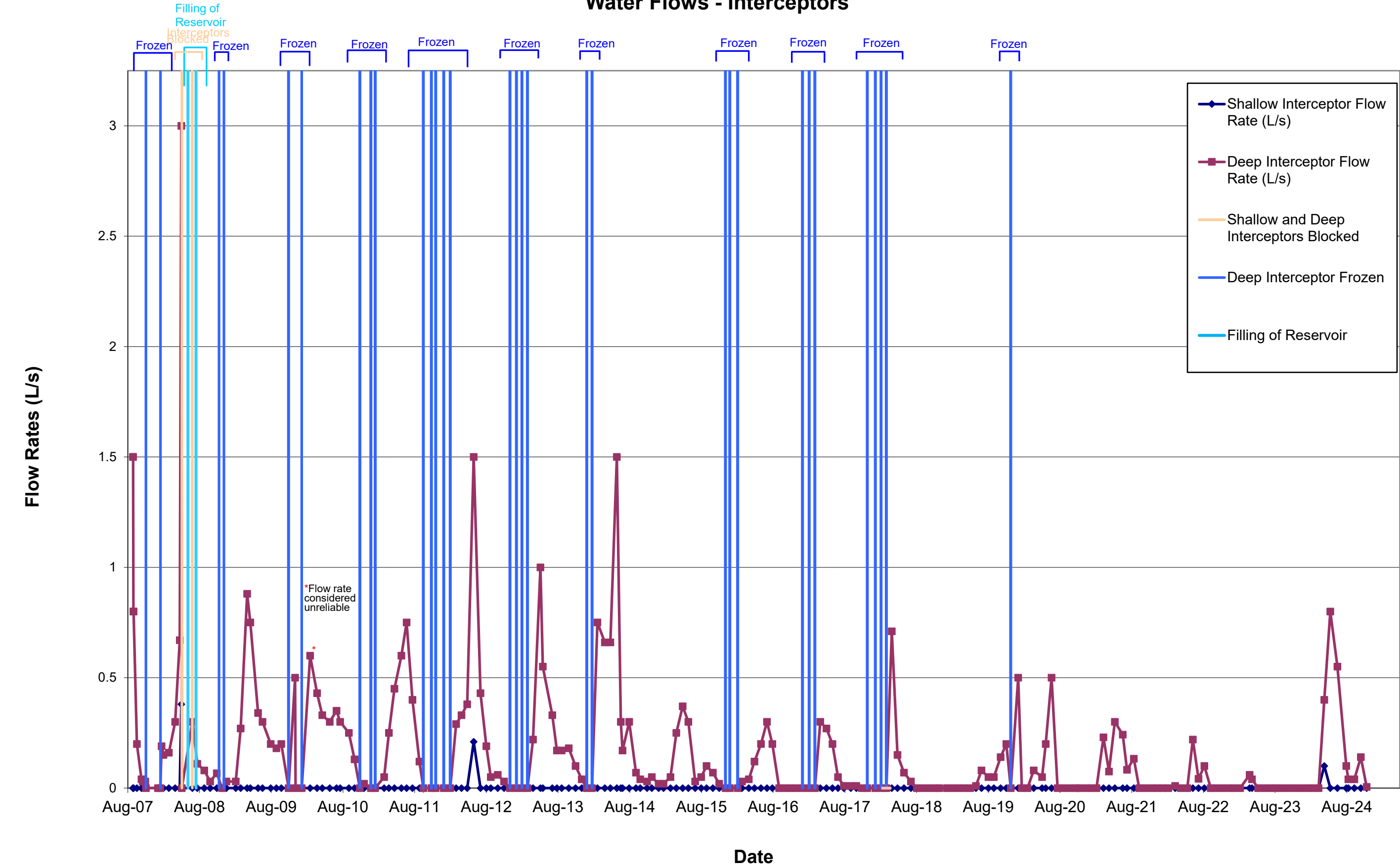


Appendix G

Interceptor Flow Rates



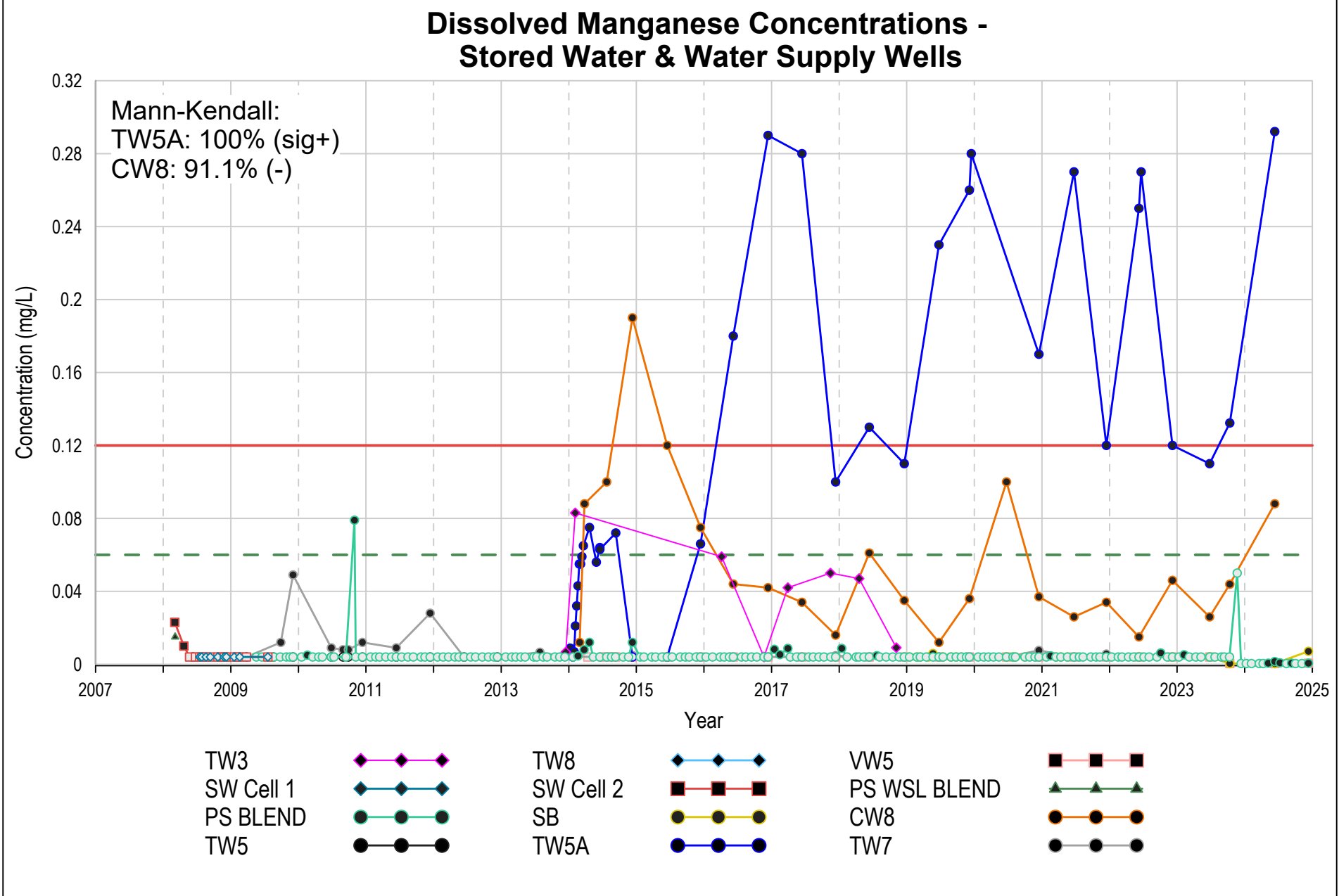
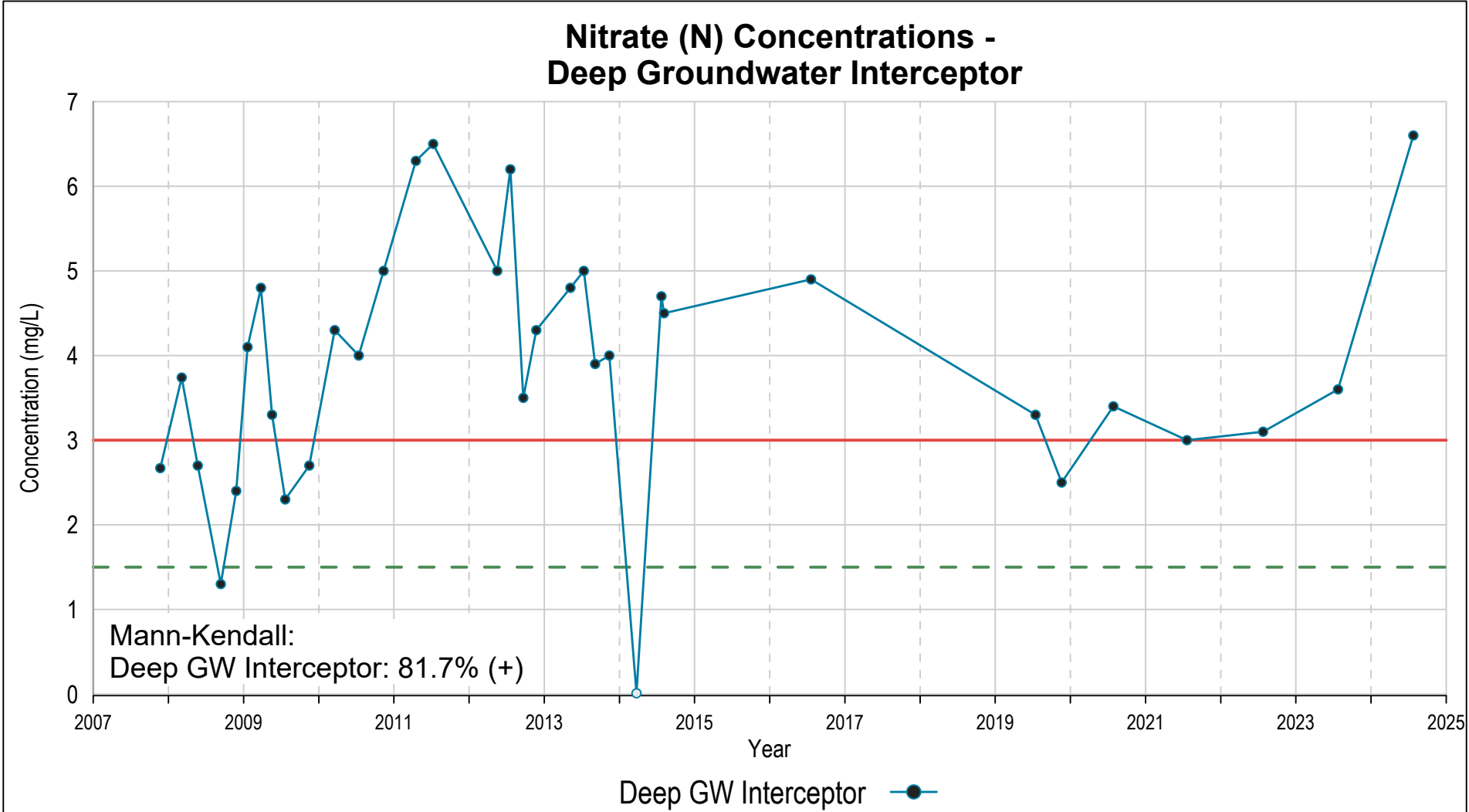
Water Flows - Interceptors



Appendix H

Key Parameter Charts





Legend:
Guideline ———
Trigger - - -
Non-detect concentrations are symbolized as: o

Guidelines:
Deep Groundwater Interceptor:
Nitrate (N) (3 mg/L)
Alberta Environment and Protected Areas Guidelines - Alberta Tier 1 Soil and Groundwater Remediation Guidelines (AEPA 2024) for coarse-grained soil, residential/parkland land use; aquatic life pathway
Groundwater:
Manganese (0.12 mg/L):
Health Canada - Guidelines for Canadian Drinking Water Quality (Health Canada 2024);
Maximum Allowable Concentration

Project Location
Alberta

Client/Project
Sheep River Regional Utility Corporation
Diamond Valley, Alberta
2024 Annual Report for Stored Raw Water,
Reservoir Site Groundwater, Well and
Infiltration Gallery Water Monitoring Programs

Chart No.
H-1

Chart Name
Key Parameter Charts
Dissolved Nitrate-Nitrogen & Manganese

123513703



Appendix I

Certificate of Analysis Reports



ANALYTICAL REPORT

Client: Sheep River Regional Corp.
 Box 5605
 High River, AB. T1V 1M7

Care of: Foothills County
Attention: Cory Lyons

KaizenLAB JOB #:	335818
DATE RECEIVED:	10-Jan-2024
DATE REPORTED:	17-Jan-2024
PROJECT ID:	Pkg 3 - Schedule 3A (PSBlend)
LOCATION:	SRRUC

KaizenLAB Sample #: 335818_001 **Sample ID:** PSBlend
Date Sampled: 7:20 10-Jan-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Routine Water Potability Analysis (Potability pkg #2)				
Electrical Conductivity (EC) at 25°C	uS/cm	486		
pH		6.8	7.0-10.5 (AO)	Unacceptable
Total Dissolved Solids (calculated)	mg/L	298	500 (AO)	Acceptable
True Colour	TCU	<4	15 (AO)	Acceptable
Turbidity	NTU	0.20	0.1/0.3/1.0 ^{see notes}	See notes
Alkalinity Parameters of Water				
Alkalinity (phenolphthalein, as CaCO ₃)	mg/L	<2.0		
Alkalinity (total, as CaCO ₃)	mg/L	172.9		
Bicarbonate (as HCO ₃)	mg/L	210.8		
Carbonate (as CO ₃)	mg/L	<1.5		
Hydroxide (as OH)	mg/L	<0.5		
Cations in Water by ICP-OES				
Dissolved Calcium	mg/L	67.6		
Dissolved Magnesium	mg/L	20.3		
Dissolved Potassium	mg/L	1.1		
Dissolved Sodium	mg/L	7.5	200 (AO)	Acceptable
Hardness (calculated, as CaCO ₃)	mg/L	252.3		
Sodium Adsorption Ratio		0.20		
Anions in Water by IC				
Bromide	mg/L	<0.10		
Chloride	mg/L	1.92	250 (AO)	Acceptable
Fluoride	mg/L	0.45	1.5 (MAC)	Pass

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2020: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

Unit# 288, 2880 45 Ave S.E.
Calgary, AB, T2B 3M1
Phone (403) 297-0868
Fax: (403) 297-0869
e-Mail: kaizenlab@kaizenlab.ca



KaizenLAB Sample #: 335818_001 **Sample ID:** PSBlend

Date Sampled: 7:20 10-Jan-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Nitrate-N	mg/L	0.045	10 (MAC)	Pass
Nitrite-N	mg/L	<0.005	1 (MAC)	Pass
Nitrite-N + Nitrate-N	mg/L	0.045		
Phosphate	mg/L	<0.10		
Sulphate	mg/L	94.00	500 (AO)	Acceptable

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2020: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

KaizenLAB Sample #: 335818_001 **Sample ID:** PSBlend

Date Sampled: 7:20 10-Jan-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Cyanide (Total) in water				
Cyanide, Total	mg/L	<0.003	0.2 (MAC)	Pass
Dissolved Mercury	ug/L	<0.001		
F2	mg/L	<0.10		
Total Kjeldahl Nitrogen	mg/L	<2.00		
Total Organic Carbon	mg/L	1.08		
F1	mg/L	<0.05		
BTEX in Water				
Benzene	mg/L	<0.001		
Ethylbenzene	mg/L	<0.001		
Toluene	mg/L	<0.0005		
Total Xylenes	mg/L	<0.003	0.09 (MAC)	Pass
Polycyclic Aromatic Hydrocarbons in Water				
Acenaphthene	mg/L	<0.000004		
Acenaphthylene	mg/L	<0.000004		
Anthracene	mg/L	<0.000004		
Benzo(a)anthracene	mg/L	<0.000004		
Benzo(a)pyrene	mg/L	<0.000004		
Benzo(a)Pyrene Total Potency Equivalents	mg/L	<0.000010		
Benzo(b,j)fluoranthene	mg/L	<0.000004		
Benzo(g,h,i)perylene	mg/L	<0.000004		
Benzo(k)fluoranthene	mg/L	<0.000004		
Chrysene	mg/L	<0.000004		
Dibenzo(a,h)anthracene	mg/L	<0.000004		
Fluoranthene	mg/L	<0.000004		
Fluorene	mg/L	<0.000004		
Indeno(1,2,3-c,d)pyrene	mg/L	<0.000004		
Naphthalene	mg/L	<0.000004		
Phenanthrene	mg/L	<0.000004		
Pyrene	mg/L	<0.000004		
Dissolved Metals in Water by ICP-MS				
Dissolved Aluminum	mg/L	<0.003	see notes	
Dissolved Antimony	mg/L	<0.0002		
Dissolved Arsenic	mg/L	0.00011		
Dissolved Barium	mg/L	0.0621		

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2020: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

KaizenLAB Sample #: 335818_001 **Sample ID:** PSBlend
Date Sampled: 7:20 10-Jan-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Dissolved Beryllium	mg/L	<0.00006		
Dissolved Bismuth	mg/L	<0.00006		
Dissolved Boron	mg/L	0.021		
Dissolved Cadmium	mg/L	<0.000015		
Dissolved Chromium	mg/L	<0.0002		
Dissolved Cobalt	mg/L	<0.00003		
Dissolved Copper	mg/L	0.0017		
Dissolved Iron	mg/L	<0.004	0.3 (AO)	Acceptable
Dissolved Lanthanum	mg/L	<0.0005		
Dissolved Lead	mg/L	<0.00007		
Dissolved Lithium	mg/L	0.008		
Dissolved Manganese	mg/L	<0.0004	0.12 (MAC)	Pass
Dissolved Molybdenum	mg/L	0.00085		
Dissolved Nickel	mg/L	0.00039		
Dissolved Selenium	mg/L	0.00090		
Dissolved Silver	mg/L	<0.000009		
Dissolved Strontium	mg/L	0.3152	7.0000 (MAC)	Pass
Dissolved Thallium	mg/L	<0.00008		
Dissolved Tin	mg/L	0.0006		
Dissolved Titanium	mg/L	0.100		
Dissolved Tungsten	mg/L	<0.001		
Dissolved Uranium	mg/L	0.00041		
Dissolved Vanadium	mg/L	<0.0001		
Dissolved Zinc	mg/L	0.006		
Dissolved Zirconium	mg/L	<0.001		

Notes:

- Aluminum: This Operational Guideline applies only to drinking water treatment plants using aluminum-based coagulants: conventional systems - 0.1 mg/L, other systems - 0.2 mg/L
- Turbidity: Based on slow sand or diatomaceous earth filtration (1.0 NTU) / membrane filtration (0.1 NTU) / conventional treatment (0.3 NTU). No limits apply for well water not under the influence of surface water. For further details and additional guidance restriction, see Guidelines for Canadian Drinking Water Quality (GCDWQ 2019).

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2020: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

Test Methodologies

Alkalinity in Water: Modified from SM 2320 B
Anions in Water: Modified from SM 4110 B
BTEX in Water: Modified from EPA 8260D, EPA 5030C/EPA 5021A
Cations in Water by ICP-OES: Modified from SM 3030 B and SM 3120 B
Cyanide, Total, in Water: Modified from ISO 14403:2012(E) and Skalar Analytical B.V., Catnr I295-004w/r issue 010421/99368551
Dissolved Mercury in Water: Modified from EPA 1631 Revision E
Dissolved Metals in Water by ICP-MS: Modified from SM 3030 B and SM 3125 B
Electrical Conductivity in Water: Modified from SM 2510 B and CCME Guidance Manual Volume 4, 2016
Extractable Hydrocarbons in Water: Modified from EPA 8015D and EPA 3520C
pH of Water: Modified from SM 4500-H+ B
Polycyclic Aromatic Hydrocarbons in Water: Modified from EPA 8270E and Royal Society of Chemistry (L-L Micro-extraction)
Total Dissolved Solids (calculated): Modified from SM 1030 E
Total Kjeldahl Nitrogen in Water: Modified from SM 4500-N(org) B and D
Total/Dissolved Organic Carbon in Water: Modified from SM 5310 B
True Colour in Water: Modified from SM 2120 C
Turbidity in Water: Modified from SM 2130 B
Volatile Hydrocarbons in Water: Modified from EPA 8015D, EPA 5030C/EPA 5021A

Final Review by:



Irene De Leon
Client Services Representative

Note: The results in this report relate only to the items tested and as received. Information is available for any items in 7.8.2.1 of ISO/IEC 17025:2017 that cannot be put on a test report. The report shall not be reproduced except in full without written approval of KaizenLAB. The validity of results may be affected if the information is provided by the customer.

Test methodologies are accredited in accordance with ISO/IEC 17025 via CALA, unless otherwise specified in the description of the methods.

Pass/Acceptable: The measurement result conforms with the specification limit when the measurement uncertainty is taken into account.

Pass/Acceptable:** It is not possible to state conformance using a 95 % coverage probability for the expanded uncertainty although the measurement result is below the limit.

Fail/Unacceptable: The measurement result does not conform with the specification limit when the measurement uncertainty is taken into account.

The statement of conformity is based on a 95% coverage probability for the expanded uncertainty. The test results and the statement of conformance with specification in this report relate only to the test sample as analysed/tested and not to the sample/item from which the test sample was drawn.

ANALYTICAL REPORT

Client: Sheep River Regional Corp.
 Box 5605
 High River, AB. T1V 1M7

Care of: Foothills County
Attention: Cory Lyons

KaizenLAB JOB #:	336224
DATE RECEIVED:	07-Feb-2024
DATE REPORTED:	14-Feb-2024
PROJECT ID:	Pkg 3 - Schedule 3A (PSBlend)
LOCATION:	SRRUC

KaizenLAB Sample #: 336224_001 **Sample ID:** PSBlend
Date Sampled: 10:10 7-Feb-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Routine Water Potability Analysis (Potability pkg #2)				
Electrical Conductivity (EC) at 25°C	uS/cm	515		
pH		6.9	7.0-10.5 (AO)	Unacceptable
Total Dissolved Solids (calculated)	mg/L	294	500 (AO)	Acceptable
True Colour	TCU	<4	15 (AO)	Acceptable
Turbidity	NTU	0.32	0.1/0.3/1.0 ^{see notes}	See notes
Alkalinity Parameters of Water				
Alkalinity (phenolphthalein, as CaCO ₃) ¹	mg/L	<2.0		
Alkalinity (total, as CaCO ₃)	mg/L	169.4		
Bicarbonate (as HCO ₃) ¹	mg/L	206.5		
Carbonate (as CO ₃) ¹	mg/L	<1.5		
Hydroxide (as OH) ¹	mg/L	<0.5		
Cations in Water by ICP-OES				
Dissolved Calcium	mg/L	68.3		
Dissolved Magnesium	mg/L	18.7		
Dissolved Potassium	mg/L	1.0		
Dissolved Sodium	mg/L	7.2	200 (AO)	Acceptable
Hardness (calculated, as CaCO ₃)	mg/L	247.5		
Sodium Adsorption Ratio		0.20		
Anions in Water by IC				
Bromide	mg/L	<0.10		
Chloride	mg/L	1.73	250 (AO)	Acceptable
Fluoride	mg/L	0.31	1.5 (MAC)	Pass

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2020: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

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Phone (403) 297-0868
Fax: (403) 297-0869
e-Mail: kaizenlab@kaizenlab.ca



KaizenLAB Sample #: 336224_001 **Sample ID:** PSBlend

Date Sampled: 10:10 7-Feb-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Nitrate-N	mg/L	0.065	10 (MAC)	Pass
Nitrite-N	mg/L	<0.005	1 (MAC)	Pass
Nitrite-N + Nitrate-N	mg/L	0.065		
Phosphate	mg/L	<0.10		
Sulphate	mg/L	94.58	500 (AO)	Acceptable

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2020: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

KaizenLAB Sample #: 336224_001 **Sample ID:** PSBlend
Date Sampled: 10:10 7-Feb-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Cyanide (Total) in water				
Cyanide, Total	mg/L	<0.003	0.2 (MAC)	Pass
Dissolved Mercury	ug/L	<0.001		
F2	mg/L	<0.10		
Total Kjeldahl Nitrogen	mg/L	<2.00		
Total Organic Carbon	mg/L	0.80		
F1	mg/L	<0.05		
BTEX in Water				
Benzene	mg/L	<0.001		
Ethylbenzene	mg/L	<0.001		
Toluene	mg/L	<0.0005		
Total Xylenes	mg/L	<0.003	0.09 (MAC)	Pass
Polycyclic Aromatic Hydrocarbons in Water				
Acenaphthene	mg/L	<0.000004		
Acenaphthylene	mg/L	<0.000004		
Anthracene	mg/L	<0.000004		
Benzo(a)anthracene	mg/L	<0.000004		
Benzo(a)pyrene	mg/L	<0.000004		
Benzo(a)Pyrene Total Potency Equivalents	mg/L	<0.000010		
Benzo(b,j)fluoranthene	mg/L	<0.000004		
Benzo(g,h,i)perylene	mg/L	<0.000004		
Benzo(k)fluoranthene	mg/L	<0.000004		
Chrysene	mg/L	<0.000004		
Dibenzo(a,h)anthracene	mg/L	<0.000004		
Fluoranthene	mg/L	<0.000004		
Fluorene	mg/L	<0.000004		
Indeno(1,2,3-c,d)pyrene	mg/L	<0.000004		
Naphthalene	mg/L	<0.000004		
Phenanthrene	mg/L	<0.000004		
Pyrene	mg/L	<0.000004		
Dissolved Metals in Water by ICP-MS				
Dissolved Aluminum	mg/L	<0.003	see notes	
Dissolved Antimony	mg/L	<0.0002		
Dissolved Arsenic	mg/L	0.00010		
Dissolved Barium	mg/L	0.0654		

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2020: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

KaizenLAB Sample #: 336224_001 **Sample ID:** PSBlend
Date Sampled: 10:10 7-Feb-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Dissolved Beryllium	mg/L	<0.00006		
Dissolved Bismuth	mg/L	<0.00006		
Dissolved Boron	mg/L	0.019		
Dissolved Cadmium	mg/L	<0.000015		
Dissolved Chromium	mg/L	<0.0002		
Dissolved Cobalt	mg/L	<0.00003		
Dissolved Copper	mg/L	0.0014		
Dissolved Iron	mg/L	<0.004	0.3 (AO)	Acceptable
Dissolved Lanthanum	mg/L	<0.0005		
Dissolved Lead	mg/L	<0.00007		
Dissolved Lithium	mg/L	0.008		
Dissolved Manganese	mg/L	<0.0004	0.12 (MAC)	Pass
Dissolved Molybdenum	mg/L	0.00086		
Dissolved Nickel	mg/L	0.00034		
Dissolved Selenium	mg/L	0.00123		
Dissolved Silver	mg/L	<0.000009		
Dissolved Strontium	mg/L	0.3212	7.0000 (MAC)	Pass
Dissolved Thallium	mg/L	<0.00008		
Dissolved Tin	mg/L	0.0009		
Dissolved Titanium	mg/L	0.107		
Dissolved Tungsten	mg/L	<0.001		
Dissolved Uranium	mg/L	0.00048		
Dissolved Vanadium	mg/L	<0.0001		
Dissolved Zinc	mg/L	0.005		
Dissolved Zirconium	mg/L	<0.001		

Notes:

- Aluminum: This Operational Guideline applies only to drinking water treatment plants using aluminum-based coagulants: conventional systems - 0.1 mg/L, other systems - 0.2 mg/L
- Turbidity: Based on slow sand or diatomaceous earth filtration (1.0 NTU) / membrane filtration (0.1 NTU) / conventional treatment (0.3 NTU). No limits apply for well water not under the influence of surface water. For further details and additional guidance restriction, see Guidelines for Canadian Drinking Water Quality (GCDWQ 2019).

