2022 Annual Report, Stoney Lake Road Landfill

Environmental Compliance Approval No. A340901

March 23, 2023

Prepared for:
The Corporation of the Township of Douro-Dummer

Cambium Reference: 12987-004

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Executive Summary

The Stoney Lake Road Landfill is owned by the Township of Douro-Dummer and operates as a waste transfer station, managed by Waste Connections of Canada under Ministry of the Environment, Conservation and Parks Environmental Compliance Approval No. A340901. The site is on the east half of Lot 21, Concession 4, Township of Douro-Dummer, County of Peterborough. The municipal address is 348 County Road 6, about 6 km east of the town of Lakefield. The total site area is 4.25 ha and has an approved landfill area of 1.60 ha. The site ceased landfilling operations in 2003 and final closure activities were completed in 2005.

This report presents the results of the 2022 activities that were completed at the Stoney Lake Road Landfill. The report and activities have been completed and reported on in general conformance with the November 2010 Ministry of the Environment Technical Guidance Document entitled “Monitoring and Reporting for Waste Disposal Sites – Groundwater and Surface Water”. The “Monitoring and Screening Checklist” is provided in Appendix A.

Groundwater elevations indicated that groundwater flow in the vicinity of the site is southeast in the overburden/upped bedrock and lower bedrock aquifer. Groundwater is anticipated to discharge to unevaluated wetlands and the Galesburg Provincially Significant Wetland to the southeast.

A leachate plume is evident beneath and down-gradient of the waste mound. Impacts were generally restricted to the overburden/upper bedrock aquifer. Groundwater results indicated that natural attenuation is occurring at the site as concentrations generally decrease with distance.

An accelerated monitoring program was implemented in late 2022 as a contingency to address an increasing trend for boron at near property boundary well TW07-2. As such, a shallow drivepoint monitor was installed down-gradient, to the east, of the site to delineate impacts to the adjacent wetlands. Initial results from the drivepoint indicate a significant decrease in boron concentrations compared to TW07-2. This accelerated monitoring program will be reported annually in a separate letter to be submitted to the Ministry of Environment, Conservation and Parks.

The conceptual site model anticipates groundwater to discharge to an unevaluated wetland and the Galesburg Provincially Significant Wetland to the east. As groundwater providing baseflow to surface water is considered reasonable use, the intent of Ministry Guideline B-7 is satisfied.

Minimal site-related impacts were occurring to the down-gradient surface water monitoring stations, if any. Of note, minimal samples have been collected from on-site station SW6 making it difficult to discern site-related impacts. For the remaining surface water monitoring locations, it is evident that outside sources (i.e., road de-icing activities, and wetland environments) and poor sampling conditions were influencing to the water quality. The surface water trigger was not activated in 2022 and no further action was warranted.

Landfill gas measurements collected in 2022 were less than 2.5% methane by volume at the perimeter monitoring wells, and less than 1.0% methane by volume in the on-site structures.

A Ministry Site Inspection was completed on October 17, 2022, and noted that the wood waste pile was approaching its maximum approved storage capacity. Waste Connections is currently seeking Ministry approval for the usage of a new grinder on-site. Until then, wood processing will not occur.

Support has been received from the Ministry of the Environments, Conservation and Parks Groundwater reviewer regarding reductions to the groundwater monitoring program and reporting frequency. Conversations between the Township and the Ministry's Surface Water reviewer are on-going.

Respectfully submitted,

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1.0 Introduction

The Corporation of the Township of Douro-Dummer (Township) retained Cambium Inc. (Cambium) to complete the 2022 annual monitoring program for the Stoney Lake Road Landfill (Site). The Site operates under Ontario Ministry of the Environment, Conservation and Parks (Ministry) Environmental Compliance Approval (ECA) No. A340901, most recently amended on June 9, 2016 (Appendix B).

To aid in the understanding of the history and development of the Site, the following information is included digitally in the report package:

- *Closure Plan, Stoney Lake Road (North) Waste Disposal Site* (LR, 2000)
- *Hydrogeological Study, Stoney Lake Road "North" Landfill Site* (LR, 1994)

1.1 Site Location

The Site is on the east half of Lot 21, Concession 4, in the Township of Douro-Dummer, County of Peterborough (Figure 1). The municipal address is 348 County Road 6 (Stoney Lake Road). The Site is accessed from County Road 6, about 6 km east of the town of Lakefield. The Universal Transverse Mercator (UTM) coordinates for the site entrance are Zone 17, 720969 m east, 4926536 m north.

1.2 Site Description

The Site was owned operated by the Township for the operation of a solid waste natural attenuation landfill until closure in 2003. Final closure activities were completed in 2005. Currently the Site operates as a waste transfer station, managed by Waste Connections of Canada (Waste Connections), for the collection of solid non-hazardous waste, and construction and demolition (C&D) materials. Waste Connections leases the property from the Township.

The Site is fully fenced and has a locked gate. The Site is in a rural area and is bordered by forest and wetland to the east and south, and passive agricultural land to the north and west.

Site details are included in Embedded Table 1. A local topography plan is attached as Figure 2. Existing site conditions are on Figure 3.

Embedded Table 1 Site Details

Total Site Area	4.25 ha
Approved Area of Refuse Placement	1.60 ha
Approved Site Capacity	54,000 m³

1.3 Scope of Work

The scope of the 2022 work program was based on the results of the 2021 monitoring program (Cambium, 2022), the requirements outlined in the ECA Condition 6 (8), and included:

- Groundwater elevation monitoring
- Surface water and groundwater sampling and analysis
- Landfill Gas (LFG) monitoring
- Evaluation of groundwater quality against the Ontario Drinking Water Quality Standards (ODWQS)
- Evaluation of groundwater quality at select monitoring wells against the Provincial Water Quality Objectives (PWQO)
- Evaluation of surface water quality against the PWQO and calculated surface water trigger values
- The installation of drivepoint DP1 to the east of the Site
- Site Inspection
- An overview of site development and operations
- Preparation of this annual report

This report presents the results of the 2022 work program and provides an assessment of current landfill impacts on the surrounding groundwater and surface water environment. Recommendations for the 2023 monitoring program, based on the 2022 results and assessment, are outlined herein. Furthermore, this report addresses on-going discussions

between Cambium and the Ministry throughout 2022 and references the following correspondence (Appendix C):

- Groundwater review comments received from Nick Battye, Hydrogeologist, Technical Support Section, Eastern Region dated August 8, 2022, following his review of the *2021 Annual Monitoring Report, Stoney Lake Road Landfill* (Cambium, 2022)
- Surface water review comments received from Laurel Rudd, Surface Water Evaluator, Technical Support Section, Eastern Region, date September 22, 2022, following her review of the *2021 Annual Monitoring Report, Stoney Lake Road Landfill* (Cambium, 2022)
- Ministry Site Inspection Report completed by Gary Muloin, Senior Environmental Officer, Peterborough District Office on October 17, 2022

2.0 Methodology

The 2022 work program was completed to maintain compliance with the ECA and Ministry requirements. As such, the environmental monitoring work program was completed consistent with *Guidance Manual for Landfill Sites Receiving Municipal Waste* (MOEE, 1993) and *Monitoring and Reporting for Waste Disposal Sites, Groundwater and Surface Water, Technical Guidance Document* (MOE, 2010).

Field tasks were completed following Cambium's Standard Operating Procedures developed from recognized standard procedures such as those listed above and *Guidance on Sampling and Analytical Methods for use at Contaminated Sites in Ontario* (MOEE, 1996). A health and safety program was developed for site-specific conditions and all Cambium personnel working on the project were familiarized and required to follow the identified protocol.

Surface water and groundwater samples were stored in coolers with freezer packs and maintained at less than 10°C during transport to Caduceon Environmental Laboratories (Caduceon) in Kingston, Ontario. Caduceon is accredited by the Canadian Association for Laboratory Accreditation Inc. for specific environmental tests listed in the scope of accreditation. Groundwater and surface water samples were submitted at the frequency and for analysis of the parameters outlined in Table 1.

2.1 Groundwater Monitoring Program

The following tasks were completed as part of the 2022 groundwater monitoring program:

- Prior to sampling, water levels were measured at each monitoring well using an electronic water level tape.
- The purge volume was calculated on-site during each monitoring event using the measured water level, well depth, and the borehole diameter. Each groundwater monitoring well to be sampled was purged of about three well bore volumes. For wells with low recovery, at least one saturated borehole volume was purged prior to sampling. Purged water was disposed on-site, down-gradient of each respective well.

- Samples were collected using dedicated polyethylene tubing equipped with inertial-lift foot valves.
- Groundwater samples for metals, and dissolved organic carbon (DOC, at select monitors) analysis was field filtered.
- Field measurements were recorded for pH, conductivity, temperature, dissolved oxygen (DO), and oxygen reduction potential (ORP).

Groundwater samples were collected on April 11, and November 14 from the monitoring wells listed below at the frequencies listed in attached Table 1. Of note, Cambium staff returned to Site on November 23 to collect samples from monitors TW07-1 and TW07-2 as they were reported inaccessible during the previous sampling attempt on November 14. During the autumn sampling event no samples were collected from TW08-2 as it had insufficient volumes for sample collection, and TW10-2 due to dry conditions.

On October 26, 2022, a shallow drivepoint was installed, in the wetland east of the Site, as part of a Ministry approved accelerated monitoring program. This contingency measure was required due to increasing boron concentrations near the property boundary at TW07-2 (Cambium, 2022). Samples will be collected from this drivepoint three times annually with the results submitted in a letter to the Ministry by December 31 of each monitoring year until 2025. Refer to Section 4.2.5 and Appendix C for additional information.

Monitoring wells included in the groundwater monitoring program are shown on Figure 3. The UTM coordinates for the monitoring locations are in Table 2. Groundwater results are discussed in Section 4.2. Field data sheets are in Appendix D. Laboratory Certificates of Analysis are in Appendix E. Photographs of each monitoring location are in Appendix F.

- TW02-1
- TW02-2
- TW03-1
- TW04-1
- TW05-1
- TW05-2
- TW06-1
- TW06-2
- TW07-1
- TW07-2
- TW08-1
- TW08-2
- TW09-1
- TW09-2
- TW10-2
- TW11-2

The following blind duplicate groundwater samples were collected as part of the Quality Assurance/Quality Control (QA/QC) program. As these field duplicates equate to at least 10% of the total samples collected, this is an adequate QA/QC program for groundwater. In addition

to these samples, the laboratory completes internal QA/QC. The results of the QA/QC program are presented in Section 4.1.

- April: TW05-1, and TW06-2 (includes volatile organic compound (VOC) duplicate)
- November: TW04-1, and TW06-2 (includes VOC duplicate)

2.2 Surface Water Monitoring Program

The following tasks were completed as part of the 2022 surface water monitoring program:

- Weather conditions prior to and during field events were recorded.
- Surface water samples were collected by immersing the sample container into the water body.
- When sample bottles were prefilled with preservatives, a clean bottle was used to collect and decant the water directly into the sample bottle.
- Surface water samples for mercury (0.45 µm) analysis was filtered by the laboratory.
- Field measurements including pH, conductivity, temperature, DO, and ORP were recorded at each sample location.
- Where possible, depth, width, and flow velocity measurements were collected at each surface water location.

The surface water monitoring program included sample collection from on-site surface water sample stations SW3, and SW6 and off-site stations SW1, and SW8 on April 11, July 13, and November 14. The only deviation from the monitoring program was that no samples were collected from stations SW3 and SW6 during the July, and November sampling events as they were reported dry.

Surface water sampling locations are shown on Figure 2. The UTM coordinates for the monitoring locations are in Embedded Table 2. Surface water results are discussed in Section 4.3. The surface water field data sheets are in Appendix D. Laboratory Certificates of Analysis provided by Caduceon are in Appendix E. Photographs of each surface water sample location are in Appendix F.

Blind duplicate surface water samples were collected from station SW6 in April, and SW1 in July and November as part of the QA/QC program. As these field duplicates equate to at least 10% of the total samples obtained, this is an adequate QA/QC program for surface water. The results of the QA/QC program are presented in Section 4.1.

2.3 Landfill Gas Monitoring Program

Landfill gas monitoring was implemented at the Site to assess compliance with Section 4.10 of *Landfill Standards, A Guideline on the Regulatory and Approval Requirements for New and Expanding Landfilling Sites* (MOEE, 1998), and ECA Condition 8 (1a, b, and c).

Landfill gas, specifically methane and carbon dioxide, is derived from the decomposition of organic wastes. Production of LFG from landfilled wastes normally reaches a maximum rate about two years after placement and may continue at this rate for many years. The biological decomposition process results in the generation of LFG until some period, likely decades, after the landfilling of that waste ceases. Hazardous concentrations for methane are 5 to 17% methane by volume or between 50,000 and 170,000 ppm (Werner Sölken, 2021)..

Landfill gas monitoring was conducted on all groundwater monitoring wells, gas probes (GP1 and GP2), and on-site structures (waste storage building and office) in conjunction with the spring and autumn sampling events. An RKI Eagle 2 Gas Monitor calibrated for methane, and hydrogen sulphide was used to collect measurements. The LFG monitoring results are in Table 9 and discussed in Section 4.4.

2.4 Site Review and Operations Overview

Site operations were observed during site visits completed in April, July, and November 2022. During these visits, the items listed below were inspected on accessed areas of the Site and observations noted in the field file. In January 2023, Waste Connections provided additional 2022 site operations information. Site inspection results are presented in Section 5.0.

- Litter control
- Condition and layout of recycling bins
- Status of monitoring well security

- Condition and layout of access roads, access gates
- Final cover integrity

3.0 Geological and Hydrogeological Context

3.1 Topography and Drainage

The Site is in the Otonabee River tertiary watershed and the Lock 19 – Otonabee River quaternary watershed. The Galesburg Provincially Significant Wetland (PSW) is east-southeast of the Site. Unevaluated wetlands are found to the east and west of the Site. Locally, drainage on-site is generally directed east towards Lynch's Creek which flows through the Galesburg PSW (with a minor portion of drainage directed west). Lynch's Creek flows south, under County Road 6, through a culvert. Overall drainage is directed south-southwest through a complex series of unevaluated wetlands a portion of the Galesburg PSW, and various other ponds and perennial streams which eventually discharge into Buckley Lake, about 3.0 km southwest of the Site. From Buckley Lake, drainage is directed to the southwest eventually discharging into the Otonabee River.

The surface water drainage systems on and near the Site have generally been characterized as stagnant, with intermittent flows occurring during periods of increased precipitation. There are currently four surface water locations around the Site, as described below (Figure 2).

- SW1 is on a perennial stream, about 350 m east and down-gradient of the Site, at a culvert on the north side of County Road 6.
- SW3 is at the southwest corner of the Site in wetland type environment. This area has the potential to collect surface water run-off.
- SW6 is slightly down-gradient the toe of the waste mound to the east, in a low-lying wet area.
- SW8 is on a tributary, about 500 m east of the Site, which drains into the perennial stream where SW1 is situated. This station is used to monitor background water quality.

The geospatial coordinates (NAD 83) for the surface water monitoring stations are in Embedded Table 2. Flow and discharge rates measured during the monitoring events are in Appendix D. During the spring and summer sampling events, field staff observed orange

surface staining at the base of the eastern slope of the waste mound, east of TW4-1, indicative of a historical leachate seep.

Embedded Table 2 Coordinates of Surface Water Stations

Surface Water Station	Northing	Easting
SW1	4926664	721376
SW3	4926525	720902
SW6	4926665	720950
SW8	4926853	721559

Notes:
1. Zone 17.

3.1.1 Precipitation Data

A review of the 2022 precipitation data for the Peterborough Trent U (Government of Canada, 2023) in comparison to the average precipitation data for 1981 to 2010 (Government of Canada, 2021b) indicated that the overall precipitation was normal; however, varied from month to month. In 2022, the wettest months of the year were February, August, and December which had above average precipitation when compared to the climate normal. There was a notable dry spell from September to November when there was only about half as much precipitation as normal. The monthly precipitation, as well as the amount of precipitation during and in the three days prior to the sampling events is summarized in Embedded Table 3. Refer to Appendix D for field sheets and climate data.

Embedded Table 3 Historical and 2022 Precipitation Data

Sampling Date	Average Monthly Precipitation (mm) (1981 – 2010)	2022 Monthly Precipitation (mm)	Precipitation During and 3- Days Prior to Sampling (mm)
April 11	68.6	56.8	1.2
July 13	70.6	55.7	11.5
November 14	86.4	57.1	6.5

3.2 Hydrogeology

The Site is in the physiographic region know as the Peterborough Drumlin Field. This area is characterized by a northeast-southwest trending drumlin features. The underlying bedrock consists of limestone with minor shale of the Middle Ordovician Trent-Black River Group (GHD, 2021). Most of the area is densely covered with glacial deposits, formed from the retreat of the Wisconsin ice sheet during the Pleistocene Epoch. The features surrounding the Site include moraines, drumlins, and kames (LR, 1994).

There are 17 wells in the current groundwater monitoring program, six of these wells are nested/clustered multi-level wells which monitor the overburden/upper bedrock aquifer, and the lower bedrock aquifer. All lower bedrock monitoring wells are designated with a -1 in their well name. Available borehole records indicate that the lower bedrock monitors were installed at variable depths from about 5 m below ground surface (bgs) to about 11 mbgs on the eastern slope of the waste mound. Conversely the overburden varies in depth from about 2.5 mbgs (east of the waste mound) to 5 mbgs (south of the waste mound) and is comprised of dense sandy, glacial till (Appendix G).

Throughout the 2022 monitoring year water levels ranged from 0.27 m above grade at TW09-1 to 8.20 mbgs at TW04-1 in the lower bedrock aquifer. Water levels ranged from 0.04 mbgs at TW09-2 to 4.58 mbgs at TW11-2 in the overburden/upper bedrock units.

Groundwater wells included in the current monitoring program are described below. Refer to Table 2 for a summary of monitoring well depths and Figure 3 for locations.

- Clustered wells TW02 are installed on the northern slope, and immediately adjacent waste footprint. Borehole logs indicate that no waste was encountered at these monitors during installation.
- Monitoring well TW03-1 are installed on the eastern slope of the waste mound. Monitoring well TW04-1 are installed in the central east area of the waste mound, at the top of the slope. Both monitors were completed within the waste footprint, in the lower bedrock aquifer.

- Clustered wells TW05, TW07, and TW09 are installed about 20 m, 75 m, and 110 m south-southeast and down-gradient of the waste mound. Monitoring well TW07 is near the property boundary and TW09 is off-site on the south side of County Road 6.
- Clustered wells TW06 are installed about 25 m downgradient of the waste mound on the eastern property boundary.
- Clustered wells TW08 are installed about 50 m up-gradient and northwest of the waste mound. These wells are used to assess background water quality. Replacement wells were installed in late 2014, adjacent the old monitors, as TW08-1 was previously abandoned, and TW08-2 was always dry.
- Monitoring well TW10-2 is installed at the toe of the eastern slope of the waste mound. Monitor TW11-2 is installed on the eastern slope of the waste mound. No borehole logs were available at the time of this report but given the location of TW11-2 is it assumed that this monitoring well is installed at or below the waste.

A stainless-steel shallow drivepoint (DP1) was installed on October 26, 2022, east of the Site in a wetland type environment. The purpose of this drivepoint is to delineate impacts to the east where groundwater is anticipated to discharge to surface. Drivepoint DP1 was installed at about 1.32 m bgs. The installation of this monitor is in conjunction with a Ministry approved accelerated monitoring program. Refer to Section 4.2.5 and Appendix C for additional details.

3.2.1 Well Records

A Ministry well record search completed in 2022 for a radius of 1 km from the Site yielded 26 results (MECP, 2022). No residential supply wells described below were identified within a 500 m of the Site. The following observations are provided:

- Eleven records for monitoring wells at the Site.
- Eight well records were incorrectly plotted.
- Three well records were identified to the west (cross-gradient) of the Site ranging in depth from about 15 to 25 m. Wells were installed in the limestone bedrock and reported a static water level ranging from about 7 to 19 m.

- Two well records were identified north (up-gradient) of the Site at depths of about 18 and 53 m. The shallow well was completed in the brown limestone and had a static water level of about 10 m. Conversely, the deep well was completed in the grey limestone and red granite and had a static water level of about 6 m.
- One well record was identified to the southeast (down-gradient) of the Site at a depth of about 45 m and installed in the grey limestone and red/black granite. The static water level was about 11 m.
- One well record was identified to the southwest (cross-gradient) of the Site at a depth of about 18 m and completed in the limestone bedrock. The static water level was about 8 m.

Given the depth to the domestic wells and distance away from the Site, the potential for adverse impact to down-gradient domestic water supplies were considered minimal. The water well locations are shown on Figure 2 and water well records are in Appendix H.

3.2.2 Groundwater Flow Direction

Groundwater levels were measured in the spring and autumn 2022. The water levels were used to calculate groundwater elevations and flow direction. Groundwater elevations are summarized in Table 2, and shown on Figure 4 and Figure 5. Groundwater elevation contours and flow direction are shown on Figure 6 (overburden/upper bedrock) and Figure 7 (lower bedrock). The general direction of shallow groundwater flow is to the in the overburden/upper bedrock and lower bedrock units were southeast, consistent with historical observations. There is a minor component of radial flow within the lower bedrock unit, as per the water elevations reported at TW03-1. The radial flow is not interpreted to significantly alter groundwater flow across the Site and is considered to have developed from localized groundwater mounding within the waste mound. The calculated horizontal hydraulic gradients to the southeast in 2022 were as followed:

- Overburden/upper bedrock: 0.02 m/m in the spring, and 0.02 m/m in the autumn
- Lower Bedrock: 0.01 m/m in the spring, and flat (0 m/m) in the autumn

3.2.3 Vertical Gradients

Groundwater elevation data was used to calculate the vertical gradients for all multi-level monitors at the Site (Table 3). Vertical gradients at most wells were downward, though upward gradients were calculated at clustered monitors TW07 and TW09 southeast of the waste mound. Vertical hydraulic gradients at wells TW06 were neutral, with slight upward gradients in April and slight downward gradients in November.

3.3 Conceptual Site Model

The following characterization of hydrogeological conditions is based upon the previous annual monitoring reports completed by GHD (GHD, 2021), the Hydrogeological Study completed by Lakefield Research (LR, 1994), and other supporting data.

In general, local drainage on-site is mostly directed east-southeast toward Lynch's Creek, which flows through the Galesburg PSW. The watercourse flows south, under County Road 6, through a culvert. The watercourse continues to flow south into Buckley Lake, which in turn discharges to the Otonabee River.

The surface water drainage systems on and near the Site are generally stagnant due to the relatively flat topography of the area. Surface water flow is only anticipated during times of increased precipitation.

The general direction of groundwater flow in the overburden/upper bedrock, and lower bedrock aquifers were determined to be toward the southeast. Vertical gradients are typically reported as downward across the Site. However, neutral vertical gradients are consistently reported at clustered wells TW06 and upward gradients are regularly sustained in the areas southeast of the Site in closest proximity to the wetland area (i.e., clustered wells TW07, and TW09). Given this evaluation, groundwater is interpreted to discharge to surface in the areas southeast of the Site. Based on the preliminary results of the accelerated monitoring program, leachate laden groundwater which discharges to surface in the area south/southeast of the Site is anticipated to remain on the north side of County Road 6. This is evidenced by the fact that boron concentrations are elevated at well TW07-2 and drivepoint DP1, when compared to well TW09-2 (located on south side of County Road 6, opposite TW07-2). Given the limited data

set further monitoring is required to support this aspect of the conceptual site model. See Section 4.2.5 for more details. The primary receiver of landfill leachate are the unevaluated wetlands, Lynch's Creek, and Galesburg PSW to the southeast.

4.0 Results and Discussion

Water quality results from the monitoring program are used to assess the existence, extent, and degree of impacts to the groundwater and surface water environments related to waste disposal site activities at the Site.

To ensure appropriate actions are in place to respond to degradation in surface water or groundwater quality beyond an acceptable level, site-specific trigger levels and contingency measures aid in the assessment of impacts from leachate contamination and help to prevent adverse impacts to the environments surrounding the waste disposal site.

This section presents the results of the 2022 monitoring program.

4.1 Quality Assurance / Quality Control

Results from the analyses completed on the blind duplicate QA/QC samples were evaluated. Parameter concentrations were considered significantly different if the relative percent difference (RPD) between the duplicate and the parent samples was greater than 30% when both results were greater than five times the reported detection limit (RDL).

The duplicate groundwater and surface water analyses were compared to the originals. Overall, the duplicate samples correlated well with the parent samples and met the data quality objective of 30%. Exceptions were noted:

- Copper at SW6 in April.
- Potassium and DOC at SW1 in November.
- Total Phosphorus at TW06-2 in November.

Parent/duplicate samples with only one measurable concentration or with results reporting less than five times the RDL were assessed qualitatively. Evaluation of these parent/duplicate samples did not identify significant data quality issues. Considering the low variation between the parent and duplicate groundwater and surface water samples, the results were interpreted with confidence.

4.2 Groundwater Quality

Groundwater analysis data for 2011 to 2022 are in Table 4 through Table 7. Groundwater analytical results were assessed using the ODWQS (MOE, 2006).

Groundwater is interpreted to discharge to surface in the area south and southeast of the waste mound (but remains north of County Road 6). As such, select monitors were compared to the PWQO (MOEE, 1994b). This aids in predicting any potential adverse impacts to the surface water down-gradient of the Site. Since groundwater provides baseflow to the down-gradient surface water regime this is recognized as reasonable use under the Ministry Reasonable Use Concept (MOEE, 1994b). As such, site compliance will be evaluated using surface water quality. Refer to Section 4.3.3.

4.2.1 Background Groundwater Quality

When evaluating the impact of any waste disposal site on a groundwater resource, a reference point or value must be established to assist in determining the magnitude of the impact. In this respect, the quality of the groundwater that is not impacted by the waste disposal site operation (background water quality) should be used for comparison purposes. Given the location of up-gradient cluster monitors TW08 (Figure 3), the groundwater results for this well represents background water quality at the Site. Monitoring well TW08-1 was completed in the lower bedrock and TW08-2 was completed in the upper bedrock.

Monitoring well TW08-1 has similar chemistry to TW08-2, though some metals (e.g., iron, chloride, manganese, etc.) were reported in greater concentrations. Conversely, TW08-2 has elevated concentrations of total phosphorus when compared to TW08-1.

Only one sample was collected from TW08-2 in 2022 as the monitor was reported to be dry during the autumn sampling event. The water quality at clustered wells TW08 was generally consistent with historical ranges and continued to be representative of background conditions at the Site.

4.2.2 Leachate Characteristics

Monitoring wells TW03-1, TW04-1, and TW11-2 were installed within the waste mound. No well records were available for TW10-2; however, given that this monitor is installed on the northeastern boundary of the existing limit of waste it was included in the leachate assessment. Lastly, monitors TW02-1 and TW02-2 were installed up-gradient on the north slope of the waste mound. Water quality results at these locations have been indicative of the leachate quality. Leachate Indicator Parameters (LIP) were selected based on if the parameter has been regularly reported at concentrations greater than background water quality. In addition, the Ministry's groundwater reviewer suggested DOC and hardness be added as a LIP in a letter dated August 8, 2022 (Appendix A). The LIPs identified for the Site are outlined below in Embedded Table 4, as defined by GHD (GHD, 2021).

Embedded Table 4 Leachate Indicator Parameters

alkalinity	barium	boron	chloride	iron
manganese	total dissolved solids (TDS)	nitrate	sodium	sulphate
DOC	hardness			

Monitoring well TW04-1 is centrally located on the waste mound and TW03-1 is installed on the eastern slope. Both monitors were installed in the lower bedrock aquifer below the waste mound. Most LIP concentrations are significantly elevated at both monitoring wells except for alkalinity and barium at TW04-1, and nitrate at TW03-1.

The water quality results in 2022 were generally consistent with historical results with the following exceptions noted below. Although both monitors exhibit a level of variability in the water chemistry, the wells were considered stable with no apparent increasing or decreasing trends.

- Ammonia, boron, and magnesium concentrations at TW03-1 were notably lower than the historical range since October 2011.
- Nitrate, sulphate, and sodium concentrations at TW03-1 were elevated in November.
- Hardness was elevated at TW04-1 in November.

Monitoring well TW10-2 is installed at the toe of the waste mound and TW11-2 is installed on the eastern slope. Historical water quality at both monitoring wells indicated that these wells are impacted by waste disposal operations as all LIPs are significantly elevated over background concentrations. Only one sample was collected from TW10-2 in 2022 due to dry conditions present during the autumn sampling event. The water quality in 2022 was generally consistent with historical ranges except for ammonia at TW10-2 which was notably less than the historical range in April, and iron, magnesium, and total phosphorus which was elevated greater than the historical range at TW11-2 in November.

Monitoring wells TW02-1 and TW02-2 were installed up-gradient, on the north slope of the waste mound in the lower and upper/overburden bedrock aquifers, respectively. The available mapping and borehole logs indicated that these monitors were not installed within an area of waste placement but given that they are within the approved landfill footprint there is a potential for these monitors to be impacted by radial groundwater flow. The water quality between the two aquifers were significantly different. It is evident that the water chemistry in the upper bedrock aquifer (TW02-2) has been impacted by waste disposal operations as all LIPs except for nitrate were significantly elevated over background water quality. Conversely, the water quality at TW02-1 in the lower bedrock aquifer was similar to background water quality with the exception of chloride. The water quality in 2022 was consistent with historical ranges except for elevated concentrations of chloride and conductivity at TW02-1 in November which were greater than the historical range since October 2011.

4.2.3 Down-gradient Groundwater Quality

Clustered wells TW05, TW06, TW07, and TW09 monitor the overburden/upper bedrock and lower bedrock aquifers down-gradient to the east-southeast.

Clustered wells TW06 are down-gradient the waste mound to the east and adjacent the property boundary. Monitoring well TW06-1 is completed in the lower bedrock aquifer whereas TW06-2 was screened across the overburden/upper bedrock aquifer interface. Most LIPs were elevated at these monitors when compared to their background quality except for chloride (TW06-1), iron, and nitrate. The water quality in the overburden/upper bedrock aquifer at TW06-2 had generally greater concentrations of LIPs (i.e., boron, chloride, hardness, DOC,

sodium, TDS, and sulphate) when compared to adjacent monitor TW06-1 (lower bedrock). The water quality in 2022 was generally consistent with historical concentrations with no increasing or decreasing trends. The vertical gradients calculated between the two monitors is generally neutral, meaning that migration of leachate into deeper aquifer systems is not expected.

Nested wells TW05 are down-gradient the waste mound to the southeast. Monitoring well TW05-1 is installed in the lower bedrock aquifer whereas TW05-2 is in the overburden/upper bedrock aquifer. All LIPs at both locations were significantly elevated over background quality except for nitrate at TW05-1 and barium at TW05-2.

Several LIPs (including boron), are regularly reported from well TW05-2 at concentrations greater than the leachate characterization wells. Similar parameters were also reported at well TW05-1 at concentrations greater than the leachate indicator wells installed in bedrock (albeit, at concentrations generally less than TW05-2). As such, clustered wells TW05 are also considered to be a leachate characterization wells, even though available information indicates that they are installed outside of the waste footprint.

The water quality reported from these wells in 2022 was generally consistent with historical results. The increasing trends for alkalinity, chloride, and sulphate at TW05-1 in 2021 began to decreased in concentration in 2022. Conversely, the water quality at TW05-2 is highly variable and LIP concentrations appear to be stabilizing within recent years. The only exception is that an increasing trend may be developing for nitrate. Additional monitoring is required to further evaluate the noted trends.

Clustered wells TW07 are on the north side and adjacent to County Road 6. All LIPs, except nitrate, are elevated at TW07-2 compared to background quality. Given the proximity to County Road 6 some impact may be partially attributed to road de-icing activities (i.e., alkalinity, chloride, hardness, sodium, and TDS). The water quality in 2022 was generally consistent with historical results at both monitors. The only exceptions were chemical oxygen demand (COD), and total Kjeldahl nitrogen (TKN) at TW07-2 in November which were elevated greater than the historical range since October 2011.

An increasing trend for boron is apparent at TW07-2. As such, a Ministry approved accelerated monitoring program was implemented in 2022 in conjunction with the installation of a shallow

drivepoint (DP1) in an area where groundwater is expected to discharge to surface, refer to Section 4.2.5 for additional information.

In 2021, a decreasing trend was reported for TDS and sulphate; however, these concentrations increased in 2022. Furthermore, barium concentrations appear to have stabilized.

Consistent with the conceptual site model, it is evident that impacts near the southeastern property boundary were primarily restricted to the overburden/upper bedrock aquifer (i.e., TW07-2). Though water quality results suggest minor impacts to the lower bedrock aquifer, if any. As such, an accelerated monitoring program was implemented in 2022 which coincides with a shallow drivepoint installed in the wetland area to the east of the Site, refer to 4.2.5 for additional detail. Time concentration graphs for all LIPs have been generated to further illustrate the water chemistry near the southeastern property boundary, refer to Figure 8 to Figure 19.

Clustered wells TW09 are off-site and on the south side of County Road 6. The water quality at both monitors were similar to or slightly above their respective background wells indicating that natural attenuation is occurring at the Site. The only exception is parameters associated with road de-icing activities and barium. Given the lack of other elevated LIPs, these wells are considered not impacted by waste disposal operations. Water quality results in 2022 were consistent with historical ranges and were considered stable at both monitors.

4.2.4 Volatile Organic Compounds

Volatile Organic Compound (VOC) analysis was completed in the spring and autumn at monitor TW02-2 and TW06-2. Historical results have indicated sporadic ODWQS exceedances for toluene at both monitors with the occurring last at TW06-2 in 2018. All VOC concentrations were less than the RDL in 2022. Refer to Table 6 for VOC results.

4.2.5 Provincial Water Quality Objectives Assessment

Given conceptual site model anticipates groundwater discharging to surface, monitors TW06-2, TW07-2, and TW09-2 were compared to the PWQO (Table 7). The following parameters did not meet the PWQO criteria at the identified locations:

- TW06-2: boron (November), total phosphorus (November), and DO
- TW07-2: boron, iron, total phosphorus, and DO
- TW09-2: iron (April), and total phosphorus

Phosphorus is not an identified LIP at the Site and can be attributed to natural elevated concentrations within the area. Due to the nature of DO in groundwater, low DO measurements are not unexpected and are not considered significant for groundwater quality comparisons.

Iron (LIP) concentrations at TW09-2 have only exceeded the PWQO twice and reported an average concentration (129 µg/L) less than the PWQO criteria. Conversely, concentrations at monitor TW07-2 are highly variable but are considered stable. Monitor TW07-2 has had many elevated LIP concentrations, including an increasing trend for boron. As such, the Ministry approved an accelerated monitoring program which coincides with the installation of a shallow drivepoint in the noted wetland area (Figure 2). The purpose of this monitoring program is to delineate potential impacts to the unevaluated wetland and Galesburg PSW, and to determine if additional contingency measures are warranted. The accelerated monitoring program will include sample collection from newly installed drivepoint DP1 three times annually until the end of 2025. A letter will be submitted to the Ministry by December 31 of each monitoring year. One sample has been collected at DP1 since installation and reported that the concentration of boron (62 µg/L) was significantly less than property boundary well TW07-2 (average 928 µg/L) and greater than off-site well TW09-2 (average 19 µg/L) to the south. This would suggest that impacts would remain north of County Road 6 and discharge to the unevaluated wetland or the Galesburg PSW; however, given the limited results additional monitoring is required. Phosphorus and iron were the only PWQO exceedances at this monitor. Specific details of the accelerated monitoring program are provided in Appendix C.

4.2.6 Groundwater Compliance Assessment

The Ministry Reasonable Use Concept (MOEE, 1994b) indicates that surface water receiving groundwater through baseflow is a recognized reasonable use of the groundwater. Given that the groundwater is interpreted to discharge into the wetland, Lynch's Creek and Galesburg PSW to the east, the Site complies with the intent of the Ministry Guideline B-7. Ministry correspondence dated December 15, 2022, generally agreed with this assessment as it pertains to the Site compliance (Appendix C). As such, site compliance will be evaluated using surface water quality. Refer to Section 4.3.3.

4.3 Surface Water Quality

The 2011 to 2022 surface water quality data are included on Table 8. The surface water data have been compared with background water quality and historical data, and compliance was assessed using the PWQO (MOEE, 1994b).

4.3.1 Background Surface Water Quality

Station SW8 is on Lynch's Creek, about 150 m north of County Road 6, and is representative of background surface water quality. Historical water quality results indicated low but detectable concentrations of most metals, and the occasional PWQO exceedance for iron, total phosphorus, and phenols. Additionally, copper, and pH (high, field and lab) have sporadically exceeded the PWQO criteria.

Water quality results in 2022 were generally consistent with historical concentration ranges. Though manganese concentrations in July, and hardness in July and November were elevated greater than the historical range since May 2013. The only parameters to exceed the PWQO criteria were iron, and total phosphorous. Overall, the water chemistry at station SW8 continued to represent background surface water quality for the Site.

4.3.2 Downstream Surface Water Quality

Station SW1 is the farthest down-gradient surface water monitoring station from the Site. This station is on the same watercourse as background station SW8. The water quality at this station is similar to background station SW8 including the occasional PWQO exceedances for

iron, total phosphorus, and phenols. Where differences in water quality where observed this can be attributed to road de-icing activities, and natural variation within a surface water course and wetland environment. The water quality results in 2022 where generally consistent with historical results. The only parameter to exceed the PWQO criteria was zinc in July. This surface water station has not been impacted by the Site.

Stations SW3 and SW6 are on the southwest and eastern property boundaries (respectively). Both stations are in low-lying wet areas with potential to receive surface water run-off from the waste mound. Both stations were dry during the summer and autumn sampling events in 2022.

Historical water quality at station SW3 has indicated low concentrations of most parameters with the occasional spike in concentration. This can be attributed to the low-lying stagnant nature of the water body which results in poor sampling conditions. As this station is adjacent County Road 6, elevated concentrations of hardness, TDS, chloride, and alkalinity can be attributed to road de-icing activities. As such, an increasing trend is apparent for chloride at this location. Total phosphorus and boron are the only parameters that persistently exceed the PWQO criteria at this station; however, total phosphorus was the only parameter to exceed the PWQO in 2022. Although boron has historically exceeded the PWQO (average 221 µg/L), the concentrations were much less than the CWQG criteria for boron of 1,500 µg/L (CCME, 2011). Given that total phosphorus is not a LIP for the Site, it is likely that the elevated concentrations can be attributed to naturally elevated concentrations within the area. The water quality results in 2022 were generally consistent with historical concentrations. Overall, minimal site related impacts were interpreted to be occurring at station SW3.

Only five samples have been collected from station SW6 since 2017. Initial results indicate persistent exceedances of the PWQO criteria for iron, mercury, total phosphorus, and phenols. The only parameters to exceed the PWQO criteria in 2022 were boron, iron, total phosphorus, and unionized ammonia. Given the lack of water quality data available it is difficult to discern site-related impacts at this station, further monitoring is required.

4.3.3 Surface Water Compliance Assessment

The following sections discuss the surface water trigger assessment as outlined in the 2020 Monitoring Report (GHD, 2021).

4.3.3.1 Trigger Location

Surface water trigger points are generally at any point where surface water impacts due to landfilling operations are likely to occur. As such, station SW1 was identified by the Ministry as the primary downstream trigger sampling location.

4.3.3.2 Trigger Parameter Concentrations

The surface water trigger criteria was calculated using background water quality at station SW8 for all parameters listed in Table 1. An exceedance at the downstream surface water stations is the numerical elevation of an analytical value greater than the 75th percentile at the background surface water station SW8.

The 75th percentile is defined as the number in a data set in which 75% of the values are less than that number and 25% of the values are greater than that number. A minimum of eight water samples, not including the assessment year, at the selected upstream background compliance monitoring location is recommended.

4.3.3.3 Surface Water Trigger Mechanism

Three consecutive annual exceedances of the trigger criteria at station SW1 and deemed to be caused by the Site would initiate the preparation of a contingency plan. The contingency plan is based on a three-tier system detailed below.

Tier 1- Alert: If a parameter exceeds the PWQO criterial for three consecutive sampling events, then the Tier 2 trigger would be implemented.

Tier 2- Confirmation: Three additional samples will be collected monthly starting after the third PWQO exceedance. Samples will be collected from the background monitoring location SW8 and station SW1, at a minimum. The purpose of additional sampling is to confirm that the exceedances can be attributed to the Site. If the exceedance is determined to be caused by

the Site, then a discussion would be initiated between the Township and the Ministry to determine appropriate actions required. The meeting should take place within 6 months from the activation Tier 2.

The first remedial step should be a detailed surface water/biological study to determine the trigger exceedances are impacting the water quality and biology of the receiving watercourse. If impacts were determined to be negligible following the surface water study, then Ministry support would be requested to not implement the contingency plans.

If negative impacts are determined by the study, then the contingency plan would commence following the next exceedance of a trigger parameter during any routine sample event. The plan should include the following:

- A recommendation for Site closure or continued operation with designed controls to prevent further impacts (e.g., leachate collection and treatment system, surface water drainage works, low permeable soil or geotextile capping on the waste mound).
- A schedule for the installation of remedial works.
- An initial plan for subsequent monitoring to confirm the remediation controls have reduced surface water impacts.

Tier 3 – Compliance: This is the implementation of the remedial works to be completed and the additional monitoring required to determine its effectiveness.

4.3.3.4 2022 Compliance Assessment

The only parameters to exceed the surface water trigger criteria for three consecutive events at station SW1 were alkalinity, sulphate, and conductivity. The only LIPs to exceed the trigger criteria was sulphate and alkalinity. Given that no other LIPs exceeded the trigger criteria the exceedances were not attributed to the Site.

The sulphate exceedances at station SW1 can be attributed to the conservative nature of the 75th percentile value calculated of 2 mg/L. Furthermore, as there is no PWQO criteria for sulphate, compliance was further assessed using the British Columbia Water Quality Guideline (BCWG) (BCMOE, 2016). The reported sulphate concentrations in 2021 (average 5.25 mg/L)

were significantly less than the BCWG criteria of 428 mg/L. As such, it was determined that no negative impact was anticipated to occur to the downstream surface water locations.

As discussed in Section 4.3.2, the downstream water quality at station SW1 was similar to background station SW8. This includes average alkalinity concentrations calculated of 226 mg/L at station SW1 and 194 mg/L at background station SW8. The slight differences in average concentrations can be attributed to natural variations within the water course. To further illustrate the similarities between background and the downgradient surface water stations, Figure 20 to Figure 30 have been created for all LIPs. No figures were created for DOC due to limited data available. Overall, the surface water trigger was not activated in 2022 and no further action was warranted.

As discussed in Section 4.2.5, an accelerated monitoring program was implemented due to increasing boron concentrations at TW07-2 near the southern property boundary. As such, a shallow drivepoint monitor (DP1) was installed, as part of an accelerated monitoring program, east of the waste mound in an area where groundwater is anticipated to discharge. Initial results indicated boron concentrations of 62 (µg/L), which were significantly less than monitor TW07-2 suggesting that natural attenuation is occurring. Further downgradient of DP1 is monitoring station SW1 which is used for site compliance. Average boron concentrations were reported of 18 µg/L which is slightly below the conservative surface water trigger value of 22 µg/L, and significantly less than the PWQO and CWQG criteria. Based on this assessment, boron concentrations will attenuate to an acceptable level prior to reaching station SW1. As such, downstream surface water receivers were not anticipated to be impacted from landfill leachate. The accelerated monitoring program is scheduled to occur until 2025 with results to be reported to the Ministry annually by December 31 of the calendar year.

4.4 Landfill Gas Monitoring

LFG, specifically methane and carbon dioxide, are derived from the decomposition of organic wastes. Production of LFG from landfilled wastes normally reaches a maximum rate about two years after placement and may continue at this rate for many years. The biological decomposition process results in the generation of LFG until some period, likely decades, after the landfilling of that waste ceases.

The 2022 LFG results are included on Table 9 and in Appendix D. Landfill gas measurements for methane, and hydrogen sulphide were collected during the spring and autumn sampling events at all groundwater monitors, gas probes, and on-site structures (office and waste storage building) (Figure 3).

Measurements collected in 2022 indicated detectable methane concentrations at monitoring wells TW05-1 and TW05-2 in April, and TW03-1, and TW04-1 in November. In addition, methane gas was detected at both gas probes during both monitoring events. Given that these locations were installed within/near the existing limit of waste detectable methane concentrations were not unexpected. Of note, methane concentrations at TW03-1, and GP1 had at least one measured concentration within the lower explosive limit. Caution should be used when working around these monitoring locations in the future. Hydrogen sulphide was not detected in 2022.

The remaining monitoring location measurements were all below 0.05% methane by volume. As such, the site complied with ECA Condition 8 (1a, b, and c) which specifies:

- The concentration of methane gas below ground surface at the property boundary must be less than 2.5 % methane by volume.
- The concentration of methane gas must be less than 1.0% methane by volume in any on-site buildings or enclosed structures (i.e., office, and waste storage building).
- The concentration of methane gas from the Site must be less than 0.05 % methane by volume in any off-site building or enclosed structures, and in the area immediately outside the foundation or basement floor of the building or structure, only if the location is accessible to any person, contains electrical equipment, or a potential source of ignition.

4.5 Adequacy of Monitoring Program

Numerous modifications were recommended to the groundwater and surface water monitoring programs in 2021 (Cambium, 2022). Following on-going discussions between the Township and the Ministry throughout 2022 and 2023, support has been received for the following revisions to the groundwater monitoring program (Appendix C):

- Groundwater samples will be analyzed for all parameters listed in Column 4 of Schedule 5 of the Landfill Standards plus barium, boron, manganese, sodium, and hardness.
- The removal of wells TW02-1, TW02-2, TW03-1, TW04-1, TW09-1, and TW11-2 from the monitoring program. These wells will remain intact for groundwater elevation monitoring purposes.
- Groundwater samples will only be collected once annually during the autumn.
- Landfill gas monitoring will be conducted once annually in conjunction with the autumn groundwater sampling event.
- Of note, support has been received from the groundwater reviewer for a biennial reporting frequency; however, support will need to be granted from the surface water reviewer prior to implementation.

The approved changes listed above will be formalized in the ECA at a later date, following additional comments from the Ministry's surface water reviewer. The revised groundwater monitoring program will commence in 2023. When an understanding of the surface water monitoring program is agreed upon then approval will be sought out from the District Manager and ultimately the Director as detailed in ECA Condition 8 (17).

Discussion between the Ministry and the Township are on-going regarding reductions to the surface water monitoring program, with the most recent correspondence supporting the changes noted below dated February 16, 2023. As of the date of this report, no additional Ministry comments have been received.

- The removal of surface water stations SW3 and SW6.
- Surface water samples should be collected once annually during the autumn.
- Analysis of parameters listed in Column 4 of Schedule 5 of the Landfill Standards plus barium, boron, manganese, sodium, and hardness.
- A reduction in reporting frequency from annual to biennial.

5.0 Site Operations

As previously mentioned in Section 1.2, the Site is owned by the Township but the property is leased by Waste Connections for the operation of a waste transfer station. This section presents a summary of the 2022 site operations. Specifically, this section details the requirements specified in ECA Condition 6 (8). In addition, this section addresses the findings of the Ministry Site Inspection conducted on October 17, 2022 (Appendix C).

- A monthly summary of the type and quantity of all incoming and outgoing waste. This includes the source of incoming waste and the destination of outgoing waste (Section 5.7 and Appendix I).
- Any environmental or operational problems that could negatively impact the environment encountered during the operation of the Transfer Station and Site inspections, and any mitigative actions taken (Section 5.4).
- Any changes to Site documentation that has been approved by the Director since the last Annual Report (Section 5.8).
- Any recommendations to minimize environmental impacts or improve operations at the Site (Section 5.4).

5.1 Site Access and Security

The Site is not visible from County Road 6 as it is well screened by surrounding trees and thick vegetation. A lockable gate at the entrance controls access. Multiple signs are posted at the gate to meet the requirements of ECA Condition 2 (2) which lists the following: hours of operation, the owner and operator, acceptable materials, a warning against illegal dumping, contact information for Waste Connections, ECA number, prohibited waste types, and emergency and complaint contact information.

The Site is approved to accept waste generated within the boundaries of the County of Northumberland, the County of Peterborough, the City of Kawartha Lakes, the Regional Municipality of Durham, the County of Haliburton, and the County of Hastings. A site attendant is present during the hours of operation.

The hours of operation in 2022 were:

Year Round

Monday to Friday:..... 7:00 AM to 5:00 PM

5.2 Site Operations

In 2022, all transfer operations were conducted under the supervision and direction of the site attendant, employed by the Waste Connections. The site attendant was responsible for ensuring that the safe and orderly operation and maintenance of the Site complied with the requirements of the ECA and the Environmental Protection Act and its Regulations as administered by the Ministry. The site attendant's responsibilities included, but were not limited to the following:

- controlling admission of authorized vehicles with acceptable wastes
- ensuring proper daily litter control
- controlling collection and haulage of materials by a licensed hauler
- maintain a daily record of all operations which are available for inspection by the Ministry

Most of the incoming waste is from residential and light commercial construction sites within a 100 km radius of the Site. The waste is transported to the Site by licensed haulers. There are two main staging areas at the Site: one area is used for the collection and sorting of Construction and Demolition (C&D) materials, and the other is a tent with concrete pad for the collection of industrial, commercial, and institutional (IC&I) waste.

A sorting machine is used for the C&D materials, and any particles smaller than 0.05 m are separated and sent to the Peterborough Waste Management Facility (Bensfort Road Landfill) for disposal. All incoming C&D materials that is deemed residual is stockpiled on the north end of the Site and transferred daily. The remaining C&D materials are chipped on-site daily and removed. An occasional stockpile of chipped materials will be present when the amount of waste processed is outpacing the volume of material hauled off-site. This generally occurs from May to October when the Site is busier.

Waste collected at the Site is temporarily stored and transferred daily to the Peterborough Waste Management Facility by licensed haulers. Scrap metal and concrete is segregated from incoming waste upon arrival.

5.3 Training

Waste Connection ensures that all staff operating the Site are properly trained for the tasks they are expected to perform. All equipment operators are certified or trained by CAT. In 2022, operating staff received the following training: a review of the ECA, Emergency Action Plans & Fire Extinguishers, Bloodborne Pathogens, Spill Prevention & Response, Personal Protective Equipment, Hazardous Energy Control and Confined Spaces, Slips, Trips & Falls, and cold stress.

In 2021, training included details of the ECA and appropriate legislation, waste screening procedures, nuisance control measures, Occupational Health and Safety, equipment use, and emergency procedures.

5.4 Site Inspections

This section discusses observations during site inspections conducted by Cambium, the Ministry, and Waste Connections in 2022.

In 2022, Waste Connections staff completed routine weekly inspections of the Transfer Station area as required by ECA Condition 6 (3). Records of the inspections were kept on-site in a logbook as required by ECA Condition 6 (5). A detailed site inspection form was created in 2021 which identifies the areas to be inspected.

Cambium staff conducted the required inspections to be completed in conjunction with the environmental monitoring in 2022 as detailed in ECA Condition 6 (4). The areas inspected are discussed in the following subsections.

5.4.1 Litter Control

A litter control fence is installed on the eastern slope of the waste mound to prevent the migration of windblown litter. During the 2022 monitoring events, Cambium staff observed litter

on the eastern slope of the waste mound and into the adjacent treeline. Furthermore, the Ministry Site Inspection Report noted minor litter present surrounding the waste building. As such, Waste Connections notified the Ministry that a thorough cleanup of the Site has commenced, and that the supervisor will be conducting daily inspections to ensure that this is not a reoccurring issue (Appendix C).

The intent of good housekeeping practices is to protect the health and safety of Site users, to protect the surrounding environment from nuisance effects, and to minimize these nuisance effects by adopting measures as part of the Site operations. Regular housekeeping is essential to control such nuisances as:

- Blowing and loose litter
- Odour
- Rodents and insects
- Scavenging birds

5.4.2 Roads

The access road has sufficient width at the entrance and within the Site to allow unimpeded winter travel and access for emergency and snow removal equipment. The site access roads were observed to be well maintained and graded and were reported to be regularly cleared of snow.

5.4.3 Final Cover Integrity

A significant amount of time has passed since final closure activities in 2005 allowing for the vegetation cover to become well established. During the 2022 site visits, Cambium field staff noted that the vegetative cover was well established with no exposed waste observed. Minor orange staining was noted during the spring and summer events, at the base of the waste mound and east of TW04-1, indicative of a historical leachate seep. This location should continue to be inspected to determine if further action is warranted. As the vegetative cover is now established, the cover integrity is not expected to deteriorate. No post-closure repairs or maintenance was completed in 2022.

The integrity of the final cover should continue to be inspected in conjunction with the monitoring events and any evidence of erosion or leachate seeps should be addressed immediately.

5.5 Complaint and Incidents

Waste Connections reported there were no complaints or incidents at the Site in 2022.

5.6 Monitoring Well Security

All monitoring wells listed in Table 1 were inspected by Cambium personnel in 2022 for compliance with R.R.O. 1990 Regulation 903 – Wells (Reg.903). Cambium staff noted that the protective casing to monitors TW07-1 and TW07-2 were damaged and could not be locked. It is recommended that repairs be completed to these wells in 2023. All remaining wells complied with Reg. 903. Refer to Appendix F for photographs of the inspected monitoring wells.

5.7 Materials Summary

The following waste types are accepted at the Site. Refer to Figure 3 for the collection location of each material.

- IC&I solid non-hazardous waste
- C&D Materials
- Scrap Metal

ECA Condition 7 (5, 6, and 7) specifies the amount of waste permitted at the Site as followed:

- No more than 800 tonnes of dry waste per day shall be accepted at the Site.
- No more than 1,700 tonnes (6,400 m^3) of dry waste, residual waste, and processed materials shall be stored at the Site at any time.
- The total amount of residual and IC&I waste leaving the Site shall not exceed 300 tonnes per day.

The Ministry Site Inspection Report noted that wood waste may be approaching the permitted limit of 600 m^3. Waste Connections notified the Ministry that they are currently in the process of

amending the ECA as a new grinder has been purchased. Once Ministry approval has been received, Waste Connections will dedicate staff to processing and shipping of wood waste (Appendix C)

5.7.1 Site Usage

Site usage, as documented by the Waste Connections, is summarized in Embedded Table 5. More specifically, a monthly summary of all incoming and outgoing waste, and the hauling destination is provided in Appendix I. A full-length truck scale was installed in 2021 to increase accuracy when weighing inbound/outbound vehicles.

Embedded Table 5 Summary of Site Usage

	2022	2021
IC&I and Residual Waste	34,914.49 tonnes	35,542.53 tonnes
C&D Materials	11,737.33 tonnes	11,801.95 tonnes
Wood[1]	586.63 tonnes	454.99 tonnes

Notes:
1. Wood is hauled off-site to BioMass in Gatineau, Quebec to be used as fuel.

5.7.2 Material Diversion

Embedded Table 6 provides a summary of materials diverted at the Site, as provided by Waste Connections.

Embedded Table 6 Summary of Site Usage

	2022	2021
Leaf and Yard Waste	292.66 tonnes	113.56 tonnes
Scrap Metal	74.61 tonnes	71.27 tonnes

5.8 Site Documentation Reviews and Updates

The documents listed below are maintained by the Township and updated as required.

- Stoney Lake Road Landfill Site Transfer Station, Processing Site. Design, Operations and Maintenance Report (DOP) (Geo-Logic, 2014)
- Closure Plan, Stoney Lake Road (North) Waste Disposal Site (LR, 2000)

- Emergency Response Plan

5.9 Compliance with Ministry Approval

Other than the minor compliance issue regarding the stockpiled wood waste on-site, the Township of Douro-Dummer and Waste Connections completed the necessary requirements to ensure compliance with the ECA in 2022.

6.0 Conclusions

Based on the 2022 monitoring program, Cambium offers the following conclusions regarding the Stoney Lake Road Landfill.

- Groundwater flow beneath the Site in the overburden/upper bedrock and lower bedrock aquifer is to the southeast. The conceptual model for the Site indicates leachate impacted groundwater discharges to the unevaluated wetlands and Galesburg PSW to the southeast.
- A leachate plume is evident beneath and down-gradient the waste mound. Impacts were generally restricted to the overburden/upper bedrock aquifer. Natural attenuation is occurring at the Site as concentrations generally decrease with distance away from the waste mound. No impacts were apparent at the farthest down-gradient off-site monitors.
- Boron concentrations continued to increase at monitor TW07-2. As such, a shallow drivepoint was installed east of the Site in conjunction with the implementation of a Ministry approved accelerated monitoring program. This monitoring program will assist in determining if additional contingency measures are warranted at the Site.
- Given that groundwater is anticipated to discharge to surface down-gradient of the waste mound, the Site complied with the intent of Ministry Guideline B-7.
- It is apparent that there is minimal impact on the down-gradient surface water stations, if any. Where elevated concentrations were observed these can be attributed to poor sampling conditions (i.e., shallow, and stagnant) and/or outside influences (i.e., road de-icing activities, and wetland environments). The surface water trigger was not activated in 2022 and no further action was warranted.
- All landfill gas measurements at the perimeter monitoring wells were less than 2.5% methane by volume. Furthermore, landfill gas measurements conducted at the on-site structures were less than 1.0% methane by volume.
- The property is leased to Waste Connections for the operation of a waste transfer station. About 35,000 tonnes of IC&I and Residual waste, 11,700 tonnes of C&D materials, and 600 tonnes of wood was accepted at the Site in 2022.

- Site inspections completed by Cambium in 2022 noted that the vegetation on the waste mound was well established with no evidence of erosion. Minor orange staining surface staining was observed near the toe of the waste mound indicative of a historical leachate seep.
- A Ministry Site inspection conducted on October 17, 2022, noted that the wood waste was approaching its approved maximum storage capacity. At the time of this report, Waste Connections is currently unable to process wood on-site until Ministry approval is received for usage of a new woodchipper.
- Ministry support was received for approval for a reduced groundwater sampling program and reporting frequency. Discussions are on-going between the Ministry and the Township for changes to the surface water monitoring program and reporting frequency.
- Other than the minor compliance issue regarding the stockpiled wood waste on-site, the Township of Douro-Dummer and Waste Connections completed the necessary requirements to ensure compliance with the ECA in 2022.

6.1 Recommendations

In 2022, support was granted from the Ministry's Groundwater reviewer for reductions to the groundwater sampling program and reporting frequency as detailed in Section 4.5. These changes to the groundwater monitoring program will commence in 2023. Conversations between the Township and the Ministry's Surface Water reviewer are on-going for similar changes. When an understanding of the surface water monitoring program is agreed upon then approval will be requested from the District Manager and ultimately the Director as detailed in ECA Condition 8 (17).

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Glossary of Terms

- **Active Face/Area**
  The portion of the landfill facility where waste is currently being deposited, spread and/or, compacted prior to the placement of cover material.
- **Adverse Environmental Impact**
  Any direct or indirect undesirable effect on the environment resulting from an emission or discharge that is caused or likely to be caused by human activity.
- **Annual Report**
  Report documenting the results of water quality, environmental quality, and operations monitoring for the year, or for a period as prescribed in the Certificate of Approval.
- **Approved Design and Operations Plan**
  The design of a landfill site and its facilities which have been submitted along with the application documents for which formal Ministry approval has been issued through the Certificate of Approval.
- **Approved Site or Facility**
  A landfill site/facility for which there is an existing and current Certificate of Approval.
- **Aquifer**
  A geologic unit (soil or rock) that contains sufficient saturated permeable material to yield measurable quantities of water to wells and springs.
- **Attenuation**
  Natural process through which the concentrations of landfill generated contaminants are reduced to safe levels.
- **Borehole**
  A hole drilled for soil sampling purposes.
- **Buffer Area**
  An area of land situated within the peripheral area surrounding an active filling area, but limited in extent to the property boundary, assigned to provide space for remedial measures, contaminant control measures, and for the reduction or elimination of adverse environmental impact caused by migrating contaminants.
- **Certificate of Approval**
  The license or permit issued by the Ministry for the operation of a landfill site. Issued to the owner of the site with conditions of compliance stated therein.
- **Contaminant**
  A compound, element, or physical parameter, usually resulting from human activity, or found at elevated concentrations that have or may have a harmful effect on public health or the environment.
- **Contaminant Migration Path**
  Route by which a contaminant will move from the site into adjacent properties or the natural environment. Usually a route that offers the least resistance to movement.
- **Contamination Attenuation Zone**
  The zone beneath the surface, located beyond the landfill site boundary, where contaminants will be naturally attenuated to predetermined levels. Also, see Reasonable Use Policy.
- **Contingency Plan**
  A documented plan detailing a co-ordinated course of action to be followed to control and remediate occurrences such as a fire, explosion, or release of contaminants in an uncontrolled manner that could threaten the environment and public health.
- **Cover Material**
  Material approved by the Ministry that is used to cover compacted solid waste. Usually, a soil with suitable characteristics for specific end-use.
- **Site Development Plan and Operations Report**
  Development and Operations Plan or Report is a document detailing the planned sequence of activities through the landfill site's active life, the control systems, site facilities and monitoring systems that are necessary. This document is required for obtaining a Certificate of Approval.
- **Design Capacity**
  The maximum amount of waste that is planned to be disposed of at a landfill site.
- **Detection Limit**
  Concentration under which a parameter cannot be quantitatively measured.

