

2025 Annual Monitoring Report

Waste Management of Canada Richmond Landfill Town of Greater Napanee, Ontario

Prepared for:



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1. Introduction

The purpose of this report is to present results and to provide an interpretation of the data that were collected during the spring and fall 2025 environmental monitoring events at the Waste Management of Canada Corporation (WM) Richmond Landfill, as required by Condition 14.0 of the Site's Amended Environmental Compliance Approval (ECA) number A371203, issued on May 16, 2025.

The WM Richmond Landfill is approved as a 16.2-hectare waste disposal (landfilling) facility within a total site area of 138 hectares, located on parts of Lots 1, 2 and 3, Concession IV of the former Township of Richmond, now in the Town of Greater Napanee, Ontario. The landfill has been closed to waste disposal since June 20, 2011.

2. Methodology

2.1 Program Summary

The spring and fall 2025 monitoring events were conducted in accordance with the requirements outlined in the Post-Closure Environmental Monitoring Plan (EMP) dated April 25, 2024, as specified in the ECA.

The site layout and monitoring locations are shown on Figure 1. The monitoring programs for groundwater, surface water, leachate and landfill gas are summarized in Table 1.

The spring monitoring event was conducted between April 28 and May 1, 2025. The activities completed include the following:

- Groundwater monitoring wells installed in the shallow and intermediate bedrock flow zones (see Table 3) were monitored for water levels on April 28, 2025. No water level was measured at groundwater monitor M82-2 because it was flowing when the j-plug was removed.
- Groundwater monitoring wells were sampled between April 29 and May 1, 2025. No sample was collected from monitoring well M6-3 because it was dry.
- Surface water samples were collected on April 30, 2025.
- A total of 11 Quality Assurance/Quality Control (QA/QC) samples were collected during the spring sampling event.

The fall monitoring event was conducted between October 27 – 29, 2025. The activities completed include the following:

- Groundwater monitoring wells installed in the shallow and intermediate bedrock flow zones (see Table 3) were monitored for water levels on October 27, 2025. No water levels were measured at groundwater monitors M14, M18, M35, M68-4R, M70-3, M201-DP, M207-DP or M209-DP because they were dry.
- Groundwater monitoring wells were sampled on October 28 and 29, 2025. No samples were collected from monitoring wells M6-3, M53-4, M67-2 or M187 because they were dry. Samples collected were analyzed for the suite of groundwater inorganic and general parameters and Volatile Organic Compounds (VOCs) listed in Table 2.
- Surface water monitoring was conducted on October 27, 2025; however, all locations were dry, therefore no samples were collected.
- Landfill gas monitoring was conducted on October 29, 2025. Field measurements were made with a RKI Eagle probe calibrated to methane gas response at seven gas monitors (GM1, GM2, GM3, GM4-1, GM4-2, GM5 and GM6).
- A total of seven Quality Assurance/Quality Control (QA/QC) samples were collected during the fall sampling event.

2.2 Water Sample Collection and Laboratory Analysis

Groundwater and surface water samples were collected in accordance with accepted industry protocols. Groundwater samples were collected using dedicated Waterra inertial lift pumps connected to dedicated polyethylene tubing. Three casing volumes of water were purged from each monitoring well prior to the collection of groundwater samples. During purging, readings for pH, temperature, conductivity, and oxidation-reduction potential were recorded on a regular basis. The stabilization of the parameters was used to assess when well purging was complete. Low producing wells were purged dry and allowed to recover prior to sampling. If the monitoring well had not recovered sufficiently for sampling within 24 hours, the monitor was considered dry, and a sample was not collected.

Surface water samples were collected using a clean bottle where water depth was sufficient; at sampling locations where water depth was an issue, a 50-cc syringe was used to carefully collect the surface water as not to disturb the bottom sediments. Surface water sampling locations were sampled from downstream to upstream to prevent any re-suspension of sediment impacting the downstream sampling locations. The pH, temperature, conductivity, dissolved oxygen, and

oxidation-reduction potential of the surface water were obtained in the field at all surface water sampling points while minimizing disturbance of the bottom sediment.

All water samples were placed in bottles supplied and prepared by the laboratory. The samples were packed in coolers with ice and shipped by courier to the laboratory. All samples were analysed by Bureau Veritas Laboratory of Mississauga, ON, which is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA). Table 2 presents a summary of groundwater and surface water analytical parameters.

Groundwater Elevations

Water levels were recorded to the nearest 0.005 m using an electronic water level meter for the groundwater monitoring wells listed in Table 3, grouped in relation to their location relative to the landfill footprint and groundwater flow zone monitored.

3. Results and Discussion

Background information concerning the site geology and hydrogeology was described in detail in the Site Conceptual Model (SCM) report ⁽¹⁾ and updated based on results from subsequent hydrogeological investigations ^(2,3,4,5,6,7) and is summarized here. The SCM report describes the groundwater flow conditions at the Richmond Landfill.

Based on the results from extensive studies conducted previously at the site, the hydrogeological framework for the facility has been defined as follows:

- The active groundwater flow zone at the site extends to a depth of approximately 30 m below the top of bedrock.

¹ Site Conceptual Model Report, WM Richmond Landfill, prepared by Dr. B.H. Kueper and WESA Inc., October 2009

² Supporting Document, Application to Amend Environmental Compliance Approval No. A371203, Waste Management Richmond Landfill Site, prepared by BluMetric Environmental Inc., March 2015

³ Site Conceptual Model Update and Contaminant Attenuation Zone Delineation, Waste Management Richmond Landfill Site, prepared by BluMetric Environmental Inc., January 2016

⁴ Addendum to Site Conceptual Model Update and Contaminant Attenuation Zone Delineation, Waste Management Richmond Landfill Site, prepared by BluMetric Environmental Inc., April 2016

⁵ Site Conceptual Model Update and Contaminant Attenuation Zone Delineation, Waste Management Richmond Landfill Site, prepared by BluMetric Environmental Inc., July 2017

⁶ Site Conceptual Model Update and Contaminant Attenuation Zone Delineation, Waste Management Richmond Landfill Site, prepared by BluMetric Environmental Inc., October 2018

⁷ Addendum to Site Conceptual Model Update and Contaminant Attenuation Zone Delineation, Waste Management Richmond Landfill Site, prepared by BluMetric Environmental Inc., May 2019

- The shallow groundwater flow zone is conceptualized as the overburden, the overburden-bedrock contact and the upper one to two metres of bedrock.
- The direction of groundwater flow in the shallow flow zone is strongly influenced by topography.
- The intermediate bedrock flow zone extends from one to two m below top of bedrock to a depth of approximately 30 m below top of bedrock.
- Groundwater flows through a network of fractures in the upper 30 m of bedrock.
- The dominant fracture orientation is horizontal to sub-horizontal; however, vertical to sub-vertical fractures are present providing hydraulic connection between horizontal fractures.
- Hydraulic connections of fractures exist in the intermediate bedrock flow zone to the west, south and east of the site (horizontal and vertical connections).
- Intermediate bedrock flownets show that groundwater flow directions are variable with season and groundwater generally flows to the west from the western edge of the landfill, to the southeast from the southern edge of the landfill, to the south along the eastern edge of the landfill, and north to northwest from the northern limit of the landfill.
- The hydraulic conductivity of the intermediate bedrock is lower to the north and east of the landfill compared to other areas of the site, implying that the rate of groundwater flow is lower than in areas immediately south, southeast and west of the landfill.
- South of the landfill, the intermediate bedrock flow zone has distinct areas of interacting hydrogeological zones which are not isolated from one another, but are distinct based on hydraulic conductivity, water level variations and the rate of response to recharge events.
- Groundwater monitoring wells in the southern portion of the proposed CAZ have static groundwater elevations that are much deeper than wells further north in the CAZ; these deep groundwater elevations appear to be controlled by karst systems confirmed to exist in the southern portion of the proposed CAZ, as discussed in the latest updates to the SCM^(6,7).

3.1 Leachate Generation

An estimate of the amount of leachate generated at the site is provided by the site records of the volume of leachate hauled to the Town of Greater Napanee Waste Water Treatment Plant (WWTP) or Cobourg's WWTP. The use of the North Lagoon, where leachate can be stored on an as needed basis when volumes exceed the WWTP's ability to accept leachate, has been temporarily discontinued. At the end of the 2025 season when pumping activities were concluded, the liquid remaining in the North Lagoon had been decreased to 3.9 percent of the lagoon's total available volume (1,010 m³ compared to the lagoon's total storage capacity of 25,600 m³).

The volume of leachate collected from the landfill and hauled to the Napanee and Cobourg WWTPs from January to December 2025 was approximately 14,985 m³. This total includes a volume of approximately 1,570 m³ pumped from the North Lagoon into the North Chamber. Consequently, the total leachate volume generated by the landfill from January to December 2025 is estimated at 13,415 m³.

4. Groundwater Results

4.1 Groundwater Elevations

Groundwater elevations were measured on April 28 and October 27, 2025, from the monitoring wells listed in Table 3, and are presented in Tables 4a and 4b, respectively. An inventory of all monitoring well locations is provided in Appendix A. Groundwater elevation contours within the shallow groundwater flow zone are shown on Figure 2a (spring) and Figure 2b (fall), while Figure 3a (spring) and Figure 3b (fall) show groundwater elevation contours for the intermediate bedrock flow zone. Groundwater flow directions were inferred by interpolating the water elevations from hydraulically active monitoring wells screened within the corresponding groundwater flow zone and are consistent with historical results.

The spring and fall 2025 shallow groundwater contours (Figures 2a and 2b, respectively) show that the Empey Hill drumlin southwest from the landfill creates a flow divide, with shallow groundwater being directed both to the north and the south towards areas of lower hydraulic heads. North of the landfill, shallow groundwater converges towards Marysville Creek in the area immediately east of County Road 10 (Deseronto Road), while shallow groundwater flow in the southern portion of the site converges along Beechwood Ditch and the southern pond system.

Shallow groundwater east of the landfill is influenced by a local zone of higher water levels in the vicinity of monitoring well M96; shallow groundwater north of M96 flows to the north-northwest and ultimately Marysville Creek, while groundwater south of M96 flows to the south-southwest, towards Beechwood Ditch and the ponds.

The interpolated spring and fall 2025 groundwater elevation data in the intermediate bedrock flow zone are presented on Figures 3a and 3b, respectively. On the landfill property, groundwater in this hydrostratigraphic unit generally flows to the north, west, and south-southeast relative to the landfill.

4.2 Groundwater Analytical Results

Groundwater monitoring results from the wells sampled in spring and fall 2025 are presented in Tables 5a and 5b, respectively, and are consistent with historical results. 1,4-dioxane results are shown for the Shallow and Intermediate Bedrock Flow Zones on Figures 4 and 5, respectively.

4.3 Shallow Groundwater Flow Zone

Analytical results from shallow groundwater monitors sampled in 2025 were generally consistent with historical results.

As shown in Table 5a, slightly elevated concentrations of a number of water quality parameters (e.g., alkalinity, boron, chloride, conductivity, DOC, sodium and/or TDS) were observed in some shallow groundwater zone monitoring wells located in close proximity to the landfill footprint, north and northwest from the unlined portion of the landfill (e.g., M86, M101, M103 and M104). 1,4-dioxane was detected at monitoring wells M103 and M104, consistent with historical results. The extent of the area west of the waste mound known to be impacted by landfill leachate in shallow groundwater appears to be smaller than previously established, as the concentration of 1,4-dioxane at monitoring well M101 has been below detection since spring 2024. The extent of the impacted area outlined in Figure 4 has been updated. A small, impacted area south of the landfill footprint is included in Figure 4 based on previously confirmed impacts at monitoring well M41, which is no longer sampled as part of the EMP.

1,4-dioxane was also detected in the shallow groundwater flow zone south of the landfill at monitoring wells M178R-5 and M206. The extent of the area known to be impacted also appears to be smaller than previously established, as the concentration of 1,4-dioxane was below detection at M205 during both the spring and fall monitoring events in 2025. The extent of the impacted area outlined in Figure 4 will be updated in the next annual report if these results are confirmed in 2026.

In other areas of the site, there is no evidence of groundwater impacts away from the landfill footprint in the shallow groundwater flow zone. Isolated occurrences of elevated concentrations of water quality parameters (i.e., one or two parameters per sample) are seen elsewhere on the Site. No indications of elevated concentrations related to landfill impacts are identified at the property boundary in the shallow flow zone.

4.4 Intermediate Groundwater Flow Zone

Analytical results from intermediate bedrock groundwater monitors sampled in 2025 were generally consistent with historical results.

North of the landfill, there was insufficient volume at monitor M6-3 to collect a sample in spring or fall 2025, however historically samples from this well have detectable concentrations of 1,4 dioxane indicating the presence of leachate impacts at this location. Despite the relatively higher concentrations of some parameters (e.g., alkalinity), the absence of 1,4-dioxane indicates no impacts from the landfill are apparent further north from the landfill footprint and near Marysville Creek (e.g., at OW1, M5-3, M75 and M82-2).

South of the landfill, the presence of 1,4-dioxane and elevated concentrations of alkalinity (typically greater than 400 mg/L where 1,4-dioxane is present), DOC, chloride and TDS indicate groundwater impacts from the landfill at several monitoring well locations (e.g., M108, M114-1, M167, M168, M170, M172, M178R-2, M178R-4 and M192). Several locations south and southeast of the landfill with elevated concentrations of chloride, sodium, TDS, and/or BTEX compounds (e.g., M106 and M186), are indicative of naturally poor quality connate (and often saline) groundwater. These pockets of naturally poor-quality groundwater are isolated and do not reflect any widespread or significant upwelling of saline groundwater.

Several monitoring wells downgradient of these impacted wells (e.g., M177, M179, M185-2, M186, M187 and M188-1) do not show impacts associated with landfill leachate (i.e., no 1,4-dioxane detected and alkalinity concentrations of 350 mg/L or lower) thus defining the limit of the groundwater plume. The approximate extents of leachate impacted groundwater in the intermediate bedrock flow zone, consistent with the leachate impacted plume delineated from historical hydrogeological investigations ^(6,7), are shown on Figure 5.

Wells sampled in the western part of the landfill site (e.g., M72 and M74) exhibit concentrations of water quality parameters that are relatively low and continue to reflect background conditions.

4.5 Trend Analysis of 1,4-Dioxane Concentrations

Time-concentration plots showing 1,4-dioxane results since 2013 are provided in Appendix B for wells located near the distal extent of the delineated leachate impacted groundwater areas, depicted on Figures 4 and 5 for the Shallow and Intermediate Bedrock flow zones, respectively. Consistent

with results from previous monitoring events, the review of apparent temporal trends in Appendix B shows that:

- A) Concentrations are significantly higher at monitoring wells M6-3 and M104, located adjacent to the north portion of the landfill, compared to all other monitoring locations. Details for the areas to the north (blue series), southeast (green series) and south (red series) of the landfill are shown on Plots B, C and D, respectively.
- B) To the north of the landfill, generally stable or declining trends are observed in the shallow groundwater flow zone (M101 (below detection since 2024), M103 and M104) and intermediate bedrock flow zone (M6-3).
- C) To the southeast of the landfill, previously increasing trends at monitoring wells located southeast of the landfill have stabilized since approximately 2020 (M170, M168 and M192) or decreased (M167).
- D) To the south of the landfill, stable or declining trends continued in 2025 in the intermediate bedrock flow zone (M114-1, M121, M178R-2, M178R-4 and M64-2).

The stable and declining trends observed in 1,4-dioxane concentrations north and south of the landfill in both shallow and intermediate bedrock zones confirm that the leachate impacted groundwater plume is stable and naturally attenuating in these areas. With respect to the southeast portion of the property, WM has submitted an application to seek approval for an engineered solution located immediately upgradient from the eastern landfill property limit. The proposed hydraulic control system (HCS) has been designed to intercept impacted groundwater and prevent further off-site migration of impacted groundwater onto the adjacent property located east of the landfill property and north of Beechwood Road.

4.6 Guideline B-7 Reasonable Use Limits (RULs)

Constituent concentrations from selected monitoring wells located within the low-head areas of the WM Richmond Landfill in both the Shallow and Intermediate Bedrock Groundwater Flow Zones are compared to the RULs derived from laboratory analytical results (Tables 5c and 5d). The RULs reported in Tables 5c and 5d for leachate indicator parameters and trigger wells were presented in the EMP, including 1,4-dioxane which has a site-specific RUL of 0.001 mg/L.

All results for 1,4-dioxane at trigger wells in the shallow and intermediate bedrock flow zones were below the RUL of 0.001 mg/L, except for M170 with detectable concentrations that are consistent with historical data.

In the shallow groundwater zone, slightly elevated concentrations of a variable number of inorganic or general water quality parameters above their respective RUL (e.g., iron, manganese, and/or TDS) were observed in monitoring wells M200 and OW37-s.

Slightly elevated concentrations of a variable number of water quality parameters above their respective RUL (e.g., alkalinity, chloride, DOC, iron, manganese, sodium and/or TDS) were also observed in some intermediate groundwater flow zone monitoring wells (e.g., M56-2, M170, M179 and M186).

The RUL exceedances observed in the spring and fall 2025 are consistent with historical results.

4.7 Status of Monitoring Wells and Compliance with Ontario Regulation 903

During the 2025 monitoring events, the condition of groundwater monitoring wells included in the EMP was inspected. Any repairs, such as new locks, labels or well caps, were made as necessary. Watertight casings and seals remain in place at all monitors to ensure that surface water or foreign materials cannot enter groundwater monitoring wells. All groundwater monitoring wells are fitted with a vermin proof cap to meet the requirements of Ontario Regulation 903 and are locked to provide protection against vandalism as per Waste Management standard operating procedure and in line with industry's best practices.

Shallow groundwater monitoring well M68-4 was damaged and could not be repaired. A replacement well, M68-4R, was installed on October 1, 2025, and M68-4 was decommissioned. The borehole log for M68-4R is provided in Appendix F.

4.8 Groundwater Chemistry Quality Assurance / Quality Control (QA/QC)

An evaluation of QA/QC data is included in Appendix C. A standard margin of error of 20% relative percent difference (RPD) between regular and duplicate samples was deemed acceptable for field duplicates. In general, the comparison between samples and duplicates shows very good correlation for the majority of analyzed constituents. All parameters for groundwater duplicate QA/QC sampling were within the 20% margin of error except for sulphate at M106 in the spring and at M192 in the fall, and dissolved organic carbon at M82-2 where the RPD was slightly higher (27%, 25% and 23%,

respectively). All parameters were near or below the laboratory RDL in the field blank and trip blank samples.

5. Surface Water Results

5.1 Surface Water Monitoring Locations

The two water courses that may receive surface water/storm water runoff from the Richmond Landfill site are Marysville Creek to the north of the waste mound and Beechwood Ditch to the south (Figure 1). Beechwood Ditch is a man-made surface water course that flows from the east onto WM property. It then flows west across a portion of the site before again crossing Beechwood Road and travelling southwest where it crosses County Road 10 and joins Marysville Creek east of Highway 49 and north of Highway 401. Both Beechwood Ditch and Marysville Creek flow intermittently in the vicinity of the landfill. Marysville Creek has some base flow locally and flows on a continuous basis west of County Road 10 (Deseronto Road). Marysville Creek eventually discharges into the Bay of Quinte at Hungry Bay.

An ephemeral unnamed local surface water course is present in the central portion of the proposed CAZ, originating from a small man-made pond located directly east of Quarry Road. Surface water flows west from this pond approximately 600 m along a topographically low area, to a second pond located near monitoring well M187 and finally to a local topographic depression located approximately 75 m farther west, where water, when flowing, enters into the ground into a near-surface karst feature.

Surface water monitoring locations are shown on Figure 1. No samples were collected during the fall monitoring event (October 27, 2025) because all the locations were dry.

5.2 Surface Water Flow

Visual observations of surface water flow and channel characteristics are summarized in Table 6.

5.3 Surface Water Analytical Results

The analytical results from surface water locations sampled during the spring 2025 sampling event are presented in Table 7. All parameters analysed were below Provincial Water Quality Objectives (PWQO).

Surface water results from 2025 are consistent with historical results and indicate that the landfill is not causing adverse impacts to surface water quality.

5.4 Historical Surface Water Analytical Results

Historical surface water analytical results are plotted in Appendix D and compared with PWQO. Throughout the history of surface water sampling, various parameters have exceeded their respective PWQO concentrations on occasion (e.g., ammonia (unionized), chromium (III), chromium (VI), cobalt, copper, iron, phenols, phosphorus (total), and zinc). Concentrations of these parameters fluctuate readily with no notable trends.

Iron and total phosphorus concentrations in surface water have frequently exceeded their PWQO of 0.3 and 0.03 mg/L, respectively, including at upstream locations S2 (Marysville Creek), S5 (Beechwood Ditch) and S18 (unnamed water course in central CAZ), indicating upstream sources unrelated to the landfill.

5.5 Surface Water Quality Assurance / Quality Control (QA/QC)

An evaluation of QA/QC data is included in Appendix C. A standard margin of error of 20% was deemed acceptable for field duplicates. The comparison between regular samples and duplicates shows very good correlation. All parameters for the spring sampling round field duplicate sample (location S7) were within the 20% margin of error.

5.6 Subsurface Gas Sampling

On May 1, 2025, BluMetric inspected the subsurface gas monitoring probes and measured methane concentrations at all locations. The locations of the gas monitors are shown on Figure 1 and results are provided in Table 8. Methane concentrations in gas monitoring wells were between 0 and 40 ppm, well below the LEL for methane of 5% by volume in air (or 50,000 ppm).

5.7 Annual Summary

A comparative review of groundwater quality results between this and previous sampling events indicates that constituent concentrations vary over time but for the most part have remained relatively consistent over the current calendar year and over the past five years or more. Depending on which monitoring point and more importantly the time scale considered, conflicting trends in concentrations can occur sporadically.

Where sufficient historical data are available, alkalinity, chloride, dissolved organic carbon (DOC), iron, manganese, sodium and total dissolved solids (TDS) concentration data were reviewed for all groundwater trigger wells listed in Table 12 of the EMP. Time-concentration plots are provided in Appendix E. Over the past 14 years (from the spring of 2012 to the fall of 2025), the vast majority of the analytical results show stabilized and/or variable/oscillating concentrations for almost all parameters. Exceptions to this generalization include:

- For the shallow groundwater monitoring locations:
 - M200 for alkalinity (increasing trend)
 - OW37-s for alkalinity (increasing trend)

- For the intermediate bedrock groundwater monitoring locations:
 - M170 for chloride, sodium and TDS (decreasing trend)
 - M179 for iron (decreasing trend)
 - M186 for DOC, iron, manganese and TDS (decreasing trend)

The observed trends in groundwater geochemistry outlined here are most likely due to natural groundwater quality variability and are not necessarily indicative of landfill leachate impacts, so they should be interpreted with caution.

5.8 Additional Investigations

Work outside of the scope of the EMP program was performed throughout the year at the Richmond Landfill Site. Table 9 summarizes the activities and reporting completed in 2025, as well as anticipated work planned for 2026.

Non-routine investigations and activities included:

- The North Lagoon was pumped between June and September 2025 to keep levels in the lagoon as low as possible.
- Updated and submitted to MECP southeast hydraulic control system (HCS) design brief to support proposed amendments to site ECAs no. 1688-8HZNJG (Industrial Sewage Works ECA), originally submitted to MECP in June 2024 to address review comments.
- Installation of M68-4R (replacement for damaged shallow groundwater monitoring well M68-4)
- Decommissioning of groundwater monitoring wells that are not included in the post-closure EMP. A total of 59 wells were decommissioned in 2025. Decommissioning work will continue in 2026.

Other activities conducted in 2025 were related to requirements from ECA no. 1688-8HZNJG associated with the monitoring of on-site Ponds and Leachate, as well as those from agreement with the Town of Napanee Wastewater Treatment Plant (WWTP) where landfill leachate is hauled and treated.

6. Summary, Conclusions and Recommendations

The spring and fall 2025 monitoring events included the collection of groundwater and surface water samples, as well as landfill gas monitoring, in accordance with the site monitoring requirements outlined in the post-closure EMP dated April 25, 2024, as specified in the Amended ECA number A371203, issued by MECP on May 16, 2025.

The following were completed as part of the spring and fall 2025 EMP monitoring events, between April 28 and May 1, 2025, and October 27 – 29, 2025, respectively:

- Surface water locations were sampled for analytical testing.
- Water levels were recorded from groundwater monitoring wells installed in the Shallow groundwater and Intermediate Bedrock Flow Zones, as well as leachate monitoring wells.
- Groundwater monitors completed in the Shallow and Intermediate Bedrock Flow Zones were sampled for analytical testing.
- Landfill gas monitoring wells were monitored for methane concentrations.
- Quality Assurance/Quality Control (QA/QC) samples were collected, including field duplicate samples, field blank and trip blank samples.

6.1 Groundwater

- Groundwater flow directions interpreted from water elevations measured in monitors were consistent with historical flownets:
 - Shallow groundwater flow on site is influenced by local topographic highs in the southwestern (Empey Hill Drumlin) and eastern (groundwater monitor M96 area) portions of the site and is characterized by a flow divide with shallow groundwater being directed both to the north (toward Marysville Creek) and the south (toward Beechwood Ditch). South of Beechwood Road shallow groundwater flow converges from local topographic highs to the north and south, and discharges to a local surface water course within a topographically low area running east-west in the central portion of the proposed CAZ;
 - Groundwater in the intermediate bedrock flow zone generally flows to the north, west, and south-southeast relative to the landfill;
- Groundwater quality data from spring and fall 2025 were generally consistent with historical results;
- Slightly elevated groundwater concentrations of a number of water quality parameters are seen in the Shallow Flow Zone within the property in the immediate vicinity of the landfill footprint to the south, north and northwest of the landfill footprint;
- The geochemical results for the Intermediate Bedrock Flow Zone indicate higher concentrations of water quality parameters associated with landfill leachate impacts to the south-southeast and immediately north of the landfill relative to concentrations west and east of the landfill;
- Time-concentration plots of 1,4-dioxane results indicate that to the north of the landfill, stable or declining trends are observed in the shallow and intermediate bedrock flow zones; to the south of the landfill, generally stable or declining trends are observed in the intermediate bedrock flow zone; and, to the southeast of the landfill, previously increasing trends at M167, M168, M170, and M192 have begun to decrease or stabilize;
- Continued groundwater monitoring within the Shallow and Intermediate Bedrock groundwater flow zones between the landfill footprint and the low-head areas is warranted in order to further examine groundwater quality and any trends over time; and,
- Shallow groundwater monitoring well M68-4 was damaged and was decommissioned. A replacement well, M68-4R, was installed October 1, 2025.

6.2 Surface Water

- The concentrations observed during the spring 2025 monitoring event are within the range of historical monitoring results and indicate that the landfill is not causing adverse impacts to surface water quality.
- All measured parameters were below PWQO.
- No surface water samples were collected during the fall sampling event as all the locations were dry.

6.3 Subsurface Gas

Measurements for methane gas were between 0 and 40 ppm for the six monitoring locations, well below the LEL for methane of 5% by volume in air (or 50,000 ppm).

7. Limiting Conditions

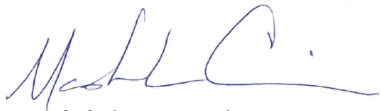
The 2025 monitoring program involved the collection of groundwater (from on-site and off-site monitoring wells) and surface water for analyses. The data collected during this investigation represent the conditions at the sampled locations only.

The conclusions presented in this report represent our professional opinion and are based on the conditions observed on the dates set out in the report, the information available at the time this report was prepared, the scope of work, and any limiting conditions noted herein.