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2020: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

Test Methodologies

Alkalinity in Water: Modified from SM 2320 B
Anions in Water: Modified from SM 4110 B
BTEX in Water: Modified from EPA 8260D, EPA 5030C/EPA 5021A
Cations in Water by ICP-OES: Modified from SM 3030 B and SM 3120 B
Cyanide, Total, in Water: Modified from ISO 14403:2012(E) and Skalar Analytical B.V., Catnr I295-004w/r issue 010421/99368551
Dissolved Mercury in Water: Modified from EPA 1631 Revision E
Dissolved Metals in Water by ICP-MS: Modified from SM 3030 B and SM 3125 B
Electrical Conductivity in Water: Modified from SM 2510 B and CCME Guidance Manual Volume 4, 2016
Extractable Hydrocarbons in Water: Modified from EPA 8015D and EPA 3520C
pH of Water: Modified from SM 4500-H+ B
Polycyclic Aromatic Hydrocarbons in Water: Modified from EPA 8270E and Royal Society of Chemistry (L-L Micro-extraction)
Total Dissolved Solids (calculated): Modified from SM 1030 E
Total Kjeldahl Nitrogen in Water: Modified from SM 4500-N(org) B and D
Total/Dissolved Organic Carbon in Water: Modified from SM 5310 B
True Colour in Water: Modified from SM 2120 C
Turbidity in Water: Modified from SM 2130 B
Volatile Hydrocarbons in Water: Modified from EPA 8015D, EPA 5030C/EPA 5021A

Final Review by:



Ivory Ringor
Client Services Representative

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The statement of conformity is based on a 95% coverage probability for the expanded uncertainty. The test results and the statement of conformance with specification in this report relate only to the test sample as analysed/tested and not to the sample/item from which the test sample was drawn.

ANALYTICAL REPORT

Client: Sheep River Regional Corp.
 Box 5605
 High River, AB. T1V 1M7

Care of: Foothills County
Attention: Cory Lyons

KaizenLAB JOB #:	336873
DATE RECEIVED:	20-Mar-2024
DATE REPORTED:	27-Mar-2024
PROJECT ID:	Pkg 3 - Schedule 3A (PSBlend)
LOCATION:	SRRUC

KaizenLAB Sample #: 336873_001 **Sample ID:** PSBlend
Date Sampled: 7:30 20-Mar-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Routine Water Potability Analysis (Potability pkg #2)				
Electrical Conductivity (EC) at 25°C	uS/cm	497		
pH		7.7	7.0-10.5 (AO)	Acceptable
Total Dissolved Solids (calculated)	mg/L	293	500 (AO)	Acceptable
True Colour	TCU	<4	15 (AO)	Acceptable
Turbidity	NTU	0.21	0.1/0.3/1.0 ^{see notes}	See notes
Alkalinity Parameters of Water				
Alkalinity (phenolphthalein, as CaCO ₃) ¹	mg/L	<2.0		
Alkalinity (total, as CaCO ₃)	mg/L	161.2		
Bicarbonate (as HCO ₃) ¹	mg/L	196.6		
Carbonate (as CO ₃) ¹	mg/L	<1.5		
Hydroxide (as OH) ¹	mg/L	<0.5		
Anions in Water by IC				
Bromide	mg/L	<0.10		
Chloride	mg/L	1.54	250 (AO)	Acceptable
Fluoride	mg/L	0.27	1.5 (MAC)	Pass
Nitrate-N	mg/L	0.067	10 (MAC)	Pass
Nitrite-N	mg/L	<0.005	1 (MAC)	Pass
Nitrite-N + Nitrate-N	mg/L	0.067		
Phosphate	mg/L	<0.10		
Sulphate	mg/L	93.85	500 (AO)	Acceptable
Cations in Water by ICP-OES				
Dissolved Calcium	mg/L	73.0		

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2020: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

KaizenLAB Sample #: 336873_001 **Sample ID:** PSBlend

Date Sampled: 7:30 20-Mar-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Dissolved Iron ¹	mg/L	<0.05	0.3 (AO)	Acceptable
Dissolved Magnesium	mg/L	19.6		
Dissolved Manganese ¹	mg/L	<0.05		
Dissolved Potassium	mg/L	1		
Dissolved Sodium	mg/L	6.9	200 (AO)	Acceptable
Hardness (calculated, as CaCO ₃)	mg/L	262.9		
Sodium Adsorption Ratio		0.18		

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KaizenLAB Sample #: 336873_001 **Sample ID:** PSBlend
Date Sampled: 7:30 20-Mar-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Cyanide (Total) in water				
Cyanide, Total	mg/L	<0.003	0.2 (MAC)	Pass
Dissolved Mercury	ug/L	<0.001		
F2	mg/L	<0.10		
Total Kjeldahl Nitrogen	mg/L	<2.00		
Total Organic Carbon	mg/L	<0.50		
F1	mg/L	<0.05		
BTEX in Water				
Benzene	mg/L	<0.001		
Ethylbenzene	mg/L	<0.001		
Toluene	mg/L	<0.0005		
Total Xylenes	mg/L	<0.003	0.09 (MAC)	Pass
Polycyclic Aromatic Hydrocarbons in Water				
Acenaphthene	mg/L	<0.000004		
Acenaphthylene	mg/L	<0.000004		
Anthracene	mg/L	<0.000004		
Benzo(a)anthracene	mg/L	<0.000004		
Benzo(a)pyrene	mg/L	<0.000004		
Benzo(a)Pyrene Total Potency Equivalents	mg/L	<0.00085		
Benzo(b,j)fluoranthene	mg/L	<0.000004		
Benzo(g,h,i)perylene	mg/L	<0.000004		
Benzo(k)fluoranthene	mg/L	<0.000004		
Chrysene	mg/L	<0.000004		
Dibenzo(a,h)anthracene	mg/L	<0.000004		
Fluoranthene	mg/L	<0.000004		
Fluorene	mg/L	<0.000004		
Indeno(1,2,3-c,d)pyrene	mg/L	<0.000004		
Naphthalene	mg/L	<0.000004		
Phenanthrene	mg/L	<0.000004		
Pyrene	mg/L	<0.000004		
Dissolved Metals in Water by ICP-MS				
Dissolved Aluminum	mg/L	<0.003	see notes	
Dissolved Antimony	mg/L	<0.0002		
Dissolved Arsenic	mg/L	0.00010		
Dissolved Barium	mg/L	0.0647		

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KaizenLAB Sample #: 336873_001 **Sample ID:** PSBlend
Date Sampled: 7:30 20-Mar-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Dissolved Beryllium	mg/L	<0.00006		
Dissolved Bismuth	mg/L	<0.00006		
Dissolved Boron	mg/L	0.015		
Dissolved Cadmium	mg/L	<0.000015		
Dissolved Chromium	mg/L	<0.0002		
Dissolved Cobalt	mg/L	<0.00003		
Dissolved Copper	mg/L	0.0011		
Dissolved Iron	mg/L	<0.004	0.3 (AO)	Acceptable
Dissolved Lanthanum	mg/L	<0.0005		
Dissolved Lead	mg/L	<0.00007		
Dissolved Lithium	mg/L	0.007		
Dissolved Manganese	mg/L	<0.0004	0.12 (MAC)	Pass
Dissolved Molybdenum	mg/L	0.00086		
Dissolved Nickel	mg/L	0.00030		
Dissolved Selenium	mg/L	0.00123		
Dissolved Silver	mg/L	<0.000009		
Dissolved Strontium	mg/L	0.3146	7.0000 (MAC)	Pass
Dissolved Thallium	mg/L	<0.00008		
Dissolved Tin	mg/L	<0.0006		
Dissolved Titanium	mg/L	0.110		
Dissolved Tungsten	mg/L	<0.001		
Dissolved Uranium	mg/L	0.00041		
Dissolved Vanadium	mg/L	<0.0001		
Dissolved Zinc	mg/L	0.002		
Dissolved Zirconium	mg/L	<0.001		

Notes:

- Aluminum: This Operational Guideline applies only to drinking water treatment plants using aluminum-based coagulants: conventional systems - 0.1 mg/L, other systems - 0.2 mg/L
- Turbidity: Based on slow sand or diatomaceous earth filtration (1.0 NTU) / membrane filtration (0.1 NTU) / conventional treatment (0.3 NTU). No limits apply for well water not under the influence of surface water. For further details and additional guidance restriction, see Guidelines for Canadian Drinking Water Quality (GCDWQ 2019).

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Test Methodologies

Alkalinity in Water: Modified from SM 2320 B
Anions in Water: Modified from SM 4110 B
BTEX in Water: Modified from EPA 8260D, EPA 5030C/EPA 5021A
Cations in Water by ICP-OES: Modified from SM 3030 B and SM 3120 B
Cyanide, Total, in Water: Modified from ISO 14403:2012(E) and Skalar Analytical B.V., Catnr I295-004w/r issue 010421/99368551
Dissolved Mercury in Water: Modified from EPA 1631 Revision E
Dissolved Metals in Water by ICP-MS: Modified from SM 3030 B and SM 3125 B
Electrical Conductivity in Water: Modified from SM 2510 B and CCME Guidance Manual Volume 4, 2016
Extractable Hydrocarbons in Water: Modified from EPA 8015D and EPA 3520C
pH of Water: Modified from SM 4500-H+ B
Polycyclic Aromatic Hydrocarbons in Water: Modified from EPA 8270E and Royal Society of Chemistry (L-L Micro-extraction)
Total Dissolved Solids (calculated): Modified from SM 1030 E
Total Kjeldahl Nitrogen in Water: Modified from SM 4500-N(org) B and D
Total/Dissolved Organic Carbon in Water: Modified from SM 5310 B
True Colour in Water: Modified from SM 2120 C
Turbidity in Water: Modified from SM 2130 B
Volatile Hydrocarbons in Water: Modified from EPA 8015D, EPA 5030C/EPA 5021A

Final Review by:



Ivory Ringor
Client Services Representative

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ANALYTICAL REPORT

Client: Sheep River Regional Corp.
 Box 5605
 High River, AB. T1V 1M7

Care of: Foothills County
Attention: Cory Lyons

KaizenLAB JOB #:	337161
DATE RECEIVED:	10-Apr-2024
DATE REPORTED:	17-Apr-2024
PROJECT ID:	Pkg 3 - Schedule 3A (PSBlend)
LOCATION:	Sheep River Regional Utility Corp.

KaizenLAB Sample #: 337161_001 **Sample ID:** PSBlend
Date Sampled: 7:30 10-Apr-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Routine Water Potability Analysis (Potability pkg #2)				
Electrical Conductivity (EC) at 25°C	uS/cm	483		
pH		7.8	7.0-10.5 (AO)	Acceptable
Total Dissolved Solids (calculated)	mg/L	286	500 (AO)	Acceptable
True Colour	TCU	<4	15 (AO)	Acceptable
Turbidity	NTU	0.27	0.1/0.3/1.0 ^{see notes}	See notes
Alkalinity Parameters of Water				
Alkalinity (phenolphthalein, as CaCO ₃) ¹	mg/L	<2.0		
Alkalinity (total, as CaCO ₃)	mg/L	153.8		
Bicarbonate (as HCO ₃) ¹	mg/L	187.5		
Carbonate (as CO ₃) ¹	mg/L	<1.5		
Hydroxide (as OH) ¹	mg/L	<0.5		
Cations in Water by ICP-OES				
Dissolved Calcium	mg/L	72.0		
Dissolved Magnesium	mg/L	19.5		
Dissolved Potassium	mg/L	1.0		
Dissolved Sodium	mg/L	7.1	200 (AO)	Acceptable
Hardness (calculated, as CaCO ₃)	mg/L	259.9		
Sodium Adsorption Ratio		0.19		
Anions in Water by IC				
Bromide	mg/L	<0.10		
Chloride	mg/L	1.57	250 (AO)	Acceptable
Fluoride	mg/L	0.28	1.5 (MAC)	Pass

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2020: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

Unit# 288, 2880 45 Ave S.E.
Calgary, AB, T2B 3M1
Phone (403) 297-0868
Fax: (403) 297-0869
e-Mail: kaizenlab@kaizenlab.ca



KaizenLAB Sample #: 337161_001 **Sample ID:** PSBlend

Date Sampled: 7:30 10-Apr-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Nitrate-N	mg/L	0.055	10 (MAC)	Pass
Nitrite-N	mg/L	<0.005	1 (MAC)	Pass
Nitrite-N + Nitrate-N	mg/L	0.055		
Phosphate	mg/L	<0.10		
Sulphate	mg/L	92.03	500 (AO)	Acceptable

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KaizenLAB Sample #: 337161_001 **Sample ID:** PSBlend
Date Sampled: 7:30 10-Apr-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Cyanide (Total) in water				
Cyanide, Total	mg/L	<0.003	0.2 (MAC)	Pass
Dissolved Mercury	ug/L	<0.001		
F2	mg/L	<0.10		
Total Kjeldahl Nitrogen	mg/L	<2.00		
Total Organic Carbon	mg/L	3.32		
F1	mg/L	<0.05		
BTEX in Water				
Benzene	mg/L	<0.001		
Ethylbenzene	mg/L	<0.001		
Toluene	mg/L	<0.0005		
Total Xylenes	mg/L	<0.003	0.09 (MAC)	Pass
Polycyclic Aromatic Hydrocarbons in Water				
Acenaphthene	mg/L	<0.000004		
Acenaphthylene	mg/L	<0.000004		
Anthracene	mg/L	<0.000004		
Benzo(a)anthracene	mg/L	<0.000004		
Benzo(a)pyrene	mg/L	<0.000004		
Benzo(a)Pyrene Total Potency Equivalents	mg/L	<0.00085		
Benzo(b,j)fluoranthene	mg/L	<0.000004		
Benzo(g,h,i)perylene	mg/L	<0.000004		
Benzo(k)fluoranthene	mg/L	<0.000004		
Chrysene	mg/L	<0.000004		
Dibenzo(a,h)anthracene	mg/L	<0.000004		
Fluoranthene	mg/L	<0.000004		
Fluorene	mg/L	<0.000004		
Indeno(1,2,3-c,d)pyrene	mg/L	<0.000004		
Naphthalene	mg/L	<0.000004		
Phenanthrene	mg/L	<0.000004		
Pyrene	mg/L	<0.000004		
Dissolved Metals in Water by ICP-MS				
Dissolved Aluminum	mg/L	<0.003	see notes	
Dissolved Antimony	mg/L	<0.0002		
Dissolved Arsenic	mg/L	0.00009		
Dissolved Barium	mg/L	0.0588		

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KaizenLAB Sample #: 337161_001 **Sample ID:** PSBlend
Date Sampled: 7:30 10-Apr-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Dissolved Beryllium	mg/L	<0.00006		
Dissolved Bismuth	mg/L	<0.00006		
Dissolved Boron	mg/L	0.013		
Dissolved Cadmium	mg/L	<0.000015		
Dissolved Chromium	mg/L	<0.0002		
Dissolved Cobalt	mg/L	<0.00003		
Dissolved Copper	mg/L	0.0014		
Dissolved Iron	mg/L	<0.004	0.3 (AO)	Acceptable
Dissolved Lanthanum	mg/L	<0.0005		
Dissolved Lead	mg/L	<0.00007		
Dissolved Lithium	mg/L	0.007		
Dissolved Manganese	mg/L	<0.0004	0.12 (MAC)	Pass
Dissolved Molybdenum	mg/L	0.00078		
Dissolved Nickel	mg/L	0.00025		
Dissolved Selenium	mg/L	0.00116		
Dissolved Silver	mg/L	<0.000009		
Dissolved Strontium	mg/L	0.3064	7.0000 (MAC)	Pass
Dissolved Thallium	mg/L	<0.00008		
Dissolved Tin	mg/L	<0.0006		
Dissolved Titanium	mg/L	0.097		
Dissolved Tungsten	mg/L	<0.001		
Dissolved Uranium	mg/L	0.00047		
Dissolved Vanadium	mg/L	<0.0001		
Dissolved Zinc	mg/L	0.003		
Dissolved Zirconium	mg/L	<0.001		

Notes:

- Aluminum: This Operational Guideline applies only to drinking water treatment plants using aluminum-based coagulants: conventional systems - 0.1 mg/L, other systems - 0.2 mg/L
- Turbidity: Based on slow sand or diatomaceous earth filtration (1.0 NTU) / membrane filtration (0.1 NTU) / conventional treatment (0.3 NTU). No limits apply for well water not under the influence of surface water. For further details and additional guidance restriction, see Guidelines for Canadian Drinking Water Quality (GCDWQ 2019).

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Test Methodologies

Alkalinity in Water: Modified from SM 2320 B
Anions in Water: Modified from SM 4110 B
BTEX in Water: Modified from EPA 8260D, EPA 5030C/EPA 5021A
Cations in Water by ICP-OES: Modified from SM 3030 B and SM 3120 B
Cyanide, Total, in Water: Modified from ISO 14403:2012(E) and Skalar Analytical B.V., Catnr I295-004w/r issue 010421/99368551
Dissolved Mercury in Water: Modified from EPA 1631 Revision E
Dissolved Metals in Water by ICP-MS: Modified from SM 3030 B and SM 3125 B
Electrical Conductivity in Water: Modified from SM 2510 B and CCME Guidance Manual Volume 4, 2016
Extractable Hydrocarbons in Water: Modified from EPA 8015D and EPA 3520C
pH of Water: Modified from SM 4500-H+ B
Polycyclic Aromatic Hydrocarbons in Water: Modified from EPA 8270E and Royal Society of Chemistry (L-L Micro-extraction)
Total Dissolved Solids (calculated): Modified from SM 1030 E
Total Kjeldahl Nitrogen in Water: Modified from SM 4500-N(org) B and D
Total/Dissolved Organic Carbon in Water: Modified from SM 5310 B
True Colour in Water: Modified from SM 2120 C
Turbidity in Water: Modified from SM 2130 B
Volatile Hydrocarbons in Water: Modified from EPA 8015D, EPA 5030C/EPA 5021A

Final Review by:



Ivory Ringor
Client Services Representative

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ANALYTICAL REPORT

Client: Sheep River Regional Corp.
 Box 5605
 High River, AB. T1V 1M7

Care of: Foothills County
Attention: Cory Lyons

KaizenLAB JOB #:	337637
DATE RECEIVED:	08-May-2024
DATE REPORTED:	15-May-2024
PROJECT ID:	Pkg 3- Schedule 3A (PSBlend)
LOCATION:	SRRUC

KaizenLAB Sample #: 337637_001 **Sample ID:** PSBlend
Date Sampled: 7:40 8-May-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Routine Water Potability Analysis (Potability pkg #2)				
Electrical Conductivity (EC) at 25°C	uS/cm	470		
pH		8.1	7.0-10.5 (AO)	Acceptable
Total Dissolved Solids (calculated)	mg/L	268	500 (AO)	Acceptable
True Colour	TCU	<4	15 (AO)	Acceptable
Turbidity	NTU	0.37	0.1 (MAC) ^{see notes}	See notes
Alkalinity Parameters of Water				
Alkalinity (phenolphthalein, as CaCO ₃) ¹	mg/L	<2.0		
Alkalinity (total, as CaCO ₃)	mg/L	138.3		
Bicarbonate (as HCO ₃) ¹	mg/L	168.7		
Carbonate (as CO ₃) ¹	mg/L	<1.5		
Hydroxide (as OH) ¹	mg/L	<0.5		
Cations in Water by ICP-OES				
Dissolved Calcium	mg/L	63.4		
Dissolved Magnesium	mg/L	18.3		
Dissolved Potassium	mg/L	0.9		
Dissolved Sodium	mg/L	6.9	200 (AO)	Acceptable
Hardness (calculated, as CaCO ₃)	mg/L	233.7		
Sodium Adsorption Ratio		0.20		
Anions in Water by IC				
Bromide	mg/L	<0.10		
Chloride	mg/L	2.02	250 (AO)	Acceptable
Fluoride	mg/L	0.26	1.5 (MAC)	Pass

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

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KaizenLAB Sample #: 337637_001 **Sample ID:** PSBlend

Date Sampled: 7:40 8-May-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Nitrate-N	mg/L	<0.010	10 (MAC)	Pass
Nitrite-N	mg/L	<0.005	1 (MAC)	Pass
Nitrite-N + Nitrate-N	mg/L	<0.015		
Phosphate	mg/L	<0.10		
Sulphate	mg/L	93.39	500 (AO)	Acceptable

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

KaizenLAB Sample #: 337637_001 **Sample ID:** PSBlend
Date Sampled: 7:40 8-May-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Cyanide (Total) in water				
Cyanide, Total	mg/L	0	0.2 (MAC)	Pass
Dissolved Mercury	ug/L	<0.001		
F2	mg/L	<0.10		
Total Kjeldahl Nitrogen	mg/L	<2.00		
Total Organic Carbon	mg/L	3.22		
F1	mg/L	<0.05		
BTEX in Water				
Benzene	mg/L	<0.001		
Ethylbenzene	mg/L	<0.001		
Toluene	mg/L	<0.0005		
Total Xylenes	mg/L	<0.003	0.09 (MAC)	Pass
Polycyclic Aromatic Hydrocarbons in Water				
Acenaphthene	mg/L	<0.000004		
Acenaphthylene	mg/L	<0.000004		
Anthracene	mg/L	<0.000004		
Benzo(a)anthracene	mg/L	<0.000004		
Benzo(a)pyrene	mg/L	<0.000004		
Benzo(a)Pyrene Total Potency Equivalents	mg/L	<0.00085		
Benzo(b,j)fluoranthene	mg/L	<0.000004		
Benzo(g,h,i)perylene	mg/L	<0.000004		
Benzo(k)fluoranthene	mg/L	<0.000004		
Chrysene	mg/L	<0.000004		
Dibenzo(a,h)anthracene	mg/L	<0.000004		
Fluoranthene	mg/L	<0.000004		
Fluorene	mg/L	<0.000004		
Indeno(1,2,3-c,d)pyrene	mg/L	<0.000004		
Naphthalene	mg/L	<0.000004		
Phenanthrene	mg/L	<0.000004		
Pyrene	mg/L	<0.000004		
Dissolved Metals in Water by ICP-MS				
Dissolved Aluminum	mg/L	<0.003	see notes	
Dissolved Antimony	mg/L	<0.0002		
Dissolved Arsenic	mg/L	0.00007		
Dissolved Barium	mg/L	0.0585		

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KaizenLAB Sample #: 337637_001 **Sample ID:** PSBlend
Date Sampled: 7:40 8-May-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Dissolved Beryllium	mg/L	<0.00006		
Dissolved Bismuth	mg/L	<0.00006		
Dissolved Boron	mg/L	0.014		
Dissolved Cadmium	mg/L	<0.000015		
Dissolved Chromium	mg/L	<0.0002		
Dissolved Cobalt	mg/L	<0.00003		
Dissolved Copper	mg/L	0.0010		
Dissolved Iron	mg/L	<0.004	0.3 (AO)	Acceptable
Dissolved Lanthanum	mg/L	<0.0005		
Dissolved Lead	mg/L	<0.00007		
Dissolved Lithium	mg/L	0.007		
Dissolved Manganese	mg/L	0.0006	0.12 (MAC)	Pass
Dissolved Molybdenum	mg/L	0.00076		
Dissolved Nickel	mg/L	0.00032		
Dissolved Selenium	mg/L	0.00103		
Dissolved Silver	mg/L	<0.000009		
Dissolved Strontium	mg/L	0.3066	7.0000 (MAC)	Pass
Dissolved Thallium	mg/L	<0.00008		
Dissolved Tin	mg/L	<0.0006		
Dissolved Titanium	mg/L	0.099		
Dissolved Tungsten	mg/L	<0.001		
Dissolved Uranium	mg/L	0.00049		
Dissolved Vanadium	mg/L	<0.0001		
Dissolved Zinc	mg/L	0.002		
Dissolved Zirconium	mg/L	<0.001		

Notes:

- Aluminum: This Operational Guideline applies only to drinking water treatment plants using aluminum-based coagulants: conventional systems - 0.1 mg/L, other systems - 0.2 mg/L
- Turbidity: Based on slow sand or diatomaceous earth filtration (1.0 NTU) / membrane filtration (0.1 NTU) / conventional treatment (0.3 NTU). No limits apply for well water not under the influence of surface water. For further details and additional guidance restriction, see Guidelines for Canadian Drinking Water Quality (GCDWQ 2019).

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

Test Methodologies

Alkalinity in Water: Modified from SM 2320 B
Anions in Water: Modified from SM 4110 B
BTEX in Water: Modified from EPA 8260D, EPA 5030C/EPA 5021A
Cations in Water by ICP-OES: Modified from SM 3030 B and SM 3120 B
Cyanide, Total, in Water: Modified from ISO 14403:2012(E) and Skalar Analytical B.V., Catnr I295-004w/r issue 010421/99368551
Dissolved Mercury in Water: Modified from EPA 1631 Revision E
Dissolved Metals in Water by ICP-MS: Modified from SM 3030 B and SM 3125 B
Electrical Conductivity in Water: Modified from SM 2510 B and CCME Guidance Manual Volume 4, 2016
Extractable Hydrocarbons in Water: Modified from EPA 8015D and EPA 3520C
pH of Water: Modified from SM 4500-H+ B
Polycyclic Aromatic Hydrocarbons in Water: Modified from EPA 8270E and Royal Society of Chemistry (L-L Micro-extraction)
Total Dissolved Solids (calculated): Modified from SM 1030 E
Total Kjeldahl Nitrogen in Water: Modified from SM 4500-N(org) B and D
Total/Dissolved Organic Carbon in Water: Modified from SM 5310 B
True Colour in Water: Modified from SM 2120 C
Turbidity in Water: Modified from SM 2130 B
Volatile Hydrocarbons in Water: Modified from EPA 8015D, EPA 5030C/EPA 5021A

Final Review by:



Irene De Leon
Client Services Representative

Note: The results in this report relate only to the items tested and as received. Information is available for any items in 7.8.2.1 of ISO/IEC 17025:2017 that cannot be put on a test report. The report shall not be reproduced except in full without written approval of KaizenLAB. The validity of results may be affected if the information is provided by the customer.

Test methodologies are accredited in accordance with ISO/IEC 17025 via CALA, unless otherwise specified in the description of the methods.

¹This analyte is not accredited, even though analyzed by an accredited methodology.

Pass/Acceptable: The measurement result conforms with the specification limit when the measurement uncertainty is taken into account.

Pass/Acceptable:** It is not possible to state conformance using a 95 % coverage probability for the expanded uncertainty although the measurement result is below the limit.

Fail/Unacceptable: The measurement result does not conform with the specification limit when the measurement uncertainty is taken into account.

The statement of conformity is based on a 95% coverage probability for the expanded uncertainty. The test results and the statement of conformance with specification in this report relate only to the test sample as analysed/tested and not to the sample/item from which the test sample was drawn.