- **EAA or EA Act**
  Environmental Assessment Act, Revised Statutes of Ontario, 1990. One of the primary acts of legislation intended to protect, conserve, and wisely manage Ontario's environment through regulating planning and development.
- **Environmental Compliance Approval**
  The license or permit issued by the Ministry for the operation of a landfill site. Issued to the owner of the site with conditions of compliance stated therein.
- **EPA**
  Environmental Protection Act, Revised Status of Ontario, 1990. EPA is another of the primary pieces of Provincial legislation governing the protection of the natural environment of the Province.
- **Evapotranspiration**
  The evaporation of all water from soil, snow, ice, vegetation and other surfaces, including the water absorbed by plants, that is released to the atmosphere as vapour.
- **Fill Area**
  The area of a landfill site designed and designated for the disposal of waste.
- **Final Cover**
  Soil material or soil in combination with synthetic membranes, overlain by vegetation in a planned landscape, placed over a waste cell that has reached the end of its active life.
- **Groundwater**
  Subsurface water that occurs beneath the water table in soils and rocks that are fully saturated.
- **Hydraulic Conductivity**
  The rate of flow of water through a cross-section under a specific hydraulic gradient. It is a property of the geologic formation and the fluid, in hydrogeologic applications where the fluid is water (Units of m/day or cm/s).
- **Hydraulic Gradient**
  The head drop per unit distance in the direction of flow, the driving force for groundwater flow.
- **Hydrogeology**
  The study of subsurface waters and related geologic aspects of surface waters.
- **Impermeable Fill**
  Soil material that is placed as filling material that is sufficiently cohesive and fine grained to impede and restrict the flow of water through it.
- **In situ Testing**
  Testing done on-site, in the field, of material or naturally occurring substances in their original state.
- **Landfill Gas**
  Combustible gas (primarily methane and carbon dioxide) generated by the decomposition of organic waste materials.
- **Landfill Site**
  A parcel of land where solid waste is disposed of in or on land for the purposes of waste management.
- **Leachate**
  Water or other liquid that has been contaminated by dissolved or suspended particles due to contact with solid waste.
- **Leachate Breakout**
  Location where leachate comes to the ground surfaces; a seep or spring.
- **Limit of Filling**
  The outermost limit at which waste has been disposed of, or approved or proposed for disposal at a landfill.
- **Ministry**
  Ontario Ministry of the Environment, Conservation and Parks.
- **Monitoring**
  Regular or spontaneous procedures used to methodically inspect and collect data on the performance of a landfill site relating to environmental quality (i.e., air, leachate, gas, ground or surface water, unsaturated soils, etc.).
- **Monitoring Well**
  The constructed unit of casing (riser and screen) installed in a borehole.
- **Multi-Level Monitoring Well**
  More than one monitoring well installed at a given test well location.
- **Native Soil**
  Soil material occurring naturally in the ground at a location.

- **Natural Attenuation**
  Where contaminants are reduced to acceptable concentration levels by natural mechanisms (dilution, absorption onto the soil matrix, etc.), biological action, and chemical interaction.
- **Occupational Health and Safety Act**
  The primary act of legislation enacted by Ontario Ministry of Labour to regulate and control the safety in the workplace; also Occupational Health and Safety Act, Revised Statutes of Ontario, 1990.
- **Odour Control**
  Minimizing or eliminating the nuisance and undesirable impact of objectionable or unpleasant odours arising from waste disposal operations.
- **Open Burning**
  Burning any matter whereby the resultant combustion products are emitted directly to the atmosphere without passing through an adequate stack, duct, or chimney.
- **Operations Plan**
  A document detailing the waste disposal operations in a planned, and if necessary, a staged manner, that ensure compliance with regulatory provisions concerning the operations of a landfill site.
- **Operator (Site Operator)/Attendant**
  The individual or organization who, through ownership or under contract, manages and operates a landfill site for the purpose of waste disposal.
- **Owner**
  A person, persons, organization, or municipal authority who own a landfill facility or part of a landfill facility, and in whose name the Certificate of Approval for the site is issued.
- **Percolation**
  The movement of infiltrating water through soil.
- **Permeability**
  Often used interchangeable with hydraulic conductivity, but not strictly correct. Permeability is a property of the porous media only. Dependent upon media properties that affect flow, diameter, sphericity, roundness, and packing of the grains.
- **Piezometer**
  A well that intersects a confined aquifer.
- **Provisional Certificate of Approval (Provisional C of A)**
  Same as Certificate of Approval.
- **Reasonable Use Policy**
  A policy developed by the Ministry to stipulate limits to the level of groundwater quality impairment that may be permitted to occur at site property boundaries, to allow the reasonable use of adjacent properties or land without adversely affecting public health and the environment.
- **Recharge Zone**
  An area where precipitation or surface run-off infiltrates into the ground and then, through natural percolation enters an aquifer.
- **Recycling**
  Sorting, collecting or processing waste materials that can be used as a substitute for the raw materials in a process or activity for the production of (the same or other) goods. For example, the "Blue Box" system, in-plant scrap handling, or raw material recovery systems. Recycling is also the marketing of products made from recycled or recycled materials.
- **Reduction (of waste or component of 3Rs program)**
  Those actions, practices, or processes that result in the production or generation of less waste.
- **Remedial Action**
  Corrective action taken to clean-up or remedy a spill, an uncontrolled discharge of a contaminant, or a breach in a facility or its operations, in order to minimize the consequent threat to public health and the environment.
- **Representative Sample**
  A small portion of soil, water, etc. which can be subjected to testing and analysis, that is expected to yield results that will reliably represent the identical characteristics of the source of the material or of a larger body of material.
- **Reuse (component of 3Rs program)**
  The use of an item again in its original form, for a similar purpose as originally intended, or to fulfil a different function.
- **Run-off**
  The part of precipitation (rainwater, snowmelt) that flows overland and does not infiltrate the surface material (soil or rock).
- **Saturated Zone**
  The zone of a subsurface soil where all voids are filled with water.

- **Sedimentation**
  The deposition of fine grained soil in an undesirable location, caused by the scouring, erosion and transportation of earth materials by surface run-off.
- **Sensitive Land Use**
  A land use where humans or the natural environment may experience an adverse environmental impact.
- **Settlement**
  The subsidence of the top surface and underlying waste of a landfill or waste cell as a result of densification under its own weight.
- **Site Capacity**
  The maximum amount of waste that is planned to be disposed (design capacity) or that has been disposed of at a landfill site.
- **Site Closure**
  The planned and approved cessation or termination of landfilling activities at a landfill site upon reaching its site capacity.
- **Site Life**
  The period from its inception through active period of waste disposal, to the time when a landfill site reaches its' site capacity, when it ceases to receive any further waste, including and up to closure.
- **Solid Waste**
  Any waste matter that cannot be characterized by its physical properties as a liquid waste product.
- **Solid Waste Disposal Site or Facility**
  A site or facility such as a landfill site where solid waste is disposed of.
- **Source Separation**
  The separation of various wastes at their point of generation for the purposes of recycling or further processing.
- **Standpipe**
  A monitoring well that intersects the water table aquifer.
- **Storm water**
  Run-off that occurs as a direct result of a storm event or thaw.
- **Storm water Detention**
  Control of storm water by the construction of impoundments of structures for the purpose of regulating storm water flows during high intensity rainfall events that would otherwise transport excessive amounts of sediment, cause soil erosion or cause flooding.
- **Stratigraphy**
  The geologic sub-structuring, usually layered with different distribution, deposition and age.
- **Surface Run-off (Drainage)**
  See Run-off.
- **Surface Water**
  Water that occurs at the earth's surface (ponds, streams, rivers, lakes, oceans).
- **Sub-Soil**
  Soil horizons below the topsoil.
- **Test hole**
  A hole drilled for soil sampling purposes.
- **Topsoil**
  The uppermost layer of the soil containing appreciable organic materials in mineral soils. Adequate fertility to support plant growth.
- **Unsaturated Zone**
  The zone (also vadose zone) in a porous sub-soil, where the voids are not completely water-filled, but contain some air-filled voids. Limited above by the land surface and below by the water table.
- **Vector**
  A disease carrier and transmitter; usually an insect or rodent.
- **VOC**
  Volatile organic compounds are those compounds that will readily volatilize (convert from liquid to gas phase) at conditions normally found in the environment.
- **Waste**
  Ashes, garbage, refuse, domestic waste, industrial waste, or municipal refuse and other used products as are designated or interpreted by the provisions of the Environmental Protection Act.

- **Waste Disposal Site (Facility)**
  Any land or land covered by water upon, into, in or through which, or building or structure in which, waste is deposited or processed and any machinery or equipment or operation required for the treatment or disposal of waste.
- **Waste Management System**
  All facilities, equipment and operations for the complete management of waste, including the collection, handling, transportation, storage, processing and disposal thereof, and may include one or more waste disposal sites.
- **Water Table**
  The water level attained in a monitoring well, which screens the surficial unconfined aquifer.
- **Water Balance**
  Amounts of water to various components in a system so that water entering the system equals the amount of water contained within and discharged out of a system.
- **Water Level**
  The level of water in a well.
- **Well Casing**
  The pipe that is used to construct a well.
- **Well Screen**
  A filtering device used to keep sediment from entering a well.
- **Wetlands**
  Areas where water is at, near or above the land surface long enough to be capable of supporting aquatic or hydrolytic vegetation, and which have soils indicative of wet conditions.

Abbreviations

RFP	Request For Proposal
ha	hectare
Ministry	Ontario Ministry of the Environment, Conservation and Parks
tonne	metric ton
MNRF	Ontario Ministry of Natural Resources and Forestry
t	metric tonne
ECA	Environmental Compliance Approval
µS	microSiemens
EPA	Environmental Protection Act
ODWQS	Ontario Drinking Water Quality Standards
EAA	Environmental Assessment Act
PC of A	Provisional Certificate of Approval
MW	monitoring well
PWQO	Provincial Water Quality Objectives
masl	metres above sea level
TOC	Total Organic Carbon
pg	picogram
VOC	Volatile Organic Compound
ng	nanogram
BTU	British Thermal Unit
µg	microgram
°C	temperature in degrees Celsius
g	gram
N/A	not available
kg	kilogram
%	percent
L	Litre
cfm	cubic feet per minute
mg/L	milligrams per litre
ppmdv	part per million by dry volume
mm	millimetre
ppmv	part per million by volume
m	metre
ppm	part per million
km	kilometre
min	minimum
m^3	cubic metre
max	maximum
m^2	square metre

Standard Limitations

Limited Warranty

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Appended Figures

2022 ANNUAL REPORT
STONEY LAKE ROAD LANDFILL

THE CORPORATION OF THE
TOWNSHIP OF DOURO - DUMMER
348 County Road 6
Lakefield, Ontario

LEGEND

- Highway
- Major Road
- Railroad
- Watercourse
- Water Area
- Provincial Park
- Wooded Area
- Built Up Area
- Lower Tier Municipality

Notes:
- Base mapping features are © Queen's Printer of Ontario, 2019 (this does not constitute an endorsement by the Ministry of Natural Resources or the Ontario Government).
- Distances on this plan are in metres and can be converted to feet by dividing by 0.3048.
- Cambium Inc. makes every effort to ensure this map is free from errors but cannot be held responsible for any damages due to error or omissions. This map should not be used for navigation or legal purposes. It is intended for general reference use only.

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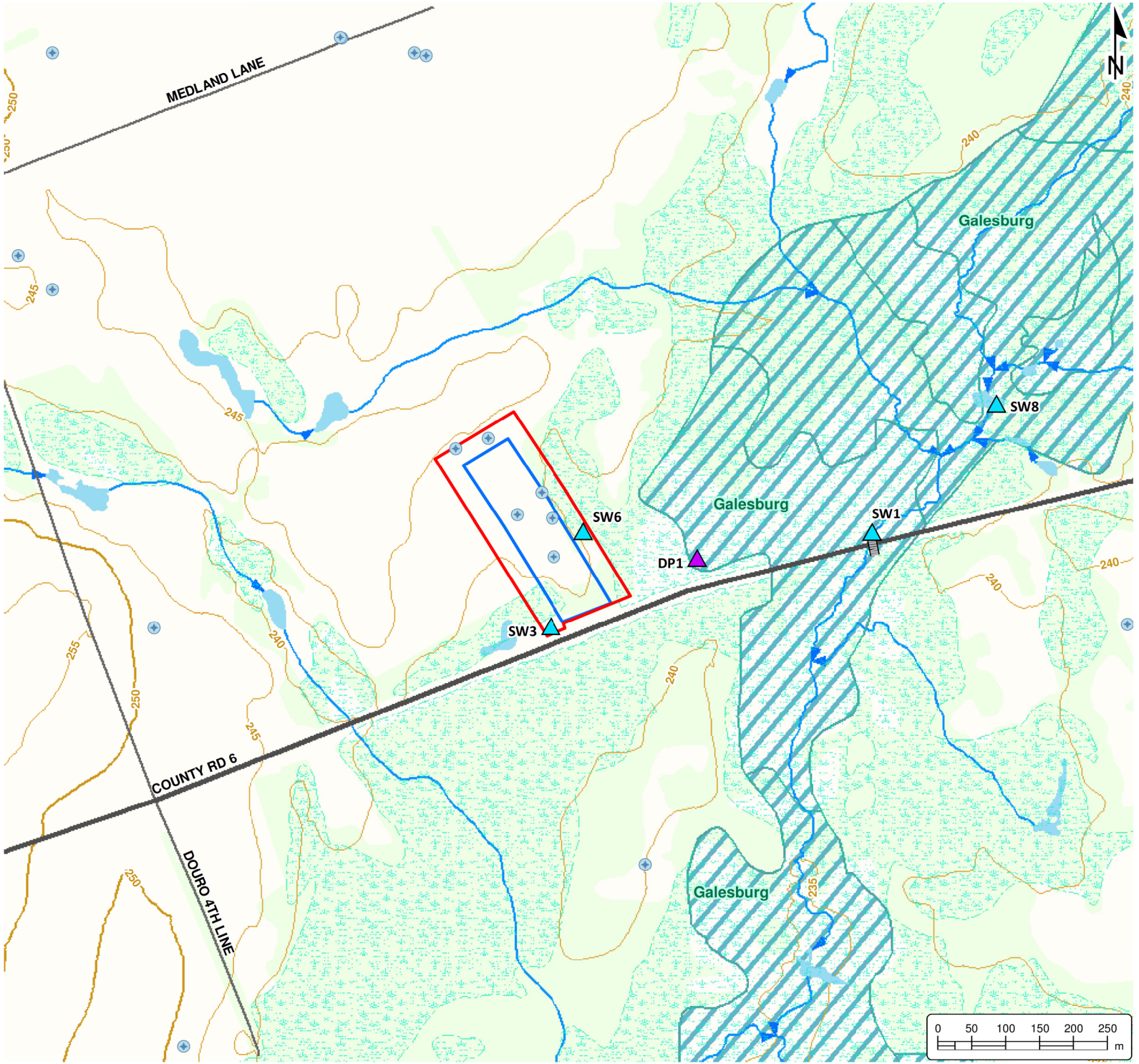
REGIONAL LOCATION PLAN

Project No.: 12987-004		Date: March 2023	Rev.:
Scale: 1:300,000		Projection: NAD 1983 UTM Zone 17N	
Created by: TLC	Checked by: CM	Figure: 1	

C:\GIS\MXDs\12900-12999\12987-004 TDD - Stoney Lake\2023-02-22 FIG 1 - Regional Location Plan.mxd



2022 ANNUAL REPORT
STONEY LAKE ROAD LANDFILL

THE CORPORATION OF THE TOWNSHIP OF DOURO - DUMMER
348 County Road 6
Lakefield, Ontario

LEGEND

- Water Well Record
- Surface Water Location
- Drive Point
- Culvert
- Major Road
- Minor Road
- Watercourse, Permanent
- Contour 5m Interval (Major)
- Contour 5m Interval (Minor)
- Unevaluated Wetlands
- Provincially Significant Wetlands
- Water Area
- Wooded Area
- Site (approximate)
- Landfill Footprint (approximate)

Notes:
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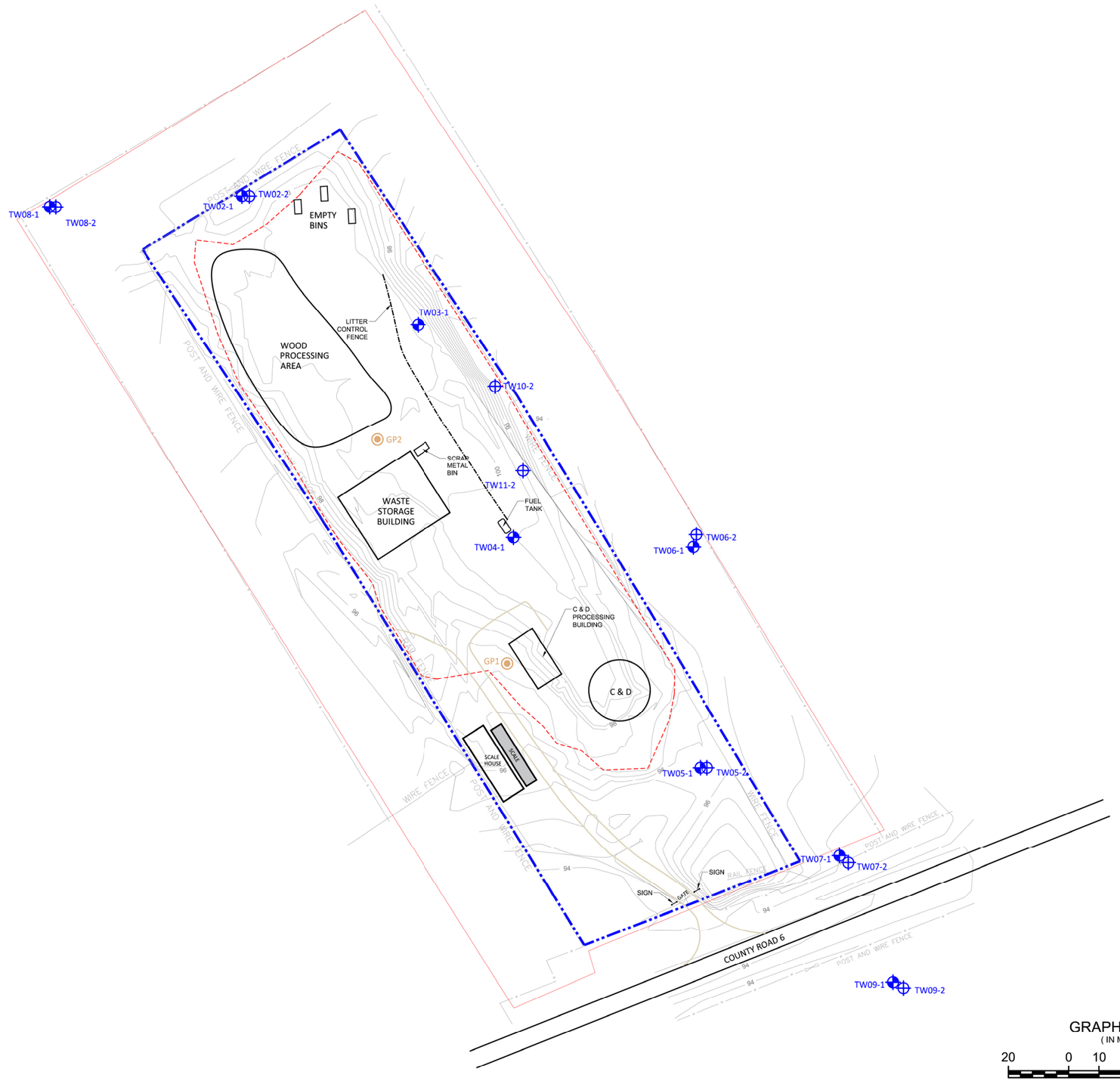
LOCAL TOPOGRAPHY PLAN

Project No.:	12987-004	Date:	March 2023
		Rev.:	
Scale:	1:8,000	Projection:	NAD 1983 UTM Zone 17N
Created by:	TLC	Checked by:	CM
Figure:	2		

O:\GIS\MXDs\12900-12999\12987-004 TDD - Stoney Lake\2023-02-22 FIG 2 - Local Topography Plan.mxd

2022 ANNUAL REPORT
STONEY LAKE ROAD LANDFILL
THE CORPORATION OF THE TOWNSHIP OF DOURO-DUMMER
348 COUNTY ROAD 6
LAKEFIELD, ONTARIO



LEGEND

- Shallow Bedrock Monitoring Well
- Deep Bedrock Monitoring Well
- Gas Probe
- Topographic Contour
- On-Site Road
- Site (approximate)
- Landfill Footprint (approximate)
- Limit of Waste (approximate)

GRAPHIC SCALE
(IN METRES)

20 0 10 20 40 60

1 : 1,500

Notes:
1. Distances on this plan are in metres and can be converted to feet by dividing by 0.3048.

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EXISTING CONDITIONS

Project No.: 12987-004		Date: March 2023	Rev.:
Horizontal Scale: 1:1,500		Projection: UTM Zone 17N	
Drawn By: TLC	Checked By: CM	Figure: 3	

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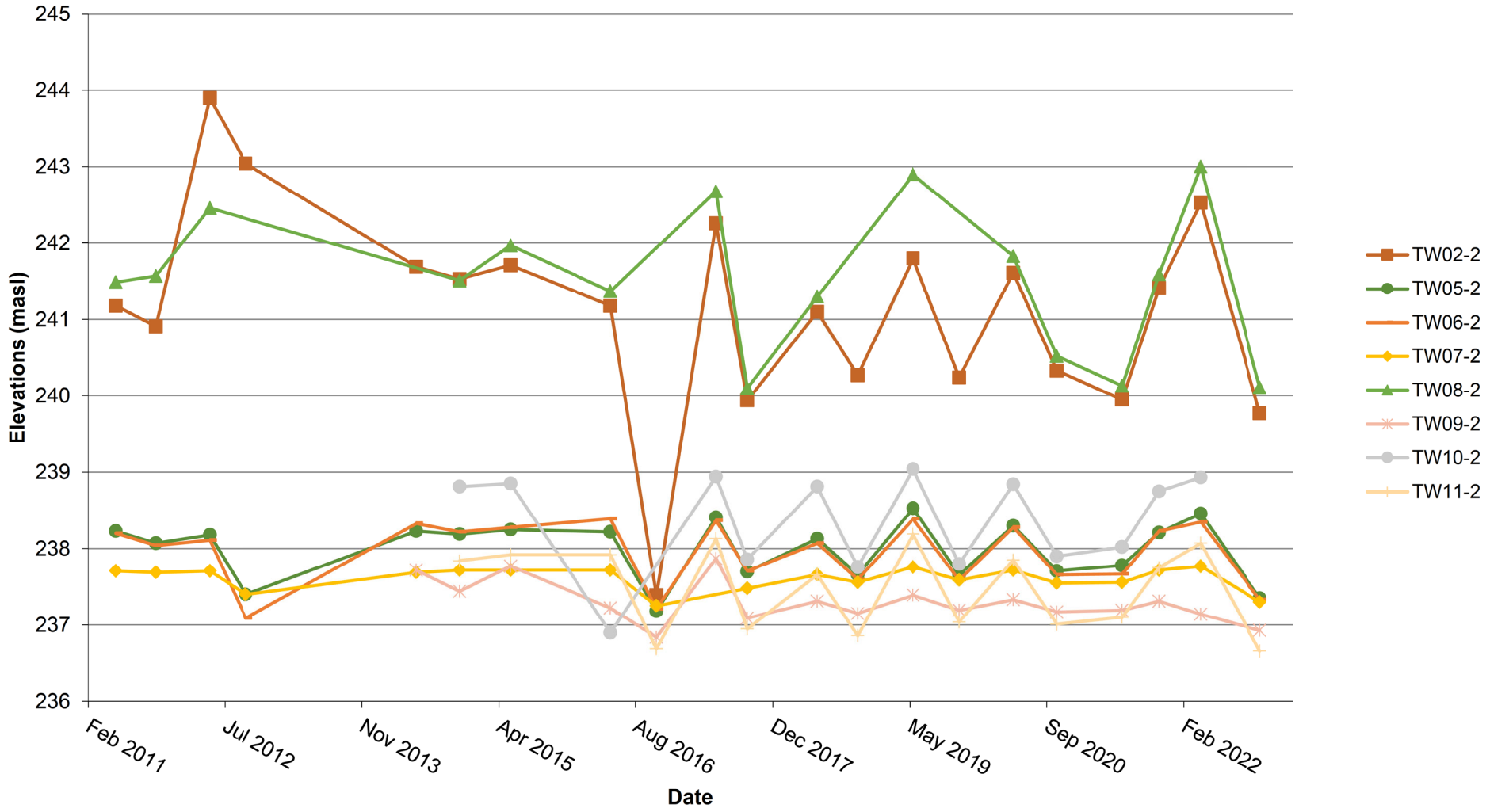
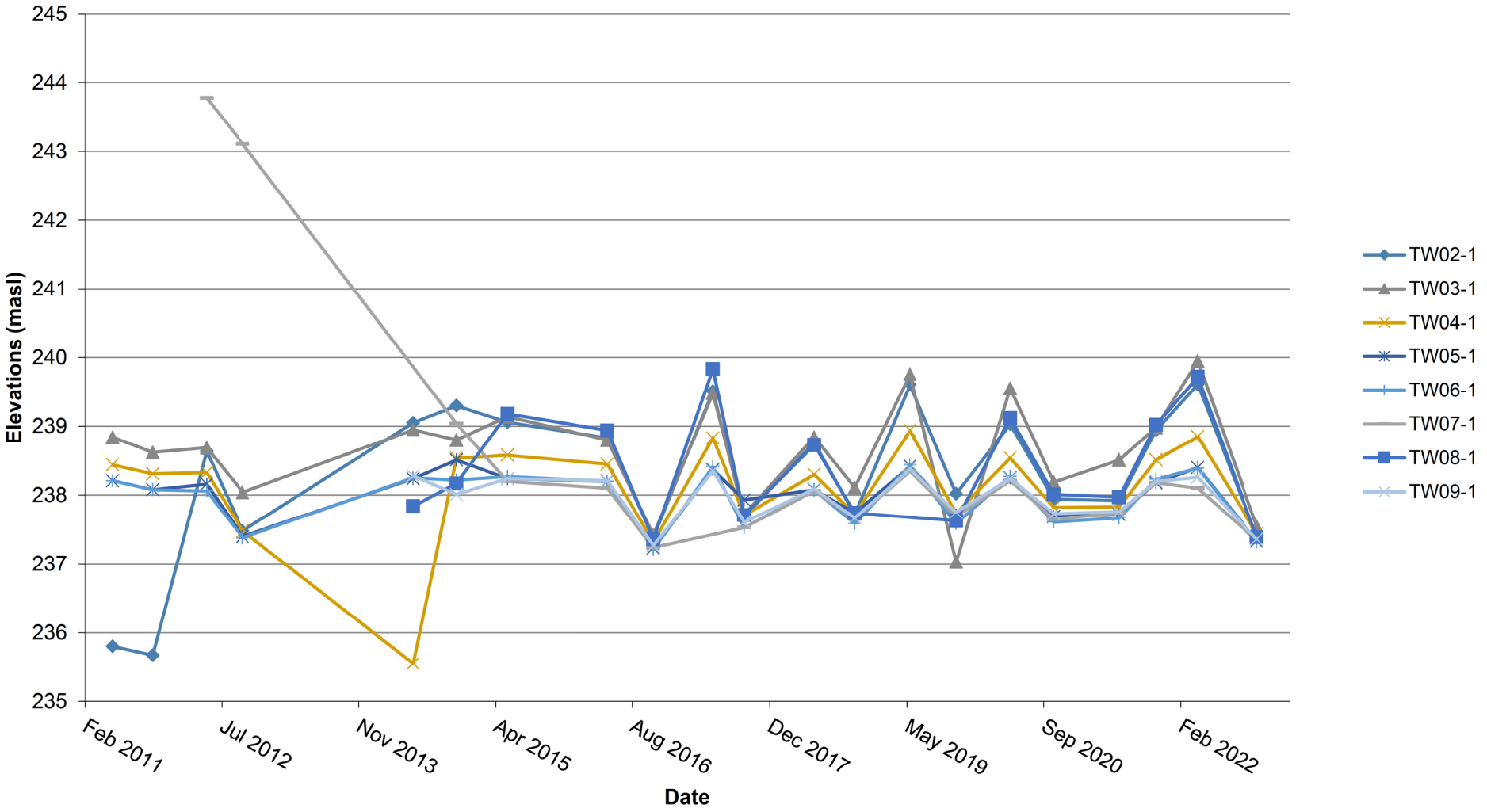


Groundwater Elevations - Overburden/Upper Bedrock

2022 Annual Report, Stoney Lake Road Landfill
348 County Road 6, Lakefield
The Corporation of the Township of Douro-Dummer

Figure:	**4**
Date:	24-Jan-23
Project Manager:	Cameron MacDougall
Project No.:	12987-004

CAMBIUM



Groundwater Elevations - Lower Bedrock

2022 Annual Report, Stoney Lake Road Landfill
348 County Road 6, Lakefield
The Corporation of the Township of Douro-Dummer

Figure:	**5**
Date:	24-Jan-23
Project Manager:	Cameron MacDougall
Project No.:	12987-004

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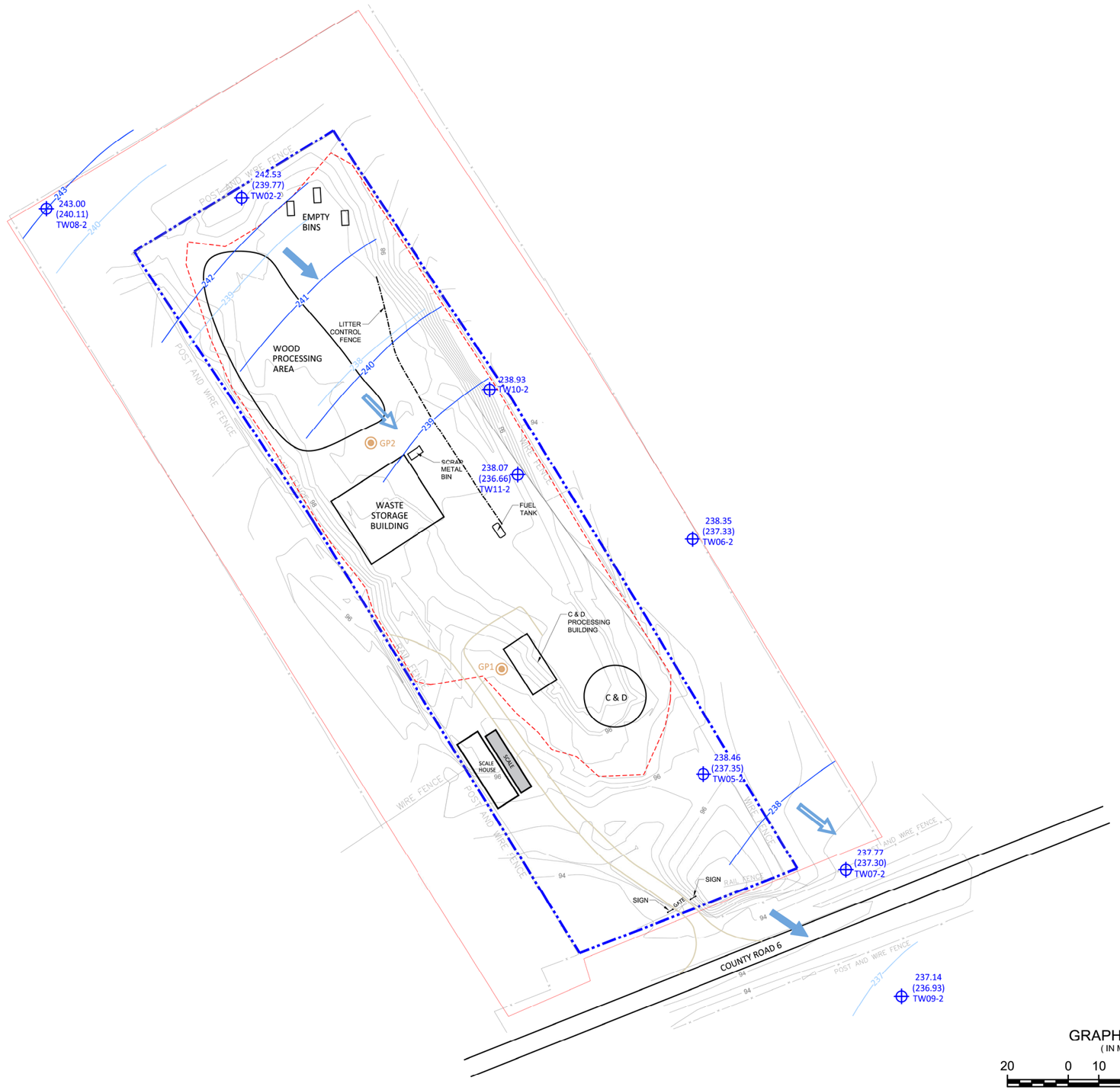
2022 ANNUAL REPORT
STONEY LAKE ROAD LANDFILL
THE CORPORATION OF THE TOWNSHIP OF DOURO-DUMMER
348 COUNTY ROAD 6
LAKEFIELD, ONTARIO



GRAPHIC SCALE
(IN METRES)
20 0 10 20 40 60
1 : 1,500

LEGEND

- Shallow Bedrock Monitoring Well
- Gas Probe
- 237.97 — Groundwater Elevation April 11, 2022
- (239.02) — Groundwater Elevation November 14, 2022
- Topographic Contour
- Groundwater Contour April 11, 2022
- Groundwater Contour November 14, 2022
- On-Site Road
- Site (approximate)
- Landfill Footprint (approximate)
- Limit of Waste (approximate)
- Groundwater Flow Direction April 11, 2022
- Groundwater Flow Direction November 14, 2022

Notes:
1. Distances on this plan are in metres and can be converted to feet by dividing by 0.3048.

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GROUNDWATER CONFIGURATION OVERBURDEN/UPPER BEDROCK

Project No.: 12987-004		Date: March 2023	Rev.:
Horizontal Scale: 1:1,500		Projection: UTM Zone 17N	
Drawn By: TLC	Checked By: CM	Figure: 6	

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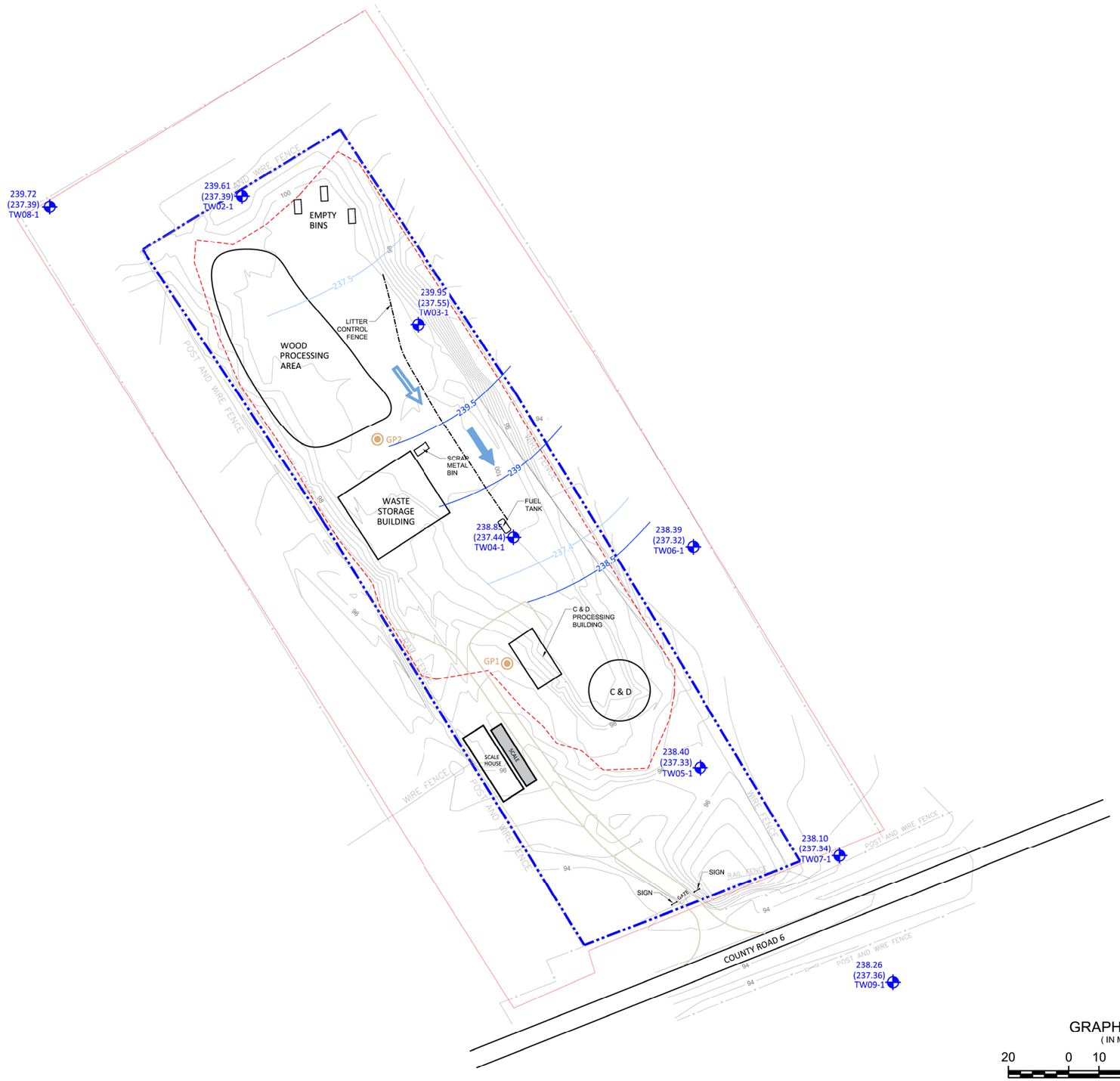
2022 ANNUAL REPORT
STONEY LAKE ROAD LANDFILL
THE CORPORATION OF THE TOWNSHIP OF DOURO-DUMMER
348 COUNTY ROAD 6
LAKEFIELD, ONTARIO



GRAPHIC SCALE
(IN METRES)
20 0 10 20 40 60
1 : 1,500

LEGEND

- Deep Bedrock Monitoring Well
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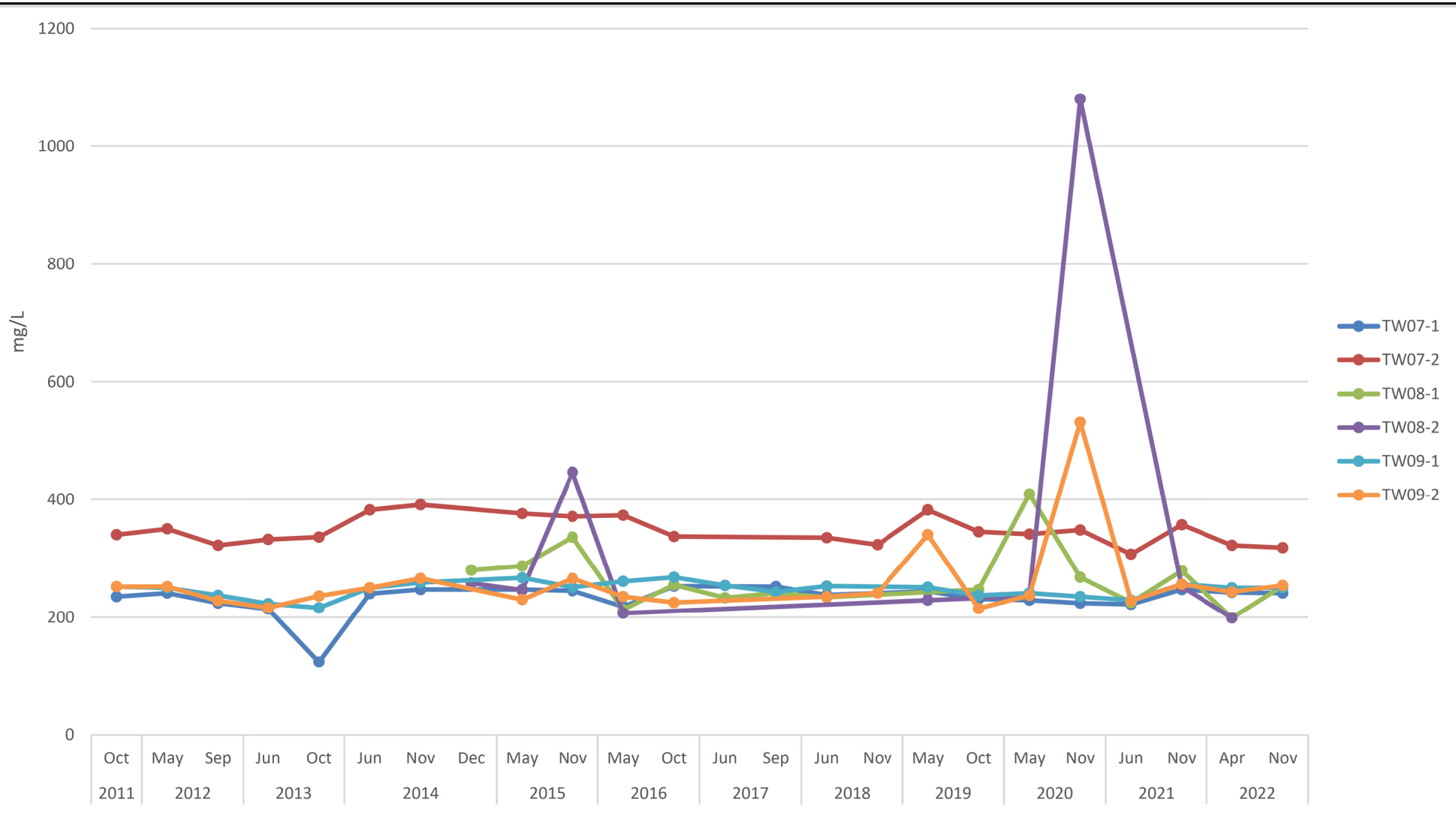
Tel: 705-742-7900 Fax: 705-742-7907
www.cambium-inc.com

GROUNDWATER CONFIGURATION LOWER BEDROCK

Project No.: 12987-004		Date: March 2023	Rev.:
Horizontal Scale: 1:1,500		Projection: UTM Zone 17N	
Drawn By: TLC	Checked By: CM	Figure: 7	

P:\12900 to 12999\12987-004 TDD - Stonsy Lake\Graphics\Drawings\CAD\2022 Stonsy Lake AIRF.dwg

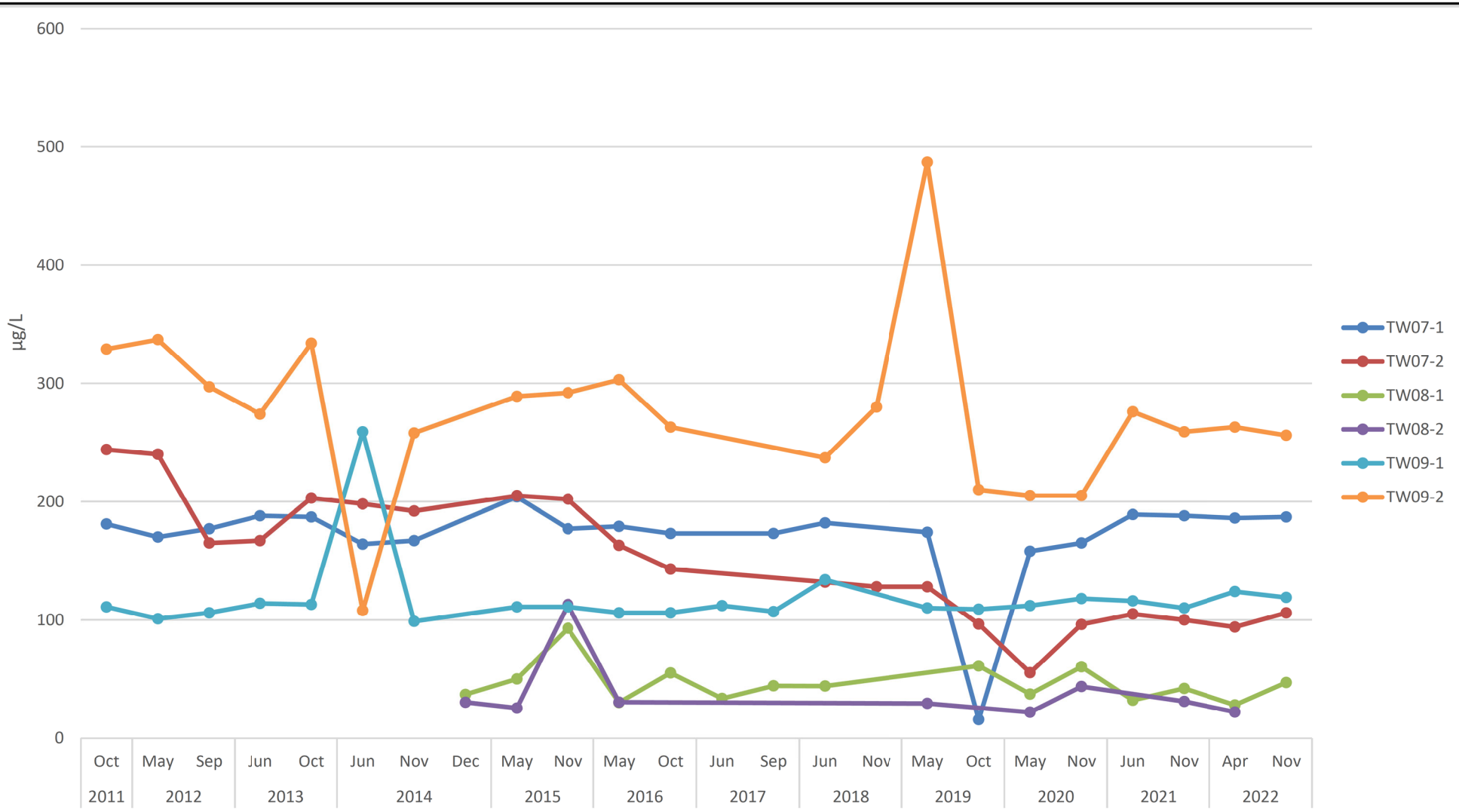


Alkalinity Concentrations - Groundwater

2022 Annual Report, Stoney Lake Road Landfill
348 County Road 6, Lakefield
The Corporation of the Township of Douro-Dummer

Figure:	**8**
Date:	2-Mar-23
Project Manager:	Cameron MacDougall
Project No.:	12987-004

CAMBIUM

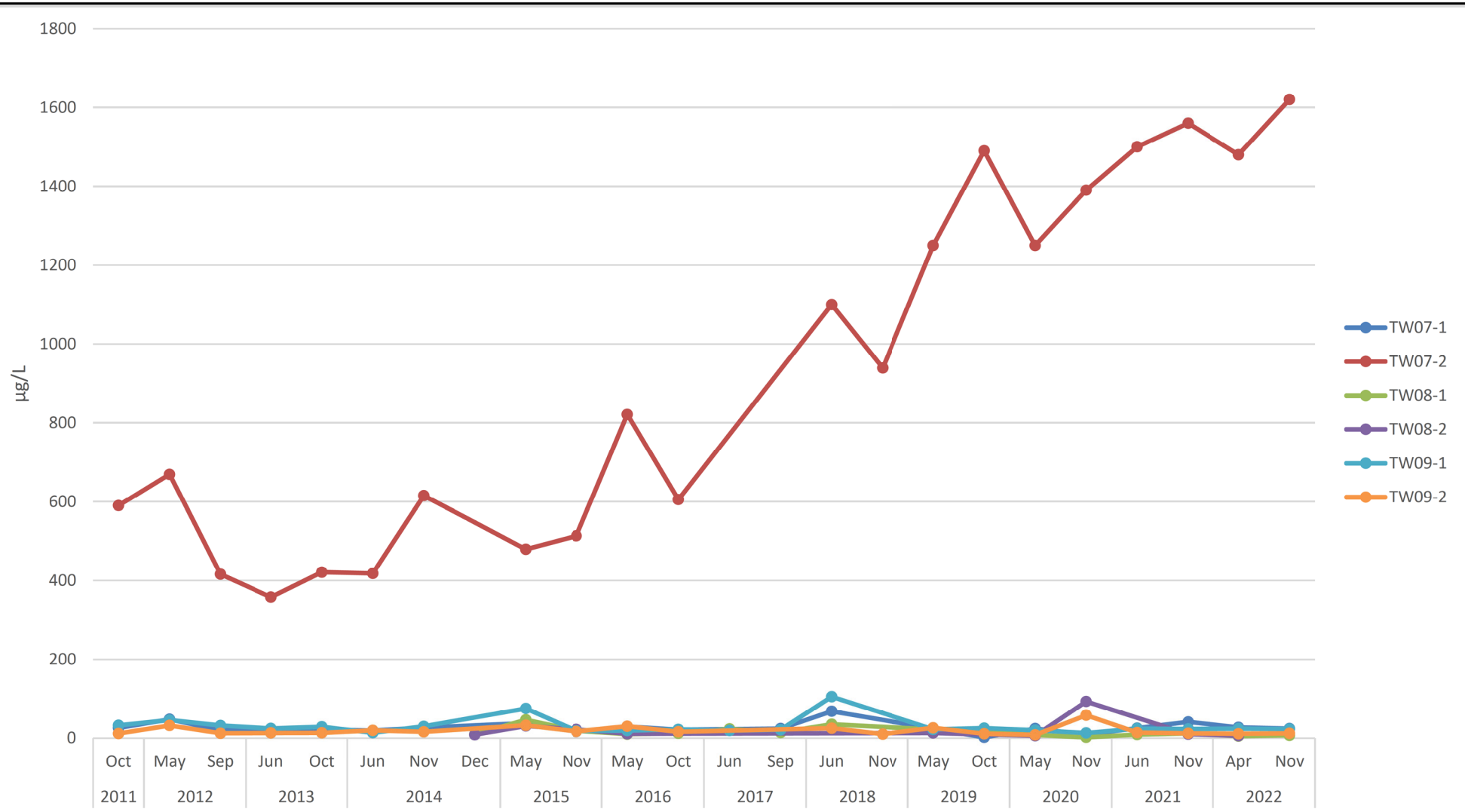


Barium Concentrations - Groundwater

2022 Annual Report, Stoney Lake Road Landfill
348 County Road 6, Lakefield
The Corporation of the Township of Douro-Dummer

Figure:	**9**
Date:	2-Mar-23
Project Manager:	Cameron MacDougall
Project No.:	12987-004

CAMBIUM

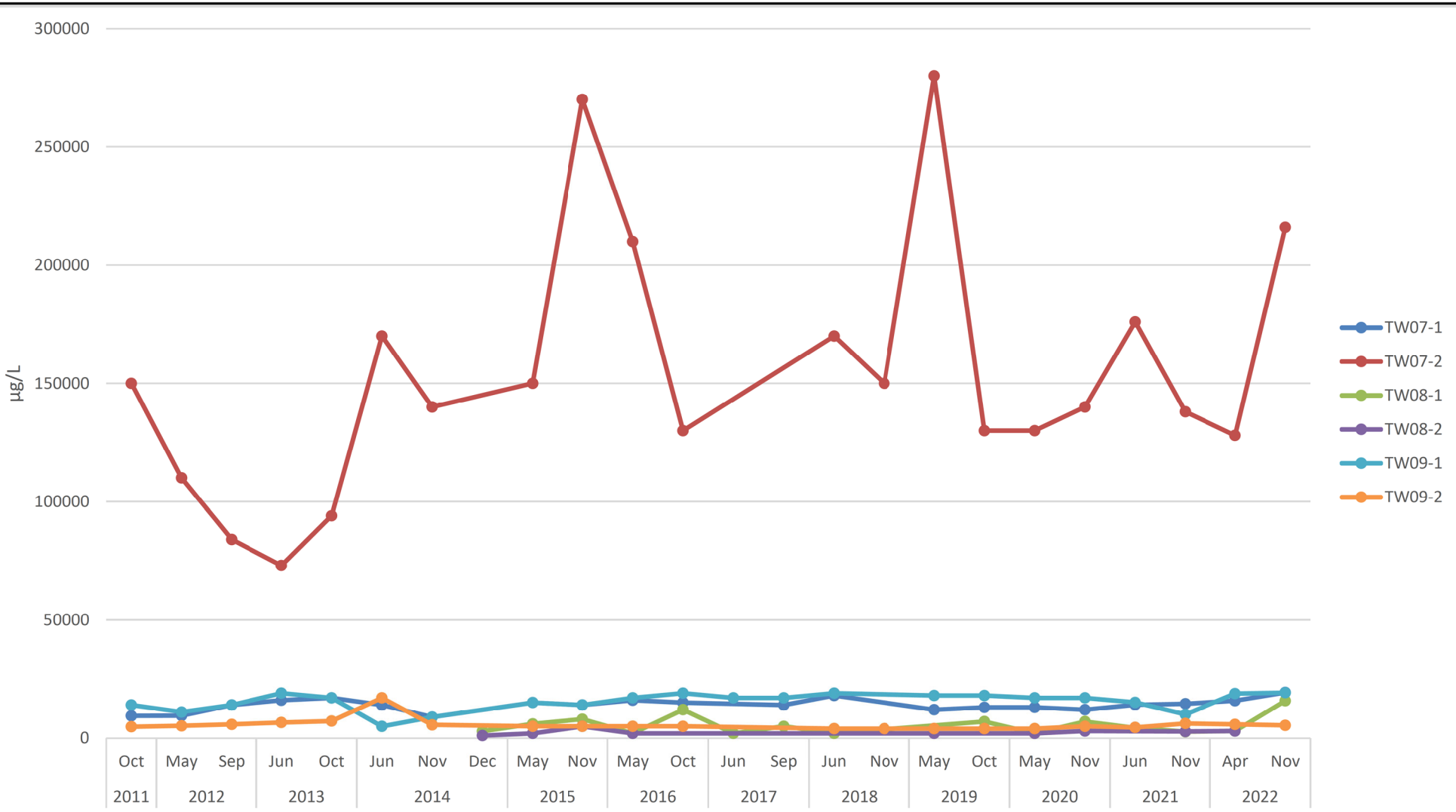


Boron Concentrations - Groundwater

2022 Annual Report, Stoney Lake Road Landfill
348 County Road 6, Lakefield
The Corporation of the Township of Douro-Dummer

Figure:	**10**
Date:	2-Mar-23
Project Manager:	Cameron MacDougall
Project No.:	12987-004

CAMBIUM

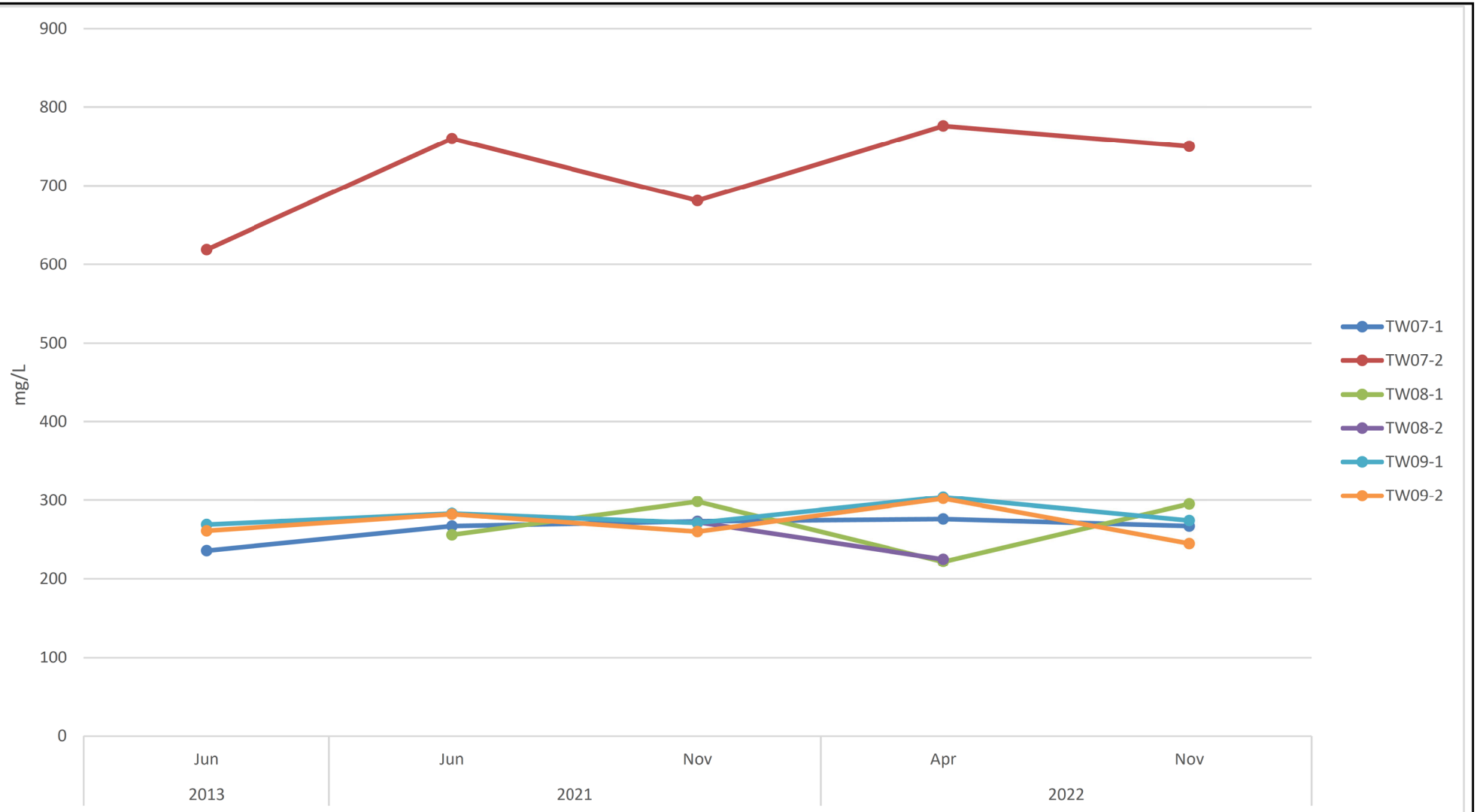


Chloride Concentrations - Groundwater

2022 Annual Report, Stoney Lake Road Landfill
348 County Road 6, Lakefield
The Corporation of the Township of Douro-Dummer

Figure:	**11**
Date:	2-Mar-23
Project Manager:	Cameron MacDougall
Project No.:	12987-004