BluMetric Environmental Inc. provides no assurances regarding changes to conditions subsequent to the time of the assessment. BluMetric Environmental Inc. makes no warranty as to the accuracy or completeness of the information provided by others or of the conclusions and recommendations predicated on the accuracy of that information.

This report has been prepared for Waste Management of Canada. Any use a third party makes of this report, any reliance on the report, or decisions based upon the report, are the responsibility of those third parties unless authorization is received from BluMetric Environmental Inc. in writing. BluMetric Environmental Inc. accepts no responsibility for any loss or damages suffered by any unauthorized third party as a result of decisions made or actions taken based on this report.

Respectfully submitted,
BluMetric Environmental Inc.



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Tables



Table 1: Summary of Environmental Monitoring Program

Monitoring Locations		Parameter Suite	Monitoring Frequency
Shallow Groundwater Flow Zone Monitors			
M68-4, M96, M99-2		Groundwater Inorganic & General, VOCs	Once every two years
M53-4, M67-2, M80-2, M86, M101, M103, M104, M114-2, M178R-5, M188-2, M199, M200, M203, M204, M205, M206, OW37-s		Groundwater Inorganic & General, VOCs	Twice each year, in spring and fall
Intermediate Bedrock Groundwater Flow Zone Monitors			
M56-2, M58-3, M59-4, M91-1, M95-1		Groundwater Inorganic & General, VOCs	Once every two years
M5-3, M6-3, M52-2, M72, M74, M75, M82-2, M106, M108, M114-1, M167, M168, M170, M177, M178R-2, M178R-4, M179, M185-2, M186, M187, M188-1, M192 ¹ , M193 ¹ , M194-2, OW1		Groundwater Inorganic & General, VOCs	Twice each year, in spring and fall
Surface Water Sampling Locations			
Beechwood Ditch	S4R, S5 and S8R	Surface Water Inorganic and General	Two times each year, in spring and fall.
Marysville Creek	S2, S3 and S7		
Unnamed water course in central portion of proposed CAZ	S23		Event based; maximum quarterly
PFAS Sampling Locations			
Groundwater Sampling Locations	M6-3, M178R-2	PFAS	Once a year, in the spring
Surface Water Sampling Locations	S3, S8R, S23, S24		
Leachate Monitoring Locations			
North Chamber and South Chamber		Leachate Inorganic & General, VOCs	Once every three years (next event 2026)
Landfill Gas Monitoring Wells			
GM1, GM3, GM4-1, GM4-2, GM5, GM6		% methane by volume	Once a year
Off-site Domestic Water Supply Wells			
1441 County Road 1 West 1483 County Road 1 West 1494 County Road 1 West (UNKN) ² 1499 County Road 1 West 1556 County Road 1 West (UNKN) ² 1614 County Road 1 West 1654 County Road 1 West 1680 County Road 1 West 1695 County Road 1 West 1866 County Road 1 West 614 Belleville Road 696 Belleville Road		1,4 dioxane	Once every five years (next event 2026)

¹ Access to monitoring wells M192 and M193 is subject to permission from the property owner

² The final list of domestic well locations will depend on confirmation of which addresses have drilled wells (locations where well construction is unknown are denoted UNKN). A residential survey will be completed in order to determine which of these locations are to be sampled. Only those residences with drilled bedrock wells that supply water for domestic use will be sampled; residences that use shallow dug wells or cisterns for water supplies are not included in the program.

Table 2: Analytical Parameters for Water and Leachate Samples

Groundwater Inorganic and General Parameters		
Total dissolved solids	Magnesium	Manganese
Alkalinity	Sodium	Ammonia (total)
Conductivity	Potassium	Nitrate
Dissolved organic carbon	Boron	Nitrite
Calcium	Iron	Chloride
		Sulphate
Volatile Organic Compounds (VOCs)		
1,4-dioxane	1,2-Dichlorobenzene	1,1,2-Trichloroethane
Benzene	1,3-Dichlorobenzene	1,1-Dichloroethane
Toluene	1,4-Dichlorobenzene	1,2-Dichloroethane
Ethylbenzene	Methylene chloride	1,1-Dichloroethylene
m&p-Xylene	Chloromethane	Cis-1,2-Dichloroethylene
o-Xylene	Chloroethane	Trans-1,2-Dichloroethylene
Styrene	1,1,2,2-Tetrachloroethane	Trichloroethylene
1,3,5-Trimethylbenzene	1,1,1,2-Tetrachloroethane	Tetrachloroethylene
Chlorobenzene	1,1,1-Trichloroethane	Vinyl chloride
Surface Water Inorganic and General Parameters		
1,4-dioxane	Potassium	Nitrate
Total suspended solids	Boron	Nitrite
Total dissolved solids	Cadmium	Chloride
Biological oxygen demand	Chromium (Total, Cr6+, Cr3+)	Sulphate
Chemical oxygen demand	Cobalt	Phenols
Alkalinity	Copper	Total phosphorous
Conductivity	Iron	Naphthalene
Hardness	Lead	
Calcium	Nickel	<i>Field measurements:</i>
Magnesium	Zinc	<i>pH, temperature, conductivity, dissolved</i>
Sodium	Ammonia (total & un-ionized)	<i>oxygen, estimated flow rate</i>
Leachate Inorganic and General Parameters		
Total dissolved solids	Dissolved organic carbon	Ammonia (total)
Conductivity	Boron	Total Kjeldahl nitrogen
Alkalinity	Cadmium	Nitrate
pH	Chromium (total)	Nitrite
Hardness	Cobalt	Chloride
Calcium	Copper	Sulphate
Magnesium	Iron	Total phosphorous
Sodium	Lead	Phenols
Potassium	Manganese	Naphthalene
Biological oxygen demand	Nickel	N-nitrosodimethylamine (NDMA)
Chemical oxygen demand	Zinc	
Per- and Polyfluoroalkyl Substances (PFAS)		
Perfluorobutanoic acid (PFBA)	Perfluorononanoic acid (PFNA)	Perfluorobutanesulfonic acid (PFBS)
Perfluoropentanoic acid (PFPeA)	Perfluorodecanoic acid (PFDA)	Perfluorohexanesulfonic acid (PFHxS)
Perfluorohexanoic acid (PFHxA)	Perfluoroundecanoic acid (PFUnA)	Perfluorooctanesulfonic acid (PFOS)
Perfluoroheptanoic acid (PFHpA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorooctane sulfonamide (PFOSA)
Perfluorooctanoic acid (PFOA)	Perfluorododecanoic acid (PFDoA)	

Table 3: Groundwater Elevation Monitoring Locations

Location	Shallow Groundwater Flow Zone	Intermediate Groundwater Flow Zone
West of landfill footprint	M27, M67-2, M98, M99-2, M101, M102, OW37-s	M58-3, M72, M74, M82-2, M91-1, M95-1
East of landfill footprint	M23, M47-3, M68-4*, M70-3, M77, M96	M50-3, M52-2
North of landfill footprint	M35, M60-4, M65-2, M66-2, M86, M94-2, M103, M104	M5-3, M6-3, M46-2, M59-4, M60-1, M75, OW1
South of landfill footprint; north of Beechwood Road	M14, M18, M41, M53-4, M54-4, M80-2, M81, M87-2, M97	M10-1, M49-1, M53-2, M56-2, M105, M106, M107, M108, M109-1, M109-2, M110-1, M111-1, M112-1, M170, M192**, M193**
South of landfill footprint; south of Beechwood Road	M114-2, M178R-5, M188-2, M199, M200, M201, M201-DP, M203, M204, M205, M206, M206-DP, M207-DP, M209-DP	M63-2, M64-2, M114-1, M121, M123, M167, M168, M177, M178R-2, M178R-4, M179, M185-1, M185-2, M186, M187, M188-1, M190, M191, M194-2

Note:

* Monitoring well M68-4R was installed on October 1, 2025 to replace damaged well M68-4.

** Access to monitoring wells M192 and M193 is subject to permission from the property owner

Table 4a: Groundwater Elevations - Spring 2025

Monitoring Well	Water Level (masl)	Monitoring Well	Water Level (masl)	Monitoring Well	Water Level (masl)	Monitoring Well	Water Level (masl)
Shallow Groundwater Flow Zone							
M14	127.29	M66-2	123.40	M97	125.68	M200	115.13
M18	127.39	M67-2	122.83	M98	130.44	M201	115.28
M23	127.54	M68-4	124.25	M99-2	130.72	M201-DP	115.31
M27	126.57	M70-3	127.81	M101	124.25	M203	117.05
M35	124.47	M77	126.56	M102	124.49	M204	115.79
M41	125.90	M80-2	123.72	M103	124.13	M205	115.83
M47-3	125.06	M81	124.55	M104	123.46	M206	118.83
M53-4	125.42	M86	121.09	M114-2	123.84	M206-DP	117.88
M54-4	124.34	M87-2	124.91	M178R-5	116.21	M207-DP	116.26
M60-4	124.36	M94-2	123.82	M188-2	115.58	M209-DP	115.99
M65-2	123.65	M96	129.34	M199	115.25	OW37-s	122.18
Intermediate Bedrock Groundwater Flow Zone							
M5-3	122.54	M64-2	118.99	M110-1	125.14	M179	112.13
M6-3	123.81	M72	123.31	M111-1	123.44	M185-1	116.41
M10-1	124.22	M74	123.97	M112-1	123.36	M185-2	116.54
M46-2	123.35	M75	123.01	M114-1	124.14	M186	114.77
M49-1	124.80	M82-2*	-	M121	122.76	M187	96.82
M50-3	124.25	M91-1	123.43	M123	122.81	M188-1	115.42
M52-2	123.66	M95-1	123.37	M167	121.66	M190	116.32
M53-2	124.36	M105	125.16	M168	122.84	M191	119.08
M56-2	123.52	M106	123.29	M170	124.66	M192	122.86
M58-3	123.55	M107	125.01	M177	115.37	M193	122.40
M59-4	123.46	M108	123.03	M178R-2	122.15	M194-2	103.00
M60-1	122.53	M109-1	125.19	M178R-4	116.86	OW1	122.60
M63-2	121.49	M109-2	125.21				

* Well was flowing when j-plug removed.

Table 4b: Groundwater Elevations - Fall 2025

Monitoring Well	Water Level (masl)	Monitoring Well	Water Level (masl)	Monitoring Well	Water Level (masl)	Monitoring Well	Water Level (masl)
Shallow Groundwater Flow Zone							
M14	dry	M66-2	122.05	M97	122.90	M200	113.32
M18	dry	M67-2	121.81	M98	127.93	M201	113.51
M23	124.66	M68-4R*	dry	M99-2	127.93	M201-DP	dry
M27	124.08	M70-3	dry	M101	121.77	M203	115.99
M35		M77	123.16	M102	121.56	M204	114.82
M41	124.66	M80-2	122.63	M103	121.89	M205	114.72
M47-3	122.93	M81	123.75	M104	122.08	M206	118.12
M53-4	124.40	M86	121.32	M114-2	122.19	M206-DP	117.77
M54-4	123.33	M87-2	121.88	M178R-5	115.54	M207-DP	dry
M60-4	123.33	M94-2	122.40	M188-2	114.51	M209-DP	dry
M65-2	121.80	M96	125.31	M199	113.88	OW37-s	121.67
Intermediate Bedrock Groundwater Flow Zone							
M5-3	122.71	M64-2	118.18	M110-1	118.74	M179	108.35
M6-3	122.17	M72	122.01	M111-1	122.17	M185-1	112.91
M10-1	118.74	M74	121.99	M112-1	122.21	M185-2	112.92
M46-2	123.15	M75	123.05	M114-1	118.74	M186	113.55
M49-1	118.35	M82-2	121.58	M121	118.45	M187	88.12
M50-3	124.02	M91-1	122.18	M123	118.60	M188-1	114.45
M52-2	119.52	M95-1	122.10	M167	118.35	M190	111.97
M53-2	118.44	M105	118.73	M168	118.62	M191	118.88
M56-2	122.22	M106	122.13	M170	118.71	M192	118.62
M58-3	122.25	M107	118.71	M177	113.59	M193	120.08
M59-4	122.28	M108	118.61	M178R-2	118.99	M194-2	102.53
M60-1	122.14	M109-1	118.73	M178R-4	115.90	OW1	122.34
M63-2	120.33	M109-2	118.73				

* Monitoring well M68-4R was installed on October 1, 2025 to replace damaged well M68-4.

Table 5a: Groundwater Quality Results - Spring 2025

		Alkalinity mg/L	Ammonia mg/L	Boron mg/L	Calcium mg/L	Chloride mg/L	Conductivity µS/cm	Dissolved Organic Carbon mg/L	Iron mg/L	Magnesium mg/L	Manganese mg/L	Nitrate mg/L	Nitrite mg/L	Potassium mg/L	Sodium mg/L	Sulphate mg/L	Total Dissolved Solids mg/L	1,1,1,2-Tetrachloroethane mg/L	1,1,1-Trichloroethane mg/L	1,1,2,2-Tetrachloroethane mg/L	1,1,2-Trichloroethane mg/L	1,1-Dichloroethane mg/L	1,1-Dichloroethylene mg/L	1,2-Dichlorobenzene (o) mg/L	1,2-Dichloroethane mg/L	1,3,5-Trimethylbenzene mg/L	1,3-Dichlorobenzene (m) mg/L	1,4-Dichlorobenzene (p) mg/L	1,4-Dioxane mg/L	Benzene mg/L	Chlorobenzene mg/L	Chloroethane mg/L	Chloromethane mg/L		
Location	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		
Shallow Groundwater Flow Zone																																			
M53-4	5/1/2025	300	< 0.15	< 0.02	100	< 1	580	3	< 0.1	15	0.041	< 0.1	< 0.01	0.23	16	21	345	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
M67-2	4/30/2025	320	0.33	0.59	51	3.7	630	1.8	0.21	26	0.031	< 0.1	< 0.01	7.7	40	12	335	< 0.002	< 0.001	< 0.002	< 0.002	< 0.001	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
M68-4	5/1/2025	280	< 0.15	< 0.02	96	5.5	580	2.3	< 0.1	16	0.026	< 0.1	< 0.01	< 0.2	12	20	355	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
M80-2	5/1/2025	350	< 0.15	0.058	72	24	770	2.1	< 0.1	37	< 0.002	0.2	< 0.01	4.1	45	28	415	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
M86	4/30/2025	490	< 0.15	0.89	16	30	1200	5	< 0.1	15	< 0.002	1.53	< 0.01	11	250	110	785	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
M96	5/1/2025	290	< 0.15	0.049	63	< 1	600	1	< 0.1	33	< 0.002	0.89	< 0.01	4.3	17	26	350	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
M99-2	4/30/2025	270	< 0.15	0.074	57	15	720	2.2	0.17	49	0.013	< 0.1	0.012	2.7	15	97	485	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
M101	4/29/2025	420	< 0.15	0.068	120	23	960	2.1	< 0.1	39	< 0.002	< 0.1	< 0.01	3.8	26	87	595	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
M103	4/29/2025	640	< 0.15	0.22	140	170	1700	3.2	0.12	79	0.038	< 0.1	< 0.01	5.8	120	39	955	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.014	< 0.0001	< 0.0001	< 0.0002	< 0.0002		
M104	4/29/2025	1300	0.26	2.4	160	820	4900	52	< 0.1	150	0.55	10.6	< 0.01	15	850	32	2930	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.14	< 0.0001	< 0.0001	< 0.0002	< 0.0002			
M114-2	4/30/2025	300	< 0.15	< 0.02	98	49	780	1.3	< 0.1	15	< 0.002	1.03	< 0.01	0.72	50	35	475	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	
M178R-5	4/29/2025	390	< 0.15	0.14	120	54	930	3.5	0.52	25	0.035	< 0.1	< 0.01	3.2	47	26	620	< 0.0002	< 0.0001	< 0.0002	< 0.0002	0.0003	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0055	0.00013	< 0.0001	< 0.0002	< 0.0002		
M188-2	4/29/2025	300	< 0.15	1.1	42	2.5	610	1.5	< 0.1	19	0.009	< 0.1	< 0.01	5.7	64	30	345	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	
M199	4/29/2025	280	0.44	0.5	66	< 1	660	1.1	0.26	34	0.036	< 0.1	0.018	9.1	17	78	385	< 0.001	< 0.0005	< 0.001	< 0.001	< 0.0005	< 0.0005	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
M200	4/29/2025	280	0.17	0.15	89	4.5	550	1.9	0.17	13	0.054	< 0.1	< 0.01	2.5	7.5	15	300	< 0.001	< 0.0005	< 0.001	< 0.001	< 0.0005	< 0.0005	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		
M203	4/29/2025	290	0.2	0.36	120	11	800	2.1	0.1	25	0.045	< 0.1	< 0.01	5.3	13	120	505	< 0.01	< 0.005	< 0.01	< 0.01	< 0.005	< 0.005	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01		
M204	4/29/2025	310	0.26	1.2	24	39	800	1.2	0.16	13	0.082	< 0.1	0.03	6.5	130	39	470	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002		
M205	4/29/2025	270	< 0.15	0.029	99	4.1	550	2.1	< 0.1	9.5	0.005	< 0.1	< 0.01	0.67	4.8	23	335	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002		
M206	4/29/2025	380	0.22	0.11	120	36	850	3.9	3.8	22	0.25	< 0.1	< 0.01	4.1	31	25	470	< 0.0002	< 0.0001	< 0.0002	< 0.0002	0.00058	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.003	< 0.0001	< 0.0001	< 0.0002	< 0.0002			
OW37-s	4/29/2025	280	0.21	0.057	100	72	910	2.5	1.2	19	0.11	< 0.1	< 0.01	9.5	46	80	585	< 0.001	< 0.0005	< 0.001	< 0.001	< 0.0005	< 0.0005	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		
Intermediate Bedrock Groundwater Flow Zone ¹																																			
M5-3	4/29/2025	450	1.4	1	36	41	990	1.2	< 0.1	26	< 0.002	< 0.1	< 0.01	13	140	25	565	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	
M52-2	5/1/2025	260	2.37	0.97	52	640	2800	0.9	< 0.1	37	0.005	< 0.1	< 0.01	18	430	11	1390	< 0.01	< 0.005	< 0.01	< 0.01	< 0.005	< 0.005	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
M56-2	4/30/2025	290	< 0.15	0.054	76	15	710	1.5	< 0.1	40	0.052	< 0.1	< 0.01	2.8	11	71	425	< 0.01	< 0.005	< 0.01	< 0.01	< 0.005	< 0.005	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
M58-3	5/1/2025	300	< 0.15	< 0.02	89	2.2	620	1.3	< 0.1	32	0.003	< 0.1	< 0.01	1.6	7.3	39	355	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	
M59-4	5/1/2025	270	< 0.15	0.47	71	7.7	690	1.5	0.27	34	0.011	< 0.1	< 0.01	5.5	21	92	415	< 0.001	< 0.0005	< 0.001	< 0.001	< 0.0005	< 0.0005	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
M72	4/30/2025	290	0.48	0.37	60	26	650	1.5	< 0.1	34	0.002	< 0.1	< 0.01	7.2	17	33	360	< 0.002	< 0.001	< 0.002	< 0.002	< 0.001	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002		
M74	4/30/2025	380	0.87	0.35	53	50	850	4.1	0.61	43	0.037	< 0.1	< 0.01	10	52	7	500	< 0.002	< 0.001	< 0.002	< 0.002	< 0.001	< 0.001	< 0.002											

Table 5b: Groundwater Quality Results - Fall 2025

Location	Date	Alkalinity mg/L	Ammonia mg/L	Boron mg/L	Calcium mg/L	Chloride mg/L	Conductivity µS/cm	Dissolved Organic Carbon mg/L	Iron mg/L	Magnesium mg/L	Manganese mg/L	Nitrate mg/L	Nitrite mg/L	Potassium mg/L	Sodium mg/L	Sulphate mg/L	Total Dissolved Solids mg/L	1,1,1,2-Tetrachloroethane mg/L	1,1,1-Trichloroethane mg/L	1,1,2,2-Tetrachloroethane mg/L	1,1,2-Trichloroethane mg/L	1,1-Dichloroethane mg/L	1,1-Dichloroethylene mg/L	1,2-Dichlorobenzene (o) mg/L	1,2-Dichloroethane mg/L
Shallow Groundwater Flow Zone ¹																									
M80-2	2025-10-29	330	< 0.15	0.061	79	25	720	1.7	< 0.1	39	0.005	< 0.1	< 0.01	3.5	38	24	445	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002
M86	2025-10-28	420	< 0.15	1.1	29	27	1100	2.7	< 0.1	24	< 0.002	0.99	< 0.01	14	180	85	635	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002
M101	2025-10-28	430	< 0.15	0.1	140	27	1000	1.9	< 0.1	42	0.003	< 0.1	< 0.01	4.5	28	82	565	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002
M103	2025-10-28	640	< 0.15	0.26	140	160	1700	3.5	0.74	82	0.048	< 0.1	< 0.01	7.5	110	33	905	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002
M104	2025-10-28	1300	2.49	2.3	160	820	4900	51	0.16	150	0.67	1.02	0.028	20	770	26	2820	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002
M114-2	2025-10-29	280	< 0.15	0.021	110	53	790	1.4	< 0.1	18	< 0.002	1.17	< 0.01	1.2	55	39	565	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002
M178R-5	2025-10-28	380	0.18	0.19	130	48	890	3.6	0.33	25	0.033	< 0.1	< 0.01	4.2	49	21	480	< 0.0002	< 0.0001	< 0.0002	< 0.0002	0.00044	< 0.0001	< 0.0002	< 0.0002
M188-2	2025-10-28	290	< 0.15	1	52	1.4	660	1.3	< 0.1	24	0.009	< 0.1	0.017	7.4	58	51	380	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002
M199	2025-10-28	290	0.97	0.75	65	1.1	660	1.4	0.23	35	0.036	< 0.1	< 0.01	12	27	55	360	< 0.01	< 0.005	< 0.01	< 0.01	< 0.005	< 0.005	< 0.01	< 0.01
M200	2025-10-28	280	< 0.15	0.14	100	3.1	550	2.1	0.97	11	0.17	< 0.1	< 0.01	2.3	6.3	13	265	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002
M203	2025-10-28	300	0.29	0.49	120	11	790	2	0.26	26	0.048	< 0.1	0.013	6.5	14	95	465	< 0.002	< 0.001	< 0.002	< 0.002	< 0.001	< 0.001	< 0.002	< 0.002
M204	2025-10-28	300	0.29	0.86	37	26	760	1.5	< 0.1	18	0.12	< 0.1	0.026	7.4	100	40	375	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002
M205	2025-10-28	260	< 0.15	0.048	100	19	580	1.9	< 0.1	11	0.01	< 0.1	< 0.01	1.1	6	15	310	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002
M206	2025-10-28	440	0.23	0.11	140	42	990	4.4	4.9	25	0.41	< 0.1	< 0.01	4.7	35	23	525	< 0.0002	< 0.0001	< 0.0002	< 0.0002	0.00066	< 0.0001	< 0.0002	< 0.0002
OW37-s	2025-10-28	220	< 0.15	0.069	83	78	830	2.1	1.4	20	0.21	< 0.1	< 0.01	11	53	49	430	< 0.002	< 0.001	< 0.002	< 0.002	< 0.001	< 0.001	< 0.002	< 0.002
Intermediate Bedrock Groundwater Flow Zone ²																									
M5-3	2025-10-28	460	1.08	1	35	42	1100	1.1	< 0.1	25	< 0.002	< 0.1	< 0.01	13	140	31	535	< 0.01	< 0.005	< 0.01	< 0.01	< 0.005	< 0.005	< 0.01	< 0.01
M52-2	2025-10-29	250	2.34	1.1	56	670	2900	0.8	< 0.1	40	0.006	< 0.1	< 0.01	20	480	6.9	1550	< 0.01	< 0.005	< 0.01	< 0.01	< 0.005	< 0.005	< 0.01	< 0.01
M72	2025-10-28	270	0.55	0.38	57	14	640	1.2	< 0.1	34	0.002	< 0.1	< 0.01	7.4	18	29	290	< 0.01	< 0.005	< 0.01	< 0.01	< 0.005	< 0.005	< 0.01	< 0.01
M74	2025-10-28	330	0.93	0.78	40	20	720	1.6	0.15	30	0.016	< 0.1	< 0.01	11	57	24	340	< 0.01	< 0.005	< 0.01	< 0.01	< 0.005	< 0.005	< 0.01	< 0.01
M75	2025-10-28	460	1.47	1.4	37	85	1200	1	< 0.1	27	0.004	< 0.1	< 0.01	16	180	33	665	< 0.01	< 0.005	< 0.01	< 0.01	< 0.005	< 0.005	< 0.01	< 0.01
M82-2	2025-10-28	320	0.2	0.1	100	13	710	1.9	< 0.1	28	0.019	< 0.1	< 0.01	3.7	13	47	375	< 0.002	< 0.001	< 0.002	< 0.002	< 0.001	< 0.001	< 0.002	< 0.002
M106	2025-10-29	350	2.98	1.7	130	1600	6000	1.2	< 0.1	86	< 0.002	< 0.1	< 0.01	25	980	16	3350	< 0.01	< 0.005	< 0.01	< 0.01	< 0.005	< 0.005	< 0.01	< 0.01
M108	2025-10-28	450	0.65	0.19	110	47	990	5	3.5	30	0.15	< 0.1	< 0.01	6.1	57	5.2	480	< 0.0002	< 0.0001	< 0.0002	< 0.0002	0.0003	< 0.0001	< 0.0002	< 0.0002
M114-1	2025-10-29	380	0.5	0.19	96	78	980	4.2	6.2	24	0.28	< 0.1	< 0.01	5.1	80	4.9	570	< 0.01	< 0.005	< 0.01	< 0.01	< 0.005	< 0.005	< 0.01	< 0.01
M167	2025-10-29	440	1.89	0.92	94	350	2000	2.8	< 0.1	56	0.005	< 0.1	< 0.01	18	230	9.5	1070	< 0.01	< 0.005	< 0.01	< 0.01	< 0.005	< 0.005	< 0.01	< 0.01
M168	2025-10-29	500	1.33	0.76	110	230	1700	3.8	< 0.1	43	0.003	< 0.1	< 0.01	14	190	11	910	< 0.01	< 0.005	< 0.01	< 0.01	< 0.005	< 0.005	< 0.01	< 0.01
M170	2025-10-29	710	1.58	1.4	50	250	2100	4.1	< 0.1	34	< 0.002	< 0.1	< 0.01	15	380	10	1190	< 0.01	< 0.005	< 0.01	< 0.01	< 0.005	< 0.005	< 0.01	< 0.01
M177	2025-10-28	250	0.55	0.36	83	8.2	570	1.8	< 0.1	17	0.005	< 0.1	< 0.01	6.4	8.4	36	285	< 0.01	< 0.005	< 0.01	< 0.01	< 0.005	< 0.005	< 0.01	< 0.01
M178R-2	2025-10-28	360	0.23	0.16	110	31	820	4.3	0.95	22	0.063	< 0.1	< 0.01	4.5	37	21	410	< 0.0002	< 0.0001	< 0.0002	< 0.0002	0.00065	< 0.0001	< 0.0002	< 0.0002
M178R-4	2025-10-28	420	0.31	0.19	120	49	960	4	0.18	27	0.039	< 0.1	< 0.01	5.2	49	20	535	< 0.0002	< 0.0001	< 0.0002	< 0.0002	0.0006	< 0.0001	< 0.0002	< 0.0002
M179	2025-10-29	320	0.36	0.36	92	70	870	2.2	0.17	17	0.028	< 0.1	< 0.01	5	70	10	515	< 0.01	< 0.005	< 0.01	< 0.01	< 0.005	< 0.005	< 0.01	< 0.01
M185-2	2025-10-29	270	< 0.15	0.15	110	6.3	590	1.9	0.12	7.1	0.01	< 0.1	< 0.01	1.8	7.8	32	370	< 0.01	< 0.005	< 0.01	< 0.01	< 0.005	< 0.005	< 0.01	< 0.01
M186	2025-10-29	330	2.56	1.8	67	1000	4500	1.7	< 0.1	53	0.037	< 0.1	< 0.01	23	730	9.3	2390	< 0.01	< 0.005	< 0.01	< 0.01	< 0.005	< 0.005	< 0.01	< 0.01
M188-1	2025-10-28	280	0.53	0.37	60	33	670	1.6	< 0.1	19	0.008	< 0.1	< 0.01	5.3	58	9	350	< 0.01	< 0.005	< 0.01	< 0.01	< 0.005	< 0.005	< 0.01	< 0.01
M192	2025-10-29	660	1.89	2.1	57	270	2100	3.6	0.15	39	0.012	< 0.1	< 0.01	17	360	3.5	1180	< 0.01	< 0.005	< 0.01	< 0.01	< 0.005	< 0.005	< 0.01	< 0.01
M193	2025-10-29	300	1.48	0.54	53	370	1900	2.4	0.34	50	0.078	< 0.1	< 0.01	14	230	12	1010	< 0.01	< 0.005	< 0.01	< 0.01	< 0.005	< 0.005	< 0.01	< 0.01
M194-2	2025-10-29	370	0.73	0.33	53	15	790	21	1.2	13	0.015	< 0.1	0.011	6.6	100	34	515	< 0.0002	< 0.0001	< 0.0002	< 0.0002	< 0.0001	< 0.0001	< 0.0002	< 0.0002
OW1	2025-10-29	430	2.07	1.1	43	49	1100	2.5	< 0.1	31	0.003	< 0.1	< 0.01	13	150	48	615	< 0.01	< 0.005	< 0.01	< 0.01	< 0.005	< 0.005	< 0.01	< 0.01