ANALYTICAL REPORT

Client: Sheep River Regional Corp.
 Box 5605
 High River, AB. T1V 1M7

Care of: Foothills County
Attention: Cory Lyons

KaizenLAB JOB #:	338337
DATE RECEIVED:	12-Jun-2024
DATE REPORTED:	19-Jun-2024
PROJECT ID:	Pkg 1 - Schedule 2 Wells and Stilling Basin
LOCATION:	SRRUC

KaizenLAB Sample #: 338337_001 **Sample ID:** TW5A

Date Sampled: 11:15 12-Jun-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Routine Water Potability Analysis (Potability pkg #2)				
Electrical Conductivity (EC) at 25°C	uS/cm	1560		
pH		7.1	7.0-10.5 (AO)	Acceptable
Total Dissolved Solids (calculated)	mg/L	1123	500 (AO)	Unacceptable
True Colour	TCU	<4	15 (AO)	Acceptable
Turbidity	NTU	7.24	0.1 (MAC) ^{see notes}	See notes
Alkalinity Parameters of Water				
Alkalinity (phenolphthalein, as CaCO ₃) ¹	mg/L	<2.0		
Alkalinity (total, as CaCO ₃)	mg/L	321.2		
Bicarbonate (as HCO ₃) ¹	mg/L	391.7		
Carbonate (as CO ₃) ¹	mg/L	<1.5		
Hydroxide (as OH) ¹	mg/L	<0.5		
Cations in Water by ICP-OES				
Dissolved Calcium	mg/L	209.6		
Dissolved Magnesium	mg/L	69.3		
Dissolved Potassium	mg/L	3.9		
Dissolved Sodium	mg/L	48.8	200 (AO)	Acceptable
Hardness (calculated, as CaCO ₃)	mg/L	808.8		
Sodium Adsorption Ratio		0.75		
Anions in Water by IC				
Bromide	mg/L	<0.10		
Chloride	mg/L	55.10	250 (AO)	Acceptable
Fluoride	mg/L	0.38	1.5 (MAC)	Pass

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

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KaizenLAB Sample #: 338337_001 **Sample ID:** TW5A
Date Sampled: 11:15 12-Jun-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Nitrate-N	mg/L	<0.010	10 (MAC)	Pass
Nitrite-N	mg/L	<0.005	1 (MAC)	Pass
Nitrite-N + Nitrate-N	mg/L	<0.015		
Phosphate	mg/L	<0.10		
Sulphate	mg/L	542.9	500 (AO)	Unacceptable

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KaizenLAB Sample #: 338337_001 **Sample ID:** TW5A

Date Sampled: 11:15 12-Jun-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Cyanide (Total) in water				
Cyanide, Total	mg/L	<0.003	0.2 (MAC)	Pass
Dissolved Mercury	ug/L	0.002		
Total Kjeldahl Nitrogen	mg/L	<2.00		
Total Organic Carbon	mg/L	6.96		
F1	mg/L	<0.05		
Extractable Hydrocarbons in Water				
F2	mg/L	<0.10		
F3	mg/L	<1.0		
F4	mg/L	<1.0		
BTEX in Water				
Benzene	mg/L	<0.001		
Ethylbenzene	mg/L	<0.001		
Toluene	mg/L	<0.0005		
Total Xylenes	mg/L	<0.003	0.09 (MAC)	Pass
Aroclor 1016	mg/L	<0.00005		
Aroclor 1221	mg/L	<0.00005		
Aroclor 1232	mg/L	<0.00005		
Aroclor 1242	mg/L	<0.00005		
Aroclor 1248	mg/L	<0.00005		
Aroclor 1254	mg/L	<0.00005		
Aroclor 1260	mg/L	<0.00005		
Aroclor 1262	mg/L	<0.00005		
Aroclor 1268	mg/L	<0.00005		
Total PCB's	mg/L	<0.00045		
Polycyclic Aromatic Hydrocarbons in Water				
Acenaphthene	mg/L	<0.000004		
Acenaphthylene	mg/L	<0.000004		
Anthracene	mg/L	<0.000004		
Benzo(a)anthracene	mg/L	<0.000004		
Benzo(a)pyrene	mg/L	<0.000004		
Benzo(a)Pyrene Total Potency Equivalents	mg/L	<0.00085		
Benzo(b,j)fluoranthene	mg/L	<0.000004		
Benzo(g,h,i)perylene	mg/L	<0.000004		
Benzo(k)fluoranthene	mg/L	<0.000004		

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KaizenLAB Sample #: 338337_001 **Sample ID:** TW5A

Date Sampled: 11:15 12-Jun-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Chrysene	mg/L	<0.000004		
Dibenzo(a,h)anthracene	mg/L	<0.000004		
Fluoranthene	mg/L	<0.000004		
Fluorene	mg/L	<0.000004		
Indeno(1,2,3-c,d)pyrene	mg/L	<0.000004		
Naphthalene	mg/L	<0.000004		
Phenanthrene	mg/L	<0.000004		
Pyrene	mg/L	<0.000004		
Dissolved Metals in Water by ICP-MS				
Dissolved Aluminum	mg/L	<0.003		see notes
Dissolved Antimony	mg/L	<0.0002		
Dissolved Arsenic	mg/L	0.00009		
Dissolved Barium	mg/L	0.0477		
Dissolved Beryllium	mg/L	<0.00006		
Dissolved Bismuth	mg/L	<0.00006		
Dissolved Boron	mg/L	0.065		
Dissolved Cadmium	mg/L	0.000075		
Dissolved Chromium	mg/L	<0.0002		
Dissolved Cobalt	mg/L	0.00078		
Dissolved Copper	mg/L	0.0023		
Dissolved Iron	mg/L	0.014	0.3 (AO)	Acceptable
Dissolved Lanthanum	mg/L	<0.0005		
Dissolved Lead	mg/L	<0.00007		
Dissolved Lithium	mg/L	0.022		
Dissolved Manganese	mg/L	0.2921	0.12 (MAC)	Unacceptable
Dissolved Molybdenum	mg/L	0.00038		
Dissolved Nickel	mg/L	0.00183		
Dissolved Selenium	mg/L	0.00033		
Dissolved Silver	mg/L	<0.000009		
Dissolved Strontium	mg/L	0.9654	7.0000 (MAC)	Pass
Dissolved Thallium	mg/L	<0.00008		
Dissolved Tin	mg/L	<0.0006		
Dissolved Titanium	mg/L	0.334		
Dissolved Tungsten	mg/L	<0.001		
Dissolved Uranium	mg/L	0.00078		
Dissolved Vanadium	mg/L	<0.0001		

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KaizenLAB Sample #: 338337_001 **Sample ID:** TW5A

Date Sampled: 11:15 12-Jun-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Dissolved Zinc	mg/L	0.002		
Dissolved Zirconium	mg/L	<0.001		

Notes:

- Aluminum: This Operational Guideline applies only to drinking water treatment plants using aluminum-based coagulants: conventional systems - 0.1 mg/L, other systems - 0.2 mg/L
- Turbidity: Based on slow sand or diatomaceous earth filtration (1.0 NTU) / membrane filtration (0.1 NTU) / conventional treatment (0.3 NTU). No limits apply for well water not under the influence of surface water. For further details and additional guidance restriction, see Guidelines for Canadian Drinking Water Quality (GCDWQ 2019).

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

KaizenLAB Sample #: 338337_002 **Sample ID:** VW5

Date Sampled: 10:45 12-Jun-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Routine Water Potability Analysis (Potability pkg #2)				
Electrical Conductivity (EC) at 25°C	uS/cm	628		
pH		7.2	7.0-10.5 (AO)	Acceptable
Total Dissolved Solids (calculated)	mg/L	388	500 (AO)	Acceptable
True Colour	TCU	<4	15 (AO)	Acceptable
Turbidity	NTU	<0.10	0.1 (MAC) ^{see notes}	See notes
Alkalinity Parameters of Water				
Alkalinity (phenolphthalein, as CaCO ₃) ¹	mg/L	<2.0		
Alkalinity (total, as CaCO ₃)	mg/L	205.7		
Bicarbonate (as HCO ₃) ¹	mg/L	250.8		
Carbonate (as CO ₃) ¹	mg/L	<1.5		
Hydroxide (as OH) ¹	mg/L	<0.5		
Cations in Water by ICP-OES				
Dissolved Calcium	mg/L	90.9		
Dissolved Magnesium	mg/L	23.1		
Dissolved Potassium	mg/L	1.2		
Dissolved Sodium	mg/L	12.4	200 (AO)	Acceptable
Hardness (calculated, as CaCO ₃)	mg/L	322.2		
Sodium Adsorption Ratio		0.30		
Anions in Water by IC				
Bromide	mg/L	<0.10		
Chloride	mg/L	7.27	250 (AO)	Acceptable
Fluoride	mg/L	0.33	1.5 (MAC)	Pass
Nitrate-N	mg/L	0.119	10 (MAC)	Pass
Nitrite-N	mg/L	<0.005	1 (MAC)	Pass
Nitrite-N + Nitrate-N	mg/L	0.119		
Phosphate	mg/L	<0.10		
Sulphate	mg/L	128.6	500 (AO)	Acceptable

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KaizenLAB Sample #: 338337_002 **Sample ID:** VW5

Date Sampled: 10:45 12-Jun-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Cyanide (Total) in water				
Cyanide, Total	mg/L	<0.003	0.2 (MAC)	Pass
Dissolved Mercury	ug/L	<0.001		
Total Kjeldahl Nitrogen	mg/L	<2.00		
Total Organic Carbon	mg/L	3.63		
F1	mg/L	<0.05		
Extractable Hydrocarbons in Water				
F2	mg/L	<0.10		
F3	mg/L	<1.0		
F4	mg/L	<1.0		
BTEX in Water				
Benzene	mg/L	<0.001		
Ethylbenzene	mg/L	<0.001		
Toluene	mg/L	<0.0005		
Total Xylenes	mg/L	<0.003	0.09 (MAC)	Pass
Aroclor 1016	mg/L	<0.00005		
Aroclor 1221	mg/L	<0.00005		
Aroclor 1232	mg/L	<0.00005		
Aroclor 1242	mg/L	<0.00005		
Aroclor 1248	mg/L	<0.00005		
Aroclor 1254	mg/L	<0.00005		
Aroclor 1260	mg/L	<0.00005		
Aroclor 1262	mg/L	<0.00005		
Aroclor 1268	mg/L	<0.00005		
Total PCB's	mg/L	<0.00045		
Polycyclic Aromatic Hydrocarbons in Water				
Acenaphthene	mg/L	<0.000004		
Acenaphthylene	mg/L	<0.000004		
Anthracene	mg/L	<0.000004		
Benzo(a)anthracene	mg/L	<0.000004		
Benzo(a)pyrene	mg/L	<0.000004		
Benzo(a)Pyrene Total Potency Equivalents	mg/L	<0.00085		
Benzo(b,j)fluoranthene	mg/L	<0.000004		
Benzo(g,h,i)perylene	mg/L	<0.000004		
Benzo(k)fluoranthene	mg/L	<0.000004		

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

KaizenLAB Sample #: 338337_002 **Sample ID:** VW5

Date Sampled: 10:45 12-Jun-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Chrysene	mg/L	<0.000004		
Dibenzo(a,h)anthracene	mg/L	<0.000004		
Fluoranthene	mg/L	<0.000004		
Fluorene	mg/L	<0.000004		
Indeno(1,2,3-c,d)pyrene	mg/L	<0.000004		
Naphthalene	mg/L	<0.000004		
Phenanthrene	mg/L	<0.000004		
Pyrene	mg/L	<0.000004		
Dissolved Metals in Water by ICP-MS				
Dissolved Aluminum	mg/L	<0.003	see notes	
Dissolved Antimony	mg/L	<0.0002		
Dissolved Arsenic	mg/L	0.00006		
Dissolved Barium	mg/L	0.0681		
Dissolved Beryllium	mg/L	<0.00006		
Dissolved Bismuth	mg/L	<0.00006		
Dissolved Boron	mg/L	0.021		
Dissolved Cadmium	mg/L	<0.000015		
Dissolved Chromium	mg/L	<0.0002		
Dissolved Cobalt	mg/L	<0.00003		
Dissolved Copper	mg/L	0.0009		
Dissolved Iron	mg/L	<0.004	0.3 (AO)	Acceptable
Dissolved Lanthanum	mg/L	<0.0005		
Dissolved Lead	mg/L	0.00012		
Dissolved Lithium	mg/L	0.009		
Dissolved Manganese	mg/L	<0.0004	0.12 (MAC)	Pass
Dissolved Molybdenum	mg/L	0.00078		
Dissolved Nickel	mg/L	0.00034		
Dissolved Selenium	mg/L	0.00098		
Dissolved Silver	mg/L	<0.000009		
Dissolved Strontium	mg/L	0.3697	7.0000 (MAC)	Pass
Dissolved Thallium	mg/L	<0.00008		
Dissolved Tin	mg/L	<0.0006		
Dissolved Titanium	mg/L	0.143		
Dissolved Tungsten	mg/L	<0.001		
Dissolved Uranium	mg/L	0.00058		
Dissolved Vanadium	mg/L	<0.0001		

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KaizenLAB Sample #: 338337_002 **Sample ID:** VW5

Date Sampled: 10:45 12-Jun-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Dissolved Zinc	mg/L	0.011		
Dissolved Zirconium	mg/L	<0.001		

Notes:

- Aluminum: This Operational Guideline applies only to drinking water treatment plants using aluminum-based coagulants: conventional systems - 0.1 mg/L, other systems - 0.2 mg/L
- Turbidity: Based on slow sand or diatomaceous earth filtration (1.0 NTU) / membrane filtration (0.1 NTU) / conventional treatment (0.3 NTU). No limits apply for well water not under the influence of surface water. For further details and additional guidance restriction, see Guidelines for Canadian Drinking Water Quality (GCDWQ 2019).

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KaizenLAB Sample #: 338337_003 **Sample ID:** CW8

Date Sampled: 11:30 12-Jun-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Routine Water Potability Analysis (Potability pkg #2)				
Electrical Conductivity (EC) at 25°C	uS/cm	637		
pH		7.3	7.0-10.5 (AO)	Acceptable
Total Dissolved Solids (calculated)	mg/L	398	500 (AO)	Acceptable
True Colour	TCU	<4	15 (AO)	Acceptable
Turbidity	NTU	2.86	0.1 (MAC) ^{see notes}	See notes
Alkalinity Parameters of Water				
Alkalinity (phenolphthalein, as CaCO ₃) ¹	mg/L	<2.0		
Alkalinity (total, as CaCO ₃)	mg/L	203.6		
Bicarbonate (as HCO ₃) ¹	mg/L	248.2		
Carbonate (as CO ₃) ¹	mg/L	<1.5		
Hydroxide (as OH) ¹	mg/L	<0.5		
Cations in Water by ICP-OES				
Dissolved Calcium	mg/L	91.0		
Dissolved Magnesium	mg/L	23.6		
Dissolved Potassium	mg/L	1.3		
Dissolved Sodium	mg/L	15.7	200 (AO)	Acceptable
Hardness (calculated, as CaCO ₃)	mg/L	324.4		
Sodium Adsorption Ratio		0.38		
Anions in Water by IC				
Bromide	mg/L	<0.10		
Chloride	mg/L	9.75	250 (AO)	Acceptable
Fluoride	mg/L	0.37	1.5 (MAC)	Pass
Nitrate-N	mg/L	0.030	10 (MAC)	Pass
Nitrite-N	mg/L	<0.005	1 (MAC)	Pass
Nitrite-N + Nitrate-N	mg/L	0.030		
Phosphate	mg/L	<0.10		
Sulphate	mg/L	134.2	500 (AO)	Acceptable

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

KaizenLAB Sample #: 338337_003 **Sample ID:** CW8

Date Sampled: 11:30 12-Jun-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Cyanide (Total) in water				
Cyanide, Total	mg/L	<0.003	0.2 (MAC)	Pass
Dissolved Mercury	ug/L	<0.001		
Total Kjeldahl Nitrogen	mg/L	<2.00		
Total Organic Carbon	mg/L	3.13		
F1	mg/L	<0.05		
Extractable Hydrocarbons in Water				
F2	mg/L	<0.10		
F3	mg/L	<1.0		
F4	mg/L	<1.0		
BTEX in Water				
Benzene	mg/L	<0.001		
Ethylbenzene	mg/L	<0.001		
Toluene	mg/L	<0.0005		
Total Xylenes	mg/L	<0.003	0.09 (MAC)	Pass
Aroclor 1016	mg/L	<0.00005		
Aroclor 1221	mg/L	<0.00005		
Aroclor 1232	mg/L	<0.00005		
Aroclor 1242	mg/L	<0.00005		
Aroclor 1248	mg/L	<0.00005		
Aroclor 1254	mg/L	<0.00005		
Aroclor 1260	mg/L	<0.00005		
Aroclor 1262	mg/L	<0.00005		
Aroclor 1268	mg/L	<0.00005		
Total PCB's	mg/L	<0.00045		
Polycyclic Aromatic Hydrocarbons in Water				
Acenaphthene	mg/L	<0.000004		
Acenaphthylene	mg/L	<0.000004		
Anthracene	mg/L	<0.000004		
Benzo(a)anthracene	mg/L	<0.000004		
Benzo(a)pyrene	mg/L	<0.000004		
Benzo(a)Pyrene Total Potency Equivalents	mg/L	<0.00085		
Benzo(b,j)fluoranthene	mg/L	<0.000004		
Benzo(g,h,i)perylene	mg/L	<0.000004		
Benzo(k)fluoranthene	mg/L	<0.000004		

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

KaizenLAB Sample #: 338337_003 **Sample ID:** CW8

Date Sampled: 11:30 12-Jun-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Chrysene	mg/L	<0.000004		
Dibenzo(a,h)anthracene	mg/L	<0.000004		
Fluoranthene	mg/L	<0.000004		
Fluorene	mg/L	<0.000004		
Indeno(1,2,3-c,d)pyrene	mg/L	<0.000004		
Naphthalene	mg/L	<0.000004		
Phenanthrene	mg/L	<0.000004		
Pyrene	mg/L	<0.000004		
Dissolved Metals in Water by ICP-MS				
Dissolved Aluminum	mg/L	<0.003		see notes
Dissolved Antimony	mg/L	<0.0002		
Dissolved Arsenic	mg/L	0.00009		
Dissolved Barium	mg/L	0.0445		
Dissolved Beryllium	mg/L	<0.00006		
Dissolved Bismuth	mg/L	<0.00006		
Dissolved Boron	mg/L	0.022		
Dissolved Cadmium	mg/L	0.000015		
Dissolved Chromium	mg/L	<0.0002		
Dissolved Cobalt	mg/L	0.00013		
Dissolved Copper	mg/L	0.0002		
Dissolved Iron	mg/L	0.024	0.3 (AO)	Acceptable
Dissolved Lanthanum	mg/L	<0.0005		
Dissolved Lead	mg/L	<0.00007		
Dissolved Lithium	mg/L	0.010		
Dissolved Manganese	mg/L	0.0880	0.12 (MAC)	Unacceptable
Dissolved Molybdenum	mg/L	0.00081		
Dissolved Nickel	mg/L	0.00055		
Dissolved Selenium	mg/L	0.00088		
Dissolved Silver	mg/L	<0.000009		
Dissolved Strontium	mg/L	0.3822	7.0000 (MAC)	Pass
Dissolved Thallium	mg/L	<0.00008		
Dissolved Tin	mg/L	<0.0006		
Dissolved Titanium	mg/L	0.141		
Dissolved Tungsten	mg/L	<0.001		
Dissolved Uranium	mg/L	0.00063		
Dissolved Vanadium	mg/L	<0.0001		

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

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KaizenLAB Sample #: 338337_003 **Sample ID:** CW8

Date Sampled: 11:30 12-Jun-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Dissolved Zinc	mg/L	0.002		
Dissolved Zirconium	mg/L	<0.001		

Notes:

- Aluminum: This Operational Guideline applies only to drinking water treatment plants using aluminum-based coagulants: conventional systems - 0.1 mg/L, other systems - 0.2 mg/L
- Turbidity: Based on slow sand or diatomaceous earth filtration (1.0 NTU) / membrane filtration (0.1 NTU) / conventional treatment (0.3 NTU). No limits apply for well water not under the influence of surface water. For further details and additional guidance restriction, see Guidelines for Canadian Drinking Water Quality (GCDWQ 2019).

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

KaizenLAB Sample #: 338337_004 **Sample ID:** Stilling Basin
Date Sampled: 12:10 12-Jun-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Routine Water Potability Analysis (Potability pkg #2)				
Electrical Conductivity (EC) at 25°C	uS/cm	299		
pH		8.2	7.0-10.5 (AO)	Acceptable
Total Dissolved Solids (calculated)	mg/L	173	500 (AO)	Acceptable
True Colour	TCU	5	15 (AO)	Acceptable
Turbidity	NTU	0.94	0.1 (MAC) ^{see notes}	See notes
Alkalinity Parameters of Water				
Alkalinity (phenolphthalein, as CaCO ₃) ¹	mg/L	<2.0		
Alkalinity (total, as CaCO ₃)	mg/L	113.7		
Bicarbonate (as HCO ₃) ¹	mg/L	138.6		
Carbonate (as CO ₃) ¹	mg/L	<1.5		
Hydroxide (as OH) ¹	mg/L	<0.5		
Cations in Water by ICP-OES				
Dissolved Calcium	mg/L	43.1		
Dissolved Magnesium	mg/L	12.8		
Dissolved Potassium	mg/L	0.7		
Dissolved Sodium	mg/L	3.9	200 (AO)	Acceptable
Hardness (calculated, as CaCO ₃)	mg/L	160.5		
Sodium Adsorption Ratio		0.13		
Anions in Water by IC				
Bromide	mg/L	<0.10		
Chloride	mg/L	0.82	250 (AO)	Acceptable
Fluoride	mg/L	0.30	1.5 (MAC)	Pass
Nitrate-N	mg/L	0.034	10 (MAC)	Pass
Nitrite-N	mg/L	<0.005	1 (MAC)	Pass
Nitrite-N + Nitrate-N	mg/L	0.034		
Phosphate	mg/L	<0.10		
Sulphate	mg/L	42.83	500 (AO)	Acceptable

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KaizenLAB Sample #: 338337_004 **Sample ID:** Stilling Basin
Date Sampled: 12:10 12-Jun-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Cyanide (Total) in water				
Cyanide, Total	mg/L	<0.003	0.2 (MAC)	Pass
Dissolved Mercury	ug/L	<0.001		
Total Kjeldahl Nitrogen	mg/L	<2.00		
Total Organic Carbon	mg/L	5.95		
F1	mg/L	<0.05		
Extractable Hydrocarbons in Water				
F2	mg/L	<0.10		
F3	mg/L	<1.0		
F4	mg/L	<1.0		
BTEX in Water				
Benzene	mg/L	<0.001		
Ethylbenzene	mg/L	<0.001		
Toluene	mg/L	<0.0005		
Total Xylenes	mg/L	<0.003	0.09 (MAC)	Pass
Aroclor 1016	mg/L	<0.00005		
Aroclor 1221	mg/L	<0.00005		
Aroclor 1232	mg/L	<0.00005		
Aroclor 1242	mg/L	<0.00005		
Aroclor 1248	mg/L	<0.00005		
Aroclor 1254	mg/L	<0.00005		
Aroclor 1260	mg/L	<0.00005		
Aroclor 1262	mg/L	<0.00005		
Aroclor 1268	mg/L	<0.00005		
Total PCB's	mg/L	<0.00045		
Polycyclic Aromatic Hydrocarbons in Water				
Acenaphthene	mg/L	<0.000004		
Acenaphthylene	mg/L	<0.000004		
Anthracene	mg/L	<0.000004		
Benzo(a)anthracene	mg/L	<0.000004		
Benzo(a)pyrene	mg/L	<0.000004		
Benzo(a)Pyrene Total Potency Equivalents	mg/L	<0.00085		
Benzo(b,j)fluoranthene	mg/L	<0.000004		
Benzo(g,h,i)perylene	mg/L	<0.000004		
Benzo(k)fluoranthene	mg/L	<0.000004		

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

KaizenLAB Sample #: 338337_004 **Sample ID:** Stilling Basin
Date Sampled: 12:10 12-Jun-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Chrysene	mg/L	<0.000004		
Dibenzo(a,h)anthracene	mg/L	<0.000004		
Fluoranthene	mg/L	<0.000004		
Fluorene	mg/L	<0.000004		
Indeno(1,2,3-c,d)pyrene	mg/L	<0.000004		
Naphthalene	mg/L	<0.000004		
Phenanthrene	mg/L	<0.000004		
Pyrene	mg/L	<0.000004		
Dissolved Metals in Water by ICP-MS				
Dissolved Aluminum	mg/L	0.007		see notes
Dissolved Antimony	mg/L	<0.0002		
Dissolved Arsenic	mg/L	0.00020		
Dissolved Barium	mg/L	0.0551		
Dissolved Beryllium	mg/L	<0.00006		
Dissolved Bismuth	mg/L	<0.00006		
Dissolved Boron	mg/L	0.010		
Dissolved Cadmium	mg/L	<0.000015		
Dissolved Chromium	mg/L	<0.0002		
Dissolved Cobalt	mg/L	0.00006		
Dissolved Copper	mg/L	0.0006		
Dissolved Iron	mg/L	<0.004	0.3 (AO)	Acceptable
Dissolved Lanthanum	mg/L	<0.0005		
Dissolved Lead	mg/L	<0.00007		
Dissolved Lithium	mg/L	0.005		
Dissolved Manganese	mg/L	0.0004	0.12 (MAC)	Pass
Dissolved Molybdenum	mg/L	0.00071		
Dissolved Nickel	mg/L	0.00064		
Dissolved Selenium	mg/L	0.00104		
Dissolved Silver	mg/L	<0.000009		
Dissolved Strontium	mg/L	0.2020	7.0000 (MAC)	Pass
Dissolved Thallium	mg/L	<0.00008		
Dissolved Tin	mg/L	<0.0006		
Dissolved Titanium	mg/L	0.066		
Dissolved Tungsten	mg/L	<0.001		
Dissolved Uranium	mg/L	0.00034		
Dissolved Vanadium	mg/L	0.0001		

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KaizenLAB Sample #: 338337_004 **Sample ID:** Stilling Basin

Date Sampled: 12:10 12-Jun-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Dissolved Zinc	mg/L	<0.002		
Dissolved Zirconium	mg/L	<0.001		

Notes:

- Aluminum: This Operational Guideline applies only to drinking water treatment plants using aluminum-based coagulants: conventional systems - 0.1 mg/L, other systems - 0.2 mg/L
- Turbidity: Based on slow sand or diatomaceous earth filtration (1.0 NTU) / membrane filtration (0.1 NTU) / conventional treatment (0.3 NTU). No limits apply for well water not under the influence of surface water. For further details and additional guidance restriction, see Guidelines for Canadian Drinking Water Quality (GCDWQ 2019).

