



**Final Report: Environmental
Monitoring – Meadowview
Landfill**

2019 Monitoring Program

Prepared for:
Municipality of the County of Kings

Prepared by:
Stantec Consulting Ltd.
102 – 40 Highland Park Drive
Dartmouth, NS
B3A 0A3

File No: 121414186

March 25, 2020

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1.0 INTRODUCTION

1.1 GENERAL

Stantec Consulting Ltd. (Stantec) was retained by the Municipality of the County of Kings (the Municipality) to perform environmental compliance monitoring at the former Meadowview Landfill (the Site). The 2019 program included groundwater and surface water monitoring, completed in general accordance with Stantec's proposal dated March 28, 2016. The 2019 environmental monitoring program is comprised of field data collection, analysis, and reporting.

The scope of the 2019 monitoring program differs from previous years and follows the recommendations to reduce the monitoring program (Stantec Consulting Ltd. (b), 2018) and to add new surface water sampling locations (Stantec Consulting Ltd. (a), 2018) as put forward by Stantec. These scope changes were confirmed with the Municipality and are summarized in Section 1.2.1.

1.2 BACKGROUND

The Town of Kentville established a landfill at the Site in the late 1960s. The Municipality took over operations and continued to operate the landfill until it closed on June 30, 1999. Upon closure, the Municipality implemented a Closure Plan, which drew on specifications outlined in the Site Closure Report (Porter Dillon, 1995). The Closure Plan set out the requirements for an environmental monitoring program, which have recently been updated (Section 1.2.1).

1.2.1 Monitoring Plan Updates

The environmental monitoring program for the Site was updated twice during 2017 based on a review of available data and to better align with regulatory requirements (Stantec Consulting Ltd. (c), 2017). As environmental compliance monitoring is no longer required from a regulatory perspective for Class 1 Landfills (as informed by Nova Scotia Environment (NSE)), the need for an ongoing monitoring program was re-examined from a due diligence perspective and Stantec recommended that the Municipality adjust the ongoing monitoring to focus on areas where potential impacts from the Site have been observed.

Groundwater sampling for 2019 was recommended for metals and general chemistry parameters at annual monitoring locations (MW-4A, MW-22A, MW-22B, MW-22C, MW-25B, TH-1) and at tri-annual sampling locations (MW-23A, MW-23B, MW-23C, MW-29B, MW-29C, and MW-31A). (Stantec Consulting Ltd. (a), 2018)

In our report on the 2018 environmental monitoring program, Stantec recommended two new surface water monitoring locations be added in Palmer Brook for the 2019 program, one downstream and one upstream of SW7 and SW7A, to provide further information on potential interactions between the Site and Palmer Brook. (Stantec Consulting Ltd. (a), 2018) Two new locations were added to the 2019 monitoring plan: SW19A (downstream) and SW19B (upstream); however, SW19A was inaccessible.



1.3 SITE DESCRIPTION

The Site is located between Lanzy Road and Brooklyn Street, south of Camp Aldershot in the Town of Kentville, NS (Figure 1, Appendix A), and is described by Service Nova Scotia and Municipal Relations' Property Online as PIDs No. 55047310, 55058325, 55047328, 55047369, 55047351, 55049035, 55047336, and 55047476. The current monitoring locations are situated on land owned by the Municipality and historical monitoring locations are also located on land owned by the Department of National Defence (DND).

The topography of the Site and surrounding areas slopes south towards the Cornwallis River. The landscape surrounding the Site is comprised of forested areas intersected by several roads, with marsh and river habitat to the south.

1.4 REGULATORY FRAMEWORK

The regulatory standards and guidelines used in 2019 were adopted from the 2018 monitoring report and are described in the sections below.

The historical groundwater data presented prior to the 2017 annual monitoring report were screened against the Guidelines for Canadian Drinking Water Quality (GCDWQ) (Health Canada, 2019). As described in Stantec's 2017 program review, the Site is no longer considered potable due to the connection of the local dwellings to municipal water supply (Stantec Consulting Ltd. (c), 2017). Therefore, GCDWQ are no longer applied.

Surface water data presented prior to the 2017 annual monitoring report was screened against the Canadian Environmental Quality Guidelines issued by the Canadian Council of Ministers of the Environment (CCME - updates) for Freshwater Aquatic Life (FAL) (Canadian Council of Ministers of the Environment, 1999).

1.4.1 Groundwater

Groundwater chemistry analytical results are compared to the following specific standards that are applicable to non-potable sites in Nova Scotia, given local soil conditions and the separation distances between monitoring wells and surface water features:

- NS Tier 1 Environmental Quality Standards (EQS) for groundwater (commercial/industrial, non-potable, coarse grained) (Nova Scotia Environment (a), 2013)
- NS Tier 2 Pathway Specific Standards (PSS) for groundwater >10 m from a fresh surface water body (Nova Scotia Environment (b), 2013).

1.4.2 Surface Water

Surface water chemistry analytical results are compared to NS Tier 1 EQS for surface water. CCME FAL guidelines are also included for comparison because they include general chemistry parameters that do not have provincial standards. In general, the NS Tier 1 EQS and CCME FAL metals guidelines are identical for common parameters (with some exceptions), but the NS Tier 1 EQS includes a more comprehensive list of parameters.



1.5 OBJECTIVES AND SCOPE

The scope of the 2019 monitoring program generally consisted of:

- groundwater sampling at 12 monitoring wells (MW)
- surface water sampling at five locations (SW) - six locations were originally planned; however, SW19A was inaccessible.

The locations of current and historical sampling points are shown on Figure 1 (Appendix A). The overall objective of the monitoring program is to track the influence of water emanating from the landfill and identify if concentrations exceed guideline values established to protect relevant receptors. By monitoring the groundwater and surface water over time, trends or changes can be identified and, where necessary, alterations to the monitoring program can be implemented.

2.0 FIELD INVESTIGATION

2.1 HEALTH AND SAFETY

Stantec prepared and reviewed a project specific risk management strategy prior to the commencement of field work. Relevant safe work practices were reviewed by all Stantec staff who completed field work on this project. During field work, a site safety meeting was conducted by Stantec staff each morning at which a last-minute risk assessment (LMRA) was completed and site conditions assessed. This LMRA form identified potential health and safety risks at the Site that might not have been previously identified during project planning. Copies of all signed health and safety documentation are retained by Stantec in the project file. No health and safety incidents occurred while Stantec was on the Site conducting field work.

2.2 METHODOLOGY

Figure 1 (Appendix A) provides the location of all sampling points assessed in 2019, along with historical locations that were not sampled. Field work was conducted on July 15, 2019 and reporting was completed in early 2020. Table 1 provides a summary of laboratory analyses conducted.

Table 1 Meadowview Landfill Monitoring Locations and Analysis

Location	Easting (m)	Northing (m)	General Chemistry and Metals
Groundwater			
MW-4A	380795	4993550	X
MW-22A	380036	4993547	X
MW-22B	380036	4993546	X
MW-22C	380034	4993546	X
MW-23A	379827	4993726	X
MW-23B	379828	4993729	X



Table 1 Meadowview Landfill Monitoring Locations and Analysis

Location	Easting (m)	Northing (m)	General Chemistry and Metals
Groundwater			
MW-23C	379824	4993728	X
MW-25B	380242	4993537	X
MW-29B	380288	4994102	X
MW-29C	380291	4994103	X
MW-31A	380079	4994174	X
TH-1	380612	4993546	X
MW-40D (MW31A dup)	-	-	X
Surface Water			
SW3	380817	4993379	X
SW7	380015	4993519	X
SW7A	380033	4993444	X
SWA	379969	4993211	X
SW19B	379864	4993666	X

2.2.1 Groundwater

Field staff conducted groundwater sampling in general accordance with Stantec’s Standard Operating Procedures (SOPs). Static water levels were measured in each monitoring well from the top of the PVC well casing using a water level probe. Monitoring well conditions were noted and the stickup height was measured from the top of the PVC well casing to ground. Water levels were measured prior to purging or sampling. Each monitoring well was purged using the existing dedicated Waterra tubing and foot valve until dry or three well volumes were removed.

In situ physical water quality parameters of temperature, pH, dissolved oxygen, and conductivity were measured using a YSI 556 multi meter. Qualitative groundwater descriptions of colour, turbidity, and sheen were also recorded by field staff. Metals samples were field filtered using single-use 0.45 µm disposable filters. Samples were collected in laboratory-supplied containers and preserved in insulated coolers provided by Bureau Veritas of Bedford, NS (BV).

2.2.2 Surface Water

Field staff conducted surface water sampling in general accordance with Stantec’s SOPs. Special care was taken at the sampling locations to not disturb the substrate in order to minimize the amount of sediment that entered sample containers. *In situ* physical water quality parameters of temperature, pH, dissolved oxygen, and conductivity were measured using a YSI 556 multi meter. Grab samples were collected in laboratory-supplied containers and preserved in insulated coolers provided by BV.



2.2.3 Quality Assurance and Quality Control

Quality assurance and quality control (QA/QC) procedures included following appropriate field methodologies and SOPs. All samples were uniquely labelled, and control was maintained using chain of custody forms. The laboratories reported the results from their own internal QA/QC process, which are included in certificates of analyses provided in Appendix E.

One blind field duplicate sample (MW-40D, duplicate of MW-31A) was submitted as part of the groundwater monitoring program. Relative percent difference (RPD) analysis between duplicates is discussed under Section 3.1.5.

3.0 RESULTS

The following sections summarize the results of the 2019 monitoring program.

3.1 GROUNDWATER

3.1.1 Field Results

Table B-1 (Appendix B) provides the *in situ* physical parameters and observations collected during well purging. These are summarized as follows:

- Upgradient wells (MW-29B, MW-29C, MW-31A):
 - Groundwater elevations ranged from 19.96 to 20.15 metres above sea level (masl).
 - pH ranged from 7.69 to 8.66.
 - Dissolved oxygen ranged from 1.22 to 5.54 mg/L.
 - Water temperature ranged from 8.74 to 13.14 °C.
 - Conductivity ranged from 0.082 to 0.194 mS/cm.
 - No requirements to repair monitoring wells were noted.
 - Water had no observed odour or sheen, had little silt, and ranged from clear to cloudy to brown.
- Downgradient wells (MW-4A, MW-22A/B/C, MW-23A/B/C, MW-25B, TH-1):
 - Groundwater elevations ranged from 7.54 to 10.54 masl.
 - pH ranged from 6.56 to 8.10.
 - Dissolved oxygen ranged from 0.00 to 6.17 mg/L. Dissolved oxygen was below 1 mg/L in four wells: MW-22B, MW-22C, MW-23B, and TH-1.
 - Water temperature ranged from 8.53 to 12.97 °C.
 - Conductivity ranged from 0.117 to 1.270 mS/cm.
 - No requirements to repair monitoring wells were noted.
 - Water had no observed odour or sheen and generally had no or little silt apart from MW-23A, which had lots of silt. Water ranged from cloudy to clear. Water was brown or light brown in MW-4A, MW-23A, MW-23B, MW-23C, and TH-1, and reddish in MW-22C.



3.1.2 Analytical Results

Analytical results for the 2019 monitoring program are presented in Tables B-3 and B-4 (Appendix B) and are discussed below. Laboratory certificates are provided in Appendix E. Additionally, results from historical monitoring events at the monitoring wells sampled in 2019 are provided in Tables C-1 through C-12 (Appendix C). Historical analytical chemistry results were provided to Stantec by the consultant responsible for the 2012–2015 monitoring events, WSP Canada Inc., and have not been verified by Stantec (WSP, 2015).

3.1.2.1 General Chemistry and Metals

Laboratory results for general chemistry are listed in Table B-3 and results for metals are listed in Table B-4, both in Appendix B. Concentrations for general chemistry and metals analysis are below the applicable Tier 1 EQS and Tier 2 PSS in 2019, with the following exceptions:

- Arsenic exceeds Tier 2 PSS in MW-22A.
- Cadmium exceeds Tier 2 PSS in MW-22B.
- Iron exceeds Tier 2 PSS in MW-4A, MW-22A, MW-22B, MW-23B, and TH-1.
- Aluminum exceeds Tier 2 PSS in MW-31A and its duplicate.

Naturally occurring water quality problems in Nova Scotia include arsenic and cadmium, along with chloride, hardness, iron, manganese, radionuclides, radon, sulphate and uranium. (Nova Scotia Environment (c), 2017) (Nova Scotia Environment (f), 2017) Arsenic is “very likely” to be naturally occurring in known areas in Nova Scotia, including in the Site area. (Nova Scotia Environment (d), 2018) The Nova Scotia Groundwater Atlas shows the relative risk of arsenic in bedrock wells to be “medium” in the Site area. (Nova Scotia Department of Natural Resources, 2015) No further spatial or source details regarding naturally occurring cadmium in groundwater are provided by NSE.

According to the Canadian Groundwater Inventory’s hydrogeological characterization of Annapolis Valley aquifers, iron is naturally relatively elevated in the Site area. (Geological Survey of Canada, 2012)

The Nova Scotia Treatment Standards for Municipal Drinking Water Systems acknowledges that aluminum may be naturally occurring in water in Nova Scotia, although spatial or source details are not provided. (Nova Scotia Environment (e), 2012)

In summary, based on NSE’s resources including a survey of groundwater studies provided for the region, elevated arsenic and iron are known to be naturally occurring in groundwater in the Site area. Elevated cadmium and aluminum are likely also naturally occurring in groundwater in the Site area.

3.1.3 Trend Analysis

Trends in indicator parameters associated with landfill leachate were analyzed in all monitoring wells sampled in 2019. Indicator parameters were identified in the Site Closure Report (Porter Dillon, 1995) and were further refined in the Monitoring Plan Evaluation (Stantec Consulting Ltd. (c), 2017). The leachate indicator parameters included ammonia, chloride, and conductivity.



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Historical analytical results for these three parameters have been plotted according to the monitoring area that the well is located in (Areas 1 to 3 on Figure 1, Appendix A) and can be seen in leachate indicator Figures D-1 to D-9 (Appendix D). The areas are summarized as follows:

- Areas 1 and 2 are considered downgradient of the Site.
 - Area 1 includes MW-4A, MW-25B, and TH-1.
 - Area 2 includes MW-22A/B/C and MW-23A/B/C.
- Area 3 is considered upgradient of the Site.
 - Area 3 includes MW-29B/C and MW-31A.

Trends for locations sampled in 2019 noted through a visual assessment of the leachate indicator figures are summarized below:

- Ammonia:
 - Area 1 – Ammonia concentrations show generally stable trends (no long-term distinct increase or decrease) with TH-1 and MW-4A showing similar, elevated levels compared to the lower MW-25B.
 - Area 2 – Ammonia concentrations show generally stable trends (no long-term distinct increase or decrease) with concentrations in recent years decreasing with depth: higher concentrations in shallow wells (MW-22A), lower in medium wells (MW-22B and MW-23B), to lowest concentrations in deep wells (MW-22C and MW-23C). MW-23A (shallow, not as far downstream along Palmer Brook) is an exception and has much lower levels than MW-22A (shallow, further downstream along Palmer Brook).
 - Area 3 – Ammonia concentrations show generally stable trends (no long-term distinct increase or decrease) with all wells showing similar, low levels.
- Chloride:
 - Area 1 – Chloride concentrations continue to show a generally decreasing trend in TH-1 and MW-4A while MW-25B concentrations are more variable. MW-25B is on the downgradient side of Brooklyn Street and may be influenced by road salt.
 - Area 2 – Chloride concentrations continue to show a slight increasing trend in MW-22C while MW-22B and MW-22A generally show slight decreasing trends. MW-23A, MW-23B, and MW-23C show generally stable trends (no long-term distinct increase or decrease). Within these trends, the shallow wells (MW-22A and MW-23A) are the most variable year to year. There is no other discernible trend in relation to well depth or distance downstream along Palmer Brook.
 - Area 3 – Chloride concentrations show generally stable trends (no long-term distinct increase or decrease).
- Conductivity:
 - Area 1 – Conductivity values generally show a slightly decreasing trend in TH-1, are stable in MW-4A, and have more variability in MW-25B with a stable to increasing trend. The conductivity trend in MW-25B correlates well to the chloride concentration trend.
 - Area 2 – Conductivity levels generally show a decreasing trend in MW-22A and a slight increasing trend in MW-22C. Other wells show generally stable trends (no long-term distinct increase or decrease). MW-22A/B/C wells (further downstream along Palmer Brook) have higher conductivity than all MW-23A/B/C wells (not as far downstream); and deep wells (MW-22C and MW-23C) have the lowest conductivity in their location's well group in recent years.
 - Area 3 – Conductivity values show generally stable trends (no long-term distinct increase or decrease).



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Groundwater elevations over the history of the monitoring program were also evaluated for trends and are shown in Figure D-10 for monitoring wells downgradient of the Site (Areas 1 and 2) and in Figure D-11 for monitoring wells upgradient of the Site (Area 3) (Appendix D). Results from the 2019 monitoring event show a slight increase in groundwater elevations over the last three years but no longer-term discernible trend, indicating that the closed landfill is not influencing groundwater elevations downgradient of it.

3.1.4 Action Levels

As described in the Monitoring Plan Evaluation (Stantec Consulting Ltd. (c), 2017), action levels were developed for each of the indicator parameters. Action levels are concentration values for indicator parameters that would initiate further response. The generic definition of an action level is an indicator parameter concentration that increases more than three standard deviations from the mean of the historical data (defined here as data collected in 2007 through 2017, or 2007 through 2016 for wells that were not sampled since 2016; the calculation is made using half of the reportable detection limit, where applicable). Table 2 below shows that no indicator parameters exceeded their respective action levels for the monitoring well locations sampled in 2019.

Table 2 2019 Data and Action Level Comparison for Indicator Parameters

Monitoring Location	Dissolved Chloride (mg/L)	Nitrogen (ammonia nitrogen) (mg/L)	Conductivity (µS/cm)
MW-4A			
MW-4A - Action Level	139	109	2463
MW-4A - 2019 Data	31	32	930
MW-22A			
MW-22A - Action Level	204	48	1506
MW-22A - 2019 Data	19	15	680
MW-22B			
MW-22B - Action Level	291	3.3	2251
MW-22B - 2019 Data	130	1.3	1500
MW-22C			
MW-22C - Action Level	51	14	755
MW-22C - 2019 Data	45	<0.050	460
MW-23A			
MW-23A - Action Level	267	0.04	926
MW-23A - 2019 Data	57	<0.050	290
MW-23B			
MW-23B - Action Level	87	1.3	453
MW-23B - 2019 Data	44	0.49	300
MW-23C			
MW-23C - Action Level	6.0	None	145
MW-23C - 2019 Data	2.7	<0.050	120



Table 2 2019 Data and Action Level Comparison for Indicator Parameters

Monitoring Location	Dissolved Chloride (mg/L)	Nitrogen (ammonia nitrogen) (mg/L)	Conductivity (µS/cm)
MW-25B			
MW-25B - Action Level	178	0.50	1654
MW-25B - 2019 Data	72	<0.05	620
MW-29B			
MW-29B - Action Level	21	None	268
MW-29B - 2019 Data	14	<0.050	220
MW-29C			
MW-29C - Action Level	19	None	156
MW-29C - 2019 Data	16	<0.050	140
MW-31A			
MW-31A - Action Level	31.7	None	110
MW-31A - 2019 Data	5.7	<0.050	81
TH1			
TH1 - Action Level	60	79	1565
TH1 - 2019 Data	19	28	940

3.1.5 QA/QC Duplicates

QA/QC measures included collection of a field duplicate sample from MW-31A. Analysis of the field duplicate was completed for general chemistry and metals. Relative percent differences (RPD) between results from MW-31A and MW-40D (the duplicate) are shown in Tables B-5 and B-6 (Appendix B). RPD values calculated are below 40%, the acceptable limit for groundwater blind field duplicates (Bureau Veritas, 2020), with the following exceptions:

- Ion balance RPD is 174%.
- Colour RPD is 70%.
- Orthophosphate RPD is 109%
- Dissolved sulphate RPD is 82%

These results do not suggest that there is any issue with the analytical quality that would affect dependence on this data.

3.2 SURFACE WATER

3.2.1 Field Results

Table B-2 (Appendix B) contains *in situ* physical parameters measured at all surface water sampling locations using a YSI 556 multi meter. These are summarized as follows:

- pH ranges from 6.23 to 7.68.
- Dissolved oxygen is 0.43 mg/L at SW19B, and ranges from 5.60 to 8.30 mg/L elsewhere.
- Water temperature ranges from 14.32 to 18.68 °C.



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- Conductivity ranges from 0.186 to 0.264 mS/cm.
- Water had no observed odour or sheen. Water was flowing and clear other than at SW3, which was moderate to low flow, brown, and silty.

3.2.2 Analytical Results

Analytical results for the 2019 monitoring program are provided in Table B-7 (Appendix B) and are discussed below. Laboratory certificates are provided in Appendix E. Additionally, results from historical monitoring events are provided in Tables C-13 through C-16, Appendix C. CCME FAL for zinc and manganese were updated in 2018 and 2019, respectively. These and other CCME FAL are dependent upon water parameters such as pH and hardness. Stantec did not recalculate dependent standards for samples from historical monitoring events. Historical analytical chemistry results were provided to Stantec by the consultant responsible for the 2012–2015 monitoring events, WSP Canada Inc., and have not been verified by Stantec.

Results from the July 2019 sampling event showed concentrations for general chemistry and metals analysis below the applicable Tier 1 EQS (fresh water) and CCME FAL (fresh water, long term exposure), with the following exceptions:

- Nitrite as nitrogen exceeded the CCME FAL at SW3.
- Ammonia as nitrogen exceeded the pH- and temperature-dependent CCME FAL at SW7A.
- pH at SW19B, as measured by the laboratory, was within the CCME FAL guideline range of 6.5-9.0.
 - Field-measured pH at this location was 6.23, outside the CCME FAL guideline range.
 - The laboratory report from BV notes that “the APHA Standard Method requires pH to be analyzed within 15 minutes of sampling and therefore field analysis is required for compliance. All laboratory pH analyses in this report are reported past the APHA Standard Method holding time.”
 - Therefore, the field-measured pH is considered more accurate and pH at SW19B is not considered to be within the CCME FAL guideline range.
- Aluminum exceeded the Tier 1 EQS at all five surface water sampling locations and the CCME FAL at SW3, SWA, and SW19B.
- Arsenic exceeded the Tier 1 EQS and CCME FAL at SW7A.
- Cadmium exceeded the Tier 1 EQS at SW3, SW7, and SW19B.
- Copper exceeded the Tier 1 EQS and the hardness-dependent CCME FAL at SW3.
- Iron exceeded the Tier 1 EQS and CCME FAL at all five surface water sampling locations.
- Lead exceeded the Tier 1 EQS and the hardness-dependent CCME FAL at SW3.
- Manganese exceeded the pH- and hardness-dependent CCME FAL at SW3, SW7, SW7A, and SW19B and the Tier 1 EQS at SW7, SW7A, and SW19B.
- Vanadium exceeded the Tier 1 EQS at SW3.
- Zinc exceeded the pH-, hardness-, and dissolved organic carbon (DOC)-dependent CCME FAL at SW3.

Water quality in the Cornwallis River upgradient of the Site is represented by SWA. Levels in this background location show elevated levels of aluminum and iron but have generally lower levels of metals than all other locations.



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Water quality in Palmer Brook is represented by SW19B, SW7, and SW7A, in order of their location up- to downstream. Comparing SW19B and SW7 shows stable to decreasing concentration levels for most substances, moving downstream. However, between SW7 and SW7A there were increases in the concentrations of many substances, particularly electrical conductivity, ammonia, arsenic, and iron. SW7A generally exhibited the highest concentrations of metals of all Palmer Brook locations.

Water quality in the Cornwallis River downgradient of the Site is represented by SW3. SW3 showed elevated concentration of several substances including nitrite, copper, cadmium, lead, vanadium, and zinc. These substances differ from those found at elevated levels in SW7A.

These levels may indicate that surface water in Palmer Brook is influenced by the Site, that the influence is strongest near SW7A, and that impacts (i.e., elevated levels of some parameters) are spatially restricted as their influence is not detected downstream in the Cornwallis River. It may also indicate two or more sources of contamination from the Site, contributing different substances, influencing to the west into Palmer Brook and south into the Cornwallis River.

3.2.3 Trends Analysis

Trends in indicator parameters associated with landfill leachate were analyzed at the surface water sites sampled in 2019. Indicator parameters were identified in the Site Closure Report (Porter Dillon, 1995) and were further refined in the Monitoring Plan Evaluation (Stantec Consulting Ltd. (c), 2017). The leachate indicator parameters included ammonia, chloride, and conductivity. Historical analytical results for these three parameters can be seen in leachate indicator Figures D-12 to D-14 (Appendix D).

Trends for locations sampled in 2019, as noted through a visual assessment of the leachate indicator figures, are summarized below. (Locations SW19B and SWA have only one and two monitoring events, respectively, and no trends are discussed.)

- Ammonia: Locations SW7 and SW3 have over 20 years of data and generally appear to have low concentrations and no discernable trends. A large spike at location SW7A was reported in 2016 but concentrations have declined in the subsequent three monitoring events.
- Chloride: Locations SW7 and SW3 have over 20 years of data and generally appear to have no discernible trends. A spike at SW7 is noted in 2007 and 2008 but levels have returned to historical norms in the last five monitoring events.
- Conductivity: Locations SW7 and SW3 have over 20 years of data and generally appear to have no discernible trends. A large spike at SW7 is noted in 2007 and 2008 but levels have returned to historical norms in the last several monitoring events. A possible upward trend at SW7A is likely based on an anomalously low initial sampling result.

4.0 CONCLUSIONS

The following conclusions were developed based on the results of the 2019 sampling program and historical data.



4.1 GROUNDWATER

Based on the results of the 2019 groundwater monitoring program, the following conclusions were made:

- Water level elevations ranged from 19.96 to 20.15 masl at upgradient wells and 7.54 to 10.54 masl at downgradient wells during the July 2019 monitoring event. These elevations are consistent with the range of historical water level elevations.
- Indicator parameter concentrations were below Action Levels at all monitoring locations.
- Groundwater quality and trends were generally consistent with historical monitoring events other than lowered levels of dissolved oxygen in four downgradient wells.
- The analytical results generally fall below applicable guidelines (Tier 1 EQS and Tier 2 PSS) other than aluminum, arsenic, cadmium, and iron, all of which can be naturally elevated in groundwater in Nova Scotia.

4.2 SURFACE WATER

Based on the results of the 2019 surface water monitoring program, the following conclusions were made:

- Surface water quality downstream of the Site in the Cornwallis River (SW3) does not appear consistent with either the upstream river location (SWA) or the locations in Palmer Brook. Cadmium, lead, vanadium, and zinc exceeded applicable standards and guidelines at SW3 for the first time in six to ten years.
- Surface water quality in Palmer Brook (SW7 and, more particularly, SW7A) continues to show some influence from the Site, with multiple parameters reporting concentrations above applicable standards and guidelines.
- Metals parameters in surface water were generally at higher levels than 2018.

5.0 RECOMMENDATIONS

Stantec recommends that the Municipality continue with the ongoing monitoring following the updated scope that was used in 2019. This will focus environmental monitoring on areas where potential impacts from the Site have historically been observed. Additionally, one new surface water monitoring location is recommended to provide further information on potential interactions between the Site and Palmer Brook. Monitoring to be completed in 2020 is recommended to include the following:

- Surface water: Sampling for metals and general chemistry parameters at annual sampling locations (SW7, SW7A, SW3, and SWA) plus the newly added location (SW19B) is recommended. A new sampling location is also recommended for Palmer Brook downstream of SW7 and SW7A and prior to the confluence with the Cornwallis River, if an accessible sampling location can be found.
- Groundwater: Sampling for metals and general chemistry parameters at annual monitoring locations (MW-4A, MW-22A, MW-22B, MW-22C, MW-25B, TH-1) is recommended.



6.0 CLOSURE

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

All information received from the client or third parties in the preparation of this report has been assumed by Stantec to be correct. Stantec assumes no responsibility for any deficiency or inaccuracy in information received from others.

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

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

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

This report was prepared by Gillian Manley, P.Eng. with review by Don Carey, M. Sc., P.Eng.

Regards,

Stantec Consulting Ltd.