¹ M53-4 and M67-2 Purged Dry - No Samples Collected; M114-2 Insufficient Water to Collect Full Sample - Missing 1,4-Dioxane

² M6-3 Purged Dry, M187 Insufficient Water - No Samples Collected

Table 5c: Groundwater Quality Results and Reasonable Use Limits - Spring 2025

		1,4-dioxane	Alkalinity	Chloride	Dissolved Organic Carbon	Iron	Manganese	Sodium	Total Dissolved Solids	1,1-dichloroethylene	Benzene	Ethylbenzene	Toluene	Xylenes (Total)
Name	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Shallow Groundwater Flow Zone														
RUL		0.001¹	395	131	3.6	0.18	0.033	109	462	0.0035	0.0003	0.07	0.0036	0.0035
M200	2025-04-29	< 0.001	280	4.5	1.9	0.17	0.054	7.5	300	< 0.0005	< 0.0005	< 0.0005	< 0.001	< 0.0005
OW37-s	2025-04-29	< 0.001	280	72	2.5	1.2	0.11	46	585	< 0.0005	< 0.0005	< 0.0005	< 0.001	< 0.0005
Intermediate Bedrock Groundwater Flow Zone														
RUL		0.001¹	402	130	3.4	0.18	0.03	107	457	0.0035	0.0003	0.07	0.0036	0.0035
M56-2	2025-04-30	< 0.001	290	15	1.5	< 0.1	0.052	11	425	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005
M58-3	2025-05-01	< 0.001	300	2.2	1.3	< 0.1	0.003	7.3	355	< 0.0001	< 0.0001	< 0.0001	< 0.0002	< 0.0001
M91-1	2025-04-30	< 0.001	280	7.7	1	< 0.1	0.003	59	385	< 0.0001	< 0.0001	< 0.0001	< 0.0002	< 0.0001
M95-1	2025-04-30	< 0.003	290	2.8	1.4	< 0.1	0.003	4.4	370	< 0.001	< 0.001	0.0021	< 0.002	< 0.001
M82-2	2025-04-29	< 0.001	330	18	2.2	< 0.1	0.017	15	445	< 0.001	< 0.001	< 0.001	< 0.002	< 0.001
M170	2025-04-30	0.017	700	180	4.3	< 0.1	< 0.002	320	1070	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005
M177	2025-04-29	< 0.001	230	3	1.9	< 0.1	0.005	6.1	275	< 0.0001	< 0.0001	< 0.0001	< 0.0002	< 0.0001
M179	2025-05-01	< 0.001	230	32	3.1	0.34	0.027	29	310	< 0.0001	< 0.0001	< 0.0001	< 0.0002	< 0.0001
M185-2	2025-05-01	< 0.001	260	22	1.8	< 0.1	0.015	5.6	360	< 0.001	< 0.001	< 0.001	< 0.002	< 0.001
M186	2025-05-01	< 0.003	340	1100	1.3	< 0.1	0.034	750	2240	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005
M187	2025-04-30	< 0.001	260	22	2.2	< 0.1	< 0.002	20	310	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005
M188-1	2025-04-29	< 0.001	320	52	1.7	< 0.1	0.007	66	375	< 0.001	< 0.001	< 0.001	< 0.002	< 0.001

0.05 Groundwater results exceed Reasonable Use Limits (RUL)

¹ Site-specific RUL for 1,4 dioxane set by ERT Order dated December 24, 2015

Table 5d: Groundwater Quality Results and Reasonable Use Limits - Fall 2025

		1,4-dioxane	Alkalinity	Chloride	Dissolved Organic Carbon	Iron	Manganese	Sodium	Total Dissolved Solids	1,1-dichloroethylene	Benzene	Ethylbenzene	Toluene	Xylenes (Total)
Name	Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Shallow Groundwater Flow Zone														
RUL		0.001¹	395	131	3.6	0.18	0.033	109	462	0.0035	0.0003	0.07	0.0036	0.0035
M200	2025-10-28	< 0.001	280	3.1	2.1	0.97	0.17	6.3	265	< 0.0001	< 0.0001	< 0.0001	< 0.0002	< 0.0001
OW37-s	2025-10-28	< 0.003	220	78	2.1	1.4	0.21	53	430	< 0.001	< 0.001	< 0.001	< 0.002	< 0.001
Intermediate Bedrock Groundwater Flow Zone²														
RUL		0.001¹	402	130	3.4	0.18	0.03	107	457	0.0035	0.0003	0.07	0.0036	0.0035
M82-2	2025-10-28	< 0.001	320	13	1.9	< 0.1	0.019	13	375	< 0.001	< 0.001	< 0.001	< 0.002	< 0.001
M170	2025-10-29	0.013	710	250	4.1	< 0.1	< 0.002	380	1190	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005
M177	2025-10-28	< 0.001	250	8.2	1.8	< 0.1	0.005	8.4	285	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005
M179	2025-10-29	< 0.001	320	70	2.2	0.17	0.028	70	515	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005
M185-2	2025-10-29	< 0.001	270	6.3	1.9	0.12	0.01	7.8	370	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005
M186	2025-10-29	< 0.001	330	1000	1.7	< 0.1	0.037	730	2390	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005
M188-1	2025-10-28	< 0.001	280	33	1.6	< 0.1	0.008	58	350	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005

0.05 Groundwater results exceed Reasonable Use Limits (RUL)

¹ Site-specific RUL for 1,4 dioxane set by ERT Order dated December 24, 2015

Table 6: Surface Water Characteristics - Spring 2025

Date	Parameter		Surface Water Station						
			S2	S3	S4R	S5	S7	S8R	S23
7/12/2024	Velocity:	m/s	<0.1	0.18	Dry	<0.1	0.15	0.12	0.24
	Depth:	m	0.35	0.35		0.18	0.15	0.12	0.12
	Width:	m	2.25	0.45		1.75	1.50	0.45	0.25
	Estimated Flow Rate:	m ³ /s	NM	0.028		NM	0.034	0.0065	0.0072

NM: Not Measured (Flow was insufficient, water was ponded, or unable to measure due to vegetation)

Table 7: Surface Water Quality Results - Spring 2025

			Marysville Creek			Beechwood Ditch			Central CAZ	
			S2	S3	S7	S5	S4R	S8R	S24	S23
			(upstream)	(downstream)	(downstream)	(upstream)	(downstream)	(downstream)	(downstream)	(downstream)
			4/30/2025	4/30/2025	4/30/2025	4/30/2025	4/30/2025	4/30/2025	4/30/2025	4/30/2025
Reading Name	Units	Date	PWQO							
Inorganic and General Parameters										
Alkalinity	mg/L		190	200	200	260	Dry	250	-	230
Ammonia	mg/L		< 0.15	0.18	0.86	< 0.15		< 0.15	-	< 0.15
Ammonia (unionized)	mg/L	0.02	< 0.0018	0.0026	0.02	< 0.0021		< 0.0038	-	< 0.0017
Biochemical Oxygen Demand	mg/L		< 2	< 2	< 2	< 2		< 2	-	< 2
Chemical Oxygen Demand	mg/L		20	18	20	18		8.4	-	< 4
Chloride	mg/L		26	19	20	< 1		26	-	9.6
Conductivity	µS/cm		450	450	450	490		580	-	480
Hardness	mg/L		210	220	220	270		270	-	250
Nitrate	mg/L		< 0.1	< 0.1	< 0.1	< 0.1		< 0.1	-	< 0.1
Nitrite	mg/L		< 0.01	< 0.01	< 0.01	< 0.01		< 0.01	-	< 0.01
Phenols	mg/L	0.001	< 0.001	< 0.001	< 0.001	< 0.001		< 0.001	-	0.001
Phosphorus (total)	mg/L	0.03	< 0.03	< 0.03	< 0.03	< 0.03		< 0.03	-	< 0.03
Sulphate	mg/L		3.8	4.6	4.5	3.8		18	-	5.2
Total Dissolved Solids	mg/L		235	225	250	285		305	-	265
Total Suspended Solids	mg/L		< 10	< 10	< 10	< 10	< 10	-	< 10	
Metals										
Boron	mg/L	0.2	< 0.02	< 0.02	< 0.02	< 0.02	Dry	0.03	-	0.027
Cadmium	mg/L		< 0.0001	< 0.0001	< 0.0001	< 0.0001		< 0.0001	-	< 0.0001
Calcium	mg/L		68	71	70	83		81	-	87
Chromium (III)	mg/L	0.0089	< 0.005	< 0.005	< 0.005	< 0.005		< 0.005	-	< 0.005
Chromium (VI)	mg/L	0.001	< 0.0005	< 0.0005	< 0.0005	< 0.0005		< 0.0005	-	< 0.0005
Chromium (Total)	mg/L		< 0.005	< 0.005	< 0.005	< 0.005		< 0.005	-	< 0.005
Cobalt	mg/L	0.0009	< 0.0005	< 0.0005	< 0.0005	< 0.0005		< 0.0005	-	< 0.0005
Copper	mg/L	0.005	< 0.002	< 0.002	< 0.002	< 0.002		< 0.002	-	< 0.002
Iron	mg/L	0.3	0.27	< 0.1	< 0.1	< 0.1		< 0.1	-	< 0.1
Lead	mg/L	0.005	< 0.0005	< 0.0005	< 0.0005	< 0.0005		< 0.0005	-	< 0.0005
Magnesium	mg/L		8.5	9.3	9.6	14		14	-	7.9
Nickel	mg/L	0.025	< 0.001	< 0.001	< 0.001	< 0.001		< 0.001	-	< 0.001
Potassium	mg/L		3.5	2.7	2.8	1.9		3.7	-	2
Sodium	mg/L		16	13	14	4		25	-	10
Zinc	mg/L	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-	< 0.01	
Volatile Organic Compounds (VOCs)										
1,4-dioxane	mg/L	0.02	< 0.001	< 0.001	< 0.001	< 0.001	Dry	< 0.001	-	< 0.001
Naphthalene	mg/L	0.007	< 0.00005	< 0.00005	< 0.00005	< 0.00005		< 0.00005	-	< 0.00005
Per- and polyfluoroalkyl substances (PFAS)										
Perfluorobutanesulfonic acid (PFBS)	ng/L	-	-	< 2	-	-	-	3.9	2.6	< 2
Perfluorobutanoic acid (PFBA)	ng/L	-	-	7.6	-	-	-	22	9.1	2.2
Perfluorodecanesulfonic acid (PFDS)	ng/L	-	-	< 2	-	-	-	< 2	< 2	< 2
Perfluorodecanoic Acid (PFDA)	ng/L	-	-	< 2	-	-	-	< 2	< 2	< 2
Perfluorododecanoic Acid (PFDoA)	ng/L	-	-	< 2	-	-	-	< 2	< 2	< 2
Perfluoroheptanoic Acid (PFHpA)	ng/L	-	-	< 2	-	-	-	15	5.2	< 2
Perfluorohexanesulfonic acid (PFHxS)	ng/L	-	-	< 2	-	-	-	2.8	< 2	< 2
Perfluorohexanoic Acid (PFHxA)	ng/L	-	-	3.9	-	-	-	41	20	< 2
Perfluorononanoic Acid (PFNA)	ng/L	-	-	< 2	-	-	-	< 2	< 2	< 2
Perfluorooctane Sulfonamide (PFOSA)	ng/L	-	-	< 4	-	-	-	< 4	< 4	< 4
Perfluorooctanesulfonic acid (PFOS)	ng/L	-	-	2	-	-	-	5.4	2.8	< 2
Perfluorooctanoic Acid (PFOA)	ng/L	-	-	4.7	-	-	-	35	10	< 2
Perfluoropentanoic Acid (PFPeA)	ng/L	-	-	3.3	-	-	-	39	15	< 2
Perfluoroundecanoic Acid (PFUnA)	ng/L	-	-	< 2	-	-	-	< 2	< 2	< 2
Field Measurements										
pH (Field)	unitless	6.5-8.5	7.74	7.77	7.96	7.73	Dry	7.98	-	7.64
Conductivity (Field)	µS/cm		470	460	460	520		590	-	490
Dissoved Oxygen (Field)	mg/L		7.6	7.0	7.7	7.3		6.9	-	8.1
Temperature (Field)	°C		9.9	10.7	11.6	12.0		12.2	-	12.2

Exceeds PWQO



Table 8: Subsurface Gas Monitoring Results - 2025

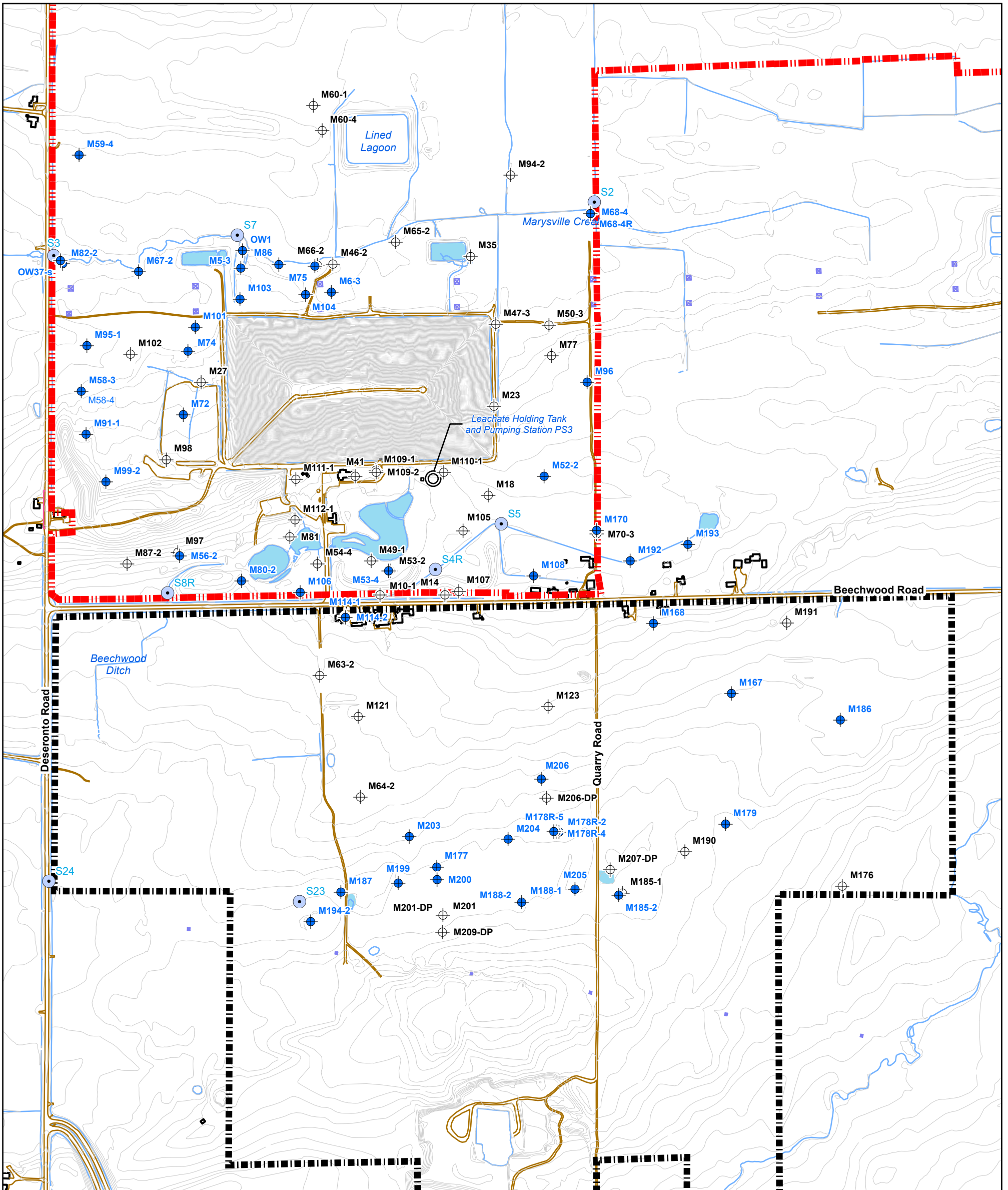
Gas Monitor	Location	Reading (ppm)
GM1	North of garage area, south of waste mound	5
GM3	Northeast corner of waste mound	40
GM4-1	Southeast corner of waste mound	15
GM4-2		15
GM5	Northwest corner of waste mound	0
GM6	North of waste mound	25

Table 9: Additional Investigations

Description of Activities in 2025	Reporting Completed in 2025	Anticipated / Planned Work in 2026
Non-Routine Investigations		
<ul style="list-style-type: none"> North Lagoon Pumping (June to September) 	- N/A	- Maintain Low Level in North Lagoon
<ul style="list-style-type: none"> ECA No. 1688-8HZNJG Amendment (Industrial Sewage Works) 	- Updated design for Southeast Hydraulic Control System (HCS) dated August 13, 2025	- Finalize ECA Amendment Application
<ul style="list-style-type: none"> Installation of monitoring well M68-4R to replace damaged well M68-4 	- Included in this report	- N/A
<ul style="list-style-type: none"> Decommissioning of groundwater monitoring wells that are not part of the post-closure EMP 	- N/A	<ul style="list-style-type: none"> Decommissioning report for 2025 to be included in 2025 Annual Report, prepared by WSP Canada Inc. Continue decommissioning work
<ul style="list-style-type: none"> Land survey of MNR property south of the landfill to complete filing of Contaminant Attenuation Zone (CAZ) 	- N/A	- File final survey plan with Ontario Surveyor General's office and finalize registration of CAZ
Town of Greater Napanee & Kingston WWTP Requirements:		
<ul style="list-style-type: none"> Monthly North/South Chambers combined leachate sampling (Jan-Dec) 	- Monthly reports prepared for the Town of Greater Napanee and City of Kingston	- Monitoring and reporting to continue in 2026
ISW ECA Monitoring Requirements - Storm Water Ponds and Leachate:		
<ul style="list-style-type: none"> <u>Storm Water Ponds</u> Monthly sampling for inorganic and general chemistry parameter lists (March, April, May, October, November, December) Quarterly Sampling of the ECA Storm water ponds for Toxicity (March, June, September, December) <u>Leachate (North Chamber)</u> Quarterly sampling list (March, August, October, December) Annual sampling chemistry list (May) 	- Monitoring results from the 2024 calendar year for the stormwater ponds and leachate locations were reported in the 2024 Annual Report, prepared by WSP Canada Inc. and dated January 2025	- Monitoring and reporting to continue in 2026

Figures





LEGEND	
	Topographic Contour Lines
	Surface Water
	Property Boundary
	Proposed CAZ Boundary
	Monitoring Well Used to Measure Water Level (Not Sampled)
	Monitoring Well Used to Measure Water Level and Sampled for Chemistry
	Gas Monitoring Well
	Leachate Chambers
	Lechate Monitoring Well
	Surface Water Monitoring Location
	Domestic Water Supply Well Sampled for Chemistry

* Monitoring well M68-4 was damaged and could not be repaired. A replacement well, M68-4R, was installed October 1, 2025.

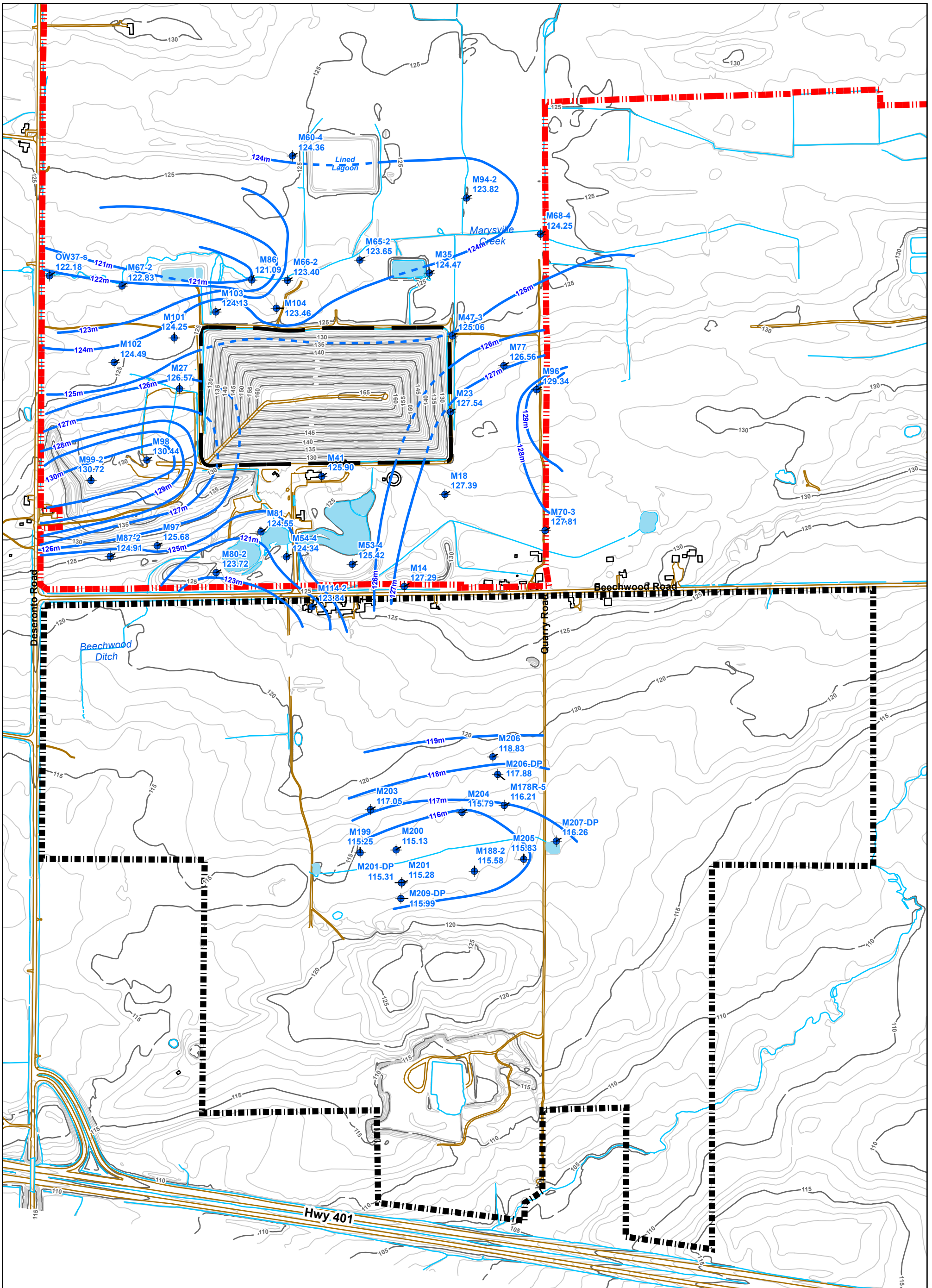
REFERENCES
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 -UNITS: METERS
 -PROJECTION: UTM NAD83 ZONE 18
 -DATA SOURCE: WMI CANADA, BLUMETRIC, MNRD, NRCAN

0 25 50 100 150 200
 Metres
 1:8,000

BluMetric
 Environmental

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CLIENT			
PROJECT			
WASTE MANAGEMENT RICHMOND LANDFILL 2025 ANNUAL REPORT			
TITLE			
SITE PLAN AND MONITORING LOCATIONS			
PROJECT #	DATE		
250147-04	13 February, 2026		
DRAWN	CHECKED	FIG NO.	REV
PB	MC	01	0



LEGEND

- Potentiometric Surface (masl)
- - - Inferred Potentiometric Surface (masl)
- Topographic Contour Lines (5 m)
- Topographic Contour Lines (1 m)
- Surface Water
- - - Property Boundary
- - - Proposed CAZ Boundary
- M166 Shallow Groundwater Zone Elevation Monitor
- M189 Monitor Not Used in Contouring

REFERENCES

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-UNITS: METERS
 -PROJECTION: UTM NAD83 ZONE 18
 -DATA SOURCE: WM CANADA, BLUMETRIC, MNRD, NRCAN