Test Methodologies

Alkalinity in Water: Modified from SM 2320 B
Anions in Water: Modified from SM 4110 B
BTEX in Water: Modified from EPA 8260D, EPA 5030C/EPA 5021A
Cations in Water by ICP-OES: Modified from SM 3030 B and SM 3120 B
Cyanide, Total, in Water: Modified from ISO 14403:2012(E) and Skalar Analytical B.V., Catnr I295-004w/r issue 010421/99368551
Dissolved Mercury in Water: Modified from EPA 1631 Revision E
Dissolved Metals in Water by ICP-MS: Modified from SM 3030 B and SM 3125 B
Electrical Conductivity in Water: Modified from SM 2510 B and CCME Guidance Manual Volume 4, 2016
Extractable Hydrocarbons in Water: Modified from EPA 8015D and EPA 3520C
pH of Water: Modified from SM 4500-H+ B
Polychlorinated Biphenyls in Water (Non-Accredited): Modified from EPA 3510C and EPA 8270E
Polycyclic Aromatic Hydrocarbons in Water: Modified from EPA 8270E and Royal Society of Chemistry (L-L Micro-extraction)
Total Dissolved Solids (calculated): Modified from SM 1030 E
Total Kjeldahl Nitrogen in Water: Modified from SM 4500-N(org) B and D
Total/Dissolved Organic Carbon in Water: Modified from SM 5310 B
True Colour in Water: Modified from SM 2120 C
Turbidity in Water: Modified from SM 2130 B
Volatile Hydrocarbons in Water: Modified from EPA 8015D, EPA 5030C/EPA 5021A

Final Review by:



Christina Daguio
Client Services Administrator

Note: The results in this report relate only to the items tested and as received. Information is available for any items in 7.8.2.1 of ISO/IEC 17025:2017 that cannot be put on a test report. The report shall not be reproduced except in full without written approval of KaizenLAB. The validity of results may be affected if the information is provided by the customer.

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*This analyte is not accredited, even though analyzed by an accredited methodology.

Pass/Acceptable: The measurement result conforms with the specification limit when the measurement uncertainty is taken into account.

Pass/Acceptable:** It is not possible to state conformance using a 95 % coverage probability for the expanded uncertainty although the measurement result is below the limit.

Fail/Unacceptable: The measurement result does not conform with the specification limit when the measurement uncertainty is taken into account.

The statement of conformity is based on a 95% coverage probability for the expanded uncertainty. The test results and the statement of conformance with specification in this report relate only to the test sample as analysed/tested and not to the sample/item from which the test sample was drawn.

ANALYTICAL REPORT

Client: Sheep River Regional Corp.
 Box 5605
 High River, AB. T1V 1M7

Care of: Foothills County
Attention: Cory Lyons

KaizenLAB JOB #:	338348
DATE RECEIVED:	12-Jun-2024
DATE REPORTED:	19-Jun-2024
PROJECT ID:	Pkg 3 - Schedule 3A (PSblend)
LOCATION:	SRRUC

KaizenLAB Sample #: 338348_001 **Sample ID:** PSblend
Date Sampled: 11:05 12-Jun-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Routine Water Potability Analysis (Potability pkg #2)				
Electrical Conductivity (EC) at 25°C	uS/cm	500		
pH		8.0	7.0-10.5 (AO)	Acceptable
Total Dissolved Solids (calculated)	mg/L	309	500 (AO)	Acceptable
True Colour	TCU	<4	15 (AO)	Acceptable
Turbidity	NTU	0.24	0.1 (MAC) ^{see notes}	See notes
Alkalinity Parameters of Water				
Alkalinity (phenolphthalein, as CaCO ₃) ¹	mg/L	<2.0		
Alkalinity (total, as CaCO ₃)	mg/L	158.6		
Bicarbonate (as HCO ₃) ¹	mg/L	193.4		
Carbonate (as CO ₃) ¹	mg/L	<1.5		
Hydroxide (as OH) ¹	mg/L	<0.5		
Cations in Water by ICP-OES				
Dissolved Calcium	mg/L	71.0		
Dissolved Magnesium	mg/L	20.8		
Dissolved Potassium	mg/L	1.0		
Dissolved Sodium	mg/L	9.1	200 (AO)	Acceptable
Hardness (calculated, as CaCO ₃)	mg/L	262.9		
Sodium Adsorption Ratio		0.24		
Anions in Water by IC				
Bromide	mg/L	<0.10		
Chloride	mg/L	3.99	250 (AO)	Acceptable
Fluoride	mg/L	0.33	1.5 (MAC)	Pass

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

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KaizenLAB Sample #: 338348_001 **Sample ID:** PSBlend
Date Sampled: 11:05 12-Jun-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Nitrate-N	mg/L	<0.010	10 (MAC)	Pass
Nitrite-N	mg/L	<0.005	1 (MAC)	Pass
Nitrite-N + Nitrate-N	mg/L	<0.015		
Phosphate	mg/L	<0.10		
Sulphate	mg/L	107.6	500 (AO)	Acceptable

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

KaizenLAB Sample #: 338348_001 **Sample ID:** PSBlend
Date Sampled: 11:05 12-Jun-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Cyanide (Total) in water				
Cyanide, Total	mg/L	<0.003	0.2 (MAC)	Pass
Dissolved Mercury	ug/L	<0.001		
F2	mg/L	<0.10		
Total Kjeldahl Nitrogen	mg/L	<2.00		
Total Organic Carbon	mg/L	4.35		
F1	mg/L	<0.05		
BTEX in Water				
Benzene	mg/L	<0.001		
Ethylbenzene	mg/L	<0.001		
Toluene	mg/L	<0.0005		
Total Xylenes	mg/L	<0.003	0.09 (MAC)	Pass
Polycyclic Aromatic Hydrocarbons in Water				
Acenaphthene	mg/L	<0.000004		
Acenaphthylene	mg/L	<0.000004		
Anthracene	mg/L	<0.000004		
Benzo(a)anthracene	mg/L	<0.000004		
Benzo(a)pyrene	mg/L	<0.000004		
Benzo(a)Pyrene Total Potency Equivalents	mg/L	<0.00085		
Benzo(b,j)fluoranthene	mg/L	<0.000004		
Benzo(g,h,i)perylene	mg/L	<0.000004		
Benzo(k)fluoranthene	mg/L	<0.000004		
Chrysene	mg/L	<0.000004		
Dibenzo(a,h)anthracene	mg/L	<0.000004		
Fluoranthene	mg/L	<0.000004		
Fluorene	mg/L	<0.000004		
Indeno(1,2,3-c,d)pyrene	mg/L	<0.000004		
Naphthalene	mg/L	<0.000004		
Phenanthrene	mg/L	<0.000004		
Pyrene	mg/L	<0.000004		
Dissolved Metals in Water by ICP-MS				
Dissolved Aluminum	mg/L	<0.003	see notes	
Dissolved Antimony	mg/L	<0.0002		
Dissolved Arsenic	mg/L	0.00011		
Dissolved Barium	mg/L	0.0601		

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

KaizenLAB Sample #: 338348_001 **Sample ID:** PSBlend

Date Sampled: 11:05 12-Jun-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Dissolved Beryllium	mg/L	<0.00006		
Dissolved Bismuth	mg/L	<0.00006		
Dissolved Boron	mg/L	0.015		
Dissolved Cadmium	mg/L	<0.000015		
Dissolved Chromium	mg/L	<0.0002		
Dissolved Cobalt	mg/L	<0.00003		
Dissolved Copper	mg/L	0.0012		
Dissolved Iron	mg/L	<0.004	0.3 (AO)	Acceptable
Dissolved Lanthanum	mg/L	<0.0005		
Dissolved Lead	mg/L	<0.00007		
Dissolved Lithium	mg/L	0.007		
Dissolved Manganese	mg/L	0.0015	0.12 (MAC)	Pass
Dissolved Molybdenum	mg/L	0.00076		
Dissolved Nickel	mg/L	0.00035		
Dissolved Selenium	mg/L	0.00096		
Dissolved Silver	mg/L	<0.000009		
Dissolved Strontium	mg/L	0.3339	7.0000 (MAC)	Pass
Dissolved Thallium	mg/L	<0.00008		
Dissolved Tin	mg/L	<0.0006		
Dissolved Titanium	mg/L	0.108		
Dissolved Tungsten	mg/L	<0.001		
Dissolved Uranium	mg/L	0.00050		
Dissolved Vanadium	mg/L	<0.0001		
Dissolved Zinc	mg/L	0.002		
Dissolved Zirconium	mg/L	<0.001		

Notes:

- Aluminum: This Operational Guideline applies only to drinking water treatment plants using aluminum-based coagulants: conventional systems - 0.1 mg/L, other systems - 0.2 mg/L
- Turbidity: Based on slow sand or diatomaceous earth filtration (1.0 NTU) / membrane filtration (0.1 NTU) / conventional treatment (0.3 NTU). No limits apply for well water not under the influence of surface water. For further details and additional guidance restriction, see Guidelines for Canadian Drinking Water Quality (GCDWQ 2019).

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

Test Methodologies

Alkalinity in Water: Modified from SM 2320 B
Anions in Water: Modified from SM 4110 B
BTEX in Water: Modified from EPA 8260D, EPA 5030C/EPA 5021A
Cations in Water by ICP-OES: Modified from SM 3030 B and SM 3120 B
Cyanide, Total, in Water: Modified from ISO 14403:2012(E) and Skalar Analytical B.V., Catnr I295-004w/r issue 010421/99368551
Dissolved Mercury in Water: Modified from EPA 1631 Revision E
Dissolved Metals in Water by ICP-MS: Modified from SM 3030 B and SM 3125 B
Electrical Conductivity in Water: Modified from SM 2510 B and CCME Guidance Manual Volume 4, 2016
Extractable Hydrocarbons in Water: Modified from EPA 8015D and EPA 3520C
pH of Water: Modified from SM 4500-H+ B
Polycyclic Aromatic Hydrocarbons in Water: Modified from EPA 8270E and Royal Society of Chemistry (L-L Micro-extraction)
Total Dissolved Solids (calculated): Modified from SM 1030 E
Total Kjeldahl Nitrogen in Water: Modified from SM 4500-N(org) B and D
Total/Dissolved Organic Carbon in Water: Modified from SM 5310 B
True Colour in Water: Modified from SM 2120 C
Turbidity in Water: Modified from SM 2130 B
Volatile Hydrocarbons in Water: Modified from EPA 8015D, EPA 5030C/EPA 5021A

Final Review by:



Christina Daguio
Client Services Administrator

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Pass/Acceptable: The measurement result conforms with the specification limit when the measurement uncertainty is taken into account.

Pass/Acceptable:** It is not possible to state conformance using a 95 % coverage probability for the expanded uncertainty although the measurement result is below the limit.

Fail/Unacceptable: The measurement result does not conform with the specification limit when the measurement uncertainty is taken into account.

The statement of conformity is based on a 95% coverage probability for the expanded uncertainty. The test results and the statement of conformance with specification in this report relate only to the test sample as analysed/tested and not to the sample/item from which the test sample was drawn.

ANALYTICAL REPORT

Client: Sheep River Regional Corp.
 Box 5605
 High River, AB. T1V 1M7

Care of: Foothills County
Attention: Cory Lyons

KaizenLAB JOB #:	338960
DATE RECEIVED:	10-Jul-2024
DATE REPORTED:	17-Jul-2024
PROJECT ID:	Pkg 3 - Schedule 3A (PSBlend)
LOCATION:	SRRUC

KaizenLAB Sample #: 338960_001 **Sample ID:** PSBlend
Date Sampled: 9:47 10-Jul-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Routine Water Potability Analysis (Potability pkg #2)				
Electrical Conductivity (EC) at 25°C	uS/cm	519		
pH		8.0	7.0-10.5 (AO)	Acceptable
Total Dissolved Solids (calculated)	mg/L	318	500 (AO)	Acceptable
True Colour	TCU	<4	15 (AO)	Acceptable
Turbidity	NTU	0.31	0.1 (MAC) ^{see notes}	See notes
Alkalinity Parameters of Water				
Alkalinity (phenolphthalein, as CaCO ₃) ¹	mg/L	<2.0		
Alkalinity (total, as CaCO ₃)	mg/L	157.4		
Bicarbonate (as HCO ₃) ¹	mg/L	192.0		
Carbonate (as CO ₃) ¹	mg/L	<1.5		
Hydroxide (as OH) ¹	mg/L	<0.5		
Cations in Water by ICP-OES				
Dissolved Calcium	mg/L	66.6		
Dissolved Magnesium	mg/L	21.4		
Dissolved Potassium	mg/L	1.1		
Dissolved Sodium	mg/L	10.2	200 (AO)	Acceptable
Hardness (calculated, as CaCO ₃)	mg/L	254.4		
Sodium Adsorption Ratio		0.28		
Anions in Water by IC				
Bromide	mg/L	<0.10		
Chloride	mg/L	5.78	250 (AO)	Acceptable
Fluoride	mg/L	0.39	1.5 (MAC)	Pass

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

Unit# 288, 2880 45 Ave S.E.
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KaizenLAB Sample #: 338960_001 **Sample ID:** PSBlend
Date Sampled: 9:47 10-Jul-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Nitrate-N	mg/L	<0.010	10 (MAC)	Pass
Nitrite-N	mg/L	<0.005	1 (MAC)	Pass
Nitrite-N + Nitrate-N	mg/L	<0.015		
Phosphate	mg/L	<0.10		
Sulphate	mg/L	117.6	500 (AO)	Acceptable

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

KaizenLAB Sample #: 338960_001 **Sample ID:** PSBlend

Date Sampled: 9:47 10-Jul-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Cyanide (Total) in water				
Cyanide, Total	mg/L	<0.003	0.2 (MAC)	Pass
Dissolved Mercury	ug/L	<0.001		
F2	mg/L	<0.10		
Total Kjeldahl Nitrogen	mg/L	<2.00		
Total Organic Carbon	mg/L	4.10		
F1	mg/L	<0.05		
BTEX in Water				
Benzene	mg/L	<0.001		
Ethylbenzene	mg/L	<0.001		
Toluene	mg/L	<0.0005		
Total Xylenes	mg/L	<0.003	0.09 (MAC)	Pass
Polycyclic Aromatic Hydrocarbons in Water				
Acenaphthene	mg/L	<0.000004		
Acenaphthylene	mg/L	<0.000004		
Anthracene	mg/L	<0.000004		
Benzo(a)anthracene	mg/L	<0.000004		
Benzo(a)pyrene	mg/L	<0.000004		
Benzo(a)Pyrene Total Potency Equivalents	mg/L	<0.00085		
Benzo(b,j)fluoranthene	mg/L	<0.000004		
Benzo(g,h,i)perylene	mg/L	<0.000004		
Benzo(k)fluoranthene	mg/L	<0.000004		
Chrysene	mg/L	<0.000004		
Dibenzo(a,h)anthracene	mg/L	<0.000004		
Fluoranthene	mg/L	<0.000004		
Fluorene	mg/L	<0.000004		
Indeno(1,2,3-c,d)pyrene	mg/L	<0.000004		
Naphthalene	mg/L	<0.000004		
Phenanthrene	mg/L	<0.000004		
Pyrene	mg/L	<0.000004		
Dissolved Metals in Water by ICP-MS				
Dissolved Aluminum	mg/L	<0.003	see notes	
Dissolved Antimony	mg/L	<0.0002		
Dissolved Arsenic	mg/L	0.00013		
Dissolved Barium	mg/L	0.0608		

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

KaizenLAB Sample #: 338960_001 **Sample ID:** PSBlend
Date Sampled: 9:47 10-Jul-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Dissolved Beryllium	mg/L	<0.00006		
Dissolved Bismuth	mg/L	<0.00006		
Dissolved Boron	mg/L	0.018		
Dissolved Cadmium	mg/L	<0.000015		
Dissolved Chromium	mg/L	<0.0002		
Dissolved Cobalt	mg/L	<0.00003		
Dissolved Copper	mg/L	0.0010		
Dissolved Iron	mg/L	<0.004	0.3 (AO)	Acceptable
Dissolved Lanthanum	mg/L	<0.0005		
Dissolved Lead	mg/L	<0.00007		
Dissolved Lithium	mg/L	0.007		
Dissolved Manganese	mg/L	0.0008	0.12 (MAC)	Pass
Dissolved Molybdenum	mg/L	0.00074		
Dissolved Nickel	mg/L	0.00043		
Dissolved Selenium	mg/L	0.00104		
Dissolved Silver	mg/L	<0.000009		
Dissolved Strontium	mg/L	0.3319	7.0000 (MAC)	Pass
Dissolved Thallium	mg/L	<0.00008		
Dissolved Tin	mg/L	<0.0006		
Dissolved Titanium	mg/L	0.106		
Dissolved Tungsten	mg/L	<0.001		
Dissolved Uranium	mg/L	0.00048		
Dissolved Vanadium	mg/L	<0.0001		
Dissolved Zinc	mg/L	0.002		
Dissolved Zirconium	mg/L	<0.001		

Notes:

- Aluminum: This Operational Guideline applies only to drinking water treatment plants using aluminum-based coagulants: conventional systems - 0.1 mg/L, other systems - 0.2 mg/L
- Turbidity: Based on slow sand or diatomaceous earth filtration (1.0 NTU) / membrane filtration (0.1 NTU) / conventional treatment (0.3 NTU). No limits apply for well water not under the influence of surface water. For further details and additional guidance restriction, see Guidelines for Canadian Drinking Water Quality (GCDWQ 2019).

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

Test Methodologies

Alkalinity in Water: Modified from SM 2320 B
Anions in Water: Modified from SM 4110 B
BTEX in Water: Modified from EPA 8260D, EPA 5030C/EPA 5021A
Cations in Water by ICP-OES: Modified from SM 3030 B and SM 3120 B
Cyanide, Total, in Water: Modified from ISO 14403:2012(E) and Skalar Analytical B.V., Catnr I295-004w/r issue 010421/99368551
Dissolved Mercury in Water: Modified from EPA 1631 Revision E
Dissolved Metals in Water by ICP-MS: Modified from SM 3030 B and SM 3125 B
Electrical Conductivity in Water: Modified from SM 2510 B and CCME Guidance Manual Volume 4, 2016
Extractable Hydrocarbons in Water: Modified from EPA 8015D and EPA 3520C
pH of Water: Modified from SM 4500-H+ B
Polycyclic Aromatic Hydrocarbons in Water: Modified from EPA 8270E and Royal Society of Chemistry (L-L Micro-extraction)
Total Dissolved Solids and Ion Sums/Ratios (calculation): Modified from SM 1030 E
Total Kjeldahl Nitrogen in Water: Modified from SM 4500-N(org) B and D
Total/Dissolved Organic Carbon in Water: Modified from SM 5310 B
True Colour in Water: Modified from SM 2120 C
Turbidity in Water: Modified from SM 2130 B
Volatile Hydrocarbons in Water: Modified from EPA 8015D, EPA 5030C/EPA 5021A

Final Review by:



Ivory Ringor
Client Services Representative

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ANALYTICAL REPORT

Client: Sheep River Regional Corp.
Box 5605
High River, AB. T1V 1M7

Care of: Stantec
Attention: Lincoln Weller

KaizenLAB JOB #:	339238
DATE RECEIVED:	23-Jul-2024
DATE REPORTED:	31-Jul-2024
PROJECT ID:	123513703
LOCATION:	Turner Valley Reservoir

KaizenLAB Sample #: 339238_001 **Sample ID:** TVR 2.1
Date Sampled: 23-Jul-2024 16:15 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
.....			
F1	mg/L	<0.05	0.05
.....			
F2	mg/L	<0.10	0.10
.....			

KaizenLAB Sample #: 339238_002 **Sample ID:** TVR 2.2
Date Sampled: 23-Jul-2024 15:45 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
.....			
F1	mg/L	<0.05	0.05
.....			
F2	mg/L	<0.10	0.10
.....			

KaizenLAB Sample #: 339238_003 **Sample ID:** TVR 2.4
Date Sampled: 23-Jul-2024 15:10 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
F1	mg/L	<0.05	0.05
F2	mg/L	<0.10	0.10

KaizenLAB Sample #: 339238_004 **Sample ID:** TVR 3.1
Date Sampled: 23-Jul-2024 14:00 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
F1	mg/L	<0.05	0.05
F2	mg/L	<0.10	0.10

KaizenLAB Sample #: 339238_005 **Sample ID:** TVR 4.1
Date Sampled: 23-Jul-2024 10:25 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
F1	mg/L	<0.05	0.05
F2	mg/L	<0.10	0.10

KaizenLAB Sample #: 339238_006 **Sample ID:** TVR 4.3
Date Sampled: 23-Jul-2024 12:40 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
F1	mg/L	<0.05	0.05
F2	mg/L	<0.10	0.10

KaizenLAB Sample #: 339238_007 **Sample ID:** TVR 4.4R
Date Sampled: 23-Jul-2024 11:10 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
F1	mg/L	<0.05	0.05
F2	mg/L	<0.10	0.10

KaizenLAB Sample #: 339238_008 **Sample ID:** TVR 4.5
Date Sampled: 23-Jul-2024 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
F1	mg/L	<0.05	0.05
F2	mg/L	<0.10	0.10

KaizenLAB Sample #: 339238_009 **Sample ID:** TVR 8.1
Date Sampled: 23-Jul-2024 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
F1	mg/L	<0.05	0.05
F2	mg/L	<0.10	0.10

Test Methodologies

BTEX in Water: Modified from EPA 8260D, EPA 5030C/EPA 5021A
Extractable Hydrocarbons in Water: Modified from EPA 8015D and EPA 3520C
Volatile Hydrocarbons in Water: Modified from EPA 8015D, EPA 5030C/EPA 5021A

Final Review by:



Irene De Leon
Client Services Representative

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ANALYTICAL REPORT

Client: Sheep River Regional Corp.
Box 5605
High River, AB. T1V 1M7

Care of: Stantec
Attention: Lincoln Weller

KaizenLAB JOB #:	339275
DATE RECEIVED:	24-Jul-2024
DATE REPORTED:	01-Aug-2024
PROJECT ID:	123513703
LOCATION:	Turner Valley Reservoir

KaizenLAB Sample #: 339275_001 **Sample ID:** TVR 1.1
Date Sampled: 24-Jul-2024 11:50 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
F1	mg/L	<0.05	0.05
F2	mg/L	<0.10	0.10

KaizenLAB Sample #: 339275_002 **Sample ID:** TVR 1.2
Date Sampled: 24-Jul-2024 11:20 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
F1	mg/L	<0.05	0.05
F2	mg/L	<0.10	0.10

KaizenLAB Sample #: 339275_003 **Sample ID:** TVR 5.1
Date Sampled: 24-Jul-2024 15:50 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
F1	mg/L	<0.05	0.05
F2	mg/L	<0.10	0.10

KaizenLAB Sample #: 339275_004 **Sample ID:** TVR 5.2R
Date Sampled: 24-Jul-2024 15:30 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
F1	mg/L	<0.05	0.05
F2	mg/L	<0.10	0.10

KaizenLAB Sample #: 339275_005 **Sample ID:** TVR 6.2R
Date Sampled: 24-Jul-2024 10:10 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
F1	mg/L	<0.05	0.05
F2	mg/L	<0.10	0.10

KaizenLAB Sample #: 339275_006 **Sample ID:** TVR 7.1
Date Sampled: 24-Jul-2024 13:15 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
F1	mg/L	<0.05	0.05
F2	mg/L	<0.10	0.10

KaizenLAB Sample #: 339275_007 **Sample ID:** TVR 7.2
Date Sampled: 24-Jul-2024 12:45 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
F1	mg/L	<0.05	0.05
F2	mg/L	<0.10	0.10

KaizenLAB Sample #: 339275_008 **Sample ID:** Sheep River 1
Date Sampled: 24-Jul-2024 13:45 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
F1	mg/L	<0.05	0.05
F2	mg/L	<0.10	0.10

KaizenLAB Sample #: 339275_009 **Sample ID:** TVR 7.3
Date Sampled: 24-Jul-2024 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
F1	mg/L	<0.05	0.05
F2	mg/L	<0.10	0.10

KaizenLAB Sample #: 339275_010 **Sample ID:** TVR 8.2
Date Sampled: 24-Jul-2024 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
F1	mg/L	<0.05	0.05
F2	mg/L	<0.10	0.10

Test Methodologies

BTEX in Water: Modified from EPA 8260D, EPA 5030C/EPA 5021A
 Extractable Hydrocarbons in Water: Modified from EPA 8015D and EPA 3520C
 Volatile Hydrocarbons in Water: Modified from EPA 8015D, EPA 5030C/EPA 5021A

Final Review by:


 Christina Dagui
 Client Services Administrator

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ANALYTICAL REPORT

Client: Sheep River Regional Corp.
Box 5605
High River, AB. T1V 1M7

Care of: Stantec
Attention: Lincoln Weller

KaizenLAB JOB #:	339309
DATE RECEIVED:	25-Jul-2024
DATE REPORTED:	02-Aug-2024
PROJECT ID:	123513703
LOCATION:	Turner Valley Reservoir

KaizenLAB Sample #: 339309_001 **Sample ID:** TVSA-02
Date Sampled: 25-Jul-2024 12:45 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
F1	mg/L	<0.05	0.05
F2	mg/L	<0.10	0.10

KaizenLAB Sample #: 339309_002 **Sample ID:** TVSA-03
Date Sampled: 25-Jul-2024 13:15 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
F1	mg/L	<0.05	0.05
F2	mg/L	0.14	0.10

KaizenLAB Sample #: 339309_003 **Sample ID:** TVSA-04
Date Sampled: 25-Jul-2024 14:50 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
F1	mg/L	<0.05	0.05
F2	mg/L	0.11	0.10

KaizenLAB Sample #: 339309_004 **Sample ID:** TVSA-05
Date Sampled: 25-Jul-2024 11:30 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
F1	mg/L	<0.05	0.05
F2	mg/L	0.13	0.10

KaizenLAB Sample #: 339309_005 **Sample ID:** TVSA-06
Date Sampled: 25-Jul-2024 10:35 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
F1	mg/L	<0.05	0.05
F2	mg/L	0.16	0.10

KaizenLAB Sample #: 339309_006 **Sample ID:** TVSA-07
Date Sampled: 25-Jul-2024 9:45 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
F1	mg/L	<0.05	0.05
F2	mg/L	0.17	0.10

KaizenLAB Sample #: 339309_007 **Sample ID:** TVSA-08
Date Sampled: 25-Jul-2024 12:15 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
F1	mg/L	<0.05	0.05
F2	mg/L	0.11	0.10

KaizenLAB Sample #: 339309_008 **Sample ID:** TVSA-09
Date Sampled: 25-Jul-2024 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
F1	mg/L	<0.05	0.05
F2	mg/L	0.13	0.10

KaizenLAB Sample #: 339309_009 **Sample ID:** TVR 8.3
Date Sampled: 25-Jul-2024 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
F1	mg/L	<0.05	0.05
F2	mg/L	0.11	0.10

KaizenLAB Sample #: 339309_010 **Sample ID:** Sheep River 2
Date Sampled: 25-Jul-2024 14:15 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
F1	mg/L	<0.05	0.05
F2	mg/L	0.11	0.10

KaizenLAB Sample #: 339309_011 **Sample ID:** Deep GW Int
Date Sampled: 25-Jul-2024 15:30 **Matrix:** Water

Parameter Description	Units	Result	Detection Limit
CCME Petroleum Hydrocarbons in water: BTEX/F1-F2			
BTEX in Water			
Benzene	mg/L	<0.001	0.001
Toluene	mg/L	<0.0005	0.0005
Ethylbenzene	mg/L	<0.001	0.001
Total Xylenes	mg/L	<0.003	0.003
F1	mg/L	<0.05	0.05
F2	mg/L	0.17	0.10

Nitrate+Nitrite-Nitrogen in Water

Anions in Water by IC

Nitrite-N	mg/L	<0.005	0.005
Nitrate-N	mg/L	6.588	0.010
Nitrite-N + Nitrate-N	mg/L	6.588	0.015

Test Methodologies

Anions in Water: Modified from SM 4110 B

BTEX in Water: Modified from EPA 8260D, EPA 5030C/EPA 5021A

Extractable Hydrocarbons in Water: Modified from EPA 8015D and EPA 3520C

Volatile Hydrocarbons in Water: Modified from EPA 8015D, EPA 5030C/EPA 5021A

Final Review by:



Irene De Leon
Client Services Representative

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*This analyte is not accredited, even though analyzed by an accredited methodology.