Don Carey, M. Sc., P.Eng.
Technical Lead – Site Investigation
Phone: (902) 468-7777
Fax: (902) 468-9009
donald.carey@stantec.com

Gillian Manley, P.Eng.
Environmental Engineer
Phone: (902) 468-7777
Fax: (902) 468-9009
gillian.manley@stantec.com

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FINAL REPORT: ENVIRONMENTAL MONITORING – MEADOWVIEW LANDFILL

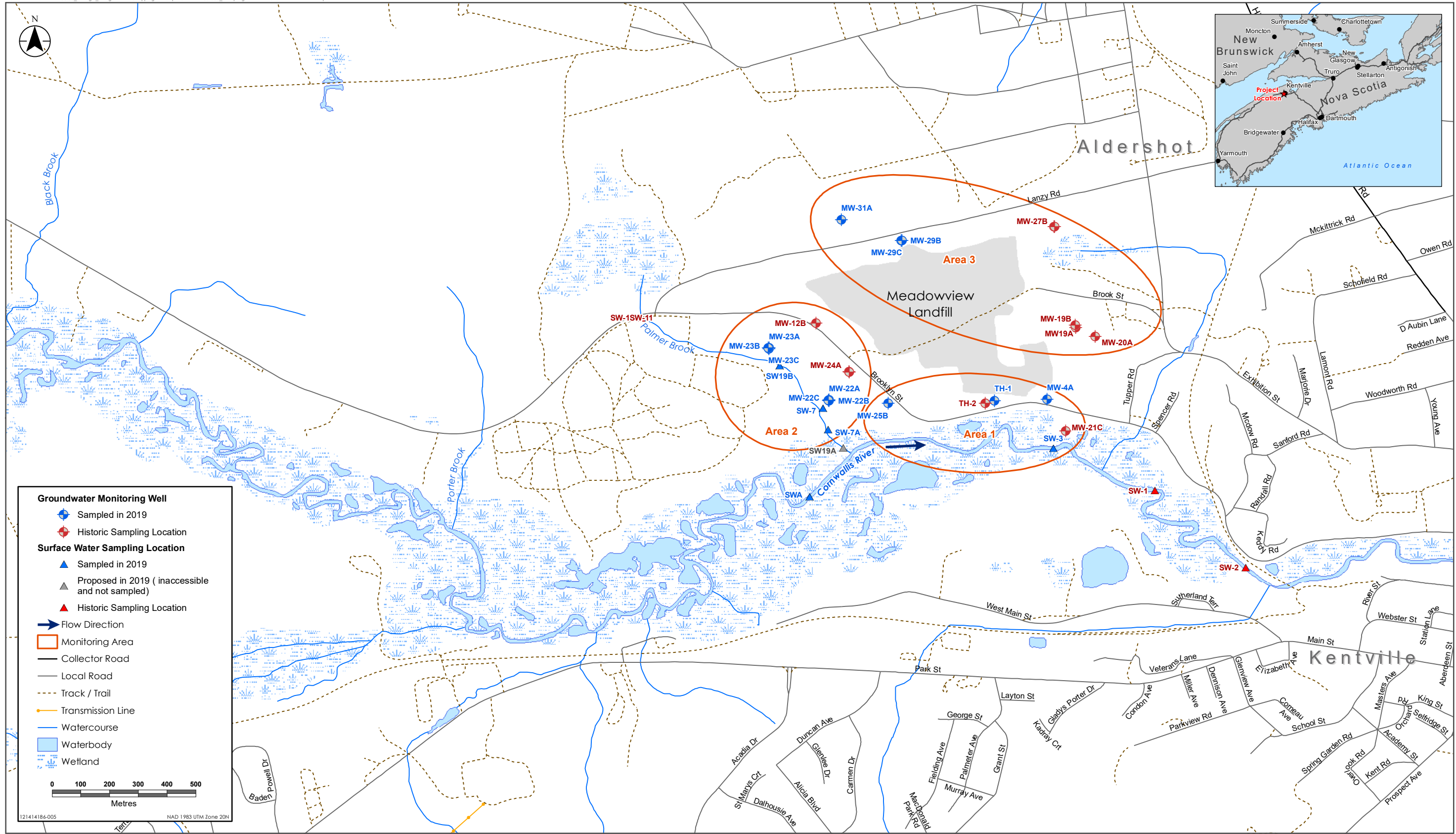
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APPENDIX A

Location Figure



Sampling Locations



APPENDIX B

Chemistry Tables

Table B-1 Summary of Groundwater Field Measurements
Municipality of Kings County
Meadowview Landfill
Stantec Consulting Ltd. Project No. 121414186

Well ID	Up-gradient or Down-gradient	Well Depth (m)	Top of Casing Elevation* (masl)	Date Sampled	Depth to Water in Well (m)	Water Elevation (masl)	Depth of Water in Well (m)	pH	Dissolved Oxygen (mg/L)	Temperature (°C)	Conductivity (mS/cm)	Observations
MW-29B	Up-gradient	9.60	23.07	15-Jul-19	2.93	20.14	6.67	7.99	3.49	9.46	0.194	Light brown, little silt, no odour, no sheen.
MW-29C	Up-gradient	23.32	23.20	15-Jul-19	3.06	20.15	20.27	7.69	1.22	8.74	0.136	Cloudy to clear, no silt, no odour, no sheen.
MW-31A	Up-gradient	7.29	25.64	15-Jul-19	5.68	19.96	1.61	8.66	5.54	13.14	0.082	Brown to clear, little silt, no odour, no sheen.
MW-4A	Down-gradient	10.43	11.70	15-Jul-19	4.12	7.58	6.31	7.40	1.73	12.97	0.309	Brown, little silt, no odour, no sheen.
MW-22A	Down-gradient	8.57	11.02	15-Jul-19	1.98	9.04	6.59	6.68	5.06	9.62	0.666	Cloudy to clear, no odour, no sheen.
MW-22B	Down-gradient	13.11	11.08	15-Jul-19	2.26	8.82	10.85	6.69	0.00	9.38	1.270	Cloudy to clear, no odour, no sheen.
MW-22C	Down-gradient	24.77	11.05	15-Jul-19	3.44	7.61	21.33	7.48	0.00	9.21	0.398	Reddish to clear, no odour, no sheen.
MW-23A	Down-gradient	4.82	12.90	15-Jul-19	2.41	10.50	2.42	7.33	1.07	10.29	0.256	Light brown, lots of silt, no odour, no sheen.
MW-23B	Down-gradient	11.41	12.95	15-Jul-19	2.42	10.54	8.99	6.56	0.23	8.54	0.277	Light brown, little silt, no odour, no sheen.
MW-23C	Down-gradient	23.04	12.62	15-Jul-19	2.11	10.52	20.94	6.94	6.17	8.53	0.117	Light brown to clear, no odour, no sheen.
MW-25B	Down-gradient	13.58	11.46	15-Jul-19	3.93	7.54	9.66	8.10	4.61	9.56	0.211	Cloudy to clear, little silt no odour, no sheen.
TH-1	Down-gradient	9.02	13.25	15-Jul-19	5.13	8.13	3.90	6.72	0.69	10.31	0.803	Light brown, little silt no odour, no sheen.

Notes:

*Top of casing elevations taken from Terms of Reference

Table B-2 Summary of Surface Water Field Measurements
Municipality of Kings County
Meadowview Landfill
Stantec Consulting Ltd. Project No. 121414186

Sample Location ID	Date Sampled	pH	Dissolved Oxygen (mg/L)	Temperature (°C)	Conductivity (mS/cm)	Observations
SW3	15-Jul-19	7.32	5.60	17.44	0.239	Moderate to low flow, brown, silty, no odour, no sheen.
SW7	15-Jul-19	7.38	5.87	14.74	0.186	Flowing, clear, no odour, no sheen.
SW7A	15-Jul-19	7.00	5.86	15.38	0.264	Flowing, clear, no odour, no sheen.
SWA	15-Jul-19	7.68	8.30	18.68	0.231	Flowing, cloudy, no odour, no sheen.
SW19B	15-Jul-19	6.23	0.43	14.32	0.189	Flowing, clear, no odour, no sheen.

Table B-3

2019 General Chemistry Analytical Results for the Groundwater Monitoring Program
Municipality of Kings County
Meadowview Landfill
Stantec Consulting Ltd. Project No. 121414186

Sample Location				MW-4A	MW-22A	MW-22B	MW-22C	MW-23A	MW-23B	MW-23C	MW-25B	MW-29B	MW-29C	MW-31A	TH-1	
Sample Date				15-Jul-2019	15-Jul-2019	15-Jul-2019	15-Jul-2019	15-Jul-2019	15-Jul-2019	15-Jul-2019	15-Jul-2019	15-Jul-2019	15-Jul-2019	15-Jul-2019	15-Jul-2019	
Sample ID				MW-4A	MW-22A	MW-22B	MW-22C	MW-23A	MW-23B	MW-23C	MW-25B	MW-29B	MW-29C	MW-31A	MW-40D	TH-1
Sampling Company				STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory				BV	BV	BV	BV	BV	BV	BV	BV	BV	BV	BV	BV	BV
Laboratory Work Order				B9J5732	B9J5732	B9J5732	B9J5732	B9J5732	B9J5732	B9J5732	B9J5732	B9J5732	B9J5732	B9J5732	B9J5732	B9J5732
Laboratory Sample ID				KGZ868	KGZ869	KGZ870	KGZ871	KGZ875	KGZ876	KGZ877	KGZ872	KGZ878	KGZ879	KGZ880	KGZ873	KGZ874
Sample Type	Units	Tier 1 EQS	Tier 2 PSS	Field Sample	Field Sample	Field Sample	Field Sample	Field Sample	Field Sample	Field Sample	Field Sample	Field Sample	Field Sample	Field Sample	Field Duplicate	Field Sample
Anion Sum	me/L	-	-	10.2	7.71	15.8	4.96	2.79	2.95	1.38	6.38	2.42	1.51	0.780	0.590	10.2
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-	460	360	600	180	51	73	59	220	96	44	25	19	480
Calculated TDS	mg/L	-	-	510	440	850	260	160	180	82	320	130	88	51	42	550
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-	<1.0	<1.0	1.4	1.4	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	-	-	8.68	8.69	16.7	4.67	2.52	2.81	1.28	5.50	2.17	1.31	0.790	0.710	10.1
Hardness (CaCO3)	mg/L	-	-	210	220	650	200	45	79	36	240	89	28	24	22	250
Ion Balance (% Difference)	%	-	-	8.10	5.98	2.71	3.01	5.08	2.43	3.76	7.41	5.45	7.09	0.640	9.23	0.390
Langelier Index (@ 20C)	-	-	-	0.0780	-0.486	0.988	0.566	-1.54	-1.13	-0.521	0.508	0.0520	-0.692	-2.49	-2.79	0.406
Langelier Index (@ 4C)	-	-	-	-0.169	-0.735	0.742	0.317	-1.79	-1.38	-0.772	0.259	-0.198	-0.943	-2.75	-3.04	0.159
Nitrate (N)	mg/L	-	-	0.61	<0.050	0.055	<0.050	<0.050	<0.050	0.24	0.050	0.061	0.24	<0.050	<0.050	<0.050
Saturation pH (@ 20C)	Units	-	-	7.00	7.08	6.41	7.34	8.51	8.10	8.47	7.20	7.90	8.72	9.02	9.18	6.90
Saturation pH (@ 4C)	Units	-	-	7.25	7.33	6.66	7.59	8.76	8.35	8.72	7.45	8.15	8.97	9.28	9.44	7.15
Total Alkalinity (Total as CaCO3)	mg/L	-	-	460	360	610	180	51	73	60	220	97	45	25	19	480
Dissolved Chloride (Cl)	mg/L	-	15000	31	19	130	45	57	44	2.7	72	14	16	5.7	5.6	19
Colour	TCU	-	-	9.8	67	8.3	<5.0	<5.0	15	<5.0	<5.0	<5.0	<5.0	25	12	6.8
Nitrate + Nitrite (N)	mg/L	-	-	0.64	<0.050	0.055	<0.050	<0.050	0.071	0.24	0.050	0.061	0.24	<0.050	<0.050	0.059
Nitrite (N)	mg/L	-	-	0.026	<0.010	<0.010	<0.010	<0.010	0.047	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.014
Nitrogen (Ammonia Nitrogen)	mg/L	-	-	32	15	1.3	<0.050	<0.050	0.49	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	28
Total Organic Carbon (C)	mg/L	-	-	<50 (T)	6.5 (T)	14 (T)	2.1	<50 (T)	5.5 (T)	<0.50	3.8	<50 (T)	<5.0 (T)	<50 (T)	<50 (T)	7.8 (T)
Orthophosphate (P)	mg/L	-	-	<0.010	<0.010	<0.010	<0.010	0.046	<0.010	0.023	<0.010	0.027	0.013	0.18	0.053	<0.010
pH	Units	-	-	7.08	6.59	7.40	7.91	6.98	6.97	7.95	7.71	7.96	8.03	6.53	6.39	7.30
Reactive Silica (SiO2)	mg/L	-	-	23	17	20	11	13	13	11	13	9.8	7.6	6.6	6.8	30
Dissolved Sulphate (SO4)	mg/L	-	-	<2.0	<2.0	<2.0	<2.0	7.9	12	4.0	<2.0	4.9	7.3	5.5	2.3	<2.0
Turbidity	NTU	-	-	>1000	610	310	1.0	860	760	36	31	>1000	20	>1000	>1000	320
Conductivity	µS/cm	-	-	930	680	1500	460	290	300	120	620	220	140	81	62	940

Notes:

(T) - Elevated reporting limit due to sample turbidity

N/A - Not Applicable

Tier 1 EQS - Tier 1 Environmental Quality Standards for Groundwater from Nova Scotia's Contaminated Sites Regulations (July 2013) Notification of Contamination Protocol, Table 4, commercial/industrial, non-potable, coarse grainec

Tier 2 PSS - Tier 2 Pathway Specific Standards for Groundwater from Nova Scotia's Contaminated Sites Regulations (July 2013) Remediation Levels Protocol, Table 3, groundwater discharge to surface water > 10 m from surface water body

Bold - indicates value exceeds Tier 2 PSS

Table B-4 2019 Metals Analytical Results for the Groundwater Monitoring Program
Municipality of Kings County
Meadowview Landfill
Stantec Consulting Ltd. Project No. 121414186

Sample Location				MW-4A	MW-22A	MW-22B	MW-22C	MW-23A	MW-23B	MW-23C	MW-25B	MW-29B	MW-29C	MW-31A	TH-1	
Sample Date				15-Jul-2019	15-Jul-2019	15-Jul-2019	15-Jul-2019	15-Jul-2019	15-Jul-2019	15-Jul-2019	15-Jul-2019	15-Jul-2019	15-Jul-2019	15-Jul-2019	15-Jul-2019	
Sample ID				MW-4A	MW-22A	MW-22B	MW-22C	MW-23A	MW-23B	MW-23C	MW-25B	MW-29B	MW-29C	MW-31A	MW-40D	
Sampling Company				STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	
Laboratory				BV	BV	BV	BV	BV	BV	BV	BV	BV	BV	BV	BV	
Laboratory Work Order				B9J5732	B9J5732	B9J5732	B9J5732	B9J5732	B9J5732	B9J5732	B9J5732	B9J5732	B9J5732	B9J5732	B9J5732	
Laboratory Sample ID				KGZ868	KGZ869	KGZ870	KGZ871	KGZ875	KGZ876	KGZ877	KGZ872	KGZ878	KGZ879	KGZ880	KGZ873	KGZ874
Sample Type	Units	Tier 1 EQS	Tier 2 PSS	Field Sample	Field Sample	Field Sample	Field Sample	Field Sample	Field Sample	Field Sample	Field Sample	Field Sample	Field Sample	Field Sample	Field Duplicate	Field Sample
Aluminum	µg/L	-	50	17	<5.0	<5.0	<5.0	12	<5.0	<5.0	<5.0	12	10	110	100	<5.0
Antimony	µg/L	-	200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic	µg/L	-	50	28	67	9.9	1.4	<1.0	6.7	5.5	2.2	1.4	3.8	1.1	<1.0	23
Barium	µg/L	-	10000	1500	880	620	8.7	60	190	52	7.6	13	3.3	22	20	870
Beryllium	µg/L	-	53	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bismuth	µg/L	-	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Boron	µg/L	-	12000	240	220	450	<50	<50	<50	<50	61	<50	<50	<50	<50	180
Cadmium	µg/L	-	0.1	0.011	<0.010	0.16	<0.010	0.059	0.072	0.075	0.023	0.015	0.011	0.034	0.029	<0.010
Calcium	µg/L	-	-	64000	66000	220000	63000	14000	26000	12000	77000	30000	9200	7900	6900	79000
Chromium	µg/L	-	-	2.2	1.0	1.4	<1.0	<1.0	<1.0	2.8	1.1	1.1	<1.0	1.1	1.2	<1.0
Cobalt	µg/L	-	100	7.8	18	9.7	<0.40	<0.40	2.7	<0.40	<0.40	<0.40	<0.40	1.2	0.90	4.0
Copper	µg/L	-	20	0.68	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	1.2	<0.50
Iron	µg/L	-	3000	9700	47000	5200	200	<50	4300	<50	<50	<50	<50	170	130	12000
Lead	µg/L	-	10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Magnesium	µg/L	-	-	13000	13000	27000	9900	2500	3700	1200	11000	3500	1200	1100	1000	14000
Manganese	µg/L	-	8200	1200	3600	3500	56	500	2900	<2.0	17	2.9	2.4	85	64	1000
Molybdenum	µg/L	-	730	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Nickel	µg/L	-	250	13	12	23	<2.0	<2.0	2.5	<2.0	4.8	<2.0	<2.0	3.3	2.6	4.1
Phosphorus	µg/L	-	-	<100	300	<100	<100	<100	<100	<100	<100	<100	<100	230	190	110
Potassium	µg/L	-	-	24000	16000	8300	6600	1200	2500	2400	6600	3300	3300	4600	3900	28000
Selenium	µg/L	-	10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Silver	µg/L	-	1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	µg/L	-	-	27000	25000	71000	12000	36000	22000	11000	13000	7100	15000	4200	4000	43000
Strontium	µg/L	-	210000	410	340	2000	900	20	52	98	990	330	120	34	31	360
Thallium	µg/L	-	8	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Tin	µg/L	-	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium	µg/L	-	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Uranium	µg/L	-	3000	0.16	<0.10	11	34	<0.10	<0.10	3.4	12	2.0	0.89	0.23	0.22	<0.10
Vanadium	µg/L	-	60	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	3.6	<2.0	<2.0	4.6	<2.0	<2.0	<2.0
Zinc	µg/L	-	300	27	5.5	7.5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

Notes:
N/A - Not Applicable
Tier 1 EQS - Tier 1 Environmental Quality Standards for Groundwater from Nova Scotia's Contaminated Sites Regulations (July 2013) Notification of Contamination Protocol, Table 4, commercial/industrial, non-potable, coarse graine
Tier 2 PSS - Tier 2 Pathway Specific Standards for Groundwater from Nova Scotia's Contaminated Sites Regulations (July 2013) Remediation Levels Protocol, Table 3, groundwater discharge to surface water > 10 m from surface water box
Bold - indicates value exceeds Tier 2 PSS

Table B-5

**Field Duplicate Analysis for Relative Percent Difference
for General Chemistry
Municipality of Kings County
Meadowview Landfill
Stantec Consulting Ltd. Project No. 121414186**

Sample Location		MW-31A		
		15-Jul-2019	15-Jul-2019	
Sample Date		MW-31A	MW-40D	
Sample ID		KGZ880	KGZ873	
Laboratory Sample ID				
Sample Type	Units	Field Sample	Field Duplicate	RPD
Anion Sum	me/L	0.780	0.590	28%
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	25	19	27%
Calculated TDS	mg/L	51	42	19%
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	<1.0	<1.0	NC
Cation Sum	me/L	0.790	0.710	11%
Hardness (CaCO ₃)	mg/L	24	22	9%
Ion Balance (% Difference)	%	0.640	9.23	174%
Langelier Index (@ 20C)	-	-2.49	-2.79	11%
Langelier Index (@ 4C)	-	-2.75	-3.04	10%
Nitrate (N)	mg/L	<0.050	<0.050	NC
Saturation pH (@ 20C)	Units	9.02	9.18	2%
Saturation pH (@ 4C)	Units	9.28	9.44	2%
Total Alkalinity (Total as CaCO ₃)	mg/L	25	19	27%
Dissolved Chloride (Cl)	mg/L	5.7	5.6	2%
Colour	TCU	25	12	70%
Nitrate + Nitrite (N)	mg/L	<0.050	<0.050	NC
Nitrite (N)	mg/L	<0.010	<0.010	NC
Nitrogen (Ammonia Nitrogen)	mg/L	<0.050	<0.050	NC
Total Organic Carbon (C)	mg/L	<50 (T)	<50 (T)	NC
Orthophosphate (P)	mg/L	0.18	0.053	109%
pH	Units	6.53	6.39	2%
Reactive Silica (SiO ₂)	mg/L	6.6	6.8	3%
Dissolved Sulphate (SO ₄)	mg/L	5.5	2.3	82%
Turbidity	NTU	>1000	>1000	NC
Conductivity	µS/cm	81	62	27%

Notes:

RPD - Relative Percent Difference

(T) - Elevated reporting limit due to sample turbidity

NC - Not Calculated

N/A - Not Applicable

Grey indicates RPD >40%

Table B-6

Field Duplicate Analysis for Relative Percent Difference for Metals
Municipality of Kings County
Meadowview Landfill
Stantec Consulting Ltd. Project No. 121414186

Sample Location		MW-31A		
Sample Date		15-Jul-2019	15-Jul-2019	
Sample ID		MW-31A	MW-40D	
Laboratory Sample ID		KGZ880	KGZ873	
Sample Type	Units	Field Sample	Field Duplicate	RPD
Aluminum	µg/L	110	100	10%
Antimony	µg/L	<1.0	<1.0	NC
Arsenic	µg/L	1.1	<1.0	NC
Barium	µg/L	22	20	10%
Beryllium	µg/L	<1.0	<1.0	NC
Bismuth	µg/L	<2.0	<2.0	NC
Boron	µg/L	<50	<50	NC
Cadmium	µg/L	0.034	0.029	NC
Calcium	µg/L	7900	6900	14%
Chromium	µg/L	1.1	1.2	9%
Cobalt	µg/L	1.2	0.90	29%
Copper	µg/L	1.2	1.2	0%
Iron	µg/L	170	130	27%
Lead	µg/L	<0.50	<0.50	NC
Magnesium	µg/L	1100	1000	10%
Manganese	µg/L	85	64	28%
Molybdenum	µg/L	<2.0	<2.0	NC
Nickel	µg/L	3.3	2.6	24%
Phosphorus	µg/L	230	190	19%
Potassium	µg/L	4600	3900	16%
Selenium	µg/L	<1.0	<1.0	NC
Silver	µg/L	<0.10	<0.10	NC
Sodium	µg/L	4200	4000	5%
Strontium	µg/L	34	31	9%
Thallium	µg/L	<0.10	<0.10	NC
Tin	µg/L	<2.0	<2.0	NC
Titanium	µg/L	<2.0	<2.0	NC
Uranium	µg/L	0.23	0.22	4%
Vanadium	µg/L	<2.0	<2.0	NC
Zinc	µg/L	<5.0	<5.0	NC

Notes:

RPD - Relative Percent Difference

NC - Not Calculated

N/A - Not Applicable

Grey indicates RPD >40%

APPENDIX C

Historical Chemistry Tables

GROUNDWATER GENERAL CHEMISTRY - NOTES
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186

Notes:

(T) or (1) - Elevated reporting limit due to sample turbidity

ND - Not Detected

N/A - Not Applicable

Tier 1 EQS - Tier 1 Environmental Quality Standards for Groundwater from Nova Scotia's Contaminated Sites Regulations (July 2013) Notification of Contamination Protocol, Table 4, commercial/industrial, non-potable, coarse grained

Tier 2 PSS - Tier 2 Pathway Specific Standards for Groundwater from Nova Scotia's Contaminated Sites Regulations (July 2013) Remediation Levels Protocol, Table 3, groundwater discharge to surface water > 10 m from surface water body

Bold - indicates value exceeds Tier 2 PSS

Action Level - see accompanying report

TABLE C-1

GROUNDWATER GENERAL CHEMISTRY - MW-4A
 Municipality of the County of Kings
 Meadowview Landfill, Kentville, NS
 Stantec Consulting Ltd. Project No. 121414186

Compound	Units	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	8-Mar-95	21-Mar-96	21-Mar-96	16-Apr-97	6-Apr-98	5-May-99	5-May-99	26-Jul-00	26-Jul-00 Field Dup.	Aug-01	Sep-02	19-Aug-03	19-Aug-03 MW-40D DUP	25-Aug-04	25-Aug-04 MW-40D	25-Aug-04 MW-40D DUP	18-Aug-05	18-Aug-05 MW-40D	23-Nov-06	1-Aug-07	1-Aug-07 MW-4ALF	28-Jul-08
Anion Sum	me/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19.8	23.1	22.8	19.2	20.8	18.6	19.4	16.2	15.8
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-	737	621	452	429	696	681	720	718	685	664	737	679.49	739	799	799	911	911	810	890	753	812	649	670
Calculated TDS	mg/L	-	-	968	-	545	520	900	835	856	845	862	820	1150	907.36	1100	1170	1030	1190	1200	1080	1110	1060	1110	1030	943
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-	0.28	0	0.2	0.2	<1	0.3	0.3	0.3	<1	<1	1	0.51	<1	1	<1	9	9	ND	ND	1	<1	<1	<1
Cation Sum	me/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.8	22	22.7	22	21.4	22.2	23.5	24.1	20.6
Hardness (CaCO3)	mg/L	-	-	703	565	389	374	598	508	567	577	597	519	751	538.12	576	602	547	631	663	580	580	610	670	680	540
Ion Balance (% Difference)	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.57	2.42	0.13	6.68	1.52	8.76	9.7	19.8	13.3
Langelier Index (@ 20C)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	1.72	1.74	0.329	0.374	0.751	0.638	0.575	0.443
Langelier Index (@ 4C)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	1.32	1.34	0.083	0.128	0.506	0.393	0.329	0.197
Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.06	<0.05	<0.05	ND	ND	ND	-	-	0.05
Saturation pH (@ 20C)	Units	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.4	6.28	6.26	6.37	6.33	6.41	6.34	6.42	6.50
Saturation pH (@ 4C)	Units	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.8	6.68	6.66	6.62	6.57	6.65	6.59	6.66	6.74
Total Alkalinity (Total as CaCO3)	mg/L	-	-	737	621	452	429	696	681	720	718	686	664	738	680	740	800	800	920	920	810	890	750	810	650	670
Dissolved Chloride (Cl)	mg/L	-	15000	109	110	31.9	32	99.2	83.1	72.9	72.1	86.8	84.8	222	157	150	160	130	160	150	95	94	120	110	110	84
Colour	TCU	-	-	160	55	130	70	17	20	100	93	11	10	15	98	26	37	18	19	19	34	31	25	23	21	17
Nitrate + Nitrite (N)	mg/L	-	-	<0.05	<0.05	0.11	0.17	0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	1.66	<0.05	<0.05	0.08	<0.05	<0.05	ND	ND	ND	<0.05	<0.05	0.05
Nitrite (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02	<0.01	<0.01	ND	ND	ND	-	-	<0.01
Nitrogen (Ammonia Nitrogen)	mg/L	-	-	13.2	11.2	11.3	10.7	16.8	18.4	10.6	10.3	27.5	26.6	31.4	<0.1	39	39	42	52	49	49	45	46	46	46	49
Total Organic Carbon (C)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	22	22	19	26
Orthophosphate (P)	mg/L	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.04	<0.3	0.04	0.01	0.06	0.06	<0.01	ND	0.01	0.01	<0.01	0.01	0.01
pH	Units	-	-	6.6	6.7	6.6	6.6	7	6.7	6.6	6.7	7	6.8	7.3	6.9	7	7.2	6.9	8	8	6.7	6.7	7.16	6.98	6.99	6.94
Reactive Silica (SiO2)	mg/L	-	-	49	49.5	26.5	27	48	44.4	44.4	44.8	38.4	37.5	41.1	44.1	37	36	35	36	36	38	37	38	40	40	37
Dissolved Sulphate (SO4)	mg/L	-	-	<2	<2	<2	2	<2	<2	<2	<2	3	2	8	4.3	10	15	7	8	8	16	16	6	4	3	<2
Turbidity	NTU	-	-	300	>1000	3.2	3.9	1.6	3	20.9	18.8	0.4	0.4	>1000	>1000	755	322	55.1	>1000	>1000	>1000	>1000	350	290	210	>1000
Conductivity	µS/cm	-	-	1820	1680	968	963	1570	1580	1620	1580	1740	1650	2420	1630	1540	2260	2150	2350	2390	1800	1900	2100	2000	2000	1900
Dissolved Organic Carbon	mg/L	-	-	24	22.2	7.5	7.5	19	15.8	1600	1570	17.1	17.6	19.1	-	-	-	<50	<500	<500	-	-	-	-	-	-
Dissolved Calcium	mg/L	-	-	210	173	128	120	179	158	179	176	191	164	227	169	182	191	170	196	207	190	190	190	210	210	170
Dissolved Magnesium	mg/L	-	-	43.4	32.3	16.9	18	36.8	25.9	34.1	33.5	29.2	26.6	44.8	28.2	29.5	30.4	29.8	34.4	35.5	25	26	34	36	36	31
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	ND	ND	ND	-	-	0.2
Potassium	mg/L	-	-	8.8	7.9	14	11.8	11.9	9.6	7.9	7.6	19.9	26.2	14.7	18.3	15.7	17	17.7	17.5	18.3	17	17	26	23	22	37
Sodium	mg/L	-	-	87.8	83.2	39.7	37.6	83.6	78.4	70	64.4	46.1	45.7	107	76.8	181	192	102	120	127	140	140	140	130	140	110