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 Metres
 1:8,000

CLIENT

WM
WASTE MANAGEMENT

PROJECT

**WASTE MANAGEMENT RICHMOND LANDFILL
2025 ANNUAL REPORT**

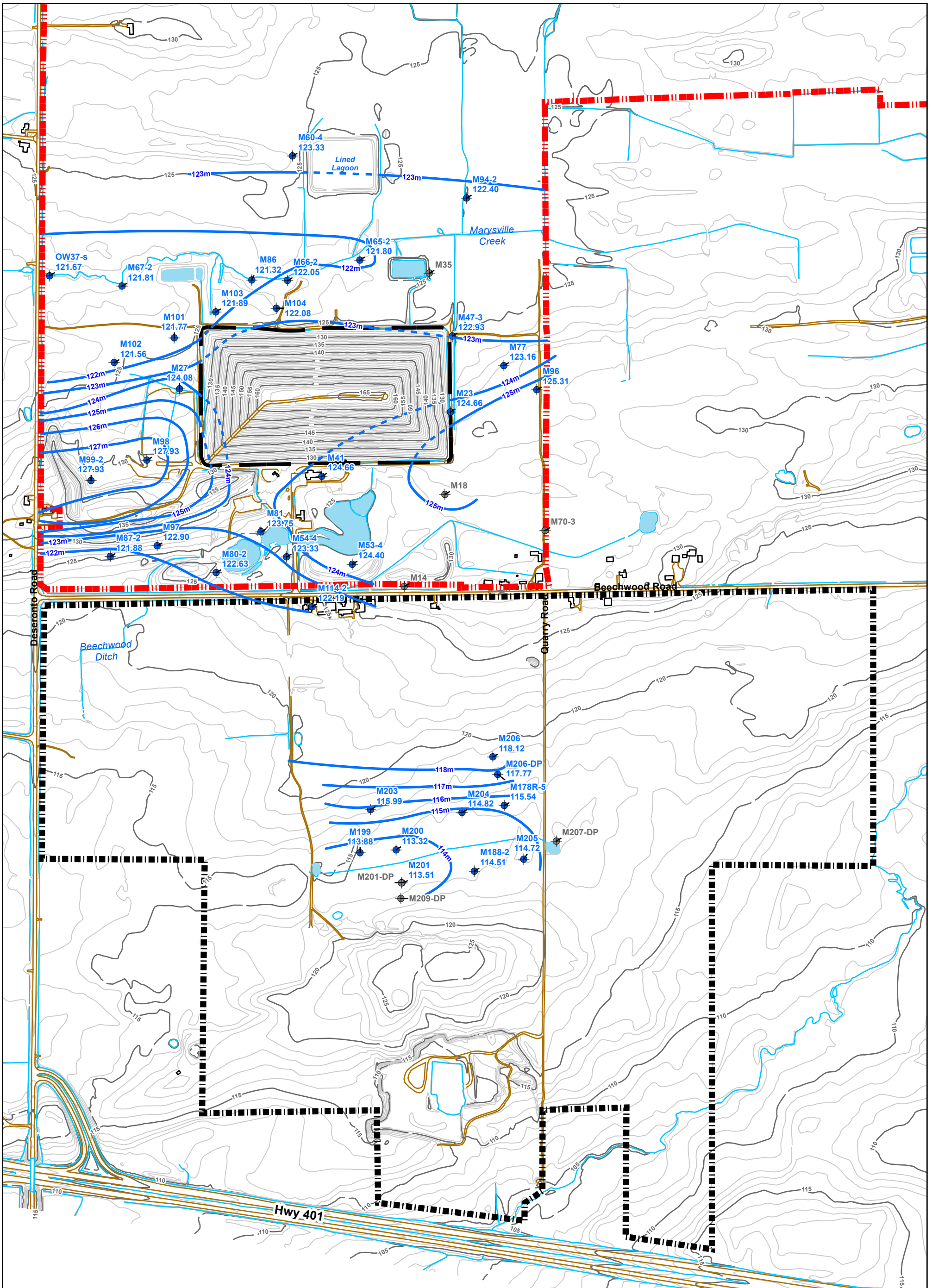
TITLE

**SHALLOW GROUNDWATER FLOW ZONE
POTENTIOMETRIC SURFACE - SPRING 2025**

PROJECT # 250147-04	DATE 12 February, 2026
DRAWN PB	CHECKED MC
FIG NO. 02a	REV 0

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LEGEND

- Potentiometric Surface (masl)
- - - Inferred Potentiometric Surface (masl)
- Topographic Contour Lines (5 m)
- Topographic Contour Lines (1 m)
- Surface Water
- - - Property Boundary
- - - Proposed CAZ Boundary
- M166 Shallow Groundwater Zone Elevation Monitor
- M189 Monitor Not Used in Contouring

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 -PROJECTION: UTM NAD83 ZONE 18
 -DATA SOURCE: WM CANADA, BLUMETRIC, MNRD, NRCAN

0 50 100 200 300 400
 Metres
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CLIENT

WM
WASTE MANAGEMENT

PROJECT

**WASTE MANAGEMENT RICHMOND LANDFILL
2025 ANNUAL REPORT**

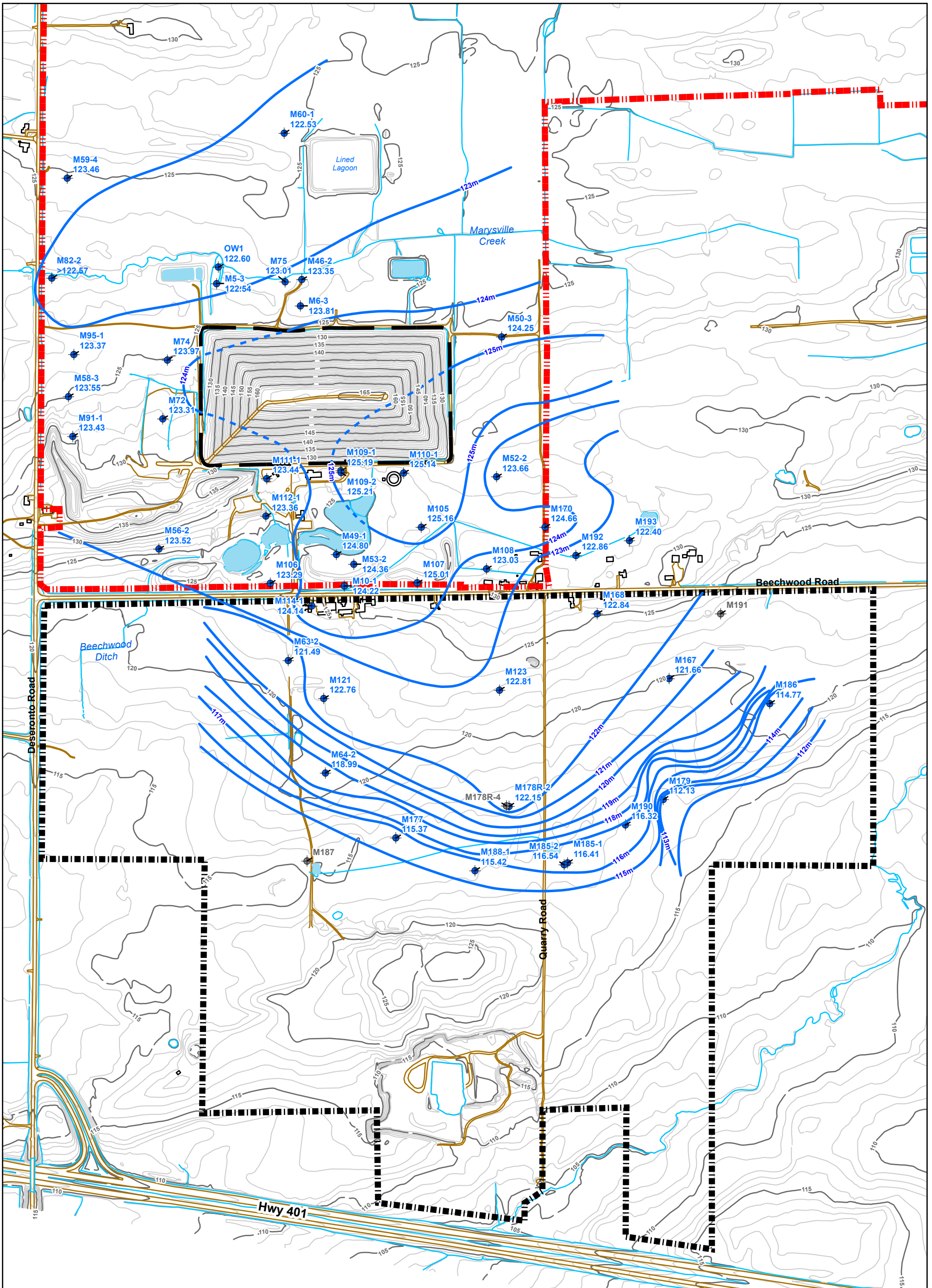
TITLE

**SHALLOW GROUNDWATER FLOW ZONE
POTENTIOMETRIC SURFACE - FALL 2025**

PROJECT # 250147-04	DATE 13 February, 2026
DRAWN PB	CHECKED MC
FIG NO. 02b	REV 0

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LEGEND

- Potentiometric Surface (masl)
- - - Inferred Potentiometric Surface (masl)
- Topographic Contour Lines (5 m)
- Topographic Contour Lines (1 m)
- Surface Water
- - - Property Boundary
- - - Proposed CAZ Boundary
- M166 Intermediate Groundwater Zone Elevation Monitor
- M189 Monitor Not Used in Contouring

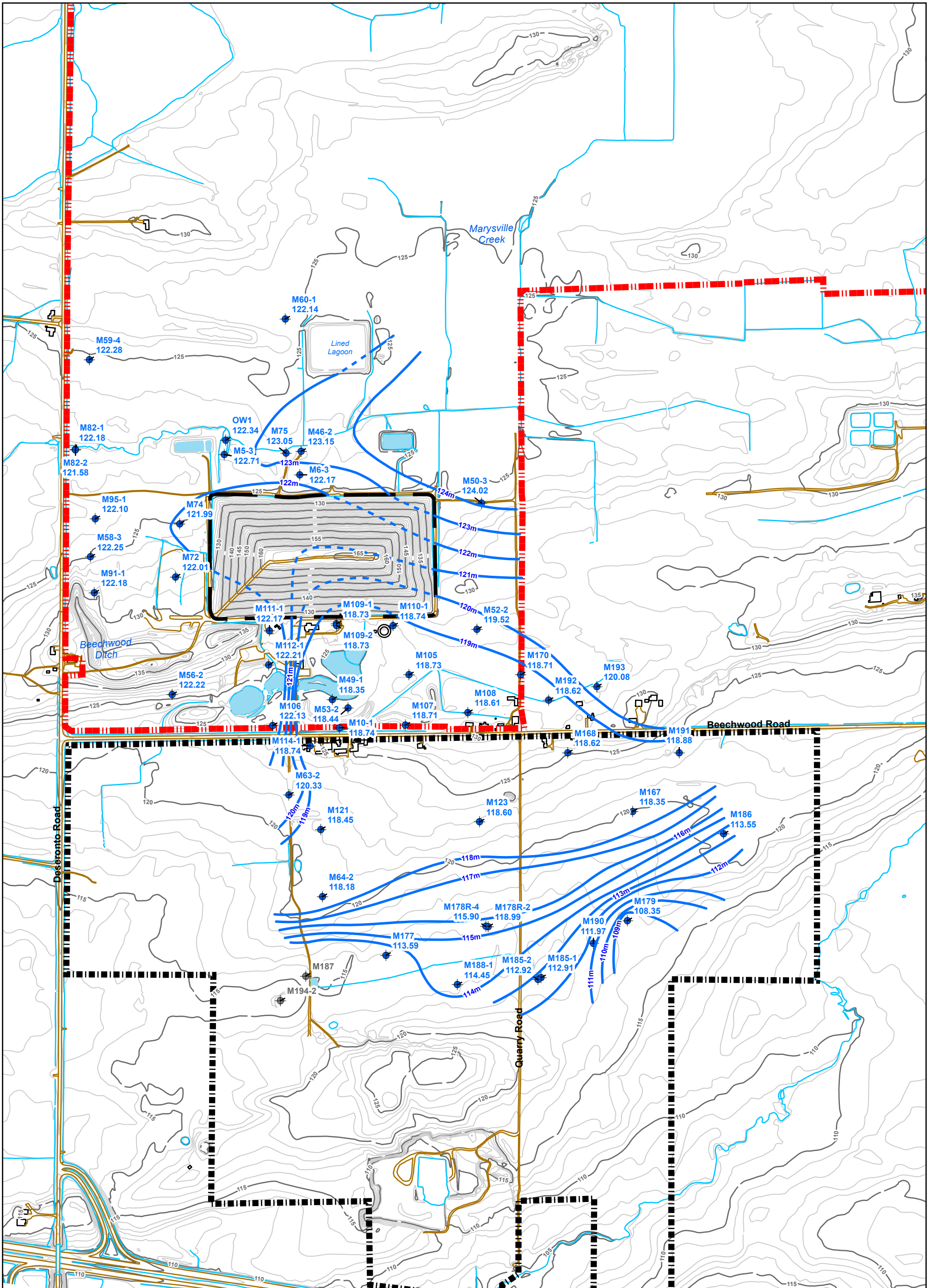
Notes:
M82-2 was flowing when water levels when sampled

REFERENCES
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 -UNITS: METERS
 -PROJECTION: UTM NAD83 ZONE 18
 -DATA SOURCE: WM CANADA, BLUMETRIC, MNRD, NRCAN

0 50 100 200 300 400
 Metres
 1:8,000

CLIENT			
PROJECT			
WASTE MANAGEMENT RICHMOND LANDFILL 2025 ANNUAL REPORT			
TITLE			
INTERMEDIATE BEDROCK GROUNDWATER FLOW ZONE POTENTIOMETRIC SURFACE - SPRING 2025			
PROJECT #	DATE		
250147-04	12 February, 2026		
DRAWN	CHECKED	FIG NO.	REV
PB	MC	03a	0

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LEGEND

- Potentiometric Surface (masl)
- - - Inferred Potentiometric Surface (masl)
- Topographic Contour Lines (5 m)
- Topographic Contour Lines (1 m)
- Surface Water
- - - Property Boundary
- - - Proposed CAZ Boundary
- M166 Intermediate Groundwater Zone Elevation Monitor
- M189 Monitor Not Used in Contouring

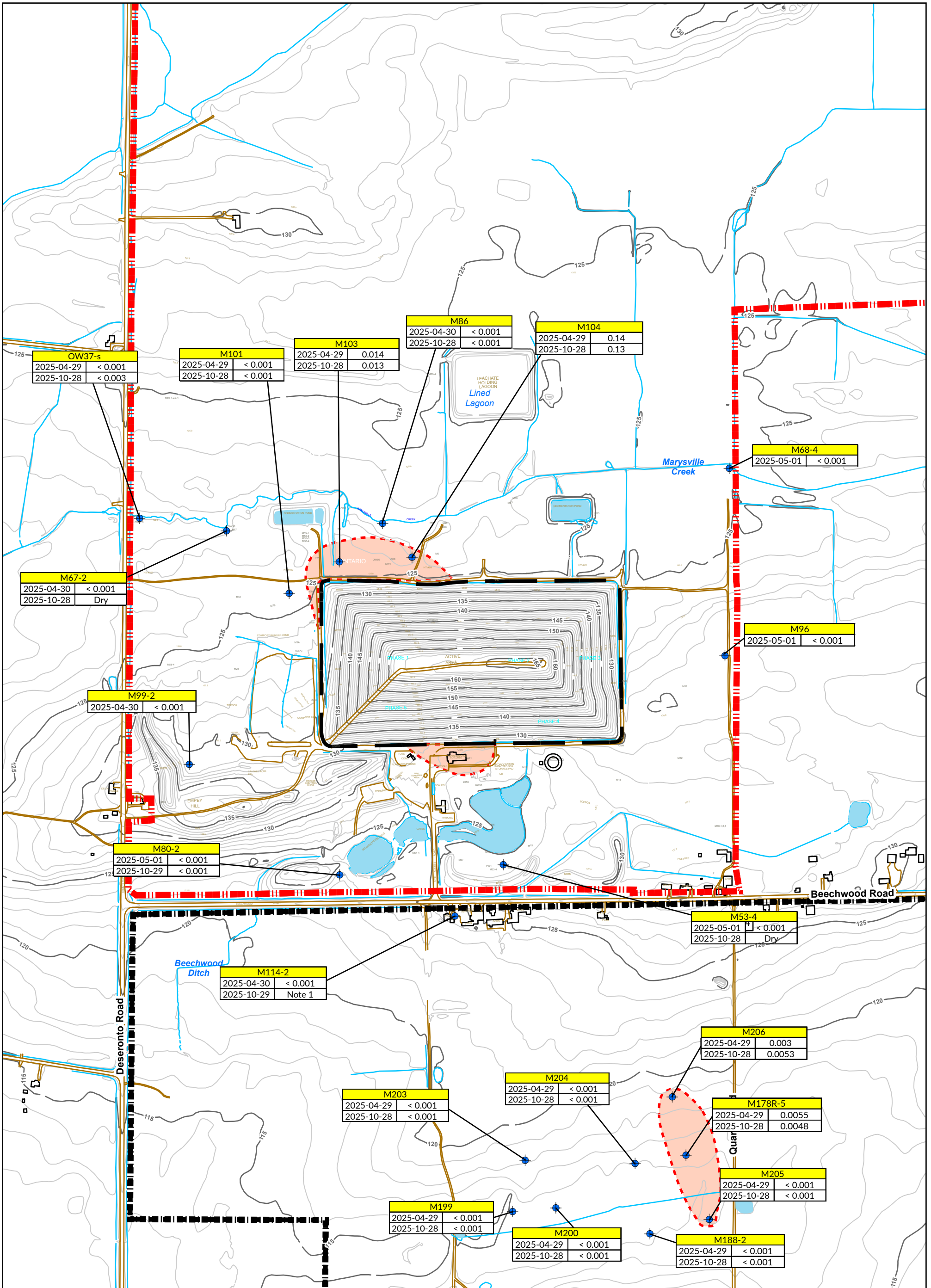
REFERENCES

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-UNITS: METERS
 -PROJECTION: UTM NAD83 ZONE 18
 -DATA SOURCE: WM CANADA, BLUMETRIC, MNRD, NRCAN

Metres
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CLIENT			
PROJECT			
WASTE MANAGEMENT RICHMOND LANDFILL 2025 ANNUAL REPORT			
TITLE			
INTERMEDIATE BEDROCK GROUNDWATER FLOW ZONE POTENTIOMETRIC SURFACE- FALL 2025			
PROJECT #	DATE		
250147-04	12 February, 2026		
DRAWN	CHECKED	FIG NO.	REV
PB	MC	03b	0



- LEGEND**
- Topographic Contour Lines
 - Surface Water
 - Property Boundary
 - Proposed CAZ Boundary
 - M99-2 Shallow Monitoring Well Sampled for Chemistry
 - M99-2 Shallow Monitoring Well Not Sampled (see text for detailed)
 - 1,4 Dioxane Impacted Area

NOTE:
M58-4 damaged - no sample collected.

Parameter	Units
Alkalinity	mg/L CaCO ₃
Ammonia	mg/L
1,4-dioxane	mg/L

REFERENCES

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-UNITS: METERS
-PROJECTION: UTM NAD83 ZONE 18
-DATA SOURCE: WM CANADA, BLUMETRIC, MNR, NRCAN

1:6,650

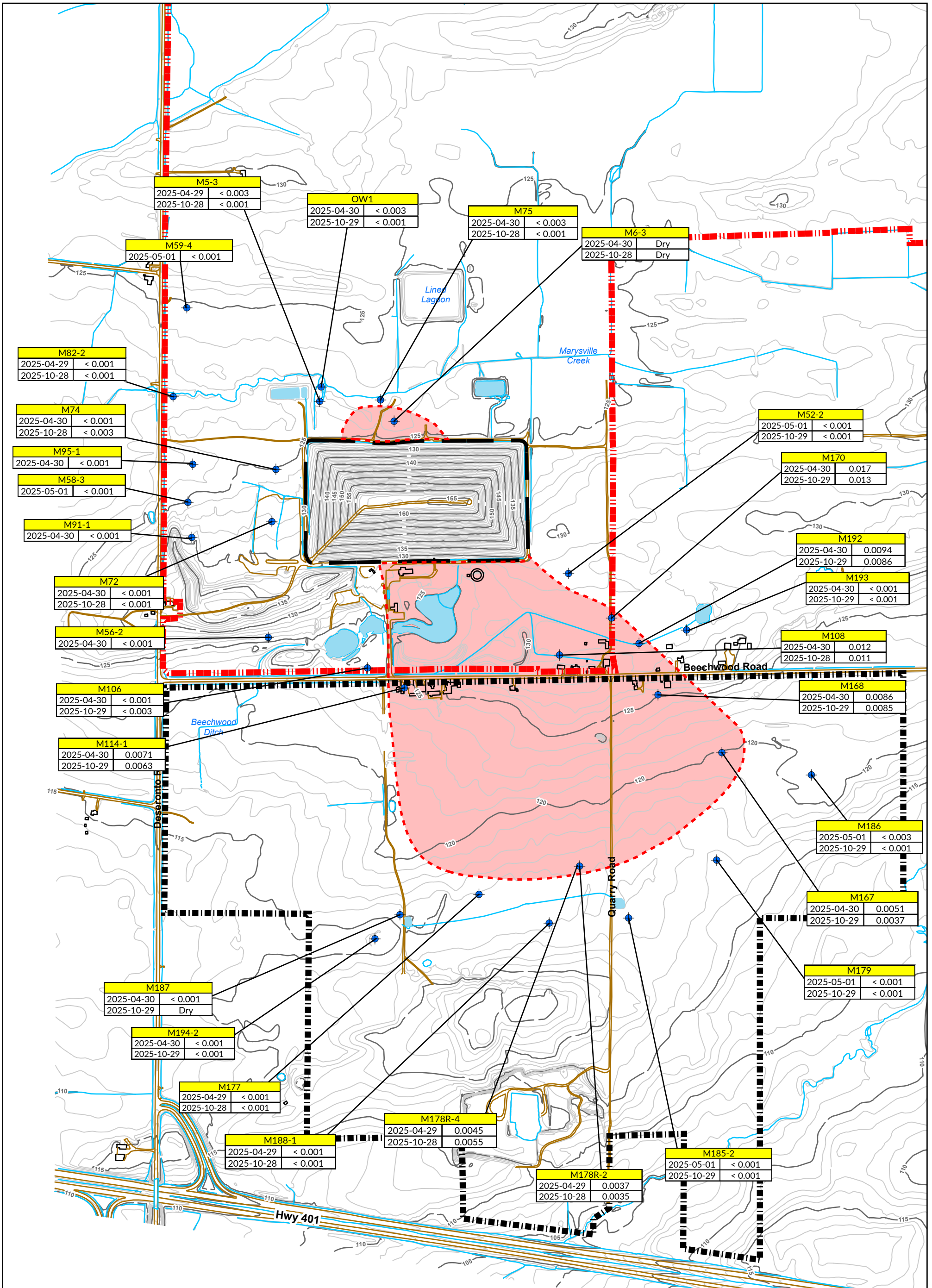
CLIENT

PROJECT
WASTE MANAGEMENT RICHMOND LANDFILL
2025 ANNUAL REPORT

TITLE
SHALLOW GROUNDWATER
FLOW ZONE 1,4-DIOXANE
CONCENTRATIONS (MG/L)

PROJECT #	DATE		
250147-04	09 February, 2026		
DRAWN	CHECKED	FIG NO.	REV
PB	MC	04	0

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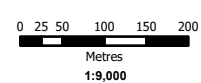
LEGEND

- Topographic Contour Lines
- Surface Water
- Property Boundary
- Proposed CAZ Boundary
- Intermediate Monitoring Well Sampled for Chemistry
- 1,4-Dioxane Impacted Area

Parameter	Units
Alkalinity	mg/L CaCO ₃
Ammonia	mg/L
1,4-dioxane	mg/L

Note:
Monitoring Well M6-3, was Purged Dry
- No Samples Collected

REFERENCES
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 -PROJECTION: UTM NAD83 ZONE 18
 -DATA SOURCE: WM CANADA, BLUMETRIC, MNR, NRCAN



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PROJECT WASTE MANAGEMENT RICHMOND LANDFILL 2025 ANNUAL REPORT			
TITLE INTERMEDIATE BEDROCK GROUNDWATER FLOW ZONE 1,4-DIOXANE CONCENTRATIONS (MG/L)			
PROJECT # 250147-04	DATE 09 February, 2026		
DRAWN PB	CHECKED MC	FIG NO. 05	REV 0

Appendix A

Monitoring Well Inventory

Appendix A: Monitoring Well Inventory

Monitoring Well	Coordinates (UTM NAD83 Zone 18)	
	Easting	Northing
2054	335293	4902797
M5-1	335003	4903162
M5-2	335003	4903163
M5-3	335003	4903163
M6-1	335200	4903172
M6-2	335201	4903174
M6-3	335201	4903174
M9-1	335410	4902787
M9-2	335410	4902789
M9-3	335410	4902789
M10-1	335494	4902596
M10-2	335494	4902596
M10-3	335494	4902594
M14	335625	4902637
M18	335648	4902866
M19	335632	4902944
M23	335602	4903049
M27	334997	4902908
M35	335458	4903336
M39	335299	4903310
M41	335368	4902818
M45-1	334790	4904582
M45-2	334790	4904582
M45-3	334790	4904582
M46-1	335185	4903230
M46-2	335185	4903232
M47-1	335552	4903214
M47-2	335552	4903215
M47-3	335552	4903215
M48-1	334838	4902564
M48-2	334839	4902565
M48-3	334839	4902565
M49-1	335454	4902658
M49-2	335455	4902660
M49-3	335455	4902660
M50-1	335660	4903247
M50-2	335660	4903248
M50-3	335660	4903248
M52-1	335748	4902939
M52-2	335748	4902940
M52-3	335748	4902940
M53-2	335499	4902650
M53-4	335496	4902649
M54-4	335348	4902618
M56-2	335065	4902545
M57	335418	4902623
M58-3	334761	4902812
M59-4	334604	4903287
M60-1	335044	4903538

Appendix A: Monitoring Well Inventory

Monitoring Well	Coordinates (UTM NAD83 Zone 18)	
	Easting	Northing
M60-4	335077	4903494
M61-1	334457	4903750
M61-2	334456	4903749
M61-3	334455	4903748
M61-4	334454	4903747
M62-1	335166	4904438
M62-2	335168	4904441
M62-3	335166	4904441
M62-4	335165	4904440
M63-1	335424	4902393
M63-2	335425	4902394
M64-1	335585	4902174
M64-2	335585	4902176
M65-1	335297	4903314
M65-2	335298	4903316
M66-1	335154	4903218
M66-2	335155	4903219
M67-1	334799	4903089
M67-2	334799	4903090
M68-4R	335671	4903496
M69-1	335062	4904299
M69-2	335063	4904298
M69-3	335063	4904296
M69-4	335064	4904295
M70-1	335890	4902862
M70-2	335891	4902860
M70-3	335891	4902858
M71	335390	4902773
M72	334981	4902831
M73	334931	4902891
M74	334950	4902962
M75	335151	4903215
M76	335675	4903217
M77	335685	4903188
M80-1	335207	4902532
M80-2	335206	4902534
M81	335275	4902654
M82-1	334640	4903060
M82-2	334641	4903058
M83	335169	4903156
M85	334999	4903208
M86	335077	4903195
M87-1	334959	4902493
M87-2	334965	4902495
M90-1	334520	4903845
M90-2	334522	4903843
M91-1	334798	4902729
M93	335006	4903908
M94-1	335497	4903519

Appendix A: Monitoring Well Inventory

Monitoring Well	Coordinates (UTM NAD83 Zone 18)	
	Easting	Northing
M94-2	335486	4903526
M95-1	334743	4902908
M95-2	334740	4902917
M96	335774	4903158
M97	335059	4902551
M98	334976	4902730
M99-2	334869	4902646
M101	334949	4903015
M102	334836	4902919
M103	335021	4903101
M104	335150	4903152
M105	335620	4902778
M106	335331	4902549
M107	335650	4902654
M108	335791	4902733
M109-1	335405	4902844
M109-2	335407	4902840
M110-1	335543	4902883
M110-2	335546	4902884
M111-1	335250	4902774
M111-2	335254	4902774
M112-1	335274	4902692
M112-2	335277	4902693
M114-1	335437	4902530
M114-2	335439	4902528
M115-1	335489	4902561
M115-2	335490	4902558
M116	335480	4902494
M117	335586	4902525
M121	335529	4902337
M122	335742	4902433
M123	335905	4902479
M125	335561	4902368
M166	336069	4902589
M167	336266	4902624
M168	336063	4902714
M170	335889	4902865
M171	335759	4903206
M172	335490	4902593
M173	335661	4901812
M174	335961	4901879
M176	336613	4902308
M177	335784	4902084
M178-1	336032	4902203
M178-2	336032	4902206
M178-3	336035	4902209
M178R-1	336008	4902236
M178R-2	336008	4902233
M178R-3	336005	4902233