ANALYTICAL REPORT

Client: Sheep River Regional Corp.
 Box 5605
 High River, AB. T1V 1M7

Care of: Foothills County
Attention: Cory Lyons

KaizenLAB JOB #:	339765
DATE RECEIVED:	14-Aug-2024
DATE REPORTED:	21-Aug-2024
PROJECT ID:	Pkg 3 - Schedule 3A (PSBlend)
LOCATION:	SRRUC

KaizenLAB Sample #: 339765_001 **Sample ID:** PSBlend
Date Sampled: 8:05 14-Aug-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Routine Water Potability Analysis (Potability pkg #2)				
Electrical Conductivity (EC) at 25°C	uS/cm	535		
pH		7.9	7.0-10.5 (AO)	Acceptable
True Colour	TCU	<4	15 (AO)	Acceptable
Turbidity	NTU	0.43	0.1 (MAC) ^{see notes}	See notes
Potability Package Calculations				
Ion Balance (calculated)	%	101.03		
Total Dissolved Solids (calculated)	mg/L	333	500 (AO)	Acceptable
Alkalinity Parameters of Water				
Alkalinity (phenolphthalein, as CaCO ₃) ¹	mg/L	<2.0		
Alkalinity (total, as CaCO ₃)	mg/L	162.6		
Bicarbonate (as HCO ₃) ¹	mg/L	198.2		
Carbonate (as CO ₃) ¹	mg/L	<1.5		
Hydroxide (as OH) ¹	mg/L	<0.5		
Cations in Water by ICP-OES				
Dissolved Calcium	mg/L	72.9		
Dissolved Magnesium	mg/L	21.8		
Dissolved Potassium	mg/L	1.1		
Dissolved Sodium	mg/L	10.7	200 (AO)	Acceptable
Hardness (calculated, as CaCO ₃)	mg/L	271.7		
Sodium Adsorption Ratio		0.28		
Anions in Water by IC				
Bromide	mg/L	<0.10		

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

Unit# 288, 2880 45 Ave S.E.
Calgary, AB, T2B 3M1
Phone (403) 297-0868
Fax: (403) 297-0869
e-Mail: kaizenlab@kaizenlab.ca



KaizenLAB Sample #: 339765_001 **Sample ID:** PSBlend

Date Sampled: 8:05 14-Aug-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Chloride	mg/L	6.33	250 (AO)	Acceptable
Fluoride	mg/L	0.24	1.5 (MAC)	Pass
Nitrate-N	mg/L	0.022	10 (MAC)	Pass
Nitrite-N	mg/L	<0.005	1 (MAC)	Pass
Nitrite-N + Nitrate-N	mg/L	0.022		
Phosphate	mg/L	<0.10		
Sulphate	mg/L	122.4	500 (AO)	Acceptable

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KaizenLAB Sample #: 339765_001 **Sample ID:** PSBlend
Date Sampled: 8:05 14-Aug-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Cyanide (Total) in water				
Cyanide, Total	mg/L	<0.003	0.2 (MAC)	Pass
Dissolved Mercury	ug/L	<0.001		
F2	mg/L	<0.10		
Total Kjeldahl Nitrogen	mg/L	<2.00		
Total Organic Carbon	mg/L	2.07		
F1	mg/L	<0.05		
BTEX in Water				
Benzene	mg/L	<0.001		
Ethylbenzene	mg/L	<0.001		
Toluene	mg/L	<0.0005		
Total Xylenes	mg/L	<0.003	0.09 (MAC)	Pass
Polycyclic Aromatic Hydrocarbons in Water				
Acenaphthene	mg/L	<0.000004		
Acenaphthylene	mg/L	<0.000004		
Anthracene	mg/L	<0.000004		
Benzo(a)anthracene	mg/L	<0.000004		
Benzo(a)pyrene	mg/L	<0.000004		
Benzo(a)Pyrene Total Potency Equivalents	mg/L	<0.00085		
Benzo(b,j)fluoranthene	mg/L	<0.000004		
Benzo(g,h,i)perylene	mg/L	<0.000004		
Benzo(k)fluoranthene	mg/L	<0.000004		
Chrysene	mg/L	<0.000004		
Dibenzo(a,h)anthracene	mg/L	<0.000004		
Fluoranthene	mg/L	<0.000004		
Fluorene	mg/L	<0.000004		
Indeno(1,2,3-c,d)pyrene	mg/L	<0.000004		
Naphthalene	mg/L	<0.000004		
Phenanthrene	mg/L	<0.000004		
Pyrene	mg/L	<0.000004		
Dissolved Metals in Water by ICP-MS				
Dissolved Aluminum	mg/L	<0.003	see notes	
Dissolved Antimony	mg/L	<0.0002		
Dissolved Arsenic	mg/L	0.00017		
Dissolved Barium	mg/L	0.0632		

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KaizenLAB Sample #: 339765_001 **Sample ID:** PSBlend
Date Sampled: 8:05 14-Aug-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Dissolved Beryllium	mg/L	<0.00006		
Dissolved Bismuth	mg/L	<0.00006		
Dissolved Boron	mg/L	0.019		
Dissolved Cadmium	mg/L	<0.000015		
Dissolved Chromium	mg/L	<0.0002		
Dissolved Cobalt	mg/L	<0.00003		
Dissolved Copper	mg/L	0.0006		
Dissolved Iron	mg/L	<0.004	0.3 (AO)	Acceptable
Dissolved Lanthanum	mg/L	<0.0005		
Dissolved Lead	mg/L	<0.00007		
Dissolved Lithium	mg/L	0.008		
Dissolved Manganese	mg/L	<0.0004	0.12 (MAC)	Pass
Dissolved Molybdenum	mg/L	0.00073		
Dissolved Nickel	mg/L	0.00041		
Dissolved Selenium	mg/L	0.00092		
Dissolved Silver	mg/L	<0.000009		
Dissolved Strontium	mg/L	0.3408	7.0000 (MAC)	Pass
Dissolved Thallium	mg/L	<0.00008		
Dissolved Tin	mg/L	<0.0006		
Dissolved Titanium	mg/L	0.123		
Dissolved Tungsten	mg/L	<0.001		
Dissolved Uranium	mg/L	0.00051		
Dissolved Vanadium	mg/L	<0.0001		
Dissolved Zinc	mg/L	0.002		
Dissolved Zirconium	mg/L	<0.001		

Notes:

- Aluminum: This Operational Guideline applies only to drinking water treatment plants using aluminum-based coagulants: conventional systems - 0.1 mg/L, other systems - 0.2 mg/L
- Turbidity: Based on slow sand or diatomaceous earth filtration (1.0 NTU) / membrane filtration (0.1 NTU) / conventional treatment (0.3 NTU). No limits apply for well water not under the influence of surface water. Refer to the Guidelines for Canadian Drinking Water Quality found on the Government of Canada website for current information.

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

Test Methodologies

Alkalinity in Water: Modified from SM 2320 B
Anions in Water: Modified from SM 4110 B
BTEX in Water: Modified from EPA 8260D, EPA 5030C/EPA 5021A
Cations in Water by ICP-OES: Modified from SM 3030 B and SM 3120 B
Cyanide, Total, in Water: Modified from ISO 14403:2012(E) and Skalar Analytical B.V., Catnr I295-004w/r issue 010421/99368551
Dissolved Mercury in Water: Modified from EPA 1631 Revision E
Dissolved Metals in Water by ICP-MS: Modified from SM 3030 B and SM 3125 B
Electrical Conductivity in Water: Modified from SM 2510 B and CCME Guidance Manual Volume 4, 2016
Extractable Hydrocarbons in Water: Modified from EPA 8015D and EPA 3520C
pH of Water: Modified from SM 4500-H+ B
Polycyclic Aromatic Hydrocarbons in Water: Modified from EPA 8270E and Royal Society of Chemistry (L-L Micro-extraction)
Total Dissolved Solids and Ion Sums/Ratios (calculation): Modified from SM 1030 E
Total Kjeldahl Nitrogen in Water: Modified from SM 4500-N(org) B and D
Total/Dissolved Organic Carbon in Water: Modified from SM 5310 B
True Colour in Water: Modified from SM 2120 C
Turbidity in Water: Modified from SM 2130 B
Volatile Hydrocarbons in Water: Modified from EPA 8015D, EPA 5030C/EPA 5021A

Final Review by:



Ivory Ringor
Client Services Representative

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Pass/Acceptable: The measurement result conforms with the specification limit when the measurement uncertainty is taken into account.

Pass/Acceptable:** It is not possible to state conformance using a 95 % coverage probability for the expanded uncertainty although the measurement result is below the limit.

Fail/Unacceptable: The measurement result does not conform with the specification limit when the measurement uncertainty is taken into account.

The statement of conformity is based on a 95% coverage probability for the expanded uncertainty. The test results and the statement of conformance with specification in this report relate only to the test sample as analysed/tested and not to the sample/item from which the test sample was drawn.

ANALYTICAL REPORT

Client: Sheep River Regional Corp.
 Box 5605
 High River, AB. T1V 1M7

Care of: Foothills County
Attention: Cory Lyons

KaizenLAB JOB #:	340436
DATE RECEIVED:	11-Sep-2024
DATE REPORTED:	18-Sep-2024
PROJECT ID:	Pkg 3-Schedule 3A (PS Blend)
LOCATION:	SRRUC

KaizenLAB Sample #: 340436_001 **Sample ID:** PS Blend
Date Sampled: 7:15 11-Sep-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Routine Water Potability Analysis (Potability pkg #2)				
Electrical Conductivity (EC) at 25°C	uS/cm	526		
pH		8.0	7.0-10.5 (AO)	Acceptable
True Colour	TCU	<4	15 (AO)	Acceptable
Turbidity	NTU	0.55	0.1 (MAC) ^{see notes}	See notes
Potability Package Calculations				
Ion Balance (calculated)	%	98.69		
Total Dissolved Solids (calculated)	mg/L	319	500 (AO)	Acceptable
Alkalinity Parameters of Water				
Alkalinity (phenolphthalein, as CaCO ₃) ¹	mg/L	<2.0		
Alkalinity (total, as CaCO ₃)	mg/L	157.2		
Bicarbonate (as HCO ₃) ¹	mg/L	191.7		
Carbonate (as CO ₃) ¹	mg/L	<1.5		
Hydroxide (as OH) ¹	mg/L	<0.5		
Anions in Water by IC				
Bromide	mg/L	<0.10		
Chloride	mg/L	5.99	250 (AO)	Acceptable
Fluoride	mg/L	0.18	1.5 (MAC)	Pass
Nitrate-N	mg/L	0.011	10 (MAC)	Pass
Nitrite-N	mg/L	<0.005	1 (MAC)	Pass
Nitrite-N + Nitrate-N	mg/L	<0.015		
Phosphate	mg/L	<0.10		
Sulphate	mg/L	114.5	500 (AO)	Acceptable

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

Unit# 288, 2880 45 Ave S.E.
Calgary, AB, T2B 3M1
Phone (403) 297-0868
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KaizenLAB Sample #: 340436_001 **Sample ID:** PS Blend
Date Sampled: 7:15 11-Sep-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Cations in Water by ICP-OES				
Dissolved Calcium	mg/L	70.2		
Dissolved Iron ¹	mg/L	<0.05	0.3 (AO)	Acceptable
Dissolved Magnesium	mg/L	21.7		
Dissolved Manganese ¹	mg/L	<0.05		
Dissolved Potassium	mg/L	1.1		
Dissolved Sodium	mg/L	10.5	200 (AO)	Acceptable
Hardness (calculated, as CaCO ₃)	mg/L	264.7		
Sodium Adsorption Ratio		0.28		
.....				

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

KaizenLAB Sample #: 340436_001 **Sample ID:** PS Blend
Date Sampled: 7:15 11-Sep-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Cyanide (Total) in water				
Cyanide, Total	mg/L	<0.003	0.2 (MAC)	Pass
Dissolved Mercury	ug/L	<0.001		
F2	mg/L	<0.10		
Total Kjeldahl Nitrogen	mg/L	<2.00		
Total Organic Carbon	mg/L	1.86		
F1	mg/L	<0.05		
BTEX in Water				
Benzene	mg/L	<0.001		
Ethylbenzene	mg/L	<0.001		
Toluene	mg/L	<0.0005		
Total Xylenes	mg/L	<0.003	0.09 (MAC)	Pass
Polycyclic Aromatic Hydrocarbons in Water				
Acenaphthene	mg/L	<0.000004		
Acenaphthylene	mg/L	<0.000004		
Anthracene	mg/L	<0.000004		
Benzo(a)anthracene	mg/L	<0.000004		
Benzo(a)pyrene	mg/L	<0.000004		
Benzo(a)Pyrene Total Potency Equivalents	mg/L	<0.00085		
Benzo(b,j)fluoranthene	mg/L	<0.000004		
Benzo(g,h,i)perylene	mg/L	<0.000004		
Benzo(k)fluoranthene	mg/L	<0.000004		
Chrysene	mg/L	<0.000004		
Dibenzo(a,h)anthracene	mg/L	<0.000004		
Fluoranthene	mg/L	<0.000004		
Fluorene	mg/L	<0.000004		
Indeno(1,2,3-c,d)pyrene	mg/L	<0.000004		
Naphthalene	mg/L	<0.000004		
Phenanthrene	mg/L	0.000005		
Pyrene	mg/L	<0.000004		
Dissolved Metals in Water by ICP-MS				
Dissolved Aluminum	mg/L	<0.003	see notes	
Dissolved Antimony	mg/L	<0.0002		
Dissolved Arsenic	mg/L	0.00018		
Dissolved Barium	mg/L	0.0610		

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KaizenLAB Sample #: 340436_001 **Sample ID:** PS Blend
Date Sampled: 7:15 11-Sep-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Dissolved Beryllium	mg/L	<0.00006		
Dissolved Boron	mg/L	0.021		
Dissolved Cadmium	mg/L	<0.000015		
Dissolved Chromium	mg/L	<0.0002		
Dissolved Cobalt	mg/L	<0.00003		
Dissolved Copper	mg/L	0.0007		
Dissolved Iron	mg/L	<0.004	0.3 (AO)	Acceptable
Dissolved Lead	mg/L	<0.00007		
Dissolved Manganese	mg/L	0.0006	0.12 (MAC)	Pass
Dissolved Molybdenum	mg/L	0.00085		
Dissolved Nickel	mg/L	0.00037		
Dissolved Selenium	mg/L	0.00089		
Dissolved Silver	mg/L	<0.000009		
Dissolved Strontium	mg/L	0.3382	7.0000 (MAC)	Pass
Dissolved Thallium	mg/L	<0.00008		
Dissolved Tin	mg/L	<0.0006		
Dissolved Titanium	mg/L	0.114		
Dissolved Uranium	mg/L	0.00051		
Dissolved Vanadium	mg/L	<0.0001		
Dissolved Zinc	mg/L	0.002		

Notes:

- Aluminum: This Operational Guideline applies only to drinking water treatment plants using aluminum-based coagulants: conventional systems - 0.1 mg/L, other systems - 0.2 mg/L
- Turbidity: Based on slow sand or diatomaceous earth filtration (1.0 NTU) / membrane filtration (0.1 NTU) / conventional treatment (0.3 NTU). No limits apply for well water not under the influence of surface water. Refer to the Guidelines for Canadian Drinking Water Quality found on the Government of Canada website for current information.

Test Methodologies

Alkalinity in Water: Modified from SM 2320 B
Anions in Water: Modified from SM 4110 B
BTEX in Water: Modified from EPA 8260D, EPA 5030C/EPA 5021A
Cations in Water by ICP-OES: Modified from SM 3030 B and SM 3120 B
Cyanide, Total, in Water: Modified from ISO 14403:2012(E) and Skalar Analytical B.V., Catnr I295-004w/r issue 010421/99368551
Dissolved Mercury in Water: Modified from EPA 1631 Revision E
Dissolved Metals in Water by ICP-MS: Modified from SM 3030 B and SM 3125 B
Electrical Conductivity in Water: Modified from SM 2510 B and CCME Guidance Manual Volume 4, 2016
Extractable Hydrocarbons in Water: Modified from EPA 8015D and EPA 3520C
pH of Water: Modified from SM 4500-H+ B
Polycyclic Aromatic Hydrocarbons in Water: Modified from EPA 8270E and Royal Society of Chemistry (L-L Micro-extraction)
Total Dissolved Solids and Ion Sums/Ratios (calculation): Modified from SM 1030 E
Total Kjeldahl Nitrogen in Water: Modified from SM 4500-N(org) B and D
Total/Dissolved Organic Carbon in Water: Modified from SM 5310 B
True Colour in Water: Modified from SM 2120 C
Turbidity in Water: Modified from SM 2130 B
Volatile Hydrocarbons in Water: Modified from EPA 8015D, EPA 5030C/EPA 5021A

Final Review by:



Ivory Ringor
Client Services Representative

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The statement of conformity is based on a 95% coverage probability for the expanded uncertainty. The test results and the statement of conformance with specification in this report relate only to the test sample as analysed/tested and not to the sample/item from which the test sample was drawn.

ANALYTICAL REPORT

Client: Sheep River Regional Corp.
 Box 5605
 High River, AB. T1V 1M7

Care of: Foothills County
Attention: Cory Lyons

KaizenLAB JOB #:	340870
DATE RECEIVED:	02-Oct-2024
DATE REPORTED:	09-Oct-2024
PROJECT ID:	Pkg 3 - Schedule 3A (PSBlend)
LOCATION:	SRRUC

KaizenLAB Sample #: 340870_001 **Sample ID:** PSBlend
Date Sampled: 7:30 2-Oct-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Routine Water Potability Analysis (Potability pkg #2)				
Electrical Conductivity (EC) at 25°C	uS/cm	524		
pH		8.1	7.0-10.5 (AO)	Acceptable
True Colour	TCU	<4	15 (AO)	Acceptable
Turbidity	NTU	0.51	0.1 (MAC) ^{see notes}	See notes
Potability Package Calculations				
Ion Balance (calculated)	%	94.68		
Total Dissolved Solids (calculated)	mg/L	326	500 (AO)	Acceptable
Alkalinity Parameters of Water				
Alkalinity (phenolphthalein, as CaCO ₃) ¹	mg/L	<2.0		
Alkalinity (total, as CaCO ₃)	mg/L	156.8		
Bicarbonate (as HCO ₃) ¹	mg/L	191.1		
Carbonate (as CO ₃) ¹	mg/L	<1.5		
Hydroxide (as OH) ¹	mg/L	<0.5		
Anions in Water by IC				
Bromide	mg/L	<0.10		
Chloride	mg/L	5.69	250 (AO)	Acceptable
Fluoride	mg/L	<0.10	1.5 (MAC)	Pass
Nitrate-N	mg/L	<0.010	10 (MAC)	Pass
Nitrite-N	mg/L	<0.005	1 (MAC)	Pass
Nitrite-N + Nitrate-N	mg/L	<0.015		
Phosphate	mg/L	<0.10		
Sulphate	mg/L	117.7	500 (AO)	Acceptable

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

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KaizenLAB Sample #: 340870_001 **Sample ID:** PSBlend
Date Sampled: 7:30 2-Oct-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Cations in Water by ICP-OES				
Dissolved Calcium	mg/L	72.5		
Dissolved Iron ¹	mg/L	<0.05	0.3 (AO)	Acceptable
Dissolved Magnesium	mg/L	23.3		
Dissolved Manganese ¹	mg/L	<0.05		
Dissolved Potassium	mg/L	1.2		
Dissolved Sodium	mg/L	11.4	200 (AO)	Acceptable
Hardness (calculated, as CaCO ₃)	mg/L	276.9		
Sodium Adsorption Ratio		0.30		
.....				

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KaizenLAB Sample #: 340870_001 **Sample ID:** PSBlend

Date Sampled: 7:30 2-Oct-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Cyanide (Total) in water				
Cyanide, Total	mg/L	<0.003	0.2 (MAC)	Pass
Dissolved Mercury	ug/L	<0.001		
F2	mg/L	<0.10		
Total Kjeldahl Nitrogen	mg/L	<2.00		
Total Organic Carbon	mg/L	2.08		
F1	mg/L	<0.05		
BTEX in Water				
Benzene	mg/L	<0.001		
Ethylbenzene	mg/L	<0.001		
Toluene	mg/L	<0.0005		
Total Xylenes	mg/L	<0.003	0.09 (MAC)	Pass
Polycyclic Aromatic Hydrocarbons in Water				
Acenaphthene	mg/L	<0.000004		
Acenaphthylene	mg/L	<0.000004		
Anthracene	mg/L	<0.000004		
Benzo(a)anthracene	mg/L	<0.000004		
Benzo(a)pyrene	mg/L	<0.000004		
Benzo(a)Pyrene Total Potency Equivalents	mg/L	<0.00085		
Benzo(b,j)fluoranthene	mg/L	<0.000004		
Benzo(g,h,i)perylene	mg/L	<0.000004		
Benzo(k)fluoranthene	mg/L	<0.000004		
Chrysene	mg/L	<0.000004		
Dibenzo(a,h)anthracene	mg/L	<0.000004		
Fluoranthene	mg/L	<0.000004		
Fluorene	mg/L	<0.000004		
Indeno(1,2,3-c,d)pyrene	mg/L	<0.000004		
Naphthalene	mg/L	<0.000004		
Phenanthrene	mg/L	<0.000004		
Pyrene	mg/L	<0.000004		
Dissolved Metals in Water by ICP-MS				
Dissolved Aluminum	mg/L	<0.003	see notes	
Dissolved Antimony	mg/L	<0.0002		
Dissolved Arsenic	mg/L	0.00018		
Dissolved Barium	mg/L	0.0584		

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KaizenLAB Sample #: 340870_001 **Sample ID:** PSBlend

Date Sampled: 7:30 2-Oct-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Dissolved Beryllium	mg/L	<0.00006		
Dissolved Bismuth	mg/L	<0.00006		
Dissolved Boron	mg/L	0.021		
Dissolved Cadmium	mg/L	<0.000015		
Dissolved Chromium	mg/L	<0.0002		
Dissolved Cobalt	mg/L	<0.00003		
Dissolved Copper	mg/L	0.0005		
Dissolved Iron	mg/L	<0.004	0.3 (AO)	Acceptable
Dissolved Lanthanum	mg/L	<0.0005		
Dissolved Lead	mg/L	<0.00007		
Dissolved Lithium	mg/L	0.008		
Dissolved Manganese	mg/L	<0.0004	0.12 (MAC)	Pass
Dissolved Molybdenum	mg/L	0.00090		
Dissolved Nickel	mg/L	0.00030		
Dissolved Selenium	mg/L	0.00079		
Dissolved Silver	mg/L	<0.000009		
Dissolved Strontium	mg/L	0.3372	7.0000 (MAC)	Pass
Dissolved Thallium	mg/L	<0.00008		
Dissolved Tin	mg/L	<0.0006		
Dissolved Titanium	mg/L	0.109		
Dissolved Tungsten	mg/L	<0.001		
Dissolved Uranium	mg/L	0.00028		
Dissolved Vanadium	mg/L	<0.0001		
Dissolved Zinc	mg/L	<0.002		
Dissolved Zirconium	mg/L	<0.001		

Notes:

- Aluminum: This Operational Guideline applies only to drinking water treatment plants using aluminum-based coagulants: conventional systems - 0.1 mg/L, other systems - 0.2 mg/L
- Turbidity: Based on slow sand or diatomaceous earth filtration (1.0 NTU) / membrane filtration (0.1 NTU) / conventional treatment (0.3 NTU). No limits apply for well water not under the influence of surface water. Refer to the Guidelines for Canadian Drinking Water Quality found on the Government of Canada website for current information.

Test Methodologies

Alkalinity in Water: Modified from SM 2320 B
Anions in Water: Modified from SM 4110 B
BTX in Water: Modified from EPA 8260D, EPA 5030C/EPA 5021A
Cations in Water by ICP-OES: Modified from SM 3030 B and SM 3120 B
Cyanide, Total, in Water: Modified from ISO 14403:2012(E) and Skalar Analytical B.V., Catnr I295-004w/r issue 010421/99368551
Dissolved Mercury in Water: Modified from EPA 1631 Revision E
Dissolved Metals in Water by ICP-MS: Modified from SM 3030 B and SM 3125 B
Electrical Conductivity in Water: Modified from SM 2510 B and CCME Guidance Manual Volume 4, 2016
Extractable Hydrocarbons in Water: Modified from EPA 8015D and EPA 3520C
pH of Water: Modified from SM 4500-H+ B
Polycyclic Aromatic Hydrocarbons in Water: Modified from EPA 8270E and Royal Society of Chemistry (L-L Micro-extraction)
Total Dissolved Solids and Ion Sums/Ratios (calculation): Modified from SM 1030 E
Total Kjeldahl Nitrogen in Water: Modified from SM 4500-N(org) B and D
Total/Dissolved Organic Carbon in Water: Modified from SM 5310 B
True Colour in Water: Modified from SM 2120 C
Turbidity in Water: Modified from SM 2130 B
Volatile Hydrocarbons in Water: Modified from EPA 8015D, EPA 5030C/EPA 5021A

Final Review by:



Irene De Leon
Client Services Representative

Note: The results in this report relate only to the items tested and as received. Information is available for any items in 7.8.2.1 of ISO/IEC 17025:2017 that cannot be put on a test report. The report shall not be reproduced except in full without written approval of KaizenLAB. The validity of results may be affected if the information is provided by the customer.

Test methodologies are accredited in accordance with ISO/IEC 17025 via CALA, unless otherwise specified in the description of the methods.

¹This analyte is not accredited, even though analyzed by an accredited methodology.

Pass/Acceptable: The measurement result conforms with the specification limit when the measurement uncertainty is taken into account.

Pass/Acceptable:** It is not possible to state conformance using a 95 % coverage probability for the expanded uncertainty although the measurement result is below the limit.

Fail/Unacceptable: The measurement result does not conform with the specification limit when the measurement uncertainty is taken into account.

The statement of conformity is based on a 95% coverage probability for the expanded uncertainty. The test results and the statement of conformance with specification in this report relate only to the test sample as analysed/tested and not to the sample/item from which the test sample was drawn.