Notes: See separate notes page

TABLE C-1

GROUNDWATER GENERAL CHEMISTRY - MW-4A
 Municipality of the County of Kings
 Meadowview Landfill, Kentville, NS
 Stanlec Consulting Ltd. Project No. 121414186

Compound	Units	NS Tier 1 EQS	NS Tier 2 PSS	28-Jul-08 Dup-A	10-Aug-09	27-Jul-10	27-Jul-10 MW-40D	21-Sep-11	4-Oct-12	4-Jul-13	4-Jul-13 MW-40D	19-Aug-14	19-Aug-14 MW-40D	21-Jul-15	21-Jul-15 MW-40D	14-Jul-16	19-Jul-17	19-Jul-17 MW-40DDUP	20-Jul-18	20-Jul-18 MW-40D (DUP)	15-Jul-19	Action Level
Anion Sum	me/L	-	-	17.9	19.7	17.4	17.8	16	16.0	17.0	17.1	15.6	15.3	15.8	15.8	14.1	11.3	10.7	14.9	13.6	10.2	-
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-	770	856	765	782	722	753	751	751	712	708	703	706	650	520	490	690	620	460	-
Calculated TDS	mg/L	-	-	1020	1050	885	892	865	902	898	897	875	868	920	911	780	610	570	790	740	510	-
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-	<1	<1	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-
Cation Sum	me/L	-	-	21.1	19.9	17.3	17.1	18.3	20.8	18.3	18.2	19	19.3	21.2	20.7	15.6	11.4	10.3	14.8	14.1	8.68	-
Hardness (CaCO3)	mg/L	-	-	540	570	425	421	442	493	467	464	407	420	555	536	350	310	300	360	350	210	-
Ion Balance (% Difference)	%	-	-	8.11	0.280	0.3	1.9	1.9	13.0	3.7	3.3	9.9	11.6	14.6	13.3	5.360	0.4	1.81	0.540	1.91	8.10	-
Langelier Index (@ 20C)	-	-	-	0.624	0.459	0.51	0.42	0.5	0.52	0.42	0.56	0.49	0.5	0.18	0.25	0.508	0.138	0.371	0.433	0.275	0.0780	-
Langelier Index (@ 4C)	-	-	-	0.378	0.213	0.19	0.1	0.18	0.20	0.10	0.24	0.17	0.18	-0.14	-0.07	0.262	-0.11	0.123	0.186	0.0290	-0.169	-
Nitrate (N)	mg/L	-	-	0.05	0.07	0.09	0.11	0.38	0.32	0.48	0.47	<0.05	<0.05	0.08	0.1	<0.050	0.76	0.93	0.054	0.054	0.61	-
Saturation pH (@ 20C)	Units	-	-	6.45	6.40	6.69	6.68	6.7	6.68	6.66	6.66	6.75	6.73	6.64	6.65	6.70	6.79	6.83	6.66	6.69	7.00	-
Saturation pH (@ 4C)	Units	-	-	6.69	6.65	7.01	7	7.02	7.00	6.98	6.98	7.07	7.05	6.96	6.97	6.95	7.04	7.08	6.90	6.94	7.25	-
Total Alkalinity (Total as CaCO3)	mg/L	-	-	770	860	765	782	722	753	751	751	712	708	703	706	650	520 (2)	490 (1)	690	620	460	-
Dissolved Chloride (Cl)	mg/L	-	15000	88	92	71	72	54	33	68	69	49	40	59	58	38	31	27	40	40	31	139
Colour	TCU	-	-	19	21	11	14	17	18	17	18	6	12	10	18	11	27	22	8.9	9.7	9.8	-
Nitrate + Nitrite (N)	mg/L	-	-	0.05	0.07	0.09	0.11	0.38	0.32	0.48	0.47	<0.05	<0.05	0.08	0.1	<0.050	0.78	0.95	0.054	0.054	0.64	-
Nitrite (N)	mg/L	-	-	<0.01	ND	<0.05	<0.05	<0.05	<0.25	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.010	0.02	0.025	<0.010	<0.010	0.026	-
Nitrogen (Ammonia Nitrogen)	mg/L	-	-	47	38	60.4	65	63.2	85.9	59.0	58.6	76.3	76.4	64.2	63.8	74	32	32	56	47	32	109
Total Organic Carbon (C)	mg/L	-	-	27	21 (1)	23.7	83.7	30	<0.5	80.1	72.8	23.9	19.6	<0.5	<0.5	19 (1)	30 (1)	27 (2)	<50 (2)	<50 (2)	<50 (1)	-
Orthophosphate (P)	mg/L	-	-	0.01	0.01	0.02	0.03	0.02	0.02	0.01	0.02	0.02	0.02	<0.01	<0.01	0.034	<0.010	<0.010	<0.010	<0.010	<0.010	-
pH	Units	-	-	7.07	6.86	7.2	7.1	7.1	7.2	7.1	7.2	7.24	7.23	6.82	6.9	7.21	6.93	7.2	7.09	6.97	7.08	-
Reactive Silica (SiO2)	mg/L	-	-	37	37	36.1	34.1	34.1	35.5	38.9	37.7	34.6	33.7	36	35.2	35	28	29	34	33	23	-
Dissolved Sulphate (SO4)	mg/L	-	-	<2	ND	5	5	2	<10	3	3	<2	<2	2	2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	-
Turbidity	NTU	-	-	>1000	480	176	3930	3200	640	5610	5150	869	1150	3730	5750	>1000	>1000	>1000	>1000	>1000	>1000	-
Conductivity	µS/cm	-	-	1900	1900	1760	1950	1480	1550	1640	1650	1640	1620	1610	1550	1400	1000	1000	1400	1300	930	2463
Dissolved Organic Carbon	mg/L	-	-	-	-	8.9	54.2	54.2	<0.5	10.4	<0.5	23.9	18	<0.5	<0.5	-	-	-	-	-	-	-
Dissolved Calcium	mg/L	-	-	170	170	127	129	132	135	140	139	121	125	158	152	100	96	91	110	110	64	-
Dissolved Magnesium	mg/L	-	-	31	36	26.1	23.9	27.2	37.9	28.4	28.3	25.4	26.2	39	38.1	23	18	17	22	22	13	-
Phosphorus	mg/L	-	-	0.1	0.1	0.1	<0.1	<0.1	<0.02	0.06	0.06	0.18	0.22	<0.02	<0.02	0.12	<0.10	<0.10	<0.100	<0.100	<0.1	-
Potassium	mg/L	-	-	43	45	30.5	29	41.9	52.2	40.8	40.8	61.7	62.9	63	63	50	36	35	42	19	24	-
Sodium	mg/L	-	-	120	93	73.1	63.7	75	79.4	70.7	70.7	75.9	75.7	67	66.3	33	33	26	47	46	27	-

Notes: See separate notes page

TABLE C-2

GROUNDWATER GENERAL CHEMISTRY - MW-22A
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186

Compound	Units	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	8-Mar-95	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	26-Jul-00 Lab Dup.	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	18-Aug-05 MW-22A Dup	23-Nov-06	16-Aug-07	28-Jul-08	10-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	14-Jul-16	18-Jul-17	18-Jul-17 Lab-Dup
Anion Sum	me/L	-	-	-	-	-	-	-	-	-	-	-	-	-	22.8	15.7	-	15	13	10.3	10.4	7.79	9.13	347	9.46	6.95	8.43	4.53	9.9	-
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-	309	1080	1020	1010	1030	1130	1020	1020	1170	931.24	99	879	689	-	597	524	460	450	72	395	347	411	328	379	170	440	-
Calculated TDS	mg/L	-	-	495	-	1590	1610	1570	1620	1550	1560	1540	1215.26	133	1110	836	-	834	774	611	574	413	501	416	527	409	516	240	590	-
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-	0.07	0	0.6	<1	0.8	2.7	<1	2	3	1.75	<1	<1	ND	-	ND	<1	<1	<1	<10	<10	<10	<10	<10	<10	1.4	<1.0	-
Cation Sum	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	18.8	16	-	16.3	16.3	12.8	10.7	5.57	9.86	8.85	10.80	9.1	11.3	4.46	12.2	-
Hardness (CaCO3)	mg/L	-	-	325	858	879	762	712	666	611	617	516	397.23	93.8	467	380	-	360	360	270	250	71.7	223	282	244	212	256	190	250	-
Ion Balance (% Difference)	%	-	-	-	-	-	-	-	-	-	-	-	-	-	9.71	0.883	-	3.93	11.4	10.6	1.51	16.6	3.8	7.6	6.5	13.4	14.6	0.78	10.2	-
Langelier Index (@ 20C)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.38	-0.141	-	-0.101	0.19	-0.0290	-0.165	-1.61	-0.19	-0.22	-0.38	-0.37	-0.63	0.554	-0.138	-
Langelier Index (@ 4C)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-0.02	-0.388	-	-0.348	-0.057	-0.276	-0.413	-1.93	-0.51	-0.54	-0.70	-0.69	-0.95	0.304	-0.386	-
Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	ND	-	ND	-	<0.05	<0.05	9.48	0.18	0.20	<0.05	<0.05	<0.05	<0.050	<0.050	-
Saturation pH (@ 20C)	Units	-	-	-	-	-	-	-	-	-	-	-	-	-	6.52	6.68	-	6.76	6.8	6.96	6.97	8.51	7.19	7.22	7.18	7.33	7.13	7.39	6.96	-
Saturation pH (@ 4C)	Units	-	-	-	-	-	-	-	-	-	-	-	-	-	6.92	6.93	-	7.01	7.05	7.21	7.21	8.83	7.51	7.54	7.50	7.65	7.45	7.64	7.21	-
Total Alkalinity (Total as CaCO3)	mg/L	-	-	309	1080	1020	1010	1030	1130	1020	1020	1170	933	100	880	690	710	600	520	460	450	72	395	-	411	328	379	170	450	440
Dissolved Chloride (Cl)	mg/L	-	15000	99.3	330	312	350	309	311	273	278	223	176	13	180	68	68	110	89	39	50	193	43	23	44	14	30	40	35	35
Colour	TCU	-	-	45	32	140	34	45	28	31	32	26	334	<5	44	35	30	16	11	9	10	<5	132	<5	7	64	10	<5.0	63	68
Nitrate + Nitrite (N)	mg/L	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.06	<0.05	<0.05	ND	-	ND	<0.05	<0.05	<0.05	9.48	0.18	0.20	<0.05	<0.05	<0.05	<0.050	<0.050	<0.050
Nitrite (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	0.04	ND	ND	ND	-	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.010	<0.010	<0.010
Nitrogen (Ammonia Nitrogen)	mg/L	-	-	4.4	32	34.5	39	60	69.5	69.5	71.4	72	<0.1	<0.05	58	42	-	31	31	27	19	6.02	22.3	-	19.4	20.4	12	<0.050	23	-
Total Organic Carbon (C)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	15	11	10	8	4.7	18.6	3.0	38.7	10	<0.5	1.6	17 (1)	-	
Orthophosphate (P)	mg/L	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.07	0.01	<0.01	<0.3	<0.01	<0.01	ND	ND	ND	<0.01	<0.01	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	0.013	<0.010	<0.010
pH	Units	-	-	6.4	6.6	6.8	7	6.9	7.4	7	7.2	7.4	7.3	7.9	6.9	6.54	-	6.66	6.99	6.93	6.8	6.9	7	7.0	6.8	6.96	6.5	7.94	6.82	-
Reactive Silica (SiO2)	mg/L	-	-	14.2	23	24	21	19.5	20.3	18	18	17.6	20.5	8.5	19	21	20	21	19	20	19	12.1	17.2	18.6	18.4	18.1	16.8	10	17	17
Dissolved Sulphate (SO4)	mg/L	-	-	4	<2	<2	3	<2	<2	5	7	2	3.5	<2	7	ND	ND	ND	<2	<2	<2	11	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0
Turbidity	NTU	-	-	342	671	66	6.3	6.4	3.1	4	4.8	>1000	96	0.6	666	490	-	400	500	400	450	469	256	272	385	233	4780	0.87	850	-
Conductivity	µS/cm	-	-	971	2860	2840	3130	3180	3510	3140	3190	3260	2180	235	2000	1400	-	1500	1300	1000	990	887	852	707	920	740	854	440	890	-
Dissolved Organic Carbon	mg/L	-	-	36.3	44.5	35.1	38.5	34	3270	41.5	41	31.1	49	-	294	-	-	-	-	-	-	2.3	12.6	<0.5	13.2	<0.5	<0.5	-	-	-
Dissolved Calcium	mg/L	-	-	105	229	230	201	179	163	156	158	127	104	30.3	117	100	100	98	99	74	73	19.3	73.4	77.2	73.4	62.8	89.3	61	75	-
Magnesium	mg/L	-	-	15.2	69.6	74	63.2	64.3	63	53.8	54	48.7	33.4	4.4	42.5	30	30	28	28	20	17	5.7	9.6	21.6	14.7	13.4	7.9	9.2	15	-
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	ND	ND	ND	-	0.2	0.2	<0.1	<0.01	<0.02	0.18	0.31	<0.02	<0.1	0.34	-
Potassium	mg/L	-	-	5.9	23.9	34.1	38.2	50.7	68.6	69	70.3	72.8	51	4.9	52.3	43	43	42	37	36	30	14.5	25.3	25.6	21.9	25.6	22.1	6.3	23	-
Sodium	mg/L	-	-	59.9	208	252	276	254	225	270	267	258	267	9.4	91.2	83	82	120	96	78	50	76.2	22.4	52.7	41.4	30.3	41.9	12	74	-

Notes: See separate notes page

TABLE C-2

GROUNDWATER GENERAL CHEMISTRY - TABLE C-2

Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121

Compound	Units	NS Tier 1 EQS	NS Tier 2 PSS	20-Jul-18	15-Jul-19	15-Jul-19 Lab-Dup	Action Level
Anion Sum	me/L	-	-	10.3	7.71	-	-
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	-	-	450	360	-	-
Calculated TDS	mg/L	-	-	580	440	-	-
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	-	-	<1.0	<1.0	-	-
Cation Sum	me/L	-	-	11.2	8.69	-	-
Hardness (CaCO ₃)	mg/L	-	-	230	220	-	-
Ion Balance (% Difference)	%	-	-	3.91	5.98	-	-
Langelier Index (@ 20C)	-	-	-	-0.366	-0.486	-	-
Langelier Index (@ 4C)	-	-	-	-0.614	-0.735	-	-
Nitrate (N)	mg/L	-	-	<0.050	<0.050	-	-
Saturation pH (@ 20C)	Units	-	-	6.99	7.08	-	-
Saturation pH (@ 4C)	Units	-	-	7.24	7.33	-	-
Total Alkalinity (Total as CaCO ₃)	mg/L	-	-	450	360	-	-
Dissolved Chloride (Cl)	mg/L	-	15000	46	19	-	204
Colour	TCU	-	-	8.0	67	-	-
Nitrate + Nitrite (N)	mg/L	-	-	<0.050	<0.050	-	-
Nitrite (N)	mg/L	-	-	<0.010	<0.010	-	-
Nitrogen (Ammonia Nitrogen)	mg/L	-	-	22	15	15	48
Total Organic Carbon (C)	mg/L	-	-	11 (2)	6.5 (1)	-	-
Orthophosphate (P)	mg/L	-	-	<0.010	<0.010	-	-
pH	Units	-	-	6.62	6.59	-	-
Reactive Silica (SiO ₂)	mg/L	-	-	18	17	-	-
Dissolved Sulphate (SO ₄)	mg/L	-	-	<2.0	<2.0	-	-
Turbidity	NTU	-	-	800	610	-	-
Conductivity	µS/cm	-	-	950	680	-	1506
Dissolved Organic Carbon	mg/L	-	-	-	-	-	-
Dissolved Calcium	mg/L	-	-	69	66	-	-
Magnesium	mg/L	-	-	13	13	-	-
Phosphorus	mg/L	-	-	0.36	0.3	-	-
Potassium	mg/L	-	-	24	16	-	-
Sodium	mg/L	-	-	62	25	-	-

Notes: See separate notes page

TABLE C-3

GROUNDWATER GENERAL CHEMISTRY - MW-22B
 Municipality of the County of Kings
 Meadowview Landfill, Kentville, NS
 Stantec Consulting Ltd. Project No. 121414186

Compound	Units	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	20-Dec-94	8-Mar-95	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	10-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	14-Jul-16	18-Jul-17	20-Jul-18	15-Jul-19	Action Level
Anion Sum	me/L	-	-	-	-	-	-	-	-	-	-	-	-	-	23.2	22.8	10.2	14.6	14.5	16.5	20	19	19.8	18.9	15.7	16.9	17.9	15.3	17.3	15.8	-
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-	683	703	856	725	762	596	445	710	683	780.66	399	789	797	444	404	428	519	704	693	710	691	632	612	690	550	670	600	-
Calculated TDS	mg/L	-	-	1010	-	-	982	1090	972	831	1180	1110	1109.66	987	1190	1210	549	982	929	954	1070	1020	1050	982	887	939	930	830	910	850	-
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-	0.51	1	1	2.7	3.6	0.9	1.1	1	2	2.32	1	<1	ND	ND	<1	<1	<1	<10	<10	<10	<10	<10	<10	1.3	1.3	<1.0	1.4	-
Cation Sum	me/L	-	-	-	-	-	-	-	-	-	-	-	-	-	21.8	23.6	10.2	24.5	21.9	20.2	22.1	21	21.5	19.2	19.8	19.9	17.6	16.2	17.3	16.7	-
Hardness (CaCO3)	mg/L	-	-	624	726	865	793	882	812	661	968	845	684.38	892	856	940	260	950	830	780	842	812	827	724	762	746	690	610	670	650	-
Ion Balance (% Difference)	%	-	-	-	-	-	-	-	-	-	-	-	-	-	2.97	1.68	0.148	25.3	20.2	10.1	4.8	5	4.0	0.9	11.5	8.2	0.76	2.76	0.0300	2.71	-
Langelier Index (@ 20C)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.92	0.796	-0.252	0.913	0.786	0.713	0.9	0.99	1.19	0.84	1.04	0.52	0.965	0.914	0.756	0.988	-
Langelier Index (@ 4C)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.52	0.551	-0.5	0.667	0.540	0.467	0.58	0.67	0.87	0.52	0.72	0.2	0.719	0.667	0.510	0.742	-
Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	0.05	1.5	-	<0.05	0.08	0.14	0.08	0.33	0.59	<0.05	<0.05	0.12	0.072	<0.050	0.055	-
Saturation pH (@ 20C)	Units	-	-	-	-	-	-	-	-	-	-	-	-	-	6.18	6.14	6.97	6.44	6.46	6.41	6.4	6.41	6.41	6.46	6.47	6.47	6.34	6.48	6.36	6.41	-
Saturation pH (@ 4C)	Units	-	-	-	-	-	-	-	-	-	-	-	-	-	6.58	6.39	7.22	6.68	6.71	6.65	6.72	6.73	6.73	6.78	6.79	6.79	6.58	6.73	6.60	6.66	-
Total Alkalinity (Total as CaCO3)	mg/L	-	-	684	704	857	728	766	597	446	711	685	783	400	790	800 (1)	440	400	430	520	704	693	710	691	632	612	690	550 (2)	670	610	-
Dissolved Chloride (Cl)	mg/L	-	15000	166	143	162	152	215	224	231	282	287	287	280	260	240	42	230	210	220	210	182	199	178	110	165	150	150	140	130	291
Colour	TCU	-	-	13	86	12	15	8	15	10	11	19	90	43	13	22	7	16	10	13	15	14	9	11	10	<5	13	6.8	11	8.3	-
Nitrate + Nitrite (N)	mg/L	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.06	< 0.05	< 0.05	0.07	1.5	< 0.05	< 0.05	0.080	0.14	0.08	0.33	0.59	< 0.05	< 0.05	0.12	0.072	< 0.050	0.055	-
Nitrite (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.01	0.02	0.03	-	< 0.01	< 0.01	< 0.05	< 0.05	< 0.25	< 0.05	< 0.05	< 0.05	< 0.010	< 0.010	< 0.010	< 0.010	-
Nitrogen (Ammonia Nitrogen)	mg/L	-	-	4.1	0.48	0.08	0.17	< 0.05	0.15	< 0.05	0.37	< 0.05	< 0.1	0.18	0.62	0.06	27	0.28	0.38	0.24	1.1	1.34	1.95	2.25	1.56	1.82	1.2	1.6	2.1	1.3	3.3
Total Organic Carbon (C)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	9.3	20	17	19	38	24.6	< 0.5	32.6	23.2	9.2	1.3	14 (1)	14	14 (1)	-
Orthophosphate (P)	mg/L	-	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.3	< 0.01	0.01	ND	ND	< 0.01	< 0.01	< 0.01	0.01	0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.019	< 0.010	< 0.010	< 0.010	-
pH	Units	-	-	6.9	7	7.1	7.6	7.7	7.2	7.4	7.3	7.5	7.5	7.5	7.1	6.94	6.72	7.35	7.25	7.12	7.3	7.4	7.6	7.3	7.51	6.99	7.3	7.39	7.11	7.40	-
Reactive Silica [SiO2]	mg/L	-	-	13.6	13.6	15.5	17.1	17.1	16.2	15	16.2	14.8	17.1	12	17	18	19	17	18	18	18.5	20.3	18.6	18.9	17.8	15.9	19	19	19	20	-
Dissolved Sulphate (SO4)	mg/L	-	-	14	< 2	< 2	< 2	< 2	< 2	< 2	2	3	< 2.0	11	< 2	ND	ND	< 2	< 2	< 2	< 2	< 2	< 10	< 2	< 2	< 2	< 2.0	< 2.0	< 2.0	< 2.0	-
Turbidity	NTU	-	-	459	< 1000	420	14.7	0.4	2.4	1.7	0.3	> 1000	26	> 1000	> 1000	180	390	190	180	330	265	147	69.6	138.0	4170	589	120	90	250	310	-
Conductivity	µS/cm	-	-	1810	1770	2190	1810	1900	2050	1840	2520	2450	2150	2500	2490	1900	1100	1800	1900	1800	2070	1680	1720	1740	1670	1440	1600	1500	1600	1500	2251
Dissolved Organic Carbon	mg/L	-	-	106	99	250	12.1	18.4	14.7	1710	24.4	16.4	28.3	-	< 500	-	-	-	-	-	37.6	27	< 0.5	< 0.5	23.4	9.2	-	-	-	-	
Dissolved Calcium	mg/L	-	-	207	242	291	262	293	270	209	316	270	219	298	286	320	72	320	280	260	280	274	270	245	259	270	230	200	230	220	-
Magnesium	mg/L	-	-	26	29.5	33.7	33.1	36.5	33.4	33.7	43.4	41.5	33.4	36	34.4	36	18	37	33	31	34.7	31.1	37.2	27.3	28.1	17.5	27	26	26	27	-
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.1	ND	ND	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.02	< 0.02	< 0.02	< 0.02	< 0.1	< 0.10	< 0.100	< 0.1	-
Potassium	mg/L	-	-	14.1	7.5	7.5	7.7	8	7.4	8.5	9.4	8.4	8.3	11.4	8.3	8	35	8.7	14	8.2	5.6	5.6	6.1	8.4	9.4	4.9	8.1	8.6	8.1	8.3	-
Sodium	mg/L	-	-	152	90.1	76.8	71.1	59.7	60.2	64.4	80.8	69.8	73	98.5	103	100	46	110	100	92	98.1	89.7	103	84.8	84.7	93.1	78	79	72	71	-

Notes: See separate notes page

TABLE C-4

GROUNDWATER GENERAL CHEMISTRY - MW-22C
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stanlec Consulting Ltd. Project No. 121414186

Compound	Units	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	8-Mar-95	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	10-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	14-Jul-16	18-Jul-17	20-Jul-18	15-Jul-19	Action Level	
Anion Sum	me/L	-	-	-	-	-	-	-	-	-	-	-	-	2.28	2.4	2.82	3.09	3.49	3.56	3.46	3.26	3.87	3.94	3.41	3.68	7.69	4.9	4.80	4.96	-	
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-	41.6	42	43.5	67.7	75.4	87.4	117	97	101.99	819	95	99.4	112	123	137	137	133	126	147	145	131	133	350	180	180	180	-	
Calculated TDS	mg/L	-	-	60	-	58	91	102	117	148	128	131.53	1110	128	137	158	175	195	193	173	176	199	207	193	202	450	260	250	260	-	
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-	0.31	0	0.4	<1	0.6	0.5	<1	<1	0.96	<1	<1	ND	ND	<1	1	<1	<10	<10	<10	<10	<10	<10	<1.0	1.3	1.0	1.4	-	
Cation Sum	me/L	-	-	-	-	-	-	-	-	-	-	-	-	2.36	2.65	3.03	3.42	3.78	3.62	3.24	3.74	3.90	4.12	4.34	4.35	8.89	4.57	4.65	4.67	-	
Hardness (CaCO3)	mg/L	-	-	29	32	42	59.4	69	82	113	86.3	88.59	506	89.5	100	120	130	150	150	134	162	162	163	183	190	190	190	200	200	-	
Ion Balance (% Difference)	%	-	-	-	-	-	-	-	-	-	-	-	-	1.55	4.92	3.71	5.07	3.99	0.84	3.2	6.9	0.4	2.2	12	8.4	7.24	3.48	1.59	3.01	-	
Langelier Index (@ 20C)	-	-	-	-	-	-	-	-	-	-	-	-	-	-0.41	-0.306	-0.102	0.19	0.417	0.047	0.15	0.33	0.17	0.25	0.35	0.03	-0.139	0.52	0.429	0.566	-	
Langelier Index (@ 4C)	-	-	-	-	-	-	-	-	-	-	-	-	-	-0.81	-0.557	-0.352	-0.06	0.167	-0.203	-0.17	0.01	-0.15	-0.07	0.03	-0.29	-0.388	0.27	0.179	0.317	-	
Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	ND	ND	-	<0.05	<0.05	0.09	0.07	<0.05	<0.05	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050	-	
Saturation pH (@ 20C)	Units	-	-	-	-	-	-	-	-	-	-	-	-	8.01	7.83	7.73	7.68	7.58	7.57	7.85	7.77	7.73	7.74	7.73	7.68	7.13	7.36	7.35	7.34	-	
Saturation pH (@ 4C)	Units	-	-	-	-	-	-	-	-	-	-	-	-	8.41	8.08	7.98	7.93	7.83	7.82	8.17	8.09	8.05	8.06	8.05	8	7.38	7.61	7.60	7.59	-	
Total Alkalinity (Total as CaCO3)	mg/L	-	-	42	42	44	68	76	88	118	98	103	820	95	100	110	120	140	140	133	126	147	145	131	133	350	180 (2)	180	180	-	
Dissolved Chloride (Cl)	mg/L	-	15000	4.4	5	5.4	6.3	8.1	10.1	11.8	11.9	11.2	140	12	14	20	22	26	29	28	26	33	37	28	36	25	46	45	45	51	
Colour	TCU	-	-	<3	5	15	21	24	7	<5	<5	68	25	8	ND	ND	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	26	<5.0	<5.0	<5.0	-
Nitrate + Nitrite (N)	mg/L	-	-	<0.05	<0.05	0.06	<0.05	<0.05	<0.05	<0.05	0.08	<0.06	<0.05	<0.05	ND	ND	<0.05	<0.05	<0.05	0.09	0.07	<0.05	<0.05	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050	-	
Nitrite (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	ND	ND	-	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.010	<0.010	<0.010	<0.010	-	
Nitrogen (Ammonia Nitrogen)	mg/L	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.19	<0.1	49	<0.05	ND	ND	<0.05	<0.05	<0.05	0.07	<0.05	<0.03	0.04	<0.03	<0.03	14	<0.050	<0.050	<0.050	14	
Total Organic Carbon (C)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	0.6	0.9	1.1	1.5	<5	2.9	2.6	0.8	7.9	4.6	3.6	9.5	<5.0 (1)	1.9	2.1	-	
Orthophosphate (P)	mg/L	-	-	<0.01	<0.01	0.02	0.02	<0.01	<0.01	0.02	0.02	<0.3	<0.01	0.11	ND	ND	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010	<0.010	-
pH	Units	-	-	7.9	7.9	8	7.7	7.9	7.8	7.7	8	8	7	7.6	7.52	7.63	7.87	8.00	7.62	8	8.1	7.9	8.0	8.08	7.71	7	7.88	7.78	7.91	-	
Reactive Silica (SiO2)	mg/L	-	-	8.3	8.1	8.3	9	8.3	8.1	7.6	8.4	8.8	19	8.6	8.7	8.9	9	9.4	9.4	9.7	9.5	9.9	9.8	9.6	9.2	15	10	10	11	-	
Dissolved Sulphate (SO4)	mg/L	-	-	2	2	<2	<2	2	2	2	4	3.5	6	<2	ND	ND	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0	<2.0	-	
Turbidity	NTU	-	-	1.5	505	41	17	5.2	3.8	0.2	398	12	322	3.2	2.2	1.3	3.8	1.1	1.6	1.3	15.8	4.9	41.5	8.6	70.1	450	54	0.82	1.0	-	
Conductivity	µS/cm	-	-	99	98	107	155	174	205	262	224	230	2330	230	230	280	300	350	360	367	312	372	395	385	382	730	470	480	460	755	
Dissolved Organic Carbon	mg/L	-	-	9.9	0.8	<0.5	<0.05	<0.05	214	<0.5	<0.5	1.2	-	1.2	-	-	-	-	-	1.5	2.7	<0.5	1.7	<0.5	3.4	-	-	-	-		
Dissolved Calcium	mg/L	-	-	9.2	10.4	13.7	19	22.2	26.1	36.5	27.3	28.6	132	28.9	34	39	41	46	47	43.8	55.2	52.5	52.4	59.1	64.9	60	62	64	63	-	
Magnesium	mg/L	-	-	1.4	1.5	2	2.9	3.3	4.1	5.4	4.4	4.17	42.8	4.2	4.8	5.9	6	7.1	7.1	6.1	5.9	7.5	7.8	8.5	6.9	8.6	9.3	9.5	9.9	-	
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	ND	ND	-	<0.1	<0.1	<0.1	<0.1	<0.02	<0.02	0.02	<0.02	0.28	<100	<0.100	<0.1	-	
Potassium	mg/L	-	-	2.9	2.9	2.9	3.6	4.2	4.1	5	4.4	4.5	61.7	4.7	4.9	5.4	5.8	8.1	6.1	4.8	5	5.3	6.5	6.9	5.1	16	6.6	6.5	6.6	-	
Sodium	mg/L	-	-	7.1	6	6.8	7.6	8.1	9.9	8.8	8.2	8.9	151	10.2	10	11	17	15	12	9.6	8.3	12.1	15.7	11.6	9.3	52	12	12	12	-	