CAMBIUM

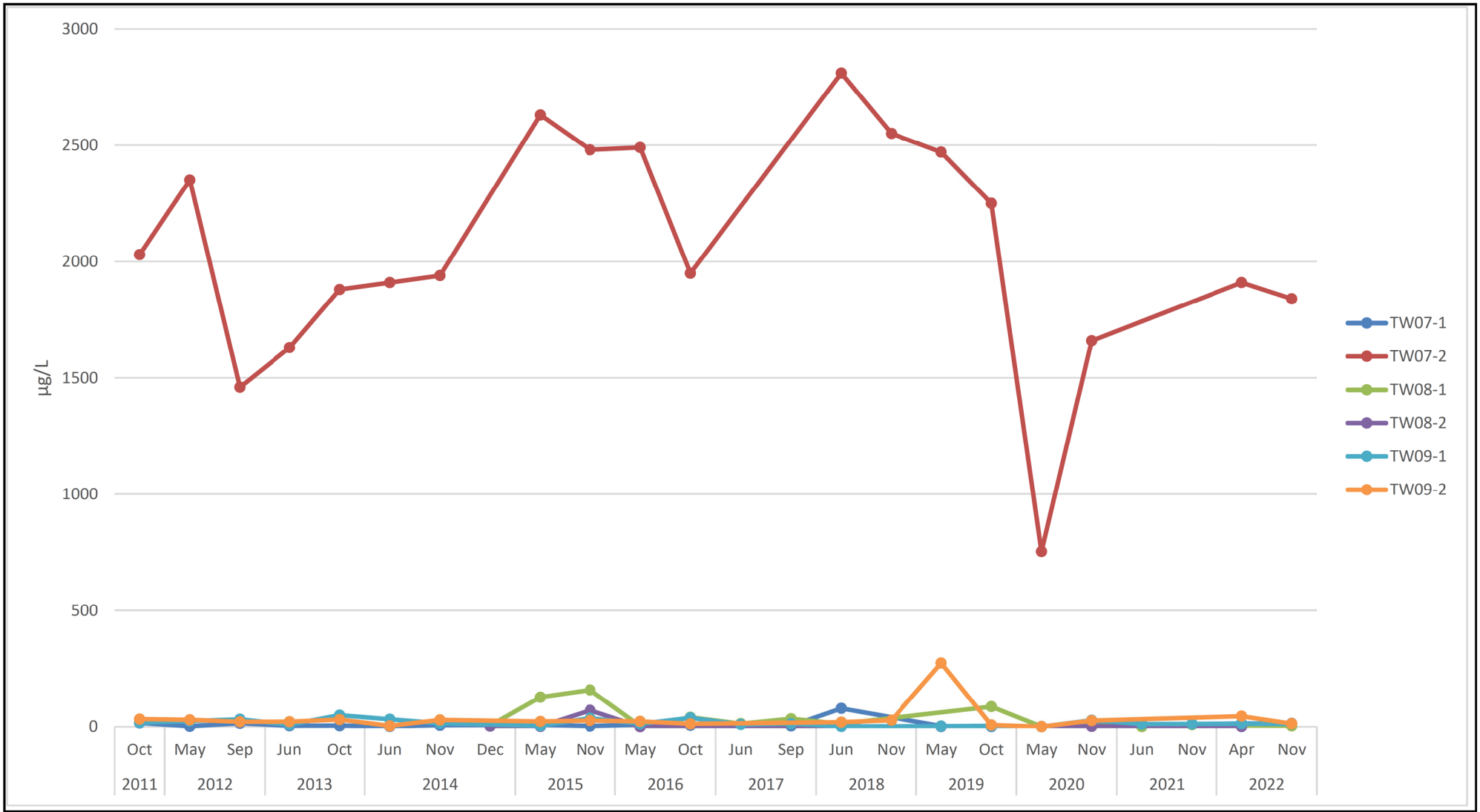


Hardness Concentrations - Groundwater

2022 Annual Report, Stoney Lake Road Landfill
348 County Road 6, Lakefield
The Corporation of the Township of Douro-Dummer

Figure:	**12**
Date:	2-Mar-23
Project Manager:	Cameron MacDougall
Project No.:	12987-004

CAMBIUM

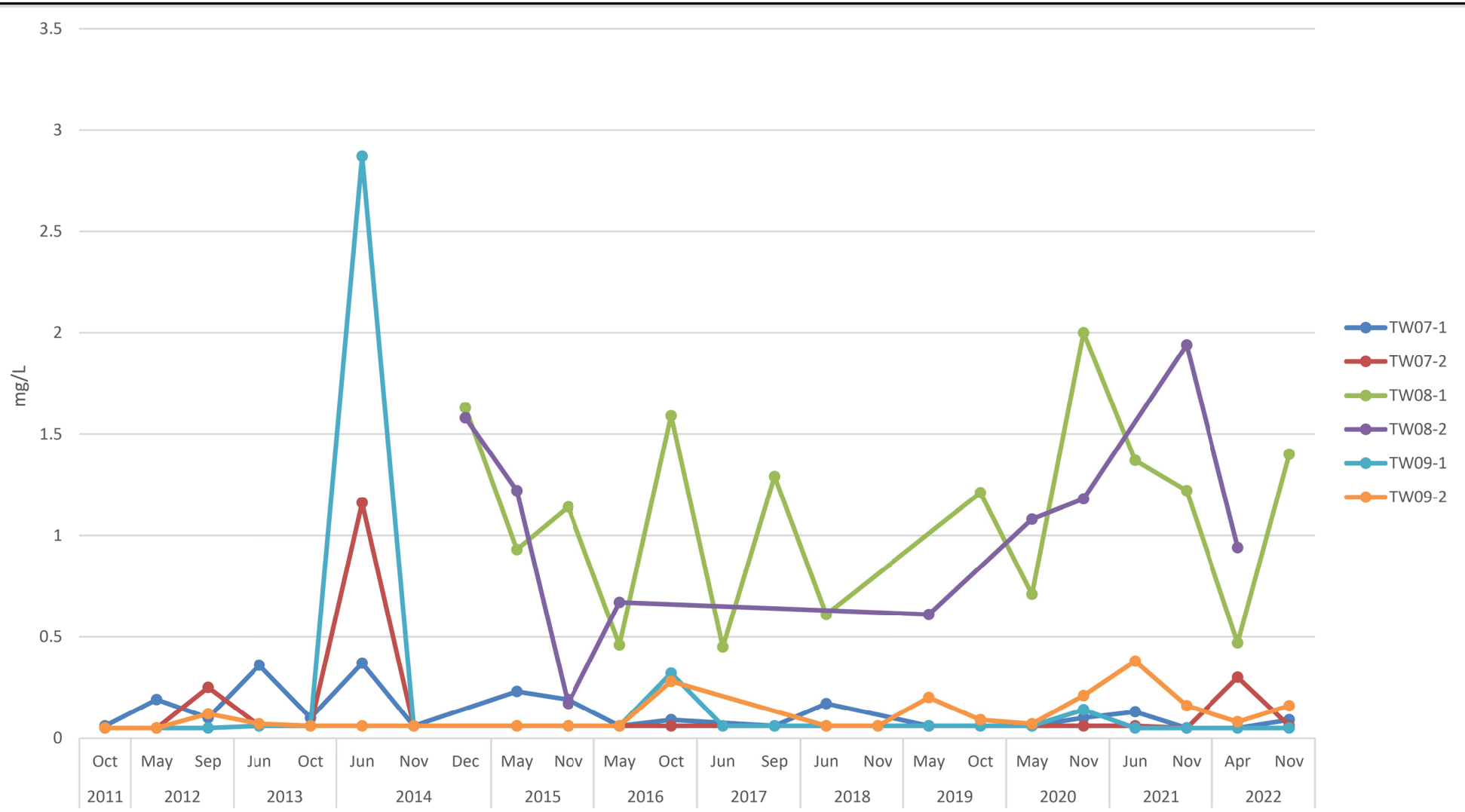


Manganese Concentrations - Groundwater

2022 Annual Report, Stoney Lake Road Landfill
348 County Road 6, Lakefield
The Corporation of the Township of Douro-Dummer

Figure:	**13**
Date:	2-Mar-23
Project Manager:	Cameron MacDougall
Project No.:	12987-004

CAMBIUM

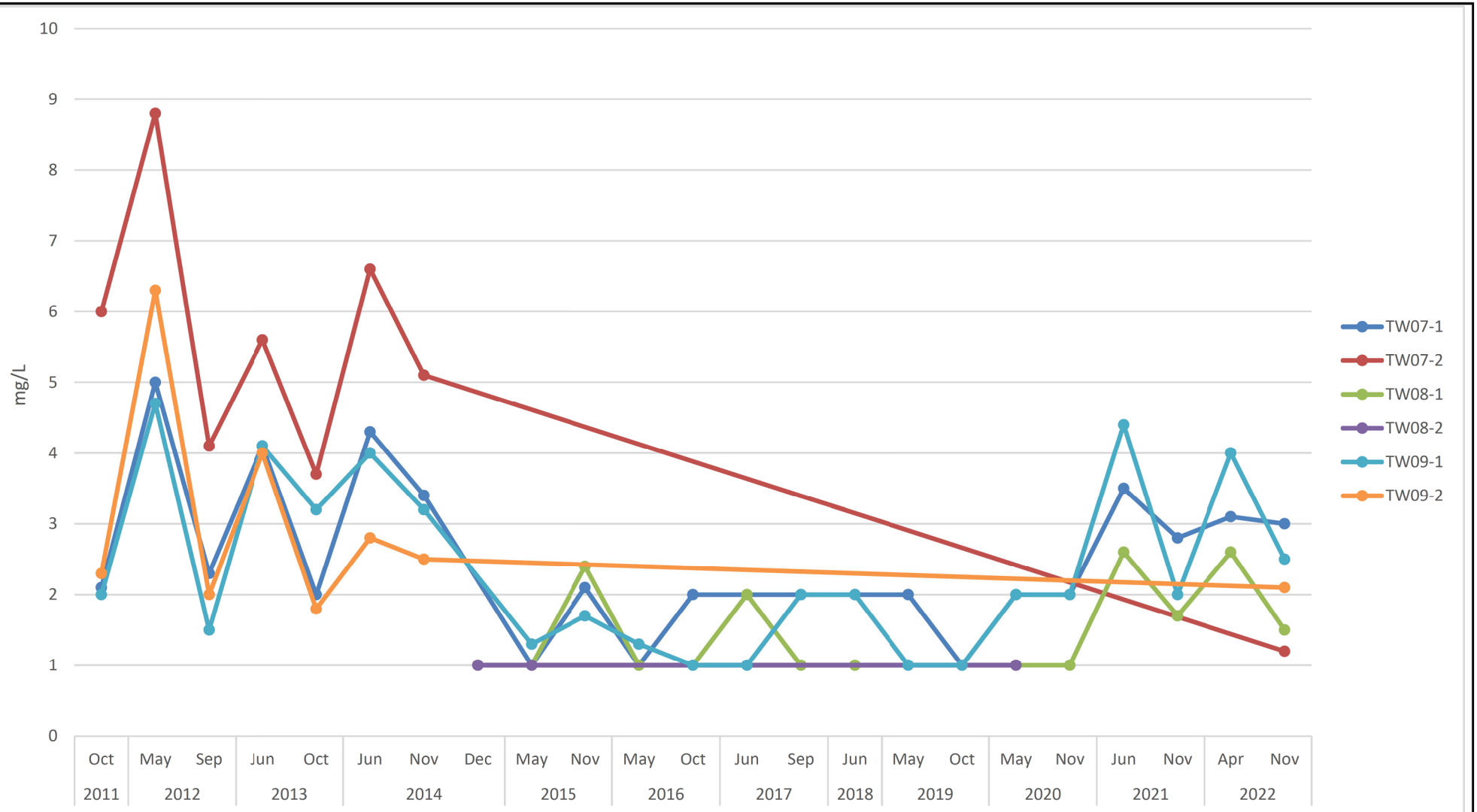


Nitrate Concentrations - Groundwater

2022 Annual Report, Stoney Lake Road Landfill
348 County Road 6, Lakefield
The Corporation of the Township of Douro-Dummer

Figure:	**14**
Date:	2-Mar-23
Project Manager:	Cameron MacDougall
Project No.:	12987-004

CAMBIUM

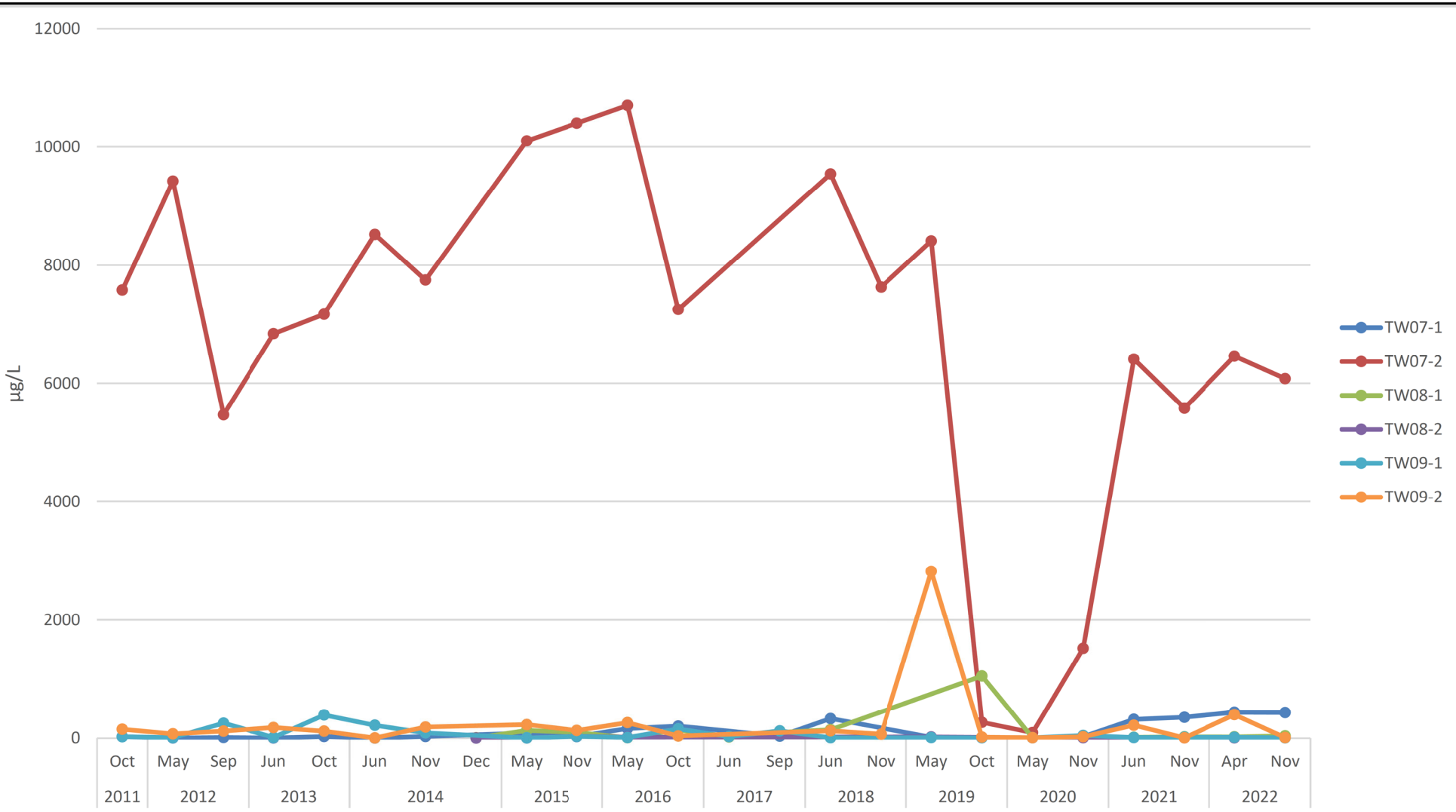


Dissolved Organic Carbon Concentrations - Groundwater

2022 Annual Report, Stoney Lake Road Landfill
348 County Road 6, Lakefield
The Corporation of the Township of Douro-Dummer

Figure:	**15**
Date:	2-Mar-23
Project Manager:	Cameron MacDougall
Project No.:	12987-004

CAMBIUM



Iron Concentrations - Groundwater

2022 Annual Report, Stoney Lake Road Landfill
348 County Road 6, Lakefield
The Corporation of the Township of Douro-Dummer

Figure:	**16**
Date:	2-Mar-23
Project Manager:	Cameron MacDougall
Project No.:	12987-004

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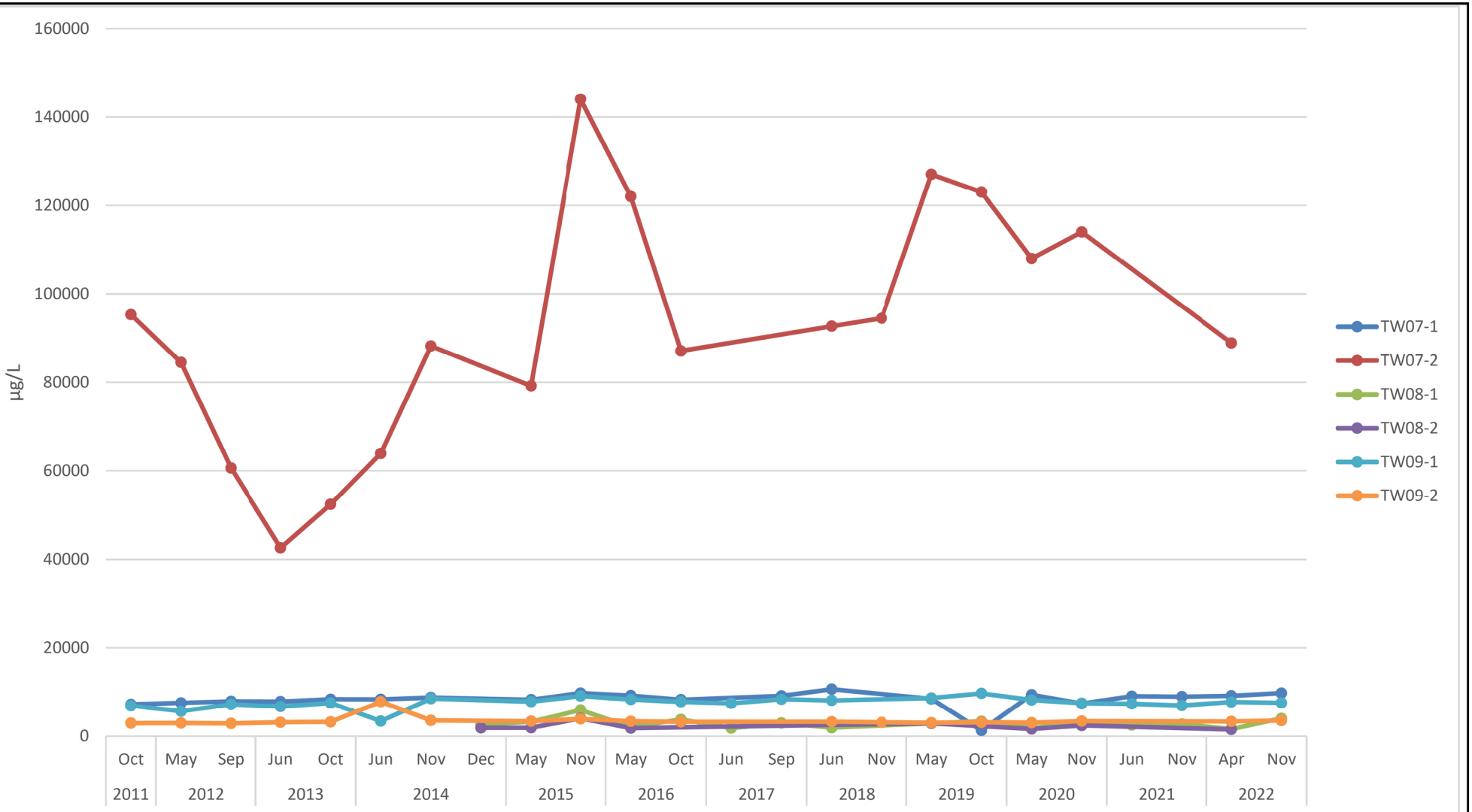
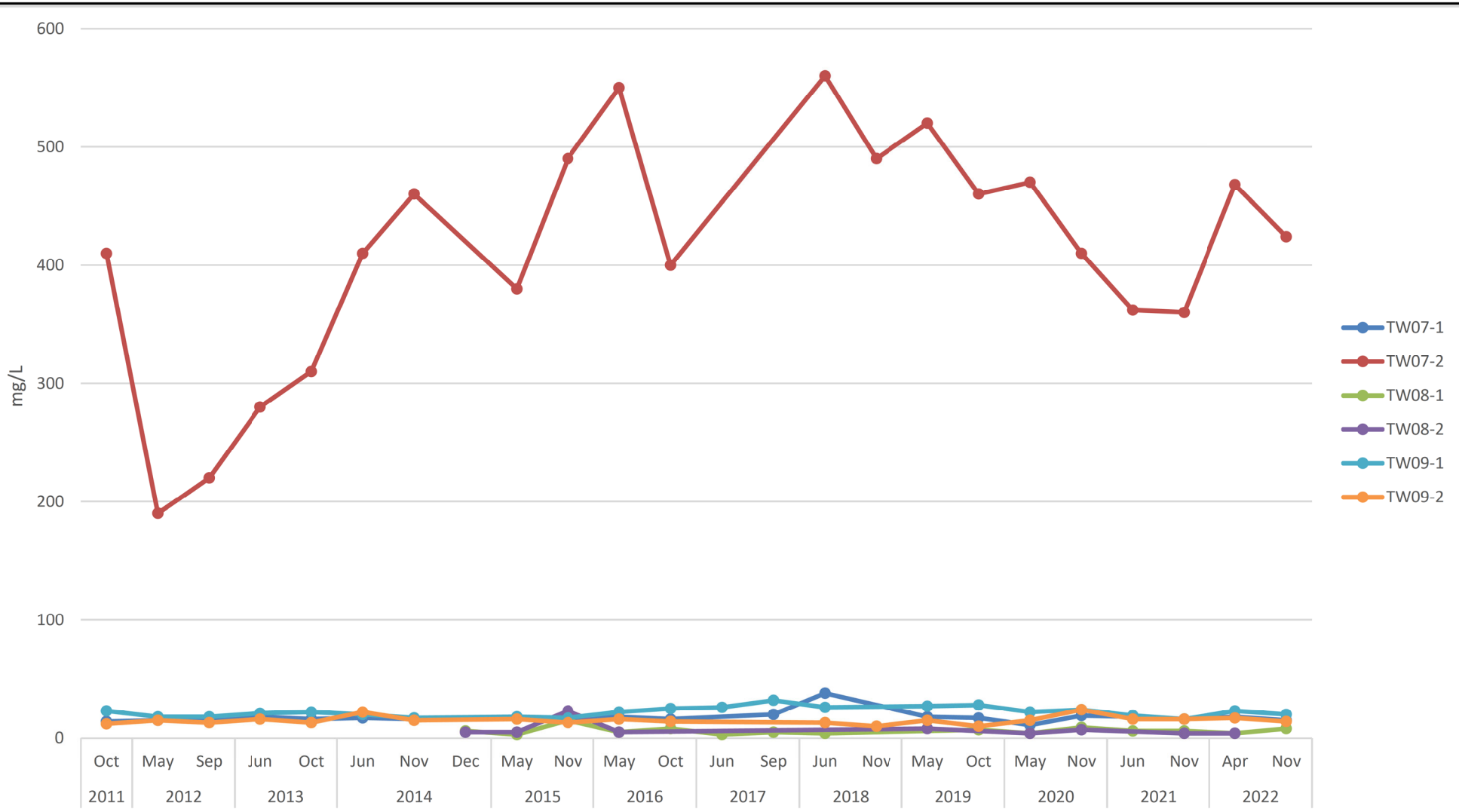


Sodium Concentrations - Groundwater

2022 Annual Report, Stoney Lake Road Landfill
348 County Road 6, Lakefield
The Corporation of the Township of Douro-Dummer

Figure:	**17**
Date:	2-Mar-23
Project Manager:	Cameron MacDougall
Project No.:	12987-004

CAMBIUM

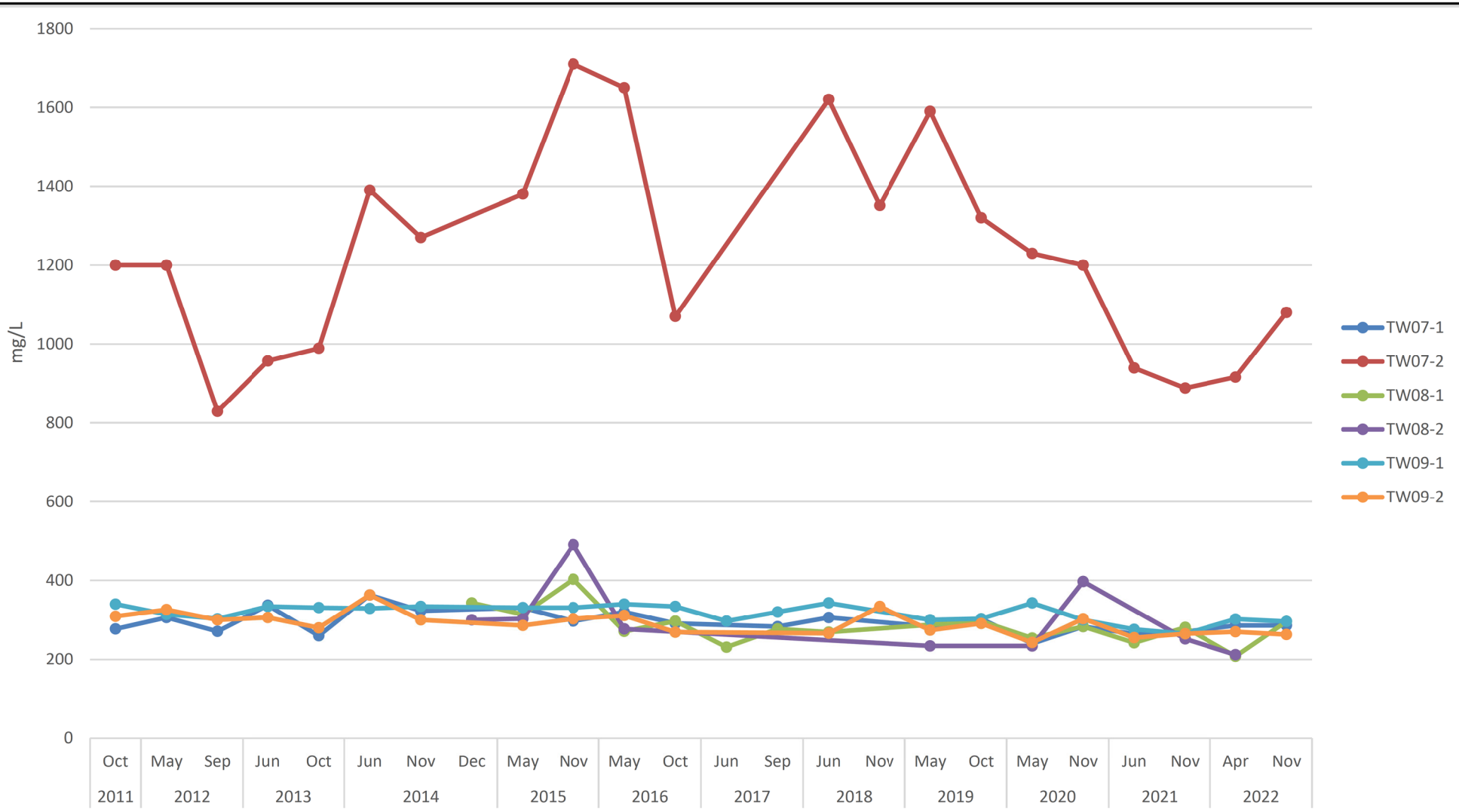


Sulphate Concentrations - Groundwater

2022 Annual Report, Stoney Lake Road Landfill
348 County Road 6, Lakefield
The Corporation of the Township of Douro-Dummer

Figure:	**18**
Date:	2-Mar-23
Project Manager:	Cameron MacDougall
Project No.:	12987-004

CAMBIUM

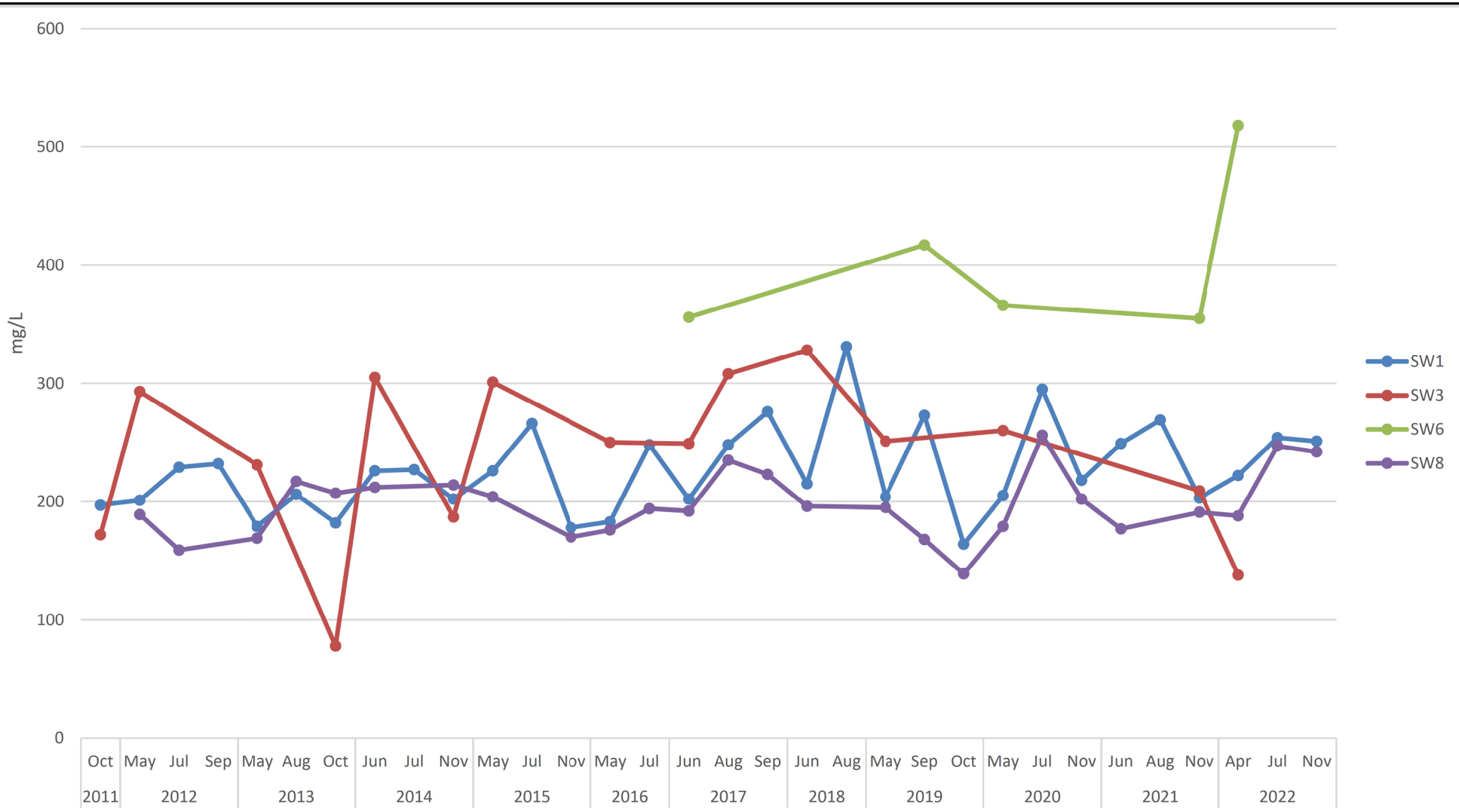


Total Dissolved Solids Concentrations - Groundwater

2022 Annual Report, Stoney Lake Road Landfill
348 County Road 6, Lakefield
The Corporation of the Township of Douro-Dummer

Figure:	**19**
Date:	2-Mar-23
Project Manager:	Cameron MacDougall
Project No.:	12987-004

CAMBIUM

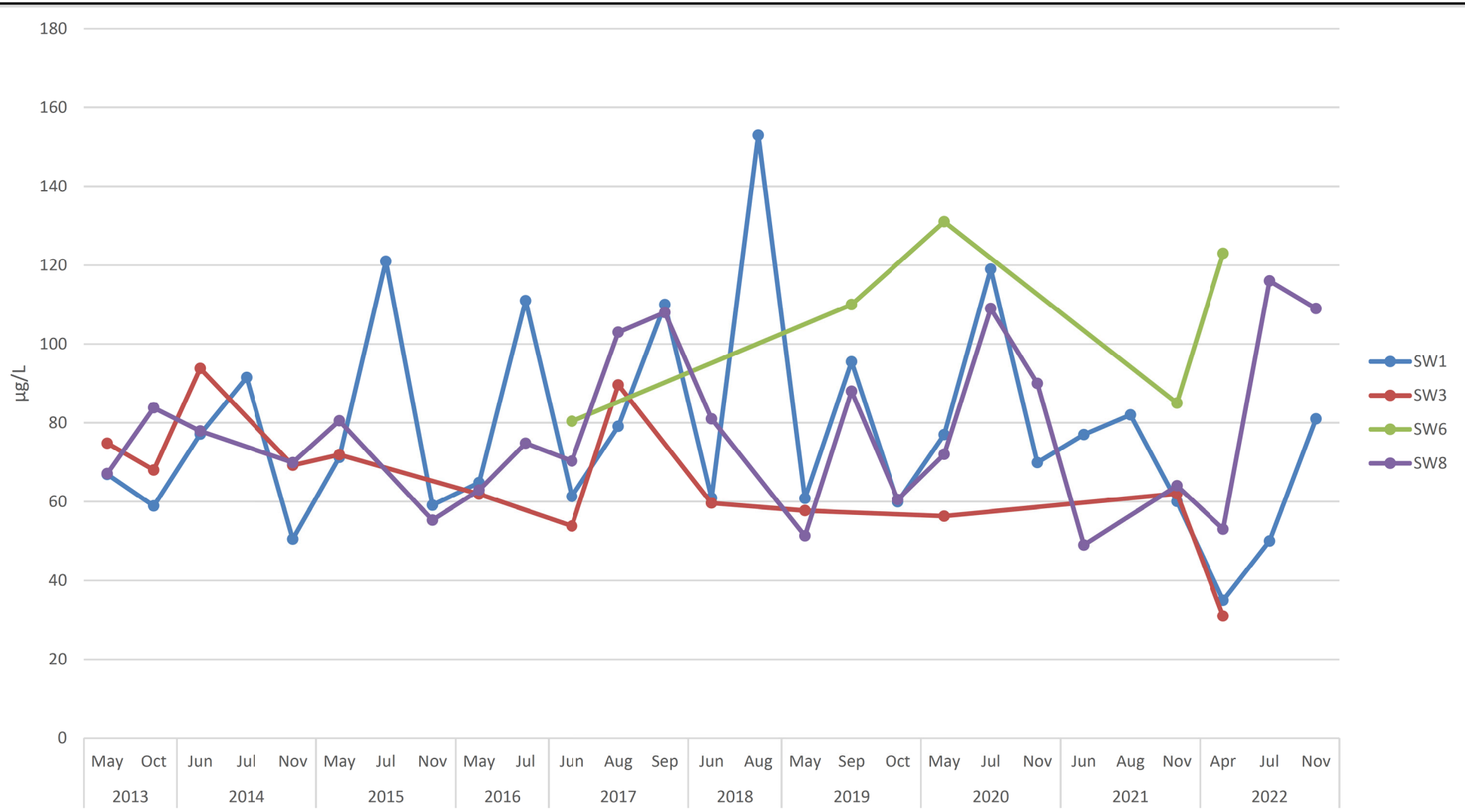


Alkalinity Concentrations - Surface Water

2022 Annual Report, Stoney Lake Road Landfill
348 County Road 6, Lakefield
The Corporation of the Township of Douro-Dummer

Figure:	**20**
Date:	2-Mar-23
Project Manager:	Cameron MacDougall
Project No.:	12987-004

CAMBIUM

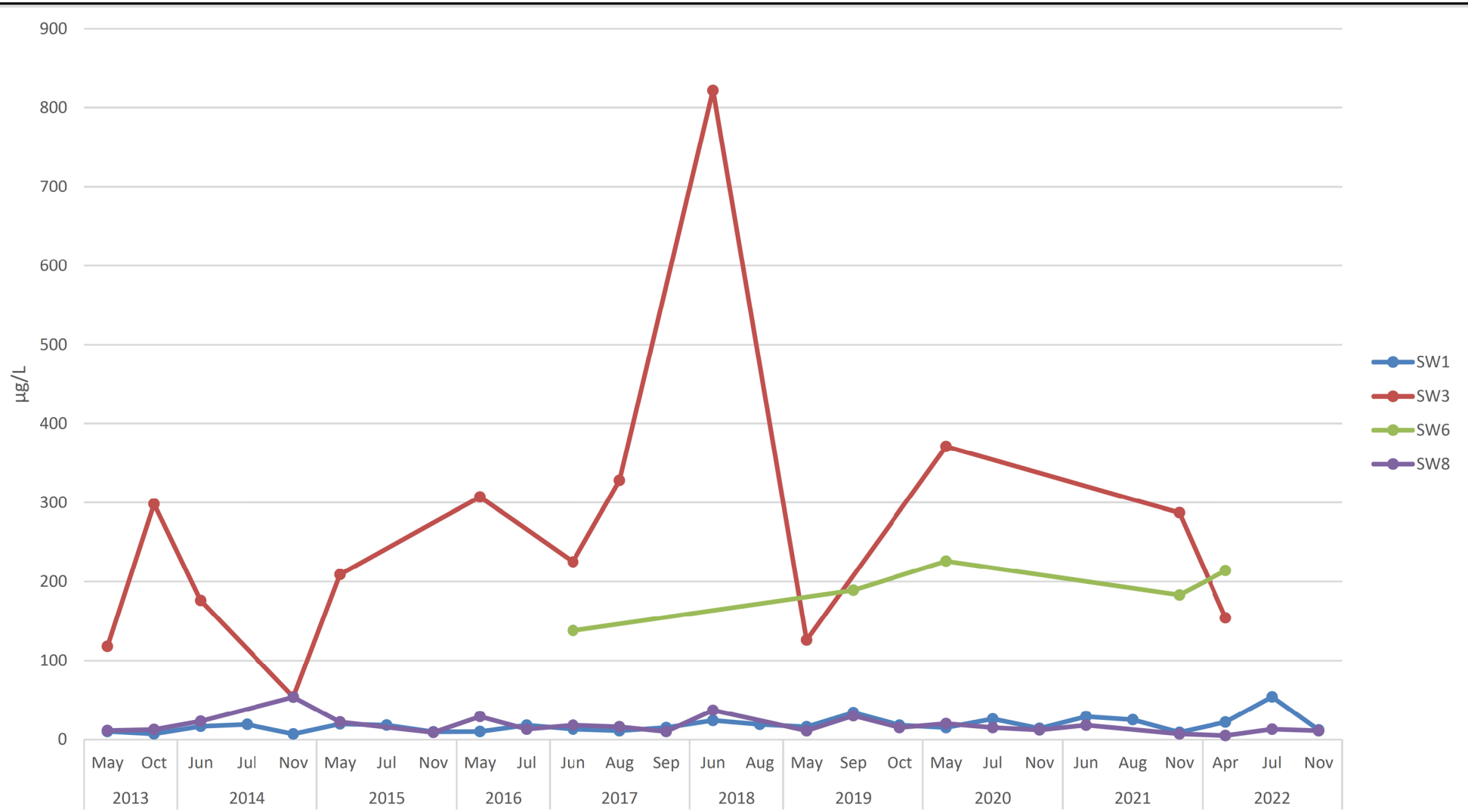


Barium Concentrations - Surface Water

2022 Annual Report, Stoney Lake Road Landfill
348 County Road 6, Lakefield
The Corporation of the Township of Douro-Dummer

Figure:	**21**
Date:	2-Mar-23
Project Manager:	Cameron MacDougall
Project No.:	12987-004

CAMBIUM

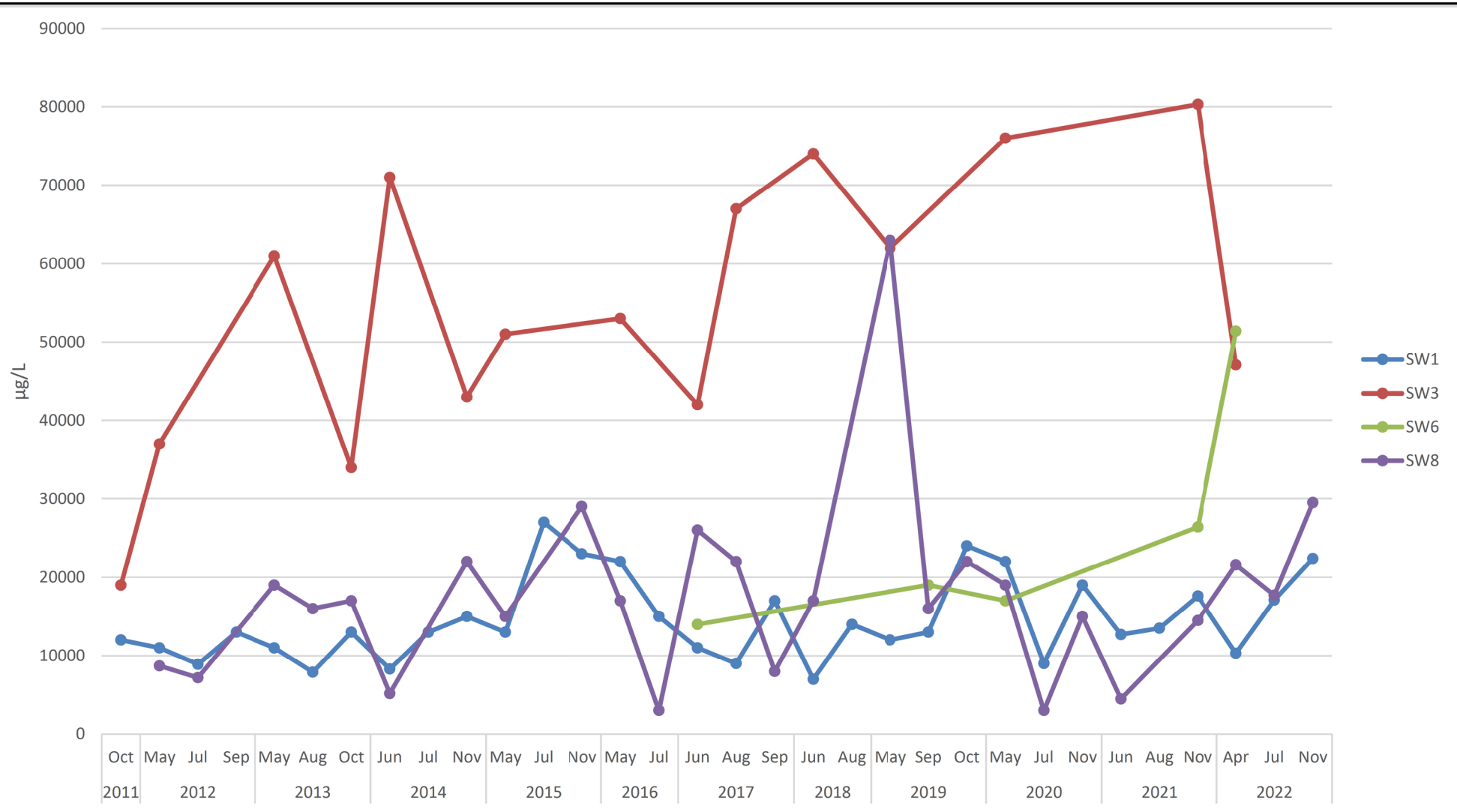


Boron Concentrations - Surface Water

2022 Annual Report, Stoney Lake Road Landfill
348 County Road 6, Lakefield
The Corporation of the Township of Douro-Dummer

Figure:	**22**
Date:	2-Mar-23
Project Manager:	Cameron MacDougall
Project No.:	12987-004

CAMBIUM

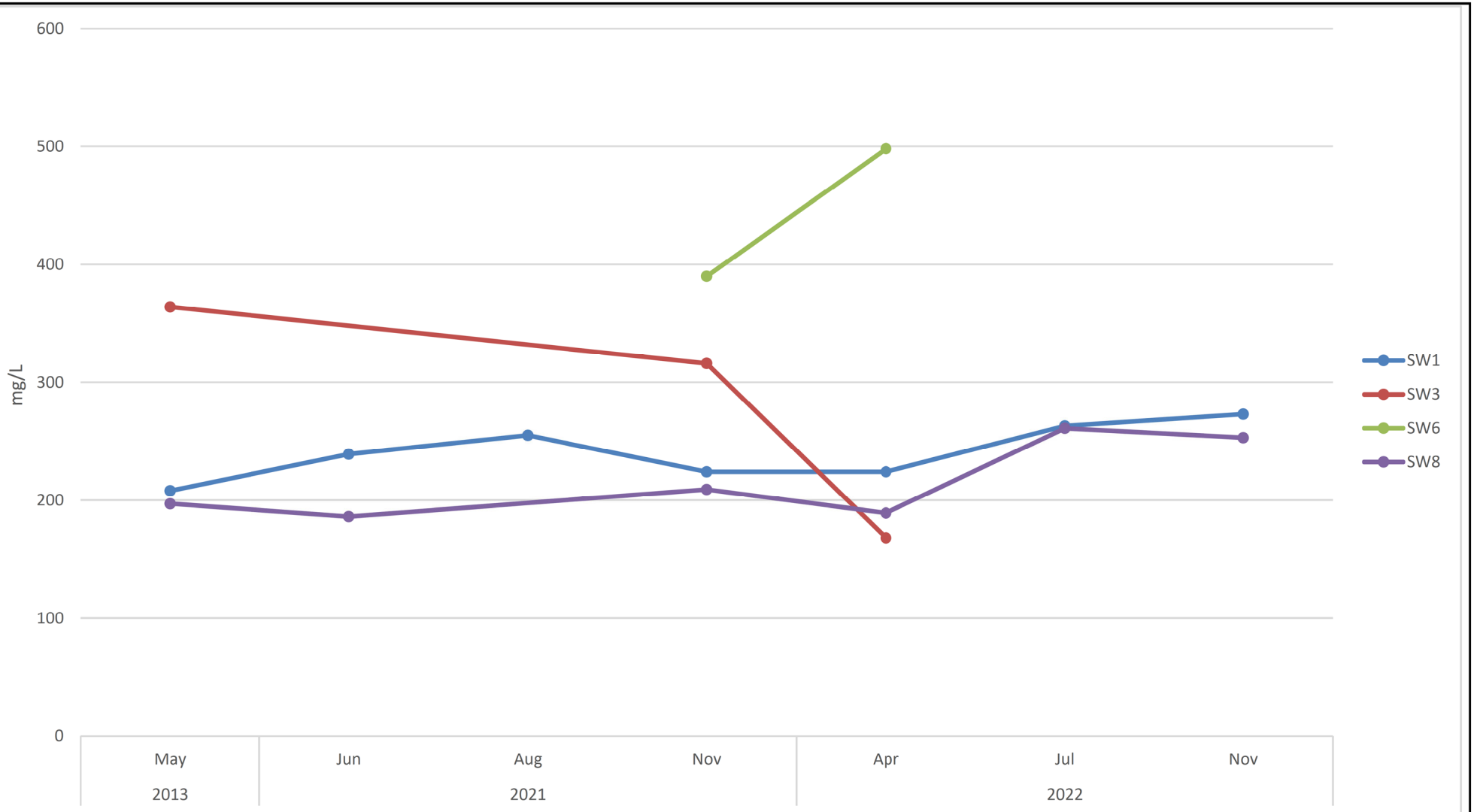


Chloride Concentrations - Surface Water

2022 Annual Report, Stoney Lake Road Landfill
348 County Road 6, Lakefield
The Corporation of the Township of Douro-Dummer

Figure:	**23**
Date:	2-Mar-23
Project Manager:	Cameron MacDougall
Project No.:	12987-004

CAMBIUM

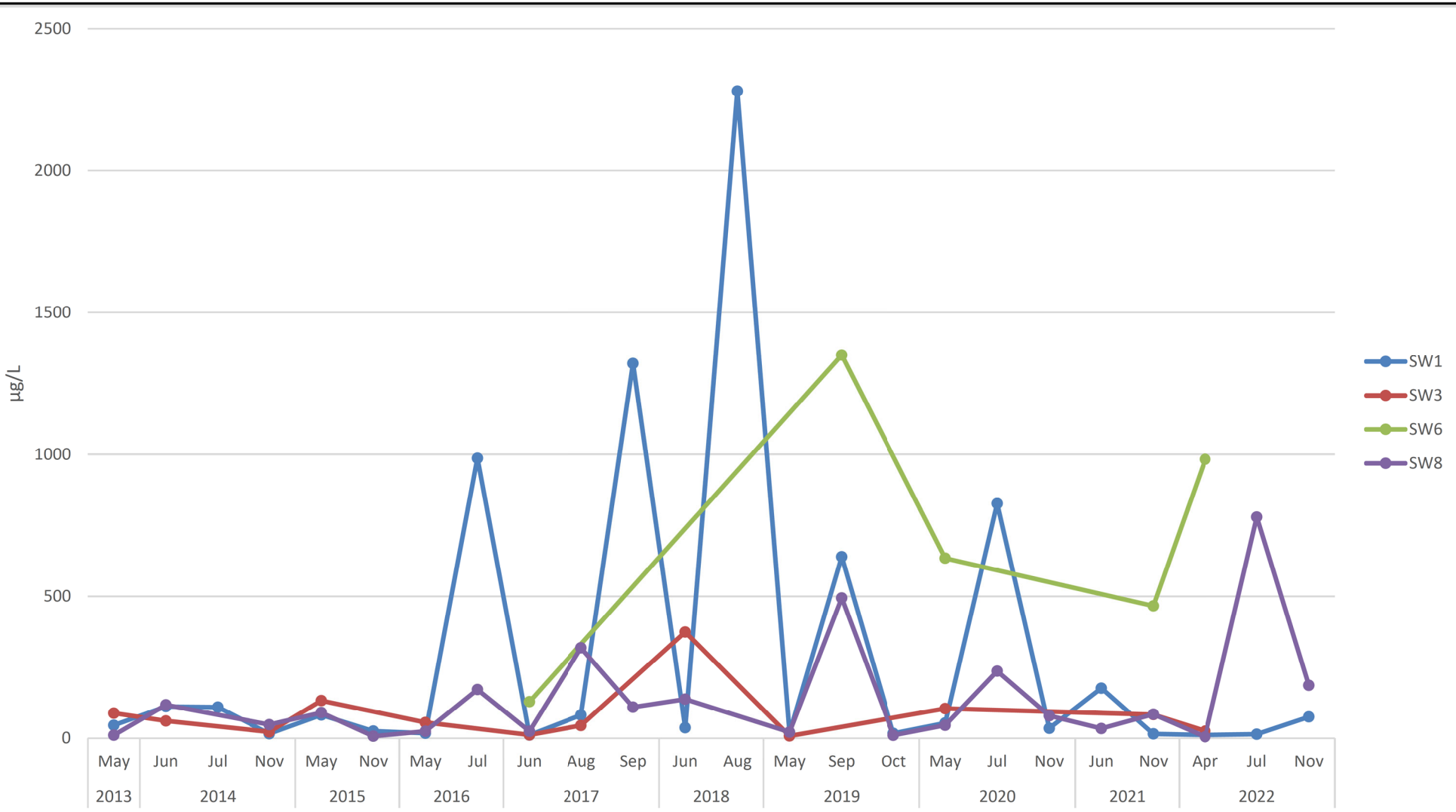


Hardness Concentrations - Surface Water

2022 Annual Report, Stoney Lake Road Landfill
348 County Road 6, Lakefield
The Corporation of the Township of Douro-Dummer

Figure:	**24**
Date:	2-Mar-23
Project Manager:	Cameron MacDougall
Project No.:	12987-004

CAMBIUM

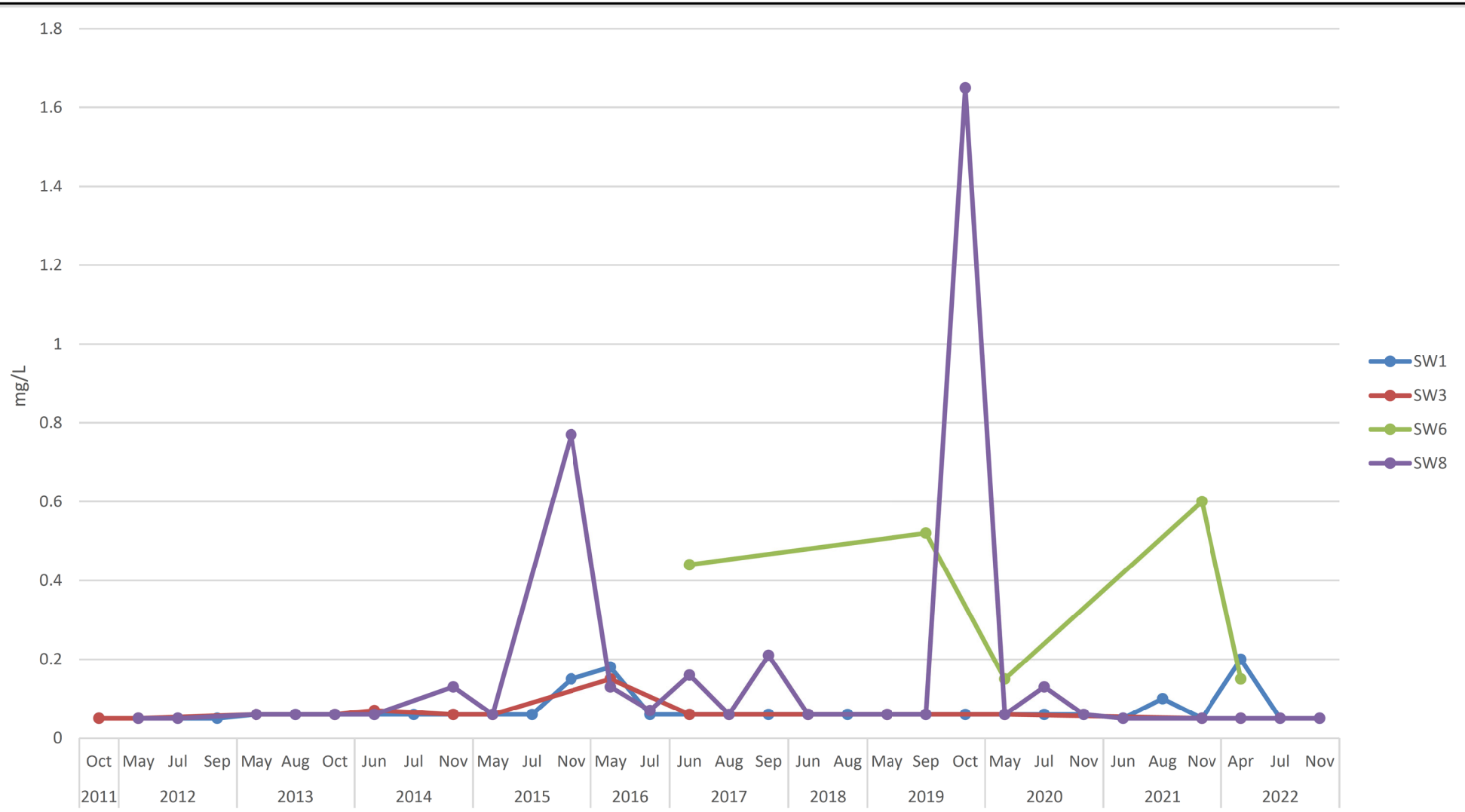


Manganese Concentrations - Surface Water

2022 Annual Report, Stoney Lake Road Landfill
348 County Road 6, Lakefield
The Corporation of the Township of Douro-Dummer

Figure:	**25**
Date:	2-Mar-23
Project Manager:	Cameron MacDougall
Project No.:	12987-004

CAMBIUM

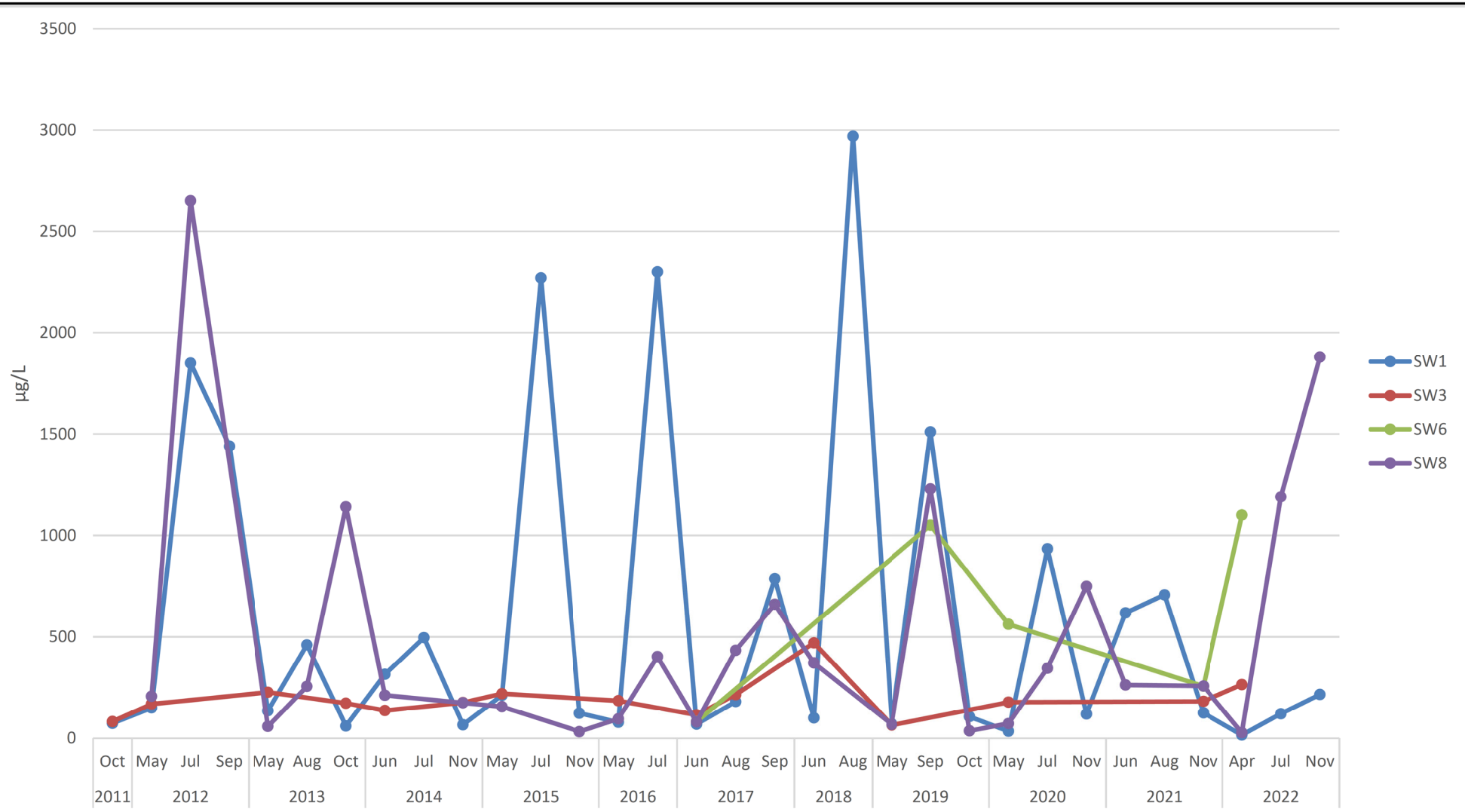


Nitrate Concentrations - Surface Water

2022 Annual Report, Stoney Lake Road Landfill
348 County Road 6, Lakefield
The Corporation of the Township of Douro-Dummer

Figure:	**26**
Date:	2-Mar-23
Project Manager:	Cameron MacDougall
Project No.:	12987-004