ANALYTICAL REPORT

Client: Sheep River Regional Corp.
 Box 5605
 High River, AB. T1V 1M7

Care of: Foothills County
Attention: Cory Lyons

KaizenLAB JOB #:	341664
DATE RECEIVED:	06-Nov-2024
DATE REPORTED:	13-Nov-2024
PROJECT ID:	Pkg 3 - Schedule 3A (PSblend)
LOCATION:	SRRUC

KaizenLAB Sample #: 341664_001 **Sample ID:** PSblend
Date Sampled: 7:20 6-Nov-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Routine Water Potability Analysis (Potability pkg #2)				
Electrical Conductivity (EC) at 25°C	uS/cm	511		
pH		8.0	7.0-10.5 (AO)	Acceptable
True Colour	TCU	<4	15 (AO)	Acceptable
Turbidity	NTU	0.52	0.1 (MAC) ^{see notes}	See notes
Potability Package Calculations				
Ion Balance (calculated)	%	92.48		
Total Dissolved Solids (calculated)	mg/L	326	500 (AO)	Acceptable
Alkalinity Parameters of Water				
Alkalinity (phenolphthalein, as CaCO ₃) ¹	mg/L	<2.0		
Alkalinity (total, as CaCO ₃)	mg/L	157.1		
Bicarbonate (as HCO ₃) ¹	mg/L	191.6		
Carbonate (as CO ₃) ¹	mg/L	<1.5		
Hydroxide (as OH) ¹	mg/L	<0.5		
Cations in Water by ICP-OES				
Dissolved Calcium	mg/L	75.7		
Dissolved Magnesium	mg/L	22.5		
Dissolved Potassium	mg/L	2.3		
Dissolved Sodium	mg/L	10.9	200 (AO)	Acceptable
Hardness (calculated, as CaCO ₃)	mg/L	281.4		
Sodium Adsorption Ratio		0.28		
Anions in Water by IC				
Bromide	mg/L	<0.10		

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

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Phone (403) 297-0868
Fax: (403) 297-0869
e-Mail: kaizenlab@kaizenlab.ca



KaizenLAB Sample #: 341664_001 **Sample ID:** PSBlend
Date Sampled: 7:20 6-Nov-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Chloride	mg/L	5.15	250 (AO)	Acceptable
Fluoride	mg/L	0.24	1.5 (MAC)	Pass
Nitrate-N	mg/L	0.017	10 (MAC)	Pass
Nitrite-N	mg/L	<0.005	1 (MAC)	Pass
Nitrite-N + Nitrate-N	mg/L	0.017		
Phosphate	mg/L	0.18		
Sulphate	mg/L	114.9	500 (AO)	Acceptable

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KaizenLAB Sample #: 341664_001 **Sample ID:** PSBlend
Date Sampled: 7:20 6-Nov-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Cyanide (Total) in water				
Cyanide, Total	mg/L	<0.003	0.2 (MAC)	Pass
Dissolved Mercury	ug/L	<0.001		
F2	mg/L	<0.10		
Total Kjeldahl Nitrogen	mg/L	<2.00		
Total Organic Carbon	mg/L	2.16		
F1	mg/L	<0.05		
BTEX in Water				
Benzene	mg/L	<0.001		
Ethylbenzene	mg/L	<0.001		
Toluene	mg/L	<0.0005		
Total Xylenes	mg/L	<0.003	0.09 (MAC)	Pass
Polycyclic Aromatic Hydrocarbons in Water				
Acenaphthene	mg/L	<0.000004		
Acenaphthylene	mg/L	<0.000004		
Anthracene	mg/L	<0.000004		
Benzo(a)anthracene	mg/L	<0.000004		
Benzo(a)pyrene	mg/L	<0.000004		
Benzo(a)Pyrene Total Potency Equivalents	mg/L	<0.00085		
Benzo(b,j)fluoranthene	mg/L	<0.000004		
Benzo(g,h,i)perylene	mg/L	<0.000004		
Benzo(k)fluoranthene	mg/L	<0.000004		
Chrysene	mg/L	<0.000004		
Dibenzo(a,h)anthracene	mg/L	<0.000004		
Fluoranthene	mg/L	<0.000004		
Fluorene	mg/L	<0.000004		
Indeno(1,2,3-c,d)pyrene	mg/L	<0.000004		
Naphthalene	mg/L	<0.000004		
Phenanthrene	mg/L	<0.000004		
Pyrene	mg/L	<0.000004		
Dissolved Metals in Water by ICP-MS				
Dissolved Aluminum	mg/L	<0.003	see notes	
Dissolved Antimony	mg/L	<0.0002		
Dissolved Arsenic	mg/L	0.00015		
Dissolved Barium	mg/L	0.0652		

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KaizenLAB Sample #: 341664_001 **Sample ID:** PSBlend
Date Sampled: 7:20 6-Nov-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Dissolved Beryllium	mg/L	<0.00006		
Dissolved Bismuth	mg/L	<0.00006		
Dissolved Boron	mg/L	0.020		
Dissolved Cadmium	mg/L	<0.000015		
Dissolved Chromium	mg/L	<0.0002		
Dissolved Cobalt	mg/L	<0.00003		
Dissolved Copper	mg/L	0.0007		
Dissolved Iron	mg/L	<0.004	0.3 (AO)	Acceptable
Dissolved Lanthanum	mg/L	<0.0005		
Dissolved Lead	mg/L	<0.00007		
Dissolved Lithium	mg/L	0.008		
Dissolved Manganese	mg/L	<0.0004	0.12 (MAC)	Pass
Dissolved Molybdenum	mg/L	0.00079		
Dissolved Nickel	mg/L	0.00044		
Dissolved Selenium	mg/L	0.00070		
Dissolved Silver	mg/L	<0.000009		
Dissolved Strontium	mg/L	0.3517	7.0000 (MAC)	Pass
Dissolved Thallium	mg/L	<0.00008		
Dissolved Tin	mg/L	<0.0006		
Dissolved Titanium	mg/L	0.123		
Dissolved Tungsten	mg/L	<0.001		
Dissolved Uranium	mg/L	0.00051		
Dissolved Vanadium	mg/L	<0.0001		
Dissolved Zinc	mg/L	0.003		
Dissolved Zirconium	mg/L	<0.001		

Notes:

- Aluminum: This Operational Guideline applies only to drinking water treatment plants using aluminum-based coagulants: conventional systems - 0.1 mg/L, other systems - 0.2 mg/L
- Turbidity: Based on slow sand or diatomaceous earth filtration (1.0 NTU) / membrane filtration (0.1 NTU) / conventional treatment (0.3 NTU). No limits apply for well water not under the influence of surface water. Refer to the Guidelines for Canadian Drinking Water Quality found on the Government of Canada website for current information.

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

Test Methodologies

Alkalinity in Water: Modified from SM 2320 B
Anions in Water: Modified from SM 4110 B
BTEX in Water: Modified from EPA 8260D, EPA 5030C/EPA 5021A
Cations in Water by ICP-OES: Modified from SM 3030 B and SM 3120 B
Cyanide, Total, in Water: Modified from ISO 14403:2012(E) and Skalar Analytical B.V., Catnr I295-004w/r issue 010421/99368551
Dissolved Mercury in Water: Modified from EPA 1631 Revision E
Dissolved Metals in Water by ICP-MS: Modified from SM 3030 B and SM 3125 B
Electrical Conductivity in Water: Modified from SM 2510 B and CCME Guidance Manual Volume 4, 2016
Extractable Hydrocarbons in Water: Modified from EPA 8015D and EPA 3520C
pH of Water: Modified from SM 4500-H+ B
Polycyclic Aromatic Hydrocarbons in Water: Modified from EPA 8270E and Royal Society of Chemistry (L-L Micro-extraction)
Total Dissolved Solids and Ion Sums/Ratios (calculation): Modified from SM 1030 E
Total Kjeldahl Nitrogen in Water: Modified from SM 4500-N(org) B and D
Total/Dissolved Organic Carbon in Water: Modified from SM 5310 B
True Colour in Water: Modified from SM 2120 C
Turbidity in Water: Modified from SM 2130 B
Volatile Hydrocarbons in Water: Modified from EPA 8015D, EPA 5030C/EPA 5021A

Final Review by:



Ivory Ringor
Client Services Representative

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¹This analyte is not accredited, even though analyzed by an accredited methodology.

Pass/Acceptable: The measurement result conforms with the specification limit when the measurement uncertainty is taken into account.

Pass/Acceptable:** It is not possible to state conformance using a 95 % coverage probability for the expanded uncertainty although the measurement result is below the limit.

Fail/Unacceptable: The measurement result does not conform with the specification limit when the measurement uncertainty is taken into account.

The statement of conformity is based on a 95% coverage probability for the expanded uncertainty. The test results and the statement of conformance with specification in this report relate only to the test sample as analysed/tested and not to the sample/item from which the test sample was drawn.

ANALYTICAL REPORT

Client: Sheep River Regional Corp.
 Box 5605
 High River, AB. T1V 1M7

Care of: Foothills County
Attention: Cory Lyons

KaizenLAB JOB #:	342337
DATE RECEIVED:	11-Dec-2024
DATE REPORTED:	18-Dec-2024
PROJECT ID:	Pkg 3 - Schedule 3A (PSblend)
LOCATION:	SRRUC

KaizenLAB Sample #: 342337_001 **Sample ID:** PSblend
Date Sampled: 8:43 11-Dec-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Routine Water Potability Analysis (Potability pkg #2)				
Electrical Conductivity (EC) at 25°C	uS/cm	527		
pH		8.0	7.0-10.5 (AO)	Acceptable
True Colour	TCU	<4	15 (AO)	Acceptable
Turbidity	NTU	0.55	0.1 (MAC) ^{see notes}	See notes
Potability Package Calculations				
Ion Balance (calculated)	%	90.42		
Total Dissolved Solids (calculated)	mg/L	333	500 (AO)	Acceptable
Alkalinity Parameters of Water				
Alkalinity (phenolphthalein, as CaCO ₃) ¹	mg/L	<2.0		
Alkalinity (total, as CaCO ₃)	mg/L	165.2		
Bicarbonate (as HCO ₃) ¹	mg/L	201.4		
Carbonate (as CO ₃) ¹	mg/L	<1.5		
Hydroxide (as OH) ¹	mg/L	<0.5		
Cations in Water by ICP-OES				
Dissolved Calcium	mg/L	81.1		
Dissolved Magnesium	mg/L	22.8		
Dissolved Potassium	mg/L	1.3		
Dissolved Sodium	mg/L	10.5	200 (AO)	Acceptable
Hardness (calculated, as CaCO ₃)	mg/L	296.4		
Sodium Adsorption Ratio		0.27		
Anions in Water by IC				
Bromide	mg/L	<0.10		

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

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Fax: (403) 297-0869
e-Mail: kaizenlab@kaizenlab.ca



KaizenLAB Sample #: 342337_001 **Sample ID:** PSBlend
Date Sampled: 8:43 11-Dec-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Chloride	mg/L	4.71	250 (AO)	Acceptable
Fluoride	mg/L	0.26	1.5 (MAC)	Pass
Nitrate-N	mg/L	0.010	10 (MAC)	Pass
Nitrite-N	mg/L	<0.005	1 (MAC)	Pass
Nitrite-N + Nitrate-N	mg/L	<0.015		
Phosphate	mg/L	<0.10		
Sulphate	mg/L	113.2	500 (AO)	Acceptable

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KaizenLAB Sample #: 342337_001 **Sample ID:** PSBlend
Date Sampled: 8:43 11-Dec-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Cyanide (Total) in water				
Cyanide, Total	mg/L	<0.003	0.2 (MAC)	Pass
Dissolved Mercury	ug/L	<0.001		
F2	mg/L	<0.10		
Total Organic Carbon	mg/L	4.28		
F1	mg/L	<0.05		
Total / Dissolved Kjeldahl Nitrogen in Water				
Total Kjeldahl Nitrogen	mg/L	<2.00		
Total Nitrogen (calculated)	mg/L	<2.60		
BTEX in Water				
Benzene	mg/L	<0.001		
Ethylbenzene	mg/L	<0.001		
Toluene	mg/L	<0.0005		
Total Xylenes	mg/L	<0.003	0.09 (MAC)	Pass
Polycyclic Aromatic Hydrocarbons in Water				
Acenaphthene	mg/L	<0.000004		
Acenaphthylene	mg/L	<0.000004		
Anthracene	mg/L	<0.000004		
Benzo(a)anthracene	mg/L	<0.000004		
Benzo(a)pyrene	mg/L	<0.000004		
Benzo(a)Pyrene Total Potency Equivalents	mg/L	<0.00085		
Benzo(b,j)fluoranthene	mg/L	<0.000004		
Benzo(g,h,i)perylene	mg/L	<0.000004		
Benzo(k)fluoranthene	mg/L	<0.000004		
Chrysene	mg/L	<0.000004		
Dibenzo(a,h)anthracene	mg/L	<0.000004		
Fluoranthene	mg/L	<0.000004		
Fluorene	mg/L	<0.000004		
Indeno(1,2,3-c,d)pyrene	mg/L	<0.000004		
Naphthalene	mg/L	<0.000004		
Phenanthrene	mg/L	<0.000004		
Pyrene	mg/L	<0.000004		
Dissolved Metals in Water by ICP-MS				
Dissolved Aluminum	mg/L	<0.003	see notes	
Dissolved Antimony	mg/L	<0.0002		

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

KaizenLAB Sample #: 342337_001 **Sample ID:** PSBlend
Date Sampled: 8:43 11-Dec-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Dissolved Arsenic	mg/L	0.00012		
Dissolved Barium	mg/L	0.0679		
Dissolved Beryllium	mg/L	<0.00006		
Dissolved Bismuth	mg/L	<0.00006		
Dissolved Boron	mg/L	0.022		
Dissolved Cadmium	mg/L	<0.000015		
Dissolved Chromium	mg/L	<0.0002		
Dissolved Cobalt	mg/L	<0.00003		
Dissolved Copper	mg/L	0.0005		
Dissolved Iron	mg/L	<0.004	0.3 (AO)	Acceptable
Dissolved Lanthanum	mg/L	<0.0005		
Dissolved Lead	mg/L	<0.00007		
Dissolved Lithium	mg/L	0.009		
Dissolved Manganese	mg/L	0.0006	0.12 (MAC)	Pass
Dissolved Molybdenum	mg/L	0.00080		
Dissolved Nickel	mg/L	0.00034		
Dissolved Selenium	mg/L	0.00068		
Dissolved Silver	mg/L	<0.000009		
Dissolved Strontium	mg/L	0.3474	7.0000 (MAC)	Pass
Dissolved Thallium	mg/L	<0.00008		
Dissolved Tin	mg/L	<0.0006		
Dissolved Titanium	mg/L	0.122		
Dissolved Tungsten	mg/L	<0.001		
Dissolved Uranium	mg/L	0.00055		
Dissolved Vanadium	mg/L	<0.0001		
Dissolved Zinc	mg/L	0.002		
Dissolved Zirconium	mg/L	<0.001		

Notes:

- Aluminum: This Operational Guideline applies only to drinking water treatment plants using aluminum-based coagulants: conventional systems - 0.1 mg/L, other systems - 0.2 mg/L
- Turbidity: Based on slow sand or diatomaceous earth filtration (1.0 NTU) / membrane filtration (0.1 NTU) / conventional treatment (0.3 NTU). No limits apply for well water not under the influence of surface water. Refer to the Guidelines for Canadian Drinking Water Quality found on the Government of Canada website for current information.

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

Test Methodologies

Alkalinity in Water: Modified from SM 2320 B
Anions in Water: Modified from SM 4110 B
BTEX in Water: Modified from EPA 8260D, EPA 5030C/EPA 5021A
Cations in Water by ICP-OES: Modified from SM 3030 B and SM 3120 B
Cyanide, Total, in Water: Modified from ISO 14403:2012(E) and Skalar Analytical B.V., Catnr I295-004w/r issue 010421/99368551
Dissolved Mercury in Water: Modified from EPA 1631 Revision E
Dissolved Metals in Water by ICP-MS: Modified from SM 3030 B and SM 3125 B
Electrical Conductivity in Water: Modified from SM 2510 B and CCME Guidance Manual Volume 4, 2016
Extractable Hydrocarbons in Water: Modified from EPA 8015D and EPA 3520C
pH of Water: Modified from SM 4500-H+ B
Polycyclic Aromatic Hydrocarbons in Water: Modified from EPA 8270E and Royal Society of Chemistry (L-L Micro-extraction)
Total Dissolved Solids and Ion Sums/Ratios (calculation): Modified from SM 1030 E
Total Kjeldahl Nitrogen in Water: Modified from SM 4500-N(org) B and D
Total/Dissolved Organic Carbon in Water: Modified from SM 5310 B
True Colour in Water: Modified from SM 2120 C
Turbidity in Water: Modified from SM 2130 B
Volatile Hydrocarbons in Water: Modified from EPA 8015D, EPA 5030C/EPA 5021A

Final Review by:



Ivory Ringor
Client Services Representative

Note: The results in this report relate only to the items tested and as received. Information is available for any items in 7.8.2.1 of ISO/IEC 17025:2017 that cannot be put on a test report. The report shall not be reproduced except in full without written approval of KaizenLAB. The validity of results may be affected if the information is provided by the customer.

Test methodologies are accredited in accordance with ISO/IEC 17025 via CALA, unless otherwise specified in the description of the methods.

¹This analyte is not accredited, even though analyzed by an accredited methodology.

Pass/Acceptable: The measurement result conforms with the specification limit when the measurement uncertainty is taken into account.

Pass/Acceptable:** It is not possible to state conformance using a 95 % coverage probability for the expanded uncertainty although the measurement result is below the limit.

Fail/Unacceptable: The measurement result does not conform with the specification limit when the measurement uncertainty is taken into account.

The statement of conformity is based on a 95% coverage probability for the expanded uncertainty. The test results and the statement of conformance with specification in this report relate only to the test sample as analysed/tested and not to the sample/item from which the test sample was drawn.

ANALYTICAL REPORT

Client: Sheep River Regional Corp.
 Box 5605
 High River, AB. T1V 1M7

Care of: Foothills County
Attention: Cory Lyons

KaizenLAB JOB #:	342340
DATE RECEIVED:	11-Dec-2024
DATE REPORTED:	18-Dec-2024
PROJECT ID:	Pkg 1 - Schedule 2 Wells and Stilling Basin
LOCATION:	SRRUC

KaizenLAB Sample #: 342340_001 **Sample ID:** VW5
Date Sampled: 8:05 11-Dec-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Routine Water Potability Analysis (Potability pkg #2)				
Electrical Conductivity (EC) at 25°C	uS/cm	619		
pH		7.2	7.0-10.5 (AO)	Acceptable
True Colour	TCU	<4	15 (AO)	Acceptable
Turbidity	NTU	0.15	0.1 (MAC) ^{see notes}	See notes
Potability Package Calculations				
Ion Balance (calculated)	%	95.84		
Total Dissolved Solids (calculated)	mg/L	388	500 (AO)	Acceptable
Alkalinity Parameters of Water				
Alkalinity (phenolphthalein, as CaCO ₃) ¹	mg/L	<2.0		
Alkalinity (total, as CaCO ₃)	mg/L	203.1		
Bicarbonate (as HCO ₃) ¹	mg/L	247.7		
Carbonate (as CO ₃) ¹	mg/L	<1.5		
Hydroxide (as OH) ¹	mg/L	<0.5		
Cations in Water by ICP-OES				
Dissolved Calcium	mg/L	95.6		
Dissolved Magnesium	mg/L	23.2		
Dissolved Potassium	mg/L	1.3		
Dissolved Sodium	mg/L	11.6	200 (AO)	Acceptable
Hardness (calculated, as CaCO ₃)	mg/L	334.2		
Sodium Adsorption Ratio		0.28		
Anions in Water by IC				
Bromide	mg/L	<0.10		

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

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KaizenLAB Sample #: 342340_001 **Sample ID:** VW5
Date Sampled: 8:05 11-Dec-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Chloride	mg/L	5.19	250 (AO)	Acceptable
Fluoride	mg/L	0.28	1.5 (MAC)	Pass
Nitrate-N	mg/L	0.075	10 (MAC)	Pass
Nitrite-N	mg/L	<0.005	1 (MAC)	Pass
Nitrite-N + Nitrate-N	mg/L	0.075		
Phosphate	mg/L	<0.10		
Sulphate	mg/L	128.9	500 (AO)	Acceptable

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

KaizenLAB Sample #: 342340_001 **Sample ID:** VW5

Date Sampled: 8:05 11-Dec-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Cyanide (Total) in water				
Cyanide, Total	mg/L	<0.003	0.2 (MAC)	Pass
Dissolved Mercury	ug/L	<0.001		
F2	mg/L	<0.10		
Total Organic Carbon	mg/L	1.58		
F1	mg/L	<0.05		
Total / Dissolved Kjeldahl Nitrogen in Water				
Total Kjeldahl Nitrogen	mg/L	<2.00		
Total Nitrogen (calculated)	mg/L	<2.60		
BTEX in Water				
Benzene	mg/L	<0.001		
Ethylbenzene	mg/L	<0.001		
Toluene	mg/L	<0.0005		
Total Xylenes	mg/L	<0.003	0.09 (MAC)	Pass
Polycyclic Aromatic Hydrocarbons in Water				
Acenaphthene	mg/L	<0.000004		
Acenaphthylene	mg/L	<0.000004		
Anthracene	mg/L	<0.000004		
Benzo(a)anthracene	mg/L	<0.000004		
Benzo(a)pyrene	mg/L	<0.000004		
Benzo(a)Pyrene Total Potency Equivalents	mg/L	<0.00085		
Benzo(b,j)fluoranthene	mg/L	<0.000004		
Benzo(g,h,i)perylene	mg/L	<0.000004		
Benzo(k)fluoranthene	mg/L	<0.000004		
Chrysene	mg/L	<0.000004		
Dibenzo(a,h)anthracene	mg/L	<0.000004		
Fluoranthene	mg/L	<0.000004		
Fluorene	mg/L	<0.000004		
Indeno(1,2,3-c,d)pyrene	mg/L	<0.000004		
Naphthalene	mg/L	<0.000004		
Phenanthrene	mg/L	<0.000004		
Pyrene	mg/L	<0.000004		
Dissolved Metals in Water by ICP-MS				
Dissolved Aluminum	mg/L	<0.003	see notes	
Dissolved Antimony	mg/L	<0.0002		

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

KaizenLAB Sample #: 342340_001 **Sample ID:** VW5
Date Sampled: 8:05 11-Dec-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Dissolved Arsenic	mg/L	0.00007		
Dissolved Barium	mg/L	0.0679		
Dissolved Beryllium	mg/L	<0.00006		
Dissolved Bismuth	mg/L	<0.00006		
Dissolved Boron	mg/L	0.019		
Dissolved Cadmium	mg/L	<0.000015		
Dissolved Chromium	mg/L	<0.0002		
Dissolved Cobalt	mg/L	<0.00003		
Dissolved Copper	mg/L	0.0013		
Dissolved Iron	mg/L	<0.004	0.3 (AO)	Acceptable
Dissolved Lanthanum	mg/L	<0.0005		
Dissolved Lead	mg/L	0.00025		
Dissolved Lithium	mg/L	0.009		
Dissolved Manganese	mg/L	0.0006	0.12 (MAC)	Pass
Dissolved Molybdenum	mg/L	0.00075		
Dissolved Nickel	mg/L	0.00034		
Dissolved Selenium	mg/L	0.00119		
Dissolved Silver	mg/L	<0.000009		
Dissolved Strontium	mg/L	0.3642	7.0000 (MAC)	Pass
Dissolved Thallium	mg/L	<0.00008		
Dissolved Tin	mg/L	<0.0006		
Dissolved Titanium	mg/L	0.144		
Dissolved Tungsten	mg/L	<0.001		
Dissolved Uranium	mg/L	0.00058		
Dissolved Vanadium	mg/L	<0.0001		
Dissolved Zinc	mg/L	0.022		
Dissolved Zirconium	mg/L	<0.001		

Notes:

- Aluminum: This Operational Guideline applies only to drinking water treatment plants using aluminum-based coagulants: conventional systems - 0.1 mg/L, other systems - 0.2 mg/L
- Turbidity: Based on slow sand or diatomaceous earth filtration (1.0 NTU) / membrane filtration (0.1 NTU) / conventional treatment (0.3 NTU). No limits apply for well water not under the influence of surface water. Refer to the Guidelines for Canadian Drinking Water Quality found on the Government of Canada website for current information.

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

KaizenLAB Sample #: 342340_002 **Sample ID:** Stilling Basin
Date Sampled: 8:30 11-Dec-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Routine Water Potability Analysis (Potability pkg #2)				
Electrical Conductivity (EC) at 25°C	uS/cm	424		
pH		7.8	7.0-10.5 (AO)	Acceptable
True Colour	TCU	<4	15 (AO)	Acceptable
Turbidity	NTU	3.12	0.1 (MAC) ^{see notes}	See notes
Potability Package Calculations				
Ion Balance (calculated)	%	95.85		
Total Dissolved Solids (calculated)	mg/L	259	500 (AO)	Acceptable
Alkalinity Parameters of Water				
Alkalinity (phenolphthalein, as CaCO ₃) ¹	mg/L	<2.0		
Alkalinity (total, as CaCO ₃)	mg/L	150.7		
Bicarbonate (as HCO ₃) ¹	mg/L	183.8		
Carbonate (as CO ₃) ¹	mg/L	<1.5		
Hydroxide (as OH) ¹	mg/L	<0.5		
Cations in Water by ICP-OES				
Dissolved Calcium	mg/L	63.7		
Dissolved Magnesium	mg/L	17.9		
Dissolved Potassium	mg/L	0.7		
Dissolved Sodium	mg/L	5.2	200 (AO)	Acceptable
Hardness (calculated, as CaCO ₃)	mg/L	232.9		
Sodium Adsorption Ratio		0.15		
Anions in Water by IC				
Bromide	mg/L	<0.10		
Chloride	mg/L	0.70	250 (AO)	Acceptable
Fluoride	mg/L	0.32	1.5 (MAC)	Pass
Nitrate-N	mg/L	0.147	10 (MAC)	Pass
Nitrite-N	mg/L	<0.005	1 (MAC)	Pass
Nitrite-N + Nitrate-N	mg/L	0.147		
Phosphate	mg/L	<0.10		
Sulphate	mg/L	79.08	500 (AO)	Acceptable

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

KaizenLAB Sample #: 342340_002 **Sample ID:** Stilling Basin
Date Sampled: 8:30 11-Dec-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Cyanide (Total) in water				
Cyanide, Total	mg/L	<0.003	0.2 (MAC)	Pass
Dissolved Mercury	ug/L	<0.001		
F2	mg/L	<0.10		
Total Organic Carbon	mg/L	1.35		
F1	mg/L	<0.05		
Total / Dissolved Kjeldahl Nitrogen in Water				
Total Kjeldahl Nitrogen	mg/L	<2.00		
Total Nitrogen (calculated)	mg/L	<2.60		
BTEX in Water				
Benzene	mg/L	<0.001		
Ethylbenzene	mg/L	<0.001		
Toluene	mg/L	<0.0005		
Total Xylenes	mg/L	<0.003	0.09 (MAC)	Pass
Polycyclic Aromatic Hydrocarbons in Water				
Acenaphthene	mg/L	<0.000004		
Acenaphthylene	mg/L	<0.000004		
Anthracene	mg/L	<0.000004		
Benzo(a)anthracene	mg/L	<0.000004		
Benzo(a)pyrene	mg/L	<0.000004		
Benzo(a)Pyrene Total Potency Equivalents	mg/L	<0.00085		
Benzo(b,j)fluoranthene	mg/L	<0.000004		
Benzo(g,h,i)perylene	mg/L	<0.000004		
Benzo(k)fluoranthene	mg/L	<0.000004		
Chrysene	mg/L	<0.000004		
Dibenzo(a,h)anthracene	mg/L	<0.000004		
Fluoranthene	mg/L	<0.000004		
Fluorene	mg/L	<0.000004		
Indeno(1,2,3-c,d)pyrene	mg/L	<0.000004		
Naphthalene	mg/L	<0.000004		
Phenanthrene	mg/L	<0.000004		
Pyrene	mg/L	<0.000004		
Dissolved Metals in Water by ICP-MS				
Dissolved Aluminum	mg/L	<0.003	see notes	
Dissolved Antimony	mg/L	<0.0002		

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

KaizenLAB Sample #: 342340_002 **Sample ID:** Stilling Basin
Date Sampled: 8:30 11-Dec-2024

Parameter Description	Units	Result	Guideline Limits*	Comment
Dissolved Arsenic	mg/L	0.00012		
Dissolved Barium	mg/L	0.0695		
Dissolved Beryllium	mg/L	<0.00006		
Dissolved Bismuth	mg/L	<0.00006		
Dissolved Boron	mg/L	0.013		
Dissolved Cadmium	mg/L	<0.000015		
Dissolved Chromium	mg/L	<0.0002		
Dissolved Cobalt	mg/L	0.00008		
Dissolved Copper	mg/L	0.0041		
Dissolved Iron	mg/L	<0.004	0.3 (AO)	Acceptable
Dissolved Lanthanum	mg/L	<0.0005		
Dissolved Lead	mg/L	<0.00007		
Dissolved Lithium	mg/L	0.006		
Dissolved Manganese	mg/L	0.0071	0.12 (MAC)	Pass
Dissolved Molybdenum	mg/L	0.00088		
Dissolved Nickel	mg/L	0.00047		
Dissolved Selenium	mg/L	0.00152		
Dissolved Silver	mg/L	<0.000009		
Dissolved Strontium	mg/L	0.3016	7.0000 (MAC)	Pass
Dissolved Thallium	mg/L	<0.00008		
Dissolved Tin	mg/L	<0.0006		
Dissolved Titanium	mg/L	0.101		
Dissolved Tungsten	mg/L	<0.001		
Dissolved Uranium	mg/L	0.00054		
Dissolved Vanadium	mg/L	<0.0001		
Dissolved Zinc	mg/L	0.003		
Dissolved Zirconium	mg/L	<0.001		

Notes:

- Aluminum: This Operational Guideline applies only to drinking water treatment plants using aluminum-based coagulants: conventional systems - 0.1 mg/L, other systems - 0.2 mg/L
- Turbidity: Based on slow sand or diatomaceous earth filtration (1.0 NTU) / membrane filtration (0.1 NTU) / conventional treatment (0.3 NTU). No limits apply for well water not under the influence of surface water. Refer to the Guidelines for Canadian Drinking Water Quality found on the Government of Canada website for current information.