Notes: See separate notes page

TABLE C-5

GROUNDWATER GENERAL CHEMISTRY - MW-25B
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186

Compound	Units	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	8-Mar-95	19-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Aug-01 Duplicate	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	16-Aug-07 Dup B	28-Jul-08	10-Aug-09	28-Jul-10	21-Sep-11	4-Oct-12	8-Jul-13	19-Aug-14	22-Jul-15	14-Jul-16	19-Jul-17	20-Jul-18	20-Jul-18 Lab-Dup	15-Jul-19	Action Level
Anion Sum	me/L	-	-	-	-	-	-	-	-	-	-	-	-	-	5.03	2.9	10	8.45	1.37	3.55	6.35	11.7	1.95	9.49	6.28	9.57	8.63	10.8	5.28	8.16	N/A	6.38	-
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-	75.4	143	44.5	49.8	91.4	46	42	42	41	43.63	229	180	102	344	274	63	120	215	393	62	333	204	353	292	380	170	290	N/A	220	-
Calculated TDS	mg/L	-	-	111	-	67	69	137	74	74	68	68	69.17	369	261	164	541	480	89	232	352	560	100	454	331	515	484	560	280	420	N/A	320	-
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-	0.56	1	0.4	<1	0.5	0.9	<1	<1	<1	0.33	1	<1	ND	ND	2	<1	<1	<1	<10	<10	<10	<10	<10	<10	<10	<10	<10	N/A	1.0	-
Cation Sum	me/L	-	-	-	-	-	-	-	-	-	-	-	-	-	4.6	3.14	10.6	10	1.55	5.20	7.03	9.62	1.81	7.93	6.62	10.8	10.8	10.2	5.02	7.71	N/A	5.50	-
Hardness (CaCO3)	mg/L	-	-	71	166	44	40.8	105	47.3	52.3	40.7	40.4	41.33	321	199	130	470	440	5	190	300	421	74.8	337	279	460	466	440	220	340	N/A	240	-
Ion Balance (% Difference)	%	-	-	-	-	-	-	-	-	-	-	-	-	-	4.42	3.89	2.72	8.6	6.16	18.9	5.08	9.7	3.9	8.9	2.6	6.2	11.2	2.72	2.52	2.84	N/A	7.41	-
Langelier Index (@ 20C)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	-0.589	0.448	1.08	-1.36	-0.0140	0.267	0.59	-0.4	0.61	0.11	0.68	0.22	0.694	0.303	0.423	N/A	0.508	-
Langelier Index (@ 4C)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-0.39	-0.84	0.2	0.836	-1.61	-0.264	0.018	0.27	-0.72	0.29	-0.21	0.36	-0.1	0.446	0.054	0.175	N/A	0.259	-
Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	ND	ND	-	-	<0.05	<0.05	0.09	0.11	0.06	<0.05	<0.05	<0.05	<0.050	0.056	<0.050	N/A	0.050	-
Saturation pH (@ 20C)	Units	-	-	-	-	-	-	-	-	-	-	-	-	-	7.39	7.7	6.74	6.86	9.33	7.53	7.1	6.91	8.4	7.09	7.36	6.93	7.01	6.73	7.32	6.95	N/A	7.20	-
Saturation pH (@ 4C)	Units	-	-	-	-	-	-	-	-	-	-	-	-	-	7.79	7.95	6.99	7.1	9.58	7.78	7.35	7.23	8.72	7.41	7.68	7.25	7.33	6.98	7.57	7.20	N/A	7.45	-
Total Alkalinity (Total as CaCO3)	mg/L	-	-	76	144	45	50	92	47	42	42	41	44	230	180	100	340	280	64	120	220	393	62	333	204	353	292	380	170 (2)	290	280	220	-
Dissolved Chloride (Cl)	mg/L	-	15000	11.5	32.1	5.2	5.4	21	10.4	9.1	10.4	9.9	9.7	74	49	30	110	100	3	41	72	135	25	100	78	89	99	110	64	85	83	72	178
Colour	TCU	-	-	<3	5	8	40	6	24	15	<5	<5	176	6	5	ND	6	6	<5	9	6	8	<5	<5	<5	<5	5	<5.0	<5.0	<5.0	<5.0	<5.0	-
Nitrate + Nitrite (N)	mg/L	-	-	<0.05	<0.05	0.08	0.06	<0.05	<0.05	0.06	<0.05	<0.05	0.52	<0.05	<0.05	ND	ND	<0.05	0.1	<0.05	<0.05	0.09	0.11	0.06	<0.05	<0.05	<0.05	<0.050	0.056	<0.050	<0.050	0.050	-
Nitrite (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	ND	ND	-	-	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.010	<0.010	<0.010	<0.010	<0.010	-
Nitrogen (Ammonia Nitrogen)	mg/L	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	0.09	0.22	0.06	ND	<0.05	0.08	<0.05	<0.05	<0.05	<0.05	<0.03	0.03	0.04	0.5	<0.050	0.052	<0.050	N/A	<0.050	0.50
Total Organic Carbon (C)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	6	14	4	1.9	<5	12.6	1.2	<0.5	2.8	4.4	3.8	9.4 (2)	<5.0 (1)	6.8	N/A	3.8	-
Orthophosphate (P)	mg/L	-	-	<0.01	<0.01	0.01	0.01	<0.01	<0.01	0.04	<0.01	<0.01	<0.3	0.01	<0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.021	<0.010	<0.010	0.011	<0.010	-
pH	Units	-	-	7.9	7.7	8	7.5	7.8	8.3	7.8	7.9	7.9	7.9	7.8	7.4	7.11	7.19	7.94	7.97	7.52	7.37	7.5	8	7.7	7.47	7.61	7.23	7.43	7.63	7.37	7.63	7.71	-
Reactive Silica (SiO2)	mg/L	-	-	9	11	7.8	8.1	9	7.8	7.2	7.8	7.7	7.6	13	11	9.2	15	14	11	9.5	12	15.9	8.4	14.3	11.7	15.1	11.8	15	11	13	13	13	-
Dissolved Sulphate (SO4)	mg/L	-	-	4	<2	2	<2	<2	<2	5	<2	4	<2.0	<2	<2	ND	ND	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0	<2.0	<2.0	-
Turbidity	NTU	-	-	0.8	798	8.3	22	4	30.4	4	835	339	95	99.2	95.4	220	330	210	190	290	160	55	111	113	4070	699	956	1.5	450	880	N/A	31	-
Conductivity	µS/cm	-	-	190	370	111	108	249	124	121	116	115	124	780	495	280	960	920	130	370	640	1190	197	889	614	1040	839	970	510	760	770	620	1654
Dissolved Organic Carbon	mg/L	-	-	2.4	1.8	<0.5	<0.5	0.3	132	1.2	<0.5	0.6	0.6	-	<5	-	-	-	-	-	-	11.6	1.8	<0.5	4.4	3.3	-	-	-	-	-	-	
Dissolved Calcium	mg/L	-	-	23.3	55.1	14.4	13.2	33.7	15.3	17	13	12.9	13.5	107	65.5	45	160	150	1.6	61	100	144	25	109	92.3	153	152	150	71	110	N/A	77	-
Magnesium	mg/L	-	-	3.2	6.8	2	1.9	5.1	2.2	2.4	2	2	1.85	13.1	8.7	5.5	18	18	0.2	8.1	13	15	3	15.7	11.8	18.9	20.9	18	9.9	14	N/A	11	-
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	ND	ND	-	-	<0.1	<0.1	<0.1	<0.1	<0.02	0.02	0.04	<0.02	<0.1	<0.10	<0.100	N/A	<0.1	-
Potassium	mg/L	-	-	5.3	6	3.5	3.6	4.8	3.4	3.9	3.6	3.6	3.8	6.4	5.8	4.7	7	7.7	1.8	14	7.6	5.2	4	4.6	7.0	8.6	5.1	6.6	7.1	N/A	6.6	-	
Sodium	mg/L	-	-	9.3	6.1	4.6	3.9	5.6	4.6	3.8	3.6	3.5	3.8	15.5	10.4	7.5	24	24	32	26	18	24	4.8	24.5	19.6	28.8	30.2	29	11	19	N/A	13	-

Notes: See separate notes page

TABLE C-6

GROUNDWATER GENERAL CHEMISTRY - TH-1
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186

Compound	Units	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	8-Mar-95	19-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	25-Aug-04 DUP	18-Aug-05	18-Aug-05 THI Dup	23-Nov-06	16-Aug-07	28-Jul-08	10-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	4-Jul-13	19-Aug-14	22-Jul-15	14-Jul-16	19-Jul-17	20-Jul-18	15-Jul-19	Action Level
Anion Sum	me/L	-	-	-	-	-	-	-	-	-	-	-	-	17.1	17.1	16.9	-	15.1	11.8	13.7	12.9	12.2	11.4	11.6	11.0	9.55	9.49	10.2	10.5	10.2	10.2	-
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-	1100	1020	1080	1140	999	995	934	836	937.77	655	741	743	755	-	666	516	625	588	552	529	537	502	453	442	470	490	480	480	-
Calculated TDS	mg/L	-	-	1450	-	1400	1430	1270	1240	1220	1160	1116.86	903	903	907	882	-	819	744	737	694	679	612	645	634	533	518	580	580	540	550	-
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-	2.06	1	1.6	4.3	1.2	0.9	1	5	2.21	5	9	7	ND	-	ND	<1	1	<1	<10	<10	<10	<10	<10	<10	<1.0	<1.0	<1.0	<1.0	-
Cation Sum	me/L	-	-	-	-	-	-	-	-	-	-	-	-	16.6	16.9	16.3	-	15.6	16.9	13.6	12.5	14.1	12.6	14.1	13.9	11.5	10.4	11.6	11	9.87	10.1	-
Hardness (CaCO3)	mg/L	-	-	634	546	636	650	550	531	533	556	479.61	409	362	369	380	-	350	380	290	290	257	294	312	262	273	279	280	270	250	250	-
Ion Balance (% Difference)	%	-	-	-	-	-	-	-	-	-	-	-	-	1.64	0.69	1.78	-	1.5	17.8	0.400	1.85	7.4	5.2	9.8	11.6	9.3	4.4	6.1	2.32	1.50	0.390	-
Langelier Index (@ 20C)	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	1.41	0.346	-	0.361	0.453	0.563	0.446	0.45	0.62	0.42	0.46	0.48	0.09	0.451	0.454	0.323	0.406	-
Langelier Index (@ 4C)	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1	1.01	0.099	-	0.114	0.206	0.317	0.199	0.13	0.3	0.10	0.14	0.16	-0.23	0.203	0.207	0.0760	0.159	-
Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	ND	-	0.55	-	<0.05	0.34	2.94	0.29	0.54	<0.05	<0.05	<0.05	<0.050	0.063	0.055	<0.050	-
Saturation pH (@ 20C)	Units	-	-	-	-	-	-	-	-	-	-	-	-	6.6	6.59	6.57	-	6.66	6.73	6.76	6.78	7.05	6.98	6.98	7.06	7.07	7.01	6.86	6.88	6.89	6.90	-
Saturation pH (@ 4C)	Units	-	-	-	-	-	-	-	-	-	-	-	-	7	6.99	6.82	-	6.91	6.97	7.00	7.03	7.37	7.3	7.30	7.38	7.39	7.33	7.11	7.12	7.14	7.15	-
Total Alkalinity (Total as CaCO3)	mg/L	-	-	1100	1020	1080	1140	1000	996	935	841	940	660	750	750	760	750	670	520	630	590	552	529	537	502	453	442	470	490 (2)	480	480	-
Dissolved Chloride (Cl)	mg/L	-	15000	203	198	169	164	150	143	133	136	117	91	74	73	62	61	60	51	41	36	31	26	28	34	15	23	27	26	20	19	60
Colour	TCU	-	-	31	90	70	27	27	27	20	21	128	25	16	17	18	18	15	13	15	21	11	9	13	11	<5	8	7.6	<5.0	7.4	6.8	-
Nitrate + Nitrite (N)	mg/L	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.08	<0.06	< 0.05	<0.05	<0.05	ND	-	0.57	<0.05	<0.05	1.3	2.94	0.29	0.69	<0.05	<0.05	<0.05	<0.050	0.063	0.055	0.059	-
Nitrite (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.01	ND	ND	0.02	-	<0.01	0.95	<0.05	<0.05	0.15	<0.05	<0.05	<0.05	<0.010	<0.010	<0.010	0.014	-
Nitrogen (Ammonia Nitrogen)	mg/L	-	-	48.9	71	67	62.5	72.5	72.1	73.4	72.4	<0.1	58	54	55	49	-	50	54	42	32	58.3	43.8	58.3	44.0	37.6	16.7	40	33	29	28	79
Total Organic Carbon (C)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	-	13	11	11	19	25.9	4.9	20.4	11.9	<0.5	<0.5	7.4 (1)	10 (1)	7.6	7.8 (1)	-
Orthophosphate (P)	mg/L	-	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	<0.01	<0.3	< 0.01	0.01	<0.01	ND	ND	ND	<0.01	<0.01	<0.01	0.02	0.02	0.01	0.01	0.01	<0.01	0.027	<0.010	<0.010	<0.010	-
pH	Units	-	-	7.3	7	7.2	7.6	7.1	7.1	7.1	7.8	7.4	7.9	8.1	8	6.92	-	7.02	7.18	7.32	7.23	7.5	7.6	7.4	7.5	7.55	7.1	7.31	7.33	7.22	7.30	-
Reactive Silica (SiO2)	mg/L	-	-	19.8	27.6	28.5	28	26.9	27.9	27.8	29.5	31.1	30	30	30	30	30	31	32	32	30	28.8	22.6	30.9	32.5	28.6	24.5	31	30	29	30	-
Dissolved Sulphate (SO4)	mg/L	-	-	2	< 2	< 2	3	< 2	< 2	5	9	3.3	7	< 2	< 2	ND	ND	3	< 2	2	3	4	2	2	2	3	< 2	< 2.0	< 2.0	< 2.0	< 2.0	-
Turbidity	NTU	-	-	308	524	12.5	0.8	1.3	1.3	0.3	375	36	330	302	294	230	-	210	330	220	84	127	240	286	232	2880	1160	160	400	570	320	-
Conductivity	µS/cm	-	-	2980	2710	2700	2520	2590	2590	2590	2590	2050	1380	1800	1810	1500	-	1400	1400	1300	1200	1270	1080	1090	1080	1020	940	1000	1000	940	940	1565
Dissolved Organic Carbon	mg/L	-	-	58	46	38.7	36	30	30	27	22.6	34.9	-	<50	<50	-	-	-	-	-	-	21.2	0.8	15.2	<0.5	<0.5	<0.5	-	-	-	-	-
Dissolved Calcium	mg/L	-	-	248	169	197	199	171	167	164	170	152	126	112	114	120	-	110	120	91	89	76.2	92.6	91.6	81.6	85.4	100	88	83	80	79	-
Magnesium	mg/L	-	-	3.5	30.1	34.9	37.3	29.8	27.6	29.9	31.9	24.3	23	20.1	20.5	20	-	19	20	16	15	16.1	15.2	20.3	14.2	14.6	7.2	16	14	13	14	-
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	ND	-	ND	-	<0.1	<0.1	<0.1	<0.1	<0.02	0.05	0.1	<0.02	0.1	<0.10	<0.100	0.11	-
Potassium	mg/L	-	-	19.4	35.9	41.7	45.2	42.1	42	52.6	51.6	49.1	47.8	45.9	45.8	43	-	46	45	43	43	45	39	39.8	35.1	39	37.7	33	32	29	28	-
Sodium	mg/L	-	-	230	176	188	186	159	138	149	132	176	107	99	101	94	-	87	87	73	68	77.4	51.7	61.4	96.4	44.7	47.8	41	48	36	43	-

Notes: See separate notes page

TABLE C-7

GROUNDWATER GENERAL CHEMISTRY - MW-23A
 Municipality of the County of Kings
 Meadowview Landfill, Kentville, NS
 Stanlec Consulting Ltd. Project No. 121414186

Compound	Units	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	19-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	23-Nov-06	16-Aug-07	29-Jul-08	12-Aug-09	29-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	13-Jul-16	15-Jul-19	Action Level
Anion Sum	me/L	-	-	-	-	-	-	-	-	-	-	-	3.29	4.13	3.31	3.85	4.04	4.49	5.19	6.52	7.40	3.04	3.61	3.44	2.79	-
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-	145	121	65.9	70.9	51.9	97	118	131.8	61	110	62	99	88	64	49	34	81	75	76	37	81	51	-
Calculated TDS	mg/L	-	-	205	227	148	163	180	198	207	312.82	164	185	240	201	243	229	228	288	363	398	181	216	190	160	-
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-	0.14	0.1	< 1	0.1	0.1	< 1	<1	0.2	< 1	<1	ND	<1	<1	<1	<10	<10	<10	<10	<10	<10	<1.0	<1.0	-
Cation Sum	me/L	-	-	-	-	-	-	-	-	-	-	-	3.32	4.11	3.93	4.66	3.69	3.52	4.91	6.76	6.90	3.77	4.13	3.15	2.52	-
Hardness (CaCO3)	mg/L	-	-	141	140	72.5	90.4	96.1	129	156	210.87	66.7	118	130	130	110	110	90	197	199	104	89.9	93	45	-	
Ion Balance (% Difference)	%	-	-	-	-	-	-	-	-	-	-	-	0.53	0.267	8.56	9.52	4.53	12	2.8	1.8	3.5	10.7	6.7	4.4	5.08	-
Langelier Index (@ 20C)	-	-	-	-	-	-	-	-	-	-	-	-	-0.61	-1.13	-0.485	-0.574	-1.12	-1.67	-1.54	-0.59	-0.74	-0.71	-1.86	-0.824	-1.54	-
Langelier Index (@ 4C)	-	-	-	-	-	-	-	-	-	-	-	-	-1.01	-1.38	-0.735	-0.823	-1.37	-1.99	-1.86	-0.91	-1.06	-1.03	-2.18	-1.07	-1.79	-
Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	0.07	0.06	-	0.06	0.11	0.17	0.12	0.14	<0.05	<0.05	<0.05	<0.050	<0.050	-
Saturation pH (@ 20C)	Units	-	-	-	-	-	-	-	-	-	-	-	7.81	7.98	7.76	7.85	8.04	8.37	8.64	7.99	7.99	8.22	8.55	7.99	8.51	-
Saturation pH (@ 4C)	Units	-	-	-	-	-	-	-	-	-	-	-	8.21	8.23	8.01	8.10	8.29	8.69	8.96	8.31	8.31	8.54	8.87	8.24	8.76	-
Total Alkalinity (Total as CaCO3)	mg/L	-	-	145	121	66	71	52	97	118	132	61	110	62	100	88	64	49	34	81	75	76	37	81	51	-
Dissolved Chloride (Cl)	mg/L	-	15000	23.6	46.7	37.2	44.5	65	45.8	35.4	88	48	31	95	39	68	91	118	155	160	201	45	93	56	57	267
Colour	TCU	-	-	4	19	10	7	9	< 5	<5	33	9	<5	ND	<5	<5	5	<5	<5	<5	<5	<5	6	<5.0	<5.0	-
Nitrate + Nitrite (N)	mg/L	-	-	< 0.05	0.06	< 0.05	0.06	< 0.05	0.05	0.06	0.18	< 0.05	0.07	0.06	0.06	0.06	0.11	0.17	0.12	0.14	<0.05	<0.05	<0.05	<0.050	<0.050	-
Nitrite (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	<0.01	ND	-	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.010	<0.010	-	
Nitrogen (Ammonia Nitrogen)	mg/L	-	-	< 0.05	0.06	< 0.05	0.06	< 0.05	< 0.05	<0.05	<0.1	0.06	<0.05	ND	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	0.03	<0.03	<0.03	<0.050	<0.050	0.04
Total Organic Carbon (C)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	ND	<5	1.7	<5	2.4	1.1	1.1	7.6	3.7	<0.5	<25 (1)	<50 (1)	-
Orthophosphate (P)	mg/L	-	-	< 0.01	< 0.01	0.03	0.02	0.03	0.04	0.03	<0.3	0.02	0.03	0.04	0.04	0.03	0.04	0.04	0.03	0.03	0.03	0.04	0.03	0.043	0.046	-
pH	Units	-	-	7	7.1	7.3	7.1	7.4	7.3	7.2	7.2	7	7.2	6.85	7.27	7.28	6.92	6.7	7.1	7.4	7.3	7.51	6.69	7.16	6.98	-
Reactive Silica (SiO2)	mg/L	-	-	15	10.4	13	8.7	10.7	11.2	1.5	13.2	13	11	12	10	12	13	12.1	11.9	10.9	9.0	12	10.2	11	13	-
Dissolved Sulphate (SO4)	mg/L	-	-	10	13	6	9	8	10	14	13.7	6	10	11	11	9	9	8	6	18	11	12	12	11	7.9	-
Turbidity	NTU	-	-	47.9	13.1	6	3.7	2.2	11.3	>1000	720	568	514	490	670	290	240.00	322	462	106	1620	1940	2430	>1000	860	-
Conductivity	µS/cm	-	-	371	457	256	293	362	380	393	543	300	343	440	330	420	440	507	558	670	777	385	376	340	290	926
Dissolved Organic Carbon	mg/L	-	-	2.9	< 0.5	< 0.5	< 0.5	355	< 0.5	0.6	2.7	-	<50	-	-	-	-	1.5	1.5	0.8	7.6	<0.5	<0.5	-	-	
Dissolved Calcium	mg/L	-	-	51.9	47.8	25.4	31.1	32.9	43.4	5.8	70.2	22.6	39.7	42	43	40	36	36.4	28.8	55.4	60.2	32.4	31.7	31	14	-
Magnesium	mg/L	-	-	2.8	4.9	2.2	3.1	3.4	5	5.9	8.64	2.5	4.6	6.2	6	6.0	4.5	4.7	4.4	14.3	11.7	5.5	2.6	3.9	2.5	-
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	<0.1	ND	-	<0.1	<0.1	<0.1	<0.1	0.02	0.03	0.04	<0.02	<0.1	<0.1	-
Potassium	mg/L	-	-	1.5	1.9	1.1	1.3	1.6	1.7	1.6	2.9	1.5	1.6	2	2	9.8	1.9	1.6	1.8	2.0	2.4	1.9	1.1	1.4	1.2	-
Sodium	mg/L	-	-	12.9	28.9	23.2	22.4	26.6	22.1	13.9	36.8	33.3	21.1	33	28	44	34	28.4	69.5	61.9	64.1	37.1	52.1	29	36	-

Notes: See separate notes page

TABLE C-8

GROUNDWATER GENERAL CHEMISTRY - MW-238
 Municipality of the County of Kings
 Meadowview Landfill, Kentville, NS
 Stantec Consulting Ltd. Project No. 121414186

Compound	Units	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	19-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	23-Nov-06	16-Aug-07	29-Jul-08	12-Aug-09	29-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	13-Jul-16	15-Jul-19	Action Level
Anion Sum	me/L	-	-	-	-	-	-	-	-	-	-	-	3.13	3.78	3.35	3.20	3.61	3.47	3.64	3.55	3.50	2.95	3.31	2.92	2.95	-
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	-	-	152	98.2	114	102	88.8	92	93	166.59	84	93	117	91	88	88	73	71	65	74	76	62	69	73	-
Calculated TDS	mg/L	-	-	225	175	187	182	170	179	178	247.91	169	174	220	215	192	210	188	288	213	204	176	198	170	180	-
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	-	-	0.09	0.7	< 1	0.1	0.2	< 1	< 1	0.39	< 1	< 1	ND	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1.0	< 1.0	-
Cation Sum	me/L	-	-	-	-	-	-	-	-	-	-	-	2.92	3.98	4.23	3.36	3.50	3.27	4	4.40	3.96	3.65	3.9	2.67	2.81	-
Hardness (CaCO ₃)	mg/L	-	-	158	114	123	118	102	122	111	196.73	103	101	150	130	99	110	97.8	90	163	105	103	103	78	79	-
Ion Balance (% Difference)	%	-	-	-	-	-	-	-	-	-	-	-	3.54	2.59	11.6	2.44	1.55	2.9	2.8	10.6	6.0	10.6	8.1	4.47	2.43	-
Langelier Index (@ 20C)	-	-	-	-	-	-	-	-	-	-	-	-	-0.97	-0.581	-0.877	-0.953	-1.15	-0.84	-1.54	-0.76	-1.06	-0.81	-1.47	-1.11	-1.13	-
Langelier Index (@ 4C)	-	-	-	-	-	-	-	-	-	-	-	-	-1.37	-0.831	-1.13	-1.20	-1.4	-1.16	-1.86	-1.08	-1.38	-1.13	-1.79	-1.36	-1.38	-
Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	<0.05	ND	-	<0.18	0.06	0.33	0.09	0.67	<0.05	<0.05	<0.05	<0.050	<0.050	-
Saturation pH (@ 20C)	Units	-	-	-	-	-	-	-	-	-	-	-	7.97	7.64	7.83	7.94	7.91	8.24	8.64	8.06	8.22	8.21	8.27	8.13	8.10	-
Saturation pH (@ 4C)	Units	-	-	-	-	-	-	-	-	-	-	-	8.37	7.89	8.08	8.19	8.16	8.56	8.96	8.38	8.54	8.53	8.59	8.38	8.35	-
Total Alkalinity (Total as CaCO ₃)	mg/L	-	-	152	99	114	102	89	92	93	167	84	93	120	91	88	88	73	71	65	74	76	62	69	73	-
Dissolved Chloride (Cl)	mg/L	-	15000	34.2	25.5	28.6	32.4	31.1	33.9	34.8	28.4	37	36	41	44	41	55	60	68	67	62	41	63	45	44	87
Colour	TCU	-	-	< 1	9	< 5	< 5	< 5	< 5	< 5	37	< 5	< 5	ND	< 5	9	18	< 5	< 5	< 5	< 5	9	< 5	< 5.0	15	-
Nitrate + Nitrite (N)	mg/L	-	-	< 0.05	1.37	0.15	0.05	0.57	0.07	0.26	0.23	0.22	0.08	ND	< 0.05	< 0.18	0.06	0.33	0.09	0.67	0.07	< 0.05	0.08	0.085	0.071	-
Nitrite (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	0.06	0.02	-	< 0.01	< 0.01	< 0.05	< 0.05	< 0.05	0.07	< 0.05	0.08	0.048	0.047	-
Nitrogen (Ammonia Nitrogen)	mg/L	-	-	0.7	< 0.05	1.07	1	0.53	0.96	0.78	0.4	0.67	0.74	0.68	0.79	0.81	0.71	0.61	0.79	< 0.03	0.72	0.75	0.49	0.59	0.49	1.3
Total Organic Carbon (C)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	1	8	1.9	0.8	3.2	1.8	0.8	1.3	0.8	< 0.5	2.5	5.5 (1)	-
Orthophosphate (P)	mg/L	-	-	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.3	< 0.01	< 0.01	ND	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.013	< 0.010	-
pH	Units	-	-	6.8	7.9	7.4	7	7.4	7.2	7.6	7.4	7.6	7	7.06	6.95	6.99	6.76	7.4	7.5	7.3	7.2	7.4	6.8	7.02	6.97	-
Reactive Silica (SiO ₂)	mg/L	-	-	11	11.5	11.4	11.4	10.6	10.2	10.8	13.3	11	11	11	11	12	12	11.8	11.5	11.7	11.5	11.5	11.6	12	13	-
Dissolved Sulphate (SO ₄)	mg/L	-	-	10	11	13	15	14	14	14	11.6	10	12	14	15	14	14	14	14	15	13	13	14	13	12	-
Turbidity	NTU	-	-	33	4	3.1	2.1	4.3	0.3	< 1000	920	203	220	98	810	110	100	365	355	165	431	78.4	230	190	760	-
Conductivity	µS/cm	-	-	435	296	336	334	336	345	327	409	313	320	380	340	340	370	389	380	365	401	361	343	290	300	453
Dissolved Organic Carbon	mg/L	-	-	0.7	0.5	0.6	< 0.5	317	< 0.5	1.1	2.3	-	< 5	-	-	-	-	1.7	1.9	365	1.3	1.1	< 0.5	-	-	
Dissolved Calcium	mg/L	-	-	50.3	37	38.9	37	32.4	39.1	34.8	68.1	33.2	33	48	41	32	34	32.4	38.9	56.1	33.9	32.9	35.8	25	26	-
Magnesium	mg/L	-	-	7.4	5.3	6.3	6.2	5.1	5.8	5.8	6.48	4.9	4.6	6	6	4.9	4.9	4.1	4	5.5	4.9	5	3.4	3.6	3.7	-
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	< 0.1	ND	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.02	0.05	0.05	< 0.02	< 0.1	< 0.1	-
Potassium	mg/L	-	-	2.5	3.1	3.6	3.4	3.1	3.6	3.5	3	3.3	3	3.1	3.6	3.6	3.3	2.4	2.6	2.4	3.3	3.4	2.3	2.5	2.5	-
Sodium	mg/L	-	-	17.1	14.2	15	14.3	17	15.8	16	16.6	17.1	17.5	22	31	24	25	20.8	28.2	21.5	33.1	27.7	32.3	20	22	-