CAMBIUM

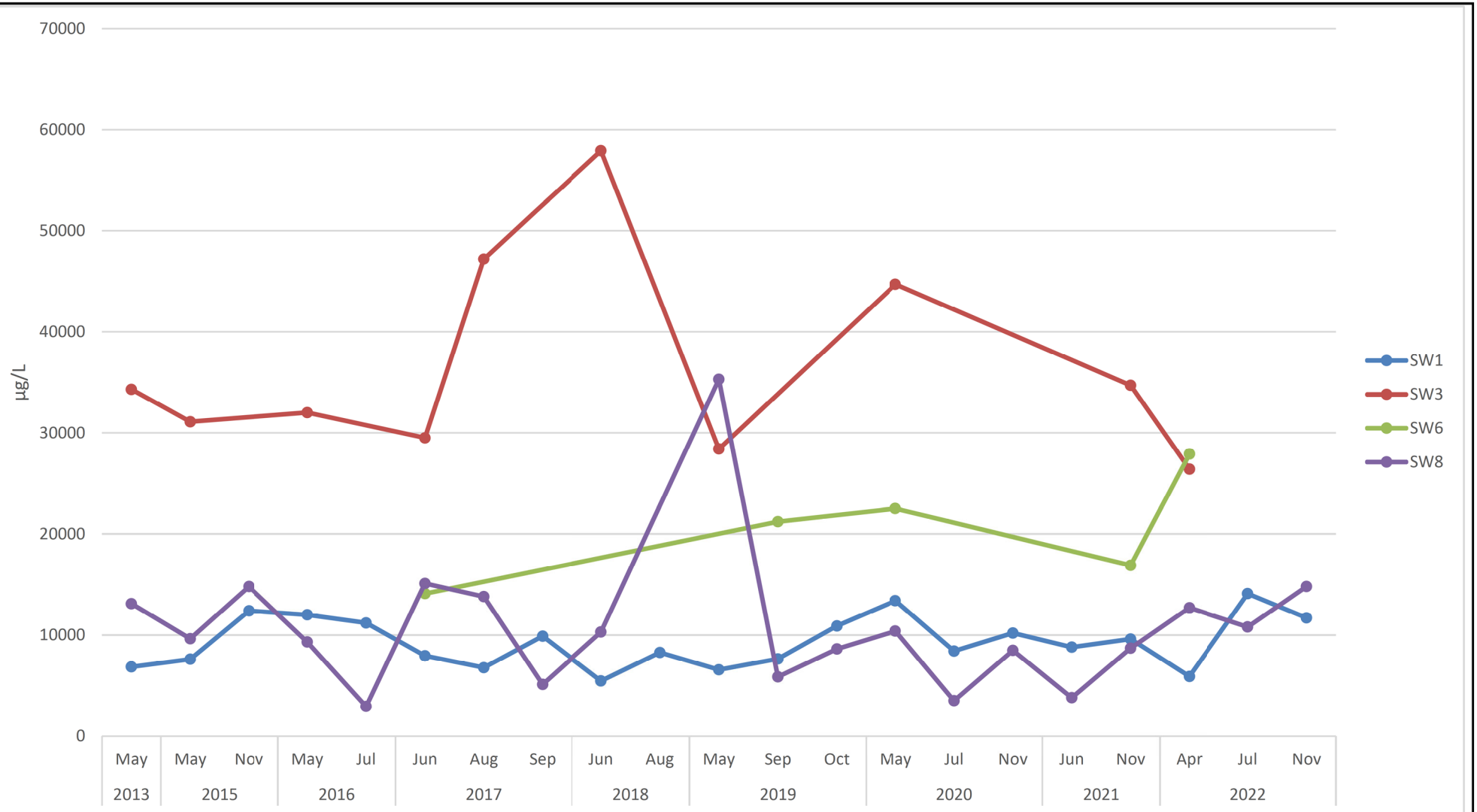


Iron Concentrations - Surface Water

2022 Annual Report, Stoney Lake Road Landfill
348 County Road 6, Lakefield
The Corporation of the Township of Douro-Dummer

Figure:	**27**
Date:	2-Mar-23
Project Manager:	Cameron MacDougall
Project No.:	12987-004

CAMBIUM

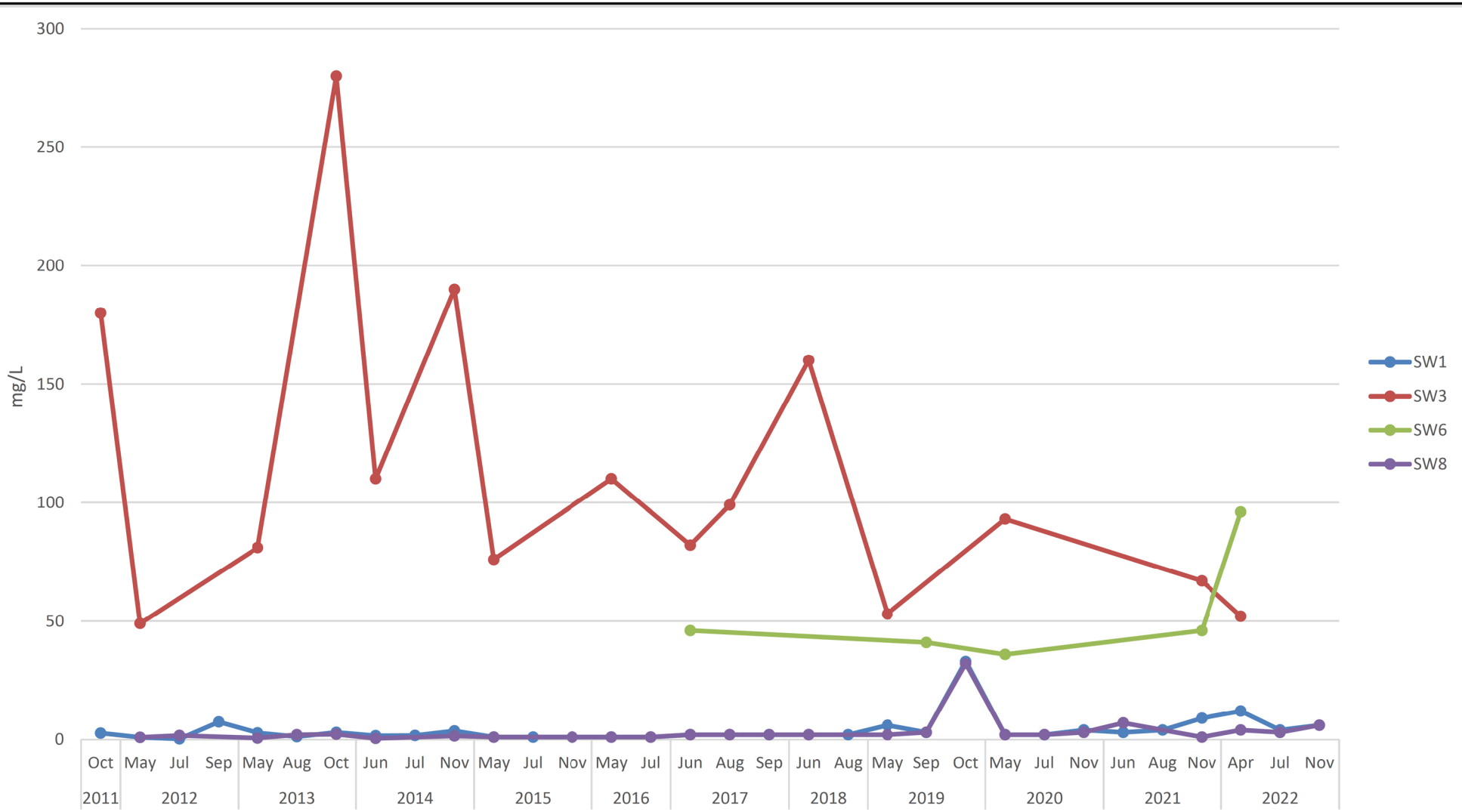


Sodium Concentrations - Surface Water

2022 Annual Report, Stoney Lake Road Landfill
348 County Road 6, Lakefield
The Corporation of the Township of Douro-Dummer

Figure:	**28**
Date:	2-Mar-23
Project Manager:	Cameron MacDougall
Project No.:	12987-004

CAMBIUM



Sulphate Concentrations - Surface Water

2022 Annual Report, Stoney Lake Road Landfill
348 County Road 6, Lakefield
The Corporation of the Township of Douro-Dummer

Figure:	**29**
Date:	2-Mar-23
Project Manager:	Cameron MacDougall
Project No.:	12987-004

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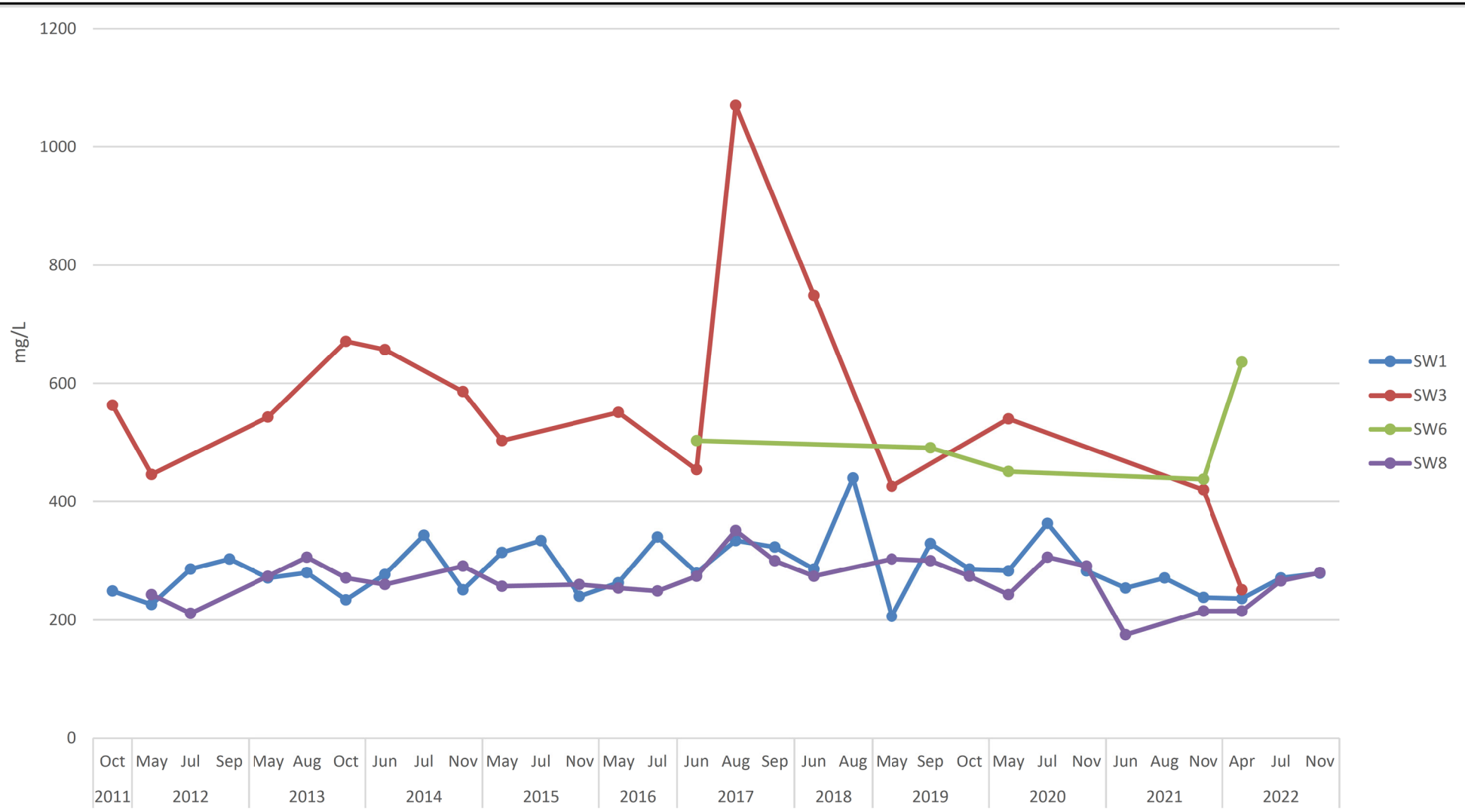

Total Dissolved Solids Concentrations - Surface Water

2022 Annual Report, Stoney Lake Road Landfill
348 County Road 6, Lakefield
The Corporation of the Township of Douro-Dummer

Figure:	**30**
Date:	2-Mar-23
Project Manager:	Cameron MacDougall
Project No.:	12987-004

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Appended Tables

Table Notes

RDL - reported detection limit for the current year

RUC - Reasonable Use Criteria

ODWQS - Ontario Drinking Water Quality Standards, O.Reg. 169/03

PWQO - Water Management, Policies, Guidelines, Provincial Water Quality Objectives (MOEE, 1994b)

PWQO for cadmium, copper, and lead depends on hardness

"-" Parameter not analyzed or measured

Unionized ammonia calculated using total ammonia and field data for pH and temperature

Table 1 Groundwater and Surface Water Monitoring Program

Location	Task	Frequency	Analytical Parameters
Groundwater			
TW02-2, TW05-2, TW06-2, TW07-2, TW08-2, TW09-2, TW10-2, TW11-2 1 QA/QC Duplicate	• Measure groundwater levels • Groundwater sampling • Field measurements (pH, temperature, ORP, conductivity)	Twice Annually (Spring & Autumn)	alkalinity, ammonia, arsenic, barium, boron, cadmium, chloride, chromium, conductivity, copper, iron, lead, manganese, mercury, nitrite, nitrate, TKN, pH, total phosphorus, TSS, TDS, sulphate, sodium, zinc, BOD, COD, phenols, hardness, DOC
TW02-1, TW03-1, TW04-1, TW05-1 1 QA/QC Duplicate	• Measure groundwater levels • Groundwater sampling • Field measurements (pH, temperature, ORP, conductivity)	Twice Annually (Spring & Autumn)	alkalinity, ammonia, barium, boron, calcium, chloride, conductivity, iron, manganese, magnesium, nitrate, pH, sodium, TDS, sulphate, COD, DOC, phenols, hardness, DOC
TW06-1, TW07-1, TW08-1, TW09-1	• Measure groundwater levels • Groundwater sampling • Field measurements (pH, temperature, ORP, conductivity)	Twice Annually (Spring & Autumn)	alkalinity, ammonia, arsenic, barium, boron, cadmium, calcium, chloride, chromium, conductivity, copper, iron, lead, magnesium, manganese, mercury, nitrite, nitrate, TKN, pH, total phosphorus, potassium, sodium, TDS, sulphate, zinc, COD, DOC, phenols, hardness Benzene, 1-4- Dichlorobenzene, Dichloromethane, Toluene, Vinyl Chloride
TW02-2, TW06-2 1 QA/QC Duplicate	• VOCs	Twice Annually (Spring & Autumn)	See List Below
All Wells (listed above) Gas Probes (GP1, GP2) On-site structures (Office, and Sorting Building)	• Landfill Gas Measurements	Twice Annually (Spring & Autumn)	CH4 and H2S
Surface Water			
SW1, SW3, SW6, SW8 1 QA/QC Duplicate	• Surface water sampling • Flow estimates • Field measurements (pH, temperature, conductivity, ORP, dissolved oxygen)	Three Times Annually (Spring, Summer, & Autumn)	alkalinity, ammonia, arsenic, barium, boron, cadmium, chloride, chromium, conductivity, copper, iron, lead, calcium, manganese, magnesium, potassium, sodium, dissolved mercury, nitrite, nitrate, TKN, pH, total phosphorus, TSS, TDS, sulphate, zinc, BOD, COD, DOC, phenols, hardness, unionized ammonia (field, calc)

*Dissolved mercury to be lab filtered with a 0.45 micron filter for all surface water samples.
**Lab to provide calculated unionized ammonia with provided field pH and temperature.

VOCs to be analyzed

Bromodichloromethane
Bromoform
Dibromochloromethane
Bromomethane
Carbon tetrachloride
Chloroethane
Chloroform
Chloromethane
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
1,1-Dichloroethane
1,2-Dichloroethane
1,1-Dichloroethylene
1,2-Dichloropropane
trans-1,2-Dichloroethene
cis-1,2-Dichloroethene
cis-1,3-Dichloropropene
trans-1,3-Dichloropropene
Ethylenedibromide
Dichloromethane
Monochlorobenzene
Styrene
1,1,2,2-Tetrachloroethane
Tetrachloroethene
Trichloroethylene
Vinyl Chloride
Trichlorofluoromethane
1,1,1-Trichloroethane
1,1,2-Trichloroethane
1,1,1,2-Tetrachloroethane

Table 2: Groundwater Elevations

Monitor	UTM Zone 17		Top of Casing Elevation (m)	Ground Elevation (m)	Measured Stick-Up (m)	Well Depth (m)	Screened Unit	Water Level Elevation (mASL)											
	Northing	Easting						07-Jun-11	31-Oct-11	15-May-12	24-Sep-12	09-Jun-14	14-Nov-14	19-May-15	03-Nov-15	19-May-16	03-Nov-16	07-Jun-17	29-Sep-17
TW02-1	4926781	720806	245.05	244.50	0.55	9.78	Hard Grey Limestone Bedrock	235.8	235.67	238.64	237.48	239.05	239.3	239.06	238.18	238.83	237.39	239.51	237.69
TW02-2	4926780	720808	245.16	244.41	0.75	6.87	Limestone Bedrock, Hard Grey Limestone Pebbles	241.18	240.91	243.90	243.04	241.69	241.53	241.71	240.56	241.18	237.39	242.26	239.94
TW03-1	4926738	720864	244.84	244.16	0.68	7.42	Grey Broken Limestone, Grey Limestone Pebbles	238.84	238.62	238.69	238.04	238.95	238.80	239.14	238.48	238.80	237.42	239.48	237.72
TW04-1	4926667	720896	245.74	245.64	0.10	11.13	Grey Broken Limestone	238.44	238.31	238.33	237.48	235.55	238.54	238.58	238.05	238.45	237.32	238.83	237.71
TW05-1	4926590	720958	241.40	240.43	0.97	7.97	Grey Broken Limestone	238.21	238.08	238.16	237.40	238.24	238.51	238.24	238.40	238.20	237.23	238.37	237.93
TW05-2	4926591	720960	241.40	240.43	0.97	5.75	Grey and Brown Sand, Broken Limestone Bedrock	238.23	238.07	238.18	237.40	238.23	238.19	238.25	237.88	238.22	237.18	238.41	237.70
TW06-1	4926664	720956	240.57	239.80	0.77	5.88	Fractured Limestone Bedrock	238.21	238.08	238.06	237.38	238.25	238.22	238.27	237.85	238.20	237.21	238.41	237.53
TW06-2	4926668	720957	240.35	239.55	0.80	4.08	Brown Sand, Fractured Limestone Bedrock	238.20	238.04	238.11	237.09	238.33	238.22	238.28	237.83	238.39	237.21	238.37	237.71
TW07-1	4926561	721004	239.66	238.77	0.89	10.03	Fractured Limestone Bedrock	-	-	243.78	243.11		239.04	238.20	237.75	238.10	237.24	-	237.53
TW07-2	4926559	721007	239.86	238.80	1.06	5.24	Grey Sand, Fractured Limestone Bedrock	237.71	237.69	237.71	237.40	237.69	237.72	237.72	237.67	237.72	237.25	-	237.48
TW08-1	4926777	720742	245.37	244.59	0.78	11.59	Fractured Limestone Bedrock	-	-	-	-	237.84	238.17	239.18	238.76	238.94	237.36	239.83	237.71
TW08-2	4926777	720744	245.34	244.54	0.80	5.33	Fractured Limestone Bedrock	241.49	241.57	242.46	-	-	241.51	241.97	241.19	241.37	-	242.68	240.10
TW09-1	4926519	721022	238.53	237.72	0.81	10.54	Limestone Bedrock	-	-	-	-	238.28	238.01	238.24	237.96	238.21	237.27	238.35	237.61
TW09-2	4926517	721026	238.20	237.18	1.02	4.29	Till	-	-	-	-	237.72	237.44	237.77	237.70	237.22	236.84	237.87	237.09
TW10-2	4926717	720890	241.20	240.38	0.82	3.78	-	-	-	-	-	-	238.81	238.85	238.25	236.90	-	238.94	237.86
TW11-2	4926689	720899	242.09	241.24	0.85	6.83	-	-	-	-	-	-	237.84	237.92	237.33	237.92	236.69	238.13	236.95
DP1	4926619	721120	-	-	0.90	2.20	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2: Groundwater Elevations

Monitor	UTM Zone 17		Top of Casing Elevation (m)	Ground Elevation (m)	Measured Stick-Up (m)	Well Depth (m)	Screened Unit	Water Level Elevation (mASL)									
	Northing	Easting						11-Jun-18	05-Nov-18	27-May-19	12-Nov-19	27-May-20	02-Nov-20	28-Jun-21	10-Nov-21	11-Apr-22	14-Nov-22
TW02-1	4926781	720806	245.05	244.50	0.55	9.78	Hard Grey Limestone Bedrock	238.76	237.72	239.61	238.02	239.03	237.94	237.92	238.94	239.61	237.39
TW02-2	4926780	720808	245.16	244.41	0.75	6.87	Limestone Bedrock, Hard Grey Limestone Pebbles	241.10	240.27	241.80	240.24	241.61	240.33	239.95	241.41	242.53	239.77
TW03-1	4926738	720864	244.84	244.16	0.68	7.42	Grey Broken Limestone, Grey Limestone Pebbles	238.84	238.11	239.76	237.03	239.55	238.19	238.51	238.98	239.95	237.55
TW04-1	4926667	720896	245.74	245.64	0.10	11.13	Grey Broken Limestone	238.30	237.72	238.94	237.74	238.54	237.82	237.83	238.51	238.85	237.44
TW05-1	4926590	720958	241.40	240.43	0.97	7.97	Grey Broken Limestone	238.08	237.74	238.42	237.71	238.25	237.69	237.72	238.18	238.40	237.33
TW05-2	4926591	720960	241.40	240.43	0.97	5.75	Grey and Brown Sand, Broken Limestone Bedrock	238.13	237.66	238.53	237.66	238.30	237.71	237.78	238.21	238.46	237.35
TW06-1	4926664	720956	240.57	239.80	0.77	5.88	Fractured Limestone Bedrock	238.07	237.59	238.44	237.59	238.27	237.61	237.67	238.23	238.39	237.32
TW06-2	4926668	720957	240.35	239.55	0.80	4.08	Brown Sand, Fractured Limestone Bedrock	238.07	237.60	238.39	237.59	238.28	237.66	237.67	238.23	238.35	237.33
TW07-1	4926561	721004	239.66	238.77	0.89	10.03	Fractured Limestone Bedrock	238.06	237.66	238.35	237.69	238.21	237.65	237.74	238.18	238.10	237.34
TW07-2	4926559	721007	239.86	238.80	1.06	5.24	Grey Sand, Fractured Limestone Bedrock	237.66	237.56	237.76	237.59	237.72	237.55	237.56	237.72	237.77	237.30
TW08-1	4926777	720742	245.37	244.59	0.78	11.59	Fractured Limestone Bedrock	238.73	237.74	-	237.63	239.12	238.01	237.97	239.02	239.72	237.39
TW08-2	4926777	720744	245.34	244.54	0.80	5.33	Fractured Limestone Bedrock	241.30	-	242.90	-	241.83	240.52	240.13	241.59	243.00	240.11
TW09-1	4926519	721022	238.53	237.72	0.81	10.54	Limestone Bedrock	238.09	237.67	238.38	237.75	238.24	237.73	237.76	238.20	238.26	237.36
TW09-2	4926517	721026	238.20	237.18	1.02	4.29	Till	237.31	237.15	237.39	237.19	237.33	237.17	237.19	237.31	237.14	236.93
TW10-2	4926717	720890	241.20	240.38	0.82	3.78	-	238.81	237.76	239.04	237.8	238.84	237.90	238.02	238.75	238.93	-
TW11-2	4926689	720899	242.09	241.24	0.85	6.83	-	237.66	236.86	238.19	237.04	237.85	237.01	237.10	237.75	238.07	236.66
DP1	4926619	721120	-	-	0.90	2.20	-	-	-	-	-	-	-	-	-	-	-0.88

Table 3: Vertical Gradients

Monitor	Screened Unit	Difference in Elevation of Bottom of Screen	Vertical Gradient (+ downward gradient, - upward gradient)							
			07-Jun-11	31-Oct-11	15-May-12	24-Sep-12	09-Jun-14	14-Nov-14	19-May-15	03-Nov-15
TW02-1	*Hard Grey Limestone Bedrock*	-3.02	1.78	1.74	1.74	1.84	0.87	0.74	0.88	0.79
TW02-2	Limestone Bedrock, Grey Limestone Pebbles									
TW05-1	*Grey Broken Limestone*	-2.22	0.01	0.00	0.01	0.00	0.00	-0.14	0.00	-0.23
TW05-2	Grey and Brown Sand, Broken Limestone Bedrock									
TW06-1	Fractured Limestone Bedrock	-1.58	-0.01	-0.03	0.03	-0.18	0.05	0.00	0.01	-0.01
TW06-2	Brown Sand, Fractured Limestone Bedrock									
TW07-1	*Fractured Limestone Bedrock*	-4.99	-	-	-1.22	-1.14	-	-0.26	-0.10	-0.02
TW07-2	Grey Sand, Fractured Limestone Bedrock									
TW08-1	Fractured Limestone Bedrock	-6.23	-	-	-	-	-	0.54	0.45	0.39
TW08-2	Limestone Bedrock									
TW09-1	Limestone Bedrock	-5.92	-	-	-	-	-0.09	-0.10	-0.08	-0.04
TW09-2	Till									

Table 3: Vertical Gradients

Monitor	Screened Unit	Difference in Elevation of Bottom of Screen	Vertical Gradient (+ downward gradient, - upward gradient)							
			19-May-16	03-Nov-16	07-Jun-17	29-Sep-17	11-Jun-18	05-Nov-18	27-May-19	12-Nov-19
TW02-1	*Hard Grey Limestone Bedrock*	-3.02	0.78	0.00	0.91	0.75	0.77	0.84	0.73	0.74
TW02-2	Limestone Bedrock, Grey Limestone Pebbles									
TW05-1	*Grey Broken Limestone*	-2.22	0.01	-0.02	0.02	-0.10	0.02	-0.04	0.05	-0.02
TW05-2	Grey and Brown Sand, Broken Limestone Bedrock									
TW06-1	Fractured Limestone Bedrock	-1.58	0.12	0.00	-0.03	0.11	0.00	0.01	-0.03	0.00
TW06-2	Brown Sand, Fractured Limestone Bedrock									
TW07-1	*Fractured Limestone Bedrock*	-4.99	-0.08	0.00	-	-0.01	-0.08	-0.02	-0.12	-0.02
TW07-2	Grey Sand, Fractured Limestone Bedrock									
TW08-1	Fractured Limestone Bedrock	-6.23	0.39	-	0.46	0.38	0.41	-	-	-
TW08-2	Limestone Bedrock									
TW09-1	Limestone Bedrock	-5.92	-0.17	-0.07	-0.08	-0.09	-0.13	-0.09	-0.17	-0.09
TW09-2	Till									

Table 3: Vertical Gradients

Monitor	Screened Unit	Difference in Elevation of Bottom of Screen	Vertical Gradient (+ downward gradient, - upward gradient)					
			27-May-20	02-Nov-20	28-Jun-21	10-Nov-21	11-Apr-22	14-Nov-22
TW02-1	*Hard Grey Limestone Bedrock*	-3.02	0.85	0.79	0.67	0.82	0.97	0.79
TW02-2	Limestone Bedrock, Grey Limestone Pebbles							
TW05-1	*Grey Broken Limestone*	-2.22	0.02	0.01	0.03	0.01	0.03	0.01
TW05-2	Grey and Brown Sand, Broken Limestone Bedrock							
TW06-1	Fractured Limestone Bedrock	-1.58	0.01	0.03	0.00	0.00	-0.03	0.01
TW06-2	Brown Sand, Fractured Limestone Bedrock							
TW07-1	*Fractured Limestone Bedrock*	-4.99	-0.10	-0.02	-0.04	-0.09	-0.07	-0.01
TW07-2	Grey Sand, Fractured Limestone Bedrock							
TW08-1	Fractured Limestone Bedrock	-6.23	0.43	0.40	0.35	0.41	0.53	0.44
TW08-2	Limestone Bedrock							
TW09-1	Limestone Bedrock	-5.92	-0.15	-0.09	-0.10	-0.15	-0.19	-0.07
TW09-2	Till							

Table 4: Groundwater Quality - Overburden/Upper Bedrock

	Unit	EQL	ODWQS	TW02-2 01 Oct 2011	TW02-2 16 May 2012	TW02-2 25 Sep 2012	TW02-2 04 Jun 2013	TW02-2 30 Oct 2013	TW02-2 09 Jun 2014	TW02-2 14 Nov 2014	TW02-2 19 May 2015	TW02-2 03 Nov 2015	TW02-2 19 May 2016
Metals													
Arsenic (filtered)	µg/L	0.1	**25**	0.4	0.3	0.6	0.3	1.0	<0.2	0.7	<0.2	3.8	<0.2
Barium (filtered)	µg/L	0.01	**1,000**	98.4	32.9	112	35.9	121	26.3	47.9	28.8	117	27.1
Boron (filtered)	µg/L	0.2	**5,000**	29.4	5.8	36.7	8.9	35.1	6.7	17.0	163	278	54
Calcium (filtered)	µg/L	10		234,000	99,100	246,000	101,000	273,000	92,300	151,000	109,000	476,000	97,000
Cadmium (filtered)	µg/L	0.003	**5**	<0.003	<0.003	0.007	0.025	0.017	0.011	<0.003	0.004	0.009	0.004
Chloride	µg/L	200	**250,000**	3,300	1,600	14,000	2,500	19,000	2,400	4,300	2,000	75,000	2,000
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	0.7	<0.5	0.5	<0.5	1.7	0.17	0.13	<0.03	0.96	0.41
Copper (filtered)	µg/L	0.02	**1,000**	1.0	0.7	0.7	0.6	0.7	0.93	0.75	0.72	0.22	0.91
Iron (filtered)	µg/L	2	**300**	**12,100**	26	**29,700**	72	**10,800**	30	**3,070**	15	**36,800**	23
Lead (filtered)	µg/L	0.01	**10**	<0.02	<0.02	0.05	0.02	0.04	0.14	0.01	<0.01	0.04	0.02
Magnesium (filtered)	µg/L	1		7,440	2,620	7,750	2,900	9,440	2,470	4,620	3,710	43,800	3,050
Manganese (filtered)	µg/L	0.01	**50**	**2,120**	41.1	**1,790**	**94.6**	**2,480**	2.41	**799**	13.2	**3,330**	1.46
Mercury (filtered)	µg/L	0.01	**1**	<0.1	<0.1	<0.1	0.03	-	-	-	-	0.05	<0.01
Phosphorus (filtered)	ug/L	3		40	<30	<30	60	-	-	-	<30	<30	<3
Phosphorus total (P2O5)	µg/L	10		-	-	-	-	-	-	-	-	-	-
Potassium (filtered)	µg/L	2		1,090	534	1,050	587	1,310	545	688	547	2,280	648
Sodium (filtered)	µg/L	10	**200,000**	2,800	1,590	5,180	2,180	10,400	1,780	4,200	2,750	74,500	2,300
Zinc (filtered)	µg/L	2	**5,000**	4	3	5	3	5	4	3	<2	6	4
Inorganics													
Alkalinity (total) as CaCO3	mg/L	2	**500**	**579**	292	**604**	265	**622**	245	381	266	**572**	221
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	-	-	-	-	-	-	-	-	-
Total Dissolved Solids	mg/L	3	**500**	**649**	191	**717**	303	**837**	274	471	340	**2,150**	283
Chemical Oxygen Demand	mg/L	5		<8	8	20	15	23	10	10	12	82	<8
Total Suspended Solids	mg/L	2		18	2	-	-	-	-	-	<2	35	<2
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	**13.5**	**5.8**	3.4	3.2	**11.8**	2.4	3.7	-	-	-
Biochemical Oxygen Demand	mg/L	2		13	<4	-	-	-	-	-	<4	10	<4
Phenols (4AAP)	mg/L	0.001		<0.002	0.014	<0.002	<0.002	-	-	-	<0.001	0.001	<0.001
Sulphate	mg/L	0.2	**500**	-	-	-	-	-	-	-	19	-	-
Sulphate (filtered)	mg/L	0.2	**500**	14	5.8	22	8.6	33	4.7	31	-	**940**	9
Ammonia as N	mg/L	0.01		0.1	0.1	0.3	0.1	0.2	<0.1	0.1	<0.1	0.8	<0.1
Nitrate (as N)	mg/L	0.05	**10**	0.06	0.56	<0.05	0.66	<0.06	0.93	<0.06	0.75	0.24	0.37
Nitrite (as N)	mg/L	0.03	**1**	<0.06	<0.06	<0.06	<0.03	-	-	-	<0.03	<0.03	<0.03
Total Kjeldahl Nitrogen	mg/L	0.1		<0.5	<0.5	0.5	<0.5	-	-	-	<0.5	2.1	<0.5
pH (Lab)	-	0.05	**6.5-8.5**	7.52	7.88	7.39	7.59	7.34	7.97	7.75	7.71	6.78	8.22
Electrical Conductivity (Lab)	µS/cm	1		1,080	545	1,210	521	1,260	458	739	507	2,460	491
Field													
DO (Field)	mg/L			-	-	-	-	-	-	-	-	-	-
Redox (Field)	mV			-	-	-	-	-	-	-	-	-	-
Temperature (Field)	oC			-	-	-	-	-	-	-	-	-	-
Conductivity (field)	µS/cm			-	-	-	-	-	-	-	-	-	-
pH (Field)	-		**6.5-8.5**	-	-	-	-	-	-	-	-	-	-

Table 4: Groundwater Quality - Overburden/Upper Bedrock

	Unit	EQL	ODWQS	TW02-2 26 Oct 2016	TW02-2 11 Jun 2018	TW02-2 05 Nov 2018	TW02-2 29 May 2019	TW02-2 28 Oct 2019	TW02-2 27 May 2020	TW02-2 12 Nov 2020	TW02-2 28 Jun 2021	TW02-2 10 Nov 2021	TW02-2 11 Apr 2022	TW02-2 14 Nov 2022
Metals														
Arsenic (filtered)	µg/L	0.1	**25**	3.9	<0.2	0.7	<0.2	0.8	<0.2	1.7	0.2	0.1	<0.1	0.5
Barium (filtered)	µg/L	0.01	**1,000**	264	31.7	145	28.7	125	25.5	116	56	37	23	76
Boron (filtered)	µg/L	0.2	**5,000**	591	13	415	160	236	13	389	33	25	6	79
Calcium (filtered)	µg/L	10		371,000	130,000	428,000	107,000	358,000	76,400	334,000	-	-	-	211,000
Cadmium (filtered)	µg/L	0.003	**5**	0.009	0.004	0.016	0.003	0.019	<0.003	0.012	<0.015	<0.015	<0.015	<0.01
Chloride	µg/L	200	**250,000**	42,000	2,000	18,000	2,000	20,000	1,000	16,000	4,800	2,200	3,100	3,000
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	1.29	0.04	0.39	0.13	0.34	<0.08	0.1	<1	2	<1	<1
Copper (filtered)	µg/L	0.02	**1,000**	0.09	0.57	0.83	0.7	0.8	0.6	0.9	1.9	0.4	1.2	1.1
Iron (filtered)	µg/L	2	**300**	**33,400**	<7	**3,460**	106	68	<7	**3,360**	**1,740**	**400**	12	**583**
Lead (filtered)	µg/L	0.01	**10**	<0.01	0.02	0.09	0.01	0.03	<0.01	0.02	0.08	<0.02	0.02	0.06
Magnesium (filtered)	µg/L	1		31,600	2,720	16,400	3,190	14,800	1,900	16,100	-	-	-	7,590
Manganese (filtered)	µg/L	0.01	**50**	**3,440**	6.8	**2,800**	**8,000**	**2,410**	0.16	**2,140**	-	-	1	**235**
Mercury (filtered)	µg/L	0.01	**1**	<0.01	0.04	<10	<10	<10	<10	<10	<0.02	<0.02	<0.02	<0.02
Phosphorus (filtered)	ug/L	3		<30	<30	<30	<30	30	<30	<30	-	-	-	-
Phosphorus total (P2O5)	µg/L	10		-	-	-	-	-	-	-	140	10	20	320
Potassium (filtered)	µg/L	2		3,750	504	1,010	780	1,010	488	1,480	-	-	-	-
Sodium (filtered)	µg/L	10	**200,000**	51,000	2,060	20,900	2,340	15,800	1,580	18,900	-	-	1,500	5,700
Zinc (filtered)	µg/L	2	**5,000**	5	<2	3	2	4	<2	3	<5	<5	<5	<5
Inorganics														
Alkalinity (total) as CaCO3	mg/L	2	**500**	**641**	278	**628**	398	**569**	238	**594**	416	312	215	**525**
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	-	-	-	-	-	-	450	332	233	**557**
Total Dissolved Solids	mg/L	3	**500**	**1,630**	326	**1,191**	251	**1,140**	226	**1,040**	453	302	222	**523**
Chemical Oxygen Demand	mg/L	5		73	9	16	<8	25	<8	48	25	12	<5	46
Total Suspended Solids	mg/L	2		133	<2	7	32	3	25	17	109	11	62	250
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	-	-	-	-	-	-	-	-	-	-	**6.4**
Biochemical Oxygen Demand	mg/L	2		7	<4	<4	<4	<4	<4	8	<3	<3	<3	<3
Phenols (4AAP)	mg/L	0.001		0.004	<0.001	0.003	0.001	0.003	<0.001	<0.001	<0.002	<0.002	<0.001	<0.001
Sulphate	mg/L	0.2	**500**	410	7	-	6	-	-	-	-	-	-	-
Sulphate (filtered)	mg/L	0.2	**500**	-	-	310	-	320	5	220	36	6	4	22
Ammonia as N	mg/L	0.01		1.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.03	0.02	<0.01	<0.01
Nitrate (as N)	mg/L	0.05	**10**	0.09	0.23	<0.06	0.36	<0.06	0.69	<0.06	0.12	0.81	0.98	<0.05
Nitrite (as N)	mg/L	0.03	**1**	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	<0.05	<0.05
Total Kjeldahl Nitrogen	mg/L	0.1		2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	0.3	0.2	1.8
pH (Lab)	-	0.05	**6.5-8.5**	6.81	7.93	7.06	7.47	7.53	7.91	7.23	7.65	8.07	7.45	7.54
Electrical Conductivity (Lab)	µS/cm	1		1,940	526	1,520	882	1,480	447	1,380	857	582	431	981
Field														
DO (Field)	mg/L			-	-	-	5.4	5.3	6.6	6.3	9.69	6.25	8.84	8.75
Redox (Field)	mV			-	-	-	76	139	155	15	110	64	58	-245
Temperature (Field)	oC			-	-	-	9.1	12	11.5	12	13.9	12.2	6.6	9
Conductivity (field)	µS/cm			-	-	-	365	1,103	390	935	472	264	357	811
pH (Field)	-		**6.5-8.5**	-	-	-	7.85	6.87	8.24	7.2	7.33	6.94	7.17	6.9

Table 4: Groundwater Quality - Overburden/Upper Bedrock

	Unit	EQL	ODWQS	TW05-2 01 Oct 2011	TW05-2 15 May 2012	TW05-2 25 Sep 2012	TW05-2 04 Jun 2013	TW05-2 30 Oct 2013	TW05-2 09 Jun 2014	TW05-2 14 Nov 2014	TW05-2 19 May 2015	TW05-2 03 Nov 2015	TW05-2 19 May 2016	TW05-2 26 Oct 2016
Metals														
Arsenic (filtered)	µg/L	0.1	**25**	1.3	1.2	1.1	1.1	0.7	1.0	2.0	0.2	0.8	0.3	0.5
Barium (filtered)	µg/L	0.01	**1,000**	60.4	37.5	55.5	29.9	36.7	43.7	44.8	51.6	44.2	35.5	32.8
Boron (filtered)	µg/L	0.2	**5,000**	643	328	842	871	890	1,640	1,590	1,640	1,710	3,130	3,380
Calcium (filtered)	µg/L	10		465,000	551,000	579,000	465,000	561,000	436,000	496,000	487,000	603,000	909,000	840,000
Cadmium (filtered)	µg/L	0.003	**5**	0.017	<0.003	0.018	0.051	0.025	0.010	0.013	0.007	0.011	0.009	0.011
Chloride	µg/L	200	**250,000**	87,000	48,000	120,000	33,000	76,000	86,000	130,000	130,000	140,000	190,000	230,000
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	1.7	0.7	0.7	0.6	1.7	0.70	6.27	0.11	0.18	0.52	0.49
Copper (filtered)	µg/L	0.02	**1,000**	3.0	3.1	3.3	2.8	3.2	3.29	5.96	3.17	1.66	6.70	7.83
Iron (filtered)	µg/L	2	**300**	**4,450**	26	**7,770**	133	**2,440**	**889**	**3,930**	**562**	**3,750**	35	30
Lead (filtered)	µg/L	0.01	**10**	0.03	0.05	0.02	0.06	0.04	0.05	0.02	<0.01	0.05	0.09	0.13
Magnesium (filtered)	µg/L	1		47,300	37,300	57,400	32,400	45,900	47,400	52,100	52,700	71,800	77,700	102,000
Manganese (filtered)	µg/L	0.01	**50**	**2,520**	**83.4**	**1,960**	**137**	**1,040**	**1,080**	**1,270**	**1,250**	**1,650**	**473**	**1,190**
Mercury (filtered)	µg/L	0.01	**1**	<0.1	<0.1	-	0.13	-	-	-	-	0.01	<0.01	<0.01
Phosphorus (filtered)	ug/L	3		90	-	-	100	-	-	-	<30	<30	11	<30
Phosphorus total (P2O5)	µg/L	10		-	-	-	-	-	-	-	-	-	-	-
Potassium (filtered)	µg/L	2		10,300	3,350	10,200	2,290	6,280	6,610	10,800	6,970	10,000	3,550	7,130
Sodium (filtered)	µg/L	10	**200,000**	54,100	42,300	75,600	33,200	64,600	61,300	80,200	75,000	117,000	124,000	170,000
Zinc (filtered)	µg/L	2	**5,000**	11	6	6	2	4	2	5	<2	3	<2	5
Inorganics														
Alkalinity (total) as CaCO3	mg/L	2	**500**	**505**	418	**530**	309	446	367	**566**	479	**595**	398	**539**
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	-	-	-	-	-	-	-	-	-	-
Total Dissolved Solids	mg/L	3	**500**	**1,960**	**2,300**	**2,140**	**2,020**	**2,230**	**2,120**	**2,300**	**2,550**	**2,530**	**3,670**	**4,040**
Chemical Oxygen Demand	mg/L	5		24	21	39	<8	24	<8	43	32	42	51	69
Total Suspended Solids	mg/L	2		120	-	-	-	-	-	-	3	9	<2	<2
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	**10.4**	**12.3**	**15.8**	**11.7**	**8.9**	**10.7**	**16.1**	-	-	-	-
Biochemical Oxygen Demand	mg/L	2		<2	-	-	-	-	-	-	<4	<4	<4	<4
Phenols (4AAP)	mg/L	0.001		<0.002	-	-	<0.002	-	-	-	0.001	0.001	<0.001	0.003
Sulphate	mg/L	0.2	**500**	-	-	-	-	-	-	-	**1,100**	-	-	**2,100**
Sulphate (filtered)	mg/L	0.2	**500**	**880**	**1,300**	**1,000**	**960**	**1,100**	**980**	**1,000**	-	**1,100**	**2,000**	-
Ammonia as N	mg/L	0.01		1.5	0.2	2.2	<0.1	0.8	1.4	2.5	1.6	2.3	0.2	0.4
Nitrate (as N)	mg/L	0.05	**10**	0.24	0.15	0.16	0.09	0.07	0.14	0.10	0.19	0.07	4.22	3.84
Nitrite (as N)	mg/L	0.03	**1**	<0.06	<0.06	-	<0.03	-	-	-	<0.03	<0.03	<0.03	0.03
Total Kjeldahl Nitrogen	mg/L	0.1		2.0	-	-	<0.5	-	-	-	2.3	3.1	1.4	1.1
pH (Lab)	-	0.05	**6.5-8.5**	7.62	7.59	7.28	7.37	7.73	7.68	7.76	7.34	7.26	7.67	7.16
Electrical Conductivity (Lab)	µS/cm	1		2,380	2,540	2,930	2,130	2,550	2,320	2,670	2,920	2,780	3,860	3,990
Field														
DO (Field)	mg/L			-	-	-	-	-	-	-	-	-	-	-
Redox (Field)	mV			-	-	-	-	-	-	-	-	-	-	-
Temperature (Field)	oC			-	-	-	-	-	-	-	-	-	-	-
Conductivity (field)	µS/cm			-	-	-	-	-	-	-	-	-	-	-
pH (Field)	-		**6.5-8.5**	-	-	-	-	-	-	-	-	-	-	-

Table 4: Groundwater Quality - Overburden/Upper Bedrock

	Unit	EQL	ODWQS	TW05-2 11 Jun 2018	TW05-2 05 Nov 2018	TW05-2 29 May 2019	TW05-2 28 Oct 2019	TW05-2 27 May 2020	TW05-2 12 Nov 2020	TW05-2 28 Jun 2021	TW05-2 10 Nov 2021	TW05-2 11 Apr 2022	TW05-2 14 Nov 2022
Metals													
Arsenic (filtered)	µg/L	0.1	**25**	0.4	0.5	0.3	0.5	0.2	0.8	0.3	0.4	0.3	0.3
Barium (filtered)	µg/L	0.01	**1,000**	32.2	31.6	25.4	24.9	24.6	33.5	28	27	24	32
Boron (filtered)	µg/L	0.2	**5,000**	**9,120**	**10,000**	**49,600**	**10,200**	**6,110**	**8,950**	**10,200**	**9,400**	**8,900**	**8,590**
Calcium (filtered)	µg/L	10		621,000	760,000	351,000	561,000	353,000	618,000	-	-	-	485,000
Cadmium (filtered)	µg/L	0.003	**5**	0.008	0.013	0.006	0.014	0.007	0.009	<0.029	<0.029	<0.029	<0.029
Chloride	µg/L	200	**250,000**	61,000	180,000	140,000	210,000	140,000	250,000	120,000	149,000	120,000	75,600
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	0.22	0.41	0.31	0.33	0.3	0.21	<1	<1	<1	<1
Copper (filtered)	µg/L	0.02	**1,000**	8.30	11.5	5.1	22.6	5	10.5	9.7	8.5	7.9	7.3
Iron (filtered)	µg/L	2	**300**	15	24	**440**	11	<7	21	206	52	53	21
Lead (filtered)	µg/L	0.01	**10**	0.03	0.07	0.15	0.63	0.03	0.09	0.23	<0.09	0.16	<0.09
Magnesium (filtered)	µg/L	1		119,000	204,000	113,000	210,000	122,000	230,000	-	-	-	210,000
Manganese (filtered)	µg/L	0.01	**50**	**67.7**	**199**	44.2	**52.9**	16	22.8	-	-	**84**	**205**
Mercury (filtered)	µg/L	0.01	**1**	0.03	<10	<10	<10	<10	<10	<0.02	<0.02	<0.02	<0.02
Phosphorus (filtered)	ug/L	3		60	<30	30	100	<30	40	-	-	-	-
Phosphorus total (P2O5)	µg/L	10		-	-	-	-	-	-	50	40	280	300
Potassium (filtered)	µg/L	2		1,950	3,940	1,550	2,610	1,470	2,600	-	-	-	-
Sodium (filtered)	µg/L	10	**200,000**	151,000	**242,000**	108,000	**206,000**	120,000	**213,000**	-	-	171,000	153,000
Zinc (filtered)	µg/L	2	**5,000**	<2	3	4	11	2	3	<10	<5	<5	<5
Inorganics													
Alkalinity (total) as CaCO3	mg/L	2	**500**	336	**507**	322	493	352	429	379	**516**	426	429
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	-	-	-	-	-	**2,270**	**2,160**	**2,070**	**2,080**
Total Dissolved Solids	mg/L	3	**500**	**3,010**	**4,489**	**1,900**	**3,690**	**3,100**	**4,070**	**2,020**	**2,110**	**2,050**	**1,980**
Chemical Oxygen Demand	mg/L	5		29	57	16	45	25	47	29	35	50	60
Total Suspended Solids	mg/L	2		2	5	86	4	246	83	46	37	439	320
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	-	-	-	-	-	-	-	-	-	**8.4**
Biochemical Oxygen Demand	mg/L	2		<4	<4	<4	<4	<4	5	<3	<3	<3	<3
Phenols (4AAP)	mg/L	0.001		0.001	0.006	0.003	0.008	0.004	<0.001	<0.002	<0.002	<0.001	<0.001
Sulphate	mg/L	0.2	**500**	**1,100**	-	**880**	-	**1,600**	-	-	-	-	-
Sulphate (filtered)	mg/L	0.2	**500**	-	**2,400**	-	**2,200**	-	**2,300**	**1,680**	**1,910**	**2,080**	**1,690**
Ammonia as N	mg/L	0.01		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.02	0.04	0.04	<0.01
Nitrate (as N)	mg/L	0.05	**10**	5.72	**11.3**	2.62	5.89	5.76	7.25	7.2	6.04	**11**	7.3
Nitrite (as N)	mg/L	0.03	**1**	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.5	0.24	<0.5	<0.5
Total Kjeldahl Nitrogen	mg/L	0.1		0.7	2.3	<0.5	0.7	0.9	1.4	1	1.2	1.4	1.3
pH (Lab)	-	0.05	**6.5-8.5**	7.67	7.52	7.33	7.76	7.79	7.53	7.65	7.83	7.46	7.54
Electrical Conductivity (Lab)	µS/cm	1		3,040	4,140	2,070	3,810	2,880	4,180	3,610	3,750	3,660	3,540
Field													
DO (Field)	mg/L			-	-	7.5	7.2	6.6	8.2	8.28	6.61	6.96	5.32
Redox (Field)	mV			-	-	118	165	224	101	88	60	72	-237
Temperature (Field)	oC			-	-	9.3	11.3	12.9	11.3	12.4	10.1	6.5	7.7
Conductivity (field)	µS/cm			-	-	1,708	1,058	2,658	2,827	2,946	1,393	2,643	2,770
pH (Field)	-		**6.5-8.5**	-	-	7.31	6.55	7.37	7.36	7.2	6.9	6.86	6.95

Table 4: Groundwater Quality - Overburden/Upper Bedrock

	Unit	EQL	ODWQS	TW06-2 01 Oct 2011	TW06-2 15 May 2012	TW06-2 25 Sep 2012	TW06-2 04 Jun 2013	TW06-2 30 Oct 2013	TW06-2 09 Jun 2014	TW06-2 14 Nov 2014	TW06-2 19 May 2015	TW06-2 03 Nov 2015	TW06-2 19 May 2016	TW06-2 26 Oct 2016
Metals														
Arsenic (filtered)	µg/L	0.1	**25**	0.5	0.5	0.4	0.7	0.6	0.4	0.6	<0.2	0.5	<0.2	<0.2
Barium (filtered)	µg/L	0.01	**1,000**	256	121	227	109	280	136	132	127	232	131	360
Boron (filtered)	µg/L	0.2	**5,000**	193	284	151	221	211	206	266	226	248	270	267
Calcium (filtered)	µg/L	10		195,000	160,000	168,000	143,000	183,000	163,000	171,000	151,000	225,000	163,000	256,000
Cadmium (filtered)	µg/L	0.003	**5**	0.017	<0.003	0.009	0.010	0.020	0.015	0.003	0.007	0.016	<0.003	0.021
Chloride	µg/L	200	**250,000**	46,000	26,000	30,000	23,000	36,000	31,000	28,000	23,000	49,000	27,000	58,000
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	1.1	<0.5	<0.5	0.6	1.8	0.69	1.66	0.08	0.18	0.46	0.37
Copper (filtered)	µg/L	0.02	**1,000**	2.5	1.2	1.7	1.1	2.5	1.49	2.33	4.22	2.36	0.81	1.69
Iron (filtered)	µg/L	2	**300**	4	<3	64	<3	22	<2	3	14	66	31	17
Lead (filtered)	µg/L	0.01	**10**	0.10	0.05	0.04	0.02	0.05	0.04	<0.01	0.04	0.08	<0.01	<0.01
Magnesium (filtered)	µg/L	1		11,900	13,000	10,200	10,600	11,800	12,100	14,500	12,200	20,300	11,800	16,200
Manganese (filtered)	µg/L	0.01	**50**	**926**	**54.0**	**1,110**	43.1	**1,240**	47.6	7.44	**122**	**1,230**	**139**	**1,970**
Mercury (filtered)	µg/L	0.01	**1**	-	-	-	-	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01
Phosphorus (filtered)	ug/L	3		-	-	-	<9	30	40	<30	<30	<30	6	<30
Phosphorus total (P2O5)	µg/L	10		-	-	-	-	-	-	-	-	-	-	-
Potassium (filtered)	µg/L	2		6,230	15,300	5,820	12,200	7,020	12,700	11,900	10,600	5,330	12,900	6,840
Sodium (filtered)	µg/L	10	**200,000**	25,200	27,200	22,900	17,000	23,100	22,800	37,000	20,600	44,400	23,500	47,700
Zinc (filtered)	µg/L	2	**5,000**	2	7	3	4	<2	3	<2	<2	<2	<2	2
Inorganics														
Alkalinity (total) as CaCO3	mg/L	2	**500**	491	451	420	371	468	458	366	391	**601**	354	438
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	-	-	400	-	-	-	-	-	-	-
Total Dissolved Solids	mg/L	3	**500**	**666**	**566**	**557**	**549**	**611**	**634**	**694**	**563**	**820**	**563**	**1,010**
Chemical Oxygen Demand	mg/L	5		18	26	16	16	17	19	21	20	22	17	10
Total Suspended Solids	mg/L	2		15	-	-	-	-	-	-	2	<3	<2	<2
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	**12.0**	**13.5**	5.0	**12.1**	**9.0**	**10.1**	**6.0**	-	-	-	-
Biochemical Oxygen Demand	mg/L	2		2	-	-	-	-	-	-	<4	<4	<4	<4
Phenols (4AAP)	mg/L	0.001		-	-	-	-	<0.002	<0.002	<0.002	<0.001	0.001	<0.001	0.002
Sulphate	mg/L	0.2	**500**	-	-	-	-	-	-	-	58	-	-	310
Sulphate (filtered)	mg/L	0.2	**500**	52	35	34	29	34	46	170	-	64	72	-
Ammonia as N	mg/L	0.01		2.3	1.0	1.6	1.0	2.3	1.3	<0.1	0.4	0.6	0.7	1.2
Nitrate (as N)	mg/L	0.05	**10**	0.60	0.48	<0.05	0.16	0.06	0.44	4.22	0.16	0.06	0.23	0.13
Nitrite (as N)	mg/L	0.03	**1**	-	-	-	-	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Total Kjeldahl Nitrogen	mg/L	0.1		-	-	-	-	2.4	1.6	<0.5	0.8	1.2	1.1	1.6
pH (Lab)	-	0.05	**6.5-8.5**	7.85	7.73	7.73	7.89	7.69	7.90	8.06	7.89	7.76	8.06	7.24
Electrical Conductivity (Lab)	µS/cm	1		1,110	941	981	812	1,030	976	1,040	811	1,310	888	1,390
Field														
DO (Field)	mg/L			-	-	-	-	-	-	-	-	-	-	-
Redox (Field)	mV			-	-	-	-	-	-	-	-	-	-	-
Temperature (Field)	oC			-	-	-	-	-	-	-	-	-	-	-
Conductivity (field)	µS/cm			-	-	-	-	-	-	-	-	-	-	-
pH (Field)	-		**6.5-8.5**	-	-	-	-	-	-	-	-	-	-	-

Table 4: Groundwater Quality - Overburden/Upper Bedrock

	Unit	EQL	ODWQS	TW06-2 11 Jun 2018	TW06-2 05 Nov 2018	TW06-2 29 May 2019	TW06-2 28 Oct 2019	TW06-2 27 May 2020	TW06-2 12 Nov 2020	TW06-2 28 Jun 2021	TW06-2 10 Nov 2021	TW06-2 11 Apr 2022	TW06-2 14 Nov 2022
Metals													
Arsenic (filtered)	µg/L	0.1	**25**	0.2	<0.2	<0.2	<0.2	<0.2	0.4	0.2	0.2	<0.1	0.2
Barium (filtered)	µg/L	0.01	**1,000**	152	354	114	287	157	241	237	128	118	300
Boron (filtered)	µg/L	0.2	**5,000**	256	175	80	359	217	361	193	218	62	213
Calcium (filtered)	µg/L	10		205,000	324,000	112,000	252,000	140,000	218,000	-	-	-	220,000
Cadmium (filtered)	µg/L	0.003	**5**	0.007	0.012	0.007	0.012	0.004	0.014	0.017	<0.015	<0.015	0.017
Chloride	µg/L	200	**250,000**	35,000	180,000	5,000	110,000	24,000	53,000	36,400	24,400	12,100	52,500
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	0.10	0.23	0.12	0.14	0.11	<0.08	<1	<1	<1	<1
Copper (filtered)	µg/L	0.02	**1,000**	1.35	2.08	0.9	1.9	1.2	2.4	2.6	2.5	1.4	2.1
Iron (filtered)	µg/L	2	**300**	<7	39	11	10	<7	18	17	11	<5	<5
Lead (filtered)	µg/L	0.01	**10**	0.03	0.09	0.01	0.03	<0.01	0.03	0.06	<0.02	<0.02	0.06
Magnesium (filtered)	µg/L	1		12,700	17,500	5,330	15,100	12,000	12,600	-	-	-	15,600
Manganese (filtered)	µg/L	0.01	**50**	34.9	**1,390**	**463**	**1,320**	**74.7**	**781**	-	-	**209**	**1,540**
Mercury (filtered)	µg/L	0.01	**1**	0.03	<10	<10	<10	<10	<10	<0.02	<0.02	<0.02	<0.02
Phosphorus (filtered)	ug/L	3		50	<30	<30	30	40	<30	-	-	-	-
Phosphorus total (P2O5)	µg/L	10		-	-	-	-	-	-	30	40	20	190
Potassium (filtered)	µg/L	2		11,400	5,260	2,320	4,390	9,650	5,990	-	-	-	-
Sodium (filtered)	µg/L	10	**200,000**	27,500	39,900	7,510	36,600	20,600	37,800	-	-	9,500	32,100
Zinc (filtered)	µg/L	2	**5,000**	<2	3	<2	2	2	<2	<5	<5	<5	<5
Inorganics													
Alkalinity (total) as CaCO3	mg/L	2	**500**	392	434	276	415	361	446	419	343	276	**508**
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	-	-	-	-	-	**582**	388	322	**615**
Total Dissolved Solids	mg/L	3	**500**	**577**	**1,091**	489	**909**	454	**757**	**577**	411	320	**665**
Chemical Oxygen Demand	mg/L	5		19	14	<8	11	16	14	9	29	<5	27
Total Suspended Solids	mg/L	2		<2	14	7	3	15	20	24	56	13	23
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	-	-	-	-	-	-	-	-	-	**5.5**
Biochemical Oxygen Demand	mg/L	2		<4	5	<4	<4	<4	<4	3	3	<3	<3
Phenols (4AAP)	mg/L	0.001		0.001	0.005	<0.001	0.004	0.001	<0.001	<0.002	<0.002	<0.001	<0.001
Sulphate	mg/L	0.2	**500**	70	220	23	140	49	98	-	-	-	-
Sulphate (filtered)	mg/L	0.2	**500**	-	-	-	-	-	-	106	50	17	96
Ammonia as N	mg/L	0.01		1.2	1.1	0.4	0.7	1.3	1.6	0.16	0.1	0.17	1.57
Nitrate (as N)	mg/L	0.05	**10**	1.09	0.06	1.98	0.15	0.17	0.08	1.94	1.01	3.3	0.05
Nitrite (as N)	mg/L	0.03	**1**	<0.03	<0.03	<0.03	<0.03	<0.03	0.07	<0.05	<0.05	0.05	<0.05
Total Kjeldahl Nitrogen	mg/L	0.1		1.5	1.1	0.6	0.6	1.6	1.8	0.6	0.5	0.5	2
pH (Lab)	-	0.05	**6.5-8.5**	7.92	7.41	8.04	7.77	7.97	7.74	7.72	7.88	7.4	7.44
Electrical Conductivity (Lab)	µS/cm	1		919	1,550	572	1,350	783	1,110	1,080	783	616	1,230
Field													
DO (Field)	mg/L			-	-	4.2	7	6.3	8.3	2.82	3.84	2.85	4.18
Redox (Field)	mV			-	-	118	167	124	55	53	29	52	-229
Temperature (Field)	oC			-	-	8.6	11.3	12.5	11.3	12.1	9.5	5.4	9
Conductivity (field)	µS/cm			-	-	517	1,006	626	731	1,012	341	519	966
pH (Field)	-		**6.5-8.5**	-	-	7.71	7.01	7.27	7.4	7.16	7.12	6.98	6.85