*CDWQG = Canadian Drinking Water Quality Guidelines, Health Canada 2024: MAC = Maximum Acceptable Concentration (affects health), AO = Aesthetic Objective (does not affect health but affects color, taste, etc.), OG = Operational Guidance

Test Methodologies

Alkalinity in Water: Modified from SM 2320 B
Anions in Water: Modified from SM 4110 B
BTEX in Water: Modified from EPA 8260D, EPA 5030C/EPA 5021A
Cations in Water by ICP-OES: Modified from SM 3030 B and SM 3120 B
Cyanide, Total, in Water: Modified from ISO 14403:2012(E) and Skalar Analytical B.V., Catnr I295-004w/r issue 010421/99368551
Dissolved Mercury in Water: Modified from EPA 1631 Revision E
Dissolved Metals in Water by ICP-MS: Modified from SM 3030 B and SM 3125 B
Electrical Conductivity in Water: Modified from SM 2510 B and CCME Guidance Manual Volume 4, 2016
Extractable Hydrocarbons in Water: Modified from EPA 8015D and EPA 3520C
pH of Water: Modified from SM 4500-H+ B
Polycyclic Aromatic Hydrocarbons in Water: Modified from EPA 8270E and Royal Society of Chemistry (L-L Micro-extraction)
Total Dissolved Solids and Ion Sums/Ratios (calculation): Modified from SM 1030 E
Total Kjeldahl Nitrogen in Water: Modified from SM 4500-N(org) B and D
Total/Dissolved Organic Carbon in Water: Modified from SM 5310 B
True Colour in Water: Modified from SM 2120 C
Turbidity in Water: Modified from SM 2130 B
Volatile Hydrocarbons in Water: Modified from EPA 8015D, EPA 5030C/EPA 5021A

Final Review by:



Ivory Ringor
Client Services Representative

Note: The results in this report relate only to the items tested and as received. Information is available for any items in 7.8.2.1 of ISO/IEC 17025:2017 that cannot be put on a test report. The report shall not be reproduced except in full without written approval of KaizenLAB. The validity of results may be affected if the information is provided by the customer.

Test methodologies are accredited in accordance with ISO/IEC 17025 via CALA, unless otherwise specified in the description of the methods.

¹This analyte is not accredited, even though analyzed by an accredited methodology.

Pass/Acceptable: The measurement result conforms with the specification limit when the measurement uncertainty is taken into account.

Pass/Acceptable:** It is not possible to state conformance using a 95 % coverage probability for the expanded uncertainty although the measurement result is below the limit.

Fail/Unacceptable: The measurement result does not conform with the specification limit when the measurement uncertainty is taken into account.

The statement of conformity is based on a 95% coverage probability for the expanded uncertainty. The test results and the statement of conformance with specification in this report relate only to the test sample as analysed/tested and not to the sample/item from which the test sample was drawn.



Appendix J

Historical Water Well Data



Table J.1: Town of Turner Valley Chemical Analysis Summary TW5

Parameter	Units	Guideline¹	Dec-07	Jun-07	Dec-06	Jun-06	Dec-05	Jul-05	Dec-04	Jun-04	Dec-03	Jun-03	Dec-02	Jul-02	Dec-01
Total Ammonia	mg/L	NG	-	-	-	-	-	-	-	-	-	-	-	<0.01	-
Misc. Inorganics															
Total Kieldahl Nitrogen	mg/L	NG	<0.05	0.07	0.05	0.14	0.12	0.32	<0.05	<0.05	<0.05	0.15	-	0.07	0.09
Calculated Parameters															
Hardness (CaCO3)	mg/L	NG	210	230	210	200	280	530	210	240	220	230	230	290	290
Ion Balance		NG	0.9	1.01	0.96	0.94	0.94	0.94	0.94	0.99	0.97	0.9	1	1.09	1.01
Total Dissolved Solids	mg/L	≤500 ^{AO}	253	259	242	226	327	655	236	274	250	267	253	321	-
Dissolved Silica	mg/L	NG	-	-	-	-	-	-	-	-	-	-	-	3.83	328
Misc. Inorganics															
Conductivity	µS/cm	NG	422	444	425	399	554	988	402	446	374	473	424	496	547
pH		7.0-10.5 ^{AO}	8.07	8.01	7.97	8.07	8.02	7.78	7.75	8.22	7.9	8.3	7.87	8.00	8.01
Week Acid Dissoc. Cyanide		0.2 ^{MAC}	-	-	-	-	-	-	-	-	-	-	-	0.001	-
Anions															
Alkalinity (PP as CaCO3)	mg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.5	<0.5	<0.5	-
Alkalinity (Total as CaCO3)	mg/L	NG	164	182	163	168	231	339	169	182	171	201	182	182	225
Bicarbonate (HCO3)	mg/L	NG	200	222	199	204	282	414	206	222	209	541	222	222	274
Carbonate (CO3)	mg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.8	<0.5	<0.5	<0.5
Dissolved Fluoride (F)	mg/L	1.5 ^{MAC}	-	-	-	-	-	-	-	-	-	-	-	0.25	0.28
Hydroxide (OH)	mg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dissolved Sulphate (SO4)	mg/L	≤500 ^{AO}	74.2	55.1	62.9	47.7	74.9	211	54.6	68.8	63.2	57.5	55	89.1	69.6
Sulphide	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01
Dissolved Chloride (Cl)	mg/L	≤250 ^{AO}	1.3	3.3	1.3	1.5	4.7	25.3	0.7	2.3	0.5	2.5	0.8	2.9	3.4
Nutrients															
Dissolved Nitrate (N)	mg/L	10 ^{MAC}	1.103	0.427	0.097	0.14	0.187	2.18	0.089	0.097	0.075	0.176	0.122	0.508	0.043
Nitrate plus Nitrite (N)	mg/L	NG	0.103	0.427	0.097	0.14	0.187	2.18	0.089	0.097	0.075	0.176	0.122	0.508	0.043
Dissolved Nitrite (N)	mg/L	1 ^{MAC}	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Total Organic Carbon (C)	mg/L	NG	0.5	1	0.6	1	1.3	3.3	0.7	0.6	0.4	0.9	-	0.7	0.8
Physical Properties															
True Colour	PtCo units	≤15 TCU ^{AO}	-	-	-	-	-	-	-	-	-	-	-	<5	5
Turbidity	NTU	narrative ^{AO}	-	-	-	-	-	-	-	-	-	-	-	0.3	2
Elements															
Total Aluminum (Al)	mg/L	0.1 ^{OG}	<0.04	<0.04	<0.04	0.0005	0.018	0.003	-	-	0.02	0.009	-	-	-
Total Antimony (Sb)	mg/L	0.006 ^{MAC}	<0.0002	<0.0002	<0.0002	0.0007	0.0002	<0.0002	-	-	0.007	<0.002	-	-	-
Total Arsenic (As)	mg/L	0.01 ^{ALARA}	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	-	-	<0.005	<0.005	-	-	-
Total Barium (Ba)	mg/L	2 ^{MAC}	0.05	0.06	0.07	0.517	0.0855	0.14	-	-	0.065	0.0609	-	-	-
Total Beryllium (Be)	mg/L	NG	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002	-	-	<0.0002	<0.0002	-	-	-
Total Boron (B)	mg/L	5 ^{MAC}	<0.02	<0.02	<0.02	0.01	0.02	0.02	-	-	<0.02	<0.02	-	-	-
Total Cadmium (Cd)	mg/L	0.007 ^{MAC}	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	-	0.0012	<0.0002	-	-	-
Total Calcium (Ca)	mg/L	NG	60	69.0	66.1	55.8	-	150	-	-	64.5	70.2	-	-	-
Total Chromium (Cr)	mg/L	0.05 ^{MAC}	<0.01	<0.01	<0.01	0.001	<0.001	<0.001	-	-	0.003	0.004	-	-	-
Total Cobalt (Co)	mg/L	NG	0.0008	0.0010	0.0004	<0.0003	<0.0003	0.0005	-	-	<0.0003	<0.0003	-	-	-
Total Copper (Cu)	mg/L	1 ^{AO} 2 ^{MAC}	0.0036	0.0017	0.0014	0.0019	0.0039	0.0032	-	-	0.016	0.0362	-	-	-
Total Iron (Fe)	mg/L	≤0.3 ^{AO}	<0.06	<0.06	<0.06	0.02	0.02	0.03	-	-	0.02	0.56	-	-	-
Total Lead (Pb)	mg/L	0.005 ^{ALARA}	<0.0002	<0.0002	<0.0002	<0.0003	<0.0003	<0.0003	-	-	0.0015	<0.0016	-	-	-
Total Lithium (Li)	mg/L	NG	<0.02	<0.02	<0.02	0.007	0.008	<0.004	-	-	<0.004	<0.004	-	-	-
Total Magnesium (Mg)	mg/L	NG	15	15.1	14.9	12.5	-	35.9	-	-	15.6	16	-	-	-
Total Manganese (Mn)	mg/L	≤0.02 ^{AO} 0.12 ^{MAC}	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	-	-	<0.004	<0.006	-	-	-
Total Molybdenum (Mo)	mg/L	NG	0.0009	0.0008	0.0008	0.0008	0.0006	0.0006	-	-	<0.0002	0.001	-	-	-
Total Nickel (Ni)	mg/L	NG	0.0052	0.0214	0.0037	0.0007	0.0028	0.0052	-	-	0.0023	0.0044	-	-	-
Total Phosphorus (P)	mg/L	NG	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	-	-	-
Total Potassium (K)	mg/L	NG	0.7	0.6	0.6	-	-	1.1	-	-	0.8	0.7	-	-	-
Total Selenium (Se)	mg/L	0.05 ^{MAC}	<0.001	<0.001	0.001	<0.007	<0.007	<0.007	-	-	<0.007	<0.007	-	-	-
Total Silicon (Si)	mg/L	NG	1.6	1.9	1.7	1.03	2.09	2.65	-	-	2.09	1.76	-	-	-
Total Silver (Ag)	mg/L	NG	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	<0.0001	0.0006	-	-	-
Total Sodium (Na)	mg/L	≤200 ^{AO}	4	4.9	4.0	-	-	17.5	-	-	4.4	5.5	-	-	-
Total Strontium (Sr)	mg/L	7 ^{MAC}	0.24	0.24	0.24	0.21	0.31	0.58	-	-	0.26	0.26	-	-	-
Total Sulphur (S)	mg/L	NG	22	16.1	20.8	13.8	23.1	57.7	-	-	20.5	18.6	-	-	-
Total Thallium (Tl)	mg/L	NG	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	-	<0.0002	<0.0002	-	-	-
Total Tin (Sn)	mg/L	NG	<0.001	<0.001	<0.001	<0.003	<0.001	<0.001	-	-	<0.001	<0.001	-	-	-
Total Titanium (Ti)	mg/L	NG	0.002	0.005	0.002	<0.001	<0.001	<0.001	-	-	0.004	<0.001	-	-	-
Total Uranium (U)	mg/L	0.02 ^{MAC}	0.0005	0.0004	0.0005	0.0004	0.0008	0.0015	-	-	<0.0004	0.0005	-	-	-
Total Vanadium (V)	mg/L	NG	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	-	-	-
Total Zinc (Z)	mg/L	≤5 ^{AO}	0.004	<0.003	0.007	0.0114	0.0087	0.0083	-	-	0.0296	0.02	-	-	-
Total Zirconium (Zr)	mg/L	NG	-	-	-	0.0011	0.0011	<0.0002	-	-	0.0007	0.0007	-	-	-
Lower Level Elements															
Total Mercury (Hg)	µg/L	1 ^{MAC}	-	-	-	-	<0.05	-	-	-	-	-	-	-	<0.05
Cations															
Dissolved Aluminum (Al)	mg/L	0.1 ^{OG}	-	-	-	-	-	-	<0.001	<0.001	-	-	-	<0.1	<0.1
Dissolved Antimony (Sb)	mg/L	0.006 ^{MAC}	-	-	-	-	-	-	<0.0002	0.0013	-	-	-	-	-
Dissolved Arsenic (As)	mg/L	0.01 ^{ALARA}	-	-	-	-	-	-	<0.005	<0.005	-	-	-	-	-
Dissolved Barium (Ba)	mg/L	2 ^{MAC}	-	-	-	-	-	-	0.0596	0.0564	-	-	-	-	-
Dissolved Beryllium (Be)	mg/L	NG	-	-	-	-	-	-	<0.0002	<0.0002	-	-	-	-	-
Dissolved Bismuth	mg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Boron (B)	mg/L	5 ^{MAC}	-	-	-	-	-	-	0.01	<0.01	-	-	-	-	-
Dissolved Cadmium (Cd)	mg/L	0.007 ^{MAC}	-	-	-	-	-	-	0.0002	0.0002	-	-	-	-	-
Dissolved Calcium (Ca)	mg/L	NG	59.9	65.2	61.6	55.8	80.2	152	62.1	72.1	-	-	66.2	81.6	85.8
Dissolved Chromium (Cr)	mg/L	0.05 ^{MAC}	-	-	-	-	-	-	0.005	<0.001	-	-	-	-	-
Dissolved Cobalt (Co)	mg/L	NG	-	-	-	-	-	-	<0.0003	<0.0003	-	-	-	-	-
Dissolved Copper (Cu)	mg/L	1 ^{AO} 2 ^{MAC}	-	-	-	-	-	-	0.0009	0.0013	-	-	-	0.005	<0.004
Dissolved Iron (Fe)	mg/L	≤0.3 ^{AO}	0.01	<0.01	<0.01	-	-	0.08	<0.01	0.03	-	-	0.001	<0.01	<0.01
Dissolved Lead (Pb)	mg/L	0.005 ^{ALARA}	-	-	-	-	-	-	<0.003	<0.0003	-	-	-	-	-
Dissolved Lithium (Li)	mg/L	NG	-	-	-	-	-	-	0.004	<0.010	-	-	-	-	-
Dissolved Magnesium (Mg)	mg/L	NG	14.5	17.0	14.2	-	18.7	36.2	12.5	15.7	-	-	15.7	20.3	19
Dissolved Manganese (Mn)	mg/L	≤0.02 ^{AO} 0.12 ^{MAC}	<0.004	<0.004	<0.004	-	-	<0.004	<0.004	<0.004	-	-	<0.004	<0.004	-
Dissolved Mercury (hg)	mg/L	0.001 ^{MAC}	-	-	-	-	-	-	-	-	-	-	-	≤0.05	-
Dissolved Molybdenum (Mo)	mg/L	NG	-	-	-	-	-	-	0.0008	0.0009	-	-	-	-	-
Dissolved Nickel (Ni)	mg/L	NG	-	-	-	-	-	-	0.0013	0.0035	-	-	-	-	-
Dissolved Phosphorus (P)	mg/L	NG	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-
Dissolved Potassium (K)	mg/L	NG	0.6	0.8	0.5	0.6	0.9	1.1	0.6	0.7	-	-	0.8	1.5	0.9
Dissolved Selenium (Se)	mg/L	0.05	-	-	-	-	-	-	<0.007	<0.007	-	-	-	-	-
Dissolved Silicon (Si)	mg/L	NG	-	-	-	-	-	-	1.62	1.79	-	-	-	-	5.23
Dissolved Silver (Ag)	mg/L	NG	-	-	-	-	-	-	<0.0001	<0.0001	-	-	-	-	-
Dissolved Sodium (Na)	mg/L	≤200 ^{AO}	3.8	6.3	3.8	4.5	8.5	17.0	3.3	4.5	-	-	4.5	10.5	8.5
Dissolved Strontium (Sr)	mg/L	7 ^{MAC}	-	-	-	-	-	-	0.21	0.27	-	-	-	-	-
Dissolved Sulphur (S)	mg/L	NG	-	-	-	-	-	-	14.6	22.6	-	-	-	-	-
Dissolved Thallium (Tl)	mg/L	NG	-	-	-	-	-	-	<0.0002	<0.0002	-	-	-	-	-
Dissolved Tin (Sn)	mg/L	NG	-	-	-	-	-	-	<0.001	<0.001	-	-	-	-	-
Dissolved Titanium (Ti)	mg/L	NG	-	-	-	-	-	-	<0.001						

Table J.1: Town of Turner Valley Chemical Analysis Summary TW5

Parameter	Units	Guideline ¹	Dec-07	Jun-07	Dec-06	Jun-06	Dec-05	Jul-05	Dec-04	Jun-04	Dec-03	Jun-03	Dec-02	Jul-02	Dec-01
Hydrocarbons															
Benzene	µg/L	5	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	µg/L	24 ^{AO} , 60 ^{MAC}	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	µg/L	1.6 ^{AO} , 140 ^{MAC}	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes	µg/L	20 ^{AO} , 90 ^{MAC}	-	-	-	-	-	-	-	-	-	-	-	-	-
F1	mg/L	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-
F2	mg/L	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-
F3	mg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
F4	mg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene equivalency	µg/L	0.04	-	-	-	-	-	<0.01	-	-	-	-	-	-	-
Acenaphthene	µg/L	1,400	-	-	-	-	-	-	-	-	-	-	-	-	-
Acenaphthylene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Acridine	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Anthracene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Benz(a)anthracene b	µg/L	NG	-	-	-	-	-	<0.07	-	-	-	-	-	-	-
Benzo(b&j)fluoranthene	µg/L	NG	-	-	-	-	-	<0.1	-	-	-	-	-	-	-
Benzo(k)fluoranthene	µg/L	NG	-	-	-	-	-	<0.07	-	-	-	-	-	-	-
Benzo(g,h,i)perylene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(c)phenanthrene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	µg/L	0.04	-	-	-	-	-	<0.07	-	-	-	-	-	-	-
Benzo(e)pyrene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Chrysene	µg/L	NG	-	-	-	-	-	<0.07	-	-	-	-	-	-	-
Dibenzo(a,h)anthracene	µg/L	NG	-	-	-	-	-	<0.07	-	-	-	-	-	-	-
Dibenzo(a,e)pyrene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibenzo(a,h)pyrene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibenzo(a,i)pyrene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibenzo(a,l)pyrene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluoranthene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluorene	µg/L	940	-	-	-	-	-	-	-	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	µg/L	NG	-	-	-	-	-	<0.1	-	-	-	-	-	-	-
2-Methylnaphthalene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	µg/L	470	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenanthrene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Perylene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Pyrene	µg/L	710	-	-	-	-	-	-	-	-	-	-	-	-	-
Quinoline	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
PCBs															
Aroclor 1016	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1221	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1232	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1242	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1248	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1254	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1260	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1262	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1268	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Total PCB	µg/L	0.094	-	-	-	-	-	-	-	-	-	-	-	-	-
NORM															
Uranium	µg/L	20	-	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium 7	Bq/L	4,000	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead-210	Bq/L	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-
Polonium-210	Bq/L	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-
Radium- 226	Bq/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-
Radium-228	Bq/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium-228	Bq/L	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium-230	Bq/L	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium-232	Bq/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium-234	Bq/L	20	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
mg/L - milligrams per litre
µg/L - micrograms per litre
Bq/L - Becquerel Per Litre
"- " - Not Analyzed
AO - Aesthetic Objective
MAC - Maximum Allowable Concentration
OG - Operational Guidance Values
NG - No Guideline
ALARA - As Low As Reasonable Achievable

¹ - Health Canada - Guidelines for Canadian Drinking Water Quality (Health Canada 2024) or Alberta Environment and Protected Areas - Alberta Tier 1 Soil and Groundwater Remediation Guidelines (AEPA 2024) for coarse-grained soils and residential/parkland land use