Notes: See separate notes page

TABLE C-9

GROUNDWATER GENERAL CHEMISTRY - MW-23C
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186

Compound	Units	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	19-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	25-Aug-04 DUP	23-Nov-06	16-Aug-07	29-Jul-08	12-Aug-09	29-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	13-Jul-16	15-Jul-19	Action Level
Anion Sum	me/L	-	-	-	-	-	-	-	-	-	-	-	1.46	1.28	1.27	1.42	1.30	1.28	1.21	9.01	1.46	1.40	1.21	1.08	1.39	1.38	-
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	-	-	56.2	67.1	83.6	57.4	52.6	60	55	62.2	57	65	56	56	61	58	58	54	55	63	60	52	49	61	59	-
Calculated TDS	mg/L	-	-	78	99	84	82	79	88	81	89.21	81	84	79	79	95	100	78	62	69	76	78	68	61	81	82	-
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	-	-	1.67	0.8	<1	0.5	0.4	<1	<1	0.74	<1	<1	<1	ND	<1	1	1	<10	<10	<10	<10	<10	<10	<1.0	<1.0	-
Cation Sum	me/L	-	-	-	-	-	-	-	-	-	-	-	1.31	1.32	1.39	1.85	2.10	1.35	1.1	1.35	1.41	1.52	1.36	1.25	1.26	1.28	-
Hardness (CaCO ₃)	mg/L	-	-	23	63	25.5	30.1	30.9	35.9	41.6	55.17	32	29.2	27.7	33	50	26	31	21.9	39.3	39.1	30.9	33.5	25.7	32	36	-
Ion Balance (% Difference)	%	-	-	-	-	-	-	-	-	-	-	-	5.49	1.49	4.63	13.2	23.5	2.66	4.9	2.3	1.9	4.0	6.1	7.2	4.91	3.76	-
Langelier Index (@ 20C)	-	-	-	-	-	-	-	-	-	-	-	-	-0.52	-0.51	-0.256	-0.471	-0.272	-0.262	-0.77	-0.29	-0.66	-0.62	-0.65	-1.05	-0.36	-0.521	-
Langelier Index (@ 4C)	-	-	-	-	-	-	-	-	-	-	-	-	-0.92	-0.91	-0.507	-0.722	-0.523	-0.514	-1.09	-0.61	-0.98	-0.94	-0.97	-1.37	-0.611	-0.772	-
Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	0.23	0.24	0.32	-	0.18	0.24	0.27	0.36	0.27	0.52	0.18	0.22	0.22	0.24	-
Saturation pH (@ 20C)	Units	-	-	-	-	-	-	-	-	-	-	-	8.62	8.71	8.53	8.32	8.66	8.55	8.97	8.69	8.66	8.78	8.79	8.93	8.51	8.47	-
Saturation pH (@ 4C)	Units	-	-	-	-	-	-	-	-	-	-	-	9.02	9.11	8.78	8.57	8.91	8.8	9.29	9.01	8.98	9.10	9.11	9.25	8.76	8.72	-
Total Alkalinity (Total as CaCO ₃)	mg/L	-	-	58	68	64	58	53	61	56	63	58	66	57	57	62	59	59.0	54	56	63	60	52	49	62	60	-
Dissolved Chloride (Cl)	mg/L	-	15000	4	3.9	3.9	4.7	4.2	4.3	4.9	4	3	3	3	4	4	4	3.00	4	5	5	4	4	3	3.3	2.7	6.0
Colour	TCU	-	-	<3	50	34	82	7	11	11	490	21	7	8	ND	<5	10	19	6	<5	5	19	<5	5	<5.0	<5.0	-
Nitrate + Nitrite (N)	mg/L	-	-	<0.05	0.44	0.21	0.25	0.22	0.29	0.33	0.53	0.24	0.23	0.24	0.32	0.57	0.18	0.24	0.27	0.36	0.27	0.64	0.18	0.22	0.22	0.24	-
Nitrite (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01	ND	-	<0.01	<0.01	<0.05	<0.05	<0.05	0.12	<0.05	<0.05	<0.010	<0.010	-
Nitrogen (Ammonia Nitrogen)	mg/L	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	ND	<0.05	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.03	<0.03	<0.050	<0.050	none
Total Organic Carbon (C)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	ND	1.1	<0.5	<5	<0.5	0.6	0.8	<5.0	2.7	<0.5	<0.50	<0.50	-
Orthophosphate (P)	mg/L	-	-	<0.01	0.05	0.02	0.03	0.03	0.06	0.04	<0.3	0.03	0.02	0.02	0.02	0.04	0.02	0.02	0.03	0.02	0.02	0.03	0.03	0.02	0.028	0.023	-
pH	Units	-	-	8.5	8.1	7.8	8	7.9	8.1	8.1	8.1	8	8.1	8.2	8.27	7.85	8.39	8.29	8.2	8.4	8.0	8.2	8.14	7.88	8.15	7.95	-
Reactive Silica (SiO ₂)	mg/L	-	-	8.6	10.5	9.1	8.7	8.6	8.9	10	11.6	9.6	9.3	9.2	9.5	10	9.0	9.2	9.2	10.2	9.8	9.3	9.5	8.1	9.7	11	-
Dissolved Sulphate (SO ₄)	mg/L	-	-	2	4	<2	2	2	6	<2	2.5	4	<2	<2	ND	<2	<2	<2	<2	2	2	2	2	<2	2.2	4.0	-
Turbidity	NTU	-	-	1.9	24.1	20	60.6	5.8	24.3	>1000	>1000	226	71.4	70.8	80	22	78	370	16.5	1580	45.7	3150	887	929	38	36	-
Conductivity	µS/cm	-	-	121	155	127	127	130	132	130	136	128	128	120	120	140	130	130	129	122	134	128	129	123	130	120	145
Dissolved Organic Carbon	mg/L	-	-	1.5	<0.5	<0.5	<0.5	133	<0.5	<0.5	0.9	-	<5	<5	-	-	-	-	<0.5	<0.5	<0.5	3.2	<0.5	<0.5	-	-	-
Dissolved Calcium	mg/L	-	-	7.7	1.2	8.4	9.9	10.4	11.4	13.7	18.5	11	9.9	9.3	11	17	8.3	10	7.3	13.6	13.2	10.4	11.6	8.8	11	12	-
Magnesium	mg/L	-	-	1	2.4	1.1	1.3	1.2	1.8	1.8	2.18	1.1	1.1	1.1	1.2	1.8	1.3	1.1	0.9	1.3	1.5	1.2	1.1	0.9	1.2	1.2	-
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	ND	-	<0.1	<0.1	<0.1	<0.1	<0.02	0.03	<0.02	<0.02	<0.1	<0.1	-
Potassium	mg/L	-	-	1.7	3.8	3.3	3.7	3.1	4.5	3.6	3.4	2.7	2.9	3	2.9	2.8	11	3.0	2.7	2.7	2.7	3.1	3.1	2	2.7	2.4	-
Sodium	mg/L	-	-	18.1	10.2	17.2	16	18.8	13	10.1	8.7	13.8	14.9	15.8	15	18	30	15	13.6	11.3	12.8	18.8	14.1	15.7	13	11	-

Notes: See separate notes page

TABLE C-10

GROUNDWATER GENERAL CHEMISTRY - MW-298
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186

Compound	Units	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	20-Mar-96	16-Apr-97	9-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	29-Jul-08	11-Aug-09	28-Jul-10	21-Sep-11	4-Oct-12	8-Jul-13	20-Aug-14	23-Jul-15	13-Jul-16	15-Jul-19	Action Level
Anion Sum	me/L	-	-	-	-	-	-	-	-	-	-	-	2.31	2.04	2.35	2.3	2.22	2.47	2.42	2.31	2.51	2.17	1.95	1.86	2.16	2.42	-
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	-	-	63.5	94.8	84.2	105	77.5	75	91	101	82	94	83.1	97	88	85	95	92	95	104	84	79	74	91	96	-
Calculated TDS	mg/L	-	-	112	131	123	149	116	133	132	143.17	123	125	114	128	145	130	136	119	120	127	115	106	102	120	130	-
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	-	-	0.47	1.1	<1	0.8	0.5	<1	1	0.95	<1	<1	ND	ND	<1	1	<1	<10	<10	<10	<10	<10	<10	1	<1.0	-
Cation Sum	me/L	-	-	-	-	-	-	-	-	-	-	-	2.14	2.07	2.27	3.16	2.43	2.36	2.03	2.35	2.37	2.24	2.16	2.13	2.12	2.17	-
Hardness (CaCO ₃)	mg/L	-	-	29	58	53.8	70.5	75.5	89.1	80.8	99.81	76.5	78.6	79	87	110	87	90	80	97.3	95.1	89.0	87	90.8	86	89	-
Ion Balance (% Difference)	%	-	-	-	-	-	-	-	-	-	-	-	3.83	0.876	1.74	15.8	4.52	2.28	8.7	0.9	2.9	1.5	5.1	6.9	0.93	5.45	-
Langelier Index (@ 20C)	-	-	-	-	-	-	-	-	-	-	-	-	-0.05	-0.56	-0.06	0.074	0.140	0.026	-0.2	0.11	-0.08	-0.36	-0.23	-0.47	0.143	0.0520	-
Langelier Index (@ 4C)	-	-	-	-	-	-	-	-	-	-	-	-	-0.45	-0.811	-0.311	-0.177	-0.110	-0.23	-0.52	-0.21	-0.40	-0.68	-0.55	-0.79	-0.108	-0.198	-
Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	0.19	0.17	0.17	-	0.09	0.2	0.26	0.15	0.12	0.19	0.12	0.07	0.066	0.061	-
Saturation pH (@ 20C)	Units	-	-	-	-	-	-	-	-	-	-	-	8.05	8	7.9	7.86	7.97	7.9	8.2	8.09	8.08	8.20	8.23	8.21	7.93	7.90	-
Saturation pH (@ 4C)	Units	-	-	-	-	-	-	-	-	-	-	-	8.45	8.25	8.15	8.11	8.22	8.16	8.52	8.41	8.40	8.52	8.55	8.53	8.19	8.15	-
Total Alkalinity (Total as CaCO ₃)	mg/L	-	-	64	96	85	106	78	76	92	102	83	95	83	98	88	86	96	92	95	104	84	79	74	92	97	-
Dissolved Chloride (Cl)	mg/L	-	15000	8.4	4	6.6	11.8	15.9	14.6	16.6	11.2	8	11	10	11	16	14	15	17	12	12	14	10	11	8	14	21
Colour	TCU	-	-	7	15	9	180	<5	<5	<5	235	54	280	ND	ND	<5	<5	<5	<5	<5	<5	7	<5	19	<5.0	<5.0	-
Nitrate + Nitrite (N)	mg/L	-	-	<0.05	0.45	0.39	0.42	0.06	0.12	0.08	0.42	0.12	0.21	0.17	0.17	0.1	0.09	0.2	0.26	0.15	0.12	0.19	0.12	0.07	0.066	0.061	-
Nitrite (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	0.02	ND	ND	-	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.010	<0.010	-
Nitrogen (Ammonia Nitrogen)	mg/L	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	ND	ND	<0.05	<0.05	<0.05	0.09	<0.05	<0.03	<0.03	<0.03	<0.03	<0.050	<0.050	none
Total Organic Carbon (C)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	5	7 (1)	<0.5	9.5	6.9	<5.0	1.3	1	0.9	<5.0 (1)	<50 (1)	-
Orthophosphate (P)	mg/L	-	-	<0.01	0.02	0.01	<0.01	<0.01	0.09	0.01	<0.3	0.04	<0.01	0.02	0.04	0.04	0.03	0.02	0.04	0.03	0.03	<0.01	0.03	0.02	0.028	0.027	-
pH	Units	-	-	7.9	8.1	8	7.9	7.8	8	8.1	8	8	8	7.44	7.84	7.93	8.11	7.93	8	8.2	8.0	7.8	8	7.74	8.08	7.96	-
Reactive Silica (SiO ₂)	mg/L	-	-	10.8	7.5	8.7	7.8	6.9	6.3	8.3	8	8.1	8.2	7.3	7.6	7.1	7.8	7.5	8	8.5	9.3	8.8	8.3	6.8	9	9.8	-
Dissolved Sulphate (SO ₄)	mg/L	-	-	14	5	9	6	3	16	5	4.5	12	4	3.3	3	3	5	5	4	3	4	4	4	3	4.1	4.9	-
Turbidity	NTU	-	-	2.8	26	48	93.2	16.2	13.5	>1000	>1000	>1000	>1000	860	200	150	>1000	570	3940	3580	4740	3730	4760	4470	410	>1000	-
Conductivity	µS/cm	-	-	180	203	199	246	207	238	227	245	210	218	190	230	230	230	240	245	212	232	224	209	198	210	220	268
Dissolved Organic Carbon	mg/L	-	-	6.3	0.5	1.4	0.3	215	<0.5	0.7	1.8	-	<500	-	-	-	-	-	3.6	4.9	6.2	<0.5	0.7	<0.5	-	-	
Dissolved Calcium	mg/L	-	-	9.9	19.5	17.9	23.6	25.3	29.1	26.6	32.8	25.7	26.2	27	30	37	8.0	30	27.1	34	32.0	29.7	28.9	31.9	29	30	-
Magnesium	mg/L	-	-	1.1	2.2	2.2	2.8	3	4	3.5	4.35	3	3.2	3.1	3.3	4.5	3.7	3.5	3	3	3.7	3.6	3.6	2.7	3.4	3.5	-
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	<0.1	ND	ND	-	<0.1	<0.1	<0.1	<.1	0.03	0.04	0.03	<0.02	<0.1	<0.1	-
Potassium	mg/L	-	-	2.7	3.2	3.2	3.9	2.9	4.4	3.6	4.5	3.6	3.5	3.2	3.8	4.3	5.8	3.7	2.8	2.9	2.9	3.6	3.8	2.5	3.3	3.3	-
Sodium	mg/L	-	-	27.2	29.6	22.9	27.3	10.7	12.1	12.7	16.2	12.2	10.9	9.4	9.7	19	13	11	7.8	7.7	9.0	8.4	7.5	5.8	7.6	7.1	-

Notes: See separate notes page

TABLE C-11

GROUNDWATER GENERAL CHEMISTRY - MW-29C
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186

Compound	Units	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	20-Mar-96	16-Apr-97	9-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	29-Jul-08	11-Aug-09	28-Jul-10	14-Sep-11	4-Oct-12	8-Jul-13	20-Aug-14	23-Jul-15	13-Jul-16	15-Jul-19	Action Level
Anion Sum	me/L	-	-	-	-	-	-	-	-	-	-	-	1.28	1.3	1.35	1.34	1.34	1.35	1.3	1.36	1.49	1.36	1.26	1.31	1.57	1.51	-
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	-	-	50.3	39.2	39.8	37.7	39.7	40	40	42.11	36	43	41.6	39	41	40	39	37	40	45	39	40	38	47	44	-
Calculated TDS	mg/L	-	-	75	68	56	70	67	84	70	76.59	70	79	79.8	83	84	89	82	68	73	83	75	74	76	90	88	-
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	-	-	0.6	0.7	<1	0.2	0.3	<1	<1	0.79	<1	<1	ND	2	<1	<1	<1	<10	<10	<10	<10	<10	<10	<1.0	<1.0	-
Cation Sum	me/L	-	-	-	-	-	-	-	-	-	-	-	1.33	1.36	1.38	1.54	1.64	1.34	1.1	1.26	1.51	1.33	1.44	1.42	1.38	1.31	-
Hardness (CaCO ₃)	mg/L	-	-	26	38	33.1	33.4	28.3	46.9	33.6	34.68	34.6	19.3	29	22	43	25	26	29.8	28.2	22.2	31.7	23.2	19.9	23	28	-
Ion Balance (% Difference)	%	-	-	-	-	-	-	-	-	-	-	-	2.07	2.11	1.32	6.94	10.1	0.37	8.1	3.8	0.7	1.1	6.3	4.1	6.44	7.09	-
Langelier Index (@ 20C)	-	-	-	-	-	-	-	-	-	-	-	-	-1.09	-0.504	-0.183	-0.461	-0.473	-0.406	-0.91	-0.9	-1.09	-1.10	-0.79	-1	-0.582	-0.692	-
Langelier Index (@ 4C)	-	-	-	-	-	-	-	-	-	-	-	-	-1.49	-0.755	-0.434	-0.712	-0.724	-0.657	-1.23	-1.22	-1.41	-1.42	-1.11	-1.32	-0.833	-0.943	-
Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	0.24	0.24	0.27	-	0.29	0.300	0.35	0.29	0.32	0.28	0.2	0.28	0.3	0.24	-
Saturation pH (@ 20C)	Units	-	-	-	-	-	-	-	-	-	-	-	8.99	8.72	8.88	8.57	8.82	8.81	9.01	9	9.09	8.97	9.08	9.18	8.78	8.72	-
Saturation pH (@ 4C)	Units	-	-	-	-	-	-	-	-	-	-	-	9.39	8.98	9.13	8.82	9.07	9.06	9.33	9.32	9.41	9.29	9.4	9.5	9.03	8.97	-
Total Alkalinity (Total as CaCO ₃)	mg/L	-	-	51	40	40	38	40	40	40	43	36	43	42	42	41	41	40	37	40	45	39	40	38	48	45	-
Dissolved Chloride (Cl)	mg/L	-	15000	5.1	5.4	7.9	9.3	10.4	10.8	11.9	10.6	12	12	13	15	15	15	16	16	16	17	17	13	15	17	16	19
Colour	TCU	-	-	10	7	44	85	10	31	<5	310	<5	13	ND	ND	<5	22	17	<5	<5	<5	6	<5	17	<5.0	<5.0	-
Nitrate + Nitrite (N)	mg/L	-	-	<0.05	0.16	0.14	0.75	0.15	0.2	0.14	0.22	0.27	0.24	0.24	0.27	0.27	0.29	0.300	0.35	0.29	0.32	0.28	0.2	0.33	0.3	0.24	-
Nitrite (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	<0.01	ND	ND	-	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	<0.010	<0.010	-
Nitrogen (Ammonia Nitrogen)	mg/L	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	ND	ND	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.03	<0.03	<0.03	<0.050	<0.050	none
Total Organic Carbon (C)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	ND	ND	6	<0.5	<0.5	1.3	0.9	<0.5	1	<0.5	<0.5	<25 (1)	<5.0 (1)	-
Orthophosphate (P)	mg/L	-	-	<0.01	0.02	<0.01	0.02	<0.01	0.06	<0.01	<0.3	<0.01	0.02	0.02	0.01	0.01	0.02	0.01	0.02	<0.01	<0.01	0.01	0.01	<0.01	0.012	0.013	-
pH	Units	-	-	8.1	8.3	7.6	7.8	7.9	7.9	8	8.3	7.8	7.9	8.22	8.7	8.11	8.35	8.4	8.1	8.1	8.0	7.9	8.29	8.18	8.2	8.03	-
Reactive Silica (SiO ₂)	mg/L	-	-	8.4	7.3	7.4	6.7	6.4	6.6	7	7.5	6.9	6.9	6.9	6.9	6.9	6.9	6.9	7	7.1	7.1	7.1	7	6.6	6.9	7.6	-
Dissolved Sulphate (SO ₄)	mg/L	-	-	4	3	2	4	<2	11	3	3.1	2	3	2.9	3	3	3	4	4	4	4	4	4	5	5.1	7.3	-
Turbidity	NTU	-	-	4.6	16.5	20	14.9	21.8	5.6	187	600	821	100	250	>1000	220	240	30	109	64.9	65.6	207	1010	873	830	20	-
Conductivity	µS/cm	-	-	117	107	112	117	115	125	126	125	133	133	130	140	140	140	140	142	145	147	145	150	141	150	140	156
Dissolved Organic Carbon	mg/L	-	-	2.2	<0.5	<0.5	<0.5	117	<0.5	<0.5	0.9	-	<25	-	-	-	-	-	0.8	0.9	0.7	<0.5	<0.5	<0.5	-	-	
Dissolved Calcium	mg/L	-	-	8.4	12.6	10.8	10.9	9.2	16	11	11.3	11.4	6.4	9.5	7.1	14	8.0	8.6	9.8	9.3	6.9	10.4	7.8	6.5	7.7	9.2	-
Magnesium	mg/L	-	-	1.1	1.6	1.5	1.5	1.3	1.7	1.5	1.57	1.5	0.8	1.2	1	2	1.3	1.1	1.3	1.2	1.2	1.4	0.9	0.9	0.99	1.2	-
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	<0.1	ND	ND	-	<0.1	<0.1	<0.1	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.1	-
Potassium	mg/L	-	-	3.3	4.1	3.4	3.5	3.4	3.6	3.5	3.9	3.6	3.2	3.4	3.4	3.7	6.6	3.6	3	2.8	3.0	3.6	3.6	2.8	2.9	3.3	-
Sodium	mg/L	-	-	14.4	7.8	8.4	8	9.4	9.4	7.9	12.6	9.8	19.8	16	19	13	22	17	9.9	14.3	22.7	13.9	20.2	21.9	19	15	-

Notes: See separate notes page

TABLE C-12

GROUNDWATER GENERAL CHEMISTRY - MW-31A
 Municipality of the County of Kings
 Meadowview Landfill, Kentville, NS
 Stantec Consulting Ltd. Project No. 121414186

Compound	Units	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	21-Mar-96	16-Apr-97	9-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	18-Aug-05 MW-31A Dup	23-Nov-06	16-Aug-07	29-Jul-08	11-Aug-09	28-Jul-10	14-Sep-11	4-Oct-12	8-Jul-13	20-Aug-14	21-Jul-15	13-Jul-16	15-Jul-19	15-Jul-19 Lab-Dup	15-Jul-19 MW-40D	15-Jul-19 Lab-Dup	Action Level	
Anion Sum	me/L	-	-	-	-	-	-	-	-	-	-	-	0.45	0.344	-	0.813	0.23	0.290	0.35	0.34	0.34	0.82	0.69	0.44	0.29	0.43	0.780		0.590		-	
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	-	-	20	5	5	4	7	5	3	3.2	**	6	8	-	ND	6	7	9	7	9	<5	14	14	7	12	25		19		-	
Calculated TDS	mg/L	-	-	49	24	19	21	24	42	30	34.95	**	33	26.8	-	56	31	44	26	18	18	45	33	22	19	28	51		42		-	
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	-	-	0.01	0	<1	0	0	<1	<1	0	**	<1	ND	-	ND	<1	<1	<1	<10	<10	<10	<10	<10	<10	<1.0	<1.0		<1.0		-	
Cation Sum	me/L	-	-	-	-	-	-	-	-	-	-	-	0.48	0.383	-	0.932	0.79	1.11	0.340	0.31	0.31	0.84	0.47	0.38	0.42	0.37	0.790		0.710		-	
Hardness (CaCO ₃)	mg/L	-	-	28	11	7.6	6.1	11.2	16.5	13	17.8	**	14.9	10	-	32	16	10	9	8.9	9.1	28.1	16.0	12.9	13.9	13	24		22		-	
Ion Balance (% Difference)	%	-	-	-	-	-	-	-	-	-	-	-	3.62	5.4	-	6.83	54.9	58.6	1.45	5.3	4	1.3	18.7	7.2	17	7.5	0.640		9.23		-	
Langelier Index (@ 20C)	-	-	-	-	-	-	-	-	-	-	-	-	-3.46	-2.56	-	ND	-3.7	-3.58	-3.56	-3.89	-3.46	-3.67	-3.02	-2.88	-3.78	-2.86	-2.49		-2.79		-	
Langelier Index (@ 4C)	-	-	-	-	-	-	-	-	-	-	-	-	-3.86	-2.81	-	ND	-3.95	-3.83	-3.81	-4.21	-3.78	-3.99	-3.34	-3.2	-4.1	-3.11	-2.75		-3.04		-	
Nitrate (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	0.05	ND	-	ND	-	<0.05	0.31	0.24	0.07	<0.05	<0.05	0.06	<0.05	<0.050	<0.050		<0.050		-	
Saturation pH (@ 20C)	Units	-	-	-	-	-	-	-	-	-	-	-	9.96	9.85	-	ND	9.87	10.1	9.9	10.3	10.2	9.97	9.69	9.77	10	9.63	9.02		9.18		-	
Saturation pH (@ 4C)	Units	-	-	-	-	-	-	-	-	-	-	-	10.4	10.1	-	ND	10.1	10.3	10.2	10.6	10.5	10.3	10.0	10.1	10.3	9.88	9.28		9.44		-	
Total Alkalinity (Total as CaCO ₃)	mg/L	-	-	20	5	5	4	7	5	3	3.2	**	6	8	-	ND	6	7	9	7	9	<5	14	14	7	12	25		19		-	
Dissolved Chloride (Cl)	mg/L	-	15000	13.9	3.4	2.9	3.5	5.3	5.1	5.6	10.7	**	10	5	-	29	4	4	4	5	4	29	13	4	4	4.3	5.7		5.6		31.7	
Colour	TCU	-	-	<3	<3	7	31	<5	43	<5	77	**	47	ND	-	ND	<5	<5	<5	<5	<5	<5	<5	<5	<5	12	<5.0	25		12		-
Nitrate + Nitrite (N)	mg/L	-	-	<0.05	0.37	<0.05	<0.05	0.05	<0.05	<0.05	<0.06	**	0.08	ND	-	ND	<0.05	<0.05	0.31	0.24	0.07	<0.05	<0.05	0.06	<0.05	<0.050	<0.050		<0.050	<0.050	-	
Nitrite (N)	mg/L	-	-	-	-	-	-	-	-	-	-	-	0.03	ND	-	ND	-	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.010	<0.010		<0.010	<0.010	-	
Nitrogen (Ammonia Nitrogen)	mg/L	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	**	0.08	ND	-	ND	<0.05	<0.05	<0.05	<0.05	<0.03	<0.03	<0.03	<0.03	<0.03	0.1	<0.050	<0.050	<0.050	N/A	none	
Total Organic Carbon (C)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	ND	-	ND	0.7	<5	<5	<0.5	0.7	<0.5	1.6	0.9	1.6	<5.0 (1)	<5.0 (1)		<5.0 (1)	<5.0 (1)	-	
Orthophosphate (P)	mg/L	-	-	<0.01	0.01	<0.01	0.02	<0.01	0.13	<0.01	<0.3	**	0.08	ND	-	ND	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.011	0.18		0.053		-	
pH	Units	-	-	6.6	6.2	6.4	6.4	6.6	6.2	6.8	6.2	**	6.5	7.29	-	5.83	6.17	6.47	6.34	6.4	6.7	6.3	6.67	6.89	6.25	6.77	6.53		6.39		-	
Reactive Silica (SiO ₂)	mg/L	-	-	7.5	5.5	5.2	4	5.1	6.1	6.3	7.8	**	7	6.5	-	8.1	6.3	6.3	6.4	6.6	7.4	7.5	5.8	6.6	5.9	6.3	6.6		6.8		-	
Dissolved Sulphate (SO ₄)	mg/L	-	-	<2	4	<2	3	2	14	6	<2.0	**	<2	2.1	-	ND	<2	2	2	2	2	<2	2	2	2	3.5	5.5		2.3		-	
Turbidity	NTU	-	-	1.7	12.5	3.6	74	16.2	9.5	505	70	**	759	>1000	-	770	82	570	48	24.4	24.0	2.1	291.0	181	119	65	>1000		>1000		-	
Conductivity	µS/cm	-	-	93	34	27.6	24.4	38.3	43.7	41	65	**	53	39	-	110	34	33	40	39	39	104	57	42	39	42	81		62		110	
Dissolved Organic Carbon	mg/L	-	-	0.7	<0.5	0.5	<0.5	40	3.2	1.2	-	-	<50	-	-	-	-	-	-	<0.5	0.8	<0.5	0.6	<0.5	1	-				-		
Dissolved Calcium	mg/L	-	-	9.5	3.4	2.2	1.8	3.5	4.8	4.2	5.2	**	4.8	3.4	3.4	9.4	4.5	2.6	2.8	2.4	2.5	7.8	5.1	4	4.4	3.9	6.9		7.9		-	
Magnesium	mg/L	-	-	1.1	0.6	0.5	0.4	0.6	1.1	0.6	1.17	**	0.7	0.5	0.5	2	1.1	0.7	0.6	0.7	0.7	2.1	0.8	0.7	0.7	0.7	1.1		1		-	
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	<0.1	ND	ND	ND	-	<0.1	<0.1	<0.1	<0.02	<0.02	0.03	<0.02	<0.02	<0.1	0.23		0.19		-	
Potassium	mg/L	-	-	0.6	0.3	0.2	0.2	0.6	5	1.4	<0.6	**	0.4	0.7	0.6	0.3	0.5	8.4	0.3	<0.1	<0.1	0.1	0.7	0.2	0.4	<0.1	3.9		4.6		-	
Sodium	mg/L	-	-	4.1	2.3	2.7	5.5	2.8	3	3.7	5.5	**	3.9	3.6	3.5	6.6	11	16	3.1	2.8	2.7	5.8	3.0	2.5	2.7	2.7	4.2		4		-	