Appendix A: Monitoring Well Inventory

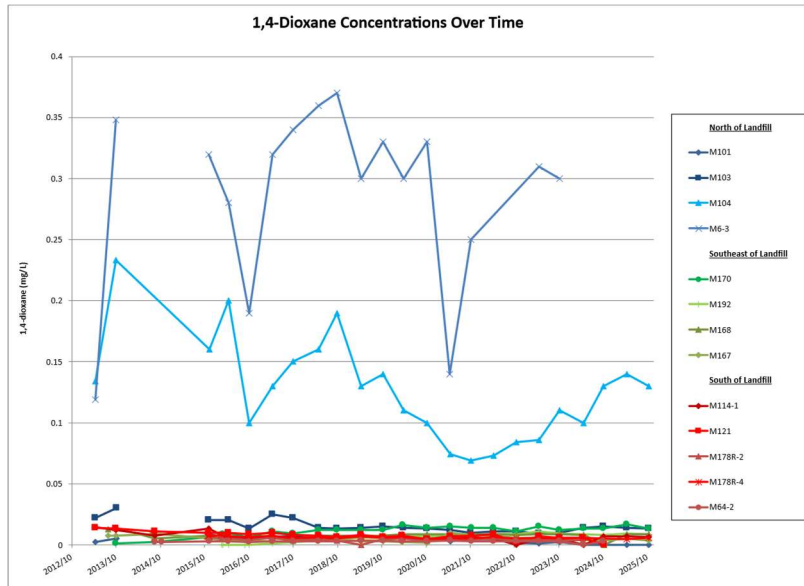
Monitoring Well	Coordinates (UTM NAD83 Zone 18)	
	Easting	Northing
M178R-4	336002	4902232
M178R-5	335997	4902232
M179	336338	4902357
M180	336801	4902677
M181-1	335912	4901492
M181-2	335912	4901492
M182	336402	4901643
M183	336953	4901770
M184	336176	4901998
M185-1	336170	4902151
M185-2	336170	4902151
M186	336509	4902627
M187	335607	4901972
M188-1	335979	4902069
M188-2	335978	4902068
M189	335479	4902099
M190	336274	4902275
M191	336332	4902802
M192	335976	4902826
M193	336082	4902896
M194-1	335564	4901886
M194-2	335568	4901889
M195	335592	4902084
M199	335717	4902027
M200	335793	4902059
M201	335829	4901991
M202	335932	4902013
M203	335709	4902128
M204	335910	4902186
M205	336077	4902128
M206	335938	4902329
M207	336131	4902261
M217	335158	4903386
M218	335260	4903407
OW1	334995	4903200
OW36	334799	4903100
OW37-s	334634	4903062
OW55-d	335376	4903186
OW55-i	335376	4903186
OW55-s	335376	4903184
OW57	335117	4902762
PW1	335465	4902639
PW3	335620	4902778

Appendix B

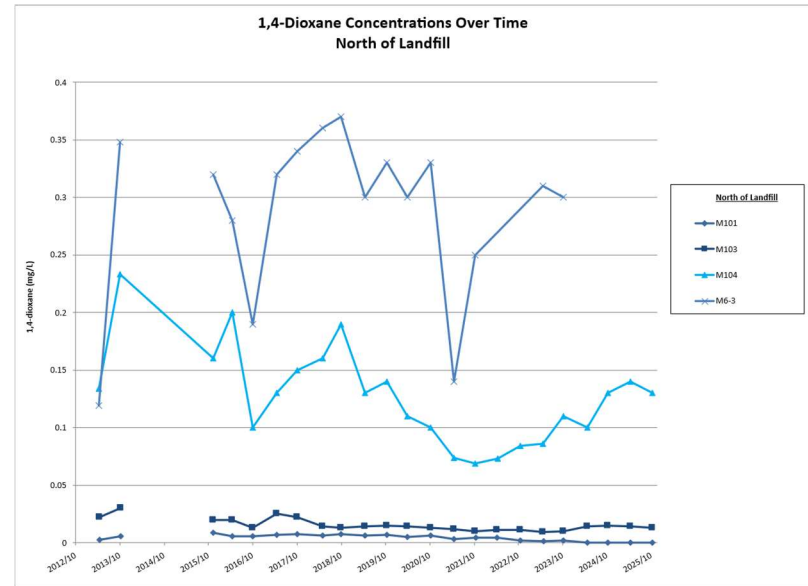
Time-Concentration Plots for 1,4-Dioxane at Selected Wells

Appendix B – Time-Concentration Plots for 1,4-Dioxane at Selected Wells

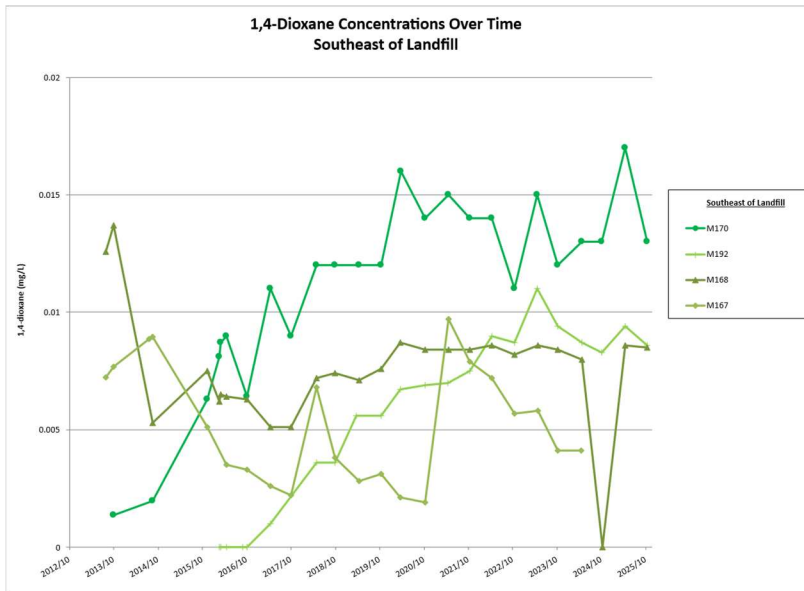
Plot A



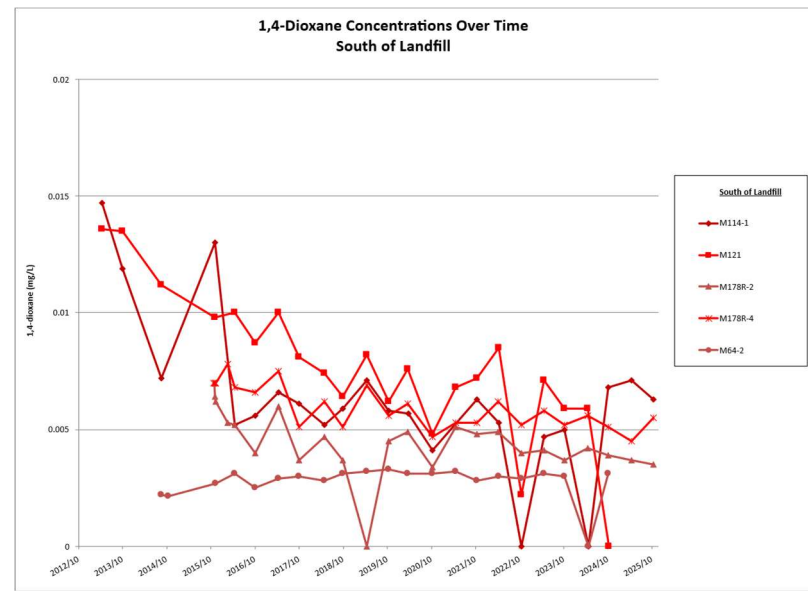
Plot B



Plot C



Plot D



Appendix C

Results from Analytical Quality Assurance / Quality Control (QA/QC) Program

Appendix C - Results from Analytical Quality Assurance / Quality Control (QA/QC) Program - Spring 2025

Summary of Results with Relative Percent Difference (RPD¹) greater than 20%

Location	Parameter	Unit	Regular Sample	Field Duplicate	RPD (%)	RDL ²	Comment
M106	Sulphate	mg/L	1.7	1.3	26.67	1.0	Within 5x RDL

¹ RPD (%) = 100 * ABS (Regular Sample - Duplicate Sample) / ([Regular Sample + Duplicate Sample] / 2)

² RDL = Laboratory Reportable Detection Limit

Detailed Results from Field Duplicate vs. Regular Samples

Reading Name	Units	M106 Regular Sample	M106 Field Duplicate	RPD (%)
General Inorganic Parameters				
Alkalinity	mg/L	390	410	5.00
Ammonia	mg/L	2.66	2.66	0.00
Boron	mg/L	1.8	1.8	0.00
Calcium	mg/L	110	110	0.00
Chloride	mg/L	1500	1500	0.00
Conductivity	µS/cm	5400	5400	0.00
Dissolved Organic Carbon	mg/L	1.3	1.3	0.00
Iron	mg/L	< 0.1	< 0.1	0.00
Magnesium	mg/L	68	69	1.46
Manganese	mg/L	< 0.002	< 0.002	0.00
Nitrate	mg/L	< 0.1	< 0.1	0.00
Nitrite	mg/L	< 0.01	< 0.01	0.00
Potassium	mg/L	21	21	0.00
Sodium	mg/L	870	870	0.00
Sulphate	mg/L	1.7	1.3	26.67
Total Dissolved Solids	mg/L	2940	2900	1.37
Volatile Organic Compounds (VOCs)				
1,4-Dioxane	mg/L	< 0.001	< 0.001	0.00
1,1,1,2-Tetrachloroethane	mg/L	< 0.01	< 0.01	0.00
1,1,1-Trichloroethane	mg/L	< 0.005	< 0.005	0.00
1,1,2,2-Tetrachloroethane	mg/L	< 0.01	< 0.01	0.00
1,1,2-Trichloroethane	mg/L	< 0.01	< 0.01	0.00
1,1-Dichloroethane	mg/L	< 0.005	< 0.005	0.00
1,1-Dichloroethylene	mg/L	< 0.005	< 0.005	0.00
1,2-Dichlorobenzene (o)	mg/L	< 0.01	< 0.01	0.00
1,2-Dichloroethane	mg/L	< 0.01	< 0.01	0.00
1,3,5-Trimethylbenzene	mg/L	< 0.01	< 0.01	0.00
1,3-Dichlorobenzene (m)	mg/L	< 0.01	< 0.01	0.00
1,4-Dichlorobenzene (p)	mg/L	< 0.01	< 0.01	0.00
Benzene	mg/L	< 0.005	< 0.005	0.00
Chlorobenzene	mg/L	< 0.005	< 0.005	0.00
Chloroethane	mg/L	< 0.01	< 0.01	0.00
Chloromethane	mg/L	< 0.025	< 0.025	0.00
Cis-1,2-Dichloroethylene	mg/L	< 0.005	< 0.005	0.00
Dichloromethane	mg/L	< 0.025	< 0.025	0.00
Ethylbenzene	mg/L	< 0.005	< 0.005	0.00
m+p-Xylene	mg/L	< 0.005	< 0.005	0.00
o-Xylene	mg/L	< 0.005	< 0.005	0.00
Styrene	mg/L	< 0.01	< 0.01	0.00
Tetrachloroethylene	mg/L	< 0.005	< 0.005	0.00
Toluene	mg/L	< 0.01	< 0.01	0.00
Total Xylenes	mg/L	< 0.005	< 0.005	0.00
Trans-1,2-dichloroethylene	mg/L	< 0.005	< 0.005	0.00
Trichloroethylene	mg/L	< 0.005	< 0.005	0.00
Vinyl Chloride	mg/L	< 0.01	< 0.01	0.00

Detailed Results from Field Duplicate vs. Regular Samples

Reading Name	Units	M114-1 Regular Sample	M114-1 Field Duplicate	RPD (%)
General/Inorganics				
Alkalinity	mg/L	370	370	0.00
Ammonia	mg/L	0.45	0.45	0.00
Boron	mg/L	0.17	0.17	0.00
Calcium	mg/L	98	99	1.02
Chloride	mg/L	60	61	1.65
Conductivity	µS/cm	910	910	0.00
Dissolved Organic Carbon	mg/L	4.4	4.6	4.44
Iron	mg/L	7.3	7.3	0.00
Magnesium	mg/L	22	23	4.44
Manganese	mg/L	0.32	0.32	0.00
Nitrate	mg/L	< 0.1	< 0.1	0.00
Nitrite	mg/L	< 0.01	< 0.01	0.00
Potassium	mg/L	4.9	4.9	0.00
Sodium	mg/L	60	59	1.68
Sulphate	mg/L	9.1	9	1.10
Total Dissolved Solids	mg/L	480	480	0.00
Volatile Organic Compounds (VOCs)				
1,4-Dioxane	mg/L	0.0071	0.0063	11.94
1,1,1,2-Tetrachloroethane	mg/L	< 0.0002	< 0.0002	0.00
1,1,1-Trichloroethane	mg/L	< 0.0001	< 0.0001	0.00
1,1,2,2-Tetrachloroethane	mg/L	< 0.0002	< 0.0002	0.00
1,1,2-Trichloroethane	mg/L	< 0.0002	< 0.0002	0.00
1,1-Dichloroethane	mg/L	0.00026	0.00026	0.00
1,1-Dichloroethylene	mg/L	0.00011	0.00013	16.67
1,2-Dichlorobenzene (o)	mg/L	< 0.0002	< 0.0002	0.00
1,2-Dichloroethane	mg/L	< 0.0002	< 0.0002	0.00
1,3,5-Trimethylbenzene	mg/L	< 0.0002	< 0.0002	0.00
1,3-Dichlorobenzene (m)	mg/L	< 0.0002	< 0.0002	0.00
1,4-Dichlorobenzene (p)	mg/L	< 0.0002	< 0.0002	0.00
Benzene	mg/L	< 0.0001	< 0.0001	0.00
Chlorobenzene	mg/L	< 0.0001	< 0.0001	0.00
Chloroethane	mg/L	0.0034	0.0036	5.71
Chloromethane	mg/L	< 0.0005	< 0.0005	0.00
Cis-1,2-Dichloroethylene	mg/L	< 0.0001	< 0.0001	0.00
Dichloromethane	mg/L	< 0.0005	< 0.0005	0.00
Ethylbenzene	mg/L	< 0.0001	< 0.0001	0.00
m+p-Xylene	mg/L	< 0.0001	< 0.0001	0.00
o-Xylene	mg/L	< 0.0001	< 0.0001	0.00
Styrene	mg/L	< 0.0002	< 0.0002	0.00
Tetrachloroethylene	mg/L	< 0.0001	< 0.0001	0.00
Toluene	mg/L	< 0.0002	< 0.0002	0.00
Total Xylenes	mg/L	< 0.0001	< 0.0001	0.00
Trans-1,2-dichloroethylene	mg/L	< 0.0001	< 0.0001	0.00
Trichloroethylene	mg/L	< 0.0001	< 0.0001	0.00
Vinyl Chloride	mg/L	< 0.0002	< 0.0002	0.00

Detailed Results from Field Duplicate vs. Regular Samples

Reading Name	Units	M167 Regular Sample	M167 Field Duplicate	RPD (%)
General/Inorganics				
Alkalinity	mg/L	470	460	2.15
Ammonia	mg/L	1.78	1.77	0.56
Boron	mg/L	0.92	0.89	3.31
Calcium	mg/L	99	97	2.04
Chloride	mg/L	310	310	0.00
Conductivity	µS/cm	1900	1900	0.00
Dissolved Organic Carbon	mg/L	3.1	3.1	0.00
Iron	mg/L	< 0.1	< 0.1	0.00
Magnesium	mg/L	57	57	0.00
Manganese	mg/L	0.003	0.003	0.00
Nitrate	mg/L	< 0.1	< 0.1	0.00
Nitrite	mg/L	< 0.01	< 0.01	0.00
Potassium	mg/L	17	17	0.00
Sodium	mg/L	190	200	5.13
Sulphate	mg/L	3.3	4	19.18
Total Dissolved Solids	mg/L	975	1020	4.51
Volatile Organic Compounds (VOCs)				
1,4-Dioxane	mg/L	0.0051	0.0049	4.00
1,1,1,2-Tetrachloroethane	mg/L	< 0.002	< 0.002	0.00
1,1,1-Trichloroethane	mg/L	< 0.001	< 0.001	0.00
1,1,2,2-Tetrachloroethane	mg/L	< 0.002	< 0.002	0.00
1,1,2-Trichloroethane	mg/L	< 0.002	< 0.002	0.00
1,1-Dichloroethane	mg/L	< 0.001	< 0.001	0.00
1,1-Dichloroethylene	mg/L	< 0.001	< 0.001	0.00
1,2-Dichlorobenzene (o)	mg/L	< 0.002	< 0.002	0.00
1,2-Dichloroethane	mg/L	< 0.002	< 0.002	0.00
1,3,5-Trimethylbenzene	mg/L	< 0.002	< 0.002	0.00
1,3-Dichlorobenzene (m)	mg/L	< 0.002	< 0.002	0.00
1,4-Dichlorobenzene (p)	mg/L	< 0.002	< 0.002	0.00
Benzene	mg/L	< 0.001	< 0.001	0.00
Chlorobenzene	mg/L	< 0.001	< 0.001	0.00
Chloroethane	mg/L	< 0.002	< 0.002	0.00
Chloromethane	mg/L	< 0.005	< 0.005	0.00
Cis-1,2-Dichloroethylene	mg/L	< 0.001	< 0.001	0.00
Dichloromethane	mg/L	< 0.005	< 0.005	0.00
Ethylbenzene	mg/L	< 0.001	< 0.001	0.00
m+p-Xylene	mg/L	< 0.001	< 0.001	0.00
o-Xylene	mg/L	< 0.001	< 0.001	0.00
Styrene	mg/L	< 0.002	< 0.002	0.00
Tetrachloroethylene	mg/L	< 0.001	< 0.001	0.00
Toluene	mg/L	< 0.002	< 0.002	0.00
Total Xylenes	mg/L	< 0.001	< 0.001	0.00
Trans-1,2-dichloroethylene	mg/L	< 0.001	< 0.001	0.00
Trichloroethylene	mg/L	< 0.001	< 0.001	0.00
Vinyl Chloride	mg/L	< 0.002	< 0.002	0.00

Detailed Results from Field Duplicate vs. Regular Samples

Reading Name	Units	M82-2 Regular Sample	M82-2 Field Duplicate	RPD (%)
General/Inorganics				
Alkalinity	mg/L	330	330	0.00
Ammonia	mg/L	0.22	0.23	4.44
Boron	mg/L	0.13	0.12	8.00
Calcium	mg/L	99	99	0.00
Chloride	mg/L	18	18	0.00
Conductivity	µS/cm	760	750	1.32
Dissolved Organic Carbon	mg/L	2.2	2.2	0.00
Iron	mg/L	< 0.1	< 0.1	0.00
Magnesium	mg/L	27	27	0.00
Manganese	mg/L	0.017	0.017	0.00
Nitrate	mg/L	< 0.1	< 0.1	0.00
Nitrite	mg/L	< 0.01	< 0.01	0.00
Potassium	mg/L	3.6	3.5	2.82
Sodium	mg/L	15	15	0.00
Sulphate	mg/L	60	59	1.68
Total Dissolved Solids	mg/L	445	450	1.12
Volatile Organic Compounds (VOCs)				
1,4-Dioxane	mg/L	< 0.001	< 0.001	0.00
1,1,1,2-Tetrachloroethane	mg/L	< 0.001	< 0.001	0.00
1,1,1-Trichloroethane	mg/L	< 0.0005	< 0.0005	0.00
1,1,2,2-Tetrachloroethane	mg/L	< 0.001	< 0.001	0.00
1,1,2-Trichloroethane	mg/L	< 0.001	< 0.001	0.00
1,1-Dichloroethane	mg/L	< 0.0005	< 0.0005	0.00
1,1-Dichloroethylene	mg/L	< 0.0005	< 0.0005	0.00
1,2-Dichlorobenzene (o)	mg/L	< 0.001	< 0.001	0.00
1,2-Dichloroethane	mg/L	< 0.001	< 0.001	0.00
1,3,5-Trimethylbenzene	mg/L	< 0.001	< 0.001	0.00
1,3-Dichlorobenzene (m)	mg/L	< 0.001	< 0.001	0.00
1,4-Dichlorobenzene (p)	mg/L	< 0.001	< 0.001	0.00
Benzene	mg/L	< 0.0005	< 0.0005	0.00
Chlorobenzene	mg/L	< 0.0005	< 0.0005	0.00
Chloroethane	mg/L	< 0.001	< 0.001	0.00
Chloromethane	mg/L	< 0.0025	< 0.0025	0.00
Cis-1,2-Dichloroethylene	mg/L	< 0.0005	< 0.0005	0.00
Dichloromethane	mg/L	< 0.0025	< 0.0025	0.00
Ethylbenzene	mg/L	< 0.0005	< 0.0005	0.00
m+p-Xylene	mg/L	< 0.0005	< 0.0005	0.00
o-Xylene	mg/L	< 0.0005	< 0.0005	0.00
Styrene	mg/L	< 0.001	< 0.001	0.00
Tetrachloroethylene	mg/L	< 0.0005	< 0.0005	0.00
Toluene	mg/L	< 0.001	< 0.001	0.00
Total Xylenes	mg/L	< 0.0005	< 0.0005	0.00
Trans-1,2-dichloroethylene	mg/L	< 0.0005	< 0.0005	0.00
Trichloroethylene	mg/L	< 0.0005	< 0.0005	0.00
Vinyl Chloride	mg/L	< 0.001	< 0.001	0.00

Detailed Results from Field Duplicate vs. Regular Samples

Parameter	Units	S7 Regular Sample	S7 Field Duplicate	RPD (%)
General/Inorganics				
Alkalinity	mg/L	200	200	0.00
Ammonia	mg/L	0.86	< 0.15	0.00
Ammonia (unionized)	mg/L	0.02	< 0.0034	0.00
Biochemical Oxygen Demand	mg/L	< 2	< 2	0.00
Chemical Oxygen Demand	mg/L	20	21	4.88
Chloride	mg/L	20	20	0.00
Conductivity	µS/cm	450	450	0.00
Hardness	mg/L	220	230	4.44
Nitrate	mg/L	< 0.1	< 0.1	0.00
Nitrite	mg/L	< 0.01	< 0.01	0.00
pH (Field)	unitless	7.96	7.96	0.00
Phenols	mg/L	< 0.001	< 0.001	0.00
Phosphorus (total)	mg/L	< 0.03	< 0.03	0.00
Sulphate	mg/L	4.5	4.9	8.51
Total Dissolved Solids	mg/L	250	235	6.19
Total Suspended Solids	mg/L	< 10	< 10	0.00
Metals				
Boron	mg/L	< 0.02	< 0.02	0.00
Cadmium	mg/L	< 0.0001	< 0.0001	0.00
Calcium	mg/L	70	70	0.00
Chromium (III)	mg/L	< 0.005	< 0.005	0.00
Chromium (Total)	mg/L	< 0.005	< 0.005	0.00
Chromium (VI)	mg/L	< 0.0005	< 0.0005	0.00
Cobalt	mg/L	< 0.0005	< 0.0005	0.00
Copper	mg/L	< 0.002	< 0.002	0.00
Iron	mg/L	< 0.1	< 0.1	0.00
Lead	mg/L	< 0.0005	< 0.0005	0.00
Magnesium	mg/L	9.6	9.3	3.17
Nickel	mg/L	< 0.001	< 0.001	0.00
Potassium	mg/L	2.8	2.7	3.64
Sodium	mg/L	14	13	7.41
Zinc	mg/L	< 0.01	< 0.01	0.00
Naphthalene	mg/L	< 0.00005	< 0.00005	0.00
1,4-Dioxane	mg/L	< 0.001	< 0.001	0.00

Appendix C - Results from Analytical Quality Assurance / Quality Control (QA/QC) Program - Fall 2025

Summary of Results with Relative Percent Difference (RPD¹) greater than 20%

Location	Parameter	Unit	Regular Sample	Field Duplicate	RPD (%)	RDL ²	Comment
M192	Sulphate	mg/L	3.5	4.5	25.00	1.0	Within 5x RDL
M82-2	Dissolved Organic Carbon	mg/L	1.9	2.4	23.26	0.4	

¹ RPD (%) = 100 * ABS (Regular Sample - Duplicate Sample) / ([Regular Sample + Duplicate Sample] / 2)

² RDL = Laboratory Reportable Detection Limit

Detailed Results from Field Duplicate vs. Regular Samples

Reading Name	Units	M170 Regular Sample	M170 Field Duplicate	RPD (%)
General Inorganic Parameters				
Alkalinity	mg/L	710	700	1.42
Ammonia	mg/L	1.58	1.61	1.88
Boron	mg/L	1.4	1.4	0.00
Calcium	mg/L	50	50	0.00
Chloride	mg/L	250	240	4.08
Conductivity	µS/cm	2100	2100	0.00
Dissolved Organic Carbon	mg/L	4.1	4.1	0.00
Iron	mg/L	< 0.1	< 0.1	0.00
Magnesium	mg/L	34	35	2.90
Manganese	mg/L	< 0.002	< 0.002	0.00
Nitrate	mg/L	< 0.1	< 0.1	0.00
Nitrite	mg/L	< 0.01	< 0.01	0.00
Potassium	mg/L	15	15	0.00
Sodium	mg/L	380	390	2.60
Sulphate	mg/L	10	9	10.53
Total Dissolved Solids	mg/L	1190	1230	3.31
Volatile Organic Compounds (VOCs)				
1,1,1,2-Tetrachloroethane	mg/L	< 0.01	< 0.01	0.00
1,1,1-Trichloroethane	mg/L	< 0.005	< 0.005	0.00
1,1,2,2-Tetrachloroethane	mg/L	< 0.01	< 0.01	0.00
1,1,2-Trichloroethane	mg/L	< 0.01	< 0.01	0.00
1,1-Dichloroethane	mg/L	< 0.005	< 0.005	0.00
1,1-Dichloroethylene	mg/L	< 0.005	< 0.005	0.00
1,2-Dichlorobenzene (o)	mg/L	< 0.01	< 0.01	0.00
1,2-Dichloroethane	mg/L	< 0.01	< 0.01	0.00
1,3,5-Trimethylbenzene	mg/L	< 0.01	< 0.01	0.00
1,3-Dichlorobenzene (m)	mg/L	< 0.01	< 0.01	0.00
1,4-Dichlorobenzene (p)	mg/L	< 0.01	< 0.01	0.00
1,4-Dioxane	mg/L	0.013	0.015	14.29
Benzene	mg/L	< 0.005	< 0.005	0.00
Chlorobenzene	mg/L	< 0.005	< 0.005	0.00
Chloroethane	mg/L	< 0.01	< 0.01	0.00
Chloromethane	mg/L	< 0.025	< 0.025	0.00
Cis-1,2-Dichloroethylene	mg/L	< 0.005	< 0.005	0.00
Dichloromethane	mg/L	< 0.025	< 0.025	0.00
Ethylbenzene	mg/L	< 0.005	< 0.005	0.00
m+p-Xylene	mg/L	< 0.005	< 0.005	0.00
o-Xylene	mg/L	< 0.005	< 0.005	0.00
Styrene	mg/L	< 0.01	< 0.01	0.00
Tetrachloroethylene	mg/L	< 0.005	< 0.005	0.00
Toluene	mg/L	< 0.01	< 0.01	0.00
Total Xylenes	mg/L	< 0.005	< 0.005	0.00
Trans-1,2-dichloroethylene	mg/L	< 0.005	< 0.005	0.00
Trichloroethylene	mg/L	< 0.005	< 0.005	0.00
Vinyl Chloride	mg/L	< 0.01	< 0.01	0.00