Table 4: Groundwater Quality - Overburden/Upper Bedrock

	Unit	EQL	ODWQS	TW07-2 01 Oct 2011	TW07-2 15 May 2012	TW07-2 25 Sep 2012	TW07-2 04 Jun 2013	TW07-2 30 Oct 2013	TW07-2 09 Jun 2014	TW07-2 14 Nov 2014	TW07-2 19 May 2015	TW07-2 03 Nov 2015	TW07-2 19 May 2016	TW07-2 26 Oct 2016
Metals														
Arsenic (filtered)	µg/L	0.1	**25**	2.4	2.1	1.9	2.0	2.1	1.7	2.7	1.3	2.4	1.5	2.2
Barium (filtered)	µg/L	0.01	**1,000**	244	240	165	167	203	198	192	205	202	163	143
Boron (filtered)	µg/L	0.2	**5,000**	590	669	416	358	421	418	615	479	513	821	605
Calcium (filtered)	µg/L	10		246,000	294,000	186,000	209,000	234,000	289,000	266,000	328,000	334,000	376,000	246,000
Cadmium (filtered)	µg/L	0.003	**5**	0.023	<0.003	<0.003	0.006	<0.003	<0.003	0.003	<0.003	<0.003	<0.003	<0.003
Chloride	µg/L	200	**250,000**	150,000	110,000	84,000	73,000	94,000	170,000	140,000	150,000	**270,000**	210,000	130,000
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	1.8	0.6	<0.5	<0.5	2.2	0.26	6.08	0.03	0.03	0.36	0.53
Copper (filtered)	µg/L	0.02	**1,000**	1.1	1.1	0.8	1.2	2.8	1.46	2.82	0.08	0.29	0.11	0.51
Iron (filtered)	µg/L	2	**300**	**7,580**	**9,420**	**5,470**	**6,840**	**7,170**	**8,520**	**7,750**	**10,100**	**10,400**	**10,700**	**7,250**
Lead (filtered)	µg/L	0.01	**10**	<0.02	0.02	0.04	0.11	<0.02	0.11	0.02	<0.01	0.05	0.05	0.05
Magnesium (filtered)	µg/L	1		26,000	31,900	20,100	23,700	24,800	32,300	27,900	35,600	38,100	37,400	27,400
Manganese (filtered)	µg/L	0.01	**50**	**2,030**	**2,350**	**1,460**	**1,630**	**1,880**	**1,910**	**1,940**	**2,630**	**2,480**	**2,490**	**1,950**
Mercury (filtered)	µg/L	0.01	**1**	-	-	-	-	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01
Phosphorus (filtered)	ug/L	3		-	-	-	12	40	<30	<30	180	<30	11	<30
Phosphorus total (P2O5)	µg/L	10		-	-	-	-	-	-	-	-	-	-	-
Potassium (filtered)	µg/L	2		3,040	3,150	2,330	2,220	2,860	2,980	3,450	2,320	3,060	2,600	2,450
Sodium (filtered)	µg/L	10	**200,000**	95,300	84,500	60,600	42,600	52,400	63,900	88,200	79,200	144,000	122,000	87,100
Zinc (filtered)	µg/L	2	**5,000**	3	5	<2	<2	<2	<2	7	<2	<2	<2	6
Inorganics														
Alkalinity (total) as CaCO3	mg/L	2	**500**	340	350	322	332	336	382	391	376	371	373	337
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	-	-	**619**	-	-	-	-	-	-	-
Total Dissolved Solids	mg/L	3	**500**	**1,200**	**1,200**	**829**	**957**	**989**	**1,390**	**1,270**	**1,380**	**1,710**	**1,650**	**1,070**
Chemical Oxygen Demand	mg/L	5		<8	11	14	<8	8	22	21	15	15	19	17
Total Suspended Solids	mg/L	2		17	-	-	-	-	-	-	40	20	23	19
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	**6.0**	**8.8**	4.1	**5.6**	3.7	**6.6**	**5.1**	-	-	-	-
Biochemical Oxygen Demand	mg/L	2		<2	-	-	-	-	-	-	<4	<4	<4	<4
Phenols (4AAP)	mg/L	0.001		-	-	-	-	<0.002	<0.002	0.005	<0.001	0.002	<0.001	0.001
Sulphate	mg/L	0.2	**500**	-	-	-	-	-	-	-	380	-	-	400
Sulphate (filtered)	mg/L	0.2	**500**	410	190	220	280	310	410	460	-	490	**550**	-
Ammonia as N	mg/L	0.01		0.1	<0.1	<0.1	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2
Nitrate (as N)	mg/L	0.05	**10**	<0.05	<0.05	0.25	<0.06	<0.06	1.16	<0.06	<0.06	<0.06	<0.06	<0.06
Nitrite (as N)	mg/L	0.03	**1**	-	-	-	-	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Total Kjeldahl Nitrogen	mg/L	0.1		-	-	-	-	<0.5	<0.5	<0.5	1.1	<0.5	<0.5	<0.5
pH (Lab)	-	0.05	**6.5-8.5**	7.90	7.52	7.78	7.69	8.02	7.67	7.88	7.51	7.40	7.85	7.39
Electrical Conductivity (Lab)	µS/cm	1		1,740	1,910	1,330	1,250	1,440	1,760	1,770	1,810	2,230	2,200	1,460
Field														
DO (Field)	mg/L			-	-	-	-	-	-	-	-	-	-	-
Redox (Field)	mV			-	-	-	-	-	-	-	-	-	-	-
Temperature (Field)	oC			-	-	-	-	-	-	-	-	-	-	-
Conductivity (field)	µS/cm			-	-	-	-	-	-	-	-	-	-	-
pH (Field)	-		**6.5-8.5**	-	-	-	-	-	-	-	-	-	-	-

Table 4: Groundwater Quality - Overburden/Upper Bedrock

	Unit	EQL	ODWQS	TW07-2 11 Jun 2018	TW07-2 05 Nov 2018	TW07-2 29 May 2019	TW07-2 28 Oct 2019	TW07-2 27 May 2020	TW07-2 12 Nov 2020	TW07-2 28 Jun 2021	TW07-2 10 Nov 2021	TW07-2 11 Apr 2022	TW07-2 23 Nov 2022
Metals													
Arsenic (filtered)	µg/L	0.1	**25**	1.4	1.7	1.2	0.7	0.3	1	<3	1.7	1.4	1.6
Barium (filtered)	µg/L	0.01	**1,000**	132	128	128	96.5	55.3	96.2	105	100	94	106
Boron (filtered)	µg/L	0.2	**5,000**	1,100	939	1,250	1,490	1,250	1,390	1,500	1,560	1,480	1,620
Calcium (filtered)	µg/L	10		384,000	341,000	339,000	263,000	257,000	244,000	-	-	-	248,000
Cadmium (filtered)	µg/L	0.003	**5**	0.004	<0.003	0.004	0.005	<0.003	0.003	<0.3	<0.015	<0.015	<0.012
Chloride	µg/L	200	**250,000**	170,000	150,000	**280,000**	130,000	130,000	140,000	176,000	138,000	128,000	216,000
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	0.23	0.13	0.14	0.15	<0.08	0.14	<3	<1	<1	<1
Copper (filtered)	µg/L	0.02	**1,000**	0.36	0.82	1.2	0.3	1.2	0.7	<2	0.1	1.5	1.4
Iron (filtered)	µg/L	2	**300**	**9,540**	**7,630**	**8,410**	267	93	**1,520**	**6,410**	**5,580**	**6,460**	**6,080**
Lead (filtered)	µg/L	0.01	**10**	0.02	<0.01	0.01	0.03	<0.01	0.06	<0.9	<0.04	<0.04	<0.04
Magnesium (filtered)	µg/L	1		36,200	32,600	41,000	30,500	30,500	26,800	-	-	-	31,600
Manganese (filtered)	µg/L	0.01	**50**	**2,810**	**2,550**	**2,470**	**2,250**	**754**	**1,660**	-	-	**1,910**	**1,840**
Mercury (filtered)	µg/L	0.01	**1**	0.09	<10	<10	<10	<10	<10	<0.02	<0.02	<0.02	<0.02
Phosphorus (filtered)	ug/L	3		50	<30	220	40	250	150	-	-	-	-
Phosphorus total (P2O5)	µg/L	10		-	-	-	-	-	-	170	30	50	2,350
Potassium (filtered)	µg/L	2		2,730	3,000	2,460	2,480	2,430	2,800	-	-	-	3,000
Sodium (filtered)	µg/L	10	**200,000**	92,700	94,500	127,000	123,000	108,000	114,000	-	-	88,900	-
Zinc (filtered)	µg/L	2	**5,000**	2	3	4	5	<2	3	<5	<5	<5	<5
Inorganics													
Alkalinity (total) as CaCO3	mg/L	2	**500**	335	323	382	345	341	348	307	357	322	318
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	-	-	-	-	-	**760**	**681**	**776**	**750**
Total Dissolved Solids	mg/L	3	**500**	**1,620**	**1,351**	**1,590**	**1,320**	**1,230**	**1,200**	**939**	**888**	**916**	**1,080**
Chemical Oxygen Demand	mg/L	5		17	15	11	13	20	14	14	32	15	143
Total Suspended Solids	mg/L	2		23	16	224	19	254	200	134	44	196	1,030
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	-	-	-	-	-	-	-	-	-	1.2
Biochemical Oxygen Demand	mg/L	2		<4	<4	<4	<4	<4	<4	<3	<3	<3	<3
Phenols (4AAP)	mg/L	0.001		0.003	0.004	0.007	0.002	0.005	<0.001	<0.002	<0.002	<0.001	<0.001
Sulphate	mg/L	0.2	**500**	**560**	490	**520**	460	470	410	-	-	-	-
Sulphate (filtered)	mg/L	0.2	**500**	-	-	-	-	-	-	362	360	468	424
Ammonia as N	mg/L	0.01		0.1	0.2	0.2	0.2	0.1	0.1	0.14	0.16	0.13	0.28
Nitrate (as N)	mg/L	0.05	**10**	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.06	<0.05	<0.3	0.06
Nitrite (as N)	mg/L	0.03	**1**	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	<0.3	<0.05
Total Kjeldahl Nitrogen	mg/L	0.1		<0.5	<0.5	<0.5	<0.5	<0.5	0.7	0.5	0.4	0.4	2.2
pH (Lab)	-	0.05	**6.5-8.5**	7.65	7.42	7.07	7.78	7.53	7.61	7.59	7.87	7.43	7.46
Electrical Conductivity (Lab)	µS/cm	1		1,920	1,740	2,140	1,730	1,560	1,610	17,100	1,620	1,670	1,960
Field													
DO (Field)	mg/L			-	-	6.6	5.2	8.9	4.7	2.51	3.19	3.58	4.26
Redox (Field)	mV			-	-	-15	162	211	-15	22	56	-88	-4
Temperature (Field)	oC			-	-	8.5	11.9	13.4	11.9	11.9	11	5.9	10.5
Conductivity (field)	µS/cm			-	-	1,694	1,751	1,438	1,065	1,575	669	1,360	1,656
pH (Field)	-		**6.5-8.5**	-	-	7.03	**6.35**	7.17	7.57	7.02	6.92	7	6.67

Table 4: Groundwater Quality - Overburden/Upper Bedrock

	Unit	EQL	ODWQS	TW08-2 23 Dec 2014	TW08-2 19 May 2015	TW08-2 03 Nov 2015	TW08-2 19 May 2016	TW08-2 29 May 2019	TW08-2 27 May 2020	TW08-2 12 Nov 2020	TW08-2 10 Nov 2021	TW08-2 11 Apr 2022
Metals												
Arsenic (filtered)	µg/L	0.1	**25**	<0.2	<0.2	0.5	<0.2	<0.2	<0.2	0.3	<0.1	<0.1
Barium (filtered)	µg/L	0.01	**1,000**	30.3	25.4	113	30.4	29.3	21.9	43.6	31	22
Boron (filtered)	µg/L	0.2	**5,000**	8.5	30.7	21.9	11	13	6	93	10	6
Calcium (filtered)	µg/L	10		98,500	99,800	168,000	93,800	98,300	85,300	128,000	-	-
Cadmium (filtered)	µg/L	0.003	**5**	<0.003	<0.003	0.005	<0.003	<0.003	<0.003	<0.003	<0.015	<0.015
Chloride	µg/L	200	**250,000**	1,100	2,000	5,000	2,000	2,000	2,000	3,000	2,800	3,000
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	<0.03	0.08	<0.03	0.36	0.2	0.19	<0.08	<1	<1
Copper (filtered)	µg/L	0.02	**1,000**	0.84	0.30	0.74	1.07	0.7	0.5	1.3	0.4	1.4
Iron (filtered)	µg/L	2	**300**	2	4	33	16	20	<7	<7	<5	6
Lead (filtered)	µg/L	0.01	**10**	0.01	<0.01	0.09	0.01	0.02	<0.01	0.02	<0.02	<0.02
Magnesium (filtered)	µg/L	1		2,950	2,760	6,720	2,490	2,820	2,050	3,050	-	-
Manganese (filtered)	µg/L	0.01	**50**	2.90	1.16	**70.5**	0.24	0.91	0.13	1.67	-	<1
Mercury (filtered)	µg/L	0.01	**1**	0.04	<0.01	<0.01	<0.01	<10	<10	<10	<0.02	<0.02
Phosphorus (filtered)	ug/L	3		360	<30	<30	6	<30	220	770	-	-
Phosphorus total (P2O5)	µg/L	10		-	-	-	-	-	-	-	820	320
Potassium (filtered)	µg/L	2		584	463	2,510	657	444	400	1,180	-	-
Sodium (filtered)	µg/L	10	**200,000**	1,870	1,890	4,020	1,800	2,860	1,610	2,390	-	1,500
Zinc (filtered)	µg/L	2	**5,000**	6	3	11	6	3	2	4	<5	<5
Inorganics												
Alkalinity (total) as CaCO3	mg/L	2	**500**	258	246	446	207	229	236	**1,080**	252	199
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	-	-	-	-	-	-	272	225
Total Dissolved Solids	mg/L	3	**500**	300	303	491	277	234	234	397	252	212
Chemical Oxygen Demand	mg/L	5		<8	<8	<8	<8	<8	<8	9	5	<5
Total Suspended Solids	mg/L	2		-	-	<2	<2	35	-	1,350	3,650	3,160
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	<1	<1	-	-	-	1	-	-	-
Biochemical Oxygen Demand	mg/L	2		-	-	<4	<4	<4	-	<4	<3	<3
Phenols (4AAP)	mg/L	0.001		<0.002	<0.002	0.003	<0.001	<0.001	<0.002	<0.001	<0.002	<0.001
Sulphate	mg/L	0.2	**500**	5.0	5	-	-	8	4	7	-	-
Sulphate (filtered)	mg/L	0.2	**500**	-	-	23	5	-	-	-	4	4
Ammonia as N	mg/L	0.01		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.01	0.01
Nitrate (as N)	mg/L	0.05	**10**	1.58	1.22	0.17	0.67	0.61	1.08	1.18	1.94	0.94
Nitrite (as N)	mg/L	0.03	**1**	<0.03	<0.03	0.07	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05
Total Kjeldahl Nitrogen	mg/L	0.1		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.4	0.2
pH (Lab)	-	0.05	**6.5-8.5**	8.05	8.05	7.93	8.17	8.18	8	7.69	8.05	7.4
Electrical Conductivity (Lab)	µS/cm	1		465	469	856	448	422	424	523	487	411
Field												
DO (Field)	mg/L			-	-	-	-	5.7	8.3	9.9	9.69	9.66
Redox (Field)	mV			-	-	-	-	-	45	83	56	73
Temperature (Field)	oC			-	-	-	-	10.1	12.6	-	12.1	6.1
Conductivity (field)	µS/cm			-	-	-	-	404	365	413	219	342
pH (Field)	-		**6.5-8.5**	-	-	-	-	7.56	7.5	8.04	7.27	7.15

Table 4: Groundwater Quality - Overburden/Upper Bedrock

	Unit	EQL	ODWQS	TW09-2 01 Oct 2011	TW09-2 15 May 2012	TW09-2 25 Sep 2012	TW09-2 04 Jun 2013	TW09-2 30 Oct 2013	TW09-2 09 Jun 2014	TW09-2 14 Nov 2014	TW09-2 19 May 2015	TW09-2 03 Nov 2015	TW09-2 19 May 2016	TW09-2 26 Oct 2016
Metals														
Arsenic (filtered)	µg/L	0.1	**25**	0.2	0.4	0.2	0.4	0.2	0.3	0.3	<0.2	0.4	<0.2	0.2
Barium (filtered)	µg/L	0.01	**1,000**	329	337	297	274	334	108	258	289	292	303	263
Boron (filtered)	µg/L	0.2	**5,000**	11.6	32.0	12.2	12.9	13.2	19.6	15.8	32.4	16.7	30	16
Calcium (filtered)	µg/L	10		101,000	97,200	92,200	98,000	101,000	105,000	103,000	104,000	98,800	109,000	90,700
Cadmium (filtered)	µg/L	0.003	**5**	<0.003	<0.003	<0.003	<0.003	0.005	0.010	<0.003	0.003	<0.003	0.003	<0.003
Chloride	µg/L	200	**250,000**	4,800	5,200	5,800	6,600	7,200	17,000	5,600	5,000	5,000	5,000	5,000
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	<0.5	0.5	<0.5	<0.5	0.6	0.30	0.25	0.05	<0.03	0.32	0.07
Copper (filtered)	µg/L	0.02	**1,000**	<0.5	<0.5	0.7	<0.5	<0.5	0.91	0.60	0.48	0.12	0.12	0.41
Iron (filtered)	µg/L	2	**300**	150	72	118	179	117	3	187	228	129	262	36
Lead (filtered)	µg/L	0.01	**10**	<0.02	0.04	0.04	<0.02	<0.02	0.01	0.05	<0.01	0.01	0.02	0.01
Magnesium (filtered)	µg/L	1		3,640	3,620	3,320	3,820	3,830	4,890	3,890	4,000	4,320	3,600	3,610
Manganese (filtered)	µg/L	0.01	**50**	32.6	29.6	20.7	21.2	30.4	3.50	29.1	22.3	26.4	22.5	12.04
Mercury (filtered)	µg/L	0.01	**1**	-	-	-	-	<0.01	<0.01	0.05	-	0.02	<0.01	<0.01
Phosphorus (filtered)	ug/L	3		-	-	-	12	50	<30	<30	<30	<30	15	<30
Phosphorus total (P2O5)	µg/L	10		-	-	-	-	-	-	-	-	-	-	-
Potassium (filtered)	µg/L	2		890	873	757	849	905	1,270	954	760	911	818	908
Sodium (filtered)	µg/L	10	**200,000**	2,920	2,940	2,860	3,120	3,210	7,780	3,540	3,360	3,870	3,340	3,200
Zinc (filtered)	µg/L	2	**5,000**	<2	3	2	<2	<2	3	2	2	<2	<2	<2
Inorganics														
Alkalinity (total) as CaCO3	mg/L	2	**500**	252	252	228	216	236	250	266	230	266	235	225
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	-	-	261	-	-	-	-	-	-	-
Total Dissolved Solids	mg/L	3	**500**	309	326	300	306	280	363	300	286	303	311	269
Chemical Oxygen Demand	mg/L	5		24	<8	10	17	<8	9	<8	10	<8	<8	10
Total Suspended Solids	mg/L	2		<2	-	-	-	-	-	-	<2	<2	<2	3
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	2.3	**6.3**	2.0	4.0	1.8	2.8	2.5	-	-	-	-
Biochemical Oxygen Demand	mg/L	2		<2	-	-	-	-	-	-	<4	<4	<4	<4
Phenols (4AAP)	mg/L	0.001		-	-	-	-	<0.002	<0.002	0.005	0.005	<0.001	<0.001	0.003
Sulphate	mg/L	0.2	**500**	-	-	-	-	-	-	-	16	-	-	14
Sulphate (filtered)	mg/L	0.2	**500**	12	15	13	16	13	22	15	-	13	16	-
Ammonia as N	mg/L	0.01		0.4	0.4	<0.1	<0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.1
Nitrate (as N)	mg/L	0.05	**10**	<0.05	<0.05	0.12	0.07	0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.28
Nitrite (as N)	mg/L	0.03	**1**	-	-	-	-	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Total Kjeldahl Nitrogen	mg/L	0.1		-	-	-	-	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
pH (Lab)	-	0.05	**6.5-8.5**	7.95	7.89	8.00	7.80	8.20	7.94	8.07	7.64	7.82	8.25	7.91
Electrical Conductivity (Lab)	µS/cm	1		517	505	494	463	499	543	524	444	521	502	456
Field														
DO (Field)	mg/L			-	-	-	-	-	-	-	-	-	-	-
Redox (Field)	mV			-	-	-	-	-	-	-	-	-	-	-
Temperature (Field)	oC			-	-	-	-	-	-	-	-	-	-	-
Conductivity (field)	µS/cm			-	-	-	-	-	-	-	-	-	-	-
pH (Field)	-		**6.5-8.5**	-	-	-	-	-	-	-	-	-	-	-

Table 4: Groundwater Quality - Overburden/Upper Bedrock

	Unit	EQL	ODWQS	TW09-2 11 Jun 2018	TW09-2 05 Nov 2018	TW09-2 29 May 2019	TW09-2 28 Oct 2019	TW09-2 27 May 2020	TW09-2 12 Nov 2020	TW09-2 28 Jun 2021	TW09-2 10 Nov 2021	TW09-2 11 Apr 2022	TW09-2 14 Nov 2022
Metals													
Arsenic (filtered)	µg/L	0.1	**25**	<0.2	<0.2	0.4	<0.2	<0.2	0.2	<0.1	0.2	<0.1	0.1
Barium (filtered)	µg/L	0.01	**1,000**	237	280	487	210	205	205	276	259	263	256
Boron (filtered)	µg/L	0.2	**5,000**	25	10	26	11	8	58	14	12	11	12
Calcium (filtered)	µg/L	10		106,000	117,000	281,000	86,800	88,300	108,000	-	-	-	91,800
Cadmium (filtered)	µg/L	0.003	**5**	0.011	<0.003	0.064	<0.003	0.005	<0.003	<0.015	<0.015	<0.015	<0.01
Chloride	µg/L	200	**250,000**	4,000	4,000	4,000	4,000	4,000	5,000	4,500	6,200	5,800	5,400
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	0.06	0.12	4.01	0.09	0.1	<0.08	2	1	<1	<1
Copper (filtered)	µg/L	0.02	**1,000**	0.33	0.26	8.1	0.7	0.9	0.5	0.2	1.9	1.6	3.8
Iron (filtered)	µg/L	2	**300**	123	67	**2,820**	17	<7	23	218	<5	**396**	9
Lead (filtered)	µg/L	0.01	**10**	0.04	<0.01	2.49	0.04	0.02	0.01	0.08	0.47	0.23	<0.02
Magnesium (filtered)	µg/L	1		3,120	3,510	8,300	2,870	2,990	3,670	-	-	-	3,860
Manganese (filtered)	µg/L	0.01	**50**	19.4	27.6	**273**	7.26	0.32	25.8	-	-	45	13
Mercury (filtered)	µg/L	0.01	**1**	0.07	<10	<10	<10	<10	<10	<0.02	<0.02	<0.02	<0.02
Phosphorus (filtered)	ug/L	3		<30	<30	730	<30	300	290	-	-	-	-
Phosphorus total (P2O5)	µg/L	10		-	-	-	-	-	-	680	640	1,210	1,460
Potassium (filtered)	µg/L	2		674	858	1,100	723	757	941	-	-	-	-
Sodium (filtered)	µg/L	10	**200,000**	3,230	3,100	3,000	3,090	3,010	3,380	-	-	3,300	3,500
Zinc (filtered)	µg/L	2	**5,000**	3	<2	17	9	4	<2	<5	<5	<5	<5
Inorganics													
Alkalinity (total) as CaCO3	mg/L	2	**500**	235	241	340	215	237	**531**	228	256	243	254
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	-	-	-	-	-	282	260	302	245
Total Dissolved Solids	mg/L	3	**500**	266	334	274	291	243	303	255	265	270	263
Chemical Oxygen Demand	mg/L	5		<8	<8	<8	<8	14	13	69	71	196	699
Total Suspended Solids	mg/L	2		<2	3	2,210	<2	3,200	341	2,000	1,070	2,200	4,220
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	-	-	-	-	-	-	-	-	-	2.1
Biochemical Oxygen Demand	mg/L	2		<4	<4	4	<4	4	<4	4	4	4	<3
Phenols (4AAP)	mg/L	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.001	<0.001
Sulphate	mg/L	0.2	**500**	13	10	15	10	15	24	-	-	-	-
Sulphate (filtered)	mg/L	0.2	**500**	-	-	-	-	-	-	16	16	17	14
Ammonia as N	mg/L	0.01		0.2	0.2	0.2	0.1	0.1	0.2	0.22	0.26	0.21	0.24
Nitrate (as N)	mg/L	0.05	**10**	<0.06	<0.06	0.2	0.09	0.07	0.21	0.38	0.16	0.08	0.16
Nitrite (as N)	mg/L	0.03	**1**	<0.03	<0.03	<0.03	<0.03	<0.03	0.03	<0.05	<0.05	<0.05	<0.05
Total Kjeldahl Nitrogen	mg/L	0.1		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.6	1.7	2	5.9
pH (Lab)	-	0.05	**6.5-8.5**	7.99	7.91	7.96	8.26	8.02	7.86	7.83	8	7.38	7.69
Electrical Conductivity (Lab)	µS/cm	1		473	475	448	384	472	478	493	512	521	509
Field													
DO (Field)	mg/L			-	-	4.1	6.7	6	5.9	9.85	8.19	6.65	7.31
Redox (Field)	mV			-	-	115	167	214	220	56	11	-15	-241
Temperature (Field)	oC			-	-	10.8	11.9	13.8	11.9	14.8	9.1	4.9	6.8
Conductivity (field)	µS/cm			-	-	362	339	388	302	463	235	373	263
pH (Field)	-		**6.5-8.5**	-	-	7.82	6.59	7.79	**8.55**	7.61	7.54	7.07	7.49

Table 4: Groundwater Quality - Overburden/Upper Bedrock

	Unit	EQL	ODWQS	TW10-2 23 Dec 2014	TW10-2 19 May 2015	TW10-2 03 Nov 2015	TW10-2 19 May 2016	TW10-2 11 Jun 2018	TW10-2 29 May 2019	TW10-2 27 May 2020	TW10-2 12 Nov 2020	TW10-2 28 Jun 2021	TW10-2 10 Nov 2021	TW10-2 11 Apr 2022
Metals														
Arsenic (filtered)	µg/L	0.1	**25**	2.5	1.5	0.9	0.6	1.8	1.6	0.3	0.4	0.9	1.1	1.2
Barium (filtered)	µg/L	0.01	**1,000**	487	438	447	355	410	398	193	279	344	301	342
Boron (filtered)	µg/L	0.2	**5,000**	307	293	332	358	386	431	328	393	387	532	417
Calcium (filtered)	µg/L	10		284,000	278,000	246,000	252,000	186,000	197,000	179,000	241,000	-	-	-
Cadmium (filtered)	µg/L	0.003	**5**	0.008	0.006	0.036	0.038	0.004	0.01	0.009	0.038	0.031	<0.015	<0.015
Chloride	µg/L	200	**250,000**	41,000	37,000	30,000	97,000	21,000	28,000	19,000	18,000	21,000	27,100	44,700
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	0.54	0.47	0.21	1.11	0.79	0.92	0.3	0.16	1	<1	<1
Copper (filtered)	µg/L	0.02	**1,000**	0.37	0.46	2.00	1.63	3.55	2	0.5	2.8	0.3	0.4	0.9
Iron (filtered)	µg/L	2	**300**	**70,100**	**44,400**	**2,110**	**19,400**	**53,800**	**41,300**	**1,380**	**840**	**30,500**	**20,300**	**47,900**
Lead (filtered)	µg/L	0.01	**10**	0.02	0.02	0.05	0.07	0.05	1.29	0.02	0.01	0.07	0.11	<0.04
Magnesium (filtered)	µg/L	1		19,500	18,000	17,500	17,500	12,000	15,800	13,000	13,400	-	-	-
Manganese (filtered)	µg/L	0.01	**50**	**3,440**	**4,390**	**2,180**	**2,000**	**1,840**	**2,490**	**2,960**	**1,250**	-	-	**3,140**
Mercury (filtered)	µg/L	0.01	**1**	0.14	-	0.01	<0.01	0.01	<10	<10	<10	<0.02	<0.02	<0.02
Phosphorus (filtered)	ug/L	3		<30	<30	<30	20	<30	130	110	190	-	-	-
Phosphorus total (P2O5)	µg/L	10		-	-	-	-	-	-	-	-	810	290	60
Potassium (filtered)	µg/L	2		20,500	16,300	21,900	28,700	19,800	19,700	16,700	19,000	-	-	-
Sodium (filtered)	µg/L	10	**200,000**	29,100	31,900	32,200	74,200	24,000	28,200	22,200	24,200	-	-	26,800
Zinc (filtered)	µg/L	2	**5,000**	18	14	12	4	3	19	7	5	6	<5	<5
Inorganics														
Alkalinity (total) as CaCO3	mg/L	2	**500**	**722**	**730**	**606**	**688**	**577**	**628**	**575**	**637**	**563**	**652**	**606**
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	-	-	-	-	-	-	-	**525**	**655**	**615**
Total Dissolved Solids	mg/L	3	**500**	**1,030**	**903**	**929**	**954**	**560**	**606**	**563**	**694**	**620**	**683**	**704**
Chemical Oxygen Demand	mg/L	5		46	38	25	62	32	35	31	44	85	57	53
Total Suspended Solids	mg/L	2		-	100	7	44	103	355	508	-	1,280	6,400	132
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	**14.3**	-	-	-	-	-	-	-	-	-	-
Biochemical Oxygen Demand	mg/L	2		-	<4	<4	<4	<4	<4	6	11	12	14	7
Phenols (4AAP)	mg/L	0.001		0.003	0.005	0.001	<0.001	0.003	0.004	0.005	0.001	<0.002	<0.002	<0.001
Sulphate	mg/L	0.2	**500**	160	100	-	-	4	8	13	83	-	-	-
Sulphate (filtered)	mg/L	0.2	**500**	-	-	160	82	-	-	-	-	7	32	12
Ammonia as N	mg/L	0.01		30.4	15.4	18.0	31.2	24.1	27.6	21.8	16.2	20.9	8.02	1.08
Nitrate (as N)	mg/L	0.05	**10**	<0.06	<0.06	9.64	0.16	<0.06	<0.06	<0.06	3.41	0.52	<0.05	0.08
Nitrite (as N)	mg/L	0.03	**1**	<0.03	<0.03	0.06	<0.03	<0.03	<0.03	<0.03	0.25	<0.05	<0.05	<0.05
Total Kjeldahl Nitrogen	mg/L	0.1		31.6	16.3	19.0	32.4	27.3	26.7	21.6	19.9	26	9.8	21
pH (Lab)	-	0.05	**6.5-8.5**	7.45	7.00	7.30	7.65	7.39	7.49	7.02	7.55	7.34	7.52	7.13
Electrical Conductivity (Lab)	µS/cm	1		1,520	1,410	1,530	1,720	1,080	1,170	989	1,190	1,150	1,260	1,300
Field														
DO (Field)	mg/L			-	-	-	-	-	6.6	4.7	8.8	6.05	5.27	4.34
Redox (Field)	mV			-	-	-	-	-	25	-33	-9	-33	50	-85
Temperature (Field)	oC			-	-	-	-	-	10	13	-	14	10.8	7.4
Conductivity (field)	µS/cm			-	-	-	-	-	1,000	913	799	1,175	550	1,146
pH (Field)	-		**6.5-8.5**	-	-	-	-	-	6.7	7	**10.6**	6.7	6.69	6.59

Table 4: Groundwater Quality - Overburden/Upper Bedrock

	Unit	EQL	ODWQS	TW11-2 23 Dec 2014	TW11-2 19 May 2015	TW11-2 03 Nov 2015	TW11-2 19 May 2016	TW11-2 26 Oct 2016	TW11-2 11 Jun 2018	TW11-2 05 Nov 2018	TW11-2 29 May 2019	TW11-2 28 Oct 2019	TW11-2 27 May 2020
Metals													
Arsenic (filtered)	µg/L	0.1	**25**	<0.2	<0.2	0.9	2.1	1.8	0.9	0.4	<0.2	0.5	<0.2
Barium (filtered)	µg/L	0.01	**1,000**	22.2	19.1	195	372	616	539	308	28.3	404	78.4
Boron (filtered)	µg/L	0.2	**5,000**	13.2	5.9	38.7	327	290	491	61	47	371	35
Calcium (filtered)	µg/L	10		110,000	106,000	106,000	188,000	215,000	276,000	239,000	118,000	212,000	100,000
Cadmium (filtered)	µg/L	0.003	**5**	0.005	0.004	0.007	0.009	0.013	0.023	0.006	0.003	0.011	<0.003
Chloride	µg/L	200	**250,000**	4,400	3,000	17,000	23,000	72,000	74,000	32,000	3,000	56,000	2,000
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	<0.03	0.05	<0.03	0.93	0.73	1.05	0.22	0.16	0.41	<0.08
Copper (filtered)	µg/L	0.02	**1,000**	0.72	0.29	0.85	1.01	0.11	1.21	1.74	1	0.8	0.8
Iron (filtered)	µg/L	2	**300**	76	<2	**3,570**	**50,000**	**26,800**	**34,700**	296	67	**8,110**	<7
Lead (filtered)	µg/L	0.01	**10**	<0.01	0.02	0.08	0.08	0.10	0.13	0.04	0.03	0.04	0.02
Magnesium (filtered)	µg/L	1		1,910	1,920	5,060	12,300	18,300	26,000	7,760	1,870	24,500	1,980
Manganese (filtered)	µg/L	0.01	**50**	8.13	5.05	**325**	**2,580**	**2,770**	**1,690**	**290**	1.69	**1,520**	1.43
Mercury (filtered)	µg/L	0.01	**1**	0.16	-	0.02	<0.01	0.01	<0.01	<10	<10	<10	<10
Phosphorus (filtered)	ug/L	3		40	<30	<30	24	<30	40	<30	360	<30	270
Phosphorus total (P2O5)	µg/L	10		-	-	-	-	-	-	-	-	-	-
Potassium (filtered)	µg/L	2		887	912	5,480	20,300	28,900	38,500	7,960	814	29,200	1,200
Sodium (filtered)	µg/L	10	**200,000**	2,460	2,530	6,660	25,900	52,200	82,100	15,300	2,610	49,900	3,100
Zinc (filtered)	µg/L	2	**5,000**	4	<2	5	9	7	5	5	4	4	<2
Inorganics													
Alkalinity (total) as CaCO3	mg/L	2	**500**	274	261	289	**559**	**668**	**730**	400	303	**646**	222
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	-	-	-	-	-	-	-	-	-
Total Dissolved Solids	mg/L	3	**500**	343	306	351	**606**	**937**	**1,030**	**663**	311	**891**	246
Chemical Oxygen Demand	mg/L	5		<8	<8	14	42	41	48	15	<8	51	<8
Total Suspended Solids	mg/L	2		-	<2	8	115	45	55	2	437	108	854
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	<1	-	-	-	-	-	-	-	-	-
Biochemical Oxygen Demand	mg/L	2		-	<4	<4	<4	6	15	<4	<4	<4	6
Phenols (4AAP)	mg/L	0.001		0.003	0.001	<0.001	0.001	0.001	0.004	0.002	0.002	0.004	0.002
Sulphate	mg/L	0.2	**500**	5.3	5	-	-	150	120	130	9	170	5
Sulphate (filtered)	mg/L	0.2	**500**	-	-	13	15	-	-	-	-	-	-
Ammonia as N	mg/L	0.01		<0.1	<0.1	3.5	30.4	29.5	18.1	5.3	<0.1	33.4	<0.1
Nitrate (as N)	mg/L	0.05	**10**	3.23	1.54	3.80	0.08	<0.06	<0.06	0.17	2.14	<0.06	2.38
Nitrite (as N)	mg/L	0.03	**1**	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Total Kjeldahl Nitrogen	mg/L	0.1		<0.5	<0.5	4.1	30.2	29.3	21.6	5.6	0.6	31.8	<0.5
pH (Lab)	-	0.05	**6.5-8.5**	8.17	7.73	7.50	7.76	7.02	7.37	7.46	7.5	7.06	7.8
Electrical Conductivity (Lab)	µS/cm	1		511	486	659	1,170	1,580	1,730	1,010	516	1,560	439
Field													
DO (Field)	mg/L			-	-	-	-	-	-	-	8.1	5.8	8
Redox (Field)	mV			-	-	-	-	-	-	-	193	-6	125
Temperature (Field)	oC			-	-	-	-	-	-	-	7.7	10.9	11.5
Conductivity (field)	µS/cm			-	-	-	-	-	-	-	396	1,266	361
pH (Field)	-		**6.5-8.5**	-	-	-	-	-	-	-	7.7	6.64	7.58

Table 4: Groundwater Quality - Overburden/Upper Bedrock

	Unit	EQL	ODWQS	TW11-2 12 Nov 2020	TW11-2 28 Jun 2021	TW11-2 10 Nov 2021	TW11-2 11 Apr 2022	TW11-2 14 Nov 2022
Metals								
Arsenic (filtered)	µg/L	0.1	**25**	0.6	1	0.2	<0.1	2.8
Barium (filtered)	µg/L	0.01	**1,000**	272	574	96	23	630
Boron (filtered)	µg/L	0.2	**5,000**	336	616	62	10	663
Calcium (filtered)	µg/L	10		176,000	-	-	-	226,000
Cadmium (filtered)	µg/L	0.003	**5**	0.005	<0.029	<0.015	<0.015	<0.029
Chloride	µg/L	200	**250,000**	62,000	106,000	18,200	5,100	125,000
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	0.22	43	<1	<1	1
Copper (filtered)	µg/L	0.02	**1,000**	0.8	0.7	0.5	1.1	0.6
Iron (filtered)	µg/L	2	**300**	**5,230**	**34,400**	**1,130**	31	**71,400**
Lead (filtered)	µg/L	0.01	**10**	0.02	0.17	0.07	0.02	<0.09
Magnesium (filtered)	µg/L	1		19,100	-	-	-	41,300
Manganese (filtered)	µg/L	0.01	**50**	**652**	-	-	1	**1,380**
Mercury (filtered)	µg/L	0.01	**1**	<10	<0.02	<0.02	<0.02	<0.02
Phosphorus (filtered)	ug/L	3		140	-	-	-	-
Phosphorus total (P2O5)	µg/L	10		-	1,430	170	250	630
Potassium (filtered)	µg/L	2		20,500	-	-	-	-
Sodium (filtered)	µg/L	10	**200,000**	39,000	-	-	2,300	84,200
Zinc (filtered)	µg/L	2	**5,000**	<2	<5	<5	<5	<5
Inorganics								
Alkalinity (total) as CaCO3	mg/L	2	**500**	**543**	**776**	295	218	**793**
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	**772**	350	249	**736**
Total Dissolved Solids	mg/L	3	**500**	**746**	**1,070**	358	240	**1,110**
Chemical Oxygen Demand	mg/L	5		39	128	23	11	90
Total Suspended Solids	mg/L	2		-	2,550	540	293	610
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	-	-	-	-	**6**
Biochemical Oxygen Demand	mg/L	2		12	17	6	<3	13
Phenols (4AAP)	mg/L	0.001		<0.001	<0.002	<0.002	<0.001	<0.001
Sulphate	mg/L	0.2	**500**	69	-	-	-	-
Sulphate (filtered)	mg/L	0.2	**500**	-	102	10	6	67
Ammonia as N	mg/L	0.01		21.7	44.5	1.76	0.02	46.1
Nitrate (as N)	mg/L	0.05	**10**	1.06	0.12	9.39	2.52	<0.5
Nitrite (as N)	mg/L	0.03	**1**	0.04	<0.05	<0.05	<0.05	<0.5
Total Kjeldahl Nitrogen	mg/L	0.1		23.6	47.1	2.2	0.5	47.5
pH (Lab)	-	0.05	**6.5-8.5**	7.42	7.06	7.77	7.36	6.97
Electrical Conductivity (Lab)	µS/cm	1		1,280	1,940	689	464	2,010
Field								
DO (Field)	mg/L			5	4.05	5.48	9.25	6.5
Redox (Field)	mV			-35	-25	27	58	-231
Temperature (Field)	oC			10.9	17.6	10.1	8.5	7.9
Conductivity (field)	µS/cm			890	1,844	294	386	1,708
pH (Field)	-		**6.5-8.5**	7.24	6.64	7.12	7.21	6.75

Table 5: Groundwater Quality - Lower Bedrock

	Unit	EQL	ODWQS	TW02-1 01 Oct 2011	TW02-1 16 May 2012	TW02-1 25 Sep 2012	TW02-1 04 Jun 2013	TW02-1 30 Oct 2013	TW02-1 09 Jun 2014	TW02-1 14 Nov 2014	TW02-1 19 May 2015	TW02-1 03 Nov 2015	TW02-1 19 May 2016	TW02-1 26 Oct 2016	TW02-1 07 Jun 2017
Metals															
Arsenic (filtered)	µg/L	0.1	**25**	<0.2	0.2	<0.2	0.3	<0.2	0.2	0.3	<0.2	4.7	<0.2	<0.2	<0.2
Barium (filtered)	µg/L	0.01	**1,000**	24.0	17.4	24.0	16.8	24.2	18.7	22.1	19.1	27.5	15.3	27.58	18.6
Boron (filtered)	µg/L	0.2	**5,000**	8.8	5.5	7.6	9.0	9.1	8.7	12.2	5.4	7.6	7	47	11
Calcium (filtered)	µg/L	10		108,000	89,400	106,000	79,500	106,000	92,700	96,800	97,200	110,000	81,900	108,000	91,100
Cadmium (filtered)	µg/L	0.003	**5**	<0.003	<0.003	0.003	0.042	0.009	0.010	0.003	0.008	<0.003	0.005	0.009	<0.003
Chloride	µg/L	200	**250,000**	4,300	2,600	9,800	3,700	6,600	2,800	2,800	2,500	12,000	3,000	23,000	2,000
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	<0.5	<0.5	<0.5	<0.5	<0.5	0.16	<0.03	0.10	<0.03	0.42	0.40	0.55
Copper (filtered)	µg/L	0.02	**1,000**	0.8	0.8	<0.5	0.6	<0.5	1.14	0.93	0.95	0.69	0.54	0.22	0.52
Iron (filtered)	µg/L	2	**300**	<3	8	8	22	<3	<2	4	22	<7	<7	19	<7
Lead (filtered)	µg/L	0.01	**10**	<0.02	0.04	0.02	0.03	0.03	0.03	<0.01	0.34	0.02	<0.01	<0.01	0.03
Magnesium (filtered)	µg/L	1		1,950	1,920	2,130	1,850	2,030	2,100	1,870	2,200	2,500	2,070	2,180	1,970
Manganese (filtered)	µg/L	0.01	**50**	1.57	0.24	0.03	0.24	0.42	0.20	0.74	2.44	<0.01	0.07	1.17	0.08
Mercury (filtered)	µg/L	0.01	**1**	<0.1	<0.1	<0.1	<0.01	-	-	-	-	<0.01	<0.01	<0.01	-
Phosphorus (filtered)	ug/L	9		-	<30	50	<30	-	-	-	-	-	-	-	-
Phosphorus total (P2O5)	µg/L	10		<30	-	-	-	-	-	-	-	-	-	-	-
Potassium (filtered)	µg/L	2		906	711	869	617	901	749	952	748	1,050	663	851	722
Sodium (filtered)	µg/L	10	**200,000**	3,740	2,000	4,750	1,770	4,410	2,820	5,590	2,500	6,600	2,360	3,940	2,210
Zinc (filtered)	µg/L	2	**5,000**	3	6	3	<2	2	3	5	<2	2	4	9	<2
Inorganics															
Alkalinity (total) as CaCO3	mg/L	2	**500**	251	219	234	199	246	240	255	233	270	200	251	209
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	-	-	-	-	-	-	-	-	-	-	-
Total Dissolved Solids	mg/L	3	**500**	300	177	291	254	360	291	291	251	370	206	351	237
Chemical Oxygen Demand	mg/L	5		<8	8	9	<8	<8	9	<8	<8	13	<8	13	<8
Total Suspended Solids	mg/L	2		46	<4	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	<1	**5.6**	2.9	2.7	1.9	3.6	1.2	2.3	1.4	1.7	1	2
Biochemical Oxygen Demand	mg/L	2		<2	<4	-	-	-	-	-	-	-	-	-	-
Phenols (4AAP)	mg/L	0.001		<0.002	0.011	<0.002	<0.002	-	-	-	-	-	-	-	-
Sulphate	mg/L	0.2	**500**	-	-	-	-	-	-	-	4.9	-	-	9	-
Sulphate (filtered)	mg/L	0.2	**500**	6.7	5.6	7.0	4.3	7.9	3.6	5.9	-	8	4	-	3
Ammonia as N	mg/L	0.01		<0.1	<0.1	<0.1	0.6	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrate (as N)	mg/L	0.05	**10**	2.86	0.77	5.10	0.35	3.05	0.77	1.64	0.68	3.89	0.22	2.43	0.41
Nitrite (as N)	mg/L	0.03	**1**	<0.06	<0.06	<0.06	<0.03	-	-	-	-	-	-	-	-
Total Kjeldahl Nitrogen	mg/L	0.1		2.7	<0.5	1.3	<0.5	-	-	-	-	-	-	-	-
pH (Lab)	-	0.05	**6.5-8.5**	8.03	8.06	7.97	7.79	8.16	7.97	8.08	7.69	7.99	8.12	7.63	7.74
Electrical Conductivity (Lab)	µS/cm	1		525	429	562	399	525	455	490	424	575	416	562	415
Field															
DO (Field)	mg/L			-	-	-	-	-	-	-	-	-	-	-	-
Redox (Field)	mV			-	-	-	-	-	-	-	-	-	-	-	-
Temperature (Field)	oC			-	-	-	-	-	-	-	-	-	-	-	-
Conductivity (field)	µS/cm			-	-	-	-	-	-	-	-	-	-	-	-
pH (Field)	-		**6.5-8.5**	-	-	-	-	-	-	-	-	-	-	-	-

Table 5: Groundwater Quality - Lower Bedrock

	Unit	EQL	ODWQS	TW02-1 29 Sep 2017	TW02-1 11 Jun 2018	TW02-1 11 Jun 2018	TW02-1 05 Nov 2018	TW02-1 29 May 2019	TW02-1 28 Oct 2019	TW02-1 27 May 2020	TW02-1 12 Nov 2020	TW02-1 28 Jun 2021	TW02-1 10 Nov 2021	TW02-1 11 Apr 2022	TW02-1 14 Nov 2022
Metals															
Arsenic (filtered)	µg/L	0.1	**25**	<0.2	<0.2	<0.2	<0.2	<0.2	23	<0.2	<0.2	-	-	-	-
Barium (filtered)	µg/L	0.01	**1,000**	25.1	20.1	20.1	23.6	19.2	8	15.8	28.3	21	24	18	37
Boron (filtered)	µg/L	0.2	**5,000**	20	6	6	12	7	**112,000**	36	23	7	9	7	<5
Calcium (filtered)	µg/L	10		115,000	103,000	103,000	113,000	102,000	<0.003	82,900	105,000	103,000	111,000	88,700	115,000
Cadmium (filtered)	µg/L	0.003	**5**	0.003	0.011	0.011	0.003	0.004	0.24	<0.003	<0.003	-	-	-	-
Chloride	µg/L	200	**250,000**	4,000	2,000	2,000	12,000	3,000	8,000	2,000	7,000	5,200	2,900	3,800	34,800
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	0.51	0.16	0.16	0.13	0.16	0.6	0.28	0.21	-	-	-	-
Copper (filtered)	µg/L	0.02	**1,000**	0.66	0.38	0.38	0.59	0.7	129	0.6	0.8	-	-	-	-
Iron (filtered)	µg/L	2	**300**	11	<7	<7	<7	7	**771**	<7	17	8	5	<5	9
Lead (filtered)	µg/L	0.01	**10**	0.04	0.02	0.02	0.03	0.01	0.04	0.02	0.05	-	-	-	-
Magnesium (filtered)	µg/L	1		2,370	2,000	2,000	2,000	2,060	0.54	1,850	1,760	2,210	1,980	1,930	2,370
Manganese (filtered)	µg/L	0.01	**50**	0.16	1.88	1.88	0.4	0.11	**4,620**	0.02	0.26	-	-	<1	<1
Mercury (filtered)	µg/L	0.01	**1**	-	-	-	-	<10	<0.2	-	-	-	-	-	-
Phosphorus (filtered)	ug/L	9		-	-	-	-	-	-	<30	-	-	-	-	-
Phosphorus total (P2O5)	µg/L	10		-	-	-	-	-	-	-	-	-	-	-	-
Potassium (filtered)	µg/L	2		755	658	658	731	671	2,100	628	851	-	-	-	-
Sodium (filtered)	µg/L	10	**200,000**	3,000	2,450	2,450	6,620	2,190	<3	2,020	4,600	2,300	2,700	2,200	5,100
Zinc (filtered)	µg/L	2	**5,000**	2	<2	<2	2	2	3	2	-	-	-	-	-
Inorganics															
Alkalinity (total) as CaCO3	mg/L	2	**500**	258	226	226	241	228	252	218	258	227	265	211	259
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	-	-	-	-	-	-	-	267	286	230	297
Total Dissolved Solids	mg/L	3	**500**	274	240	240	320	260	334	254	300	250	270	224	332
Chemical Oxygen Demand	mg/L	5		<8	<8	<8	<8	<8	<8	<8	<8	11	9	<5	<5
Total Suspended Solids	mg/L	2		-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	1	2	2	1	1	<1	1	2	2.8	1.8	3.2	2.1
Biochemical Oxygen Demand	mg/L	2		-	-	-	-	-	-	-	-	-	-	-	-
Phenols (4AAP)	mg/L	0.001		-	-	-	-	-	-	-	-	<0.002	<0.002	<0.001	<0.01
Sulphate	mg/L	0.2	**500**	-	-	-	-	3	7	3	-	-	-	-	-
Sulphate (filtered)	mg/L	0.2	**500**	5	3	3	8	-	-	-	8	6	5	4	9
Ammonia as N	mg/L	0.01		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.01	<0.01	<0.01	0.08
Nitrate (as N)	mg/L	0.05	**10**	2.61	0.19	0.19	3.61	0.96	3.71	0.57	2.68	1.47	1.52	0.46	3.33
Nitrite (as N)	mg/L	0.03	**1**	-	-	-	-	-	-	-	-	-	-	-	-
Total Kjeldahl Nitrogen	mg/L	0.1		-	-	-	-	-	-	-	-	-	-	-	-
pH (Lab)	-	0.05	**6.5-8.5**	7.9	7.91	7.91	7.81	8.12	8.02	7.95	7.72	7.82	7.79	7.38	7.59
Electrical Conductivity (Lab)	µS/cm	1		505	423	423	542	451	581	429	499	484	521	433	640
Field															
DO (Field)	mg/L			-	-	-	-	7.6	8.1	7.8	10.2	8.44	10.08	7.62	10.05
Redox (Field)	mV			-	-	-	-	75	117	43	125	113	63	51	-249
Temperature (Field)	oC			-	-	-	-	9.5	11.3	12.8	11.3	15.9	11	7.6	8.6
Conductivity (field)	µS/cm			-	-	-	-	343	502	419	332	681	225	356	550
pH (Field)	-		**6.5-8.5**	-	-	-	-	7.6	7.35	7.46	7.82	7.14	7.16	7.16	7.42

Table 5: Groundwater Quality - Lower Bedrock

	Unit	EQL	ODWQS	TW03-1 01 Oct 2011	TW03-1 16 May 2012	TW03-1 04 Jun 2013	TW03-1 30 Oct 2013	TW03-1 09 Jun 2014	TW03-1 14 Nov 2014	TW03-1 19 May 2015	TW03-1 03 Nov 2015	TW03-1 19 May 2016
Metals												
Arsenic (filtered)	µg/L	0.1	**25**	6.2	17.6	2.3	1.2	0.3	15.9	3.3	**54.3**	2.2
Barium (filtered)	µg/L	0.01	**1,000**	417	450	226	235	96.4	425	276	**2,270**	152
Boron (filtered)	µg/L	0.2	**5,000**	256	232	209	172	87.3	251	230	221	181
Calcium (filtered)	µg/L	10		212,000	206,000	94,700	107,000	146,000	120,000	188,000	196,000	108,000
Cadmium (filtered)	µg/L	0.003	**5**	0.007	0.136	0.009	0.009	0.008	0.071	0.007	0.021	0.017
Chloride	µg/L	200	**250,000**	44,000	21,000	14,000	15,000	17,000	20,000	30,000	55,000	13,000
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	1.9	2.3	1.7	1.0	0.25	4.60	0.63	1.81	0.80
Copper (filtered)	µg/L	0.02	**1,000**	1.0	1	<0.5	0.6	0.82	1.35	0.45	0.83	0.42
Iron (filtered)	µg/L	2	**300**	**48,400**	**74,600**	**14,900**	**16,900**	37	**227,000**	**29,400**	**106,000**	**17,100**
Lead (filtered)	µg/L	0.01	**10**	0.46	0.17	0.30	0.04	0.20	0.38	0.01	0.16	0.08
Magnesium (filtered)	µg/L	1		16,300	16,000	7,910	8,150	10,700	9,430	14,500	15,300	8,330
Manganese (filtered)	µg/L	0.01	**50**	**1,290**	**880**	**577**	**344**	**75.8**	**552**	**705**	**323**	**429**
Mercury (filtered)	µg/L	0.01	**1**	<0.1	<0.1	0.03	-	-	-	-	<0.01	<0.01
Phosphorus (filtered)	ug/L	9		70	40	40	-	-	-	-	-	-
Phosphorus total (P2O5)	µg/L	10		-	-	-	-	-	-	-	-	-
Potassium (filtered)	µg/L	2		24,600	26,000	15,800	17,200	2,610	21,500	17,800	19,600	14,300
Sodium (filtered)	µg/L	10	**200,000**	26,700	27,700	15,000	15,700	19,000	18,200	25,000	29,700	14,000
Zinc (filtered)	µg/L	2	**5,000**	4	6	3	<2	7	9	3	7	6
Inorganics												
Alkalinity (total) as CaCO3	mg/L	2	**500**	**690**	449	381	**505**	463	**598**	**578**	**734**	415
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	-	-	-	-	-	-	-	-
Total Dissolved Solids	mg/L	3	**500**	**751**	321	371	**680**	431	**586**	**571**	**871**	360
Chemical Oxygen Demand	mg/L	5		31	53	27	21	50	93	34	64	19
Total Suspended Solids	mg/L	2		2,230	41	-	-	-	-	-	-	-
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	**8.5**	**16.9**	**12.4**	**6.8**	**11.8**	**11.8**	**7.2**	**16.8**	4.6
Biochemical Oxygen Demand	mg/L	2		21	<40	-	-	-	-	-	-	-
Phenols (4AAP)	mg/L	0.001		<0.002	0.014	<0.002	-	-	-	-	-	-
Sulphate	mg/L	0.2	**500**	-	-	-	-	-	-	34	-	-
Sulphate (filtered)	mg/L	0.2	**500**	6.6	3.7	2.6	2.7	2.3	0.4	-	52	6
Ammonia as N	mg/L	0.01		28.6	22.5	25.4	25.0	32.5	30.6	30.4	30.4	19.2
Nitrate (as N)	mg/L	0.05	**10**	0.29	0.06	<0.06	0.30	<0.06	<0.06	<0.06	<0.06	0.06
Nitrite (as N)	mg/L	0.03	**1**	<0.06	<0.06	<0.03	-	-	-	-	-	-
Total Kjeldahl Nitrogen	mg/L	0.1		31.2	21.4	25.4	-	-	-	-	-	-
pH (Lab)	-	0.05	**6.5-8.5**	7.71	7.58	7.57	7.45	7.51	7.25	7.04	7.18	7.69
Electrical Conductivity (Lab)	µS/cm	1		1,430	881	786	1,170	914	1,190	1,070	1,550	787
Field												
DO (Field)	mg/L			-	-	-	-	-	-	-	-	-
Redox (Field)	mV			-	-	-	-	-	-	-	-	-
Temperature (Field)	oC			-	-	-	-	-	-	-	-	-
Conductivity (field)	µS/cm			-	-	-	-	-	-	-	-	-
pH (Field)	-		**6.5-8.5**	-	-	-	-	-	-	-	-	-

Table 5: Groundwater Quality - Lower Bedrock

	Unit	EQL	ODWQS	TW03-1 07 Jun 2017	TW03-1 11 Jun 2018	TW03-1 29 May 2019	TW03-1 27 May 2020	TW03-1 28 Jun 2021	TW03-1 10 Nov 2021	TW03-1 11 Apr 2022	TW03-1 14 Nov 2022
Metals											
Arsenic (filtered)	µg/L	0.1	**25**	1.8	1.1	13	0.5	-	-	-	-
Barium (filtered)	µg/L	0.01	**1,000**	299	161	639	142	223	359	164	170
Boron (filtered)	µg/L	0.2	**5,000**	204	164	266	171	222	298	297	10
Calcium (filtered)	µg/L	10		110,000	135,000	135,000	114,000	122,000	194,000	146,000	57,500
Cadmium (filtered)	µg/L	0.003	**5**	0.004	<0.003	0.009	<0.003	-	-	-	-
Chloride	µg/L	200	**250,000**	16,000	11,000	19,000	14,000	14,700	22,000	22,600	28,300
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	1.18	0.37	3.71	0.41	-	-	-	-
Copper (filtered)	µg/L	0.02	**1,000**	0.33	0.16	0.9	0.5	-	-	-	-
Iron (filtered)	µg/L	2	**300**	**36,400**	**15,200**	**140,000**	**923**	**9,450**	**112,000**	**6,890**	**265,000**
Lead (filtered)	µg/L	0.01	**10**	0.04	<0.01	0.49	0.05	-	-	-	-
Magnesium (filtered)	µg/L	1		8,500	8,620	10,000	10,300	10,500	16,200	13,600	6,310
Manganese (filtered)	µg/L	0.01	**50**	**323**	**503**	**646**	**525**	-	-	**593**	**85**
Mercury (filtered)	µg/L	0.01	**1**	-	-	**10**	-	-	-	-	-
Phosphorus (filtered)	ug/L	9		-	-	-	660	-	-	-	-
Phosphorus total (P2O5)	µg/L	10		-	-	-	-	-	-	-	-
Potassium (filtered)	µg/L	2		15,500	14,200	13,900	13,900	-	-	-	-
Sodium (filtered)	µg/L	10	**200,000**	15,700	11,900	18,600	15,700	17,700	21,200	25,300	**352,000**
Zinc (filtered)	µg/L	2	**5,000**	4	<2	6	2	-	-	-	-
Inorganics											
Alkalinity (total) as CaCO3	mg/L	2	**500**	382	394	483	395	435	**564**	453	402
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	-	-	-	348	**552**	421	415
Total Dissolved Solids	mg/L	3	**500**	380	394	389	366	**508**	**640**	**532**	**532**
Chemical Oxygen Demand	mg/L	5		26	25	78	104	2,640	327	860	410
Total Suspended Solids	mg/L	2		-	-	-	-	-	-	-	-
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	**7**	5	**6**	**7**	**17.8**	**21**	**12.8**	**8.3**
Biochemical Oxygen Demand	mg/L	2		-	-	-	-	-	-	-	-
Phenols (4AAP)	mg/L	0.001		-	-	-	-	<0.002	<0.002	0.001	<0.001
Sulphate	mg/L	0.2	**500**	-	-	9	4	-	-	-	-
Sulphate (filtered)	mg/L	0.2	**500**	20	5	-	-	26	58	9	298
Ammonia as N	mg/L	0.01		19.7	16.0	21.3	18.3	21.3	21	2.95	5.5
Nitrate (as N)	mg/L	0.05	**10**	<0.06	<0.06	<0.06	0.06	0.15	<0.05	0.1	0.52
Nitrite (as N)	mg/L	0.03	**1**	-	-	-	-	-	-	-	-
Total Kjeldahl Nitrogen	mg/L	0.1		-	-	-	-	-	-	-	-
pH (Lab)	-	0.05	**6.5-8.5**	7.2	7.49	7.11	7.5	7.39	7.41	7.31	7.17
Electrical Conductivity (Lab)	µS/cm	1		801	758	822	771	954	1,190	997	998
Field											
DO (Field)	mg/L			-	-	5	5.2	0.04	0.82	6.6	2.1
Redox (Field)	mV			-	-	60	138	75	106	-25	-243
Temperature (Field)	oC			-	-	10.8	13.9	11.9	10.3	8.7	10
Conductivity (field)	µS/cm			-	-	686	634	894	530	842	1,326
pH (Field)	-		**6.5-8.5**	-	-	7.15	7.18	6.7	6.68	6.6	6.77