Notes: See separate notes page

GROUNDWATER METALS CHEMISTRY - NOTES
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186

Notes:

Bold indicates exceedance of NS Tier 2 PSS

Italics indicates the detection limit exceeds NS Tier 2 PSS

Tier 1 EQS - Tier 1 Environmental Quality Standards for Groundwater from Nova Scotia's Contaminated Sites Regulations (July 2013) Notification of Contamination Protocol, Table 4, commercial/industrial, non-potable, coarse grained

Tier 2 PSS - Tier 2 Pathway Specific Standards for Groundwater from Nova Scotia's Contaminated Sites Regulations (July 2013) Remediation Levels Protocol, Table 3, groundwater discharge to surface water > 10 m from surface water b

ND - Not Detected

TABLE C-13 GROUNDWATER METALS CHEMISTRY - MW-4A
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186

Compound	Units	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	21-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	26-Jul-00 Dup.	Aug-01	Sep-02	Sep-02 Duplicate	19-Aug-03
Aluminum	µg/L	-	50	9	13	33	33	< 5	4000	2500	14	<20	<20	< 100
Antimony	µg/L	-	200	3	< 2	< 2	< 2	< 2	< 20	< 20	<2	<0.4	<0.4	< 20
Arsenic	µg/L	-	50	170	39	93	81	59	100	67	33	61.9	64.4	23
Barium	µg/L	-	10000	2900	1800	2700	2300	2200	3300	2900	1400	4560	4570	2800
Beryllium	µg/L	-	53	< 5	< 5	< 5	< 5	< 5	< 50	< 50	<5	<0.5	<0.5	< 20
Bismuth	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	< 20
Boron	µg/L	-	12000	540	250	400	420	440	390	390	200	450	450	780
Cadmium	µg/L	-	0.1	< 0.5	< 0.3	< 0.3	< 0.3	< 0.3	1.6	1.1	0.09	<0.3	<0.3	< 3
Chromium	µg/L	-	-	4	5	< 2	4	5	24	< 20	<2	2	3	< 20
Cobalt	µg/L	-	100	29	21	26	22	20	91	56	15	21	22	20
Copper	µg/L	-	20	< 10	3	3	4	< 2	63	37	2	10	11	< 20
Iron	µg/L	-	3000	24800	20000	28000	22000	13000	210000	94000	14000	25000	25500	< 500
Lead	µg/L	-	10	0.1	0.4	0.4	0.5	< 0.5	51	29	<.5	<1	<1	< 5
Manganese	µg/L	-	8200	420	5400	900	890	450	33000	17000	3500	785	811	480
Mercury	µg/L	-	0.26	-	-	-	-	-	-	-	-	-	-	-
Molybdenum	µg/L	-	730	< 2	< 2	< 2	< 2	< 2	< 20	< 20	<2	<4	<4	< 20
Nickel	µg/L	-	250	47	28	36	39	26	120	69	12	41	42	50
Selenium	µg/L	-	10	< 2	< 2	< 2	< 2	< 2	< 10	< 10	<1	2	3	< 20
Silver	µg/L	-	1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 5	< 5	<0.1	<2	<2	< 5
Strontium	µg/L	-	210000	730	370	580	510	580	600	550	350	859	876	950
Thallium	µg/L	-	8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	< 1	<0.1	<0.8	<0.8	< 1
Tin	µg/L	-	-	< 2	< 2	< 2	< 2	< 2	< 20	< 20	<2	.20	<20	< 20
Titanium	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	< 20
Uranium	µg/L	-	3000	0.1	0.1	0.2	0.2	0.1	6.6	3.5	0.2	0.21	0.21	< 1
Vanadium	µg/L	-	60	< 2	< 2	< 2	< 2	< 2	50	22	<2	4	5	< 20
Zinc	µg/L	-	300	< 10	43	21	14	12	< 200	< 200	22	7	7	< 50

Notes: See separate notes page

TABLE C-13 GROUNDWATER METALS CHEMISTRY - MW-4A
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186

Compound	Units	NS Tier 1 EQS	NS Tier 2 PSS	25-Aug-04	25-Aug-04 MW-40D	25-Aug-04 Lab Dup	18-Aug-05	18-Aug-05 MW-40D	23-Nov-06	1-Aug-07	16-Aug-07 MW-4ALF	28-Jul-08
Aluminum	µg/L	-	50	<100	<100	<101	<100	<100	ND	<50	<50	<50
Antimony	µg/L	-	200	<20	<20	<21	<20	<20	ND	<20	<20	<20
Arsenic	µg/L	-	50	<20	25	24	51	47	ND	76	69	68
Barium	µg/L	-	10000	2800	3200	3200	3200	3200	3000	3760	3860	3740
Beryllium	µg/L	-	53	<20	<20	<20	<20	<20	ND	<20	<20	<20
Bismuth	µg/L	-	-	<20	<20	<20	<20	<20	ND	<20	<20	<20
Boron	µg/L	-	12000	660	790	860	980	990	900	845	867	734
Cadmium	µg/L	-	0.1	<3	<3	<3	<3	<3	ND	0.21	<0.17	<0.17
Chromium	µg/L	-	-	<20	<20	<20	<20	<20	ND	<20	<20	<20
Cobalt	µg/L	-	100	24	24	23	17	18	18	14.8	13.8	15.6
Copper	µg/L	-	20	<20	<20	<20	<20	<20	ND	<20	<20	35
Iron	µg/L	-	3000	<500	1300	1300	11000	7800	ND	20500	20900	18800
Lead	µg/L	-	10	<5	<5	<5	<5	<5	ND	<5.0	<5.0	<5.0
Manganese	µg/L	-	8200	1100	550	550	480	470	540	493	481	497
Mercury	µg/L	-	0.26	-	-	-	-	-	-	-	-	-
Molybdenum	µg/L	-	730	<20	<20	<20	<20	<20	ND	<20	<20	<20
Nickel	µg/L	-	250	56	68	69	48	51	45	32	31	33
Selenium	µg/L	-	10	<20	<20	<20	<20	<20	ND	<10	<10	<10
Silver	µg/L	-	1	<5	<5	<5	<5	<5	ND	<1.0	<1.0	<1.0
Strontium	µg/L	-	210000	940	1100	1100	960	960	1000	1080	1090	970
Thallium	µg/L	-	8	<1	<1	<1	<1	<1	ND	<1.0	<1.0	<1.0
Tin	µg/L	-	-	<20	<20	<20	<20	<20	ND	<20	<20	<20
Titanium	µg/L	-	-	<20	<20	<20	<20	<20	ND	<20	<20	<20
Uranium	µg/L	-	3000	<1	<1	<1	<1	<1	1	1.2	<1.0	<1.0
Vanadium	µg/L	-	60	<20	<20	<20	<20	<20	ND	<20	<20	<20
Zinc	µg/L	-	300	<50	<50	<50	<50	<50	ND	<50	<50	<50

Notes: See separate notes page

TABLE C-13 **GROUNDWATER METALS CHEMISTRY - MW-4A**
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186

Compound	Units	NS Tier 1 EQS	NS Tier 2 PSS	28-Jul-08 Dup-A	12-Aug-09	12-Aug-09 MW-40D	27-Jul-10	27-Jul-10 MW-40D	21-Sep-11	4-Oct-12	4-Jul-13	4-Jul-13 MW-40D	19-Aug-14
Aluminum	µg/L	-	50	<50	<50	<50	<10	<10	<10	<5	347	62	10
Antimony	µg/L	-	200	<20	<20	<20	<2	<2	<2	<2	<2	<2	<2
Arsenic	µg/L	-	50	68	67	62	122	117	57	43	66	64	89
Barium	µg/L	-	10000	3990	4030	3760	2900	3000	3250	3420	3170	3200	4090
Beryllium	µg/L	-	53	<20	<20	<20	<2	<2	<2	<2	<2	<2	<2
Bismuth	µg/L	-	-	<20	<20	<20	<2	<2	<2	<2	<2	<2	<2
Boron	µg/L	-	12000	727	548	565	624	610	690	773	591	681	726
Cadmium	µg/L	-	0.1	<0.17	<0.17	<0.17	<0.3	<0.3	<0.3	0.452	<0.017	0.029	<0.017
Chromium	µg/L	-	-	<20	<10	<10	2	3	<2	<1	3	<1	<1
Cobalt	µg/L	-	100	15.6	15.8	15.5	6	7	7	9	11	11	10
Copper	µg/L	-	20	<20	<20	<20	<2	<2	<2	<2	<2	3	4
Iron	µg/L	-	3000	18600	16600	17600	14400	15200	15900	<50	17400	17200	15600
Lead	µg/L	-	10	<5.0	<5.0	<5.0	1.9	1.8	<0.5	<0.5	<0.5	<0.5	3.4
Manganese	µg/L	-	8200	515	497	520	384	407	641	702	541	513	430
Mercury	µg/L	-	0.26	-	-	-	-	-	-	-	0.101	<0.026	0.029
Molybdenum	µg/L	-	730	<20	<20	<20	<2	<2	<2	5	<2	<2	<2
Nickel	µg/L	-	250	33	32	28	17	15	15	39	27	25	19
Selenium	µg/L	-	10	<10	<10	<10	3	3	<2	2	<1	<1	<1
Silver	µg/L	-	1	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1
Strontium	µg/L	-	210000	1010	1040	1040	865	875	823	872	980	974	845
Thallium	µg/L	-	8	<1.0	<1.0	<1.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Tin	µg/L	-	-	<20	<20	<20	<2	<2	<2	<2	<2	<2	<2
Titanium	µg/L	-	-	<20	<20	<20	<2	<2	<2	<2	<2	<2	<2
Uranium	µg/L	-	3000	<1.0	<1.0	<1.0	<0.1	0.1	<0.1	0.6	0.1	<0.1	<0.1
Vanadium	µg/L	-	60	<20	<20	<20	4	4	2	<2	<2	<2	<2
Zinc	µg/L	-	300	<50	<50	<50	10	<5	<5	<5	35	20	9

Notes: See separate notes page

TABLE C-13 GROUNDWATER METALS CHEMISTRY - MW-4A
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186

Compound	Units	NS Tier 1 EQS	NS Tier 2 PSS	19-Aug-14 MW-40D	21-Jul-15	21-Jul-15 MW-40D	14-Jul-16	19-Jul-17	19-Jul-17 MW-40D	15-Jul-19	
Aluminum	µg/L	-	50	10	<5	<5	<5.0	6.5	<5.0	17	
Antimony	µg/L	-	200	<2	<2	<2	<1.0	<1.0	<1.0	<1.0	
Arsenic	µg/L	-	50	90	84	82	64	47	6.4	28	
Barium	µg/L	-	10000	3980	4090	4110	3300	2300	1900	1500	
Beryllium	µg/L	-	53	<2	<2	<2	<1.0	<1.0	<1.0	<1.0	
Bismuth	µg/L	-	-	<2	<2	<2	<2.0	<2.0	<2.0	<2.0	
Boron	µg/L	-	12000	704	801	651	390	330	270	240	
Cadmium	µg/L	-	0.1	<0.017	<0.017	<0.017	<0.010	0.015	0.27	0.011	
Chromium	µg/L	-	-	<1	3	3	<1.0	<1.0	<1.0	2.2	
Cobalt	µg/L	-	100	10	6	6	12	10	11	7.8	
Copper	µg/L	-	20	<2	<2	<2	<2.0	<2.0	<2.0	0.68	
Iron	µg/L	-	3000	14800	25900	24400	19000	13000	<50	9700	
Lead	µg/L	-	10	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	
Manganese	µg/L	-	8200	443	657	633	550	1200	1700	1200	
Mercury	µg/L	-	0.26	<0.026	<0.026	<0.026	-	-	-	-	
Molybdenum	µg/L	-	730	<2	<2	<2	<2.0	<2.0	<2.0	<2.0	
Nickel	µg/L	-	250	18	9	9	18	16	22	13	
Selenium	µg/L	-	10	<1	7	7	<1.0	<1.0	<1.0	<1.0	
Silver	µg/L	-	1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	
Strontium	µg/L	-	210000	853	974	936	770	620	550	27000	
Thallium	µg/L	-	8	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	410	
Tin	µg/L	-	-	<2	<2	<2	<2.0	<2.0	<2.0	<0.10	
Titanium	µg/L	-	-	<2	<2	<2	<2.0	<2.0	<2.0	<2.0	
Uranium	µg/L	-	3000	0.1	<0.1	<0.1	<0.10	<0.10	0.27	<2.0	
Vanadium	µg/L	-	60	<2	2	3	<2.0	<2.0	<2.0	0.16	
Zinc	µg/L	-	300	<5	9	8	7.2	11	15	<2.0	

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Notes: See separate notes page

TABLE C-14 GROUNDWATER METALS CHEMISTRY - MW-22A
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186

Compound	Units	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	26-Jul-00 Lab Dup.	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	10-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	14-Jul-16	19-Jul-17	15-Jul-19	15-Jul-19 Lab-Dup
Aluminum	µg/L	-	50	5	< 100	< 10	< 10	< 10	1000	3700	120	20	< 10	<10	<100	ND	<5.0	<5.0	12.4	<10	<10	<5	21	<5	<5	<5.0	<5.0	<5.0	<5.0
Antimony	µg/L	-	200	9	< 20	< 2	< 2	< 2	< 20	< 20	<2	<0.4	< 2	<2	<20	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0	<1.0	<1.0	<1.0
Arsenic	µg/L	-	50	36	< 20	100	110	97	61	92	110	106	2	<2	27	ND	101	104	111	<2	107	<2	75	88	106	1.4	95	67	66
Barium	µg/L	-	10000	990	1800	4100	4000	4000	4300	4600	3500	602	6	150	1300	920	1230	1080	1090	357	815	730	938	910	1110	8.6	1100	880	880
Beryllium	µg/L	-	53	< 5	< 50	< 5	< 5	< 5	< 50	< 50	<5	<0.5	< 2	<2	<20	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0	<1.0	<1.0	<1.0
Bismuth	µg/L	-	-	-	-	-	-	-	-	-	-	-	< 2	<2	<20	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0	<2.0
Boron	µg/L	-	12000	160	1000	1300	1400	1600	1800	1800	2100	830	7	780	470	630	387	429	295	135	212	336	291	229	322	<50	440	220	220
Cadmium	µg/L	-	0.1	< 0.5	< 0.5	< 0.3	< 0.3	< 0.3	< 1	< 1	0.05	<0.3	< 0.3	<0.3	<3	ND	0.023	<0.017	0.358	<0.3	<0.3	<0.017	0.022	<0.017	<0.017	<0.010	75000	<0.010	<0.010
Chromium	µg/L	-	-	5	< 20	2	10	6	< 20	< 20	2	3	< 2	<2	<20	ND	2.2	3.3	1.4	3	<2	1	<1	<1	2	<1.0	<1.0	1.0	1.0
Cobalt	µg/L	-	100	35	50	48	33	37	38	45	26	21	< 1	3	26	28	23	19.3	23.3	<1	18	18	26	17	16	<0.40	19	18	17
Copper	µg/L	-	20	10	< 20	< 2	2	7	40	90	4	21	< 2	<2	<20	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<0.50	<0.50
Iron	µg/L	-	3000	118000	1500	76000	50000	50000	30000	53000	39000	41500	< 50	1100	22000	16000	45900	33700	37000	<50	56100	990	56000	36900	74400	200	49000	47000	47000
Lead	µg/L	-	10	0.2	< 1	0.5	< 0.5	< 0.5	11	29	1.1	<1	< 0.5	<0.5	<5	ND	<0.50	<0.50	<0.50	1.4	0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50
Manganese	µg/L	-	8200	2290	4800	7200	4100	4300	3700	4800	3200	2740	39	350	3600	3300	4220	2570	4330	656	4800	5030	4220	3020	7770	57	4000	3600	3600
Mercury	µg/L	-	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.049	<0.026	<0.026	-	-	-	-
Molybdenum	µg/L	-	730	< 2	< 20	3	3	3	< 20	< 20	3	<4	< 2	<2	<20	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0	<2.0
Nickel	µg/L	-	250	29	60	48	47	49	53	60	44	30	< 2	4	25	25	18	17.3	15.4	3	9	12	19	10	10	<2.0	16	12	11
Selenium	µg/L	-	10	< 2	< 20	< 2	< 2	< 2	< 10	< 10	<1	1	< 2	<2	<20	ND	<1.0	<1.0	<1.0	<2	<2	<1	<1	<1	2	<1.0	<1.0	<1.0	<1.0
Silver	µg/L	-	1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 5	< 5	<0.1	<2	< 0.5	<0.5	<5	ND	<0.10	<0.10	<0.10	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10
Strontium	µg/L	-	210000	300	940	1100	1100	1200	1000	1100	1000	906	420	84	670	560	521	475	436	154	411	415	418	327	392	850	420	340	340
Thallium	µg/L	-	8	< 0.1	< 0.1	< 0.1	< 0.1	0.1	< 1	< 1	0.1	<0.8	< 0.1	<0.1	<1	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10
Tin	µg/L	-	-	< 2	< 20	< 2	< 2	< 2	< 20	< 20	<2	<20	< 2	<2	<20	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0	<2.0
Titanium	µg/L	-	-	-	-	-	-	-	-	-	-	-	< 2	<2	<20	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0	<2.0
Uranium	µg/L	-	3000	0.1	< 0.1	0.2	0.3	0.4	3.2	5	1.2	1.04	10	0.1	<1	ND	<0.10	<0.10	0.12	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	33	<0.10	<0.10	<0.10
Vanadium	µg/L	-	60	< 2	< 2	3	3	2	< 20	< 20	4	6	< 2	<2	<20	ND	<2.0	<2.0	<2.0	<2	3	3	<2	<2	2	<2.0	<2.0	<2.0	<2.0
Zinc	µg/L	-	300	20	< 50	9	11	24	< 200	< 200	10	10	< 5	<5	160	ND	22.4	5.5	<5.0	5	5	<5	23	8	<5	<5.0	<5.0	5.5	6.9

Notes: See separate notes page

TABLE C-15 GROUNDWATER METALS CHEMISTRY - MW-22B
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186

Compound	Units	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	10-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	14-Jul-16	19-Jul-17	15-Jul-19
Aluminum	µg/L	-	50	5	260	26	<20	30	2300	<50	<20	<100	<100	<100	ND	<50	<50	<50	<10	<10	<5	29	<5	<5	<5.0	<5.0	<5.0
Antimony	µg/L	-	200	12	<2	<2	<2	<2	<20	<20	<0.4	<20	<20	<20	ND	<20	<20	<20	<2	<2	<2	<2	<2	<2	<1.0	<1.0	<1.0
Arsenic	µg/L	-	50	10	13	15	4	7	22	<20	14.2	<20	<20	<20	ND	<20	<20	<20	41	57	12	23	26	36	4.1	9.5	9.9
Barium	µg/L	-	10000	1400	420	520	350	510	900	580	548	720	590	510	1000	596	581	572	735	3250	672	734	896	814	700	690	620
Beryllium	µg/L	-	53	<5	<5	<5	<5	<5	<50	<50	<0.5	<20	<20	<20	ND	<20	<20	<20	<2	<2	<2	<2	<2	<2	<1.0	<1.0	<1.0
Bismuth	µg/L	-	-	-	-	-	-	-	-	-	-	<20	<20	<20	ND	<20	<20	<20	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0
Boron	µg/L	-	12000	320	120	160	180	250	330	370	280	440	600	500	350	567	504	470	601	690	726	541	480	449	460	490	450
Cadmium	µg/L	-	0.1	<0.5	<0.5	<0.3	<0.3	<0.3	<1	0.5	<0.3	<3	<3	<3	ND	<0.17	<0.17	0.8	<0.3	<0.3	0.023	<0.017	<0.017	<0.017	0.052	0.018	0.16
Chromium	µg/L	-	-	2	8	<2	<2	2	<20	<20	<2	<20	<20	<20	3	<20	<20	<10	4	<2	3	<1	<1	8	<1.0	<1.0	1.4
Cobalt	µg/L	-	100	34	22	11	5	8	23	10	6	17	15	13	24	10.4	9.5	9.6	10	7	10	16	13	9	9.5	8.4	9.7
Copper	µg/L	-	20	10	14	<2	2	4	31	<20	9	<20	<20	<20	ND	<20	<20	<20	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<0.50
Iron	µg/L	-	3000	3200	9900	14000	720	1600	18000	8800	11500	1300	<500	2400	7100	10100	8820	8690	15500	15900	<50	14200	10400	14200	2700	5100	5200
Lead	µg/L	-	10	0.2	2	1.1	<0.5	0.9	22	<5.0	<1	<5	<5	<5	ND	<5.0	<5.0	<5.0	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50
Manganese	µg/L	-	8200	5280	3100	4300	270	1700	6900	2400	736	4300	4400	4500	4100	4070	4180	3650	4490	641	4520	4260	4270	4870	3400	1200	3500
Mercury	µg/L	-	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.026	<0.026	<0.026	-	-	-
Molybdenum	µg/L	-	730	20	6	5	3	4	<20	<20	<4	23	<20	<20	ND	<20	<20	<20	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0
Nickel	µg/L	-	250	80	20	15	14	28	38	26	24	77	36	30	17	32	28	27	22	15	22	35	25	16	25	25	23
Selenium	µg/L	-	10	4	<2	<2	<2	<2	<10	<10	3	<20	<20	<20	ND	<10	<10	<10	5	<2	3	2	<1	11	<1.0	<1.0	<1.0
Silver	µg/L	-	1	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<1	<2	<5	<5	<5	ND	<1.0	<1.0	<1.0	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10
Strontium	µg/L	-	210000	1500	2400	2500	2400	2300	3000	2900	2840	3100	2800	2500	450	2540	2460	2410	2280	823	2190	1990	2030	1970	2000	2000	2000
Thallium	µg/L	-	8	<0.1	<0.1	<0.1	<0.1	<0.1	<1	<1	<0.8	<1	<1	<1	ND	<1.0	<1.0	<1.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10
Tin	µg/L	-	-	<2	<2	<2	<2	<2	<20	<20	<20	<20	<20	<20	ND	<20	<20	<20	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0
Titanium	µg/L	-	-	-	-	-	-	-	-	-	-	<20	<20	<20	ND	<20	<20	<20	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0
Uranium	µg/L	-	3000	2	2.8	3.9	1.8	7.6	13	7.1	4.1	75	15	9.6	0.1	9.9	12.0	11	3.3	<0.1	22.2	5.0	11.5	7.8	12	9.6	11
Vanadium	µg/L	-	60	<2	3	<2	<2	<2	<20	<20	3	<20	<20	<20	ND	<20	<20	<20	5	2	3	<2	<2	3	<2.0	<2.0	<2.0
Zinc	µg/L	-	300	20	53	9	11	18	170	24	7	<50	<50	<50	14	<50	<50	<50	<5	<5	<5	12	17	<5	8	<5.0	7.5

Notes: See separate notes page

TABLE C-16 GROUNDWATER METALS CHEMISTRY - MW-22C
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186

Compound	Units	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	20-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	10-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	14-Jul-16	19-Jul-17	15-Jul-19
Aluminum	µg/L	-	50	18	170	170	69	110	260	19	<20	<100	<10	ND	44	5.2	<5.0	<5.0	<10	<10	<5	18	6	<5	<5.0	<5.0	<5.0
Antimony	µg/L	-	200	6	<2	<2	<2	<2	<2	<2	<0.4	<20	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0	<1.0	<1.0
Arsenic	µg/L	-	50	<20	2	<2	2	2	3	2	2	32	2	ND	ND	<2.0	2.2	<2.0	2	<2	<2	<2	<2	2	62	1.3	1.4
Barium	µg/L	-	10000	6	13	6	5	61	19	11	12	1900	8	6.7	9	10.9	8.5	7.5	7	5	6	25	8	7	710	8.8	8.7
Beryllium	µg/L	-	53	<5	<5	<5	<5	<5	<5	<5	<0.5	<20	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0	<1.0	<1.0
Bismuth	µg/L	-	-	-	-	-	-	-	-	-	-	<20	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0
Boron	µg/L	-	12000	10	12	9	12	21	<20	12	<100	1200	9	8.9	9	13.5	9.9	9.4	10	10	25	48	12	17	370	<50	<50
Cadmium	µg/L	-	0.1	<0.5	<0.5	<0.3	<0.3	<0.3	<0.1	0.02	<0.3	<3	<0.3	ND	0.3	0.019	0.027	0.025	<0.3	<0.3	<0.017	<0.017	<0.017	<0.017	<0.010	62000	<0.010
Chromium	µg/L	-	-	<2	3	<2	<2	<2	<2	<2	<2	<20	<2	ND	ND	<2.0	<2.0	2.5	<2	<2	1	<1	<1	1	<1.0	<1.0	<1.0
Cobalt	µg/L	-	100	<1	1	1	1	1	1	0.4	<1	28	<1	ND	ND	<0.40	<0.40	<0.40	<1	<1	<1	<1	<1	<1	15	<0.40	<0.40
Copper	µg/L	-	20	10	15	2	4	9	14	<2	6	<20	<2	ND	ND	<2.0	<2.0	<2.0	2	<2	<2	35	<2	<2	<2.0	<2.0	<0.50
Iron	µg/L	-	3000	60	210	120	120	230	250	20	110	23000	<50	ND	ND	109	156	145	176	135	<50	150	156	94	41000	230	200
Lead	µg/L	-	10	0.1	1.1	0.6	0.7	0.5	1.2	<0.5	<1	<5	<0.5	ND	ND	<0.50	<0.50	<0.50	1.5	<0.5	<0.5	2	<0.5	<0.5	<0.50	<0.50	<0.50
Manganese	µg/L	-	8200	40	41	15	15	93	94	100	83	3800	24	ND	46	62.4	54.2	51.4	47	47	10	51	44	43	3300	57	56
Mercury	µg/L	-	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.087	<0.026	<0.026	-	-	-
Molybdenum	µg/L	-	730	<2	<2	<2	<2	<2	<2	<2	<4	<20	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0
Nickel	µg/L	-	250	<2	2	<2	<2	2	2	<2	<3	35	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	3	<2	<2	12	<2.0	<2.0
Selenium	µg/L	-	10	<2	<2	<2	<2	<2	<1	<1	<1	<20	<2	ND	ND	<1.0	<1.0	<1.0	<2	<2	<1	<1	<1	2	<1.0	<1.0	<1.0
Silver	µg/L	-	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<2	<5	<0.5	ND	ND	<0.10	<0.10	<0.10	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10
Strontium	µg/L	-	210000	130	150	230	270	330	460	380	429	850	400	400	470	534	589	630	580	753	721	740	697	786	280	12000	900
Thallium	µg/L	-	8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<1	<0.1	ND	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	870	<0.10
Tin	µg/L	-	-	<2	<2	<2	<2	<2	<2	<2	<20	<20	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<0.10	<2.0
Titanium	µg/L	-	-	-	-	-	-	-	-	-	-	<20	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0
Uranium	µg/L	-	3000	1.5	5.1	8.3	7.2	8.7	12	40	20.8	<1	8.6	28	24	19.4	18.7	23.8	17	25.2	26.5	27.4	33.6	34.7	<0.10	<2.0	34
Vanadium	µg/L	-	60	<2	2	<2	<2	<2	6	4	3	<20	<2	6.4	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	34	<2.0
Zinc	µg/L	-	300	<10	37	5	22	18	13	6	7	<50	<5	ND	5	50.8	10.8	<5.0	<5	<5	<5	29	6	<5	<5.0	<2.0	<5.0