Detailed Results from Field Duplicate vs. Regular Samples

Reading Name	Units	M192 Regular Sample	M192 Field Duplicate	RPD (%)
General/Inorganics				
Alkalinity	mg/L	660	660	0.00
Ammonia	mg/L	1.89	1.89	0.00
Boron	mg/L	2.1	2.1	0.00
Calcium	mg/L	57	56	1.77
Chloride	mg/L	270	260	3.77
Conductivity	µS/cm	2100	2100	0.00
Dissolved Organic Carbon	mg/L	3.6	3.6	0.00
Iron	mg/L	0.15	0.15	0.00
Magnesium	mg/L	39	38	2.60
Manganese	mg/L	0.012	0.012	0.00
Nitrate	mg/L	< 0.1	< 0.1	0.00
Nitrite	mg/L	< 0.01	< 0.01	0.00
Potassium	mg/L	17	17	0.00
Sodium	mg/L	360	350	2.82
Sulphate	mg/L	3.5	4.5	25.00
Total Dissolved Solids	mg/L	1180	1300	9.68
Volatile Organic Compounds (VOCs)				
1,1,1,2-Tetrachloroethane	mg/L	< 0.01	< 0.01	0.00
1,1,1-Trichloroethane	mg/L	< 0.005	< 0.005	0.00
1,1,2,2-Tetrachloroethane	mg/L	< 0.01	< 0.01	0.00
1,1,2-Trichloroethane	mg/L	< 0.01	< 0.01	0.00
1,1-Dichloroethane	mg/L	< 0.005	< 0.005	0.00
1,1-Dichloroethylene	mg/L	< 0.005	< 0.005	0.00
1,2-Dichlorobenzene (o)	mg/L	< 0.01	< 0.01	0.00
1,2-Dichloroethane	mg/L	< 0.01	< 0.01	0.00
1,3,5-Trimethylbenzene	mg/L	< 0.01	< 0.01	0.00
1,3-Dichlorobenzene (m)	mg/L	< 0.01	< 0.01	0.00
1,4-Dichlorobenzene (p)	mg/L	< 0.01	< 0.01	0.00
1,4-Dioxane	mg/L	0.0086	0.0081	5.99
Benzene	mg/L	< 0.005	< 0.005	0.00
Chlorobenzene	mg/L	< 0.005	< 0.005	0.00
Chloroethane	mg/L	< 0.01	< 0.01	0.00
Chloromethane	mg/L	< 0.025	< 0.025	0.00
Cis-1,2-Dichloroethylene	mg/L	< 0.005	< 0.005	0.00
Dichloromethane	mg/L	< 0.025	< 0.025	0.00
Ethylbenzene	mg/L	< 0.005	< 0.005	0.00
m+p-Xylene	mg/L	< 0.005	< 0.005	0.00
o-Xylene	mg/L	< 0.005	< 0.005	0.00
Styrene	mg/L	< 0.01	< 0.01	0.00
Tetrachloroethylene	mg/L	< 0.005	< 0.005	0.00
Toluene	mg/L	< 0.01	< 0.01	0.00
Total Xylenes	mg/L	< 0.005	< 0.005	0.00
Trans-1,2-dichloroethylene	mg/L	< 0.005	< 0.005	0.00
Trichloroethylene	mg/L	< 0.005	< 0.005	0.00
Vinyl Chloride	mg/L	< 0.01	< 0.01	0.00

Detailed Results from Field Duplicate vs. Regular Samples

Reading Name	Units	M82-2 Regular Sample	M82-2 Field Duplicate	RPD (%)
General/Inorganics				
Alkalinity	mg/L	320	310	3.17
Ammonia	mg/L	0.2	0.24	18.18
Boron	mg/L	0.1	0.097	3.05
Calcium	mg/L	100	100	0.00
Chloride	mg/L	13	13	0.00
Conductivity	µS/cm	710	710	0.00
Dissolved Organic Carbon	mg/L	1.9	2.4	23.26
Iron	mg/L	< 0.1	< 0.1	0.00
Magnesium	mg/L	28	27	3.64
Manganese	mg/L	0.019	0.019	0.00
Nitrate	mg/L	< 0.1	< 0.1	0.00
Nitrite	mg/L	< 0.01	< 0.01	0.00
Potassium	mg/L	3.7	3.5	5.56
Sodium	mg/L	13	13	0.00
Sulphate	mg/L	47	46	2.15
Total Dissolved Solids	mg/L	375	400	6.45
Volatile Organic Compounds (VOCs)				
1,1,1,2-Tetrachloroethane	mg/L	< 0.002	< 0.0002	0.00
1,1,1-Trichloroethane	mg/L	< 0.001	< 0.0001	0.00
1,1,2,2-Tetrachloroethane	mg/L	< 0.002	< 0.0002	0.00
1,1,2-Trichloroethane	mg/L	< 0.002	< 0.0002	0.00
1,1-Dichloroethane	mg/L	< 0.001	< 0.0001	0.00
1,1-Dichloroethylene	mg/L	< 0.001	< 0.0001	0.00
1,2-Dichlorobenzene (o)	mg/L	< 0.002	< 0.0002	0.00
1,2-Dichloroethane	mg/L	< 0.002	< 0.0002	0.00
1,3,5-Trimethylbenzene	mg/L	< 0.002	< 0.0002	0.00
1,3-Dichlorobenzene (m)	mg/L	< 0.002	< 0.0002	0.00
1,4-Dichlorobenzene (p)	mg/L	< 0.002	< 0.0002	0.00
1,4-Dioxane	mg/L	< 0.001	< 0.001	0.00
Benzene	mg/L	< 0.001	< 0.0001	0.00
Chlorobenzene	mg/L	< 0.001	< 0.0001	0.00
Chloroethane	mg/L	< 0.002	< 0.0002	0.00
Chloromethane	mg/L	< 0.005	< 0.0005	0.00
Cis-1,2-Dichloroethylene	mg/L	< 0.001	< 0.0001	0.00
Dichloromethane	mg/L	< 0.005	< 0.0005	0.00
Ethylbenzene	mg/L	< 0.001	< 0.0001	0.00
m+p-Xylene	mg/L	< 0.001	< 0.0001	0.00
o-Xylene	mg/L	< 0.001	< 0.0001	0.00
Styrene	mg/L	< 0.002	< 0.0002	0.00
Tetrachloroethylene	mg/L	< 0.001	< 0.0001	0.00
Toluene	mg/L	< 0.002	< 0.0002	0.00
Total Xylenes	mg/L	< 0.001	< 0.0001	0.00
Trans-1,2-dichloroethylene	mg/L	< 0.001	< 0.0001	0.00
Trichloroethylene	mg/L	< 0.001	< 0.0001	0.00
Vinyl Chloride	mg/L	< 0.002	< 0.0002	0.00

Appendix C: Results from Analytical Quality Assurance / Quality Control (QA/QC) Program
 Detailed Results from Field Blank Samples - Spring & Fall 2025

Reading Name	Units	2025-04-30 Groundwater Field Blank #1	2025-04-30 Groundwater Field Blank #2	2025-05-01 Groundwater Field Blank	2025-10-28 Groundwater Field Blank	2025-10-29 Groundwater Field Blank
General/Inorganic Parameters						
Alkalinity	mg/L	3	2.6	3.8	< 1	< 1
Ammonia	mg/L	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15
Boron	mg/L	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Calcium	mg/L	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chloride	mg/L	< 1	< 1	< 1	< 1	< 1
Conductivity	µS/cm	< 2	< 2	< 2	< 2	< 2
Dissolved Organic Carbon	mg/L	0.4	< 0.4	< 0.4	1	< 0.4
Iron	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Magnesium	mg/L	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Manganese	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Nitrate	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Nitrite	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Potassium	mg/L	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Sodium	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Sulphate	mg/L	< 1	< 1	< 1	< 1	< 1
Total Dissolved Solids	mg/L	< 10	10	< 10	10	< 10
Volatile Organic Compounds (VOCs)						
1,4-Dioxane	mg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
1,1,1,2-Tetrachloroethane	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
1,1,1-Trichloroethane	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
1,1,2,2-Tetrachloroethane	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
1,1,2-Trichloroethane	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
1,1-Dichloroethane	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
1,1-Dichloroethylene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
1,2-Dichlorobenzene (o)	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
1,2-Dichloroethane	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
1,3,5-Trimethylbenzene	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
1,3-Dichlorobenzene (m)	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
1,4-Dichlorobenzene (p)	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Benzene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chlorobenzene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chloroethane	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chloromethane	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Cis-1,2-Dichloroethylene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Dichloromethane	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Ethylbenzene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
m+p-Xylene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
o-Xylene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Styrene	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Tetrachloroethylene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Toluene	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Total Xylenes	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Trans-1,2-dichloroethylene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Trichloroethylene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Vinyl Chloride	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002

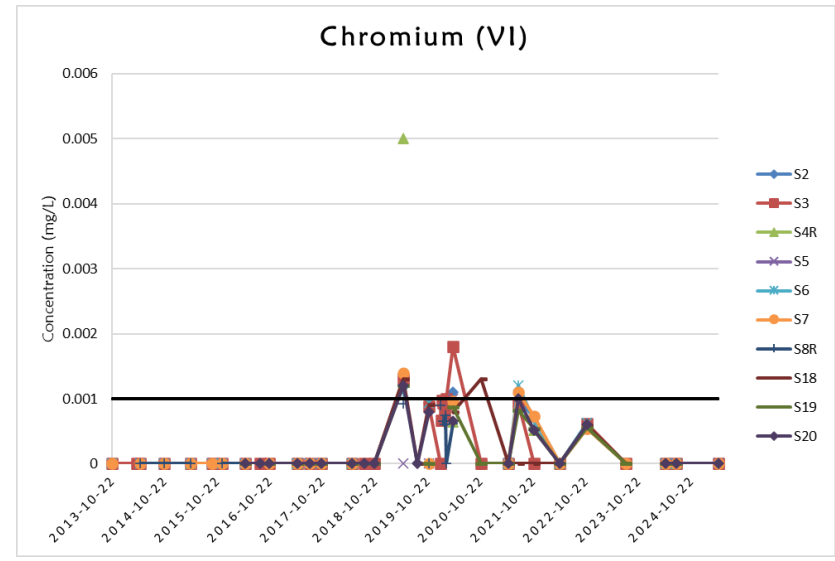
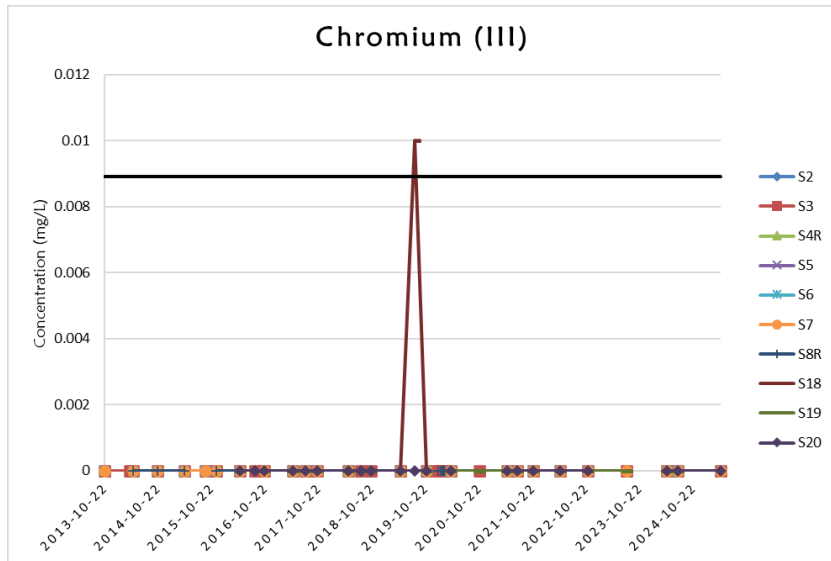
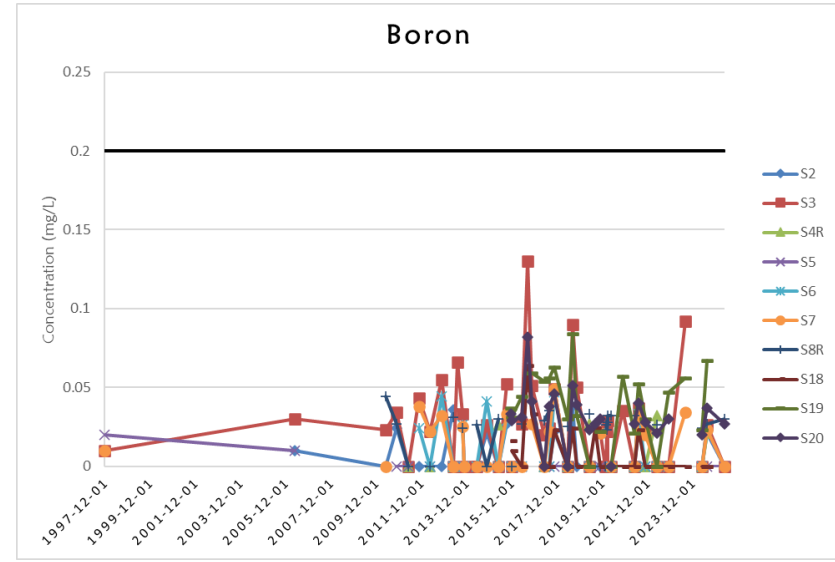
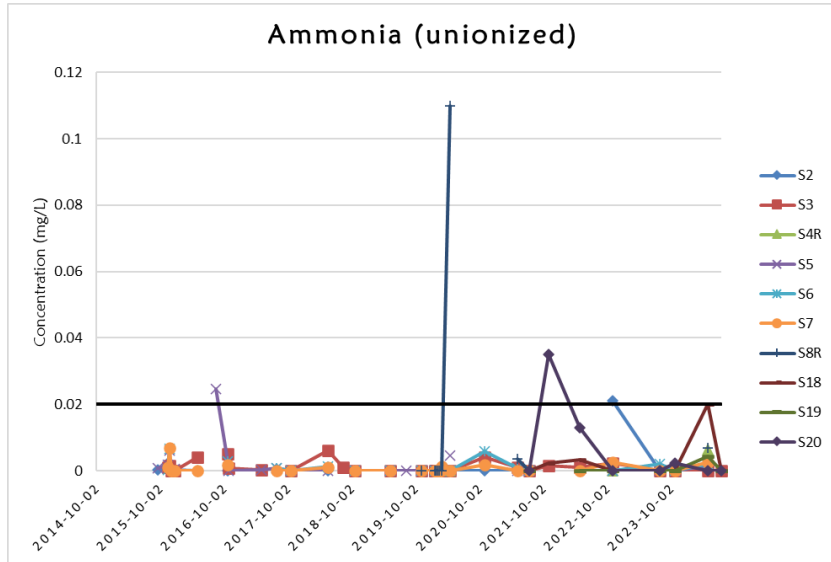
Appendix C: Results from Analytical Quality Assurance / Quality Control (QA/QC) Program
 Detailed Results from Trip Blank Samples - Spring & Fall 2025

Reading Name	Units	2025-04-29 Trip Blank	2025-04-30 Trip Blank	2025-05-01 Trip Blank	2025-10-28 Trip Blank	2025-10-29 Trip Blank
Volatile Organic Compounds (VOCs)						
1,1,1,2-Tetrachloroethane	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
1,1,1-Trichloroethane	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
1,1,2,2-Tetrachloroethane	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
1,1,2-Trichloroethane	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
1,1-Dichloroethane	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
1,1-Dichloroethylene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
1,2-Dichlorobenzene (o)	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
1,2-Dichloroethane	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
1,3,5-Trimethylbenzene	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
1,3-Dichlorobenzene (m)	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
1,4-Dichlorobenzene (p)	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Benzene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chlorobenzene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chloroethane	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chloromethane	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Cis-1,2-Dichloroethylene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Dichloromethane	mg/L	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Ethylbenzene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
m+p-Xylene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
o-Xylene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Styrene	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Tetrachloroethylene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Toluene	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Total Xylenes	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Trans-1,2-dichloroethylene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Trichloroethylene	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Vinyl Chloride	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002

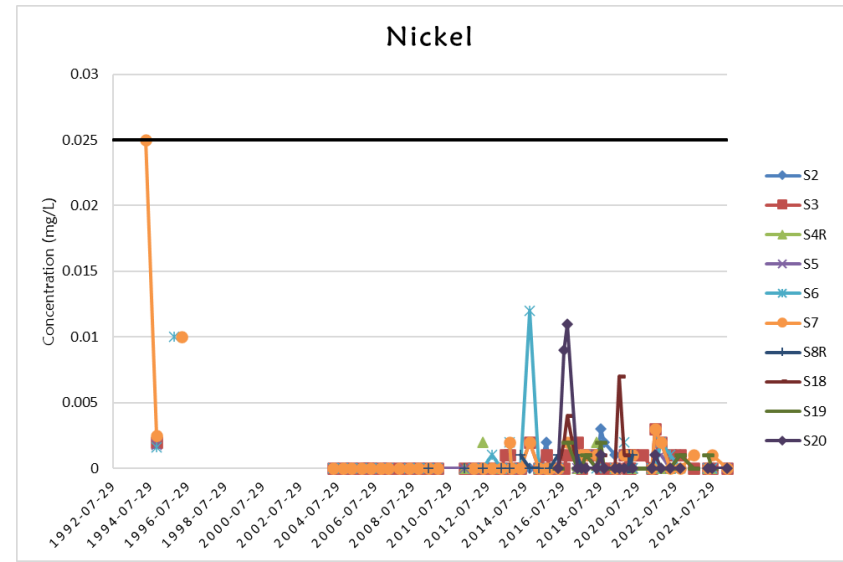
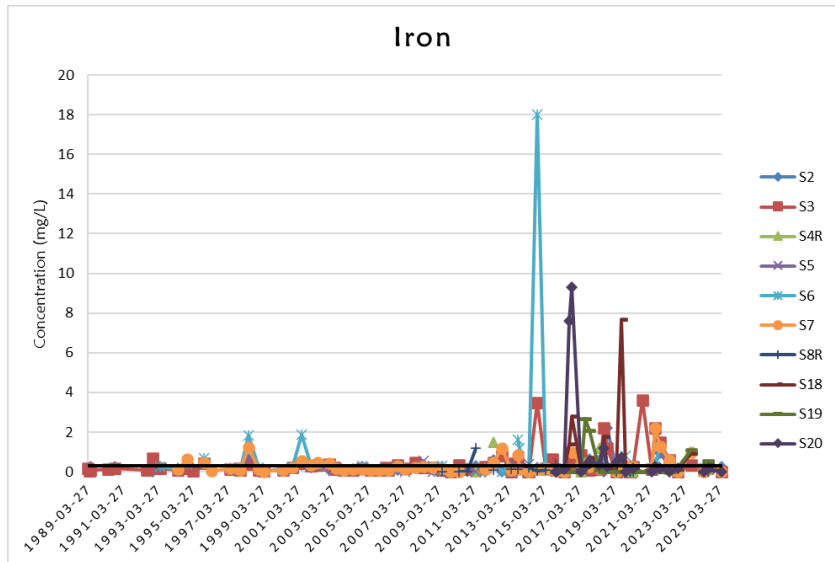
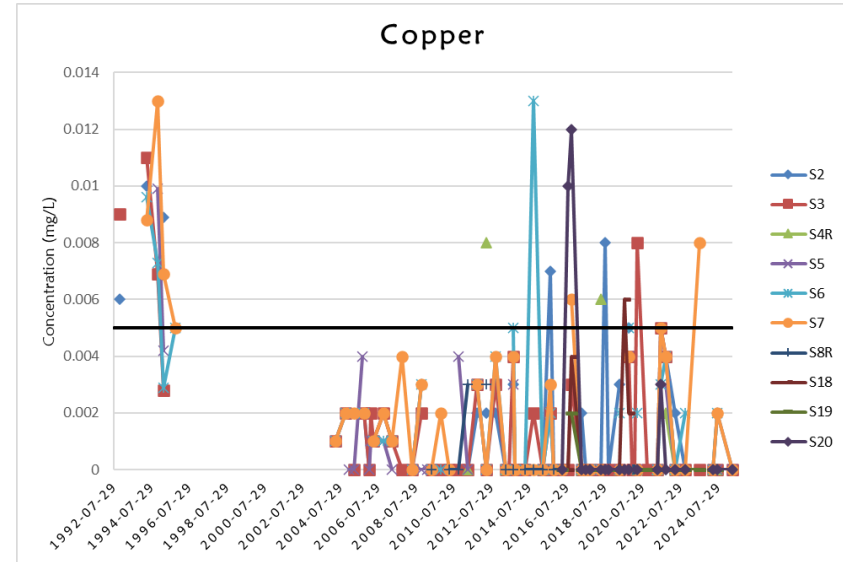
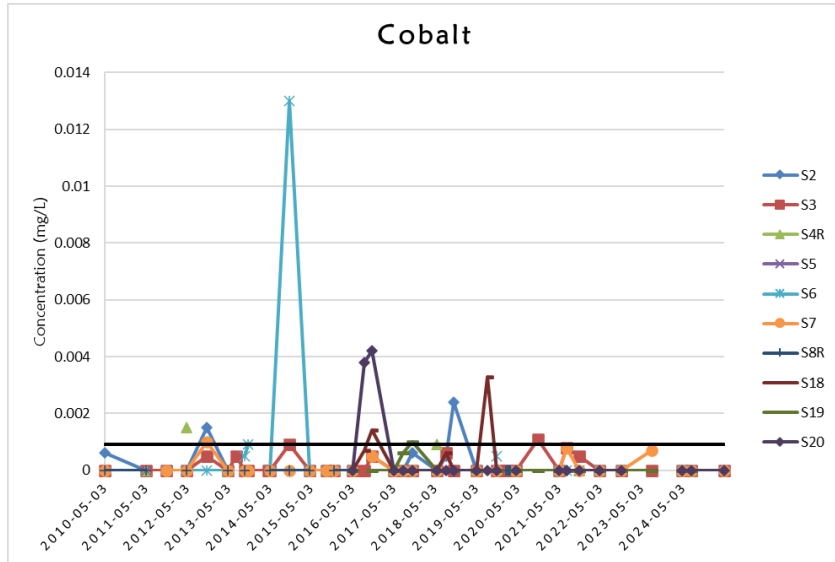
Appendix D

Time-Concentration Plots from Surface Water Sampling Locations

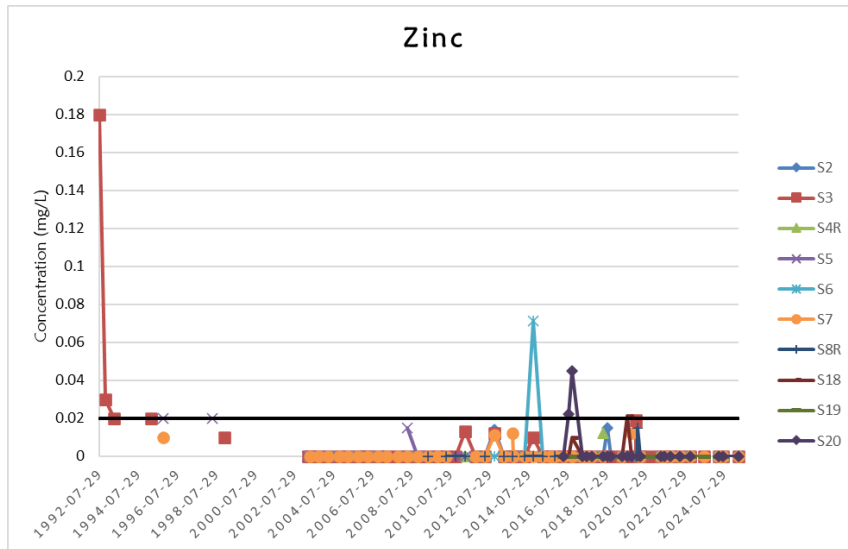
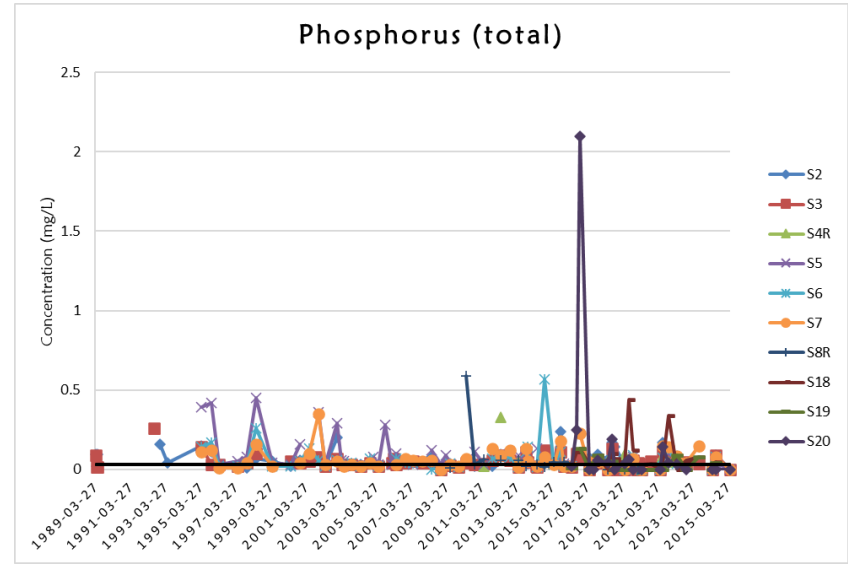
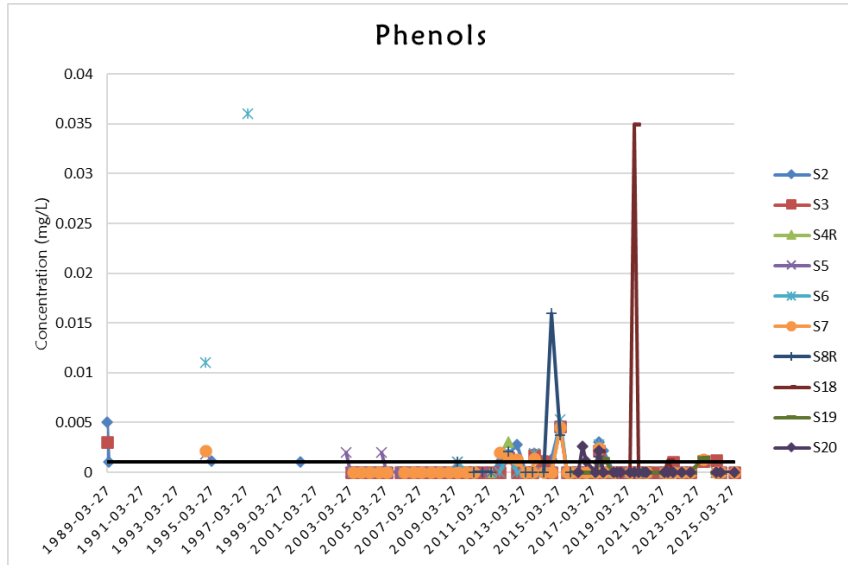
Appendix D – Time-Concentration Plots from Surface Water Sampling Locations