Exceeds Guideline

italics - laboratory detection limit exceeds the guidelines

Table J.2: Town of Turner Valley Chemical Analysis Summary TW7

Parameter	Units	Guideline ¹	May-08	Dec-07	Jun-07	Dec-06	Jun-06	Dec-05	Jul-05	Dec-04	Jun-04	Dec-03	Jun-03	Dec-02	Jul-02	Dec-01
Total Ammonia	mg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-
Misc. Inorganics																
Total Kieldahl Nitrogen	mg/L	NG	0.09	0.09	0.12	0.07	0.29	0.75	0.26	<0.05	0.07	<0.05	0.21	-	0.12	<0.05
Calculated Parameters																
Hardness (CaCO3)	mg/L	NG	280	290	450	320	370	390	530	260	340	290	330	300	460	290
Ion Balance		NG	0.99	0.92	0.97	0.96	0.92	0.92	0.98	0.9	1	1	1.03	0.98	1.02	1.03
Total Dissolved Solids	mg/L	≤500 ^{AO}	330	355	563	383	456	479	660	320	394	329	381	341	538	-
Dissolved Silica	mg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	5.23	319
Misc. Inorganics																
Conductivity	µS/cm	NG	540	612	899	653	749	781	1040	565	626	536	626	558	803	533
pH		7.0-10.5 ^{AO}	7.8	8.07	7.82	8.11	7.91	7.95	7.73	7.59	8.08	7.67	8.24	7.62	7.88	7.97
Week Acid Dissoc. Cyanide		0.2 ^{MAC}	<0.002	-	-	-	-	-	-	-	-	-	-	-	0.001	-
Anions																
Alkalinity (PP as CaCO3)	mg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
Alkalinity (Total as CaCO3)	mg/L	NG	200	243	299	265	283	304	332	224	237	221	234	233	267	216
Bicarbonate (HCO3)	mg/L	NG	250	297	365	324	345	371	406	274	289	269	286	285	325	263
Carbonate (CO3)	mg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dissolved Fluoride (F)	mg/L	1.5 ^{MAC}	0.29	-	-	-	-	-	-	-	-	-	-	-	0.24	0.29
Hydroxide (OH)	mg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dissolved Sulphate (SO4)	mg/L	≤500 ^{AO}	89	85.4	169	86.4	122	124	214	75.9	108	78.5	93.3	80.3	173	69.2
Sulphide	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01
Dissolved Chloride (Cl)	mg/L	≤250 ^{AO}	5.6	7.3	30.4	8.5	17.2	17.4	30.3	5.9	9.9	5.1	13.4	5.1	17.9	3.1
Nutrients																
Dissolved Nitrate (N)	mg/L	10 ^{MAC}	0.15	0.058	0.129	0.078	0.06	0.081	0.219	0.05	0.123	0.061	0.074	0.06	0.226	0.045
Nitrate plus Nitrite (N)	mg/L	NG	0.15	0.058	0.129	0.078	0.06	0.085	0.219	0.05	0.123	0.061	0.074	0.067	0.226	0.045
Dissolved Nitrite (N)	mg/L	1 ^{MAC}	<0.003	<0.003	<0.003	<0.003	<0.003	0.004	<0.003	<0.003	<0.003	<0.003	<0.003	0.007	<0.003	<0.003
Total Organic Carbon (C)	mg/L	NG	1.6	1.1	2.2	1.4	2.1	2.3	4.4	1.2	0.9	0.7	1.1	-	1.9	0.8
Physical Properties																
True Colour	PtCo units	≤15 TCU ^{AO}	<2	-	-	-	-	-	-	-	-	-	-	-	<5	5
Turbidity	NTU	narrative ^{AO}	0.5	-	-	-	-	-	-	-	-	-	-	-	0.4	<1
Elements																
Total Aluminum (Al)	mg/L	0.1 ^{OG}	-	<0.04	<0.04	<0.04	0.026	0.015	0.003	-	-	0.001	0.013	-	-	-
Total Antimony (Sb)	mg/L	0.006 ^{MAC}	-	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	<0.0002	-	-	0.0007	0.0023	-	-	-
Total Arsenic (As)	mg/L	0.01 ^{ALARA}	-	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	-	-	<0.005	<0.005	-	-	-
Total Barium (Ba)	mg/L	2 ^{MAC}	-	0.04	0.06	0.06	0.0551	0.0696	0.0751	-	-	0.0469	0.0459	-	-	-
Total Beryllium (Be)	mg/L	NG	-	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002	-	-	<0.0002	<0.0002	-	-	-
Total Boron (B)	mg/L	5 ^{MAC}	-	<0.02	0.03	0.02	0.03	0.03	0.03	-	-	<0.02	0.02	-	-	-
Total Cadmium (Cd)	mg/L	0.007 ^{MAC}	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	-	0.001	<0.0002	-	-	-
Total Calcium (Ca)	mg/L	NG	-	84	137	101	-	-	160	-	-	84.4	101	-	-	-
Total Chromium (Cr)	mg/L	0.05 ^{MAC}	-	<0.01	<0.01	<0.01	0.001	<0.001	<0.001	-	-	0.002	0.003	-	-	-
Total Cobalt (Co)	mg/L	NG	-	0.0011	0.0022	0.0006	<0.0003	<0.0003	0.0011	-	-	<0.0003	<0.0003	-	-	-
Total Copper (Cu)	mg/L	1 ^{AO} 2 ^{MAC}	-	0.0041	0.0044	0.002	0.0066	0.002	0.0051	-	-	0.0442	0.131	-	-	-
Total Iron (Fe)	mg/L	≤0.3 ^{AO}	-	0.08	<0.06	<0.06	0.11	0.07	0.08	-	-	0.05	0.1	-	-	-
Total Lead (Pb)	mg/L	0.005 ^{ALARA}	-	<0.0002	<0.0002	<0.0002	<0.0003	<0.0003	<0.0003	-	-	0.0007	0.0058	-	-	-
Total Lithium (Li)	mg/L	NG	-	<0.02	<0.02	<0.02	0.009	0.011	<0.004	-	-	<0.004	<0.004	-	-	-
Total Magnesium (Mg)	mg/L	NG	-	19	28.4	23	23.4	-	36.3	-	-	18.3	22.1	-	-	-
Total Manganese (Mn)	mg/L	≤0.02 ^{AO} 0.12 ^{MAC}	-	0.006	<0.004	0.006	0.007	0.006	0.011	-	-	0.005	0.016	-	-	-
Total Molybdenum (Mo)	mg/L	NG	-	0.0005	0.0007	0.0005	0.0006	0.0005	0.0005	-	-	<0.0002	0.0007	-	-	-
Total Nickel (Ni)	mg/L	NG	-	0.0070	0.0474	0.006	0.0012	0.004	0.0098	-	-	0.001	0.0042	-	-	-
Total Phosphorus (P)	mg/L	NG	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	-	-	-
Total Potassium (K)	mg/L	NG	-	1.1	1.2	1.2	-	-	2	-	-	1.1	2	-	-	-
Total Selenium (Se)	mg/L	0.05 ^{MAC}	-	<0.001	<0.001	<0.001	<0.007	<0.007	<0.007	-	-	<0.007	<0.007	-	-	-
Total Silicon (Si)	mg/L	NG	-	2.1	2.5	2.4	2.19	2.51	2.79	-	-	2.27	1.98	-	-	-
Total Silver (Ag)	mg/L	NG	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	<0.0001	0.0004	-	-	-
Total Sodium (Na)	mg/L	≤200 ^{AO}	-	10	19.0	12.4	-	-	23.7	-	-	8.6	12.9	-	-	-
Total Strontium (Sr)	mg/L	7 ^{MAC}	-	0.32	0.43	0.36	0.38	0.4	0.55	-	-	0.31	0.33	-	-	-
Total Sulphur (S)	mg/L	NG	-	25	49.0	28.7	34	37.5	67.5	-	-	25.2	30.3	-	-	-
Total Thallium (Tl)	mg/L	NG	-	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	-	<0.0002	<0.0002	-	-	-
Total Tin (Sn)	mg/L	NG	-	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	-	-	<0.001	0.002	-	-	-
Total Titanium (Ti)	mg/L	NG	-	0.003	0.009	0.003	0.001	<0.001	0.002	-	-	<0.001	<0.001	-	-	-
Total Uranium (U)	mg/L	0.02 ^{MAC}	-	0.0007	0.0010	0.0008	0.0009	0.0011	0.0021	-	-	0.0005	0.0007	-	-	-
Total Vanadium (V)	mg/L	NG	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	-	-	-
Total Zinc (Z)	mg/L	≤5 ^{AO}	-	0.004	0.003	0.009	0.012	0.0091	0.0134	-	-	<0.0006	0.0265	-	-	-
Total Zirconium (Zr)	mg/L	NG	-	-	-	-	0.0013	0.0003	0.0022	-	-	0.0004	0.0128	-	-	-
Lower Level Elements																
Total Mercury (Hg)	µg/L	1 ^{MAC}	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	<0.05
Cations																
Dissolved Aluminum (Al)	mg/L	0.1 ^{OG}	<0.04	-	-	-	-	-	-	<0.001	<0.001	-	-	-	<0.1	<0.1
Dissolved Antimony (Sb)	mg/L	0.006 ^{MAC}	<0.0002	-	-	-	-	-	-	<0.0002	<0.0002	-	-	-	-	-
Dissolved Arsenic (As)	mg/L	0.01 ^{ALARA}	<0.001	-	-	-	-	-	-	<0.005	<0.005	-	-	-	-	-
Dissolved Barium (Ba)	mg/L	2 ^{MAC}	0.04	-	-	-	-	-	-	0.0451	0.0456	-	-	-	-	-
Dissolved Beryllium (Be)	mg/L	NG	<0.001	-	-	-	-	-	-	<0.0002	<0.0002	-	-	-	-	-
Dissolved Bismuth	mg/L	NG	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Boron (B)	mg/L	5 ^{MAC}	<0.02	-	-	-	-	-	-	0.02	0.02	-	-	-	-	-
Dissolved Cadmium (Cd)	mg/L	0.007 ^{MAC}	<0.0002	-	-	-	-	-	-	<0.0002	<0.0002	-	-	-	-	-
Dissolved Calcium (Ca)	mg/L	NG	83	85.3	126	94.1	104	112	155	78.6	102	84	98.2	86.1	134	85
Dissolved Chromium (Cr)	mg/L	0.05 ^{MAC}	<0.01	-	-	-	-	-	-	0.006	<0.001	-	-	-	-	-
Dissolved Cobalt (Co)	mg/L	NG	<0.0003	-	-	-	-	-	-	<0.0003	<0.0003	-	-	-	-	-
Dissolved Copper (Cu)	mg/L	1 ^{AO} 2 ^{MAC}	0.0074	-	-	-	-	-	-	0.0008	0.0103	-	-	-	0.004	<0.004
Dissolved Iron (Fe)	mg/L	≤0.3 ^{AO}	0.09	0.02	0.05	<0.01	-	-	0.03	0.01	0.06	0.01	0.02	0.05	<0.01	<0.01
Dissolved Lead (Pb)	mg/L	0.005 ^{ALARA}	0.0003	-	-	-	-	-	-	<0.0003	<0.0003	-	-	-	-	-
Dissolved Lithium (Li)	mg/L	NG	<0.02	-	-	-	-	-	-	<0.004	0.014	-	-	-	-	-
Dissolved Magnesium (Mg)	mg/L	NG	18	19.3	32.5	21.7	-	25.9	35.8	16.4	20.7	19	21.8	19.7	29.1	18.6
Dissolved Manganese (Mn)	mg/L	≤0.02 ^{AO} 0.12 ^{MAC}	0.009	0.011	<0.004	0.006	-	-	0.011	<0.004	<0.004	0.005	0.016	0.004	0.006	-
Dissolved Mercury (hg)	mg/L	0.001 ^{MAC}	<0.00005	-	-	-	-	-	-	-	-	-	-	-	≤0.05	-
Dissolved Molybdenum (Mo)	mg/L	NG	0.0003	-	-	-	-	-	-	0.0007	0.0008	-	-	-	-	-
Dissolved Nickel (Ni)	mg/L	NG	0.0028	-	-	-	-	-	-	0.0014	0.0057	-	-	-	-	-
Dissolved Phosphorus (P)	mg/L	NG	<0.1	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-
Dissolved Potassium (K)	mg/L	NG	0.8	1.0	1.6	1	1.2	1.4	1.9	0.9	1.1	1.1	1.1	1.2	1.3	0.7
Dissolved Selenium (Se)	mg/L	0.05 ^{MAC}	0.002	-	-	-	-	-	-	<0.007	<0.007	-	-	-	-	-
Dissolved Silicon (Si)	mg/L	NG	1.9	-	-	-	-	-	-	1.87	2.1	-	-	-	-	4.93
Dissolved Silver (Ag)	mg/L	NG	<0.0001	-	-	-	-	-	-	&						

Table J.2: Town of Turner Valley Chemical Analysis Summary TW7

Parameter	Units	Guideline ¹	May-08	Dec-07	Jun-07	Dec-06	Jun-06	Dec-05	Jul-05	Dec-04	Jun-04	Dec-03	Jun-03	Dec-02	Jul-02	Dec-01
Hydrocarbons																
Benzene	µg/L	5	<0.4	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	µg/L	24 ^{AO} , 60 ^{MAC}	<0.4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	µg/L	1.6 ^{AO} , 140 ^{MAC}	<0.4	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes	µg/L	20 ^{AO} , 90 ^{MAC}	<0.8	-	-	-	-	-	-	-	-	-	-	-	-	-
F1	mg/L	2.2	<100	-	-	-	-	-	-	-	-	-	-	-	-	-
F2	mg/L	1.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
F3	mg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F4	mg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene equivalency	µg/L	0.04	<0.01	-	-	-	-	-	<0.008	-	-	-	-	-	-	-
Acenaphthene	µg/L	1,400	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Acenaphthylene	µg/L	NG	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Acridine	µg/L	NG	<0.2	-	-	-	-	-	-	-	-	-	-	-	-	-
Anthracene	µg/L	NG	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-
Benz(a)anthracene b	µg/L	NG	<0.009	-	-	-	-	-	<0.05	-	-	-	-	-	-	-
Benzo(b&j)fluoranthene	µg/L	NG	<0.009	-	-	-	-	-	<0.1	-	-	-	-	-	-	-
Benzo(k)fluoranthene	µg/L	NG	<0.009	-	-	-	-	-	<0.05	-	-	-	-	-	-	-
Benzo(g,h,i)perylene	µg/L	NG	<0.009	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(c)phenanthrene	µg/L	NG	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	µg/L	0.04	<0.008	-	-	-	-	-	<0.05	-	-	-	-	-	-	-
Benzo(e)pyrene	µg/L	NG	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
Chrysene	µg/L	NG	<0.009	-	-	-	-	-	<0.05	-	-	-	-	-	-	-
Dibenzo(a,h)anthracene	µg/L	NG	<0.008	-	-	-	-	-	<0.05	-	-	-	-	-	-	-
Dibenzo(a,e)pyrene	µg/L	NG	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibenzo(a,h)pyrene	µg/L	NG	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibenzo(a,i)pyrene	µg/L	NG	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibenzo(a,l)pyrene	µg/L	NG	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluoranthene	µg/L	NG	<0.04	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluorene	µg/L	940	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	µg/L	NG	<0.009	-	-	-	-	-	<0.1	-	-	-	-	-	-	-
2-Methylnaphthalene	µg/L	NG	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	µg/L	470	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenanthrene	µg/L	NG	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
Perylene	µg/L	NG	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-
Pyrene	µg/L	710	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-
Quinoline	µg/L	NG	<0.2	-	-	-	-	-	-	-	-	-	-	-	-	-
PCBs																
Aroclor 1016	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1221	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1232	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1242	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1248	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1254	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1260	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1262	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1268	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total PCB	µg/L	0.094	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NORM																
Uranium	µg/L	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium 7	Bq/L	4,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead-210	Bq/L	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polonium-210	Bq/L	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Radium- 226	Bq/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Radium-228	Bq/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium-228	Bq/L	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium-230	Bq/L	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium-232	Bq/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium-234	Bq/L	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
mg/L - milligrams per litre
µg/L - micrograms per litre
Bq/L - Becquerel Per Litre
"- " - Not Analyzed
AO - Aesthetic Objective
MAC - Maximum Allowable Concentration
OG - Operational Guidance Values
NG - No Guideline
ALARA - As Low As Reasonable Achievable

¹ - Health Canada - Guidelines for Canadian Drinking Water Quality (Health Canada 2024) or Alberta Environment and Protected Areas - Alberta Tier 1 Soil and Groundwater Remediation Guidelines (AEPA 2024) for coarse-grained soils and residential/parkland land use

Exceeds Guideline
italics - laboratory detection limit exceeds the guidelines

Table J.3: Town of Turner Valley Chemical Analysis Summary TW8

Parameter	Units	Guideline ¹	Dec-07	Jun-07	Dec-06	Jun-06	Dec-05	Jul-05	Dec-04	Jun-04	Dec-03	Jun-03	Dec-02	Jul-02	Dec-01
Total Ammonia	mg/L	NG	-	-	-	-	-	-	-	-	-	-	-	<0.01	-
Misc. Inorganics															
Total Kieldahl Nitrogen	mg/L	NG	0.21	0.12	0.09	0.25	0.23	0.1	<0.05	<0.05	<0.05	0.16	-	0.06	0.06
Calculated Parameters															
Hardness (CaCO3)	mg/L	NG	280	360	290	240	470	520	240	270	250	290	290	300	260
Ion Balance		NG	0.92	0.91	0.92	0.95	0.91	0.97	0.9	0.98	0.92	0.94	0.99	0.95	0.94
Total Dissolved Solids	mg/L	≤500 ^{AO}	337	454	356	411	583	636	285	311	300	344	329	364	-
Dissolved Silica	mg/L	NG	-	-	-	-	-	-	-	-	-	-	-	5.18	305
Misc. Inorganics															
Conductivity	µS/cm	NG	584	771	596	688	948	1040	505	507	504	584	539	580	495
pH		7.0-10.5 ^{AO}	8.08	7.87	8.15	7.96	7.97	7.72	7.68	8.13	7.75	8.31	7.76	8	7.84
Week Acid Dissoc. Cyanide		0.2 ^{MAC}	-	-	-	-	-	-	-	-	-	-	-	0.001	-
Anions															
Alkalinity (PP as CaCO3)	mg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.9	<0.5	<0.5	-
Alkalinity (Total as CaCO3)	mg/L	NG	232	295	253	274	370	359	210	208	212	234	220	224	211
Bicarbonate (HCO3)	mg/L	NG	283	360	309	334	451	437	256	254	258	282	269	274	257
Carbonate (CO3)	mg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.3	<0.5	<0.5	<0.5
Dissolved Fluoride (F)	mg/L	1.5 ^{MAC}	-	-	-	-	-	-	-	-	-	-	-	0.25	0.27
Hydroxide (OH)	mg/L	NG	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dissolved Sulphate (SO4)	mg/L	≤500 ^{AO}	81.5	107	80	95.7	145	159	63	76.2	72.2	80.5	80.8	96.9	69.3
Sulphide	mg/L	0.05	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01
Dissolved Chloride (Cl)	mg/L	≤250 ^{AO}	5.2	20.0	5.8	12.1	26.0	41.8	2.7	2.9	2.5	7.3	3.9	5	2.8
Nutrients															
Dissolved Nitrate (N)	mg/L	10 ^{MAC}	0.251	0.911	0.287	0.491	0.310	2.33	0.208	0.347	0.123	0.383	0.144	0.618	0.07
Nitrate plus Nitrite (N)	mg/L	NG	0.251	0.911	0.287	0.491	0.310	2.33	0.208	0.347	0.123	0.383	0.152	0.618	0.073
Dissolved Nitrite (N)	mg/L	1 ^{MAC}	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.008	<0.003	0.003
Total Organic Carbon (C)	mg/L	NG	1.2	1.6	1	1.9	3.6	2.9	0.9	0.4	0.6	0.8	-	2	0.7
Physical Properties															
True Colour	PtCo units	≤15 TCU ^{AO}	-	-	-	-	-	-	-	-	-	-	-	<5	5
Turbidity	NTU	narrative ^{AO}	-	-	-	-	-	-	-	-	-	-	-	0.2	<1
Elements															
Total Aluminum (Al)	mg/L	0.1 ^{OG}	<0.04	<0.04	<0.04	0.007	0.096	0.004	-	-	0.002	0.01	-	-	-
Total Antimony (Sb)	mg/L	0.006 ^{MAC}	<0.0002	<0.0002	<0.0002	0.0004	0.0002	<0.0002	-	-	0.0007	<0.0003	-	-	-
Total Arsenic (As)	mg/L	0.01 ^{ALARA}	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	-	-	<0.005	<0.005	-	-	-
Total Barium (Ba)	mg/L	2 ^{MAC}	0.04	0.06	0.05	0.0552	0.0962	0.0884	-	-	0.0433	0.0447	-	-	-
Total Beryllium (Be)	mg/L	NG	<0.001	<0.001	<0.001	<0.0002	<0.0002	<0.0002	-	-	<0.0002	<0.0002	-	-	-
Total Boron (B)	mg/L	5 ^{MAC}	0.02	0.03	0.03	0.03	0.04	0.03	-	-	0.02	0.02	-	-	-
Total Cadmium (Cd)	mg/L	0.007 ^{MAC}	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	-	<0.0002	<0.0002	-	-	-
Total Calcium (Ca)	mg/L	NG	83	121	98.9	93.9	-	148	-	-	75.7	86.9	-	-	-
Total Chromium (Cr)	mg/L	0.05 ^{MAC}	<0.01	<0.01	<0.01	0.001	0.003	<0.001	-	-	0.001	0.003	-	-	-
Total Cobalt (Co)	mg/L	NG	0.001	0.0020	0.0006	<0.0003	0.0004	0.0011	-	-	<0.0003	<0.0003	-	-	-
Total Copper (Cu)	mg/L	1 ^{AO} , 2 ^{MAC}	0.0038	0.0036	0.0017	0.0019	0.0026	0.0013	-	-	0.0026	0.0022	-	-	-
Total Iron (Fe)	mg/L	≤0.3 ^{AO}	<0.06	<0.06	<0.06	0.06	0.10	0.04	-	-	0.02	0.03	-	-	-
Total Lead (Pb)	mg/L	0.005 ^{ALARA}	<0.0002	<0.0002	<0.0002	<0.0003	0.0004	<0.0003	-	-	<0.0003	<0.0003	-	-	-
Total Lithium (Li)	mg/L	NG	<0.02	<0.02	<0.02	0.009	0.013	<0.004	-	-	<0.004	<0.004	-	-	-
Total Magnesium (Mg)	mg/L	NG	18	24.1	21.2	19.4	-	34.3	-	-	17	19.5	-	-	-
Total Manganese (Mn)	mg/L	≤0.02 ^{AO} , 0.12 ^{MAC}	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	-	-	<0.004	<0.004	-	-	-
Total Molybdenum (Mo)	mg/L	NG	0.0005	0.0007	0.0006	0.0006	0.0005	0.0005	-	-	<0.0002	0.0007	-	-	-
Total Nickel (Ni)	mg/L	NG	0.0070	0.0418	0.0058	0.0019	0.0067	0.009	-	-	0.0009	0.002	-	-	-
Total Phosphorus (P)	mg/L	NG	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	-	-	-
Total Potassium (K)	mg/L	NG	1.1	1.1	1.2	-	-	1.4	-	-	1	1	-	-	-
Total Selenium (Se)	mg/L	0.05 ^{MAC}	<0.001	<0.001	0.001	<0.007	<0.007	<0.007	-	-	<0.007	<0.007	-	-	-
Total Silicon (Si)	mg/L	NG	2.4	2.8	2.7	1.81	3.34	2.96	-	-	2.36	2.21	-	-	-
Total Silver (Ag)	mg/L	NG	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	<0.0001	0.0004	-	-	-
Total Sodium (Na)	mg/L	≤200 ^{AO}	9.9	13.7	13.1	-	-	22.2	-	-	7.1	9.5	-	-	-
Total Strontium (Sr)	mg/L	7 ^{MAC}	0.31	0.39	0.35	0.34	0.51	0.56	-	-	0.29	0.32	-	-	-
Total Sulphur (S)	mg/L	NG	24	32.1	27.3	25.7	45.1	48.4	-	-	23.3	26.4	-	-	-
Total Thallium (Tl)	mg/L	NG	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	-	-	<0.0002	<0.0002	-	-	-
Total Tin (Sn)	mg/L	NG	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	-	-	<0.001	<0.001	-	-	-
Total Titanium (Ti)	mg/L	NG	0.003	0.008	0.003	<0.001	0.009	0.002	-	-	<0.001	<0.001	-	-	-
Total Uranium (U)	mg/L	0.02 ^{MAC}	0.0006	0.0007	0.0007	0.0006	0.0013	0.0011	-	-	<0.0004	0.0005	-	-	-
Total Vanadium (V)	mg/L	NG	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	-	-	-
Total Zinc (Z)	mg/L	≤5 ^{AO}	0.007	0.004	0.011	0.0135	0.0089	0.0143	-	-	0.0037	0.0132	-	-	-
Total Zirconium (Zr)	mg/L	NG	-	-	-	0.001	0.0002	<0.0002	-	-	0.0005	0.0034	-	-	-
Lower Level Elements															
Total Mercury (Hg)	µg/L	1 ^{MAC}	-	-	-	-	0.05	-	-	-	-	-	-	-	<0.05
Cations															
Dissolved Aluminum (Al)	mg/L	0.1 ^{OG}	-	-	-	-	-	-	<0.001	<0.001	-	-	-	0.3	0.1
Dissolved Antimony (Sb)	mg/L	0.006 ^{MAC}	-	-	-	-	-	-	<0.0002	<0.0002	-	-	-	-	-
Dissolved Arsenic (As)	mg/L	0.01 ^{ALARA}	-	-	-	-	-	-	<0.005	<0.005	-	-	-	-	-
Dissolved Barium (Ba)	mg/L	2 ^{MAC}	-	-	-	-	-	-	0.0415	0.0361	-	-	-	-	-
Dissolved Beryllium (Be)	mg/L	NG	-	-	-	-	-	-	<0.0002	<0.0002	-	-	-	-	-
Dissolved Bismuth	mg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Boron (B)	mg/L	5 ^{MAC}	-	-	-	-	-	-	0.01	0.02	-	-	-	-	-
Dissolved Cadmium (Cd)	mg/L	0.007 ^{MAC}	-	-	-	-	-	-	<0.0002	<0.0002	-	-	-	-	-
Dissolved Calcium (Ca)	mg/L	NG	81.8	99.4	85.9	93.9	137	148	69.8	80.9	-	-	82.6	89.6	75
Dissolved Chromium (Cr)	mg/L	0.05 ^{MAC}	-	-	-	-	-	-	0.006	<0.001	-	-	-	-	-
Dissolved Cobalt (Co)	mg/L	NG	-	-	-	-	-	-	<0.0003	<0.003	-	-	-	-	-
Dissolved Copper (Cu)	mg/L	1 ^{AO} , 2 ^{MAC}	-	-	-	-	-	-	0.0009	0.0015	-	-	-	<0.004	0.008
Dissolved Iron (Fe)	mg/L	≤0.3 ^{AO}	0.02	0.02	<0.01	-	-	0.03	0.01	0.02	-	-	0.01	0.26	<0.01
Dissolved Lead (Pb)	mg/L	0.005 ^{ALARA}	-	-	-	-	-	-	<0.0003	<0.0003	-	-	-	-	-
Dissolved Lithium (Li)	mg/L	NG	-	-	-	-	-	-	<0.004	<0.011	-	-	-	-	-
Dissolved Magnesium (Mg)	mg/L	NG	17.7	27.4	18.7	-	30.0	36.7	15.6	17.1	-	-	19.4	19.2	17.5
Dissolved Manganese (Mn)	mg/L	≤0.02 ^{AO} , 0.12 ^{MAC}	0.011	<0.004	<0.004	-	-	<0.004	<0.004	<0.004	-	-	<0.004	0.009	-
Dissolved Mercury (hg)	mg/L	0.001 ^{MAC}	-	-	-	-	-	-	-	-	-	-	-	<0.05	-
Dissolved Molybdenum (Mo)	mg/L	NG	-	-	-	-	-	-	0.0007	0.0007	-	-	-	-	-
Dissolved Nickel (Ni)	mg/L	NG	-	-	-	-	-	-	0.0024	0.0046	-	-	-	-	-
Dissolved Phicosphorus (P)	mg/L	NG	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-
Dissolved Potassium (K)	mg/L	NG	1.0	1.5	0.9	1	1.4	1.4	0.8	1	-	-	1.1	1	1.1
Dissolved Selenium (Se)	mg/L	0.05 ^{MAC}	-	-	-	-	-	-	<0.007	<0.007	-	-	-	-	-
Dissolved Silicon (Si)	mg/L	NG	-	-	-	-	-	-	1.96	2.14	-	-	-	-	4.97
Dissolved Silver (Ag)	mg/L	NG	-	-	-	-	-	-	<0.0001	<0.0001	-	-	-	-	-
Dissolved Sodium (Na)	mg/L	≤200 ^{AO}	9.3	16.9	11.3	11.1	19.6	23.2	6.4	6.7	-	-	8.6	9	7.3
Dissolved Strontium (Sr)	mg/L	7 ^{MAC}	-	-	-	-	-	-	0.27	0.29	-	-	-	-	-
Dissolved Sulphur (S)	mg/L	NG	-	-	-	-	-	-	17.6	24.6	-	-	-	-	-
Dissolved Thallium (Tl)	mg/L	NG	-	-	-	-	-	-	<0.0002	<0.0002	-	-	-	-	-
Dissolved Tin (Sn)	mg/L	NG	-	-	-	-	-	-	<0.001	<0.001	-	-	-	-	-
Dissolved Titanium (Ti)	mg/L	NG	-	-	-	-	-	-	<0.001	<0.001	-	-	-	-	-
Dissolved Uranium (U)	mg/L	0.02 ^{MAC}	-	-	-										

Table J.3: Town of Turner Valley Chemical Analysis Summary TW8

Parameter	Units	Guideline ¹	Dec-07	Jun-07	Dec-06	Jun-06	Dec-05	Jul-05	Dec-04	Jun-04	Dec-03	Jun-03	Dec-02	Jul-02	Dec-01
Hydrocarbons															
Benzene	µg/L	5	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	µg/L	24 ^{AO} , 60 ^{MAC}	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	µg/L	1.6 ^{AO} , 140 ^{MAC}	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes	µg/L	20 ^{AO} , 90 ^{MAC}	-	-	-	-	-	-	-	-	-	-	-	-	-
F1	mg/L	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-
F2	mg/L	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-
F3	mg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
F4	mg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene equivalency	µg/L	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-
Acenaphthene	µg/L	1,400	-	-	-	-	-	-	-	-	-	-	-	-	-
Acenaphthylene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Acridine	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Anthracene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Benz(a)anthracene b	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(b&j)fluoranthene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(g,h,i)perylene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(c)phenanthrene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	µg/L	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(e)pyrene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Chrysene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibenzo(a,h)anthracene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibenzo(a,e)pyrene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibenzo(a,h)pyrene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibenzo(a,i)pyrene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibenzo(a,l)pyrene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluoranthene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluorene	µg/L	940	-	-	-	-	-	-	-	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Methylnaphthalene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	µg/L	470	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenanthrene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Perylene	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Pyrene	µg/L	710	-	-	-	-	-	-	-	-	-	-	-	-	-
Quinoline	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
PCBs															
Aroclor 1016	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1221	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1232	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1242	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1248	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1254	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1260	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1262	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1268	µg/L	NG	-	-	-	-	-	-	-	-	-	-	-	-	-
Total PCB	µg/L	0.094	-	-	-	-	-	-	-	-	-	-	-	-	-
NORM															
Uranium	µg/L	20	-	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium 7	Bq/L	4,000	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead-210	Bq/L	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-
Polonium-210	Bq/L	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-
Radium- 226	Bq/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-
Radium-228	Bq/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium-228	Bq/L	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium-230	Bq/L	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium-232	Bq/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium-234	Bq/L	20	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
mg/L - milligrams per litre
µg/L - micrograms per litre
Bq/L - Becquerel Per Litre
"- " - Not Analyzed
AO - Aesthetic Objective
MAC - Maximum Allowable Concentration
OG - Operational Guidance Values
NG - No Guideline
ALARA - As Low As Reasonable Achievable

¹ - Health Canada - Guidelines for Canadian Drinking Water Quality (Health Canada 2024) or Alberta Environment and Protected Areas - Alberta Tier 1 Soil and Groundwater Remediation Guidelines (AEPA 2024) for coarse-grained soils and residential/parkland land use

Exceeds Guideline

italics - laboratory detection limit exceeds the guidelines