Notes: See separate notes page

TABLE C-17 GROUNDWATER METALS CHEMISTRY - MW-25B
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186

Compound	Units	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	19-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Aug-01 Duplicate	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	16-Aug-07 Dup A	28-Jul-08	10-Aug-09	28-Jul-10	21-Sep-11	4-Oct-12	8-Jul-13	19-Aug-14	22-Jul-15	14-Jul-16	19-Jul-17	15-Jul-19
Aluminum	µg/L	-	50	7	22	160	39	50	450	26	19	<20	<10	<10	ND	ND	6.3	98.4	<5.0	<5.0	<10	<10	<5	15	9	<5	<5.0	<5.0	<5.0
Antimony	µg/L	-	200	2	<2	<2	<2	<2	<2	<2	<2	<0.4	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0	<1.0	<1.0
Arsenic	µg/L	-	50	<2	2	2	<2	2	2	2	2	1.5	<2	<2	ND	3	2	<2.0	<2.0	2.8	5	<2	3	3	5	8	3.6	1.9	1.4
Barium	µg/L	-	10000	12	23	5	11	16	11	6	5	5.3	24	13	7.2	42	22.1	<5.0	11.3	12.7	29	<5	27	14	77	35	27	7.6	8.7
Beryllium	µg/L	-	53	<5	<5	<5	<5	<5	<5	<5	<5	<0.5	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0	<1.0	<1.0
Bismuth	µg/L	-	-	-	-	-	-	-	-	-	-	-	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Boron	µg/L	-	12000	14	11	10	12	18	7	7	6	<100	63	41	21	140	93.4	11.8	44.0	78.9	186	18	170	100	162	165	160	56	<50
Cadmium	µg/L	-	0.1	<0.5	<0.5	<0.3	<0.3	<0.3	0.1	0.03	0.03	<0.3	<0.3	<0.3	ND	ND	0.029	<0.017	<0.017	0.065	<0.3	1	0.512	0.449	<0.017	0.02	0.021	0.019	<0.010
Chromium	µg/L	-	-	2	<2	<2	<2	2	<2	<2	<2	<2	<2	<2	ND	2	<2.0	<2.0	<2.0	<1.0	3	<2	3	<1	<1	4	<1.0	<1.0	<1.0
Cobalt	µg/L	-	100	<0.1	<1	1	1	<1	<1	<0.4	<0.4	<1	<1	<1	ND	ND	0.5	<0.40	<0.40	<0.40	<1	<1	<1	<1	2	1	0.84	<0.40	<0.40
Copper	µg/L	-	20	<10	6	<2	4	2	21	9	6	5	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<0.50
Iron	µg/L	-	3000	30	18	130	57	80	200	<20	<20	<100	<50	<50	ND	ND	<50	57	<50	<50	<50	<50	<50	<50	3270	83	<50	<50	200
Lead	µg/L	-	10	0.1	0.4	0.4	<0.5	<0.5	1.4	<0.5	<0.5	<1	<0.5	<0.5	ND	ND	<0.50	<0.50	<0.50	<0.50	1.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50
Manganese	µg/L	-	8200	150	3	16	7	56	32	34	32	7	30	17	19	140	86.2	10.3	60.4	35.8	250	8	283	<2	1410	435	300	11	56
Mercury	µg/L	-	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.026	<0.026	<0.026	-	-	-
Molybdenum	µg/L	-	730	35	<2	<2	<2	<2	<2	<2	<2	<4	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0
Nickel	µg/L	-	250	8	<2	<2	<2	<2	2	<2	<2	<3	3	2	ND	8	7.2	<2.0	3.8	6	10	<2	8	10	11	9	11	6600	<2.0
Selenium	µg/L	-	10	<2	<2	<2	<2	<2	<1	<1	<1	<1	<2	<2	ND	ND	<1.0	<1.0	<1.0	<1.0	4	<2	2	<1	<1	10	<1.0	<1.0	<1.0
Silver	µg/L	-	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<2	<0.5	<0.5	ND	ND	<0.1	<0.10	<0.10	<0.10	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10
Strontium	µg/L	-	210000	240	140	150	370	180	190	170	160	230	1100	780	440	1500	1310	23.2	632	1180	1510	262	1030	917	1520	1480	1600	880	900
Thallium	µg/L	-	8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	ND	ND	<0.1	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10
Tin	µg/L	-	-	<2	<2	<2	<2	<2	<2	<2	<2	<20	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0
Titanium	µg/L	-	-	-	-	-	-	-	-	-	-	-	<2	<2	ND	2	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0
Uranium	µg/L	-	3000	1	3	2.9	4.3	2.7	3	3	2.8	2.98	9.8	5.9	4.6	15	13	<0.10	4.40	10.6	18.2	3.1	9.5	9.6	14	15.9	17	9.8	34
Vanadium	µg/L	-	60	<2	2	2	<2	2	2	<2	<2	<2	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2.0	3	<2	2	<2	<2	<2	<2.0	<2.0	<2.0
Zinc	µg/L	-	300	<10	18	5	11	6	14	7	6	4	5	<5	ND	ND	12.5	<5.0	23.3	<5.0	<5	8	6	10	6	<5	<5.0	<5.0	<5.0

Notes: See separate notes page

TABLE C-18 GROUNDWATER METALS CHEMISTRY - TH-1
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186

Compound	Units	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	19-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	25-Aug-04 Lab DUP	18-Aug-05	23-Nov-06	16-Aug-07	28-Jul-08	28-Jul-08 Dup-B	10-Aug-09	27-Jul-10	21-Sep-11	4-Oct-12	4-Jul-13	20-Aug-14	22-Jul-15	14-Jul-16	19-Jul-17	15-Jul-19
Aluminum	µg/L	-	50	5	70	< 10	< 10	< 10	130	<50	<20	< 10	<100	<100	ND	ND	<5.0	<5.0	<5.0	<5.0	<10	<10	<5	37	5	<5	<5.0	<5.0	<5.0
Antimony	µg/L	-	200	4	< 2	< 2	< 2	< 2	< 20	<20	<0.4	< 2	<20	<20	ND	ND	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0	<1.0	<1.0
Arsenic	µg/L	-	50	43	26	34	8	27	27	30	22.6	10	<20	<20	11	4	35.9	49.7	43.1	36	35	25	10	28	33	21	26	24	23
Barium	µg/L	-	10000	3800	3300	3400	2800	2800	3100	3100	2460	2000	1600	1700	1400	1200	1500	1400	1400	1370	1030	1210	1090	1030	1170	1130	1000	970	870
Beryllium	µg/L	-	53	< 5	< 5	< 5	< 5	< 5	< 50	<50	<0.5	< 2	<20	<20	ND	ND	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0	<1.0	<1.0
Bismuth	µg/L	-	-	-	-	-	-	-	-	-	-	< 2	<20	<20	ND	ND	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Boron	µg/L	-	12000	1200	1000	950	1000	920	900	870	650	610	630	670	500	450	351	344	350	323	363	254	365	2210	244	240	220	210	180
Cadmium	µg/L	-	0.1	0.5	1	< 0.3	< 0.3	< 0.3	< 1	0.1	<0.3	<0.3	<3	<3	ND	ND	<0.017	0.059	0.047	0.089	<0.3	1	<0.017	<0.017	<0.017	0.023	<0.010	<0.010	<0.010
Chromium	µg/L	-	-	7	5	5	4	7	< 20	<20	<2	3	<20	<20	3.3	3	<2.0	3.4	2.2	1.7	<2	<2	1	7	<1	1	<1.0	<1.0	<1.0
Cobalt	µg/L	-	100	21	17	18	14	14	12	16	10	16	12	13	9.9	16	7.89	11.2	10.7	8.29	4	5	4	6	6	4	6.3	4.1	4.0
Copper	µg/L	-	20	< 10	7	< 2	2	< 2	< 20	<20	15	< 2	<20	<20	ND	ND	<2.0	4.1	2.1	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<0.50
Iron	µg/L	-	3000	25300	13000	23000	120	13000	23000	26000	15200	80	<500	<500	1700	78	14100	12100	11900	11600	8630	9710	<50	11800	10400	14000	12000	13000	12000
Lead	µg/L	-	10	0.3	1	0.2	< 0.5	< 0.5	< 5	<5	<1	< 0.5	<5	<5	ND	ND	<0.50	<0.50	<0.50	<0.50	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50
Manganese	µg/L	-	8200	1740	1400	1600	1400	1300	1500	1500	1280	1100	990	1000	950	750	855	774	759	841	774	1030	1000	913	914	1200	1100	990	1000
Mercury	µg/L	-	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.026	<0.026	<0.026	-	-	-
Molybdenum	µg/L	-	730	2	2	2	< 2	< 2	< 20	<20	<4	2	<20	<20	ND	4	<2.0	4.9	4.8	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0
Nickel	µg/L	-	250	41	29	33	21	18	< 20	21	16	25	<20	<20	15	25	10.8	21.8	20.3	8.9	6	5	5	9	5	4	6.5	4.7	4.1
Selenium	µg/L	-	10	< 2	< 2	< 2	< 2	< 2	< 10	<10	2	< 2	<20	<20	ND	ND	<1.0	<1.0	<1.0	<1.0	<2	<2	1	<1	<1	4	<1.0	<1.0	<1.0
Silver	µg/L	-	1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 5	<1	<2	< 0.5	<5	<5	ND	ND	<0.10	<0.10	<0.10	<0.10	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10
Strontium	µg/L	-	210000	920	790	840	800	770	860	840	873	690	570	590	520	470	439	429	415	425	430	434	413	384	376	400	400	380	360
Thallium	µg/L	-	8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 1	<1	<0.8	< 0.1	<1	<1	ND	ND	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10
Tin	µg/L	-	-	3	3	2	2	2	< 20	<20	<20	2	<20	<20	ND	3	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0
Titanium	µg/L	-	-	-	-	-	-	-	-	-	-	< 2	<20	<20	ND	ND	<2.0	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0
Uranium	µg/L	-	3000	0.5	1	0.4	0.2	0.2	< 1	<1	0.18	0.2	<1	<1	0.1	0.5	<0.10	0.15	0.13	<0.10	0.2	0.2	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10
Vanadium	µg/L	-	60	2	2	3	< 2	< 2	< 20	<20	4	< 2	<20	<20	ND	ND	<2.0	<2.0	<2.0	<2.0	3	3	<2	<2	<2	<2	<2.0	<2.0	<2.0
Zinc	µg/L	-	300	180	44	12	6	9	27	<20	7	7	<50	<50	ND	ND	27.6	6.4	17.6	<5.0	8	<5	6	15	<5	<5	<5.0	<5.0	<5.0

Notes: See separate notes page

TABLE C-19 GROUNDWATER METALS CHEMISTRY - MW-23A
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	19-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	23-Nov-06	16-Aug-07	29-Jul-08	12-Aug-09	29-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	13-Jul-16	15-Jul-19
Aluminum	µg/L	-	50	9	100	47	140	20	770	40	<20	30	<10	ND	<5.0	<5.0	<5.0	<10	<10	<5	16	5	<5	6.2	12
Antimony	µg/L	-	200	8	<2	<2	<2	<2	<2	<2	<0.4	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0	<1.0
Arsenic	µg/L	-	50	4	<2	<2	<2	<2	<2	<2	<0.6	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0	<1.0
Barium	µg/L	-	10000	140	120	56	65	90	98	100	150	42	99	140	103	120	113	158	145	228	215	110	87	94	60
Beryllium	µg/L	-	53	<5	<5	<5	<5	<5	<5	<5	<0.5	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0	<1.0
Bismuth	µg/L	-	-	-	-	-	-	-	-	-	-	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Boron	µg/L	-	12000	18	20	7	11	12	<20	14	<100	8	11	9	11.1	10.7	10.1	8	8	20	42	12	9	<50	<50
Cadmium	µg/L	-	0.1	<0.5	<0.5	<0.3	<0.3	0.3	0.7	<0.3	<0.3	<0.3	0.4	ND	0.086	1.04	0.105	<0.3	0.8	1.44	0.19	0.095	0.112	0.15	0.059
Chromium	µg/L	-	-	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	ND	<2.0	<2.0	2	<2	<2	2	<1	<1	<1	<1.0	<1.0
Cobalt	µg/L	-	100	4	<1	1	1	<1	<1	<1	<1	<1	<1	ND	<0.40	<0.40	<0.40	<1	<1	<1	<1	<1	<1	<0.40	<0.40
Copper	µg/L	-	20	10	23	<2	<2	5	<2	<2	3	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<0.50
Iron	µg/L	-	3000	5000	180	71	200	140	540	60	160	<50	<50	ND	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Lead	µg/L	-	10	0.1	0.4	0.2	<0.5	<0.5	0.6	0.5	<1	<0.5	<0.5	ND	<0.50	<0.50	<0.50	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50
Manganese	µg/L	-	8200	3120	1100	890	900	860	770	880	1120	680	870	1100	900	1040	813	1160	1070	2020	2240	1010	1160	820	500
Mercury	µg/L	-	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.026	0.058	<0.026	-	-
Molybdenum	µg/L	-	730	<2	<2	<2	<2	<2	<2	<2	<4	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Nickel	µg/L	-	250	3	4	<2	2	2	2	<2	<3	<2	<2	3	<2.0	2.3	<2.0	3	3	4	7	<2	<2	<2.0	<2.0
Selenium	µg/L	-	10	<2	<2	<2	<2	<2	<1	<2	<1	<2	<2	ND	<1.0	<1.0	<1.0	<2	<2	<1	<1	<1	<1	<1.0	<1.0
Silver	µg/L	-	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	ND	<0.10	<0.10	<0.10	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10
Strontium	µg/L	-	210000	46	54	23	31	37	44	52	68	22	46	56	55.6	48.4	46.1	55	36	83	98	42	36	39	20
Thallium	µg/L	-	8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10
Tin	µg/L	-	-	<2	<2	<2	<2	<2	<2	<2	<20	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Titanium	µg/L	-	-	-	-	-	-	-	-	-	-	4	2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Uranium	µg/L	-	3000	0.3	0.2	0.1	0.1	0.1	0.4	0.9	0.37	0.3	0.3	0.1	0.29	0.1	0.17	<0.1	<0.1	0.1	0.3	0.2	<0.1	0.22	<0.10
Vanadium	µg/L	-	60	<2	<2	<2	<2	<2	3	<2	<2	<200	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Zinc	µg/L	-	300	10	59	12	11	27	5	10	<2	<5	<5	ND	21.8	27.2	5.7	<5	8	<5	8	<5	5	7.5	<5.0

Notes: See separate notes page

TABLE C-20 GROUNDWATER METALS CHEMISTRY - MW-23B
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	20-Mar-96	16-Apr-97	6-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	23-Nov-06	16-Aug-07	29-Jul-08	12-Aug-09	29-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	13-Jul-16	15-Jul-19
Aluminum	µg/L	-	50	7	50	65	72	< 20	760	10	30	< 10	<10	ND	14.3	<5.0	<5.0	<10	<10	<5	34	5	<5	<5.0	<5.0
Antimony	µg/L	-	200	3	< 2	< 2	< 2	< 2	< 2	<2	<0.4	< 2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0	<1.0
Arsenic	µg/L	-	50	14	7	16	15	9	16	11	5.3	2	<2	ND	14	9.3	10.4	11	11	<2	9	8	8	5.9	6.7
Barium	µg/L	-	10000	280	290	320	270	290	550	280	199	270	220	260	269	257	267	234	255	276	258	312	238	200	190
Beryllium	µg/L	-	53	< 5	< 5	< 5	< 5	< 5	< 5	<5	<0.5	< 2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0	<1.0
Bismuth	µg/L	-	-	-	-	-	-	-	-	-	-	< 2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Boron	µg/L	-	12000	28	28	27	24	27	21	19	<100	19	18	19	19	16.6	18.1	19	19	22	39	23	19	<50	<50
Cadmium	µg/L	-	0.1	< 0.5	< 0.5	< 0.3	< 0.3	< 0.3	1.8	<0.3	<0.3	< 0.3	<0.3	ND	0.087	0.040	0.045	<0.3	1.4	0.150	0.122	0.057	0.096	0.055	0.072
Chromium	µg/L	-	-	< 2	< 2	< 2	< 2	< 2	< 2	<2	<2	< 2	<2	ND	<2.0	<2.0	2.2	<2	<2	1	<1	<1	<1	<1.0	<1.0
Cobalt	µg/L	-	100	6	4	5	5	4	4	3	2	3	3	3	2.71	2.55	2.73	2	3	2	3	3	2	2.1	2.7
Copper	µg/L	-	20	10	8	< 2	< 2	4	18	<2	<2	< 2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<0.50
Iron	µg/L	-	3000	3950	1700	11000	8300	4900	2900	6200	3110	130	<50	ND	5370	4860	5010	5370	6520	<50	4480	3520	5020	3300	4300
Lead	µg/L	-	10	< 0.5	0.6	0.3	< 0.5	< 0.5	5.7	<0.5	<1	< 0.5	<0.5	ND	0.5	<0.50	<0.50	1.8	<0.5	<0.5	<0.5	<0.5	<0.5	4	<0.50
Manganese	µg/L	-	8200	11400	3700	4900	4000	3600	3600	3500	3340	3300	2900	3400	3260	2820	3180	3160	4040	3950	3280	3350	4220	2700	2900
Mercury	µg/L	-	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.026	0.038	<0.026	-	-
Molybdenum	µg/L	-	730	< 2	< 2	< 2	< 2	< 2	< 2	<2	<4	< 2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Nickel	µg/L	-	250	6	4	3	3	4	5	3	<3	4	3	2	3.6	2.8	3.3	3	3	<2	4	3	3	2.5	2.5
Selenium	µg/L	-	10	< 2	< 2	< 2	< 2	< 2	< 1	<2	<1	< 2	<2	ND	<1.0	<1.0	<1.0	<2	<2	<1	<1	<1	1	<1.0	<1.0
Silver	µg/L	-	1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<0.5	<2	< 0.5	<0.5	ND	<0.10	<0.10	<0.10	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10
Strontium	µg/L	-	210000	100	77	75	69	79	70	67	73	66	64	76	75.5	62.6	65.6	65	70	78	69	56	64	50	52
Thallium	µg/L	-	8	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	<0.1	<0.8	< 0.1	<0.1	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10
Tin	µg/L	-	-	< 2	< 2	< 2	< 2	< 2	< 2	<2	<20	< 2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Titanium	µg/L	-	-	-	-	-	-	-	-	-	-	< 2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Uranium	µg/L	-	3000	2	0.1	0.1	0.1	0.1	0.6	<0.1	0.66	< 0.1	<0.1	0.2	<0.10	<0.10	<0.10	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.10	<0.10
Vanadium	µg/L	-	60	< 2	< 2	< 2	< 2	< 2	7	<2	<2	< 2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Zinc	µg/L	-	300	< 10	22	5	9	15	8	6	<2	5	<5	ND	31.2	6.1	<5.0	5	8	<5	10	6	6	<5.0	<5.0

Notes: See separate notes page

TABLE C-21 GROUNDWATER METALS CHEMISTRY - MW-23C
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	19-Mar-96	16-Apr-97	8-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	25-Aug-04 Lab DUP	23-Nov-06	16-Aug-07	29-Jul-08	12-Aug-09	29-Jul-10	21-Sep-11	4-Oct-12	5-Jul-13	19-Aug-14	22-Jul-15	13-Jul-16	15-Jul-19	
Aluminum	µg/L	-	50	26	330	130	380	<20	2400	100	80	30	30	30	20	<5.0	7.3	<5.0	<10	<10	<5	24	15	<5	<5.0	<5.0	
Antimony	µg/L	-	200	<2	<2	<2	<2	<2	<2	<2	<0.4	<2	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0	<1.0	
Arsenic	µg/L	-	50	8	3	7	7	10	10	6	2	6	6	6	6	4.6	6.7	6.3	7	5	5	6	7	7	6	5.5	
Barium	µg/L	-	10000	5	52	13	18	230	290	28	33.9	29	18	18	33	49.5	16.4	28.9	17	33	40	36	41	43	43	52	
Beryllium	µg/L	-	53	<5	<5	<5	<5	<5	<5	<5	<0.5	<2	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0	<1.0	
Bismuth	µg/L	-	-	-	-	-	-	-	-	-	-	<2	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Boron	µg/L	-	12000	16	16	14	14	100	14	13	<100	9	13	13	11	14.5	13.3	11.6	13	12	19	72	14	12	<50	<50	
Cadmium	µg/L	-	0.1	0.5	<0.5	<0.3	<0.3	<0.3	0.1	<0.3	<0.3	<0.3	<0.3	<0.3	ND	0.021	<0.017	<0.017	<0.3	<0.3	0.131	<0.017	0.071	<0.017	<0.010	0.075	
Chromium	µg/L	-	-	2	4	3	3	3	6	4	2	2	2	2	2	2.5	2.0	3	2	2	3	2	2	2	2.2	2.8	
Cobalt	µg/L	-	100	1	<1	1	1	2	4	<1	<1	<1	<1	<1	ND	<0.40	<0.40	<0.40	<1	<1	<1	<1	<1	<1	<0.40	<0.40	
Copper	µg/L	-	20	<10	<2	<2	<2	6	10	<2	<2	<2	<2	<2	ND	4.3	2.1	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<0.50	
Iron	µg/L	-	3000	40	180	140	310	2500	940	240	<100	<50	<50	<50	ND	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	
Lead	µg/L	-	10	<0.1	0.5	0.2	0.7	<0.5	8	0.5	<1	<0.5	<0.5	<0.5	ND	<0.50	<0.50	<0.50	1.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	
Manganese	µg/L	-	8200	20	66	13	33	260	250	5	11	2	<2	<2	4	4.8	<2.0	<2.0	<2	<2	2	<2	<2	3	<2.0	<2.0	
Mercury	µg/L	-	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.026	0.082	<0.026	-	-	
Molybdenum	µg/L	-	730	<2	<2	<2	<2	<2	<2	<2	<4	<2	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0	
Nickel	µg/L	-	250	<2	<2	<2	<2	4	3	<2	<3	<2	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0	
Selenium	µg/L	-	10	<2	<2	<2	<2	<2	<1	<2	<1	<2	<2	<2	ND	<1.0	<1.0	<1.0	<2	<2	<1	<1	<1	<1	<1.0	<1.0	
Silver	µg/L	-	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	ND	<0.10	<0.10	<0.10	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	
Strontium	µg/L	-	210000	84	160	78	92	160	480	130	125	89	96	94	82	120	82.8	92	81	107	117	108	78	75	93	98	
Thallium	µg/L	-	8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	<0.1	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	
Tin	µg/L	-	-	<2	<2	<2	<2	<2	<2	<2	<20	<2	<2	<2	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0	
Titanium	µg/L	-	-	-	-	-	-	-	-	-	-	7	3	5	3	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0	
Uranium	µg/L	-	3000	3.7	2.9	5.3	4.9	4.8	6.1	3.8	1.82	3.5	3.9	3.9	4.2	1.95	3.67	4.52	4.7	3	3.3	4.4	4.4	3.8	4	3.4	
Vanadium	µg/L	-	60	<2	2	6	6	5	18	4	<2	4	4	4	4	2.7	5.0	4	4	3	3	4	4	4	4.1	3.6	
Zinc	µg/L	-	300	<10	7	6	10	15	18	6	<2	<5	<5	<5	ND	42.5	21.8	<5.0	6	<5	<5	8	8	<5	<5.0	<5.0	

Notes: See separate notes page

TABLE C-22 GROUNDWATER METALS CHEMISTRY - MW-29B
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	20-Mar-96	16-Apr-97	9-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	19-Aug-03 LAB DUP	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	29-Jul-08	11-Aug-09	28-Jul-10	21-Sep-11	4-Oct-12	8-Jul-13	20-Aug-14	23-Jul-15	13-Jul-16	15-Jul-19
Aluminum	µg/L	-	50	94	340	400	1600	50	3500	26	30	20	20	<10	22	ND	12.2	18.2	42.1	35	<10	<5	16	8	8	<5.0	12
Antimony	µg/L	-	200	14	<2	<2	<2	<2	<2	<2	<0.4	<2	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0	<1.0
Arsenic	µg/L	-	50	4	2	2	2	<2	4	2	1.7	2	2	2	2	2	2.4	2.0	2.1	2	2	<2	<2	2	2	1.7	1.4
Barium	µg/L	-	10000	<2	28	9	61	45	140	10	7.4	8	8	10	9.6	15	15.5	9.8	32	22	10	18	11	13	11	12	13
Beryllium	µg/L	-	53	<5	<5	<5	<5	<5	<5	<5	<0.5	<2	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0	<1.0
Bismuth	µg/L	-	-	-	-	-	-	-	-	-	-	<2	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Boron	µg/L	-	12000	12	19	14	18	10	12	9	<100	7	6	7	7.5	9	13.4	6.4	6.1	5	6	14	7	7	6	<50	<50
Cadmium	µg/L	-	0.1	<0.5	<0.5	<0.3	<0.3	<0.3	0.1	0.09	<0.3	<0.3	<0.3	<0.3	ND	ND	<0.017	0.254	0.363	1	<0.3	0.019	<0.017	0.239	<0.017	0.016	0.015
Chromium	µg/L	-	-	<2	2	<2	<2	<2	<2	<2	<2	<2	<2	2	ND	ND	<2.0	<2.0	<1.0	<2	<2	<1	<1	<1	<1	<1.0	1.1
Cobalt	µg/L	-	100	<1	<1	<1	2	<1	2	<0.4	<1	<1	<1	<1	ND	ND	<0.40	<0.40	<0.40	<1	<1	<1	<1	<1	<1	<0.40	<0.40
Copper	µg/L	-	20	<10	16	2	7	6	13	<2	<2	<2	2	<2	ND	ND	2.2	<2.0	<2.0	2	<2	<2	<2	<2	<2	<2.0	<0.50
Iron	µg/L	-	3000	80	200	210	670	<20	840	<20	<100	<50	<50	<50	ND	ND	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Lead	µg/L	-	10	0.7	1.3	3.6	15	0.6	20	<0.5	<1	<0.5	<0.5	<0.5	ND	ND	<0.50	<0.50	2.73	1.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50
Manganese	µg/L	-	8200	<10	51	15	170	42	1400	7	7	4	2	2	7.3	120	3.6	5.4	855	334	3	32	<2	<2	<2	<2.0	2.9
Mercury	µg/L	-	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.026	<0.026	<0.026	-	-
Molybdenum	µg/L	-	730	7	4	3	2	5	2	3	<4	2	2	2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Nickel	µg/L	-	250	<2	3	2	2	<2	2	<2	<3	<2	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Selenium	µg/L	-	10	<2	<2	<2	<2	<2	<1	<1	<1	<2	<2	<2	ND	ND	<1.0	<1.0	<1.0	<2	<2	<1	<1	<1	<1	<1.0	<1.0
Silver	µg/L	-	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<2	<0.5	<0.5	<0.5	ND	ND	<0.10	<0.10	<0.10	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10
Strontium	µg/L	-	210000	99	150	210	330	250	680	290	279	280	280	340	280	340	309	316	316	282	338	335	300	300	296	310	330
Thallium	µg/L	-	8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	<0.1	ND	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10
Tin	µg/L	-	-	<2	<2	<2	<2	<2	<2	<2	<20	<2	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Titanium	µg/L	-	-	-	-	-	-	-	-	-	-	<2	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Uranium	µg/L	-	3000	1.1	2.7	4.1	6.8	1.8	4.4	2.6	2.47	0.5	0.5	3.5	1.8	2.0	0.99	1.76	1.72	1.6	1.8	1.9	2.1	2.1	1.9	2	2.0
Vanadium	µg/L	-	60	<2	2	<2	6	<2	8	<2	<2	<2	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Zinc	µg/L	-	300	<10	46	9	20	13	44	13	3	5	6	<5	ND	ND	22.8	15.1	40.3	9	<5	<5	7	6	<5	<5.0	<5.0