Appendix D – Time-Concentration Plots from Surface Water Sampling Locations



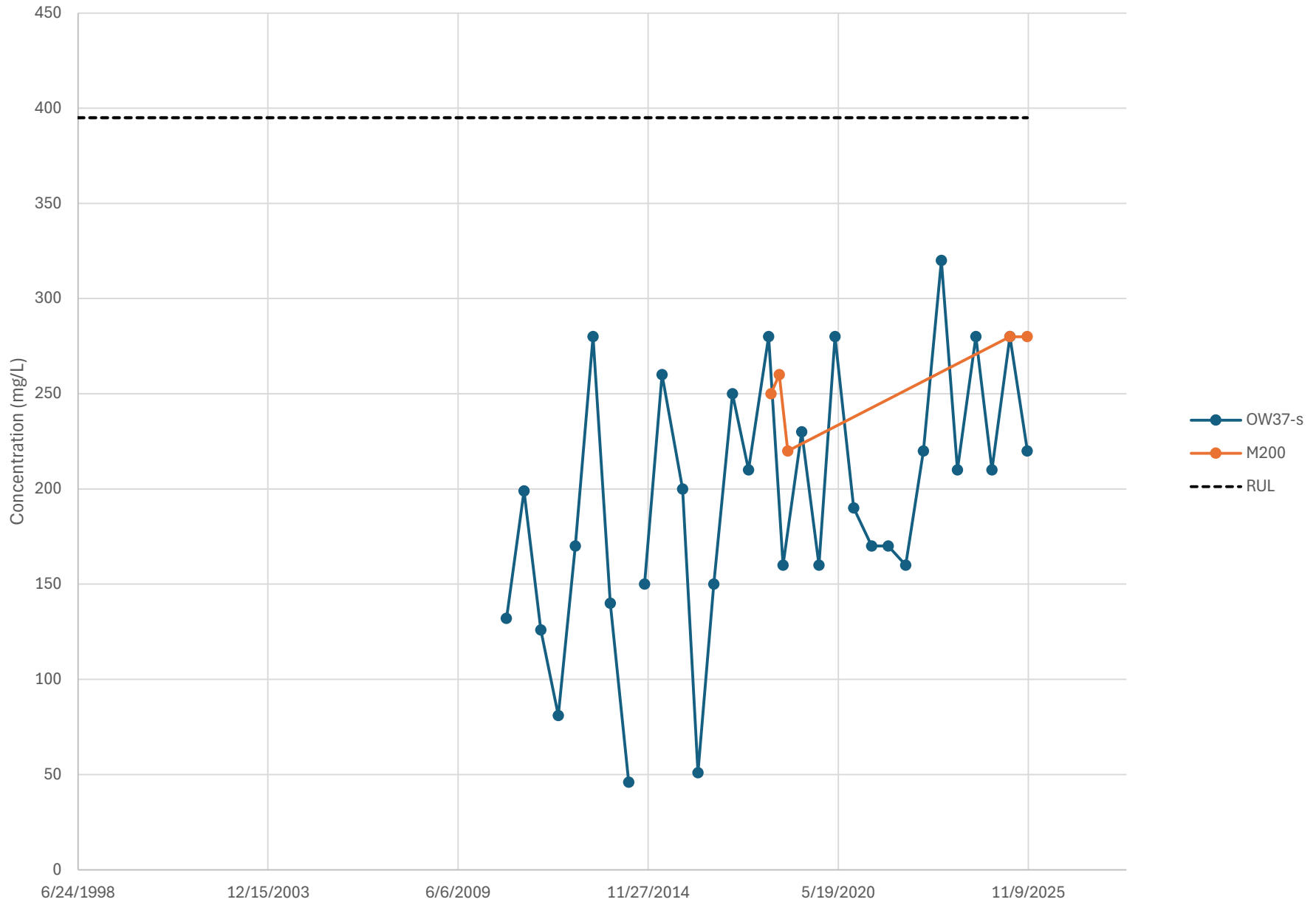
Appendix D – Time-Concentration Plots from Surface Water Sampling Locations



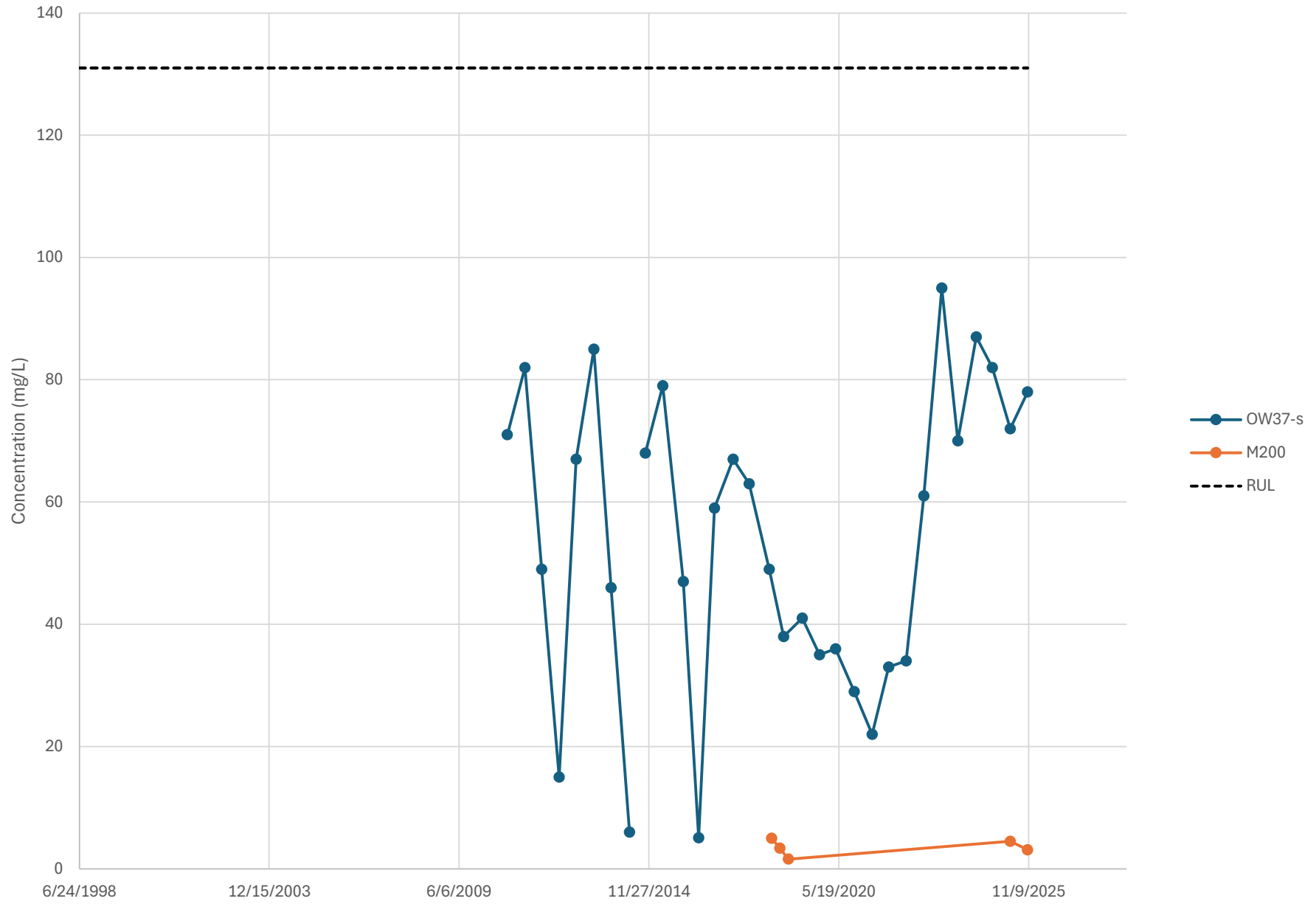
Appendix E

Time-Concentration Plots from Groundwater Trigger Wells

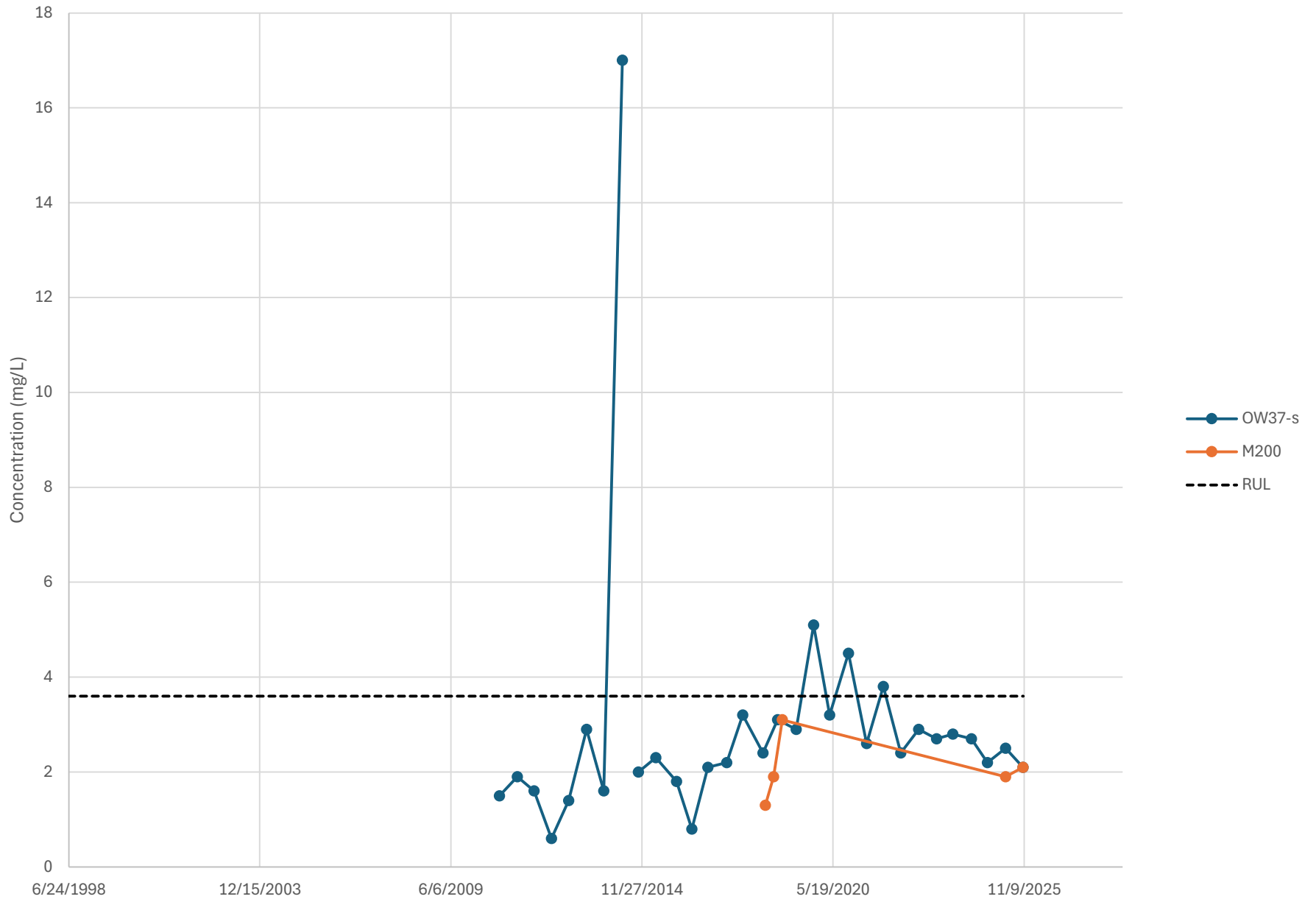
Shallow Flow Zone Trigger Wells - Alkalinity



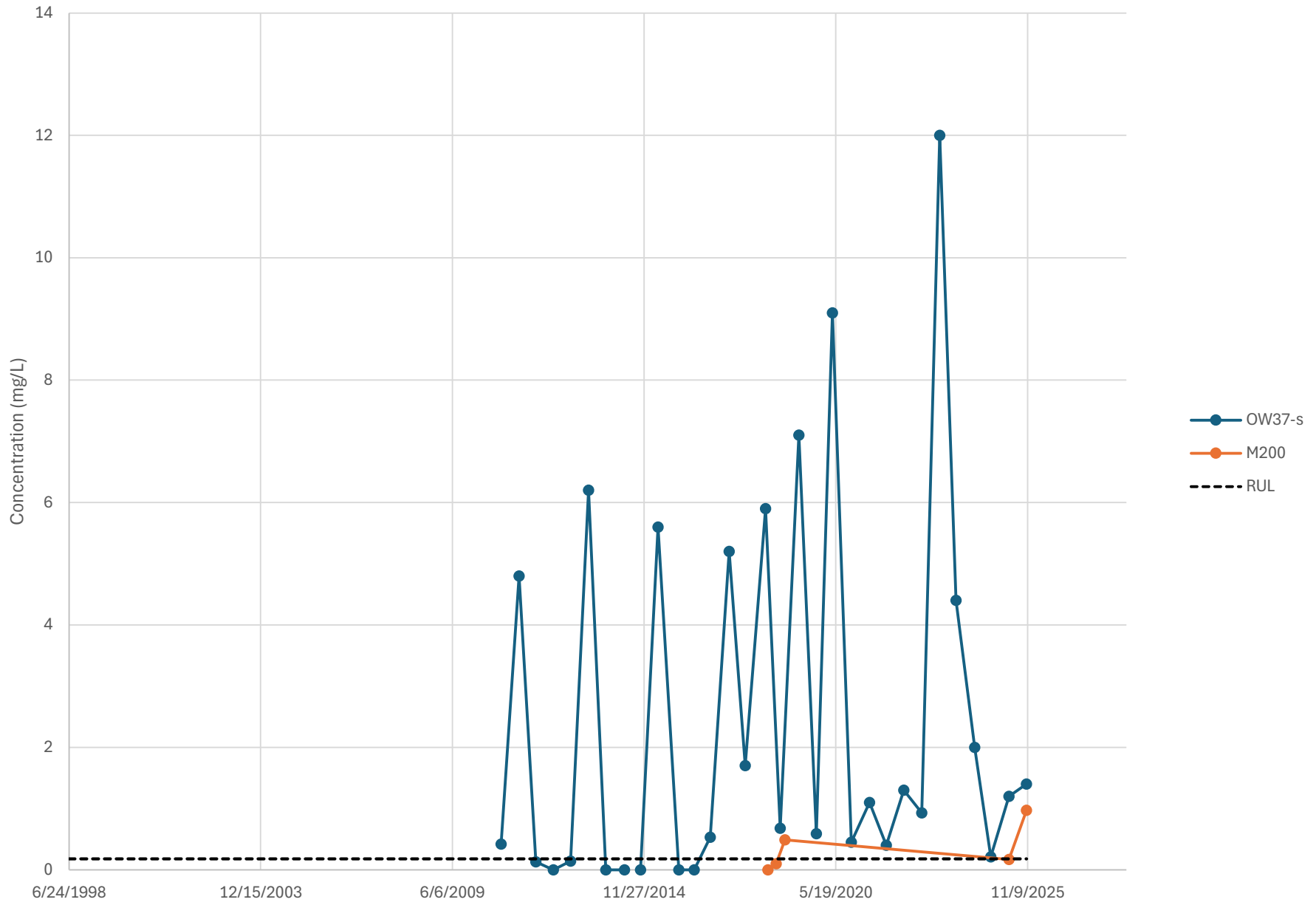
Shallow Flow Zone Trigger Wells - Chloride



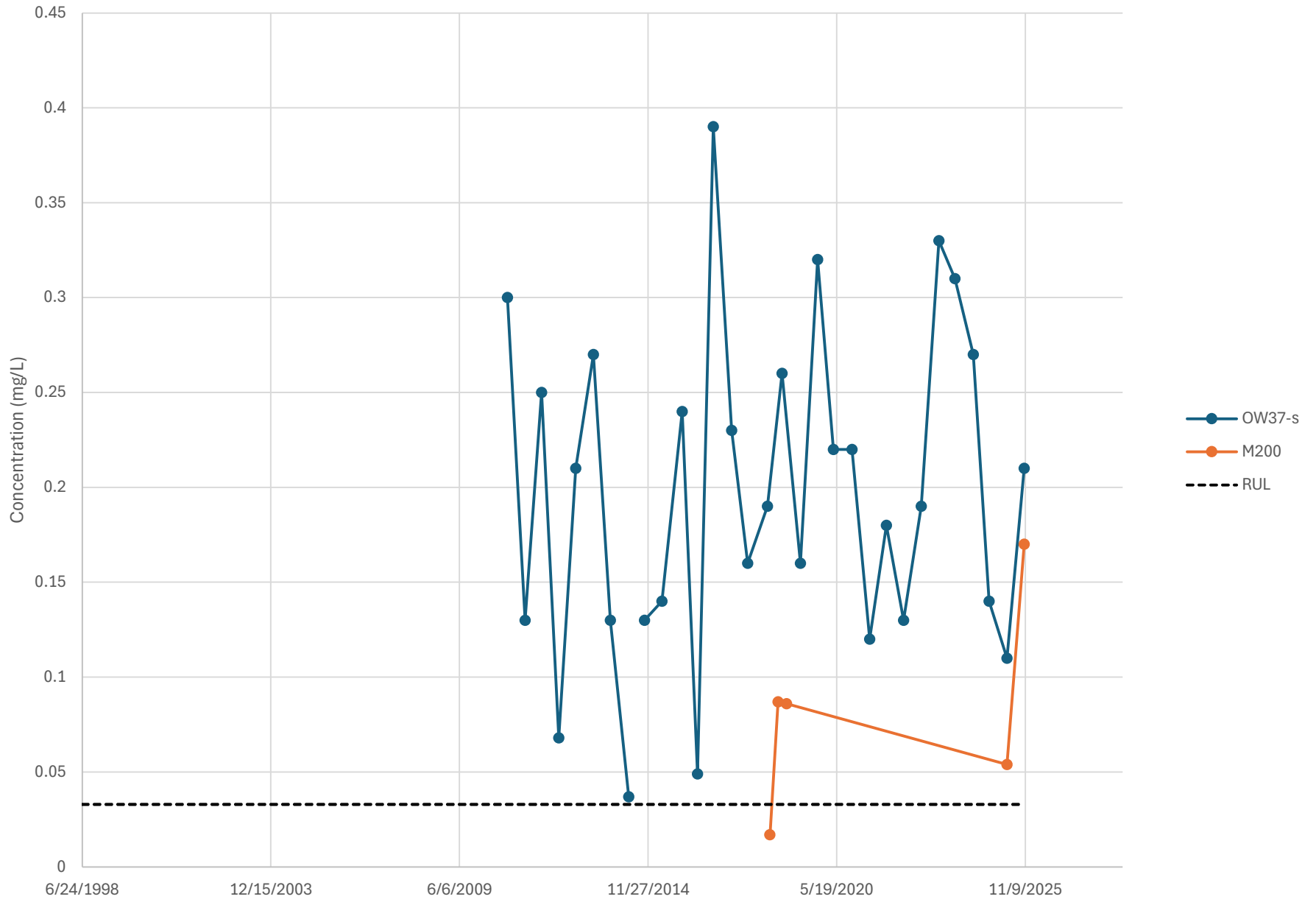
Shallow Flow Zone Trigger Wells - DOC



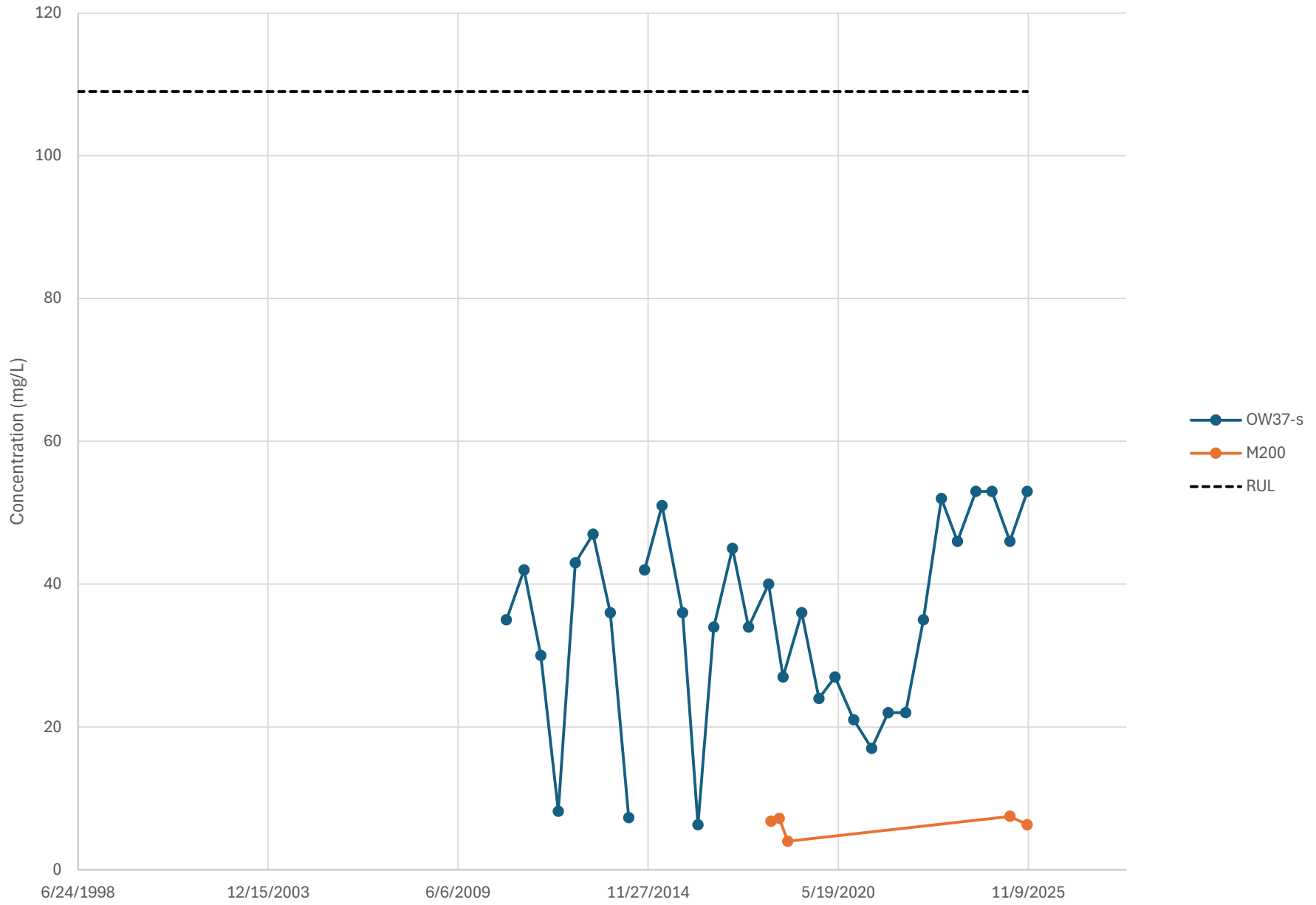
Shallow Flow Zone Trigger Wells - Iron



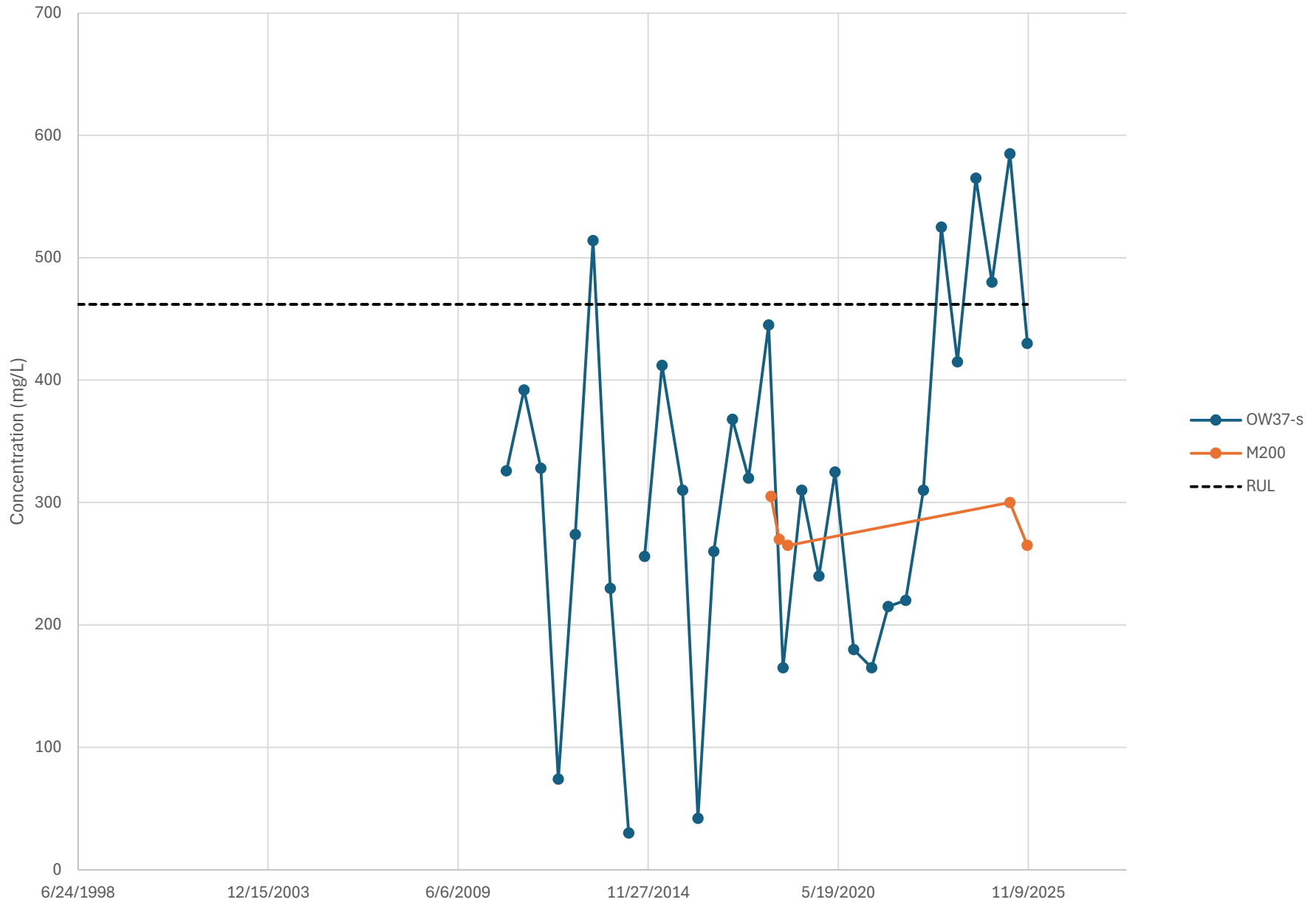
Shallow Flow Zone Trigger Wells - Manganese