Table 5: Groundwater Quality - Lower Bedrock

	Unit	EQL	ODWQS	TW04-1 01 Oct 2011	TW04-1 16 May 2012	TW04-1 25 Sep 2012	TW04-1 04 Jun 2013	TW04-1 30 Oct 2013	TW04-1 09 Jun 2014	TW04-1 14 Nov 2014	TW04-1 19 May 2015	TW04-1 03 Nov 2015	TW04-1 19 May 2016	TW04-1 26 Oct 2016	TW04-1 07 Jun 2017
Metals															
Arsenic (filtered)	µg/L	0.1	**25**	<0.2	0.4	0.2	0.3	0.3	0.6	0.4	<0.2	2.4	<0.2	0.3	<0.2
Barium (filtered)	µg/L	0.01	**1,000**	24.1	21.9	35.8	17.1	23.0	17.4	24.1	17.4	40.2	14.9	131	18.9
Boron (filtered)	µg/L	0.2	**5,000**	13.1	10.4	26.8	10.3	14.2	7.9	17.6	23.0	23.0	21	90	15
Calcium (filtered)	µg/L	10		111,000	98,300	128,000	92,200	104,000	103,000	107,000	98,600	148,000	89,600	292,000	97,700
Cadmium (filtered)	µg/L	0.003	**5**	<0.003	<0.003	<0.003	0.009	0.005	0.008	<0.003	0.005	0.006	<0.003	0.012	<0.003
Chloride	µg/L	200	**250,000**	5,100	5,600	10,000	8,400	5,500	3,500	3,500	3,000	16,000	4,000	68,000	2,000
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	<0.5	<0.5	<0.5	<0.5	<0.5	0.29	<0.03	0.06	<0.03	0.35	0.37	0.56
Copper (filtered)	µg/L	0.02	**1,000**	0.9	0.6	0.6	0.7	<0.5	0.60	0.80	0.70	0.71	0.38	0.90	0.44
Iron (filtered)	µg/L	2	**300**	<3	<3	24	9	14	4	185	18	9	94	284	14
Lead (filtered)	µg/L	0.01	**10**	0.06	0.02	0.04	0.06	<0.02	0.42	0.01	<0.01	0.02	0.01	0.18	0.03
Magnesium (filtered)	µg/L	1		1,980	1,730	2,720	1,630	2,160	1,760	2,080	1,780	3,440	1,730	9,310	1,670
Manganese (filtered)	µg/L	0.01	**50**	9.79	7.77	21.7	1.17	2.03	1.46	2.83	0.62	14.3	0.19	**63.4**	0.12
Mercury (filtered)	µg/L	0.01	**1**	<0.1	<0.1	<0.1	<0.01	-	-	-	-	<0.01	<0.01	<0.01	-
Phosphorus (filtered)	ug/L	9		50	<30	50	30	-	-	-	-	-	-	-	-
Phosphorus total (P2O5)	µg/L	10		-	-	-	-	-	-	-	-	-	-	-	-
Potassium (filtered)	µg/L	2		1,100	1,000	2,020	885	1,700	941	1,420	874	2,380	823	3,620	871
Sodium (filtered)	µg/L	10	**200,000**	2,220	2,020	5,140	2,140	2,890	2,590	2,600	2,480	6,430	2,590	50,800	2,910
Zinc (filtered)	µg/L	2	**5,000**	2	4	<2	4	<2	3	2	<2	3	2	<2	<2
Inorganics															
Alkalinity (total) as CaCO3	mg/L	2	**500**	239	235	301	213	171	254	270	265	316	219	**548**	249
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	-	-	-	-	-	-	-	-	-	-	-
Total Dissolved Solids	mg/L	3	**500**	343	269	394	234	286	329	337	274	403	220	**1,120**	243
Chemical Oxygen Demand	mg/L	5		<8	8	<8	27	<8	<8	<8	8	<8	9	18	<8
Total Suspended Solids	mg/L	2		8	<2	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	2.1	**5.1**	1.4	3.0	1.8	<1	1.9	1.9	2.6	<1	**6**	1
Biochemical Oxygen Demand	mg/L	2		<2	<12	-	-	-	-	-	-	-	-	-	-
Phenols (4AAP)	mg/L	0.001		<0.002	0.013	<0.002	<0.002	-	-	-	-	-	-	-	-
Sulphate	mg/L	0.2	**500**	-	-	-	-	-	-	-	4.4	-	-	310	-
Sulphate (filtered)	mg/L	0.2	**500**	6.0	5.4	7.0	4.3	9.5	4.1	6.0	-	23	4	-	3
Ammonia as N	mg/L	0.01		0.1	<0.1	0.5	<0.1	0.2	0.3	<0.1	<0.1	0.5	<0.1	0.9	<0.1
Nitrate (as N)	mg/L	0.05	**10**	7.80	4.25	2.90	2.80	3.34	2.65	2.53	1.40	3.25	0.75	0.16	0.62
Nitrite (as N)	mg/L	0.03	**1**	<0.06	<0.06	<0.06	<0.03	-	-	-	-	-	-	-	-
Total Kjeldahl Nitrogen	mg/L	0.1		3.3	0.6	0.6	<0.5	-	-	-	-	-	-	-	-
pH (Lab)	-	0.05	**6.5-8.5**	8.03	7.99	7.81	7.84	8.13	7.98	8.03	7.72	7.91	8.15	7.09	7.7
Electrical Conductivity (Lab)	µS/cm	1		563	493	670	470	478	498	524	475	651	452	1,540	457
Field															
DO (Field)	mg/L			-	-	-	-	-	-	-	-	-	-	-	-
Redox (Field)	mV			-	-	-	-	-	-	-	-	-	-	-	-
Temperature (Field)	oC			-	-	-	-	-	-	-	-	-	-	-	-
Conductivity (field)	µS/cm			-	-	-	-	-	-	-	-	-	-	-	-
pH (Field)	-		**6.5-8.5**	-	-	-	-	-	-	-	-	-	-	-	-

Table 5: Groundwater Quality - Lower Bedrock

	Unit	EQL	ODWQS	TW04-1 29 Sep 2017	TW04-1 11 Jun 2018	TW04-1 05 Nov 2018	TW04-1 29 May 2019	TW04-1 28 Oct 2019	TW04-1 27 May 2020	TW04-1 12 Nov 2020	TW04-1 28 Jun 2021	TW04-1 10 Nov 2021	TW04-1 11 Apr 2022	TW04-1 14 Nov 2022
Metals														
Arsenic (filtered)	µg/L	0.1	**25**	<0.2	<0.2	0.3	<0.2	**70.1**	<0.2	<0.2	-	-	-	-
Barium (filtered)	µg/L	0.01	**1,000**	44.6	19.4	30.9	19	90	16.2	30	22	24	17	40
Boron (filtered)	µg/L	0.2	**5,000**	33	22	1,240	12	**305,000**	13	<2	13	11	9	27
Calcium (filtered)	µg/L	10		150,000	110,000	399,000	120,000	0.004	93,100	114,000	111,000	121,000	93,800	161,000
Cadmium (filtered)	µg/L	0.003	**5**	<0.003	0.010	0.005	<0.003	0.39	<0.003	<0.003	-	-	-	-
Chloride	µg/L	200	**250,000**	11,000	2,000	38,000	3,000	43,000	2,000	7,000	6,200	5,600	4,700	24,100
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	0.75	0.23	0.23	0.14	1.2	0.22	0.14	-	-	-	-
Copper (filtered)	µg/L	0.02	**1,000**	0.72	1.48	1.02	0.9	77	0.6	0.8	-	-	-	-
Iron (filtered)	µg/L	2	**300**	37	**592**	**3,030**	42	**1,910**	<7	21	12	6	5	<5
Lead (filtered)	µg/L	0.01	**10**	0.12	1.43	0.1	0.02	0.11	0.03	0.07	-	-	-	-
Magnesium (filtered)	µg/L	1		3,650	1,560	36,300	1,880	31.3	1,620	2,490	2,160	2,190	1,600	4,220
Manganese (filtered)	µg/L	0.01	**50**	29	**127**	**472**	0.53	**31,000**	0.57	1.83	-	-	1	5
Mercury (filtered)	µg/L	0.01	**1**	-	-	-	<10	0.4	-	-	-	-	-	-
Phosphorus (filtered)	ug/L	9		-	-	-	-	-	40	-	-	-	-	-
Phosphorus total (P2O5)	µg/L	10		-	-	-	-	-	-	-	-	-	-	-
Potassium (filtered)	µg/L	2		2,530	876	4,310	820	7,310	765	1,360	-	-	-	-
Sodium (filtered)	µg/L	10	**200,000**	9,830	2,360	78,500	2,750	13	2,420	3,200	3,700	2,700	2,300	9,400
Zinc (filtered)	µg/L	2	**5,000**	2	<2	4	3	4	2	-	-	-	-	-
Inorganics														
Alkalinity (total) as CaCO3	mg/L	2	**500**	325	231	407	272	436	233	271	241	272	217	357
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	-	-	-	-	-	-	286	312	241	420
Total Dissolved Solids	mg/L	3	**500**	391	257	**1,010**	280	**966**	257	380	269	292	232	435
Chemical Oxygen Demand	mg/L	5		9	<8	11	<8	24	<8	<8	<5	20	<5	6
Total Suspended Solids	mg/L	2		-	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	2	2	**8**	2	**8**	1	2	3.4	2.3	3.7	3.2
Biochemical Oxygen Demand	mg/L	2		-	-	-	-	-	-	-	-	-	-	-
Phenols (4AAP)	mg/L	0.001		-	-	-	-	-	-	-	<0.002	<0.002	<0.001	<0.001
Sulphate	mg/L	0.2	**500**	-	5	-	9	340	6	-	-	-	-	-
Sulphate (filtered)	mg/L	0.2	**500**	34	-	310	-	-	-	15	9	7	6	40
Ammonia as N	mg/L	0.01		0.6	<0.1	0.6	<0.1	0.2	<0.1	<0.1	0.02	0.05	<0.01	0.09
Nitrate (as N)	mg/L	0.05	**10**	1.36	1.11	1.56	1.87	1.33	4.4	3.89	1.74	6.7	2.18	1.49
Nitrite (as N)	mg/L	0.03	**1**	-	-	-	-	-	-	-	-	-	-	-
Total Kjeldahl Nitrogen	mg/L	0.1		-	-	-	-	-	-	-	-	-	-	-
pH (Lab)	-	0.05	**6.5-8.5**	7.76	7.93	7.51	8.01	7.72	7.8	7.67	7.75	7.89	7.31	7.37
Electrical Conductivity (Lab)	µS/cm	1		693	444	1,320	529	1,360	459	559	520	564	449	826
Field														
DO (Field)	mg/L			-	-	-	7.5	6.5	8.8	7.6	5.11	9.41	9.62	5.9
Redox (Field)	mV			-	-	-	189	155	103	196	57	11	52	-227
Temperature (Field)	oC			-	-	-	9.7	12.1	13.3	12.1	15.6	10	9.2	8.5
Conductivity (field)	µS/cm			-	-	-	400	1,107	380	374	512	254	374	553
pH (Field)	-		**6.5-8.5**	-	-	-	7.4	7.07	7.53	8.45	7.11	7.21	7.2	6.92

Table 5: Groundwater Quality - Lower Bedrock

	Unit	EQL	ODWQS	TW05-1 01 Oct 2011	TW05-1 15 May 2012	TW05-1 25 Sep 2012	TW05-1 04 Jun 2013	TW05-1 30 Oct 2013	TW05-1 09 Jun 2014	TW05-1 14 Nov 2014	TW05-1 19 May 2015	TW05-1 03 Nov 2015	TW05-1 19 May 2016	TW05-1 26 Oct 2016	TW05-1 07 Jun 2017
Metals															
Arsenic (filtered)	µg/L	0.1	**25**	0.5	0.3	0.3	0.4	0.4	4.8	0.6	<0.2	2.0	<0.2	0.2	0.9
Barium (filtered)	µg/L	0.01	**1,000**	168	123	146	141	137	730	104	72.7	86.0	51.6	68.91	38.3
Boron (filtered)	µg/L	0.2	**5,000**	86.7	94.8	72.4	76.7	77.0	217	114	151	160	239	322	1,560
Calcium (filtered)	µg/L	10		165,000	110,000	129,000	121,000	137,000	182,000	159,000	189,000	198,000	146,000	238,000	517,000
Cadmium (filtered)	µg/L	0.003	**5**	<0.003	<0.003	<0.003	0.050	<0.003	0.150	<0.003	0.010	0.003	<0.003	0.011	<0.003
Chloride	µg/L	200	**250,000**	35,000	18,000	27,000	28,000	33,000	36,000	51,000	51,000	81,000	40,000	150,000	150,000
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	<0.5	<0.5	<0.5	<0.5	1.0	4.45	1.59	0.06	<0.03	0.35	0.30	0.84
Copper (filtered)	µg/L	0.02	**1,000**	0.8	0.6	<0.5	0.7	0.6	1.21	1.88	0.67	0.61	0.36	0.08	0.45
Iron (filtered)	µg/L	2	**300**	**2,430**	50	**1,320**	17	**1,220**	**145,000**	**871**	**400**	**2,600**	45	**3,860**	**14,000**
Lead (filtered)	µg/L	0.01	**10**	<0.02	0.07	0.02	4.65	0.07	0.26	0.03	0.12	<0.01	0.01	<0.01	0.04
Magnesium (filtered)	µg/L	1		12,300	7,900	9,510	9,200	10,200	13,400	11,800	14,700	16,600	12,800	23,200	62,700
Manganese (filtered)	µg/L	0.01	**50**	**248**	8.22	**340**	3.35	**297**	**648**	**132**	**74.8**	**367**	2.01	**520**	**1,200**
Mercury (filtered)	µg/L	0.01	**1**	<0.1	<0.1	-	<0.01	-	-	-	-	<0.01	<0.01	<0.01	-
Phosphorus (filtered)	ug/L	9		90	-	-	<30	-	-	-	-	-	-	-	-
Phosphorus total (P2O5)	µg/L	10		-	-	-	-	-	-	-	-	-	-	-	-
Potassium (filtered)	µg/L	2		2,780	2,290	2,200	2,340	2,620	22,000	2,780	2,560	2,790	2,620	3,300	7,010
Sodium (filtered)	µg/L	10	**200,000**	14,600	11,900	13,100	12,800	15,600	23,500	20,700	26,300	30,700	30,500	43,600	99,100
Zinc (filtered)	µg/L	2	**5,000**	4	3	<2	2	<2	16	2	<2	3	5	3	<2
Inorganics															
Alkalinity (total) as CaCO3	mg/L	2	**500**	299	269	287	255	320	308	365	339	392	309	408	418
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	-	-	-	-	-	-	-	-	-	-	-
Total Dissolved Solids	mg/L	3	**500**	**520**	369	**511**	463	**683**	**671**	**803**	**711**	**1,170**	**706**	**1,940**	**2,090**
Chemical Oxygen Demand	mg/L	5		10	<8	12	<8	14	12	16	13	27	12	39	32
Total Suspended Solids	mg/L	2		43	-	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	3.0	**5.7**	4.0	**5.4**	3.4	2.6	3.9	3.6	**6.8**	4.3	**6**	**14**
Biochemical Oxygen Demand	mg/L	2		<2	-	-	-	-	-	-	-	-	-	-	-
Phenols (4AAP)	mg/L	0.001		<0.002	-	-	<0.002	-	-	-	-	-	-	-	-
Sulphate	mg/L	0.2	**500**	-	41	-	-	-	-	-	160	-	-	**770**	-
Sulphate (filtered)	mg/L	0.2	**500**	86	-	75	62	96	100	170	-	350	84	-	**930**
Ammonia as N	mg/L	0.01		0.2	<0.1	<0.1	<0.1	0.2	<0.1	0.2	<0.1	0.2	0.1	0.2	0.7
Nitrate (as N)	mg/L	0.05	**10**	<0.05	0.09	<0.05	0.42	<0.06	0.08	0.10	0.09	<0.06	0.13	<0.06	<0.06
Nitrite (as N)	mg/L	0.03	**1**	<0.06	<0.06	-	<0.03	-	-	-	-	-	-	-	-
Total Kjeldahl Nitrogen	mg/L	0.1		<0.5	-	-	<0.5	-	-	-	-	-	-	-	-
pH (Lab)	-	0.05	**6.5-8.5**	7.97	7.87	7.81	7.67	8.01	7.90	7.83	7.84	7.67	7.80	7.16	7.12
Electrical Conductivity (Lab)	µS/cm	1		841	631	911	683	1,130	885	1,180	1,040	1,520	1,000	2,230	2,930
Field															
DO (Field)	mg/L			-	-	-	-	-	-	-	-	-	-	-	-
Redox (Field)	mV			-	-	-	-	-	-	-	-	-	-	-	-
Temperature (Field)	oC			-	-	-	-	-	-	-	-	-	-	-	-
Conductivity (field)	µS/cm			-	-	-	-	-	-	-	-	-	-	-	-
pH (Field)	-		**6.5-8.5**	-	-	-	-	-	-	-	-	-	-	-	-

Table 5: Groundwater Quality - Lower Bedrock

	Unit	EQL	ODWQS	TW05-1 29 Sep 2017	TW05-1 11 Jun 2018	TW05-1 05 Nov 2018	TW05-1 29 May 2019	TW05-1 28 Oct 2019	TW05-1 27 May 2020	TW05-1 12 Nov 2020	TW05-1 28 Jun 2021	TW05-1 10 Nov 2021	TW05-1 11 Apr 2022	TW05-1 14 Nov 2022
Metals														
Arsenic (filtered)	µg/L	0.1	**25**	0.4	0.6	0.3	0.4	5.97	0.3	0.4	-	-	-	-
Barium (filtered)	µg/L	0.01	**1,000**	48.1	32.4	92	27.3	374	42.8	30.2	28	29	34	36
Boron (filtered)	µg/L	0.2	**5,000**	1,000	1,830	77	1,490	**57,900**	2,330	1,570	4,600	4,070	3,510	3,150
Calcium (filtered)	µg/L	10		484,000	466,000	295,000	475,000	<0.003	533,000	482,000	444,000	449,000	295,000	362,000
Cadmium (filtered)	µg/L	0.003	**5**	<0.003	0.007	0.007	<0.003	<0.08	<0.003	<0.003	-	-	-	-
Chloride	µg/L	200	**250,000**	150,000	97,000	150,000	160,000	170,000	230,000	190,000	158,000	157,000	125,000	117,000
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	0.93	0.26	0.21	0.25	<0.2	0.33	0.25	-	-	-	-
Copper (filtered)	µg/L	0.02	**1,000**	1.25	0.74	1.11	2.3	**1,450**	2.8	0.6	-	-	-	-
Iron (filtered)	µg/L	2	**300**	**7,180**	**6,110**	<7	**6,360**	**573**	**4,160**	**3,480**	**7,460**	**3,890**	**4,090**	**5,350**
Lead (filtered)	µg/L	0.01	**10**	0.07	0.04	0.06	0.02	<0.01	0.07	0.06	-	-	-	-
Magnesium (filtered)	µg/L	1		43,900	52,600	7,260	48,000	117	77,800	52,100	105,000	91,400	72,800	72,400
Manganese (filtered)	µg/L	0.01	**50**	**804**	**677**	24.1	**852**	**11,700**	**1,180**	**547**	-	-	**578**	**717**
Mercury (filtered)	µg/L	0.01	**1**	-	-	-	<10	<0.2	-	-	-	-	-	-
Phosphorus (filtered)	ug/L	9		-	-	-	-	-	<30	-	-	-	-	-
Phosphorus total (P2O5)	µg/L	10		-	-	-	-	-	-	-	-	-	-	-
Potassium (filtered)	µg/L	2		5,430	6,250	2,690	4,920	7,950	6,230	5,710	-	-	-	-
Sodium (filtered)	µg/L	10	**200,000**	73,100	91,600	22,800	82,900	3	**251,000**	85,400	143,000	132,000	107,000	105,000
Zinc (filtered)	µg/L	2	**5,000**	3	<2	<2	3	<2	2	-	-	-	-	-
Inorganics														
Alkalinity (total) as CaCO3	mg/L	2	**500**	425	405	445	451	413	435	412	450	496	430	449
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	-	-	-	-	-	-	**1,540**	**1,500**	**1,040**	**1,200**
Total Dissolved Solids	mg/L	3	**500**	**2,240**	**1,980**	**2,480**	**2,390**	**2,670**	**2,350**	**2,560**	**1,530**	**1,500**	**1,190**	**1,390**
Chemical Oxygen Demand	mg/L	5		32	24	37	32	25	43	39	39	38	31	42
Total Suspended Solids	mg/L	2		-	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	**12**	**9**	**8**	**12**	**11**	**16**	**12**	**8.6**	**7.2**	**6.9**	4.5
Biochemical Oxygen Demand	mg/L	2		-	-	-	-	-	-	-	-	-	-	-
Phenols (4AAP)	mg/L	0.001		-	-	-	-	-	-	-	<0.002	<0.002	<0.001	<0.001
Sulphate	mg/L	0.2	**500**	-	460	-	**950**	**1,100**	**1,100**	-	-	-	-	-
Sulphate (filtered)	mg/L	0.2	**500**	**760**	-	**940**	-	-	-	**1,200**	**973**	**1,010**	**773**	**889**
Ammonia as N	mg/L	0.01		0.5	<0.1	1.2	0.7	0.6	1	0.8	1.29	1.34	1.33	0.89
Nitrate (as N)	mg/L	0.05	**10**	0.84	0.38	0.34	<0.06	<0.06	<0.06	<0.06	1	<0.05	<0.3	<0.5
Nitrite (as N)	mg/L	0.03	**1**	-	-	-	-	-	-	-	-	-	-	-
Total Kjeldahl Nitrogen	mg/L	0.1		-	-	-	-	-	-	-	-	-	-	-
pH (Lab)	-	0.05	**6.5-8.5**	7.44	7.47	7.17	7.08	7.62	7.18	7.21	7.36	7.63	7.3	7.31
Electrical Conductivity (Lab)	µS/cm	1		2,670	2,250	2,650	2,570	2,800	2,620	2,780	2,750	2,690	2,160	2,510
Field														
DO (Field)	mg/L			-	-	-	5.7	6.9	6.1	5.6	5.98	5.74	3.1	2.2
Redox (Field)	mV			-	-	-	20	122	76	-8	85	63	-37	-228
Temperature (Field)	oC			-	-	-	9.1	10.9	10.6	10.9	12.4	9.6	8.6	8.1
Conductivity (field)	µS/cm			-	-	-	2,130	221	2,072	1,831	2,354	1,101	1,715	1,858
pH (Field)	-		**6.5-8.5**	-	-	-	6.81	6.65	7.08	7.56	6.9	6.86	6.75	6.81

Table 5: Groundwater Quality - Lower Bedrock

	Unit	EQL	ODWQS	TW06-1 01 Oct 2011	TW06-1 15 May 2012	TW06-1 25 Sep 2012	TW06-1 04 Jun 2013	TW06-1 30 Oct 2013	TW06-1 09 Jun 2014	TW06-1 14 Nov 2014	TW06-1 19 May 2015	TW06-1 03 Nov 2015	TW06-1 19 May 2016	TW06-1 26 Oct 2016
Metals														
Arsenic (filtered)	µg/L	0.1	**25**	0.3	0.4	0.4	0.5	0.7	0.2	0.9	<0.2	0.4	<0.2	<0.2
Barium (filtered)	µg/L	0.01	**1,000**	416	260	362	282	484	148	355	318	490	313	341
Boron (filtered)	µg/L	0.2	**5,000**	143	98.4	110	73.0	193	52.5	150	80.7	156	134	115
Calcium (filtered)	µg/L	10		159,000	146,000	174,000	140,000	186,000	109,000	182,000	146,000	189,000	189,000	167,000
Cadmium (filtered)	µg/L	0.003	**5**	0.020	<0.003	0.033	0.026	0.038	0.012	0.022	0.026	0.029	0.030	0.009
Chloride	µg/L	200	**250,000**	35,000	21,000	33,000	21,000	40,000	7,000	40,000	24,000	44,000	35,000	31,000
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	0.9	0.7	<0.5	<0.5	2.0	0.31	2.66	0.06	0.15	0.37	0.43
Copper (filtered)	µg/L	0.02	**1,000**	1.5	1.6	1.4	1.5	2.3	1.23	2.88	1.93	1.00	1.69	0.86
Iron (filtered)	µg/L	2	**300**	126	<3	10	<3	17	7	12	<2	**306**	12	37
Lead (filtered)	µg/L	0.01	**10**	0.05	0.10	0.08	0.02	0.05	0.09	0.04	0.01	0.13	<0.01	0.05
Magnesium (filtered)	µg/L	1		9,040	6,980	9,460	6,680	11,400	3,950	9,740	7,390	13,200	8,710	8,520
Manganese (filtered)	µg/L	0.01	**50**	**3,250**	**962**	**1,930**	**1,330**	**3,250**	**363**	**1,960**	**1,860**	**6,070**	**1,350**	**2,560**
Mercury (filtered)	µg/L	0.01	**1**	-	-	-	-	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01
Phosphorus (filtered)	ug/L	9		-	-	-	<9	<30	<30	<30	30	70	<30	<30
Phosphorus total (P2O5)	µg/L	10		-	-	-	-	-	-	-	-	-	-	-
Potassium (filtered)	µg/L	2		11,200	5,650	8,880	5,450	12,900	3,780	8,540	5,380	11,500	4,840	6,400
Sodium (filtered)	µg/L	10	**200,000**	21,000	15,900	21,600	11,900	27,400	5,920	24,600	13,700	33,000	21,500	21,700
Zinc (filtered)	µg/L	2	**5,000**	4	3	3	6	2	3	2	4	5	3	2
Inorganics														
Alkalinity (total) as CaCO3	mg/L	2	**500**	419	353	455	326	471	283	478	385	**562**	403	414
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	-	-	377	-	-	-	-	-	-	-
Total Dissolved Solids	mg/L	3	**500**	497	449	**551**	494	**754**	351	**609**	474	**674**	**677**	**557**
Chemical Oxygen Demand	mg/L	5		10	8	20	<8	17	<8	12	11	23	14	12
Total Suspended Solids	mg/L	2		122	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	**5.4**	**8.4**	4.1	5.0	**6.8**	4.8	**13.5**	2.7	**7.8**	3.5	3
Biochemical Oxygen Demand	mg/L	2		14	-	-	-	-	-	-	-	-	-	-
Phenols (4AAP)	mg/L	0.001		-	-	-	-	<0.002	<0.002	0.004	<0.002	0.007	0.002	<0.002
Sulphate	mg/L	0.2	**500**	-	-	-	-	-	-	-	28	-	-	72
Sulphate (filtered)	mg/L	0.2	**500**	24	57	35	36	28	9.7	42	-	50	77	-
Ammonia as N	mg/L	0.01		5.7	0.4	3.3	2.6	8.3	0.9	3.1	2.0	7.6	0.8	2.7
Nitrate (as N)	mg/L	0.05	**10**	0.48	1.77	0.38	0.94	0.24	2.61	0.10	0.61	0.19	0.15	0.24
Nitrite (as N)	mg/L	0.03	**1**	-	-	-	-	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Total Kjeldahl Nitrogen	mg/L	0.1		-	-	-	-	8.2	1.0	3.6	2.2	8.1	1.1	2.8
pH (Lab)	-	0.05	**6.5-8.5**	7.80	7.59	7.49	7.80	7.77	7.91	7.82	7.83	7.54	7.83	7.37
Electrical Conductivity (Lab)	µS/cm	1		906	808	1,050	759	1,060	567	1,020	809	1,210	1,010	924
Field														
DO (Field)	mg/L			-	-	-	-	-	-	-	-	-	-	-
Redox (Field)	mV			-	-	-	-	-	-	-	-	-	-	-
Temperature (Field)	oC			-	-	-	-	-	-	-	-	-	-	-
Conductivity (field)	µS/cm			-	-	-	-	-	-	-	-	-	-	-
pH (Field)	-		**6.5-8.5**	-	-	-	-	-	-	-	-	-	-	-

Table 5: Groundwater Quality - Lower Bedrock

	Unit	EQL	ODWQS	TW06-1 07 Jun 2017	TW06-1 29 Sep 2017	TW06-1 11 Jun 2018	TW06-1 29 May 2019	TW06-1 28 Oct 2019	TW06-1 27 May 2020	TW06-1 12 Nov 2020	TW06-1 28 Jun 2021	TW06-1 10 Nov 2021	TW06-1 11 Apr 2022	TW06-1 14 Nov 2022
Metals														
Arsenic (filtered)	µg/L	0.1	**25**	<0.2	<0.2	<0.2	<0.2	0.6	<0.2	<0.2	<0.1	<0.1	<0.1	0.1
Barium (filtered)	µg/L	0.01	**1,000**	138	297	225	117	393	103	279	296	301	110	306
Boron (filtered)	µg/L	0.2	**5,000**	33	113	56	23	145	29	91	110	136	27	170
Calcium (filtered)	µg/L	10		103,000	166,000	149,000	115,000	253,000	105,000	178,000	178,000	160,000	101,000	194,000
Cadmium (filtered)	µg/L	0.003	**5**	0.014	0.026	0.012	0.016	0.056	<0.003	0.026	0.019	0.024	<0.015	0.022
Chloride	µg/L	200	**250,000**	3,000	39,000	17,000	5,000	55,000	5,000	34,000	38,400	27,300	7,100	43,300
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	1.01	0.77	0.12	0.11	0.32	0.17	0.17	<1	<1	<1	<1
Copper (filtered)	µg/L	0.02	**1,000**	0.77	3.11	1.07	1	1	0.9	0.9	1.9	1.1	0.8	1.1
Iron (filtered)	µg/L	2	**300**	60	13	<7	12	221	13	132	17	26	<5	26
Lead (filtered)	µg/L	0.01	**10**	0.16	0.2	<0.01	<3	0.34	0.05	0.1	0.05	0.08	0.02	0.04
Magnesium (filtered)	µg/L	1		2,990	7,710	5,050	3,650	13,600	3,680	9,080	9,900	10,500	3,900	12,700
Manganese (filtered)	µg/L	0.01	**50**	**241**	**950**	**374**	**568**	**4,360**	3.71	**1,210**	**1,190**	**1,390**	**213**	**1,630**
Mercury (filtered)	µg/L	0.01	**1**	<10	**70**	0.03	<10	<10	<10	<10	<0.02	<0.02	<0.02	<0.02
Phosphorus (filtered)	ug/L	9		<30	40	<30	<30	4	30	<3	-	-	-	-
Phosphorus total (P2O5)	µg/L	10		-	-	-	-	-	-	-	90	30	20	40
Potassium (filtered)	µg/L	2		2,540	4,520	4,010	2,330	8,140	2,280	7,720	5,000	7,400	2,400	7,200
Sodium (filtered)	µg/L	10	**200,000**	4,210	17,300	8,600	4,200	38,000	5,740	21,000	24,800	20,300	4,800	30,200
Zinc (filtered)	µg/L	2	**5,000**	2	3	<2	0.02	3	5	<2	<5	<5	<5	<5
Inorganics														
Alkalinity (total) as CaCO3	mg/L	2	**500**	239	355	292	399	**534**	266	454	352	392	228	**508**
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	-	-	-	-	-	-	486	443	269	**538**
Total Dissolved Solids	mg/L	3	**500**	274	**526**	380	**509**	**806**	300	**609**	**505**	467	263	**635**
Chemical Oxygen Demand	mg/L	5		<8	<8	<8	<8	16	<8	14	11	16	<5	25
Total Suspended Solids	mg/L	2		-	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	2	2	3	2	**8**	2	5	**5.9**	4.2	3	**5.4**
Biochemical Oxygen Demand	mg/L	2		-	-	-	-	-	-	-	-	-	-	-
Phenols (4AAP)	mg/L	0.001		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001
Sulphate	mg/L	0.2	**500**	-	-	35	12	-	10	-	-	-	-	-
Sulphate (filtered)	mg/L	0.2	**500**	6	82	-	-	110	-	80	90	45	9	79
Ammonia as N	mg/L	0.01		0.2	0.7	0.5	0.6	5.4	<0.1	4.5	1.07	3.45	0.46	3.59
Nitrate (as N)	mg/L	0.05	**10**	1.19	0.16	1.85	2.58	0.08	3.43	0.98	1.03	3.5	3.99	0.11
Nitrite (as N)	mg/L	0.03	**1**	<0.03	<0.03	0.22	0.16	<0.03	<0.03	0.44	0.19	0.07	0.06	0.05
Total Kjeldahl Nitrogen	mg/L	0.1		<0.5	1.1	0.8	0.8	6.4	<0.5	5.4	1.4	4	0.5	4.1
pH (Lab)	-	0.05	**6.5-8.5**	7.62	7.54	7.83	7.71	7.8	7.85	7.47	7.52	7.57	7.23	7.23
Electrical Conductivity (Lab)	µS/cm	1		483	862	656	817	1,270	530	977	950	882	508	1,180
Field														
DO (Field)	mg/L			-	-	-	4.5	7	7	6.1	2.19	3.18	2.95	2.21
Redox (Field)	mV			-	-	-	126	164	84	88	62	33	50	-223
Temperature (Field)	oC			-	-	-	9.6	11.4	13.9	11.4	14.8	10.4	6.9	9.5
Conductivity (field)	µS/cm			-	-	-	650	959	438	660	890	383	424	929
pH (Field)	-		**6.5-8.5**	-	-	-	7.38	7.03	7.46	7.25	6.89	6.82	6.97	6.79

Table 5: Groundwater Quality - Lower Bedrock

	Unit	EQL	ODWQS	TW07-1 01 Oct 2011	TW07-1 15 May 2012	TW07-1 25 Sep 2012	TW07-1 04 Jun 2013	TW07-1 30 Oct 2013	TW07-1 09 Jun 2014	TW07-1 14 Nov 2014	TW07-1 19 May 2015	TW07-1 03 Nov 2015	TW07-1 19 May 2016	TW07-1 26 Oct 2016
Metals														
Arsenic (filtered)	µg/L	0.1	**25**	<0.2	0.3	<0.2	0.4	0.5	<0.2	0.3	<0.2	<0.2	<0.2	<0.2
Barium (filtered)	µg/L	0.01	**1,000**	181	170	177	188	187	164	167	204	177	179	173
Boron (filtered)	µg/L	0.2	**5,000**	25.8	47.6	20.0	21.8	21.5	19.1	26.3	37.6	16.4	29	21
Calcium (filtered)	µg/L	10		94,700	93,600	94,300	87,200	92,400	94,000	94,000	101,000	94,600	97,000	97,700
Cadmium (filtered)	µg/L	0.003	**5**	0.058	<0.003	<0.003	0.005	0.005	0.011	<0.003	0.007	0.003	0.006	<0.003
Chloride	µg/L	200	**250,000**	9,400	9,500	14,000	16,000	17,000	14,000	8,900	15,000	14,000	16,000	15,000
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	<0.5	0.8	<0.5	<0.5	0.8	0.40	0.29	0.03	0.07	0.33	0.37
Copper (filtered)	µg/L	0.02	**1,000**	1.0	1.3	0.8	1.0	0.9	1.35	1.35	0.81	1.31	0.43	0.41
Iron (filtered)	µg/L	2	**300**	25	<3	11	<3	27	<2	28	85	26	162	204
Lead (filtered)	µg/L	0.01	**10**	<0.02	<0.02	<0.02	<0.02	0.02	0.04	0.03	0.02	0.05	0.02	0.05
Magnesium (filtered)	µg/L	1		4,640	4,760	4,780	4,560	4,680	4,730	4,700	5,090	5,320	5,140	4,940
Manganese (filtered)	µg/L	0.01	**50**	16.2	1.93	14.8	4.26	4.50	1.31	6.55	7.88	2.94	8.18	6.59
Mercury (filtered)	µg/L	0.01	**1**	-	-	-	-	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01
Phosphorus (filtered)	ug/L	9		-	-	-	<9	30	<30	<30	<30	<30	<30	<30
Phosphorus total (P2O5)	µg/L	10		-	-	-	-	-	-	-	-	-	-	-
Potassium (filtered)	µg/L	2		1,300	1,440	1,340	1,330	1,400	1,480	1,420	1,200	1,380	1,280	1,170
Sodium (filtered)	µg/L	10	**200,000**	7,150	7,500	7,850	7,790	8,320	8,300	8,720	8,220	9,710	9,150	8,230
Zinc (filtered)	µg/L	2	**5,000**	7	7	3	4	3	4	3	<2	8	4	3
Inorganics														
Alkalinity (total) as CaCO3	mg/L	2	**500**	235	241	224	214	124	240	247	247	245	218	253
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	-	-	236	-	-	-	-	-	-	-
Total Dissolved Solids	mg/L	3	**500**	277	306	271	337	260	363	323	331	297	320	291
Chemical Oxygen Demand	mg/L	5		<8	<8	10	<8	<8	11	<8	<8	<8	<8	11
Total Suspended Solids	mg/L	2		15	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	2.1	5.0	2.3	4.1	2.0	4.3	3.4	<1	2.1	<1	2
Biochemical Oxygen Demand	mg/L	2		<2	-	-	-	-	-	-	-	-	-	-
Phenols (4AAP)	mg/L	0.001		-	-	-	-	<0.002	<0.002	0.004	<0.002	<0.002	0.002	<0.002
Sulphate	mg/L	0.2	**500**	-	-	-	-	-	-	-	17	-	-	16
Sulphate (filtered)	mg/L	0.2	**500**	14	15	15	18	16	17	16	-	15	18	-
Ammonia as N	mg/L	0.01		<0.1	<0.1	<0.1	0.8	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1
Nitrate (as N)	mg/L	0.05	**10**	0.06	0.19	0.10	0.36	0.10	0.37	<0.06	0.23	0.19	<0.06	0.09
Nitrite (as N)	mg/L	0.03	**1**	-	-	-	-	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Total Kjeldahl Nitrogen	mg/L	0.1		-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
pH (Lab)	-	0.05	**6.5-8.5**	8.03	7.88	7.97	7.88	8.24	8.00	8.08	7.70	7.76	8.04	7.64
Electrical Conductivity (Lab)	µS/cm	1		506	524	540	509	486	517	511	523	531	534	517
Field														
DO (Field)	mg/L			-	-	-	-	-	-	-	-	-	-	-
Redox (Field)	mV			-	-	-	-	-	-	-	-	-	-	-
Temperature (Field)	oC			-	-	-	-	-	-	-	-	-	-	-
Conductivity (field)	µS/cm			-	-	-	-	-	-	-	-	-	-	-
pH (Field)	-		**6.5-8.5**	-	-	-	-	-	-	-	-	-	-	-

Table 5: Groundwater Quality - Lower Bedrock

	Unit	EQL	ODWQS	TW07-1 29 Sep 2017	TW07-1 11 Jun 2018	TW07-1 29 May 2019	TW07-1 28 Oct 2019	TW07-1 27 May 2020	TW07-1 12 Nov 2020	TW07-1 28 Jun 2021	TW07-1 10 Nov 2021	TW07-1 11 Apr 2022	TW07-1 23 Nov 2022
Metals													
Arsenic (filtered)	µg/L	0.1	**25**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	0.2	0.2	0.2
Barium (filtered)	µg/L	0.01	**1,000**	173	182	174	15.7	158	165	189	188	186	187
Boron (filtered)	µg/L	0.2	**5,000**	24	68	24	2	24	9	25	41	27	24
Calcium (filtered)	µg/L	10		102,000	123,000	102,000	14,100	91,400	97,300	98,500	101,000	102,000	98,400
Cadmium (filtered)	µg/L	0.003	**5**	<0.003	<0.003	0.003	<0.003	0.026	<0.003	<0.015	<0.015	<0.015	<0.01
Chloride	µg/L	200	**250,000**	14,000	18,000	12,000	13,000	13,000	12,000	14,100	14,500	15,800	19,300
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	0.62	0.18	0.12	<0.08	0.19	0.08	<1	<1	<1	<1
Copper (filtered)	µg/L	0.02	**1,000**	0.97	1.02	1.8	<0.2	1.7	1.6	0.4	0.4	0.4	0.7
Iron (filtered)	µg/L	2	**300**	33	**330**	15	<7	<7	24	**317**	**353**	**438**	**432**
Lead (filtered)	µg/L	0.01	**10**	0.05	<0.01	<3	<0.01	0.01	0.11	0.04	0.03	<0.02	0.03
Magnesium (filtered)	µg/L	1		5,260	5,670	4,860	668	4,600	4,070	4,930	4,910	5,030	5,050
Manganese (filtered)	µg/L	0.01	**50**	3.8	**78.9**	2.39	0.57	0.28	5.84	11	11	14	14
Mercury (filtered)	µg/L	0.01	**1**	**30**	<0.01	<10	<10	<10	<10	<0.02	<0.02	<0.02	<0.02
Phosphorus (filtered)	ug/L	9		40	<30	<30	<3	40	<3	-	-	-	-
Phosphorus total (P2O5)	µg/L	10		-	-	-	-	-	-	20	<10	10	10
Potassium (filtered)	µg/L	2		1,260	1,390	1,210	120	1,240	1,270	1,100	1,200	1,100	-
Sodium (filtered)	µg/L	10	**200,000**	9,080	10,600	8,400	1,300	9,330	7,340	9,000	8,900	9,100	9,700
Zinc (filtered)	µg/L	2	**5,000**	<2	5	0.05	<2	5	4	<5	<5	<5	<5
Inorganics													
Alkalinity (total) as CaCO3	mg/L	2	**500**	252	238	244	231	229	224	222	247	242	241
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	-	-	-	-	-	267	273	276	267
Total Dissolved Solids	mg/L	3	**500**	283	306	283	303	240	283	264	270	286	286
Chemical Oxygen Demand	mg/L	5		<8	<8	<8	8	<8	<8	<5	12	<5	6
Total Suspended Solids	mg/L	2		-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	2	2	2	<1	2	2	3.5	2.8	3.1	3
Biochemical Oxygen Demand	mg/L	2		-	-	-	-	-	-	-	-	-	-
Phenols (4AAP)	mg/L	0.001		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001
Sulphate	mg/L	0.2	**500**	20	38	18	17	11	19	-	-	-	-
Sulphate (filtered)	mg/L	0.2	**500**	-	-	-	-	-	-	18	16	18	15
Ammonia as N	mg/L	0.01		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.02	0.01	<0.01	0.03
Nitrate (as N)	mg/L	0.05	**10**	<0.06	0.17	<0.06	<0.06	<0.06	0.1	0.13	<0.05	<0.05	0.09
Nitrite (as N)	mg/L	0.03	**1**	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	<0.05	<0.05
Total Kjeldahl Nitrogen	mg/L	0.1		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.2	0.2	0.2	0.1
pH (Lab)	-	0.05	**6.5-8.5**	7.62	7.92	7.85	8.07	8.02	7.82	7.89	7.85	7.35	7.68
Electrical Conductivity (Lab)	µS/cm	1		507	511	528	513	501	487	510	522	551	552
Field													
DO (Field)	mg/L			-	-	10.3	6.3	5.5	3.9	2.23	4.56	4.38	2.79
Redox (Field)	mV			-	-	-14	118	211	21	-4	21	-67	-20
Temperature (Field)	oC			-	-	8.9	11.7	14.7	11.7	11.9	9.2	7.6	9.7
Conductivity (field)	µS/cm			-	-	430	395	411	337	519	229	476	503
pH (Field)	-		**6.5-8.5**	-	-	7.45	6.72	7.65	7.98	7.29	7.33	7.09	6.83

Table 5: Groundwater Quality - Lower Bedrock

	Unit	EQL	ODWQS	TW08-1 23 Dec 2014	TW08-1 19 May 2015	TW08-1 03 Nov 2015	TW08-1 19 May 2016	TW08-1 26 Oct 2016	TW08-1 07 Jun 2017	TW08-1 29 Sep 2017	TW08-1 11 Jun 2018
Metals											
Arsenic (filtered)	µg/L	0.1	**25**	<0.2	<0.2	0.3	<0.2	<0.2	<0.2	<0.2	<0.2
Barium (filtered)	µg/L	0.01	**1,000**	36.9	50.0	93.0	30.1	55.1	33.5	44.2	44.0
Boron (filtered)	µg/L	0.2	**5,000**	9.4	46.3	18.6	10	12	23	14	35
Calcium (filtered)	µg/L	10		101,000	99,400	134,000	89,900	114,000	90,500	105,000	109,000
Cadmium (filtered)	µg/L	0.003	**5**	<0.003	<0.003	0.005	<0.003	<0.003	0.003	0.003	0.030
Chloride	µg/L	200	**250,000**	2,900	6,000	8,000	2,000	12,000	2,000	5,000	2,000
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	<0.03	0.04	<0.03	0.35	0.42	0.59	0.98	0.29
Copper (filtered)	µg/L	0.02	**1,000**	0.54	0.45	0.89	0.43	0.41	0.91	0.66	0.61
Iron (filtered)	µg/L	2	**300**	5	129	96	<7	139	19	95	141
Lead (filtered)	µg/L	0.01	**10**	<0.01	0.05	0.03	<0.01	0.04	0.03	0.07	0.04
Magnesium (filtered)	µg/L	1		3,090	3,420	5,500	2,570	2,730	2,230	2,890	2,440
Manganese (filtered)	µg/L	0.01	**50**	4.89	**127**	**158**	2.80	40.1	12.9	34.1	12.1
Mercury (filtered)	µg/L	0.01	**1**	0.04	<0.01	<0.01	<0.01	<0.01	<10	**80**	0.03
Phosphorus (filtered)	ug/L	9		130	<30	60	<30	<30	<30	140	40
Phosphorus total (P2O5)	µg/L	10		-	-	-	-	-	-	-	-
Potassium (filtered)	µg/L	2		628	908	2,620	670	1,330	645	993	667
Sodium (filtered)	µg/L	10	**200,000**	2,610	3,240	5,900	2,060	3,750	1,800	2,950	1,900
Zinc (filtered)	µg/L	2	**5,000**	8	<2	13	<2	7	3	7	11
Inorganics											
Alkalinity (total) as CaCO3	mg/L	2	**500**	280	287	336	213	255	233	241	234
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	-	-	-	-	-	-	-
Total Dissolved Solids	mg/L	3	**500**	343	314	403	271	297	231	277	269
Chemical Oxygen Demand	mg/L	5		8	<8	14	<8	<8	<8	<8	<8
Total Suspended Solids	mg/L	2		-	-	-	-	-	-	-	-
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	<1	<1	2.4	<1	<1	2	1	1
Biochemical Oxygen Demand	mg/L	2		-	-	-	-	-	-	-	-
Phenols (4AAP)	mg/L	0.001		<0.002	0.004	<0.002	0.002	<0.002	<0.002	<0.002	<0.002
Sulphate	mg/L	0.2	**500**	6.0	3	-	-	8	3	5	4
Sulphate (filtered)	mg/L	0.2	**500**	-	-	15	5	-	-	-	-
Ammonia as N	mg/L	0.01		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrate (as N)	mg/L	0.05	**10**	1.63	0.93	1.14	0.46	1.59	0.45	1.29	0.61
Nitrite (as N)	mg/L	0.03	**1**	<0.03	<0.03	0.04	<0.03	<0.03	<0.03	<0.03	<0.03
Total Kjeldahl Nitrogen	mg/L	0.1		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
pH (Lab)	-	0.05	**6.5-8.5**	8.15	7.97	7.52	8.12	7.48	7.68	7.87	7.94
Electrical Conductivity (Lab)	µS/cm	1		512	550	662	453	527	423	487	438
Field											
DO (Field)	mg/L			-	-	-	-	-	-	-	-
Redox (Field)	mV			-	-	-	-	-	-	-	-
Temperature (Field)	oC			-	-	-	-	-	-	-	-
Conductivity (field)	µS/cm			-	-	-	-	-	-	-	-
pH (Field)	-		**6.5-8.5**	-	-	-	-	-	-	-	-

Table 5: Groundwater Quality - Lower Bedrock

	Unit	EQL	ODWQS	TW08-1 28 Oct 2019	TW08-1 27 May 2020	TW08-1 12 Nov 2020	TW08-1 28 Jun 2021	TW08-1 10 Nov 2021	TW08-1 11 Apr 2022	TW08-1 14 Nov 2022
Metals										
Arsenic (filtered)	µg/L	0.1	**25**	0.9	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1
Barium (filtered)	µg/L	0.01	**1,000**	61.1	37.2	60.3	32	42	28	47
Boron (filtered)	µg/L	0.2	**5,000**	15	8	<2	9	12	5	7
Calcium (filtered)	µg/L	10		120,000	86,800	106,000	98,300	114,000	85,200	114,000
Cadmium (filtered)	µg/L	0.003	**5**	0.017	<0.003	<0.003	<0.015	<0.015	<0.015	<0.01
Chloride	µg/L	200	**250,000**	7,000	2,000	7,000	4,300	2,700	3,000	15,800
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	1.27	0.16	0.14	<1	<1	<1	<1
Copper (filtered)	µg/L	0.02	**1,000**	2.7	0.8	0.8	0.6	0.6	0.8	0.8
Iron (filtered)	µg/L	2	**300**	**1,050**	<7	10	14	22	21	38
Lead (filtered)	µg/L	0.01	**10**	1.07	0.01	0.06	0.04	0.03	<0.02	0.06
Magnesium (filtered)	µg/L	1		2,980	2,160	2,360	2,560	3,060	2,140	2,770
Manganese (filtered)	µg/L	0.01	**50**	**86.3**	0.67	3.57	1	9	5	4
Mercury (filtered)	µg/L	0.01	**1**	<10	<10	<10	<0.02	<0.02	<0.02	<0.02
Phosphorus (filtered)	ug/L	9		75	800	<3	-	-	-	-
Phosphorus total (P2O5)	µg/L	10		-	-	-	120	270	200	180
Potassium (filtered)	µg/L	2		1,370	616	1,700	600	700	400	900
Sodium (filtered)	µg/L	10	**200,000**	3,340	1,770	3,060	2,500	2,700	1,600	4,000
Zinc (filtered)	µg/L	2	**5,000**	22	39	4	<5	<5	<5	<5
Inorganics										
Alkalinity (total) as CaCO3	mg/L	2	**500**	247	409	268	225	279	199	253
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	-	-	256	298	222	295
Total Dissolved Solids	mg/L	3	**500**	297	254	283	242	281	208	296
Chemical Oxygen Demand	mg/L	5		<8	8	<8	<5	14	12	10
Total Suspended Solids	mg/L	2		-	-	-	-	-	-	-
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	<1	1	1	2.6	1.7	2.6	1.5
Biochemical Oxygen Demand	mg/L	2		-	-	-	-	-	-	-
Phenols (4AAP)	mg/L	0.001		<0.002	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001
Sulphate	mg/L	0.2	**500**	7	4	9	-	-	-	-
Sulphate (filtered)	mg/L	0.2	**500**	-	-	-	6	6	4	8
Ammonia as N	mg/L	0.01		<0.1	<0.1	<0.1	<0.01	0.01	<0.01	<0.01
Nitrate (as N)	mg/L	0.05	**10**	1.21	0.71	2	1.37	1.22	0.47	1.4
Nitrite (as N)	mg/L	0.03	**1**	<0.03	<0.03	<0.03	<0.05	<0.05	<0.05	<0.05
Total Kjeldahl Nitrogen	mg/L	0.1		<0.5	<0.5	<0.5	0.3	0.4	0.5	0.5
pH (Lab)	-	0.05	**6.5-8.5**	8.03	8.02	7.85	7.85	7.73	7.32	7.57
Electrical Conductivity (Lab)	µS/cm	1		522	455	483	469	542	403	570
Field										
DO (Field)	mg/L			7.2	7.6	8.6	8.18	6.62	5.62	8.06
Redox (Field)	mV			118	166	106	114	57	47	-258
Temperature (Field)	oC			12.1	10.6	12.1	12.4	10.4	7.5	8.4
Conductivity (field)	µS/cm			413	419	327	456	237	329	513
pH (Field)	-		**6.5-8.5**	7.23	7.84	7.96	7.42	7.2	7.18	7.24

Table 5: Groundwater Quality - Lower Bedrock

	Unit	EQL	ODWQS	TW09-1 01 Oct 2011	TW09-1 15 May 2012	TW09-1 25 Sep 2012	TW09-1 04 Jun 2013	TW09-1 30 Oct 2013	TW09-1 09 Jun 2014	TW09-1 14 Nov 2014	TW09-1 19 May 2015	TW09-1 03 Nov 2015	TW09-1 19 May 2016	TW09-1 26 Oct 2016
Metals														
Arsenic (filtered)	µg/L	0.1	**25**	<0.2	0.3	<0.2	0.4	0.3	0.3	0.4	<0.2	<0.2	<0.2	<0.2
Barium (filtered)	µg/L	0.01	**1,000**	111	101	106	114	113	259	98.8	111	111	106	106
Boron (filtered)	µg/L	0.2	**5,000**	32.2	45.6	31.8	24.3	28.5	13.6	29.7	75.1	18.1	19	22
Calcium (filtered)	µg/L	10		105,000	98,200	96,300	99,900	103,000	101,000	98,600	107,000	98,400	104,000	108,000
Cadmium (filtered)	µg/L	0.003	**5**	<0.003	<0.003	<0.003	0.026	<0.003	0.006	<0.003	0.007	<0.003	<0.003	<0.003
Chloride	µg/L	200	**250,000**	14,000	11,000	14,000	19,000	17,000	5,000	8,900	15,000	14,000	17,000	19,000
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	<0.5	0.5	<0.5	<0.5	0.9	0.25	0.71	0.05	<0.03	0.28	0.30
Copper (filtered)	µg/L	0.02	**1,000**	1.4	<0.5	0.7	0.7	0.5	0.74	0.88	0.59	0.73	0.14	0.09
Iron (filtered)	µg/L	2	**300**	24	8	253	12	**391**	217	88	4	30	10	156
Lead (filtered)	µg/L	0.01	**10**	0.03	<0.02	<0.02	0.07	<0.02	0.03	<0.01	<0.01	0.02	<0.01	0.02
Magnesium (filtered)	µg/L	1		5,180	4,530	5,050	4,770	5,140	3,770	4,710	5,060	5,610	5,230	5,260
Manganese (filtered)	µg/L	0.01	**50**	17.5	23.8	31.9	8.47	49.5	31.7	15.0	3.89	36.7	12.5	38.0
Mercury (filtered)	µg/L	0.01	**1**	-	-	-	-	<0.01	<0.01	<0.01	<0.01	0.03	<0.01	<0.01
Phosphorus (filtered)	ug/L	9		-	-	-	<9	40	50	<30	<30	60	<30	<30
Phosphorus total (P2O5)	µg/L	10		-	-	-	-	-	-	-	-	-	-	-
Potassium (filtered)	µg/L	2		1,350	1,130	1,260	1,170	1,260	855	1,260	1,120	1,260	1,130	1,040
Sodium (filtered)	µg/L	10	**200,000**	6,850	5,620	7,160	6,680	7,480	3,380	8,460	7,780	9,040	8,260	7,740
Zinc (filtered)	µg/L	2	**5,000**	6	<2	3	3	<2	2	<2	3	3	<2	2
Inorganics														
Alkalinity (total) as CaCO3	mg/L	2	**500**	252	250	237	223	216	250	259	267	251	261	268
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	-	-	269	-	-	-	-	-	-	-
Total Dissolved Solids	mg/L	3	**500**	340	314	303	334	331	329	334	331	331	340	334
Chemical Oxygen Demand	mg/L	5		<8	<8	9	12	<8	96	<8	<8	<8	9	<8
Total Suspended Solids	mg/L	2		9	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	2.0	4.7	1.5	4.1	3.2	4.0	3.2	1.3	1.7	1.3	1
Biochemical Oxygen Demand	mg/L	2		<2	-	-	-	-	-	-	-	-	-	-
Phenols (4AAP)	mg/L	0.001		-	-	-	-	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	0.002
Sulphate	mg/L	0.2	**500**	-	-	-	-	-	-	-	18	-	-	25
Sulphate (filtered)	mg/L	0.2	**500**	23	18	18	21	22	20	17	-	17	22	-
Ammonia as N	mg/L	0.01		<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrate (as N)	mg/L	0.05	**10**	<0.05	<0.05	<0.05	<0.06	<0.06	2.87	<0.06	<0.06	<0.06	<0.06	0.32
Nitrite (as N)	mg/L	0.03	**1**	-	-	-	-	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Total Kjeldahl Nitrogen	mg/L	0.1		-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
pH (Lab)	-	0.05	**6.5-8.5**	7.97	7.81	7.97	7.92	8.14	7.96	8.08	8.00	8.08	8.08	7.59
Electrical Conductivity (Lab)	µS/cm	1		569	533	545	531	521	498	524	555	551	559	560
Field														
DO (Field)	mg/L			-	-	-	-	-	-	-	-	-	-	-
Redox (Field)	mV			-	-	-	-	-	-	-	-	-	-	-
Temperature (Field)	oC			-	-	-	-	-	-	-	-	-	-	-
Conductivity (field)	µS/cm			-	-	-	-	-	-	-	-	-	-	-
pH (Field)	-		**6.5-8.5**	-	-	-	-	-	-	-	-	-	-	-

Table 5: Groundwater Quality - Lower Bedrock

	Unit	EQL	ODWQS	TW09-1 07 Jun 2017	TW09-1 29 Sep 2017	TW09-1 11 Jun 2018	TW09-1 29 May 2019	TW09-1 28 Oct 2019	TW09-1 27 May 2020	TW09-1 12 Nov 2020	TW09-1 28 Jun 2021	TW09-1 10 Nov 2021	TW09-1 11 Apr 2022	TW09-1 14 Nov 2022
Metals														
Arsenic (filtered)	µg/L	0.1	**25**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1
Barium (filtered)	µg/L	0.01	**1,000**	112	107	134	110	109	112	118	116	110	124	119
Boron (filtered)	µg/L	0.2	**5,000**	19	21	105	22	25	20	13	24	23	24	23
Calcium (filtered)	µg/L	10		101,000	114,000	132,000	114,000	108,000	102,000	104,000	105,000	101,000	113,000	101,000
Cadmium (filtered)	µg/L	0.003	**5**	<0.003	0.004	<0.003	<0.003	0.01	<0.003	0.004	<0.015	<0.015	<0.015	<0.01
Chloride	µg/L	200	**250,000**	17,000	17,000	19,000	18,000	18,000	17,000	17,000	15,100	10,000	18,800	19,200
Chromium (III+VI) (filtered)	µg/L	0.03	**50**	0.51	0.65	0.11	0.34	0.15	0.15	0.14	<1	<1	<1	<1
Copper (filtered)	µg/L	0.02	**1,000**	0.22	41.5	0.65	0.8	0.8	0.5	1	0.3	0.5	1	0.4
Iron (filtered)	µg/L	2	**300**	25	122	<7	9	7	<7	44	10	15	14	6
Lead (filtered)	µg/L	0.01	**10**	0.02	5.23	<0.01	<3	0.02	<0.01	0.05	0.03	0.03	<0.02	<0.02
Magnesium (filtered)	µg/L	1		4,470	5,490	5,140	5,290	5,100	4,870	4,560	5,010	4,620	5,250	5,070
Manganese (filtered)	µg/L	0.01	**50**	9.94	13.1	1.13	1.94	3.4	0.05	27.5	11	12	13	12
Mercury (filtered)	µg/L	0.01	**1**	<10	**140**	<0.01	<10	<10	<10	<10	<0.02	<0.02	<0.02	<0.02
Phosphorus (filtered)	ug/L	9		<30	40	<30	<30	<3	100	<3	-	-	-	-
Phosphorus total (P2O5)	µg/L	10		-	-	-	-	-	-	-	<10	<10	<10	40
Potassium (filtered)	µg/L	2		1,110	1,130	1,300	1,240	1,840	1,040	1,220	1,000	1,000	1,000	1,100
Sodium (filtered)	µg/L	10	**200,000**	7,410	8,320	8,060	8,590	9,640	8,160	7,420	7,300	6,900	7,700	7,500
Zinc (filtered)	µg/L	2	**5,000**	<2	321	<2	0.01	3	<2	2	<5	<5	<5	<5
Inorganics														
Alkalinity (total) as CaCO3	mg/L	2	**500**	254	243	253	251	237	241	235	229	256	250	250
Hardness (as CaCO3) (filtered)	mg/L	0.05	**500**	-	-	-	-	-	-	-	283	271	304	274
Total Dissolved Solids	mg/L	3	**500**	297	320	343	300	303	343	300	276	265	302	296
Chemical Oxygen Demand	mg/L	5		10	<8	<8	<8	<8	12	<8	<5	7	<5	6
Total Suspended Solids	mg/L	2		-	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon (filtered)	mg/L	0.2	**5**	1	2	2	1	<1	2	2	4.4	2	4	2.5
Biochemical Oxygen Demand	mg/L	2		-	-	-	-	-	-	-	-	-	-	-
Phenols (4AAP)	mg/L	0.001		0.004	<0.002	<0.002	<0.002	<0.002	0.004	<0.002	<0.002	<0.002	<0.001	<0.001
Sulphate	mg/L	0.2	**500**	26	32	26	27	28	22	24	-	-	-	-
Sulphate (filtered)	mg/L	0.2	**500**	-	-	-	-	-	-	-	19	16	23	20
Ammonia as N	mg/L	0.01		<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.03	0.02	<0.01	<0.01
Nitrate (as N)	mg/L	0.05	**10**	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.14	<0.05	<0.05	<0.05	<0.05
Nitrite (as N)	mg/L	0.03	**1**	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	<0.05	<0.05
Total Kjeldahl Nitrogen	mg/L	0.1		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.2	0.1	0.2	0.1
pH (Lab)	-	0.05	**6.5-8.5**	7.63	7.67	7.93	7.9	8.02	8.1	7.77	7.83	7.9	7.38	7.62
Electrical Conductivity (Lab)	µS/cm	1		527	559	572	544	543	564	511	533	511	583	571
Field														
DO (Field)	mg/L			-	-	-	9.2	6.3	6.1	5	2.47	3.2	4.8	5.55
Redox (Field)	mV			-	-	-	85	179	209	204	61	16	190	-243
Temperature (Field)	oC			-	-	-	9.1	12.5	13.2	12.5	11.5	8.8	7	5.5
Conductivity (field)	µS/cm			-	-	-	311	410	527	323	527	227	474	379
pH (Field)	-		**6.5-8.5**	-	-	-	7.59	**6.42**	7.62	8.2	7.25	7.29	7.05	7.45