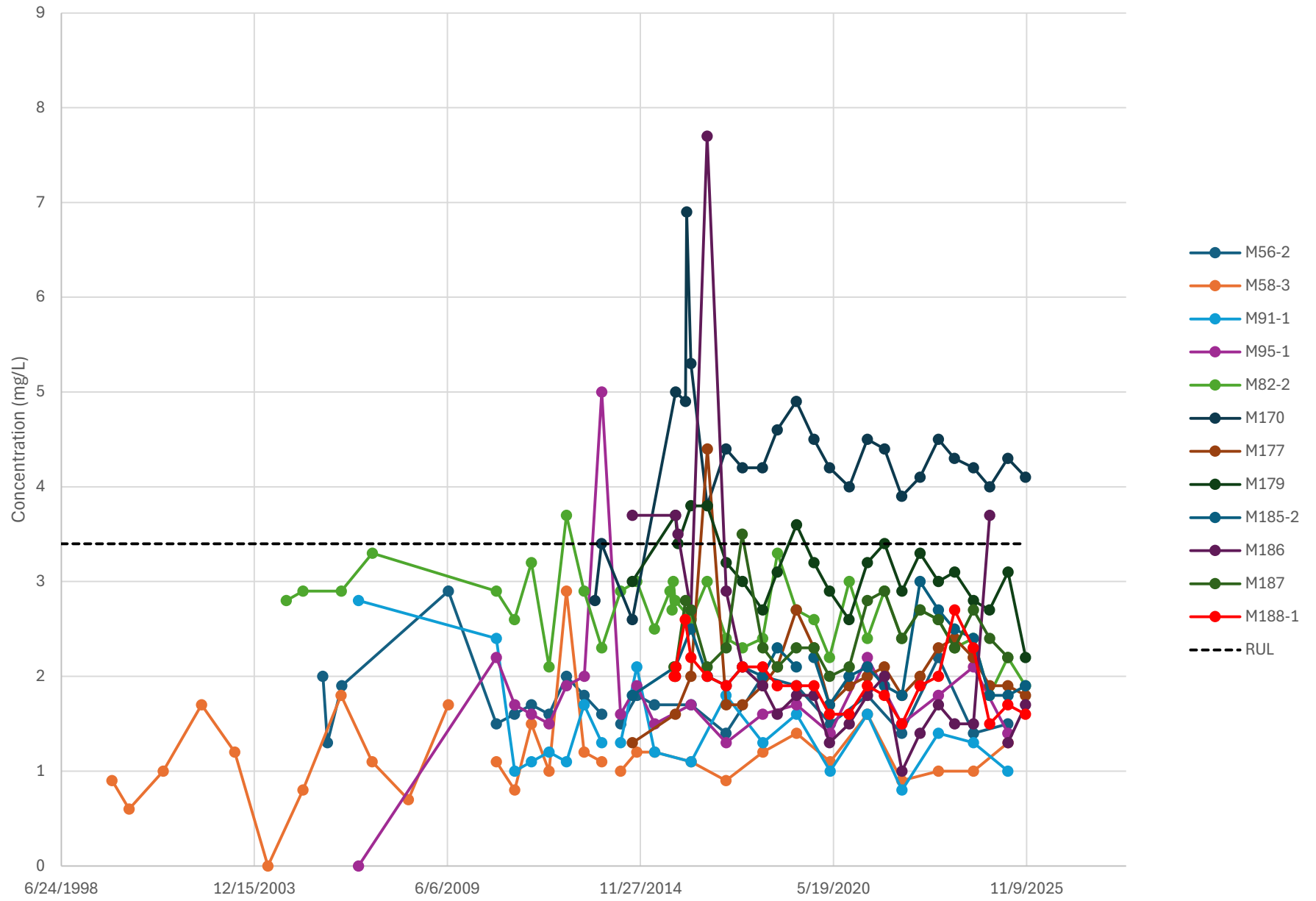
Shallow Flow Zone Trigger Wells - Sodium



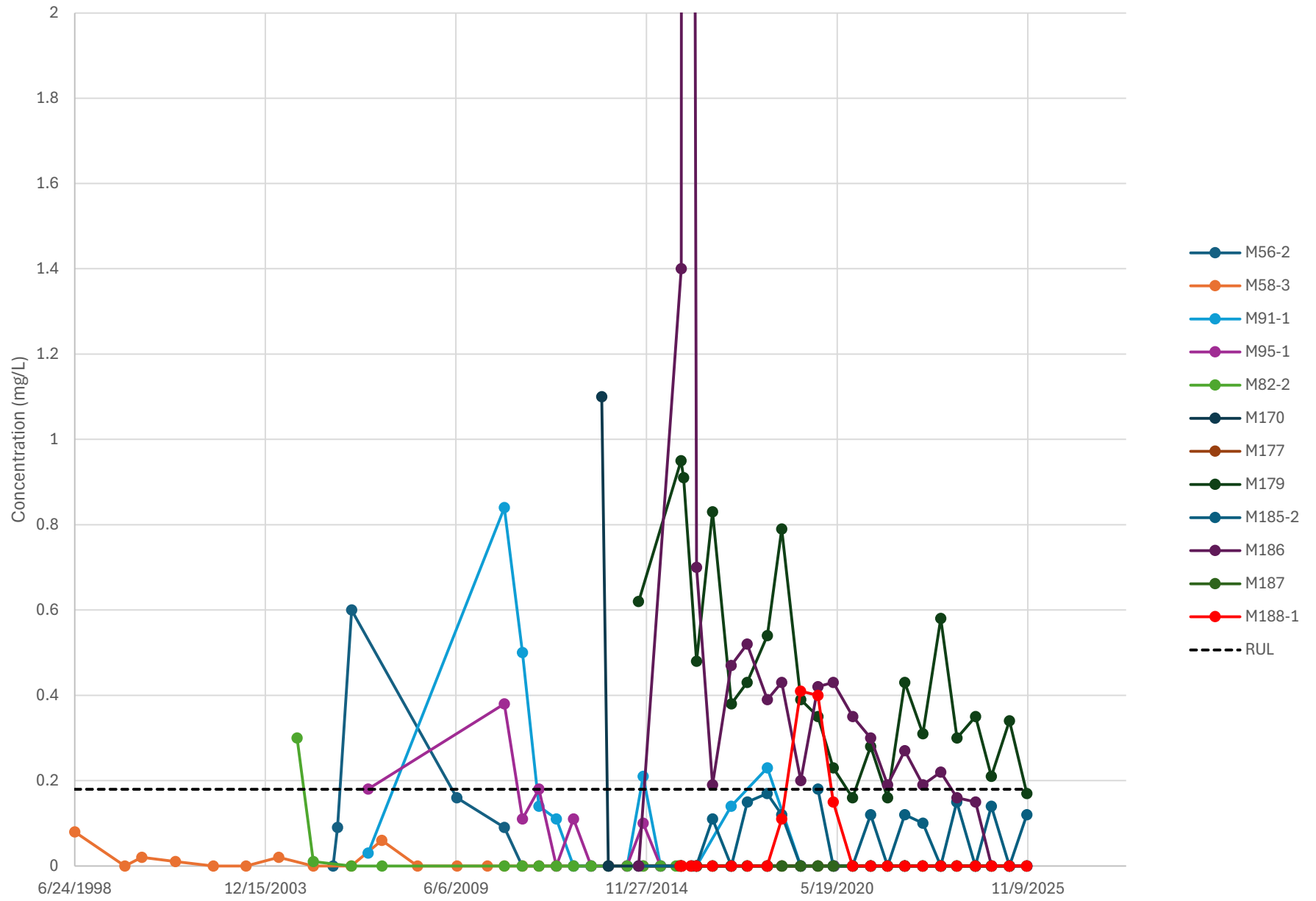
Shallow Flow Zone Trigger Wells - Total Dissolved Solids



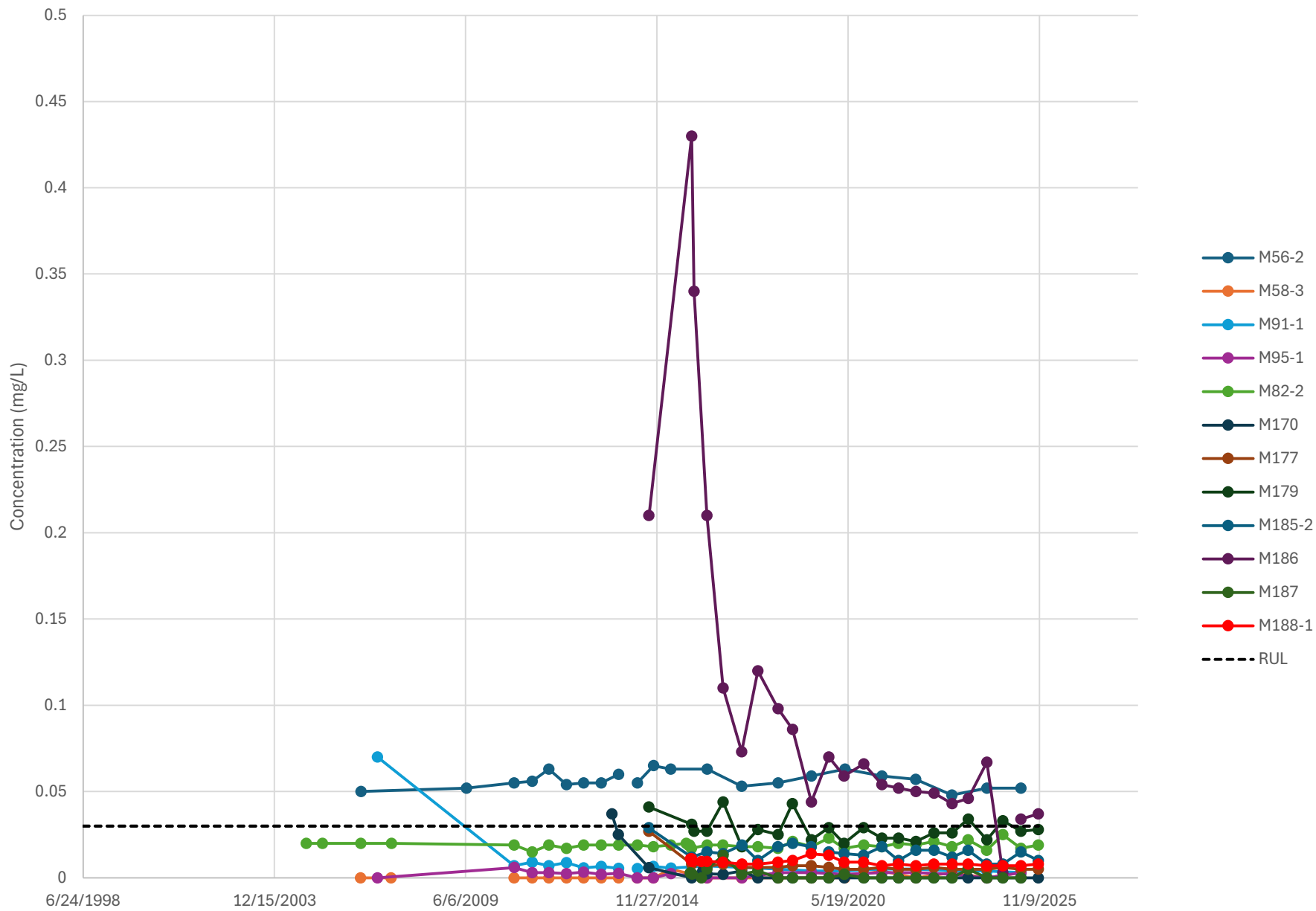
Intermediate Flow Zone Trigger Wells - DOC



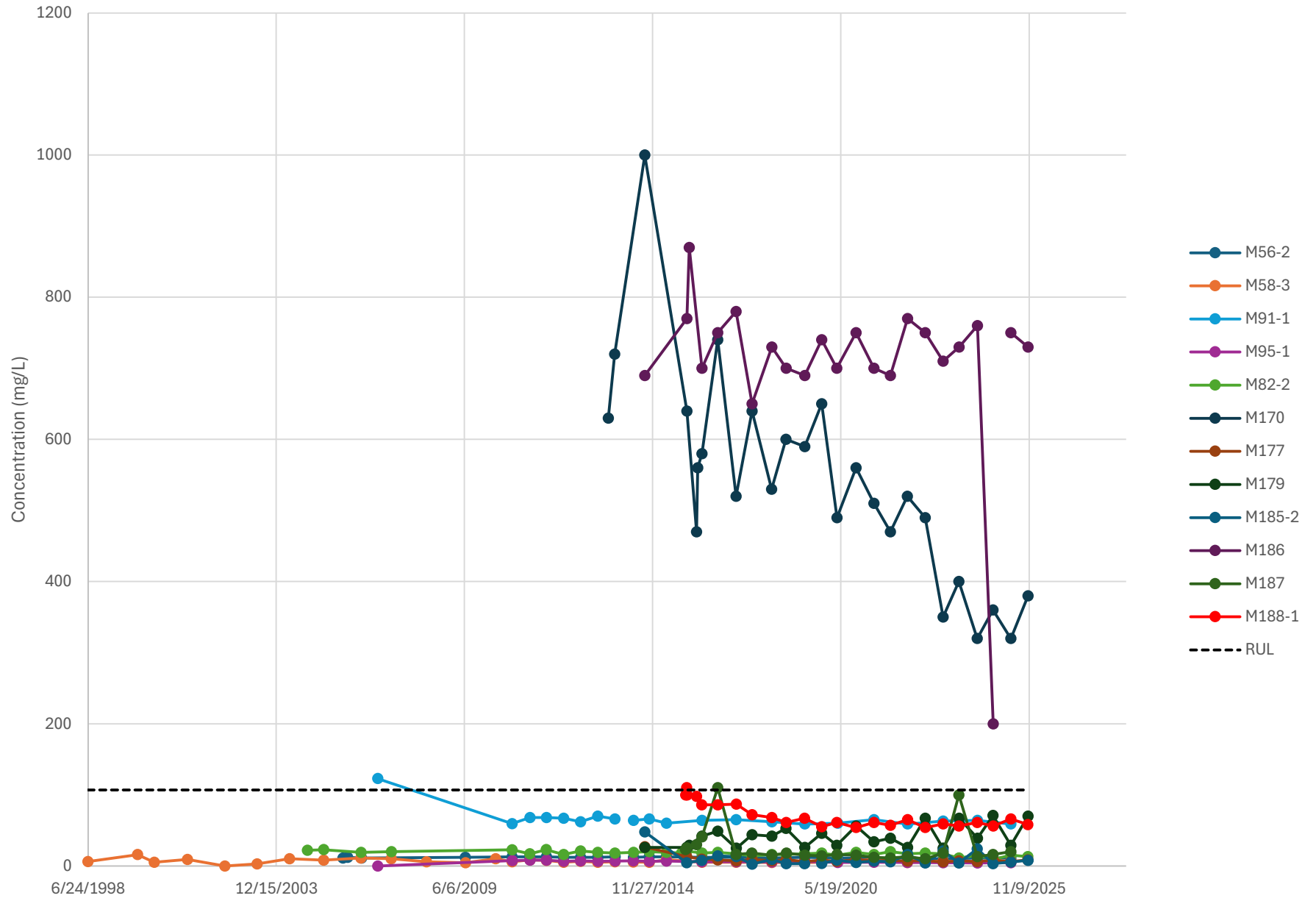
Intermediate Flow Zone Trigger Wells - Iron



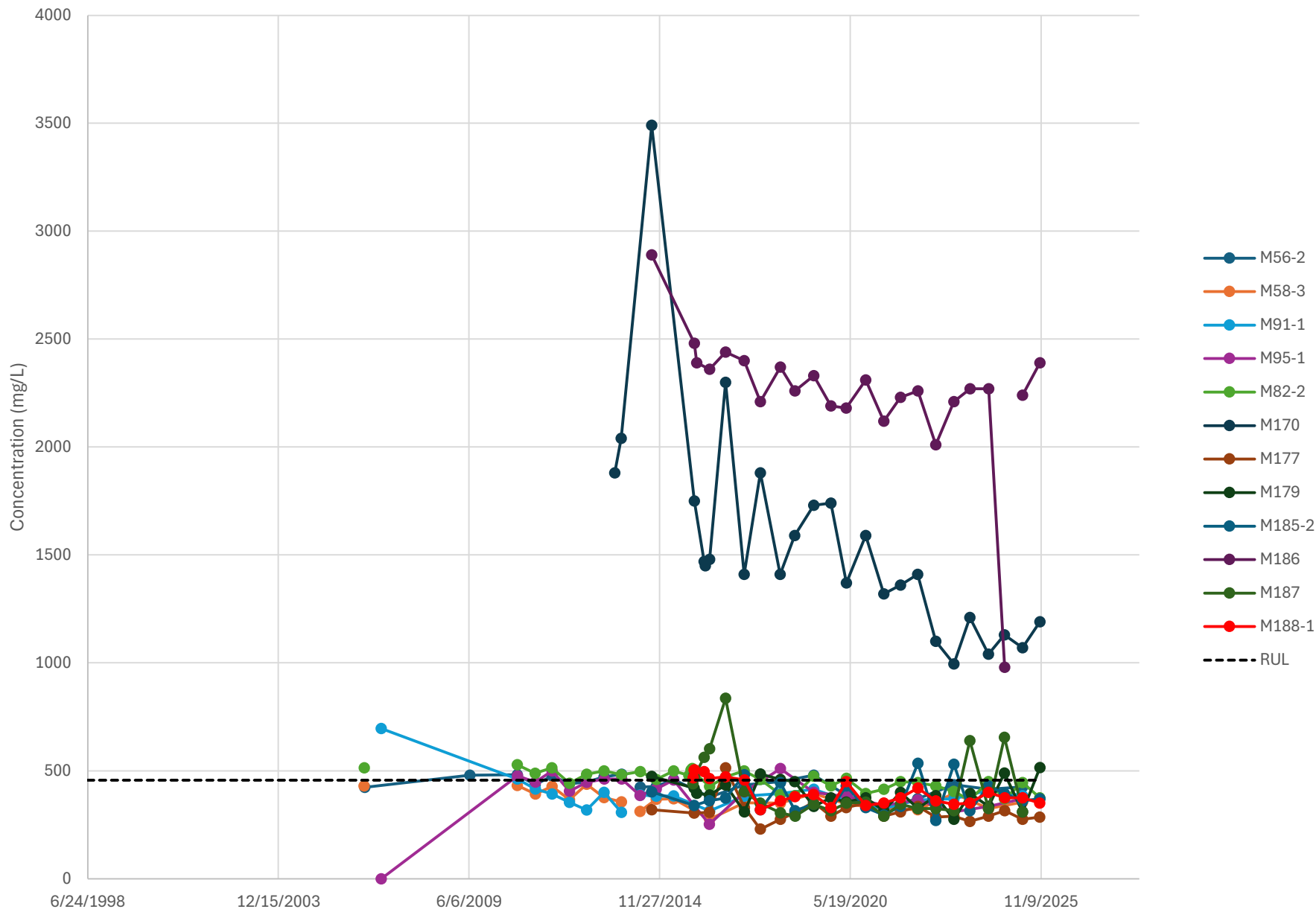
Intermediate Flow Zone Triggers Well - Manganese



Intermediate Flow Zone Trigger Wells - Sodium



Intermediate Flow Zone Trigger Wells - Total Dissolved Solids



Appendix F

Details Regarding Monitoring Well M68-4/M68-4R



Memo Summary

Re: Decommissioning of M68-4 and Installation of M68-4R

Project: 250147-05 WM Richmond Well Repairs

This memo provides a summary of the decommissioning, drilling, and survey work that was completed to replace monitoring well M68-4 with replacement well M68-4R. The borehole logs for both M68-4 and M68-4R can be found attached to this memo.

Installation of M68-4R

M68-4R was installed as a replacement monitoring well for M68-4 which was damaged and could not be repaired. M68-4R was installed on October 1st, 2025 by Canadian Environmental Drilling Company (CEDC) under the supervision of BluMetric Environmental field staff. The well was installed using an LC50 CME 55 Track Machine and six-inch solid stem augers. The hole was drilled to a final depth of 2.13 mbgs at bedrock refusal. A two-inch PVC monitoring well and four-inch square locking monument casing were installed. A survey of the new monitoring well was completed using M68-2 as a reference point on Dec 9, 2025. The soil stratigraphy included in the M68-4R borehole was inferred from the original M68-4 borehole log.

M68-4 Decommissioning

Monitoring well M68-4 was decommissioned on December 11, 2025 by CEDC under the supervision of BluMetric Environmental field staff. The six-inch steel casing and PVC were pulled from the ground and the remaining well construction material was removed using a six-inch solid stem auger. The decommissioned well was cleared to a depth of 2.01 mbgs at bedrock refusal and backfilled using 3/8" bentonite hole plug.

Monitoring Well Comparison

Monitoring Well	Northing (m)	Easting (m)	Top of Pipe Elevation (m asl)	Ground Surface Elevation (m asl)	Total Depth (m bgs)	Screen Interval (masl)
M68-4	4,903,498.9	335,671.8	125.13	124.43	2.02	122.43-123.34
M68-4R	4,903,495.9	335,671.1	125.04	124.32	2.13	123.10-122.19



Project No: A754

Project: Richmond Landfill Expansion

Client: Canadian Waste Services Ltd.

Location: Napanee, Ontario

Drilled By: Chalk Well Drilling Ltd.

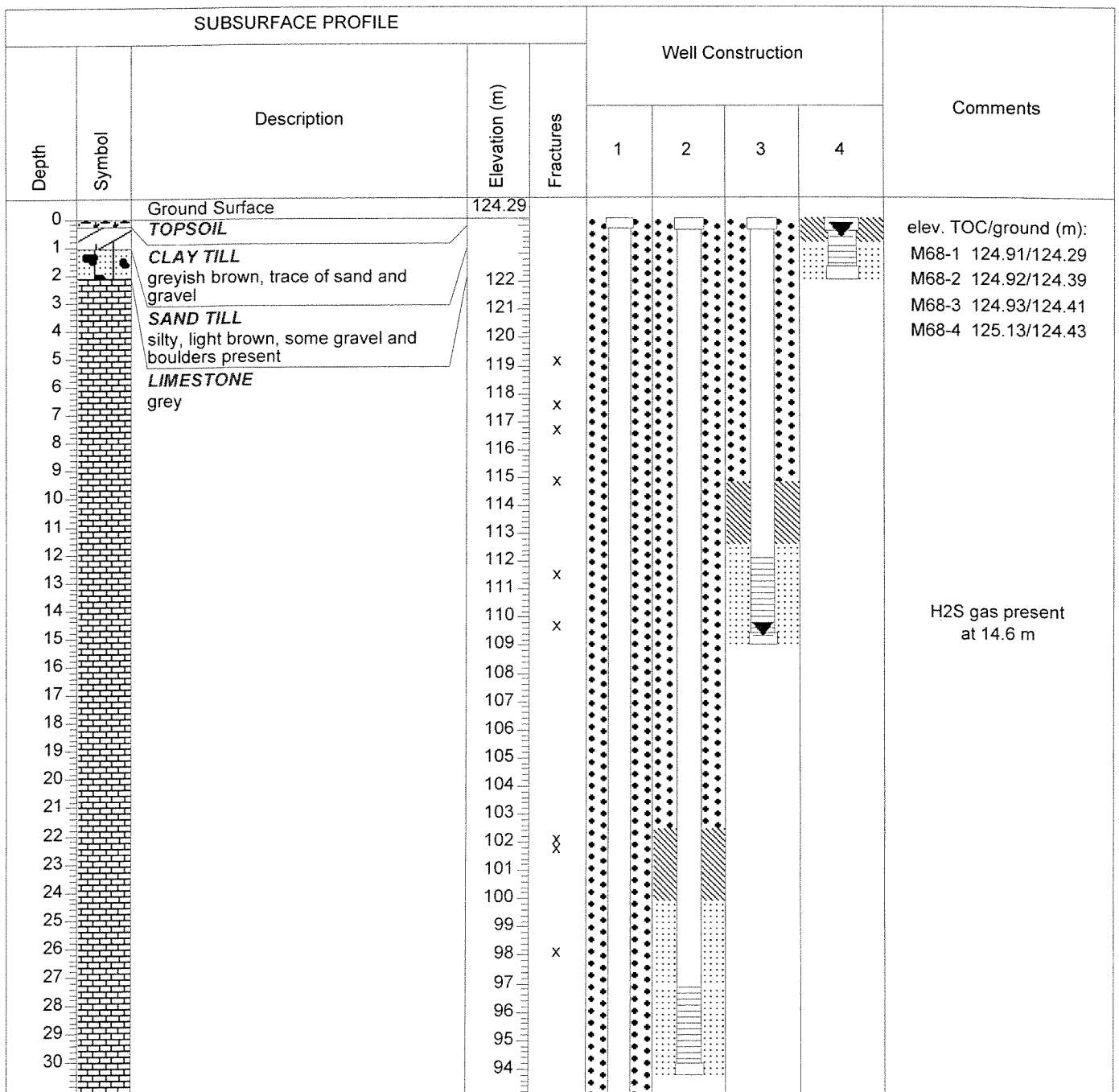
Drill Method: Air Rotary

Well ID: M68

Enclosure:

Field Personnel: BA

SUBSURFACE PROFILE



Hole Size: 15.9 cm diameter

Datum: 124.29 m (at M68-1)

Drill Date: June 2-3, 1998

Sheet: 1 of 2



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WATER & EARTH SCIENCE ASSOCIATES LTD.

Project No: A754

Project: Richmond Landfill Expansion

Client: Canadian Waste Services Ltd.

Location: Napanee, Ontario

Drilled By: Chalk Well Drilling Ltd.

Drill Method: Air Rotary

Well ID: M68

Enclosure:

Field Personnel: BA

SUBSURFACE PROFILE

Depth	Symbol	Description	Elevation (m)	Fractures	Well Construction				Comments	
					1	2	3	4		
31		LIMESTONE grey	93							
32			92	x						
33			91	x						
34			90	x						
35			89	x						
36			88							
37			87							
38			86	x						
39			85							
40			84	x						
41			83							
42			82							
43			81							
44			80							
45			79	x						
46			78							
47			77							
48			76							
49			75	x						
50			74							
51			73							
52			72							
53			71							
54			70							
55			69							
56			68	x						
57			67							
58			66							
59			65							
60			64							
61			63							

EOH at 60.96 m depth

blue-green colour
from 44.5 to 44.8 m

blue-green colour
from 56.4 to 59.7 m

Hole Size: 15.9 cm diameter

Datum: 124.29 m (at M68-1)

Drill Date: June 2-3, 1998

Sheet: 2 of 2



W.E.S.A.
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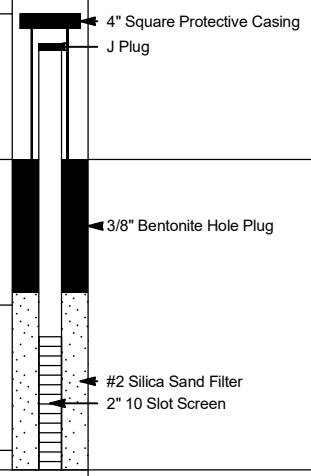
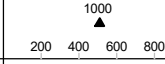
Monitoring Well ID: M68-4R

Project No.: 250147-05
Client: Waste Management of Canada Corporation
Report: Well Repair
Site Address: 1271 Beechwood Road
 Greater Napanee, ON

Elevation Ground: 124.32 m
TOP: 125.04 m
UTM NAD83 (Zone 18): 4903496.000 N
 335671.000 E

SUBSURFACE PROFILE				SAMPLE						WELL COMPLETION		
Depth (m)	Elevation (m)	Symbol	Description	Depth (m) / Elev. (m.a.s.l.)	Type	Recovery (%)	Blow Counts	Sample ID	Lab Analysis		Construction	Notes
-1												
-1.25												
0			Ground Surface	0.0								
0	124.3		TOPSOIL	124.3								
0.8			CLAY Greyish brown clay till, trace sand and gravel	[0.8]								
1.0			SILTY SAND Light brown, silty sand till, some gravel and boulders present	1.0								
1.1	123.3			[1.1]								
2.1				2.1								
2.13	122.2		EOH at 2.13 m, 2" PVC Monitoring well installed.	122.2								
3												
3	121											
4												
4	120											
5												
5	119											
6												
6	118											
7												
7	117											
8												
8	116											

BH MW OB LOG 250147 WM RICHMOND M68-4R.GPJ BLUMETRIC STANDARD.GDT 26-1-5



Drill Date: 2025 October 1
Drilled By: CEDC
Drilling Method: Solid Stem Auger
Datum: M68-2, 124.92 m [Geodetic]

Hole Diameter (OD): 0.15 m
Logged By: NW
Checked By: BM

Perched Groundwater Strike / Unstabilized Groundwater Level
 True Groundwater Strike / Stabilized Groundwater Level



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