Table 6: Groundwater Quality - VOCs

	Unit	EQL	ODWQS	DP1 14 Nov 2022	TW02-1 16 May 2012	TW02-1 25 Sep 2012	TW02-1 04 Jun 2013	TW02-2 01 Oct 2011	TW02-2 16 May 2012	TW02-2 25 Sep 2012	TW02-2 04 Jun 2013	TW02-2 30 Oct 2013	TW02-2 09 Jun 2014	TW02-2 14 Nov 2014	TW02-2 19 May 2015
BTEX															
Benzene	µg/L	0.5	**1**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5	**60**	1.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.4	<0.5	<0.5
Ethylbenzene	µg/L	0.5	**140**	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Xylene (m & p)	µg/L	0.5		-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Xylene (o)	µg/L	0.5		-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Xylene Total	µg/L	0.5	**90**	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
VOCs															
Acetone	µg/L	30		-	-	-	-	-	-	-	-	-	-	-	-
Bromoform	µg/L	0.5		-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromomethane	µg/L	0.5		-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	µg/L	0.5		-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	µg/L	0.2	**2**	-	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorobenzene	µg/L	0.5	**80**	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chloroform	µg/L	0.5		-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	µg/L	0.5		-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chloroethane	µg/L	3		-	-	-	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chloromethane	µg/L	2		-	-	-	<5	<5	<5	<5	<5	<5	<5	<5	<5
Dibromoethane,1,2-	µg/L	0.2		-	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dichlorobenzene, 1,2-	µg/L	0.5	**200**	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorobenzene, 1,3-	µg/L	0.5		-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorobenzene, 1,4-	µg/L	0.5	**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
Dichlorodifluoromethane	µg/L	2		-	-	-	-	-	-	-	-	-	-	-	-
Dichloroethane, 1,1-	µg/L	0.5		-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethane, 1,2-	µg/L	0.5	**5**	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethene, 1,1-	µg/L	0.5	**14**	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethene, 1,2-cis-	µg/L	0.5		-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethene, 1,2-trans-	µg/L	0.5		-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloromethane	µg/L	0.5	**50**	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloropropane, 1,2-	µg/L	0.5		-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloropropene, 1,3- cis & trans	µg/L	0.5		-	-	-	-	-	-	-	-	-	-	-	-
Dichloropropene, 1,3- cis	µg/L	0.5		-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloropropene, 1,3- trans	µg/L	0.5		-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hexane	µg/L	5		-	-	-	-	-	-	-	-	-	-	-	-
Methyl Ethyl Ketone	µg/L	20		-	-	-	-	-	-	-	-	-	-	-	-
Methyl Iso-Butyl Ketone	µg/L	20		-	-	-	-	-	-	-	-	-	-	-	-
MTBE	µg/L	2		-	-	-	-	-	-	-	-	-	-	-	-
Styrene	µg/L	0.5		-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene	µg/L	0.5	**10**	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethane, 1,1,1,2-	µg/L	0.5		-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethane, 1,1,2,2-	µg/L	0.5		-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	µg/L	0.5	**5**	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethane, 1,1,1-	µg/L	0.5		-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethane, 1,1,2-	µg/L	0.5		-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trimethylbenzene, 1,3,5-	µg/L	0.1		-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	µg/L	5		-	-	-	<5	<5	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	µg/L	0.2	**1**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Table 6: Groundwater Quality - VOCs

	Unit	EQL	ODWQS	TW02-2 03 Nov 2015	TW02-2 19 May 2016	TW02-2 26 Oct 2016	TW02-2 11 Jun 2018	TW02-2 05 Nov 2018	TW02-2 28 Oct 2019	TW02-2 27 May 2020	TW02-2 12 Nov 2020	TW02-2 28 Jun 2021	TW02-2 10 Nov 2021	TW02-2 11 Apr 2022	TW02-2 14 Nov 2022
BTEX															
Benzene	µg/L	0.5	**1**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5	**60**	<0.5	<0.5	1.3	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5	**140**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
Xylene (m & p)	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<1	<1	<1
Xylene (o)	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
Xylene Total	µg/L	0.5	**90**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<1.1	<1.1	<1.1
VOCs															
Acetone	µg/L	30		-	-	-	-	-	-	-	-	-	<30	<30	<30
Bromoform	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<5	<5
Bromomethane	µg/L	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
Bromodichloromethane	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<2
Carbon tetrachloride	µg/L	0.2	**2**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorobenzene	µg/L	0.5	**80**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5
Chloroform	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<1	<1
Dibromochloromethane	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<2
Chloroethane	µg/L	3		<5	<5	<5	<5	<5	<5	<5	<5	<3	<3	<3	<3
Chloromethane	µg/L	2		<5	<5	<5	<5	<5	<5	<5	<5	<2	<2	<2	<2
Dibromoethane,1,2-	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dichlorobenzene, 1,2-	µg/L	0.5	**200**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorobenzene, 1,3-	µg/L	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
Dichlorobenzene, 1,4-	µg/L	0.5	**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
Dichlorodifluoromethane	µg/L	2		-	-	-	-	-	-	-	-	-	<2	<2	<2
Dichloroethane, 1,1-	µg/L	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
Dichloroethane, 1,2-	µg/L	0.5	**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
Dichloroethene, 1,1-	µg/L	0.5	**14**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethene, 1,2-cis-	µg/L	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
Dichloroethene, 1,2-trans-	µg/L	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
Dichloromethane	µg/L	0.5	**50**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<5	<5
Dichloropropane, 1,2-	µg/L	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
Dichloropropene, 1,3- cis & trans	µg/L	0.5		-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5
Dichloropropene, 1,3- cis	µg/L	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
Dichloropropene, 1,3- trans	µg/L	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
Hexane	µg/L	5		-	-	-	-	-	-	-	-	-	<5	<5	<5
Methyl Ethyl Ketone	µg/L	20		-	-	-	-	-	-	-	-	-	<20	<20	<20
Methyl Iso-Butyl Ketone	µg/L	20		-	-	-	-	-	-	-	-	-	<20	<20	<20
MTBE	µg/L	2		-	-	-	-	-	-	-	-	-	<2	<2	<2
Styrene	µg/L	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
Tetrachloroethene	µg/L	0.5	**10**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethane, 1,1,1,2-	µg/L	0.5		<0.5	<0.5	<0.5	-	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5
Tetrachloroethane, 1,1,2,2-	µg/L	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
Trichloroethene	µg/L	0.5	**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
Trichloroethane, 1,1,1-	µg/L	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
Trichloroethane, 1,1,2-	µg/L	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
Trimethylbenzene, 1,3,5-	µg/L	0.1		-	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1
Trichlorofluoromethane	µg/L	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	µg/L	0.2	**1**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Table 6: Groundwater Quality - VOCs

	Unit	EQL	ODWQS	TW03-1 16 May 2012	TW03-1 04 Jun 2013	TW04-1 16 May 2012	TW04-1 25 Sep 2012	TW04-1 04 Jun 2013	TW05-1 04 Jun 2013	TW05-2 04 Jun 2013	TW06-1 30 Oct 2013	TW06-1 14 Nov 2014	TW06-1 19 May 2015	TW06-1 03 Nov 2015	TW06-1 19 May 2016
BTEX															
Benzene	µg/L	0.5	**1**	0.52	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5	**60**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5	**140**	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	-	-	-	-
Xylene (m & p)	µg/L	0.5		-	<0.5	-	-	<0.5	<0.5	<0.5	-	-	-	-	-
Xylene (o)	µg/L	0.5		-	<0.5	-	-	<0.5	<0.5	<0.5	-	-	-	-	-
Xylene Total	µg/L	0.5	**90**	-	<0.5	-	-	<0.5	<0.5	<0.5	-	-	-	-	-
VOCs															
Acetone	µg/L	30		-	-	-	-	-	-	-	-	-	-	-	-
Bromoform	µg/L	0.5		-	<0.5	-	-	<0.5	<0.5	<0.5	-	-	-	-	-
Bromomethane	µg/L	0.5		-	<0.5	-	-	<0.5	<0.5	<0.5	-	-	-	-	-
Bromodichloromethane	µg/L	0.5		-	<0.5	-	-	<0.5	<0.5	<0.5	-	-	-	-	-
Carbon tetrachloride	µg/L	0.2	**2**	-	<0.2	-	-	<0.2	<0.2	<0.2	-	-	-	-	-
Chlorobenzene	µg/L	0.5	**80**	-	1.3	-	-	<0.5	<0.5	<0.5	-	-	-	-	-
Chloroform	µg/L	0.5		-	<0.5	-	-	<0.5	<0.5	<0.5	-	-	-	-	-
Dibromochloromethane	µg/L	0.5		-	<0.5	-	-	<0.5	<0.5	<0.5	-	-	-	-	-
Chloroethane	µg/L	3		-	<5	-	-	<5	<5	<5	-	-	-	-	-
Chloromethane	µg/L	2		-	<5	-	-	<5	<5	<5	-	-	-	-	-
Dibromoethane,1,2-	µg/L	0.2		-	<0.2	-	-	<0.2	<0.2	<0.2	-	-	-	-	-
Dichlorobenzene, 1,2-	µg/L	0.5	**200**	-	<0.5	-	-	<0.5	<0.5	<0.5	-	-	-	-	-
Dichlorobenzene, 1,3-	µg/L	0.5		-	<0.5	-	-	<0.5	<0.5	<0.5	-	-	-	-	-
Dichlorobenzene, 1,4-	µg/L	0.5	**5**	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	µg/L	2		-	-	-	-	-	-	-	-	-	-	-	-
Dichloroethane, 1,1-	µg/L	0.5		-	<0.5	-	-	<0.5	<0.5	<0.5	-	-	-	-	-
Dichloroethane, 1,2-	µg/L	0.5	**5**	-	<0.5	-	-	<0.5	<0.5	<0.5	-	-	-	-	-
Dichloroethene, 1,1-	µg/L	0.5	**14**	-	<0.5	-	-	<0.5	<0.5	<0.5	-	-	-	-	-
Dichloroethene, 1,2-cis-	µg/L	0.5		-	<0.5	-	-	<0.5	<0.5	<0.5	-	-	-	-	-
Dichloroethene, 1,2-trans-	µg/L	0.5		-	<0.5	-	-	<0.5	<0.5	<0.5	-	-	-	-	-
Dichloromethane	µg/L	0.5	**50**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloropropane, 1,2-	µg/L	0.5		-	<0.5	-	-	<0.5	<0.5	<0.5	-	-	-	-	-
Dichloropropene, 1,3- cis & trans	µg/L	0.5		-	-	-	-	-	-	-	-	-	-	-	-
Dichloropropene, 1,3- cis	µg/L	0.5		-	<0.5	-	-	<0.5	<0.5	<0.5	-	-	-	-	-
Dichloropropene, 1,3- trans	µg/L	0.5		-	<0.5	-	-	<0.5	<0.5	<0.5	-	-	-	-	-
Hexane	µg/L	5		-	-	-	-	-	-	-	-	-	-	-	-
Methyl Ethyl Ketone	µg/L	20		-	-	-	-	-	-	-	-	-	-	-	-
Methyl Iso-Butyl Ketone	µg/L	20		-	-	-	-	-	-	-	-	-	-	-	-
MTBE	µg/L	2		-	-	-	-	-	-	-	-	-	-	-	-
Styrene	µg/L	0.5		-	<0.5	-	-	<0.5	<0.5	<0.5	-	-	-	-	-
Tetrachloroethene	µg/L	0.5	**10**	-	<0.5	-	-	<0.5	<0.5	<0.5	-	-	-	-	-
Tetrachloroethane, 1,1,1,2-	µg/L	0.5		-	<0.5	-	-	<0.5	<0.5	<0.5	-	-	-	-	-
Tetrachloroethane, 1,1,2,2-	µg/L	0.5		-	<0.5	-	-	<0.5	<0.5	<0.5	-	-	-	-	-
Trichloroethene	µg/L	0.5	**5**	-	<0.5	-	-	<0.5	<0.5	<0.5	-	-	-	-	-
Trichloroethane, 1,1,1-	µg/L	0.5		-	<0.5	-	-	<0.5	<0.5	<0.5	-	-	-	-	-
Trichloroethane, 1,1,2-	µg/L	0.5		-	<0.5	-	-	<0.5	<0.5	<0.5	-	-	-	-	-
Trimethylbenzene, 1,3,5-	µg/L	0.1		-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	µg/L	5		-	<5	-	-	<5	<5	<5	-	-	-	-	-
Vinyl chloride	µg/L	0.2	**1**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Table 6: Groundwater Quality - VOCs

	Unit	EQL	ODWQS	TW06-1 26 Oct 2016	TW06-1 07 Jun 2017	TW06-1 29 Sep 2017	TW06-1 11 Jun 2018	TW06-1 28 Oct 2019	TW06-1 12 Nov 2020	TW06-1 28 Jun 2021	TW06-1 10 Nov 2021	TW06-1 11 Apr 2022	TW06-1 14 Nov 2022
BTEX													
Benzene	µg/L	0.5	**1**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5	**60**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5	**140**	-	-	-	-	-	-	-	-	-	-
Xylene (m & p)	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Xylene (o)	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Xylene Total	µg/L	0.5	**90**	-	-	-	-	-	-	-	-	-	-
VOCs													
Acetone	µg/L	30		-	-	-	-	-	-	-	-	-	-
Bromoform	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Bromomethane	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride	µg/L	0.2	**2**	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	µg/L	0.5	**80**	-	-	-	-	-	-	-	-	-	-
Chloroform	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Chloroethane	µg/L	3		-	-	-	-	-	-	-	-	-	-
Chloromethane	µg/L	2		-	-	-	-	-	-	-	-	-	-
Dibromoethane,1,2-	µg/L	0.2		-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,2-	µg/L	0.5	**200**	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,3-	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,4-	µg/L	0.5	**5**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	µg/L	2		-	-	-	-	-	-	-	-	-	-
Dichloroethane, 1,1-	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Dichloroethane, 1,2-	µg/L	0.5	**5**	-	-	-	-	-	-	-	-	-	-
Dichloroethene, 1,1-	µg/L	0.5	**14**	-	-	-	-	-	-	-	-	-	-
Dichloroethene, 1,2-cis-	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Dichloroethene, 1,2-trans-	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Dichloromethane	µg/L	0.5	**50**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<5	<5
Dichloropropane, 1,2-	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Dichloropropene, 1,3- cis & trans	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Dichloropropene, 1,3- cis	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Dichloropropene, 1,3- trans	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Hexane	µg/L	5		-	-	-	-	-	-	-	-	-	-
Methyl Ethyl Ketone	µg/L	20		-	-	-	-	-	-	-	-	-	-
Methyl Iso-Butyl Ketone	µg/L	20		-	-	-	-	-	-	-	-	-	-
MTBE	µg/L	2		-	-	-	-	-	-	-	-	-	-
Styrene	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	µg/L	0.5	**10**	-	-	-	-	-	-	-	-	-	-
Tetrachloroethane, 1,1,1,2-	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Tetrachloroethane, 1,1,2,2-	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Trichloroethene	µg/L	0.5	**5**	-	-	-	-	-	-	-	-	-	-
Trichloroethane, 1,1,1-	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Trichloroethane, 1,1,2-	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Trimethylbenzene, 1,3,5-	µg/L	0.1		-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	µg/L	5		-	-	-	-	-	-	-	-	-	-
Vinyl chloride	µg/L	0.2	**1**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Table 6: Groundwater Quality - VOCs

	Unit	EQL	ODWQS	TW06-2 01 Oct 2011	TW06-2 15 May 2012	TW06-2 25 Sep 2012	TW06-2 04 Jun 2013	TW06-2 30 Oct 2013	TW06-2 09 Jun 2014	TW06-2 14 Nov 2014	TW06-2 19 May 2015	TW06-2 03 Nov 2015	TW06-2 19 May 2016
BTEX													
Benzene	µg/L	0.5	**1**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5	**60**	<0.5	<0.5	<0.5	<0.5	<0.5	1.8	1.1	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5	**140**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Xylene (m & p)	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Xylene (o)	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Xylene Total	µg/L	0.5	**90**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
VOCs													
Acetone	µg/L	30		-	-	-	-	-	-	-	-	-	-
Bromoform	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromomethane	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	µg/L	0.2	**2**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorobenzene	µg/L	0.5	**80**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chloroform	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chloroethane	µg/L	3		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chloromethane	µg/L	2		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Dibromoethane,1,2-	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dichlorobenzene, 1,2-	µg/L	0.5	**200**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorobenzene, 1,3-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorobenzene, 1,4-	µg/L	0.5	**5**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	µg/L	2		-	-	-	-	-	-	-	-	-	-
Dichloroethane, 1,1-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethane, 1,2-	µg/L	0.5	**5**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethene, 1,1-	µg/L	0.5	**14**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethene, 1,2-cis-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethene, 1,2-trans-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloromethane	µg/L	0.5	**50**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloropropane, 1,2-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloropropene, 1,3- cis & trans	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Dichloropropene, 1,3- cis	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloropropene, 1,3- trans	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hexane	µg/L	5		-	-	-	-	-	-	-	-	-	-
Methyl Ethyl Ketone	µg/L	20		-	-	-	-	-	-	-	-	-	-
Methyl Iso-Butyl Ketone	µg/L	20		-	-	-	-	-	-	-	-	-	-
MTBE	µg/L	2		-	-	-	-	-	-	-	-	-	-
Styrene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene	µg/L	0.5	**10**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethane, 1,1,1,2-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethane, 1,1,2,2-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	µg/L	0.5	**5**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethane, 1,1,1-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethane, 1,1,2-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trimethylbenzene, 1,3,5-	µg/L	0.1		-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	µg/L	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	µg/L	0.2	**1**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Table 6: Groundwater Quality - VOCs

	Unit	EQL	ODWQS	TW06-2 02 Nov 2016	TW06-2 11 Jun 2018	TW06-2 05 Nov 2018	TW06-2 28 Oct 2019	TW06-2 27 May 2020	TW06-2 12 Nov 2020	TW06-2 28 Jun 2021	TW06-2 10 Nov 2021	TW06-2 11 Apr 2022	TW06-2 14 Nov 2022
BTEX													
Benzene	µg/L	0.5	**1**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5	**60**	<0.5	0.8	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5	**140**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
Xylene (m & p)	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<1	<1	<1
Xylene (o)	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
Xylene Total	µg/L	0.5	**90**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<1.1	<1.1	<1.1
VOCs													
Acetone	µg/L	30		-	-	-	-	-	-	-	<30	<30	<30
Bromoform	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<5	<5
Bromomethane	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<2
Carbon tetrachloride	µg/L	0.2	**2**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorobenzene	µg/L	0.5	**80**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5
Chloroform	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<1	<1
Dibromochloromethane	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<2	<2	<2
Chloroethane	µg/L	3		<5	<5	<5	<5	<5	<5	<3	<3	<3	<3
Chloromethane	µg/L	2		<5	<5	<5	<5	<5	<5	<2	<2	<2	<2
Dibromoethane,1,2-	µg/L	0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dichlorobenzene, 1,2-	µg/L	0.5	**200**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorobenzene, 1,3-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorobenzene, 1,4-	µg/L	0.5	**5**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	µg/L	2		-	-	-	-	-	-	-	<2	<2	<2
Dichloroethane, 1,1-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethane, 1,2-	µg/L	0.5	**5**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethene, 1,1-	µg/L	0.5	**14**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethene, 1,2-cis-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethene, 1,2-trans-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloromethane	µg/L	0.5	**50**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<5	<5	<5
Dichloropropane, 1,2-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloropropene, 1,3- cis & trans	µg/L	0.5		-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5
Dichloropropene, 1,3- cis	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloropropene, 1,3- trans	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hexane	µg/L	5		-	-	-	-	-	-	-	<5	<5	<5
Methyl Ethyl Ketone	µg/L	20		-	-	-	-	-	-	-	<20	<20	<20
Methyl Iso-Butyl Ketone	µg/L	20		-	-	-	-	-	-	-	<20	<20	<20
MTBE	µg/L	2		-	-	-	-	-	-	-	<2	<2	<2
Styrene	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene	µg/L	0.5	**10**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethane, 1,1,1,2-	µg/L	0.5		<0.5	-	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5
Tetrachloroethane, 1,1,2,2-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	µg/L	0.5	**5**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethane, 1,1,1-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethane, 1,1,2-	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trimethylbenzene, 1,3,5-	µg/L	0.1		-	-	-	-	-	-	-	<0.1	<0.1	<0.1
Trichlorofluoromethane	µg/L	5		<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	µg/L	0.2	**1**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Table 6: Groundwater Quality - VOCs

	Unit	EQL	ODWQS	TW07-1 30 Oct 2013	TW07-1 14 Nov 2014	TW07-1 19 May 2015	TW07-1 03 Nov 2015	TW07-1 19 May 2016	TW07-1 26 Oct 2016	TW07-1 29 Sep 2017	TW07-1 11 Jun 2018	TW07-1 28 Oct 2019
BTEX												
Benzene	µg/L	0.5	**1**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5	**60**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.0	<0.5
Ethylbenzene	µg/L	0.5	**140**	-	-	-	-	-	-	-	-	-
Xylene (m & p)	µg/L	0.5		-	-	-	-	-	-	-	-	-
Xylene (o)	µg/L	0.5		-	-	-	-	-	-	-	-	-
Xylene Total	µg/L	0.5	**90**	-	-	-	-	-	-	-	-	-
VOCs												
Acetone	µg/L	30		-	-	-	-	-	-	-	-	-
Bromoform	µg/L	0.5		-	-	-	-	-	-	-	-	-
Bromomethane	µg/L	0.5		-	-	-	-	-	-	-	-	-
Bromodichloromethane	µg/L	0.5		-	-	-	-	-	-	-	-	-
Carbon tetrachloride	µg/L	0.2	**2**	-	-	-	-	-	-	-	-	-
Chlorobenzene	µg/L	0.5	**80**	-	-	-	-	-	-	-	-	-
Chloroform	µg/L	0.5		-	-	-	-	-	-	-	-	-
Dibromochloromethane	µg/L	0.5		-	-	-	-	-	-	-	-	-
Chloroethane	µg/L	3		-	-	-	-	-	-	-	-	-
Chloromethane	µg/L	2		-	-	-	-	-	-	-	-	-
Dibromoethane,1,2-	µg/L	0.2		-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,2-	µg/L	0.5	**200**	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,3-	µg/L	0.5		-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,4-	µg/L	0.5	**5**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	µg/L	2		-	-	-	-	-	-	-	-	-
Dichloroethane, 1,1-	µg/L	0.5		-	-	-	-	-	-	-	-	-
Dichloroethane, 1,2-	µg/L	0.5	**5**	-	-	-	-	-	-	-	-	-
Dichloroethene, 1,1-	µg/L	0.5	**14**	-	-	-	-	-	-	-	-	-
Dichloroethene, 1,2-cis-	µg/L	0.5		-	-	-	-	-	-	-	-	-
Dichloroethene, 1,2-trans-	µg/L	0.5		-	-	-	-	-	-	-	-	-
Dichloromethane	µg/L	0.5	**50**	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloropropane, 1,2-	µg/L	0.5		-	-	-	-	-	-	-	-	-
Dichloropropene, 1,3- cis & trans	µg/L	0.5		-	-	-	-	-	-	-	-	-
Dichloropropene, 1,3- cis	µg/L	0.5		-	-	-	-	-	-	-	-	-
Dichloropropene, 1,3- trans	µg/L	0.5		-	-	-	-	-	-	-	-	-
Hexane	µg/L	5		-	-	-	-	-	-	-	-	-
Methyl Ethyl Ketone	µg/L	20		-	-	-	-	-	-	-	-	-
Methyl Iso-Butyl Ketone	µg/L	20		-	-	-	-	-	-	-	-	-
MTBE	µg/L	2		-	-	-	-	-	-	-	-	-
Styrene	µg/L	0.5		-	-	-	-	-	-	-	-	-
Tetrachloroethene	µg/L	0.5	**10**	-	-	-	-	-	-	-	-	-
Tetrachloroethane, 1,1,1,2-	µg/L	0.5		-	-	-	-	-	-	-	-	-
Tetrachloroethane, 1,1,2,2-	µg/L	0.5		-	-	-	-	-	-	-	-	-
Trichloroethene	µg/L	0.5	**5**	-	-	-	-	-	-	-	-	-
Trichloroethane, 1,1,1-	µg/L	0.5		-	-	-	-	-	-	-	-	-
Trichloroethane, 1,1,2-	µg/L	0.5		-	-	-	-	-	-	-	-	-
Trimethylbenzene, 1,3,5-	µg/L	0.1		-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	µg/L	5		-	-	-	-	-	-	-	-	-
Vinyl chloride	µg/L	0.2	**1**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Table 6: Groundwater Quality - VOCs

	Unit	EQL	ODWQS	TW07-1 27 May 2020	TW07-1 12 Nov 2020	TW07-1 28 Jun 2021	TW07-1 10 Nov 2021	TW07-1 11 Apr 2022	TW07-1 23 Nov 2022	TW07-2 30 Oct 2013	TW07-2 14 Nov 2014
BTEX											
Benzene	µg/L	0.5	**1**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5	**60**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5	**140**	-	-	-	-	-	-	-	-
Xylene (m & p)	µg/L	0.5		-	-	-	-	-	-	-	-
Xylene (o)	µg/L	0.5		-	-	-	-	-	-	-	-
Xylene Total	µg/L	0.5	**90**	-	-	-	-	-	-	-	-
VOCs											
Acetone	µg/L	30		-	-	-	-	-	-	-	-
Bromoform	µg/L	0.5		-	-	-	-	-	-	-	-
Bromomethane	µg/L	0.5		-	-	-	-	-	-	-	-
Bromodichloromethane	µg/L	0.5		-	-	-	-	-	-	-	-
Carbon tetrachloride	µg/L	0.2	**2**	-	-	-	-	-	-	-	-
Chlorobenzene	µg/L	0.5	**80**	-	-	-	-	-	-	-	-
Chloroform	µg/L	0.5		-	-	-	-	-	-	-	-
Dibromochloromethane	µg/L	0.5		-	-	-	-	-	-	-	-
Chloroethane	µg/L	3		-	-	-	-	-	-	-	-
Chloromethane	µg/L	2		-	-	-	-	-	-	-	-
Dibromoethane,1,2-	µg/L	0.2		-	-	-	-	-	-	-	-
Dichlorobenzene, 1,2-	µg/L	0.5	**200**	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,3-	µg/L	0.5		-	-	-	-	-	-	-	-
Dichlorobenzene, 1,4-	µg/L	0.5	**5**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	µg/L	2		-	-	-	-	-	-	-	-
Dichloroethane, 1,1-	µg/L	0.5		-	-	-	-	-	-	-	-
Dichloroethane, 1,2-	µg/L	0.5	**5**	-	-	-	-	-	-	-	-
Dichloroethene, 1,1-	µg/L	0.5	**14**	-	-	-	-	-	-	-	-
Dichloroethene, 1,2-cis-	µg/L	0.5		-	-	-	-	-	-	-	-
Dichloroethene, 1,2-trans-	µg/L	0.5		-	-	-	-	-	-	-	-
Dichloromethane	µg/L	0.5	**50**	<0.5	<0.5	<5	<5	<5	<5	<0.5	<0.5
Dichloropropane, 1,2-	µg/L	0.5		-	-	-	-	-	-	-	-
Dichloropropene, 1,3- cis & trans	µg/L	0.5		-	-	-	-	-	-	-	-
Dichloropropene, 1,3- cis	µg/L	0.5		-	-	-	-	-	-	-	-
Dichloropropene, 1,3- trans	µg/L	0.5		-	-	-	-	-	-	-	-
Hexane	µg/L	5		-	-	-	-	-	-	-	-
Methyl Ethyl Ketone	µg/L	20		-	-	-	-	-	-	-	-
Methyl Iso-Butyl Ketone	µg/L	20		-	-	-	-	-	-	-	-
MTBE	µg/L	2		-	-	-	-	-	-	-	-
Styrene	µg/L	0.5		-	-	-	-	-	-	-	-
Tetrachloroethene	µg/L	0.5	**10**	-	-	-	-	-	-	-	-
Tetrachloroethane, 1,1,1,2-	µg/L	0.5		-	-	-	-	-	-	-	-
Tetrachloroethane, 1,1,2,2-	µg/L	0.5		-	-	-	-	-	-	-	-
Trichloroethene	µg/L	0.5	**5**	-	-	-	-	-	-	-	-
Trichloroethane, 1,1,1-	µg/L	0.5		-	-	-	-	-	-	-	-
Trichloroethane, 1,1,2-	µg/L	0.5		-	-	-	-	-	-	-	-
Trimethylbenzene, 1,3,5-	µg/L	0.1		-	-	-	-	-	-	-	-
Trichlorofluoromethane	µg/L	5		-	-	-	-	-	-	-	-
Vinyl chloride	µg/L	0.2	**1**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Table 6: Groundwater Quality - VOCs

	Unit	EQL	ODWQS	TW08-1 23 Dec 2014	TW08-1 19 May 2015	TW08-1 03 Nov 2015	TW08-1 19 May 2016	TW08-1 26 Oct 2016	TW08-1 07 Jun 2017	TW08-1 29 Sep 2017	TW08-1 11 Jun 2018	TW08-1 28 Oct 2019
BTEX												
Benzene	µg/L	0.5	**1**	<0.5	**3.9**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1
Toluene	µg/L	0.5	**60**	<0.5	1.9	1.0	1.1	1.2	<0.5	1.1	1.6	<0.5
Ethylbenzene	µg/L	0.5	**140**	-	-	-	-	-	-	-	-	-
Xylene (m & p)	µg/L	0.5		-	-	-	-	-	-	-	-	-
Xylene (o)	µg/L	0.5		-	-	-	-	-	-	-	-	-
Xylene Total	µg/L	0.5	**90**	-	-	-	-	-	-	-	-	-
VOCs												
Acetone	µg/L	30		-	-	-	-	-	-	-	-	-
Bromoform	µg/L	0.5		-	-	-	-	-	-	-	-	-
Bromomethane	µg/L	0.5		-	-	-	-	-	-	-	-	-
Bromodichloromethane	µg/L	0.5		-	-	-	-	-	-	-	-	-
Carbon tetrachloride	µg/L	0.2	**2**	-	-	-	-	-	-	-	-	-
Chlorobenzene	µg/L	0.5	**80**	-	-	-	-	-	-	-	-	-
Chloroform	µg/L	0.5		-	-	-	-	-	-	-	-	-
Dibromochloromethane	µg/L	0.5		-	-	-	-	-	-	-	-	-
Chloroethane	µg/L	3		-	-	-	-	-	-	-	-	-
Chloromethane	µg/L	2		-	-	-	-	-	-	-	-	-
Dibromoethane,1,2-	µg/L	0.2		-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,2-	µg/L	0.5	**200**	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,3-	µg/L	0.5		-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,4-	µg/L	0.5	**5**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	µg/L	2		-	-	-	-	-	-	-	-	-
Dichloroethane, 1,1-	µg/L	0.5		-	-	-	-	-	-	-	-	-
Dichloroethane, 1,2-	µg/L	0.5	**5**	-	-	-	-	-	-	-	-	-
Dichloroethene, 1,1-	µg/L	0.5	**14**	-	-	-	-	-	-	-	-	-
Dichloroethene, 1,2-cis-	µg/L	0.5		-	-	-	-	-	-	-	-	-
Dichloroethene, 1,2-trans-	µg/L	0.5		-	-	-	-	-	-	-	-	-
Dichloromethane	µg/L	0.5	**50**	<0.5	<0.5	1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloropropane, 1,2-	µg/L	0.5		-	-	-	-	-	-	-	-	-
Dichloropropene, 1,3- cis & trans	µg/L	0.5		-	-	-	-	-	-	-	-	-
Dichloropropene, 1,3- cis	µg/L	0.5		-	-	-	-	-	-	-	-	-
Dichloropropene, 1,3- trans	µg/L	0.5		-	-	-	-	-	-	-	-	-
Hexane	µg/L	5		-	-	-	-	-	-	-	-	-
Methyl Ethyl Ketone	µg/L	20		-	-	-	-	-	-	-	-	-
Methyl Iso-Butyl Ketone	µg/L	20		-	-	-	-	-	-	-	-	-
MTBE	µg/L	2		-	-	-	-	-	-	-	-	-
Styrene	µg/L	0.5		-	-	-	-	-	-	-	-	-
Tetrachloroethene	µg/L	0.5	**10**	-	-	-	-	-	-	-	-	-
Tetrachloroethane, 1,1,1,2-	µg/L	0.5		-	-	-	-	-	-	-	-	-
Tetrachloroethane, 1,1,2,2-	µg/L	0.5		-	-	-	-	-	-	-	-	-
Trichloroethene	µg/L	0.5	**5**	-	-	-	-	-	-	-	-	-
Trichloroethane, 1,1,1-	µg/L	0.5		-	-	-	-	-	-	-	-	-
Trichloroethane, 1,1,2-	µg/L	0.5		-	-	-	-	-	-	-	-	-
Trimethylbenzene, 1,3,5-	µg/L	0.1		-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	µg/L	5		-	-	-	-	-	-	-	-	-
Vinyl chloride	µg/L	0.2	**1**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Table 6: Groundwater Quality - VOCs

	Unit	EQL	ODWQS	TW08-1 27 May 2020	TW08-1 12 Nov 2020	TW08-1 28 Jun 2021	TW08-1 10 Nov 2021	TW08-1 11 Apr 2022	TW08-1 14 Nov 2022	TW08-2 23 Dec 2014	TW08-2 19 May 2015	TW08-2 27 May 2020
BTEX												
Benzene	µg/L	0.5	**1**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5	**60**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.3
Ethylbenzene	µg/L	0.5	**140**	-	-	-	-	-	-	-	-	-
Xylene (m & p)	µg/L	0.5		-	-	-	-	-	-	-	-	-
Xylene (o)	µg/L	0.5		-	-	-	-	-	-	-	-	-
Xylene Total	µg/L	0.5	**90**	-	-	-	-	-	-	-	-	-
VOCs												
Acetone	µg/L	30		-	-	-	-	-	-	-	-	-
Bromoform	µg/L	0.5		-	-	-	-	-	-	-	-	-
Bromomethane	µg/L	0.5		-	-	-	-	-	-	-	-	-
Bromodichloromethane	µg/L	0.5		-	-	-	-	-	-	-	-	-
Carbon tetrachloride	µg/L	0.2	**2**	-	-	-	-	-	-	-	-	-
Chlorobenzene	µg/L	0.5	**80**	-	-	-	-	-	-	-	-	-
Chloroform	µg/L	0.5		-	-	-	-	-	-	-	-	-
Dibromochloromethane	µg/L	0.5		-	-	-	-	-	-	-	-	-
Chloroethane	µg/L	3		-	-	-	-	-	-	-	-	-
Chloromethane	µg/L	2		-	-	-	-	-	-	-	-	-
Dibromoethane,1,2-	µg/L	0.2		-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,2-	µg/L	0.5	**200**	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,3-	µg/L	0.5		-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,4-	µg/L	0.5	**5**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	µg/L	2		-	-	-	-	-	-	-	-	-
Dichloroethane, 1,1-	µg/L	0.5		-	-	-	-	-	-	-	-	-
Dichloroethane, 1,2-	µg/L	0.5	**5**	-	-	-	-	-	-	-	-	-
Dichloroethene, 1,1-	µg/L	0.5	**14**	-	-	-	-	-	-	-	-	-
Dichloroethene, 1,2-cis-	µg/L	0.5		-	-	-	-	-	-	-	-	-
Dichloroethene, 1,2-trans-	µg/L	0.5		-	-	-	-	-	-	-	-	-
Dichloromethane	µg/L	0.5	**50**	<0.5	<0.5	<5	<5	<5	<5	<0.5	<0.5	<0.5
Dichloropropane, 1,2-	µg/L	0.5		-	-	-	-	-	-	-	-	-
Dichloropropene, 1,3- cis & trans	µg/L	0.5		-	-	-	-	-	-	-	-	-
Dichloropropene, 1,3- cis	µg/L	0.5		-	-	-	-	-	-	-	-	-
Dichloropropene, 1,3- trans	µg/L	0.5		-	-	-	-	-	-	-	-	-
Hexane	µg/L	5		-	-	-	-	-	-	-	-	-
Methyl Ethyl Ketone	µg/L	20		-	-	-	-	-	-	-	-	-
Methyl Iso-Butyl Ketone	µg/L	20		-	-	-	-	-	-	-	-	-
MTBE	µg/L	2		-	-	-	-	-	-	-	-	-
Styrene	µg/L	0.5		-	-	-	-	-	-	-	-	-
Tetrachloroethene	µg/L	0.5	**10**	-	-	-	-	-	-	-	-	-
Tetrachloroethane, 1,1,1,2-	µg/L	0.5		-	-	-	-	-	-	-	-	-
Tetrachloroethane, 1,1,2,2-	µg/L	0.5		-	-	-	-	-	-	-	-	-
Trichloroethene	µg/L	0.5	**5**	-	-	-	-	-	-	-	-	-
Trichloroethane, 1,1,1-	µg/L	0.5		-	-	-	-	-	-	-	-	-
Trichloroethane, 1,1,2-	µg/L	0.5		-	-	-	-	-	-	-	-	-
Trimethylbenzene, 1,3,5-	µg/L	0.1		-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	µg/L	5		-	-	-	-	-	-	-	-	-
Vinyl chloride	µg/L	0.2	**1**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Table 6: Groundwater Quality - VOCs

	Unit	EQL	ODWQS	TW09-1 30 Oct 2013	TW09-1 14 Nov 2014	TW09-1 19 May 2015	TW09-1 03 Nov 2015	TW09-1 19 May 2016	TW09-1 26 Oct 2016	TW09-1 07 Jun 2017	TW09-1 29 Sep 2017	TW09-1 11 Jun 2018	TW09-1 28 Oct 2019
BTEX													
Benzene	µg/L	0.5	**1**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5	**60**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5	**140**	-	-	-	-	-	-	-	-	-	-
Xylene (m & p)	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Xylene (o)	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Xylene Total	µg/L	0.5	**90**	-	-	-	-	-	-	-	-	-	-
VOCs													
Acetone	µg/L	30		-	-	-	-	-	-	-	-	-	-
Bromoform	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Bromomethane	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride	µg/L	0.2	**2**	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	µg/L	0.5	**80**	-	-	-	-	-	-	-	-	-	-
Chloroform	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Chloroethane	µg/L	3		-	-	-	-	-	-	-	-	-	-
Chloromethane	µg/L	2		-	-	-	-	-	-	-	-	-	-
Dibromoethane,1,2-	µg/L	0.2		-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,2-	µg/L	0.5	**200**	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,3-	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,4-	µg/L	0.5	**5**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	µg/L	2		-	-	-	-	-	-	-	-	-	-
Dichloroethane, 1,1-	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Dichloroethane, 1,2-	µg/L	0.5	**5**	-	-	-	-	-	-	-	-	-	-
Dichloroethene, 1,1-	µg/L	0.5	**14**	-	-	-	-	-	-	-	-	-	-
Dichloroethene, 1,2-cis-	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Dichloroethene, 1,2-trans-	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Dichloromethane	µg/L	0.5	**50**	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloropropane, 1,2-	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Dichloropropene, 1,3- cis & trans	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Dichloropropene, 1,3- cis	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Dichloropropene, 1,3- trans	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Hexane	µg/L	5		-	-	-	-	-	-	-	-	-	-
Methyl Ethyl Ketone	µg/L	20		-	-	-	-	-	-	-	-	-	-
Methyl Iso-Butyl Ketone	µg/L	20		-	-	-	-	-	-	-	-	-	-
MTBE	µg/L	2		-	-	-	-	-	-	-	-	-	-
Styrene	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	µg/L	0.5	**10**	-	-	-	-	-	-	-	-	-	-
Tetrachloroethane, 1,1,1,2-	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Tetrachloroethane, 1,1,2,2-	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Trichloroethene	µg/L	0.5	**5**	-	-	-	-	-	-	-	-	-	-
Trichloroethane, 1,1,1-	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Trichloroethane, 1,1,2-	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Trimethylbenzene, 1,3,5-	µg/L	0.1		-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	µg/L	5		-	-	-	-	-	-	-	-	-	-
Vinyl chloride	µg/L	0.2	**1**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Table 6: Groundwater Quality - VOCs

	Unit	EQL	ODWQS	TW09-1 27 May 2020	TW09-1 12 Nov 2020	TW09-1 28 Jun 2021	TW09-1 10 Nov 2021	TW09-1 11 Apr 2022	TW09-1 14 Nov 2022	TW09-2 30 Oct 2013	TW09-2 14 Nov 2014	TW10-2 23 Dec 2014	TW11-2 23 Dec 2014
BTEX													
Benzene	µg/L	0.5	**1**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5
Toluene	µg/L	0.5	**60**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5	**140**	-	-	-	-	-	-	-	-	-	-
Xylene (m & p)	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Xylene (o)	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Xylene Total	µg/L	0.5	**90**	-	-	-	-	-	-	-	-	-	-
VOCs													
Acetone	µg/L	30		-	-	-	-	-	-	-	-	-	-
Bromoform	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Bromomethane	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride	µg/L	0.2	**2**	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	µg/L	0.5	**80**	-	-	-	-	-	-	-	-	-	-
Chloroform	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Chloroethane	µg/L	3		-	-	-	-	-	-	-	-	-	-
Chloromethane	µg/L	2		-	-	-	-	-	-	-	-	-	-
Dibromoethane,1,2-	µg/L	0.2		-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,2-	µg/L	0.5	**200**	-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,3-	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Dichlorobenzene, 1,4-	µg/L	0.5	**5**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	µg/L	2		-	-	-	-	-	-	-	-	-	-
Dichloroethane, 1,1-	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Dichloroethane, 1,2-	µg/L	0.5	**5**	-	-	-	-	-	-	-	-	-	-
Dichloroethene, 1,1-	µg/L	0.5	**14**	-	-	-	-	-	-	-	-	-	-
Dichloroethene, 1,2-cis-	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Dichloroethene, 1,2-trans-	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Dichloromethane	µg/L	0.5	**50**	<0.5	<0.5	<5	<5	<5	<5	<0.5	<0.5	<0.5	<0.5
Dichloropropane, 1,2-	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Dichloropropene, 1,3- cis & trans	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Dichloropropene, 1,3- cis	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Dichloropropene, 1,3- trans	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Hexane	µg/L	5		-	-	-	-	-	-	-	-	-	-
Methyl Ethyl Ketone	µg/L	20		-	-	-	-	-	-	-	-	-	-
Methyl Iso-Butyl Ketone	µg/L	20		-	-	-	-	-	-	-	-	-	-
MTBE	µg/L	2		-	-	-	-	-	-	-	-	-	-
Styrene	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	µg/L	0.5	**10**	-	-	-	-	-	-	-	-	-	-
Tetrachloroethane, 1,1,1,2-	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Tetrachloroethane, 1,1,2,2-	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Trichloroethene	µg/L	0.5	**5**	-	-	-	-	-	-	-	-	-	-
Trichloroethane, 1,1,1-	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Trichloroethane, 1,1,2-	µg/L	0.5		-	-	-	-	-	-	-	-	-	-
Trimethylbenzene, 1,3,5-	µg/L	0.1		-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	µg/L	5		-	-	-	-	-	-	-	-	-	-
Vinyl chloride	µg/L	0.2	**1**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Table 7: Groundwater Quality - PWQO

	Unit	EQL	PWQO	DP1	TW06-2	TW06-2	TW06-2	TW06-2	TW06-2	TW06-2	TW06-2	TW06-2	TW06-2	TW06-2
				14 Nov 2022	01 Oct 2011	15 May 2012	25 Sep 2012	04 Jun 2013	30 Oct 2013	09 Jun 2014	14 Nov 2014	19 May 2015	03 Nov 2015	19 May 2016
Metals														
Arsenic (filtered)	µg/L	0.1	**5**	0.2	0.5	0.5	0.4	0.7	0.6	0.4	0.6	<0.2	0.5	<0.2
Barium (filtered)	µg/L	0.01		323	256	121	227	109	280	136	132	127	232	131
Boron (filtered)	µg/L	0.2	**200**	62	193	**284**	151	**221**	**211**	**206**	**266**	**226**	**248**	**270**
Calcium (filtered)	µg/L	10		123,000	195,000	160,000	168,000	143,000	183,000	163,000	171,000	151,000	225,000	163,000
Cadmium (filtered)	µg/L	0.003	**0.1..0.5**[#1]	<0.01	0.017	<0.003	0.009	0.010	0.020	0.015	0.003	0.007	0.016	<0.003
Chloride	µg/L	200		41,500	46,000	26,000	30,000	23,000	36,000	31,000	28,000	23,000	49,000	27,000
Chromium (III+VI) (filtered)	µg/L	0.03	**1**[#2]	<1	**1.1**	<0.5	<0.5	0.6	**1.8**	0.69	**1.66**	0.08	0.18	0.46
Copper (filtered)	µg/L	0.02	**1..5**[#1]	0.1	**2.5**	**1.2**	**1.7**	1.1	**2.5**	**1.49**	**2.33**	**4.22**	**2.36**	0.81
Iron (filtered)	µg/L	2	**300**	**667**	4	<3	64	<3	22	<2	3	14	66	31
Lead (filtered)	µg/L	0.01	**1..5**[#1]	<0.02	0.10	0.05	0.04	0.02	0.05	0.04	<0.01	0.04	0.08	<0.01
Magnesium (filtered)	µg/L	1		7,690	11,900	13,000	10,200	10,600	11,800	12,100	14,500	12,200	20,300	11,800
Manganese (filtered)	µg/L	0.01		80	926	54.0	1,110	43.1	1,240	47.6	7.44	122	1,230	139
Mercury (filtered)	µg/L	0.01	**0.2**	<0.02	-	-	-	-	<0.01	<0.01	<0.01	-	<0.01	<0.01
Phosphorus (filtered)	ug/L	3	**30**	-	-	-	-	<9	30	**40**	<30	<30	<30	6
Phosphorus total (P2O5)	µg/L	10	**30**	**16,500**	-	-	-	-	-	-	-	-	-	-
Potassium (filtered)	µg/L	2		-	6,230	15,300	5,820	12,200	7,020	12,700	11,900	10,600	5,330	12,900
Sodium (filtered)	µg/L	10		23,400	25,200	27,200	22,900	17,000	23,100	22,800	37,000	20,600	44,400	23,500
Zinc (filtered)	µg/L	2	**20**	-	2	7	3	4	<2	3	<2	<2	<2	<2
Inorganics														
Alkalinity (total) as CaCO3	mg/L	2		306	491	451	420	371	468	458	366	391	601	354
Hardness (as CaCO3) (filtered)	mg/L	0.05		339	-	-	-	400	-	-	-	-	-	-
Total Dissolved Solids	mg/L	3		380	666	566	557	549	611	634	694	563	820	563
Chemical Oxygen Demand	mg/L	5		300	18	26	16	16	17	19	21	20	22	17
Total Suspended Solids	mg/L	2		35,500	15	-	-	-	-	-	-	2	<3	<2
Dissolved Organic Carbon (filtered)	mg/L	0.2		-	12.0	13.5	5.0	12.1	9.0	10.1	6.0	-	-	-
Biochemical Oxygen Demand	mg/L	2		6	2	-	-	-	-	-	-	<4	<4	<4
Phenols (4AAP)	mg/L	0.001	**0.001**	<0.001	-	-	-	-	<0.002	<0.002	<0.002	<0.001	0.001	<0.001
Sulphate	mg/L	0.2		-	-	-	-	-	-	-	-	58	-	-
Sulphate (filtered)	mg/L	0.2		15	52	35	34	29	34	46	170	-	64	72
Ammonia as N	mg/L	0.01		<0.01	2.3	1.0	1.6	1.0	2.3	1.3	<0.1	0.4	0.6	0.7
Nitrate (as N)	mg/L	0.05		<0.05	0.60	0.48	<0.05	0.16	0.06	0.44	4.22	0.16	0.06	0.23
Nitrite (as N)	mg/L	0.03		<0.05	-	-	-	-	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Total Kjeldahl Nitrogen	mg/L	0.1		98.6	-	-	-	-	2.4	1.6	<0.5	0.8	1.2	1.1
pH (Lab)	-	0.05	**6.5-8.5**	7.37	7.85	7.73	7.73	7.89	7.69	7.90	8.06	7.89	7.76	8.06
Electrical Conductivity (Lab)	µS/cm	1		729	1,110	941	981	812	1,030	976	1,040	811	1,310	888
Field														
DO (Field)	mg/L		**5**	7.14	-	-	-	-	-	-	-	-	-	-
Redox (Field)	mV			-247	-	-	-	-	-	-	-	-	-	-
Temperature (Field)	oC			5.8	-	-	-	-	-	-	-	-	-	-
Conductivity (field)	µS/cm			507	-	-	-	-	-	-	-	-	-	-
pH (Field)	-		**6.5-8.5**	7.03	-	-	-	-	-	-	-	-	-	-

Table 7: Groundwater Quality - PWQO

	Unit	EQL	PWQO	TW06-2 26 Oct 2016	TW06-2 11 Jun 2018	TW06-2 05 Nov 2018	TW06-2 29 May 2019	TW06-2 28 Oct 2019	TW06-2 27 May 2020	TW06-2 12 Nov 2020	TW06-2 28 Jun 2021	TW06-2 10 Nov 2021	TW06-2 11 Apr 2022	TW06-2 14 Nov 2022
Metals														
Arsenic (filtered)	µg/L	0.1	**5**	<0.2	0.2	<0.2	<0.2	<0.2	<0.2	0.4	0.2	0.2	<0.1	0.2
Barium (filtered)	µg/L	0.01		360	152	354	114	287	157	241	237	128	118	300
Boron (filtered)	µg/L	0.2	**200**	**267**	**256**	175	80	**359**	**217**	**361**	193	**218**	62	**213**
Calcium (filtered)	µg/L	10		256,000	205,000	324,000	112,000	252,000	140,000	218,000	-	-	-	220,000
Cadmium (filtered)	µg/L	0.003	**0.1..0.5**[#1]	0.021	0.007	0.012	0.007	0.012	0.004	0.014	0.017	<0.015	<0.015	0.017
Chloride	µg/L	200		58,000	35,000	180,000	5,000	110,000	24,000	53,000	36,400	24,400	12,100	52,500
Chromium (III+VI) (filtered)	µg/L	0.03	**1**[#2]	0.37	0.10	0.23	0.12	0.14	0.11	<0.08	<1	<1	<1	<1
Copper (filtered)	µg/L	0.02	**1..5**[#1]	**1.69**	**1.35**	**2.08**	0.9	**1.9**	**1.2**	**2.4**	2.6	2.5	1.4	2.1
Iron (filtered)	µg/L	2	**300**	17	<7	39	11	10	<7	18	17	11	<5	<5
Lead (filtered)	µg/L	0.01	**1..5**[#1]	<0.01	0.03	0.09	0.01	0.03	<0.01	0.03	0.06	<0.02	<0.02	0.06
Magnesium (filtered)	µg/L	1		16,200	12,700	17,500	5,330	15,100	12,000	12,600	-	-	-	15,600
Manganese (filtered)	µg/L	0.01		1,970	34.9	1,390	463	1,320	74.7	781	-	-	209	1,540
Mercury (filtered)	µg/L	0.01	**0.2**	<0.01	0.03	<10	<10	<10	<10	<10	<0.02	<0.02	<0.02	<0.02
Phosphorus (filtered)	ug/L	3	**30**	<30	**50**	<30	<30	30	**40**	<30	-	-	-	-
Phosphorus total (P2O5)	µg/L	10	**30**	-	-	-	-	-	-	-	30	**40**	20	**190**
Potassium (filtered)	µg/L	2		6,840	11,400	5,260	2,320	4,390	9,650	5,990	-	-	-	-
Sodium (filtered)	µg/L	10		47,700	27,500	39,900	7,510	36,600	20,600	37,800	-	-	9,500	32,100
Zinc (filtered)	µg/L	2	**20**	2	<2	3	<2	2	2	<2	<5	<5	<5	<5
Inorganics														
Alkalinity (total) as CaCO3	mg/L	2		438	392	434	276	415	361	446	419	343	276	508
Hardness (as CaCO3) (filtered)	mg/L	0.05		-	-	-	-	-	-	-	582	388	322	615
Total Dissolved Solids	mg/L	3		1,010	577	1,091	489	909	454	757	577	411	320	665
Chemical Oxygen Demand	mg/L	5		10	19	14	<8	11	16	14	9	29	<5	27
Total Suspended Solids	mg/L	2		<2	<2	14	7	3	15	20	24	56	13	23
Dissolved Organic Carbon (filtered)	mg/L	0.2		-	-	-	-	-	-	-	-	-	-	5.5
Biochemical Oxygen Demand	mg/L	2		<4	<4	5	<4	<4	<4	<4	3	3	<3	<3
Phenols (4AAP)	mg/L	0.001	**0.001**	**0.002**	0.001	**0.005**	<0.001	**0.004**	0.001	<0.001	<0.002	<0.002	<0.001	<0.001
Sulphate	mg/L	0.2		310	70	220	23	140	49	98	-	-	-	-
Sulphate (filtered)	mg/L	0.2		-	-	-	-	-	-	-	106	50	17	96
Ammonia as N	mg/L	0.01		1.2	1.2	1.1	0.4	0.7	1.3	1.6	0.16	0.1	0.17	1.57
Nitrate (as N)	mg/L	0.05		0.13	1.09	0.06	1.98	0.15	0.17	0.08	1.94	1.01	3.3	0.05
Nitrite (as N)	mg/L	0.03		<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.07	<0.05	<0.05	0.05	<0.05
Total Kjeldahl Nitrogen	mg/L	0.1		1.6	1.5	1.1	0.6	0.6	1.6	1.8	0.6	0.5	0.5	2
pH (Lab)	-	0.05	**6.5-8.5**	7.24	7.92	7.41	8.04	7.77	7.97	7.74	7.72	7.88	7.4	7.44
Electrical Conductivity (Lab)	µS/cm	1		1,390	919	1,550	572	1,350	783	1,110	1,080	783	616	1,230
Field														
DO (Field)	mg/L		**5**	-	-	-	**4.2**	7	6.3	8.3	**2.82**	**3.84**	**2.85**	**4.18**
Redox (Field)	mV			-	-	-	118	167	124	55	53	29	52	-229
Temperature (Field)	oC			-	-	-	8.6	11.3	12.5	11.3	12.1	9.5	5.4	9
Conductivity (field)	µS/cm			-	-	-	517	1,006	626	731	1,012	341	519	966
pH (Field)	-		**6.5-8.5**	-	-	-	7.71	7.01	7.27	7.4	7.16	7.12	6.98	6.85

Table 7: Groundwater Quality - PWQO

	Unit	EQL	PWQO	TW07-2 01 Oct 2011	TW07-2 15 May 2012	TW07-2 25 Sep 2012	TW07-2 04 Jun 2013	TW07-2 30 Oct 2013	TW07-2 09 Jun 2014	TW07-2 14 Nov 2014	TW07-2 19 May 2015	TW07-2 03 Nov 2015	TW07-2 19 May 2016	TW07-2 26 Oct 2016
Metals														
Arsenic (filtered)	µg/L	0.1	**5**	2.4	2.1	1.9	2.0	2.1	1.7	2.7	1.3	2.4	1.5	2.2
Barium (filtered)	µg/L	0.01		244	240	165	167	203	198	192	205	202	163	143
Boron (filtered)	µg/L	0.2	**200**	**590**	**669**	**416**	**358**	**421**	**418**	**615**	**479**	**513**	**821**	**605**
Calcium (filtered)	µg/L	10		246,000	294,000	186,000	209,000	234,000	289,000	266,000	328,000	334,000	376,000	246,000
Cadmium (filtered)	µg/L	0.003	**0.1..0.5**[#1]	0.023	<0.003	<0.003	0.006	<0.003	<0.003	0.003	<0.003	<0.003	<0.003	<0.003
Chloride	µg/L	200		150,000	110,000	84,000	73,000	94,000	170,000	140,000	150,000	270,000	210,000	130,000
Chromium (III+VI) (filtered)	µg/L	0.03	**1**[#2]	**1.8**	0.6	<0.5	<0.5	**2.2**	0.26	**6.08**	0.03	0.03	0.36	0.53
Copper (filtered)	µg/L	0.02	**1..5**[#1]	**1.1**	**1.1**	0.8	1.2	**2.8**	**1.46**	**2.82**	0.08	0.29	0.11	0.51
Iron (filtered)	µg/L	2	**300**	**7,580**	**9,420**	**5,470**	**6,840**	**7,170**	**8,520**	**7,750**	**10,100**	**10,400**	**10,700**	**7,250**
Lead (filtered)	µg/L	0.01	**1..5**[#1]	<0.02	0.02	0.04	0.11	<0.02	0.11	0.02	<0.01	0.05	0.05	0.05
Magnesium (filtered)	µg/L	1		26,000	31,900	20,100	23,700	24,800	32,300	27,900	35,600	38,100	37,400	27,400
Manganese (filtered)	µg/L	0.01		2,030	2,350	1,460	1,630	1,880	1,910	1,940	2,630	2,480	2,490	1,950
Mercury (filtered)	µg/L	0.01	**0.2**	-	-	-	-	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01
Phosphorus (filtered)	ug/L	3	**30**	-	-	-	12	**40**	<30	<30	**180**	<30	11	<30
Phosphorus total (P2O5)	µg/L	10	**30**	-	-	-	-	-	-	-	-	-	-	-
Potassium (filtered)	µg/L	2		3,040	3,150	2,330	2,220	2,860	2,980	3,450	2,320	3,060	2,600	2,450
Sodium (filtered)	µg/L	10		95,300	84,500	60,600	42,600	52,400	63,900	88,200	79,200	144,000	122,000	87,100
Zinc (filtered)	µg/L	2	**20**	3	5	<2	<2	<2	<2	7	<2	<2	<2	6
Inorganics														
Alkalinity (total) as CaCO3	mg/L	2		340	350	322	332	336	382	391	376	371	373	337
Hardness (as CaCO3) (filtered)	mg/L	0.05		-	-	-	619	-	-	-	-	-	-	-
Total Dissolved Solids	mg/L	3		1,200	1,200	829	957	989	1,390	1,270	1,380	1,710	1,650	1,070
Chemical Oxygen Demand	mg/L	5		<8	11	14	<8	8	22	21	15	15	19	17
Total Suspended Solids	mg/L	2		17	-	-	-	-	-	-	40	20	23	19
Dissolved Organic Carbon (filtered)	mg/L	0.2		6.0	8.8	4.1	5.6	3.7	6.6	5.1	-	-	-	-
Biochemical Oxygen Demand	mg/L	2		<2	-	-	-	-	-	-	<4	<4	<4	<4
Phenols (4AAP)	mg/L	0.001	**0.001**	-	-	-	-	<0.002	<0.002	**0.005**	<0.001	**0.002**	<0.001	0.001
Sulphate	mg/L	0.2		-	-	-	-	-	-	-	380	-	-	400
Sulphate (filtered)	mg/L	0.2		410	190	220	280	310	410	460	-	490	550	-
Ammonia as N	mg/L	0.01		0.1	<0.1	<0.1	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2
Nitrate (as N)	mg/L	0.05		<0.05	<0.05	0.25	<0.06	<0.06	1.16	<0.06	<0.06	<0.06	<0.06	<0.06
Nitrite (as N)	mg/L	0.03		-	-	-	-	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Total Kjeldahl Nitrogen	mg/L	0.1		-	-	-	-	<0.5	<0.5	<0.5	1.1	<0.5	<0.5	<0.5
pH (Lab)	-	0.05	**6.5-8.5**	7.90	7.52	7.78	7.69	8.02	7.67	7.88	7.51	7.40	7.85	7.39
Electrical Conductivity (Lab)	µS/cm	1		1,740	1,910	1,330	1,250	1,440	1,760	1,770	1,810	2,230	2,200	1,460
Field														
DO (Field)	mg/L		**5**	-	-	-	-	-	-	-	-	-	-	-
Redox (Field)	mV			-	-	-	-	-	-	-	-	-	-	-
Temperature (Field)	oC			-	-	-	-	-	-	-	-	-	-	-
Conductivity (field)	µS/cm			-	-	-	-	-	-	-	-	-	-	-
pH (Field)	-		**6.5-8.5**	-	-	-	-	-	-	-	-	-	-	-

Table 7: Groundwater Quality - PWQO

	Unit	EQL	PWQO	TW07-2 11 Jun 2018	TW07-2 05 Nov 2018	TW07-2 29 May 2019	TW07-2 28 Oct 2019	TW07-2 27 May 2020	TW07-2 12 Nov 2020	TW07-2 28 Jun 2021	TW07-2 10 Nov 2021	TW07-2 11 Apr 2022	TW07-2 23 Nov 2022
Metals													
Arsenic (filtered)	µg/L	0.1	**5**	1.4	1.7	1.2	0.7	0.3	1	<3	1.7	1.4	1.6
Barium (filtered)	µg/L	0.01		132	128	128	96.5	55.3	96.2	105	100	94	106
Boron (filtered)	µg/L	0.2	**200**	**1,100**	**939**	**1,250**	**1,490**	**1,250**	**1,390**	**1,500**	**1,560**	**1,480**	**1,620**
Calcium (filtered)	µg/L	10		384,000	341,000	339,000	263,000	257,000	244,000	-	-	-	248,000
Cadmium (filtered)	µg/L	0.003	**0.1..0.5**[#1]	0.004	<0.003	0.004	0.005	<0.003	0.003	<0.3	<0.015	<0.015	<0.012
Chloride	µg/L	200		170,000	150,000	280,000	130,000	130,000	140,000	176,000	138,000	128,000	216,000
Chromium (III+VI) (filtered)	µg/L	0.03	**1**[#2]	0.23	0.13	0.14	0.15	<0.08	0.14	<3	<1	<1	<1
Copper (filtered)	µg/L	0.02	**1..5**[#1]	0.36	0.82	**1.2**	0.3	**1.2**	0.7	<2	0.1	1.5	1.4
Iron (filtered)	µg/L	2	**300**	**9,540**	**7,630**	**8,410**	267	93	**1,520**	**6,410**	**5,580**	**6,460**	**6,080**
Lead (filtered)	µg/L	0.01	**1..5**[#1]	0.02	<0.01	0.01	0.03	<0.01	0.06	<0.9	<0.04	<0.04	<0.04
Magnesium (filtered)	µg/L	1		36,200	32,600	41,000	30,500	30,500	26,800	-	-	-	31,600
Manganese (filtered)	µg/L	0.01		2,810	2,550	2,470	2,250	754	1,660	-	-	1,910	1,840
Mercury (filtered)	µg/L	0.01	**0.2**	0.09	<10	<10	<10	<10	<10	<0.02	<0.02	<0.02	<0.02
Phosphorus (filtered)	ug/L	3	**30**	**50**	<30	**220**	**40**	**250**	**150**	-	-	-	-
Phosphorus total (P2O5)	µg/L	10	**30**	-	-	-	-	-	-	**170**	30	**50**	**2,350**
Potassium (filtered)	µg/L	2		2,730	3,000	2,460	2,480	2,430	2,800	-	-	-	3,000
Sodium (filtered)	µg/L	10		92,700	94,500	127,000	123,000	108,000	114,000	-	-	88,900	-
Zinc (filtered)	µg/L	2	**20**	2	3	4	5	<2	3	<5	<5	<5	<5
Inorganics													
Alkalinity (total) as CaCO3	mg/L	2		335	323	382	345	341	348	307	357	322	318
Hardness (as CaCO3) (filtered)	mg/L	0.05		-	-	-	-	-	-	760	681	776	750
Total Dissolved Solids	mg/L	3		1,620	1,351	1,590	1,320	1,230	1,200	939	888	916	1,080
Chemical Oxygen Demand	mg/L	5		17	15	11	13	20	14	14	32	15	143
Total Suspended Solids	mg/L	2		23	16	224	19	254	200	134	44	196	1,030
Dissolved Organic Carbon (filtered)	mg/L	0.2		-	-	-	-	-	-	-	-	-	1.2
Biochemical Oxygen Demand	mg/L	2		<4	<4	<4	<4	<4	<4	<3	<3	<3	<3
Phenols (4AAP)	mg/L	0.001	**0.001**	**0.003**	**0.004**	**0.007**	**0.002**	**0.005**	<0.001	<0.002	<0.002	<0.001	<0.001
Sulphate	mg/L	0.2		560	490	520	460	470	410	-	-	-	-
Sulphate (filtered)	mg/L	0.2		-	-	-	-	-	-	362	360	468	424
Ammonia as N	mg/L	0.01		0.1	0.2	0.2	0.2	0.1	0.1	0.14	0.16	0.13	0.28
Nitrate (as N)	mg/L	0.05		<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.06	<0.05	<0.3	0.06
Nitrite (as N)	mg/L	0.03		<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	<0.3	<0.05
Total Kjeldahl Nitrogen	mg/L	0.1		<0.5	<0.5	<0.5	<0.5	<0.5	0.7	0.5	0.4	0.4	2.2
pH (Lab)	-	0.05	**6.5-8.5**	7.65	7.42	7.07	7.78	7.53	7.61	7.59	7.87	7.43	7.46
Electrical Conductivity (Lab)	µS/cm	1		1,920	1,740	2,140	1,730	1,560	1,610	17,100	1,620	1,670	1,960
Field													
DO (Field)	mg/L		**5**	-	-	6.6	5.2	8.9	**4.7**	**2.51**	**3.19**	**3.58**	**4.26**
Redox (Field)	mV			-	-	-15	162	211	-15	22	56	-88	-4
Temperature (Field)	oC			-	-	8.5	11.9	13.4	11.9	11.9	11	5.9	10.5
Conductivity (field)	µS/cm			-	-	1,694	1,751	1,438	1,065	1,575	669	1,360	1,656
pH (Field)	-		**6.5-8.5**	-	-	7.03	**6.35**	7.17	7.57	7.02	6.92	7	6.67

Table 7: Groundwater Quality - PWQO

	Unit	EQL	PWQO	TW09-2 01 Oct 2011	TW09-2 15 May 2012	TW09-2 25 Sep 2012	TW09-2 04 Jun 2013	TW09-2 30 Oct 2013	TW09-2 09 Jun 2014	TW09-2 14 Nov 2014	TW09-2 19 May 2015	TW09-2 03 Nov 2015	TW09-2 19 May 2016	TW09-2 26 Oct 2016
Metals														
Arsenic (filtered)	µg/L	0.1	**5**	0.2	0.4	0.2	0.4	0.2	0.3	0.3	<0.2	0.4	<0.2	0.2
Barium (filtered)	µg/L	0.01		329	337	297	274	334	108	258	289	292	303	263
Boron (filtered)	µg/L	0.2	**200**	11.6	32.0	12.2	12.9	13.2	19.6	15.8	32.4	16.7	30	16
Calcium (filtered)	µg/L	10		101,000	97,200	92,200	98,000	101,000	105,000	103,000	104,000	98,800	109,000	90,700
Cadmium (filtered)	µg/L	0.003	**0.1..0.5**[#1]	<0.003	<0.003	<0.003	<0.003	0.005	0.010	<0.003	0.003	<0.003	0.003	<0.003
Chloride	µg/L	200		4,800	5,200	5,800	6,600	7,200	17,000	5,600	5,000	5,000	5,000	5,000
Chromium (III+VI) (filtered)	µg/L	0.03	**1**[#2]	<0.5	0.5	<0.5	<0.5	0.6	0.30	0.25	0.05	<0.03	0.32	0.07
Copper (filtered)	µg/L	0.02	**1..5**[#1]	<0.5	<0.5	0.7	<0.5	<0.5	0.91	0.60	0.48	0.12	0.12	0.41
Iron (filtered)	µg/L	2	**300**	150	72	118	179	117	3	187	228	129	262	36
Lead (filtered)	µg/L	0.01	**1..5**[#1]	<0.02	0.04	0.04	<0.02	<0.02	0.01	0.05	<0.01	0.01	0.02	0.01
Magnesium (filtered)	µg/L	1		3,640	3,620	3,320	3,820	3,830	4,890	3,890	4,000	4,320	3,600	3,610
Manganese (filtered)	µg/L	0.01		32.6	29.6	20.7	21.2	30.4	3.50	29.1	22.3	26.4	22.5	12.04
Mercury (filtered)	µg/L	0.01	**0.2**	-	-	-	-	<0.01	<0.01	0.05	-	0.02	<0.01	<0.01
Phosphorus (filtered)	ug/L	3	**30**	-	-	-	12	**50**	<30	<30	<30	<30	15	<30
Phosphorus total (P2O5)	µg/L	10	**30**	-	-	-	-	-	-	-	-	-	-	-
Potassium (filtered)	µg/L	2		890	873	757	849	905	1,270	954	760	911	818	908
Sodium (filtered)	µg/L	10		2,920	2,940	2,860	3,120	3,210	7,780	3,540	3,360	3,870	3,340	3,200
Zinc (filtered)	µg/L	2	**20**	<2	3	2	<2	<2	3	2	2	<2	<2	<2
Inorganics														
Alkalinity (total) as CaCO3	mg/L	2		252	252	228	216	236	250	266	230	266	235	225
Hardness (as CaCO3) (filtered)	mg/L	0.05		-	-	-	261	-	-	-	-	-	-	-
Total Dissolved Solids	mg/L	3		309	326	300	306	280	363	300	286	303	311	269
Chemical Oxygen Demand	mg/L	5		24	<8	10	17	<8	9	<8	10	<8	<8	10
Total Suspended Solids	mg/L	2		<2	-	-	-	-	-	-	<2	<2	<2	3
Dissolved Organic Carbon (filtered)	mg/L	0.2		2.3	6.3	2.0	4.0	1.8	2.8	2.5	-	-	-	-
Biochemical Oxygen Demand	mg/L	2		<2	-	-	-	-	-	-	<4	<4	<4	<4
Phenols (4AAP)	mg/L	0.001	**0.001**	-	-	-	-	<0.002	<0.002	**0.005**	**0.005**	<0.001	<0.001	**0.003**
Sulphate	mg/L	0.2		-	-	-	-	-	-	-	16	-	-	14
Sulphate (filtered)	mg/L	0.2		12	15	13	16	13	22	15	-	13	16	-
Ammonia as N	mg/L	0.01		0.4	0.4	<0.1	<0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.1
Nitrate (as N)	mg/L	0.05		<0.05	<0.05	0.12	0.07	0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.28
Nitrite (as N)	mg/L	0.03		-	-	-	-	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Total Kjeldahl Nitrogen	mg/L	0.1		-	-	-	-	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
pH (Lab)	-	0.05	**6.5-8.5**	7.95	7.89	8.00	7.80	8.20	7.94	8.07	7.64	7.82	8.25	7.91
Electrical Conductivity (Lab)	µS/cm	1		517	505	494	463	499	543	524	444	521	502	456
Field														
DO (Field)	mg/L		**5**	-	-	-	-	-	-	-	-	-	-	-
Redox (Field)	mV			-	-	-	-	-	-	-	-	-	-	-
Temperature (Field)	oC			-	-	-	-	-	-	-	-	-	-	-
Conductivity (field)	µS/cm			-	-	-	-	-	-	-	-	-	-	-
pH (Field)	-		**6.5-8.5**	-	-	-	-	-	-	-	-	-	-	-

Table 7: Groundwater Quality - PWQO

	Unit	EQL	PWQO	TW09-2 11 Jun 2018	TW09-2 05 Nov 2018	TW09-2 29 May 2019	TW09-2 28 Oct 2019	TW09-2 27 May 2020	TW09-2 12 Nov 2020	TW09-2 28 Jun 2021	TW09-2 10 Nov 2021	TW09-2 11 Apr 2022	TW09-2 14 Nov 2022
Metals													
Arsenic (filtered)	µg/L	0.1	**5**	<0.2	<0.2	0.4	<0.2	<0.2	0.2	<0.1	0.2	<0.1	0.1
Barium (filtered)	µg/L	0.01		237	280	487	210	205	205	276	259	263	256
Boron (filtered)	µg/L	0.2	**200**	25	10	26	11	8	58	14	12	11	12
Calcium (filtered)	µg/L	10		106,000	117,000	281,000	86,800	88,300	108,000	-	-	-	91,800
Cadmium (filtered)	µg/L	0.003	**0.1..0.5**[#1]	0.011	<0.003	0.064	<0.003	0.005	<0.003	<0.015	<0.015	<0.015	<0.01
Chloride	µg/L	200		4,000	4,000	4,000	4,000	4,000	5,000	4,500	6,200	5,800	5,400
Chromium (III+VI) (filtered)	µg/L	0.03	**1**[#2]	0.06	0.12	**4.01**	0.09	0.1	<0.08	**2**	1	<1	<1
Copper (filtered)	µg/L	0.02	**1..5**[#1]	0.33	0.26	**8.1**	0.7	0.9	0.5	0.2	1.9	1.6	3.8
Iron (filtered)	µg/L	2	**300**	123	67	**2,820**	17	<7	23	218	<5	**396**	9
Lead (filtered)	µg/L	0.01	**1..5**[#1]	0.04	<0.01	**2.49**	0.04	0.02	0.01	0.08	0.47	0.23	<0.02
Magnesium (filtered)	µg/L	1		3,120	3,510	8,300	2,870	2,990	3,670	-	-	-	3,860
Manganese (filtered)	µg/L	0.01		19.4	27.6	273	7.26	0.32	25.8	-	-	45	13
Mercury (filtered)	µg/L	0.01	**0.2**	0.07	<10	<10	<10	<10	<10	<0.02	<0.02	<0.02	<0.02
Phosphorus (filtered)	ug/L	3	**30**	<30	<30	**730**	<30	**300**	**290**	-	-	-	-
Phosphorus total (P2O5)	µg/L	10	**30**	-	-	-	-	-	-	**680**	**640**	**1,210**	**1,460**
Potassium (filtered)	µg/L	2		674	858	1,100	723	757	941	-	-	-	-
Sodium (filtered)	µg/L	10		3,230	3,100	3,000	3,090	3,010	3,380	-	-	3,300	3,500
Zinc (filtered)	µg/L	2	**20**	3	<2	17	9	4	<2	<5	<5	<5	<5
Inorganics													
Alkalinity (total) as CaCO3	mg/L	2		235	241	340	215	237	531	228	256	243	254
Hardness (as CaCO3) (filtered)	mg/L	0.05		-	-	-	-	-	-	282	260	302	245
Total Dissolved Solids	mg/L	3		266	334	274	291	243	303	255	265	270	263
Chemical Oxygen Demand	mg/L	5		<8	<8	<8	<8	14	13	69	71	196	699
Total Suspended Solids	mg/L	2		<2	3	2,210	<2	3,200	341	2,000	1,070	2,200	4,220
Dissolved Organic Carbon (filtered)	mg/L	0.2		-	-	-	-	-	-	-	-	-	2.1
Biochemical Oxygen Demand	mg/L	2		<4	<4	4	<4	4	<4	4	4	4	<3
Phenols (4AAP)	mg/L	0.001	**0.001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.001	<0.001
Sulphate	mg/L	0.2		13	10	15	10	15	24	-	-	-	-
Sulphate (filtered)	mg/L	0.2		-	-	-	-	-	-	16	16	17	14
Ammonia as N	mg/L	0.01		0.2	0.2	0.2	0.1	0.1	0.2	0.22	0.26	0.21	0.24
Nitrate (as N)	mg/L	0.05		<0.06	<0.06	0.2	0.09	0.07	0.21	0.38	0.16	0.08	0.16
Nitrite (as N)	mg/L	0.03		<0.03	<0.03	<0.03	<0.03	<0.03	0.03	<0.05	<0.05	<0.05	<0.05
Total Kjeldahl Nitrogen	mg/L	0.1		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.6	1.7	2	5.9
pH (Lab)	-	0.05	**6.5-8.5**	7.99	7.91	7.96	8.26	8.02	7.86	7.83	8	7.38	7.69
Electrical Conductivity (Lab)	µS/cm	1		473	475	448	384	472	478	493	512	521	509
Field													
DO (Field)	mg/L		**5**	-	-	**4.1**	6.7	6	5.9	9.85	8.19	6.65	7.31
Redox (Field)	mV			-	-	115	167	214	220	56	11	-15	-241
Temperature (Field)	oC			-	-	10.8	11.9	13.8	11.9	14.8	9.1	4.9	6.8
Conductivity (field)	µS/cm			-	-	362	339	388	302	463	235	373	263
pH (Field)	-		**6.5-8.5**	-	-	7.82	6.59	7.79	**8.55**	7.61	7.54	7.07	7.49

Table 8: Surface Water Quality

	Unit	EQL	PWQO	SW Trigger	SW1 01 Oct 2011	SW1 15 May 2012	SW1 11 Jul 2012	SW1 25 Sep 2012	SW1 29 May 2013	SW1 09 Aug 2013	SW1 30 Oct 2013	SW1 09 Jun 2014	SW1 29 Jul 2014	SW1 14 Nov 2014	SW1 19 May 2015
Metals															
Arsenic	µg/L	0.1	**5**	***0.8***	-	-	-	-	0.5	-	0.6	0.7	0.8	0.4	0.7
Barium	µg/L	0.01		***87***	-	-	-	-	66.9	-	58.9	77.1	***91.5***	50.5	71.2
Boron	µg/L	0.2	**200**	***21.6***	-	-	-	-	10.1	-	7.1	16.6	19.0	7.0	19.6
Calcium	µg/L	10		***95,350***	-	-	-	-	79,800	-	-	-	-	-	***98,900***
Cadmium	µg/L	0.003	**0.1..0.5**[#1]	***0.01***	-	-	-	-	0.004	-	0.010	0.003	<0.003	<0.003	0.009
Chloride	µg/L	200		***21,250***	12,000	11,000	8,900	13,000	11,000	7,900	13,000	8,300	13,000	15,000	13,000
Chromium (III+VI)	µg/L	0.03	***1***[#2]	***0.76***	-	-	-	-	<0.5	-	<0.5	0.05	0.20	***1.65***	<0.03
Copper	µg/L	0.02	**1..5**[#1]	***0.91***	-	-	-	-	<0.5	-	<0.5	***6.01***	0.73	0.58	0.43
Iron	µg/L	2	**300**	***394***	73	149	***1,850***	***1,440***	135	***460***	60	**315**	***496***	66	211
Lead	µg/L	0.01	**1..5**[#1]	***0.14***	-	-	-	-	0.11	-	0.03	***0.46***	0.08	0.10	0.06
Magnesium	µg/L	1		***2,930***	-	-	-	-	2,170	-	-	-	-	-	2,400
Manganese	µg/L	0.01		***137***	-	-	-	-	45.5	-	-	111	109	15.6	81.5
Mercury (filtered)	µg/L	0.01	**0.2**	***10***	-	-	-	-	-	-	-	-	-	-	<0.01
Phosphorus total (P2O5)	µg/L	3	**30**	***40***	***60***	<30	<30	**40**	***80***	<30	30	**40**	**40**	<30	15
Potassium	µg/L	3		***817***	-	-	-	-	***857***	-	-	-	-	-	705
Sodium	µg/L	10		***11,750***	-	-	-	-	6,850	-	-	-	-	-	7,610
Zinc	µg/L	1	**20**	***8***	-	-	-	-	<2	-	<2	***11***	2	<2	2
Inorganics															
Alkalinity (total) as CaCO3	mg/L	2		***211***	197	201	***229***	***232***	179	206	182	***226***	***227***	202	***226***
Hardness (as CaCO3)	mg/L	0.05			-	-	-	-	208	-	-	-	-	-	-
Total Dissolved Solids	mg/L	1		***298***	249	226	286	***303***	271	280	234	277	***343***	251	***314***
Chemical Oxygen Demand	mg/L	5		***39.3***	***41***	17	31	32	18	35	24	<8	29	24	24
Total Suspended Solids	mg/L	2		***13***	<2	<2	6	4	<2	3	2	2	<2	<2	<2
Dissolved Organic Carbon (filtered)	mg/L	0.2			-	-	-	-	-	-	-	-	-	-	13.2
Biochemical Oxygen Demand	mg/L	2		***4***	<2	<4	***5***	<4	<4	<4	<4	<4	3	<4	***6***
Phenols (4AAP)	mg/L	0.001	**0.001**	***0.003***	**0.002**	0.001	***0.004***	**0.002**	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	**0.002**
Sulphate	mg/L	0.2		***2***	-	-	0.3	-	-	-	-	-	-	-	<1
Sulphate (filtered)	mg/L	0.2		***2***	***2.7***	0.9	-	***7.4***	***2.8***	1.2	***3.0***	1.6	1.7	***3.6***	-
Ammonia as N	mg/L	0.01		***0.1***	<0.1	***0.2***	<0.1	0.1	<0.1	<0.1	<0.1	***0.2***	0.1	-	<0.1
Nitrate (as N)	mg/L	0.05		***0.13***	<0.05	<0.05	<0.05	<0.05	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
Nitrite (as N)	mg/L	0.03		***0.03***	<0.06	<0.06	<0.06	<0.06	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Total Kjeldahl Nitrogen	mg/L	0.1		***0.7***	<0.5	<0.5	0.6	***0.8***	0.6	0.7	<0.5	<0.5	<0.5	<0.5	<0.5
Ammonia, Unionized	mg/L	0.01	**0.02**	***0.01***	-	-	-	-	-	-	-	-	-	-	-
pH (Lab)	-	0.05	**6.5-8.5**		8.01	8.04	7.87	8.04	8.12	7.91	8.21	7.99	7.94	8.20	7.84
Electrical Conductivity (Lab)	µS/cm	1		***428***	405	409	***454***	***530***	425	424	394	***440***	***474***	422	***449***
Field															
DO (Field)	mg/L		**5**		-	-	-	-	-	-	-	-	-	-	-
Redox (Field)	mV				-	-	-	-	-	-	-	-	-	-	-
Temperature (Field)	oC				-	-	-	-	-	-	-	-	-	-	-
Conductivity (field)	µS/cm				-	-	-	-	-	-	-	-	-	-	-
pH (Field)	-		**6.5-8.5**		-	-	-	-	-	-	-	-	-	-	-

Table 8: Surface Water Quality

	Unit	EQL	PWQO	SW Trigger	SW1 29 Jul 2015	SW1 03 Nov 2015	SW1 16 May 2016	SW1 06 Jul 2016	SW1 07 Jun 2017	SW1 03 Aug 2017	SW1 29 Sep 2017	SW1 11 Jun 2018	SW1 16 Aug 2018	SW1 29 May 2019	SW1 02 Sep 2019
Metals															
Arsenic	µg/L	0.1	5	***0.8***	***1.4***	0.3	0.3	***1.1***	0.2	0.4	0.5	0.3	***1.2***	0.2	0.5
Barium	µg/L	0.01		***87***	***121***	59.1	64.8	***111***	61.3	79.1	***110***	60.9	***153***	60.8	***95.5***
Boron	µg/L	0.2	200	***21.6***	18.1	9.6	10	18	13	11	15	***24***	19	16	***34***
Calcium	µg/L	10		***95,350***	-	72,000	81,500	***108,000***	85,100	***112,000***	***115,000***	***96,500***	***141,000***	70,800	***117,000***
Cadmium	µg/L	0.003	0.1..0.5[#1]	***0.01***	***0.011***	0.010	0.005	<0.003	0.009	0.008	0.008	0.003	***0.020***	<0.003	***0.019***
Chloride	µg/L	200		***21,250***	***27,000***	***23,000***	***22,000***	15,000	11,000	9,000	17,000	7,000	14,000	12,000	13,000
Chromium (III+VI)	µg/L	0.03	1[#2]	***0.76***	0.08	0.04	0.42	0.41	0.57	0.67	0.66	<0.03	0.61	0.11	0.21
Copper	µg/L	0.02	1..5[#1]	***0.91***	***0.94***	***1.97***	0.37	0.61	0.39	0.21	***1.08***	0.22	0.59	<0.2	0.9
Iron	µg/L	2	300	***394***	***2,270***	123	78	***2,300***	69	180	***786***	100	***2,970***	71	***1,510***
Lead	µg/L	0.01	1..5[#1]	***0.14***	***0.80***	0.10	0.07	0.05	0.05	0.01	0.13	***0.64***	***0.48***	<0.01	0.09
Magnesium	µg/L	1		***2,930***	-	2,470	2,460	***3,110***	2,500	2,710	2,740	2,160	***3,520***	1,960	2,810
Manganese	µg/L	0.01		***137***	-	24.7	17.4	***986***	10.7	81.4	***1,320***	36.7	***2,280***	19.3	***639***
Mercury (filtered)	µg/L	0.01	0.2	***10***	<0.01	<0.01	<0.01	<0.01	***200***	<10	<10	0.03	<0.01	<10	<10
Phosphorus total (P2O5)	µg/L	3	30	***40***	**40**	<30	<30	***110***	<30	<30	**40**	<30	***157***	<3	**37**
Potassium	µg/L	3		***817***	-	***1,050***	585	731	161	290	528	111	***1,320***	581	660
Sodium	µg/L	10		***11,750***	-	***12,400***	***12,000***	11,200	7,950	6,770	9,890	5,460	8,270	6,560	7,640
Zinc	µg/L	1	20	***8***	3	7	4	3	4	<2	***12***	<2	6	2	***9***
Inorganics															
Alkalinity (total) as CaCO3	mg/L	2		***211***	***266***	178	183	***248***	202	***248***	***276***	***215***	***331***	204	***273***
Hardness (as CaCO3)	mg/L	0.05			-	-	-	-	-	-	-	-	-	-	-
Total Dissolved Solids	mg/L	1		***298***	***334***	240	263	***340***	280	***334***	***323***	286	***440***	206	***329***
Chemical Oxygen Demand	mg/L	5		***39.3***	37	30	10	35	25	31	39	30	***53***	19	27
Total Suspended Solids	mg/L	2		***13***	7	<2	<2	8	<2	<2	8	<2	***24***	***14***	13
Dissolved Organic Carbon (filtered)	mg/L	0.2			-	-	-	-	-	-	-	-	-	-	-
Biochemical Oxygen Demand	mg/L	2		***4***	***5***	<4	<4	<4	<4	<4	<4	<4	***12***	<4	***5***
Phenols (4AAP)	mg/L	0.001	**0.001**	***0.003***	**0.003**	0.001	<0.001	<0.001	0.001	<0.001	<0.001	0.001	***0.011***	**0.003**	***0.006***
Sulphate	mg/L	0.2		***2***	-	-	-	-	-	-	-	-	<2	-	-
Sulphate (filtered)	mg/L	0.2		***2***	<1	<1	1	<1	<2	<2	<2	<2	-	***6***	***3***
Ammonia as N	mg/L	0.01		***0.1***	<0.1	<0.1	0.1	***0.2***	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	***0.2***
Nitrate (as N)	mg/L	0.05		***0.13***	<0.06	***0.15***	***0.18***	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
Nitrite (as N)	mg/L	0.03		***0.03***	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Total Kjeldahl Nitrogen	mg/L	0.1		***0.7***	0.6	<0.5	<0.5	0.7	<0.5	<0.5	0.5	<0.5	***1.0***	<0.5	***0.9***
Ammonia, Unionized	mg/L	0.01	**0.02**	***0.01***	-	-	-	-	-	-	-	-	-	-	-
pH (Lab)	-	0.05	**6.5-8.5**		8.10	8.14	8.26	7.85	7.82	7.74	7.76	7.94	7.88	8.17	8
Electrical Conductivity (Lab)	µS/cm	1		***428***	***560***	411	***444***	***510***	417	***485***	***529***	417	***613***	407	***543***
Field															
DO (Field)	mg/L		5		-	-	-	-	-	-	-	-	-	6.3	**4.57**
Redox (Field)	mV				-	-	-	-	-	-	-	-	-	111	-
Temperature (Field)	oC				-	-	-	-	-	-	-	-	-	13	21.2
Conductivity (field)	µS/cm				-	-	-	-	-	-	-	-	-	324	749
pH (Field)	-		**6.5-8.5**		-	-	-	-	-	-	-	-	-	7.74	7.38

Table 8: Surface Water Quality

	Unit	EQL	PWQO	*SW Trigger*	SW1 28 Oct 2019	SW1 27 May 2020	SW1 07 Jul 2020	SW1 13 Jul 2020	SW1 12 Nov 2020	SW1 28 Jun 2021	SW1 26 Aug 2021	SW1 10 Nov 2021	SW1 11 Apr 2022	SW1 13 Jul 2022	SW1 14 Nov 2022
Metals															
Arsenic	µg/L	0.1	**5**	***0.8***	0.5	0.5	***1.1***	***1.1***	0.5	0.6	0.6	0.3	0.1	0.2	0.3
Barium	µg/L	0.01		***87***	59.9	77	***119***	***119***	69.9	76	82	60	35	50	74
Boron	µg/L	0.2	**200**	***21.6***	18	15	***26***	***26***	14	***29***	***23***	9	***22***	***54***	11
Calcium	µg/L	10		***95,350***	81,000	74,500	***132,000***	***132,000***	***104,000***	89,400	-	85,400	85,100	***99,300***	***96,700***
Cadmium	µg/L	0.003	**0.1..0.5**[#1]	***0.01***	0.003	0.003	<0.003	<0.003	<0.003	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
Chloride	µg/L	200		***21,250***	***24,000***	***22,000***	9,000	9,000	19,000	12,700	12,900	17,200	10,300	16,500	***22,200***
Chromium (III+VI)	µg/L	0.03	**1**[#2]	***0.76***	0.15	0.3	<0.08	<0.08	<0.08	<1	<1	<1	<1	<1	<1
Copper	µg/L	0.02	**1..5**[#1]	***0.91***	0.5	0.4	0.7	0.7	0.5	0.4	<0.1	0.4	0.2	0.3	0.2
Iron	µg/L	2	**300**	***394***	106	34	***934***	***934***	119	***603***	***707***	125	16	120	187
Lead	µg/L	0.01	**1..5**[#1]	***0.14***	0.12	0.02	<0.01	<0.01	0.09	0.08	0.04	***0.72***	0.02	0.08	0.03
Magnesium	µg/L	1		***2,930***	2,390	2,380	***3,390***	***3,390***	2,810	2,540	-	2,490	2,790	***3,530***	2,740
Manganese	µg/L	0.01		***137***	16.8	53.3	***826***	***826***	34.7	***172***	-	15	11	14	68
Mercury (filtered)	µg/L	0.01	**0.2**	***10***	<10	<10	<10	<10	<10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Phosphorus total (P2O5)	µg/L	3	**30**	***40***	14	24	***61***	***61***	<3	30	<10	***50***	10	30	30
Potassium	µg/L	3		***817***	***2,060***	***989***	688	688	553	200	-	300	***1,400***	300	500
Sodium	µg/L	10		***11,750***	10,900	***13,400***	8,410	8,410	10,200	8,800	-	9,600	5,900	***13,700***	10,900
Zinc	µg/L	1	**20**	***8***	<2	3	<2	<2	2	***14***	***19***	***13***	6	***100***	<5
Inorganics															
Alkalinity (total) as CaCO3	mg/L	2		***211***	164	205	***295***	***295***	***218***	***247***	***269***	203	***222***	***254***	***251***
Hardness (as CaCO3)	mg/L	0.05			-	-	-	-	-	234	253	224	224	263	253
Total Dissolved Solids	mg/L	1		***298***	286	283	***363***	***363***	283	254	271	237	236	269	279
Chemical Oxygen Demand	mg/L	5		***39.3***	27	22	38	38	27	26	26	32	6	20	18
Total Suspended Solids	mg/L	2		***13***	2	<2	7	7	12	3	4	6	<3	9	13
Dissolved Organic Carbon (filtered)	mg/L	0.2			-	-	-	-	-	-	-	-	-	-	12
Biochemical Oxygen Demand	mg/L	2		***4***	<4	<4	4	4	<4	<3	<3	<3	<3	<3	<3
Phenols (4AAP)	mg/L	0.001	**0.001**	***0.003***	<0.001	**0.003**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	0.2		***2***	-	-	-	-	-	-	-	-	-	-	-
Sulphate (filtered)	mg/L	0.2		***2***	***33***	<2	<2	<2	***4***	***3***	***4***	***9***	***12***	***4***	***6***
Ammonia as N	mg/L	0.01		***0.1***	<0.1	<0.1	<0.1	<0.1	<0.1	0.05	0.03	0.02	<0.01	0.05	<0.01
Nitrate (as N)	mg/L	0.05		***0.13***	<0.06	<0.06	<0.06	<0.06	<0.06	0.05	0.1	<0.05	***0.2***	<0.05	<0.05
Nitrite (as N)	mg/L	0.03		***0.03***	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	***0.06***	<0.05	<0.05	<0.05	<0.05
Total Kjeldahl Nitrogen	mg/L	0.1		***0.7***	<0.5	<0.5	***0.8***	***0.8***	<0.5	0.5	0.6	0.5	0.2	0.5	0.5
Ammonia, Unionized	mg/L	0.01	**0.02**	***0.01***	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
pH (Lab)	-	0.05	**6.5-8.5**		8.17	7.94	7.66	7.66	7.67	7.96	8.01	7.79	7.98	7.99	7.67
Electrical Conductivity (Lab)	µS/cm	1		***428***	402	424	***529***	***529***	***454***	***490***	***524***	***458***	***457***	***520***	***539***
Field															
DO (Field)	mg/L		**5**		5.98	6.01	-	**4.66**	6.21	6.49	6.48	9.17	7.92	6.67	9.12
Redox (Field)	mV				225	25	-	120	210	67	130	20	240	208	-251
Temperature (Field)	oC				11.8	20.5	-	25.7	6.9	26.8	28	6.8	1.8	18.6	3.7
Conductivity (field)	µS/cm				411	414	-	550	321	485	545	204	413	560	447
pH (Field)	-		**6.5-8.5**		7.71	7.6	-	7.84	**8.8**	7.31	7.34	7.58	6.95	7.33	7.47

Table 8: Surface Water Quality

	Unit	EQL	PWQO	SW Trigger	SW3 01 Oct 2011	SW3 15 May 2012	SW3 29 May 2013	SW3 30 Oct 2013	SW3 09 Jun 2014	SW3 14 Nov 2014	SW3 19 May 2015	SW3 16 May 2016	SW3 07 Jun 2017	SW3 03 Aug 2017	SW3 11 Jun 2018	SW3 29 May 2019	SW3 27 May 2020	SW3 10 Nov 2021	SW3 11 Apr 2022
Metals																			
Arsenic	µg/L	0.1	5	0.8	-	-	0.7	1.0	0.8	0.6	0.9	0.5	0.4	0.5	1.1	0.2	0.4	0.8	0.3
Barium	µg/L	0.01		87	-	-	74.8	68.0	93.8	69.2	71.9	61.9	53.8	89.6	59.6	57.7	56.3	62	31
Boron	µg/L	0.2	200	21.6	-	-	118	298	176	53.9	209	307	225	328	822	126	371	287	154
Calcium	µg/L	10		95,350	-	-	132,000	-	-	-	147,000	134,000	128,000	154,000	196,000	113,000	122,000	113,000	59,900
Cadmium	µg/L	0.003	0.1..0.5[#1]	0.01	-	-	0.008	0.040	0.361	0.016	0.012	0.026	0.015	0.017	0.019	0.003	0.011	0.016	<0.015
Chloride	µg/L	200		21,250	19,000	37,000	61,000	34,000	71,000	43,000	51,000	53,000	42,000	67,000	74,000	62,000	76,000	80,300	47,100
Chromium (III+VI)	µg/L	0.03	1[#2]	0.76	-	-	<0.5	0.6	0.47	0.97	0.13	0.61	0.77	0.58	0.46	0.24	0.43	<1	<1
Copper	µg/L	0.02	1..5[#1]	0.91	-	-	1.0	3.1	0.98	1.94	0.58	3.04	0.97	0.65	1.39	0.8	0.8	1.5	1.2
Iron	µg/L	2	300	394	82	168	226	172	136	175	219	184	114	214	470	64	177	181	264
Lead	µg/L	0.01	1..5[#1]	0.14	-	-	0.50	2.10	1.59	1.56	0.40	0.58	1.43	0.78	1.23	<0.01	0.17	0.41	0.48
Magnesium	µg/L	1		2,930	-	-	8,230	-	-	-	9,570	9,920	7,610	11,200	16,100	6,710	10,600	8,100	4,340
Manganese	µg/L	0.01		137	-	-	88.0	-	60.6	22.0	132	55.2	11.5	44.6	374	7.7	104	83	25
Mercury (filtered)	µg/L	0.01	0.2	10	-	-	-	-	-	-	<0.01	0.01	150	<10	0.08	<10	<10	<0.02	<0.02
Phosphorus total (P2O5)	µg/L	3	30	40	70	30	110	80	60	<30	35	40	40	<30	80	137	44	80	80
Potassium	µg/L	3		817	-	-	3,340	-	-	-	3,180	3,100	3,000	1,480	4,730	1,680	3,270	9,000	2,900
Sodium	µg/L	10		11,750	-	-	34,300	-	-	-	31,100	32,000	29,500	47,200	57,900	28,400	44,700	34,700	26,400
Zinc	µg/L	1	20	8	-	-	3	13	9	4	3	14	7	3	5	4	3	17	7
Inorganics																			
Alkalinity (total) as CaCO3	mg/L	2		211	172	293	231	78	305	187	301	250	249	308	328	251	260	209	138
Hardness (as CaCO3)	mg/L	0.05			-	-	364	-	-	-	-	-	-	-	-	-	-	316	168
Total Dissolved Solids	mg/L	1		298	563	446	543	671	657	586	503	551	454	1,070	749	426	540	420	251
Chemical Oxygen Demand	mg/L	5		39.3	26	29	40	38	<8	22	25	17	27	31	39	14	32	46	17
Total Suspended Solids	mg/L	2		13	5	<2	3	35	6	10	<2	5	62	31	17	2	10	26	26
Dissolved Organic Carbon (filtered)	mg/L	0.2			-	-	-	-	-	-	10.8	-	-	-	-	-	-	-	-
Biochemical Oxygen Demand	mg/L	2		4	5	15	<4	5	<4	<4	<4	7	<4	<4	<4	<4	4	<3	<3
Phenols (4AAP)	mg/L	0.001	0.001	0.003	<0.001	0.001	<0.001	<0.001	<0.001	0.001	0.001	0.001	0.005	0.002	0.007	0.004	0.009	<0.001	<0.001
Sulphate	mg/L	0.2		2	-	-	-	-	-	-	76	-	-	-	-	-	-	-	-
Sulphate (filtered)	mg/L	0.2		2	180	49	81	280	110	190	-	110	82	99	160	53	93	67	52
Ammonia as N	mg/L	0.01		0.1	<0.1	<0.1	0.3	<0.1	0.2	-	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	0.04	0.02
Nitrate (as N)	mg/L	0.05		0.13	<0.05	<0.05	<0.06	<0.06	0.07	<0.06	<0.06	0.15	<0.06	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05
Nitrite (as N)	mg/L	0.03		0.03	<0.06	<0.06	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05
Total Kjeldahl Nitrogen	mg/L	0.1		0.7	0.7	<0.5	1.7	1.0	0.8	1.0	0.6	0.7	0.5	<0.5	0.9	<0.5	<0.5	0.7	0.6
Ammonia, Unionized	mg/L	0.01	0.02	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01
pH (Lab)	-	0.05	6.5-8.5		8.01	8.11	8.18	8.06	8.04	8.00	7.95	4.76	8.09	7.79	7.92	8.17	7.88	7.72	7.76
Electrical Conductivity (Lab)	µS/cm	1		428	761	728	820	857	954	824	811	834	717	953	1,080	724	814	800	486
Field																			
DO (Field)	mg/L		5		-	-	-	-	-	-	-	-	-	-	-	9.2	6.04	8.06	8.02
Redox (Field)	mV				-	-	-	-	-	-	-	-	-	-	-	115	60	43	-3
Temperature (Field)	oC				-	-	-	-	-	-	-	-	-	-	-	13.1	20.2	6.7	9.5
Conductivity (field)	µS/cm				-	-	-	-	-	-	-	-	-	-	-	586	817	372	467
pH (Field)	-		6.5-8.5		-	-	-	-	-	-	-	-	-	-	-	7.95	4.42	7.55	7.4

Table 8: Surface Water Quality

	Unit	EQL	PWQO	SW Trigger	SW6 07 Jun 2017	SW6 02 Sep 2019	SW6 25 May 2020	SW6 10 Nov 2021	SW6 11 Apr 2022	SW8 15 May 2012	SW8 11 Jul 2012	SW8 29 May 2013	SW8 09 Aug 2013	SW8 30 Oct 2013	SW8 09 Jun 2014
Metals															
Arsenic	µg/L	0.1	5	0.8	0.4	0.4	0.7	0.6	0.3	-	-	0.5	-	0.8	0.5
Barium	µg/L	0.01		87	80.4	110	131	85	123	-	-	67.1	-	83.8	77.9
Boron	µg/L	0.2	200	21.6	138	189	226	183	214	-	-	11.2	-	12.6	23.1
Calcium	µg/L	10		95,350	149,000	164,000	128,000	139,000	171,000	-	-	74,800	-	-	-
Cadmium	µg/L	0.003	0.1..0.5[#1]	0.01	0.027	0.005	0.013	0.033	<0.015	-	-	0.005	-	0.020	<0.003
Chloride	µg/L	200		21,250	14,000	19,000	17,000	26,400	51,400	8,700	7,200	19,000	16,000	17,000	5,200
Chromium (III+VI)	µg/L	0.03	1[#2]	0.76	0.91	0.71	0.85	<1	<1	-	-	1.4	-	<0.5	0.07
Copper	µg/L	0.02	1..5[#1]	0.91	1.06	0.8	1	2.4	2	-	-	2.1	-	<0.5	0.85
Iron	µg/L	2	300	394	82	1,050	562	256	1,100	206	2,650	58	255	1,140	211
Lead	µg/L	0.01	1..5[#1]	0.14	0.94	0.16	0.26	2.1	0.27	-	-	0.19	-	0.14	0.10
Magnesium	µg/L	1		2,930	7,610	11,600	11,600	10,400	17,100	-	-	2,410	-	-	-
Manganese	µg/L	0.01		137	128	1,350	634	466	982	-	-	10.5	-	-	117
Mercury (filtered)	µg/L	0.01	0.2	10	150	<10	10	<0.02	<0.02	-	-	-	-	-	-
Phosphorus total (P2O5)	µg/L	3	30	40	50	36	116	70	40	<30	<30	60	50	50	40
Potassium	µg/L	3		817	6,240	10,400	11,800	12,200	10,200	-	-	407	-	-	-
Sodium	µg/L	10		11,750	14,100	21,200	22,500	16,900	27,900	-	-	13,100	-	-	-
Zinc	µg/L	1	20	8	6	5	3	15	<5	-	-	4	-	<2	9
Inorganics															
Alkalinity (total) as CaCO3	mg/L	2		211	356	417	366	355	515	189	159	169	217	207	212
Hardness (as CaCO3)	mg/L	0.05			-	-	-	390	498	-	-	197	-	-	-
Total Dissolved Solids	mg/L	1		298	503	491	451	438	636	243	211	274	306	271	260
Chemical Oxygen Demand	mg/L	5		39.3	23	17	26	58	23	23	51	37	72	30	21
Total Suspended Solids	mg/L	2		13	49	3	6	62	27	<2	145	8	6	15	5
Dissolved Organic Carbon (filtered)	mg/L	0.2			-	-	-	-	-	-	-	-	-	-	-
Biochemical Oxygen Demand	mg/L	2		4	11	<4	6	3	<3	<4	11	<4	<4	<4	<4
Phenols (4AAP)	mg/L	0.001	0.001	0.003	0.01	0.003	0.011	<0.001	<0.001	0.002	0.004	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	0.2		2	-	-	-	-	-	-	1.7	-	-	-	-
Sulphate (filtered)	mg/L	0.2		2	46	41	36	46	96	0.9	-	0.6	2.0	2.2	0.5
Ammonia as N	mg/L	0.01		0.1	0.7	1.6	2.2	0.07	3.55	0.3	0.1	<0.1	<0.1	<0.1	0.4
Nitrate (as N)	mg/L	0.05		0.13	0.44	0.52	0.15	0.6	0.14	<0.05	<0.05	<0.06	<0.06	<0.06	<0.06
Nitrite (as N)	mg/L	0.03		0.03	0.03	0.03	0.07	<0.05	<0.05	<0.06	<0.06	<0.03	<0.03	<0.03	<0.03
Total Kjeldahl Nitrogen	mg/L	0.1		0.7	1.4	2.4	3.4	1.4	4.1	<0.5	1.3	0.7	0.7	0.6	0.6
Ammonia, Unionized	mg/L	0.01	0.02	0.01	-	-	-	<0.01	0.09	-	-	-	-	-	-
pH (Lab)	-	0.05	6.5-8.5		8.03	7.69	8.01	8.08	7.67	8.03	7.52	8.11	8.08	8.17	8.02
Electrical Conductivity (Lab)	µS/cm	1		428	795	860	743	832	1,180	386	323	428	461	456	398
Field															
DO (Field)	mg/L		5		-	9.24	6.67	5.21	10.15	-	-	-	-	-	-
Redox (Field)	mV				-	115	-2	28	36	-	-	-	-	-	-
Temperature (Field)	oC				-	12.1	18.8	6	5.2	-	-	-	-	-	-
Conductivity (field)	µS/cm				-	656	754	365	786	-	-	-	-	-	-
pH (Field)	-		6.5-8.5		-	7.63	7.17	7.87	7.21	-	-	-	-	-	-

Table 8: Surface Water Quality

	Unit	EQL	PWQO	*SW Trigger*	SW8 14 Nov 2014	SW8 19 May 2015	SW8 03 Nov 2015	SW8 16 May 2016	SW8 06 Jul 2016	SW8 07 Jun 2017	SW8 03 Aug 2017	SW8 29 Sep 2017	SW8 11 Jun 2018	SW8 29 May 2019	SW8 02 Sep 2019
Metals															
Arsenic	µg/L	0.1	**5**	***0.8***	0.4	0.5	0.2	0.3	0.8	0.3	0.6	0.7	0.6	0.2	***2.6***
Barium	µg/L	0.01		***87***	69.9	80.5	55.3	62.9	74.8	70.3	***103***	***108***	81.0	51.3	***88***
Boron	µg/L	0.2	**200**	***21.6***	***53.6***	***22.1***	8.9	***29***	13	18	16	10	***37***	11	***30***
Calcium	µg/L	10		***95,350***	-	90,800	69,200	76,800	82,900	79,700	***110,000***	***98,300***	92,700	74,800	71,600
Cadmium	µg/L	0.003	**0.1..0.5**[#1]	***0.01***	<0.003	***0.011***	***0.024***	<0.003	<0.003	0.006	0.004	0.005	***0.013***	0.006	0.01
Chloride	µg/L	200		***21,250***	***22,000***	15,000	***29,000***	17,000	3,000	***26,000***	***22,000***	8,000	17,000	***63,000***	16,000
Chromium (III+VI)	µg/L	0.03	**1**[#2]	***0.76***	***3.19***	<0.03	0.05	0.48	0.41	0.57	0.39	***0.82***	0.12	0.15	0.14
Copper	µg/L	0.02	**1..5**[#1]	***0.91***	0.25	***0.97***	***1.19***	0.44	0.82	***1.08***	0.54	0.62	***0.93***	<0.2	0.6
Iron	µg/L	2	**300**	***394***	174	155	32	95	***402***	80	***433***	***660***	***371***	67	***1,230***
Lead	µg/L	0.01	**1..5**[#1]	***0.14***	0.03	0.03	0.11	0.10	0.04	0.12	0.04	0.08	0.08	0.08	***0.38***
Magnesium	µg/L	1		***2,930***	-	2,710	2,470	2,570	2,910	2,620	***3,070***	***2,970***	2,420	1,810	***2,950***
Manganese	µg/L	0.01		***137***	47.6	89.9	6.93	24.1	***171***	24.2	***318***	109	137	21.1	***494***
Mercury (filtered)	µg/L	0.01	**0.2**	***10***	-	<0.01	<0.01	<0.01	<0.01	***120***	<10	<10	0.06	<10	<10
Phosphorus total (P2O5)	µg/L	3	**30**	***40***	<30	28	<30	<30	**40**	30	***70***	<30	<30	28	***286***
Potassium	µg/L	3		***817***	-	760	***1,210***	652	217	259	326	621	256	***1,300***	***8,640***
Sodium	µg/L	10		***11,750***	-	9,640	***14,800***	9,310	2,940	***15,100***	***13,800***	5,110	10,300	***35,300***	5,860
Zinc	µg/L	1	**20**	***8***	<2	2	***11***	8	<2	5	3	***10***	3	3	4
Inorganics															
Alkalinity (total) as CaCO3	mg/L	2		***211***	***214***	204	170	176	194	192	***235***	***223***	196	195	168
Hardness (as CaCO3)	mg/L	0.05			-	-	-	-	-	-	-	-	-	-	-
Total Dissolved Solids	mg/L	1		***298***	291	257	260	254	249	274	***351***	***300***	274	***303***	***300***
Chemical Oxygen Demand	mg/L	5		***39.3***	23	27	27	17	35	32	***40***	***42***	32	19	***70***
Total Suspended Solids	mg/L	2		***13***	4	9	3	6	8	4	***14***	4	10	8	***83***
Dissolved Organic Carbon (filtered)	mg/L	0.2			-	14.0	-	-	-	-	-	-	-	-	-
Biochemical Oxygen Demand	mg/L	2		***4***	<4	<4	<4	***10***	<4	<4	<4	<4	<4	<4	***34***
Phenols (4AAP)	mg/L	0.001	**0.001**	***0.003***	<0.001	<0.001	<0.001	<0.001	0.001	**0.003**	<0.001	**0.003**	**0.003**	***0.004***	***0.009***
Sulphate	mg/L	0.2		***2***	-	<1	-	-	-	-	-	-	-	-	-
Sulphate (filtered)	mg/L	0.2		***2***	1.5	-	<1	<1	<1	<2	<2	<2	<2	<2	***3***
Ammonia as N	mg/L	0.01		***0.1***	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	***0.3***	<0.1	<0.1
Nitrate (as N)	mg/L	0.05		***0.13***	0.13	<0.06	***0.77***	0.13	0.07	***0.16***	<0.06	***0.21***	<0.06	<0.06	<0.06
Nitrite (as N)	mg/L	0.03		***0.03***	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Total Kjeldahl Nitrogen	mg/L	0.1		***0.7***	<0.5	<0.5	<0.5	<0.5	0.7	0.7	<0.5	***0.8***	***1.5***	0.7	***1.7***
Ammonia, Unionized	mg/L	0.01	**0.02**	***0.01***	-	-	-	-	-	-	-	-	-	<0.005	***0.013***
pH (Lab)	-	0.05	**6.5-8.5**		8.10	8.07	8.14	8.03	8.20	7.83	7.85	7.86	7.98	7.71	**8.64**
Electrical Conductivity (Lab)	µS/cm	1		***428***	***458***	422	405	415	373	426	***502***	***432***	411	***558***	358
Field															
DO (Field)	mg/L		**5**		-	-	-	-	-	-	-	-	-	9.4	7.81
Redox (Field)	mV				-	-	-	-	-	-	-	-	-	140	-
Temperature (Field)	oC				-	-	-	-	-	-	-	-	-	16.1	24.4
Conductivity (field)	µS/cm				-	-	-	-	-	-	-	-	-	480	323
pH (Field)	-		**6.5-8.5**		-	-	-	-	-	-	-	-	-	7.78	8.45

Table 8: Surface Water Quality

	Unit	EQL	PWQO	SW Trigger	SW8 28 Oct 2019	SW8 27 May 2020	SW8 07 Jul 2020	SW8 13 Jul 2020	SW8 12 Nov 2020	SW8 28 Jun 2021	SW8 10 Nov 2021	SW8 11 Apr 2022	SW8 13 Jul 2022	SW8 14 Nov 2022
Metals														
Arsenic	µg/L	0.1	5	***0.8***	0.5	0.4	***1.2***	***1.2***	0.8	***1***	0.4	0.2	0.8	0.4
Barium	µg/L	0.01		***87***	60.5	72	***109***	***109***	***90***	49	64	53	***116***	***109***
Boron	µg/L	0.2	200	***21.6***	15	20	15	15	12	18	7	<5	13	11
Calcium	µg/L	10		***95,350***	68,900	69,800	***105,000***	***105,000***	***98,000***	70,500	79,600	71,400	***99,500***	***96,200***
Cadmium	µg/L	0.003	0.1..0.5[#1]	***0.01***	***0.098***	<0.003	<0.003	<0.003	***0.098***	<0.015	<0.015	<0.015	<0.015	<0.015
Chloride	µg/L	200		***21,250***	***22,000***	19,000	3,000	3,000	15,000	4,500	14,500	***21,600***	17,700	***29,500***
Chromium (III+VI)	µg/L	0.03	1[#2]	***0.76***	0.17	0.17	<0.08	<0.08	***0.88***	<1	<1	<1	<1	<1
Copper	µg/L	0.02	1..5[#1]	***0.91***	0.4	0.2	0.5	0.5	***2.4***	0.5	0.3	0.9	0.3	0.2
Iron	µg/L	2	300	***394***	36	72	***345***	***345***	***749***	262	257	27	***1,190***	***1,880***
Lead	µg/L	0.01	1..5[#1]	***0.14***	***0.15***	<0.01	0.06	0.06	***3.23***	0.09	***0.34***	***0.31***	***0.73***	***0.18***
Magnesium	µg/L	1		***2,930***	2,310	2,180	***2,960***	***2,960***	2,870	2,440	2,460	2,450	***3,040***	***2,940***
Manganese	µg/L	0.01		***137***	10.1	45.3	***236***	***236***	78.9	34	84	5	***779***	***186***
Mercury (filtered)	µg/L	0.01	0.2	***10***	<10	<10	<10	<10	<10	<0.02	<0.02	<0.02	<0.02	<0.02
Phosphorus total (P2O5)	µg/L	3	30	***40***	26	<500	***38***	***38***	***106***	***40***	30	<10	***60***	***300***
Potassium	µg/L	3		***817***	***1,970***	550	202	202	***873***	200	200	800	500	500
Sodium	µg/L	10		***11,750***	8,620	10,400	3,500	3,500	8,480	3,800	8,700	***12,700***	10,800	***14,800***
Zinc	µg/L	1	20	***8***	<2	<2	4	4	***12***	***21***	***11***	<5	<5	<5
Inorganics														
Alkalinity (total) as CaCO3	mg/L	2		***211***	139	179	***256***	***256***	202	177	191	188	***247***	***242***
Hardness (as CaCO3)	mg/L	0.05			-	-	-	-	-	186	209	189	261	253
Total Dissolved Solids	mg/L	1		***298***	274	243	***306***	***306***	291	175	215	215	266	280
Chemical Oxygen Demand	mg/L	5		***39.3***	30	19	***40***	***40***	36	37	***45***	9	38	***57***
Total Suspended Solids	mg/L	2		***13***	3	4	***137***	***137***	***23***	6	6	5	***28***	***32***
Dissolved Organic Carbon (filtered)	mg/L	0.2			-	-	-	-	-	-	-	-	-	10
Biochemical Oxygen Demand	mg/L	2		***4***	<4	<4	<4	<4	<4	<3	<3	<3	<3	3
Phenols (4AAP)	mg/L	0.001	0.001	***0.003***	0.003	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulphate	mg/L	0.2		***2***	-	-	-	-	-	-	-	-	-	-
Sulphate (filtered)	mg/L	0.2		***2***	***32***	<2	<2	<2	***3***	***7***	1	***4***	***3***	***6***
Ammonia as N	mg/L	0.01		***0.1***	<0.1	<0.1	<0.1	<0.1	<0.1	0.03	0.03	<0.01	0.09	0.05
Nitrate (as N)	mg/L	0.05		***0.13***	***1.65***	<0.06	0.13	0.13	<0.06	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrite (as N)	mg/L	0.03		***0.03***	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05	<0.05	<0.05	<0.05	<0.05
Total Kjeldahl Nitrogen	mg/L	0.1		***0.7***	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	0.6	0.3	***0.8***	***2.3***
Ammonia, Unionized	mg/L	0.01	0.02	***0.01***	<0.005	<0.005	-	0.006	0.009	<0.01	<0.01	<0.01	<0.01	<0.01
pH (Lab)	-	0.05	6.5-8.5		7.82	7.93	7.94	7.94	7.87	8.27	7.76	7.94	7.95	7.7
Electrical Conductivity (Lab)	µS/cm	1		***428***	372	379	424	424	421	341	417	416	***513***	***541***
Field														
DO (Field)	mg/L		5		8.86	6.69	-	9.03	9.65	13.88	10.35	11.4	6.91	10.79
Redox (Field)	mV				203	73	-	115	208	67	20	163	323	-260
Temperature (Field)	oC				11.6	19.4	-	29	5.3	29.5	6.6	1.9	20.8	3.6
Conductivity (field)	µS/cm				305	380	-	459	248	340	191	366	550	730
pH (Field)	-		6.5-8.5		7.9	7.69	-	7.95	**8.91**	8.4	7.72	7.35	7.29	7.28

Table 9: Landfill Gas Measurements

Well ID		TW02-1	TW02-2	TW03-1	TW04-1	TW05-1	TW05-2	TW06-1	TW06-2	TW07-1	TW07-2	TW08-1	TW08-2	TW09-1	TW09-2	TW10-2	TW11-2	GP1	GP2	Office	Sorting Building
Top of Screen Elevation (m)		236.84	239.81	238.86	237.66	234.95	237.17	236.21	237.79	231.15	236.14	236.83	241.53	229.51	235.43	238.94	236.78	-	-		
Water Elevation (mASL)		238.49	238.49	238.49	238.49	238.49	238.49	238.49	238.49	238.49	238.49	238.49	238.49	238.49	238.49	238.49	238.49	-	-		
Screen Saturated		yes	no	no	yes	yes	yes	yes	yes	yes	yes	yes	no	yes	yes	no	yes	no	no	-	-
Percent Methane by Volume	28-Jun-21	<0.05	<0.05	12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	12.5	8	-	<0.05
Hydrogen Sulphide (ppm)	28-Jun-21	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
Percent Methane by Volume	10-Nov-21	<0.1	<0.1	1.15	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.85	3.95	19	12	<0.1	<0.1
Hydrogen Sulphide (ppm)	10-Nov-21	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Percent Methane by Volume	11-Apr-22	<0.1	<0.1	<0.1	<0.1	0.05	0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	20.2	28.5	<0.1	<0.1
Hydrogen Sulphide (ppm)	11-Apr-22	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Percent Methane by Volume	14-Nov-22	<0.1	<0.2	5.0	0.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	5.0	3.5	<0.1	<0.1
Hydrogen Sulphide (ppm)	14-Nov-22	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Appendices

Appendices

The following appendices are available in Part II – Appendices.

Appendix A **Monitoring and Screen Checklist**

Appendix B **Environmental Compliance Approval No. A340901**

Appendix C **Correspondence**

Appendix D **Field Sheets and Climate Data**

Appendix E **Laboratory Certificates of Analysis**

Appendix F **Photographs**

Appendix G **Borehole Logs**

Appendix H **Well Records**

Appendix I **Monthly Waste Quantities**