Notes: See separate notes page

TABLE C-23 GROUNDWATER METALS CHEMISTRY - MW-29C
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	20-Mar-96	16-Apr-97	9-Apr-98	5-May-99	26-Jul-00	Aug-01	Sept-02	19-Aug-03	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	29-Jul-08	11-Aug-09	28-Jul-10	14-Sep-11	4-Oct-12	8-Jul-13	20-Aug-14	23-Jul-15	13-Jul-16	15-Jul-19
Aluminum	µg/L	-	50	210	180	110	140	40	550	48	50	30	50	62	120	11	7.5	66.6	<10	-	<5	15	11	<5	6.2	10
Antimony	µg/L	-	200	6	<2	<2	<2	<2	<2	<2	<0.4	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0	<1.0
Arsenic	µg/L	-	50	7	4	5	5	5	5	4	3.4	5	5	5.9	6	4.5	4.9	4.5	5	4	6	4	5	6	4.9	3.8
Barium	µg/L	-	10000	<2	9	<5	<5	20	14	<5	4.3	<5	<5	ND	ND	<5.0	<5.0	<5.0	<5	<5	<5	<5	<5	<5	2.9	3.3
Beryllium	µg/L	-	53	<5	<5	<5	<5	<5	<5	<5	<0.5	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0	<1.0
Bismuth	µg/L	-	-	-	-	-	-	-	-	-	-	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Boron	µg/L	-	12000	32	12	7	10	11	12	9	<100	10	19	19	21	11.6	16.0	15.0	15	23	35	18	22	19	<50	<50
Cadmium	µg/L	-	0.1	<0.5	<0.5	<0.3	<0.3	<0.3	<0.1	0.06	<0.3	<0.3	<0.3	ND	ND	<0.017	0.068	0.02	0.4	0.087	0.205	<0.017	<0.017	<0.017	<0.010	0.011
Chromium	µg/L	-	-	<2	2	<2	<2	<2	<2	<2	<2	<2	<2	ND	ND	<2.0	<2.0	<1.0	<2	<1	<1	<1	<1	<1	<1.0	<1.0
Cobalt	µg/L	-	100	<1	<1	1	<1	<1	<1	<0.4	<1	<1	<1	ND	ND	<0.40	<0.40	<0.40	<1	<1	<1	<1	<1	<1	<0.40	<0.40
Copper	µg/L	-	20	<10	11	2	3	4	4	<2	<2	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	2	<2	<2	<2.0	<0.50
Iron	µg/L	-	3000	160	100	100	190	<50	170	20	<100	<50	70	68	130	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Lead	µg/L	-	10	0.9	1.1	0.4	0.5	0.8	1.9	<0.5	<1	<0.5	<0.5	ND	ND	<0.50	<0.50	<0.50	2.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50
Manganese	µg/L	-	8200	<10	8	8	7	41	28	2	4	4	2	4.3	4	6.2	2.0	3.6	4	<2	<2	<2	<2	<2	<2.0	2.4
Mercury	µg/L	-	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.026	<0.026	<0.026	-	-
Molybdenum	µg/L	-	730	<2	<2	<2	<2	<2	<2	<2	<4	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Nickel	µg/L	-	250	<2	2	<2	<2	<2	<2	<2	<3	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Selenium	µg/L	-	10	<2	<2	<2	<2	<2	<1	<1	<1	<2	<2	ND	ND	<1.0	<1.0	<1.0	<2	<1	<1	<1	<1	<1	<1.0	<1.0
Silver	µg/L	-	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	>0.1	<2	<0.5	<0.5	ND	ND	<0.10	<0.10	<0.10	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10
Strontium	µg/L	-	210000	99	120	140	130	120	160	140	113	150	82	110	87	154	102	107	135	127	100	125	91	95	94	120
Thallium	µg/L	-	8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	0.1	<0.1	ND	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10
Tin	µg/L	-	-	<2	<2	<2	<2	<2	<2	<2	<20	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Titanium	µg/L	-	-	-	-	-	-	-	-	-	-	2	6	3.1	9	<2.0	<2.0	3	<2	<2	<2	<2	<2	<2	<2.0	<2.0
Uranium	µg/L	-	3000	1.3	1.3	0.8	1	1	1	0.9	0.89	0.9	0.8	1	0.9	0.87	0.91	0.85	0.9	0.9	0.9	0.9	1	0.9	0.98	0.89
Vanadium	µg/L	-	60	<2	5	6	6	5	7	6	5	6	6	6.6	7	5.6	5.6	5.1	5	5	6	6	5	5	5.4	4.6
Zinc	µg/L	-	300	<10	31	7	9	14	10	3	<2	<5	<5	ND	ND	12	9.7	<5.0	11	<5	<5	<5	<5	<5	<5.0	<5.0

Notes: See separate notes page

TABLE C-24 GROUNDWATER METALS CHEMISTRY - MW-31A
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186.301

Compound	Units	NS Tier 1 EQS	NS Tier 2 PSS	Sep-93	21-Mar-96	16-Apr-97	9-Apr-98	5-May-99	26-Jul-00	Aug.-01	Sept.-02	25-Aug-04	18-Aug-05	23-Nov-06	16-Aug-07	29-Jul-08	11-Aug-09	28-Jul-10	14-Sep-11	4-Oct-12	8-Jul-13	20-Aug-14	21-Jul-15	13-Jul-16	15-Jul-19	MW-40D (DUP)
Aluminum	µg/L	-	50	8	140	110	12	30	1000	160	60	20	47	10	14.5	7.8	9.4	<10		14	22	10	10	5.1	110	100
Antimony	µg/L	-	200	7	<2	<2	<2	<2	<2	<2	<0.4	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0	<1.0	<1.0
Arsenic	µg/L	-	50	<2	<2	<2	<2	<2	2	<2	1.2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0	1.1	<1.0
Barium	µg/L	-	10000	9	14	<5	<5	19	49	17	14	8	8.7	32	8.2	8.0	6.2	<5	5	31	10	8	8	5.5	22	20
Beryllium	µg/L	-	53	<0.5	<5	<5	<5	<5	<5	<5	<0.5	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<1.0	<1.0	<1.0
Bismuth	µg/L	-	-	-	-	-	-	-	-	-	-	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0
Boron	µg/L	-	12000	<2	<2	<5	<5	<5	<10	<5	<100	<5	ND	ND	<5.0	<5.0	<5.0	<5	52	<5	<5	<5	<5	<50	<50	<50
Cadmium	µg/L	-	0.1	<1	<0.5	<0.3	<0.3	<0.3	<0.1	0.07	<0.3	<0.3	ND	ND	0.034	<0.017	0.073	<0.3	<0.017	0.184	0.055	<0.017	<0.017	0.011	0.034	0.029
Chromium	µg/L	-	-	<10	2	<2	<2	<2	<2	<2	<2	<2	ND	ND	<2.0	<2.0	<1.0	<2	<1	<1	<1	<1	<1	<1.0	1.1	1.2
Cobalt	µg/L	-	100	<1	<1	1	<1	<1	1	0.9	<1	1	1	2	<0.40	<0.40	<0.40	<1	<1	<1	<1	<1	<1	<0.40	1.2	0.90
Copper	µg/L	-	20	<10	13	<2	3	5	2	2	<2	<2	ND	ND	2.6	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	1.2	1.2
Iron	µg/L	-	3000	20	120	60	<20	<50	400	270	1290	<50	ND	ND	92	<50	310	141	315	459	<50	171	199	<50	170	130
Lead	µg/L	-	10	<0.1	1.9	0.1	<0.5	0.5	2	0.5	<1	<0.5	ND	ND	<0.50	<0.50	<0.50	1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50
Manganese	µg/L	-	8200	50	340	14	3	16	190	310	195	210	240	480	49.2	16.5	70.4	29	59	99	<2	30	45	22	85	64
Mercury	µg/L	-	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.026	<0.026	<0.026	-	-	-
Molybdenum	µg/L	-	730	<2	2	<2	<2	<2	<2	<2	<4	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0
Nickel	µg/L	-	250	<2	3	<2	<2	<2	2	<2	<3	<2	ND	ND	<2.0	<2.0	<2.0	2	<2	<2	<2	<2	<2	<2.0	3.3	2.6
Selenium	µg/L	-	10	<2	<2	<2	<2	<2	<1	<1	<1	<2	ND	ND	<1.0	<1.0	<1.0	<2	<1	<1	<1	<1	<1	<1.0	<1.0	<1.0
Silver	µg/L	-	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<2	<0.5	ND	ND	<0.10	<0.10	<0.10	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10
Strontium	µg/L	-	210000	43	31	11	8	26	29	19	23	21	14	50	23.3	11.4	14.6	14	15	56	22	16	21	18	34	31
Thallium	µg/L	-	8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	ND	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10
Tin	µg/L	-	-	<2	<2	<2	<2	<2	<2	<2	<20	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0
Titanium	µg/L	-	-	-	-	-	-	-	-	-	-	<2	2.5	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0
Uranium	µg/L	-	3000	-	0.4	<0.1	<0.1	<0.1	1	0.1	<0.15	<0.1	ND	ND	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	0.23	0.22
Vanadium	µg/L	-	60	<2	<2	<2	<2	<2	2	<2	<2	<2	ND	ND	<2.0	<2.0	<2.0	<2	<2	<2	<2	<2	<2	<2.0	<2.0	<2.0
Zinc	µg/L	-	300	<10	37	1100	45	15	6	20	6	<5	ND	ND	48.1	24.5	<5.0	<5	<5	<5	8	<5	<5	<5.0	<5.0	<5.0

Notes: See separate notes page

SURFACE WATER GENERAL AND METALS CHEMISTRY - NOTES

Municipality of the County of Kings

Meadowview Landfill, Kentville, NS

Stantec Consulting Ltd. Project No. 121414186

Grey indicates value exceeds CCME FAL

#^u or (T) Reporting limit increased due to turbidity

- (1) The mean absorbance of filtered water samples at 456 nm shall not be significantly higher than the seasonally adjusted expected value for the system under consideration
- (2) Guideline depends upon sample type (high flow or turbid vs. clear flow).
High flow or turbid waters: Maximum increase of 8 NTUs from background levels at any one time when background levels are between 8 and 80 NTUs. Should not increase more than 10% of background levels when background is > 80 NTUs.
Clear flow: Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period).
- (3) Refer to CCME Fact Sheet: Ammonia. Guidelines were calculated using the Fact Sheet's Table 2 and converting to mg/L total ammonia-N using pH 7.5 and temperature 15. See Appendix B tables for comparison to specific guidelines for 2019.
- (4) There are no set guidelines for phosphorus. Trigger range for potential further investigation is >100 µg/L. Refer to CCME Fact Sheet: Phosphorus.
- (5) Guideline value is 100 for pH ≥ 6.5. See Appendix B tables for comparison to specific guidelines for 2019.
- (6) These guidelines were calculated on the CCME website by equations using water hardness values.
See CCME Factsheets for cadmium, copper, lead, and nickel.
- (7) No guideline prior to 2019; prior data not compared to any criteria. 2019 guideline was calculated by an equation using water hardness and field-measured pH values.
See Scientific Criteria Document for the Development of the Canadian Water Quality Guidelines for the Protection of Aquatic Life - Manganese (2019) - Appendix B.
- (8) No guideline prior to 2018; prior data not compared to any criteria. 2019 guideline was calculated by an equation using water hardness, dissolved organic carbon (DOC), and field-measured pH values. DOC was not measured so a low conservative value of 0.3 mg/L was assumed.
(Equation valid for DOC 0.3-22.9 mg/L). pH for SW19B (6.23) was outside valid equation range (6.5-8.13) so value of 6.5 was used. See CCME Fact Sheet for zinc.

TABLE C-25

Surface Water Inorganic Chemistry and Metals - SW-3

Municipality of the County of Kings

Meadowview Landfill, Kentville, NS

Stantec Consulting Ltd. Project No. 121414186

Compound	Units	DL	Tier 1 EQS Fresh Water	CCME-FAL	May-96	Sept.-96	Nov.-96	May-97	Oct.-97	Sept.-98	Jul-00	Jul-00 Dup	Aug.-01	Sept.-02	Aug 19/03	25-Aug-04	14-Jan-06	23-Nov-06	1-Aug-07	12-Aug-09	Jul-13	Jul-17	Jul-17 Lab-Dup	Jul-18	Jul-19
Alkalinity (as CaCO3)	mg/L	5	-	-	36	6	38	38	53	56	63	61	60	52	57	60	27	46	180	210		65	N/A	66	61
Ammonia (as N)	mg/L	0.05	-	1.83 (3)	<0.05	<0.05	0.05	<0.05	0.07	0.09	0.07	0.07	0.17	<0.1	0.08	<0.05	0.09	0.13	13	6.1		0.10	N/A	0.15	0.12
Anion Sum	me/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.38	1.52	2.19	5.59	5.69		2.79	N/A	2.84	2.60
Bicarbonate (as CaCO3)	mg/L	1	-	-	35.9	62.9	37.9	37.9	52.9	55.7	63	61	60	51.66	57	60	27	46	179	215		64	N/A	66	61
Calcium	mg/L	0.1	-	-	22.8	31.4	23.4	23.1	33.4	31.9	32.2	32.9	29.8	30.9	30.3	39.5	18	29	99	50		32000	N/A	33	32
Carbonate (as CaCO3)	mg/L	1	-	-	<0.1	<1	<1	<1	0.1	0.3	<1	<1	<1	0.31	<1	<1	ND	ND	<1	<1		<1.0	N/A	<1.0	<1.0
Cation Sum	me/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.5	1.61	2.35	18.6	8.27		2.60	N/A	2.75	2.88
Chloride	mg/L	1	-	120	19	31.2	19.2	18.4	49.6	54	29.6	29.6	37.4	32.7	30	43	21	25	71	50		32	N/A	36	30
Color	TCU	5	-	(1)	33	20	28	33	20	11	14	14	9	68	22	9	23	19	9	72		13	N/A	13	20
Conductivity (RCap)	µS/cm	1	-	-	187	267	203	199	377	375	274	274	284	291	283	388	160	220	590	510		270	N/A	300	260
Dissolved Organic Carbon	mg/L	-	-	-	5.8	-	3.9	4.6	1.3	2.8	3	3.2	1.9	8.6	-	2.2	-	-	-	-		-	-	-	-
Hardness (as CaCO3)	mg/L	-	-	-	68.5	92.4	70.8	69.2	102	99.4	95.6	97.4	90.1	90.83	91.3	116	54	88	340	160		94	N/A	96	97
Ion Balance	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.67	2.94	3.37	53.8	18.5		3.53	N/A	1.61	5.11
Langelier Index (@ 20C)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-0.38	-1.87	-0.824	-0.411	-0.555		-0.424	N/A	-0.575	-0.616
Langelier Index (@ 4C)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-0.78	-2.12	-1.08	-0.658	-0.804		-0.674	N/A	-0.826	-0.868
Magnesium	mg/L	0.1	-	-	2.8	3.4	3	2.8	4.5	4.8	3.7	3.7	3.8	3.32	3.8	4.1	2.5	3.7	22	7.5		3.5	N/A	3.7	4.4
Nitrate	mg/L	0.05	-	13	-	-	-	-	-	-	-	-	-	-	-	1.84	1.6	2.0		<0.05		0.012	N/A	1.7	2.3
Nitrate + Nitrite (as N)	mg/L	0.05	-	-	1.68	1.78	1.6	1.16	1.87	0.5	1.4	1.38	1.93	2.08	1.9	1.9	1.6	2.0	0.05	0.05		2.0	N/A	1.7	2.4
Nitrite	mg/L	0.01	-	0.06	-	-	-	-	-	-	-	-	-	-	-	0.06	ND	0.02	-	0.01		2.0	N/A	0.016	0.074
Orthophosphate	mg/L	0.01	-	-	0.04	0.11	0.05	0.04	0.06	0.12	0.06	0.06	0.04	<0.3	0.09	0.18	0.04	0.07	<0.01	0.01		0.013	N/A	0.36	0.024
pH	-	-	-	-	7.3	7.3	7.2	7.5	7.4	7.7	7.7	7.5	7.9	7.8	7.6	7.7	6.79	7.41	6.84	6.86		7.64	N/A	7.47	7.47
Phosphorus	mg/L	0.2	-	(4)	-	-	-	-	-	-	-	-	-	-	-	0.2	<0.1	0.2		1.5		<0.100	N/A	0.110	0.520
Potassium	mg/L	0.1	-	-	1.6	2.5	1.9	1.6	3.3	3.5	1.9	1.9	2.2	2.9	2.8	3.4	1.9	2.3	25	15		1.9	N/A	2.2	2.8
Reactive Silica (as SiO2)	mg/L	0.5	-	-	5.2	7.3	8.9	4.2	5.4	7.4	4.1	4.1	5.1	9	10	5.8	6.4	9.5	23	18		6.6	N/A	4.8	7.0
Saturation pH (@ 20C)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.08	8.66	8.23	7.25	7.42		8.06	N/A	8.04	8.09
Saturation pH (@ 4C)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.48	8.91	8.49	7.5	7.66		8.31	N/A	8.29	8.34
Sodium	mg/L	0.1	-	-	9.8	14.1	9.6	-	-	-	-	-	-	-	-	25.2	11	11	35	35		15	N/A	17	15
Sulphate	mg/L	2	-	-	19	21	24	17	30	24	20	20	19	28.4	19	40	13	20	<2	<2		21	N/A	18	18
TDS (Calculated)	mg/L	1	-	-	-	-	-	-	-	-	149	149	159	153.8	155	205	97	139	652	395		160	N/A	160	160
Total Organic Carbon (C)	mg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.8	3.4	59	27		2.7	N/A	2.6	7.7 (1)
Turbidity	NTU	0.1	-	(2)	3.9	1.9	1	1.4	4	1.9	<0.1	<0.1	1.9	12	4.3	2.3	14	5.6	740	580		26	30	2.9	140
Aluminum	µg/L	10	5	100 (5)	100	97	110	38	253	500	10	10	26	110	10	10	130	240	38800	1360	210	120	N/A	140	3000
Antimony	µg/L	2	20	-	<2	<2	<2	<2	-	<20	<2	<2	<2	<0.4	<2	<2	ND	ND	<20	<2.0	<2	<1.0	N/A	<1.0	<1.0
Arsenic	µg/L	2	5	5	<2	2	<2	<2	-	<20	<2	<2	<2	1.8	2	2	ND	ND	359	105	<2	1.5	N/A	1.6	5.0
Barium	µg/L	5	1000	-	24	37	3000	19	39	<50	33	32	43	55.1	32	38	24	31	2870	1070	31	31	N/A	35	71
Beryllium	µg/L	2	5.3	-	<5	<5	<5	<5	<5	<50	<5	<5	<5	<0.5	<2	<2	ND	ND	<20	<2.0	<2	<1.0	N/A	<1.0	<1.0
Bismuth	µg/L	2	-	-	-	-	-	-	-	-	-	-	-	-	<2	<2	ND	ND	<20	<2.0	<2	<2.0	N/A	<2.0	<2.0
Boron	µg/L	5	1200	1500	10	18	10	8	20	<50	15	15	18	<100	16	21	11	13	179	135	20	<50	N/A	<50	<50
Cadmium	µg/L	0.3	0.01	(6)	<0.3	<0.3	<0.3	<0.3	<5	<3	<0.1	<0.1	0.02	<0.3	<0.3	<0.3	ND	ND	2.05	0.380	0.018	<0.010	N/A	<0.010	0.046
Chromium	µg/L	2	-	8.9	<2	<2	<2	<2	<5	<20	<2	<2	<2	<2	<2	<2	ND	ND	47	2.1	<1	<1.0	N/A	<1.0	5.6
Cobalt	µg/L	1	10	-	<1	<1	<1	<1	<5	<10	<1	<1	<0.4	<1	<1	<1	ND	ND	20.2	1.91	<1	<0.40	N/A	<0.40	2.2
Copper	µg/L	2	2	(6)	<2	<2	<2	<2	<10	<20	<2	<2	<2	4	<2	<2	ND	ND	123	6.2	3	<2.0	N/A	<2.0	3.4
Iron	µg/L	50	300	300	340	500	280	320	340	1100	320	330	440	810	590	150	190	670	235000	78700	830	560	N/A	600	5900
Lead	µg/L	0.5	1	(6)	0.2	0.5	0.5	0.3	<2.5	<5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	ND	ND	76.7	3.78	<0.5	<0.50	N/A	<0.50	3.1
Manganese	µg/L	2	820	(7)	40	110	39	33	130	120	60	59	160	238	290	51	14	87	7700	4860	130	120	N/A	140	760
Molybdenum	µg/L	2	73	73	<2	<2	<2	<2	<10	<20	<2	<2	3	<4	<2	<2	ND	ND	<20	<2.0	<2	-	-	<2.0	<2.0
Nickel	µg/L	2	25	(6)	<2	<2	<2	<2	<10	<20	<2	<2	<2	<3	<2	<2	ND	ND	49	3.3	<2	<2.0	N/A	<2.0	4.2
Selenium	µg/L	2	1	1	<2	<2	<2	<2	<20	<20	<1	<1	<1	<1	<2	<2	ND	ND	<10	<1.0	<1	<1.0	N/A	<1.0	<1.0
Silver	µg/L	0.5	0.1	0.25	<0.5	<0.5	<0.5	<0.5	<3	<5	<0.5	<0.5	<0.1	<2	<0.5	<0.5	ND	ND	<1.0	<0.10	<0.1	<0.10	N/A	<0.10	<0.10
Strontium	µg/L	5	21000	-	68	0.1	77	71	-	130	120	120	100	160	110	170	58	91	415	257	104	120	N/A	120	110
Thallium	µg/L	0.1	0.8	0.8	<0.1	<0.1	<0.1	<0.1	-	<1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	ND	ND	<1.0	<0.10	<0.1	<0.10	N/A	<0.10	<0.10
Tin	µg/L	2	-	-	<2	<2	<2	<2	<50	<20	<2	<2	<2	<20	<2	<2	ND	ND	<20	<2.0	<2	<2.0	N/A	<2.0	<2.0
Titanium	µg/L	2	-	-	-	-	-	-	-	-	-	-	-	-	<2	<2	5	7	146	25.7	7	3.3	N/A	6.0	70
Uranium	µg/L	0.1	300	15	0.5	0.7	0.5	0.5	-	<1	0.6	0.6	0.8	0.62	0.5	1	0.2	0.8	4.4	0.28	0.7	1.0	N/A	1.0	1.7
Vanadium	µg/L	2	6	-	<2	<2	<2	<2	<10	<20	<2	<2	<2	<2	<2	<2	ND	ND	139	8.5	<2	<2.0	N/A	<2.0	7.0
Zinc	µg/L	5	30	(8)	5	12	15	21	<10	<20	6	4	24	8	<5	<5	8	5	395	36.3	8	<5.0	N/A	<5.0	18

Notes: See separate notes page

TABLE C-26 Surface Water Inorganic Chemistry and Metals - SW-7
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186

Compound	Units	RDL	Tier 1 EQS Fresh Water	CCME-FAL	May-93	Aug-93	Nov-93	May-96	Sep-96	Nov-96	May-97	Oct-97	Sept-98	Jul-00	Aug-01	Sept-02	Aug 19/03	Aug 19/03 Lab Dup	25-Aug-04	18-Aug-05	14-Jan-06	23-Nov-06	1-Aug-07	29-Jul-08	10-Aug-09	10-Aug-10	Jul-13	Aug-14	Jul-16	Jul-17	Jul-17 Lab-Dup	Dec-17	Jul-18	Jul-19	
Alkalinity (as CaCO3)	mg/L	5	-	-	76	85	66	48	84	58	66	87	74	81	111	89	110	120	88	93	54	68	72	72	89	66	-	-	85	71	N/A	46	63	64	
Ammonia (as N)	mg/L	0.03	-	1.83 (3)	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.59	1.66	< 0.1	2.8	2.8	2.5	2.5	1.3	1.8	1.9	1.4	1.1	1.91	-	-	1.2	0.75	N/A	0.078	0.46	0.46	
Anion Sum	me/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.44	2.58	1.85	2.03	2.05	2.11	2.89	2.26	-	-	2.52	71	N/A	1.1	1.80	2.06	
Bicarbonate (as CaCO3)	mg/L	5	-	-	75.9	84.8	65.9	47.9	83.7	57.9	65.7	85.9	73.9	81	110	88.44	109	119	88	93.1	54	68	72	72	89	66	-	-	85	2.09	N/A	46	63	64	
Calcium	mg/L	0.1	-	-	25	30.9	24.3	20	28.7	24.7	23	27.3	22.9	26.6	34.7	26.7	32.3	32.8	25.2	28	18	23	23	23	28	19.3	-	-	25	71	N/A	14	20	20	
Carbonate (as CaCO3)	mg/L	10	-	-	0.11	0.2	0.1	< 0.1	< 1	< 1	< 1	1	0.1	< 1	1	0.52	< 1	< 1	< 1	ND	ND	ND	< 1	< 1	< 1	< 10	-	-	< 1.0	< 1.0	N/A	< 1.0	< 1.0	< 1.0	
Cation Sum	me/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.39	2.55	1.91	2.08	2.17	2.08	2.80	2.18	-	-	2.44	1.95	N/A	1.05	1.71	1.96	
Chloride	mg/L	1	-	120	20.1	20.2	18.2	20.9	22.3	21.9	24.5	23.5	22.2	21.1	28.3	21.9	30	32	21	23	24	20	19	21	32	29	-	-	26	21	N/A	6.3	16	23	
Color	TCU	5	-	(1)	64	29	24	31	30	53	58	30	22	20	27	54	59	58	27	22	31	20	12	19	69	19	-	-	46	30	N/A	53	14	87	
Conductivity (RCAP)	µS/cm	1	-	-	233	229	186	177	226	210	215	250	220	233	306	252	349	348	244	250	180	200	210	220	270	251	-	-	240	200	N/A	100	190	190	
Hardness (as CaCO3)	mg/L	-	-	-	76.8	91.6	71.8	59	83.6	72.8	68.1	80.5	67.5	77.5	102	78.68	97.1	98.4	102	102	145	127	127	127	158	118	-	-	76	63	N/A	40	59	59	
Ion Balance	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.02	0.642	1.65	1.27	2.84	0.720	1.58	1.8	-	-	3.47	N/A	-	2.54	2.49	
Langlier Index (@ 20C)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-0.9	-0.846	-1.5	-0.794	-0.731	-0.593	-1.24	-0.99	-	-	-0.790	-0.742	N/A	-1.07	-0.848	-0.910	
Langlier Index (@ 4C)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-1.3	-1.1	-1.75	-1.05	-0.982	-0.844	-1.49	-1.31	-	-	-1.04	-0.993	N/A	-1.32	-1.10	-1.16	
Magnesium	mg/L	0.1	-	-	3.5	3.5	2.7	2.2	2.9	2.7	2.6	3	2.5	2.7	3.8	2.43	4	4	2.9	3.3	2.5	2.7	2.6	2.7	4.2	2.2	-	-	3.2	2.4	N/A	1	2	2.4	
Nitrate	mg/L	0.05	-	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	0.14	0.11	0.19	-	-	2.1	0.48	-	-	0.16	< 0.010	N/A	< 0.010	0.17	0.11	
Nitrate + Nitrite (as N)	mg/L	0.05	-	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.06	0.18	0.16	0.1	0.14	0.11	0.19	0.15	0.17	2.1	0.48	-	-	0.16	0.15	N/A	0.08	0.17	0.11	
Nitrite	mg/L	0.05	-	0.06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.01	ND	ND	ND	-	-	0.02	< 0.05	-	-	< 0.010	0.15	N/A	0.08	< 0.010	< 0.010	
Orthophosphate	mg/L	0.01	-	-	< 0.01	< 0.01	0.01	0.01	0.01	0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.3	0.01	0.01	< 0.01	0.01	ND	0.01	0.01	0.01	< 0.01	0.01	-	-	0.017	< 0.010	N/A	0.023	0.013	8.4	
pH	-	-	-	6.5-9.0	7.2	7.4	7.2	7.1	7.3	7	7.6	8.1	7.3	7.6	8.1	7.8	7.7	7.8	7.2	7.1	6.85	7.37	7.4	7.54	6.74	7.5	-	-	7.25	7.43	N/A	7.4	7.39	7.34	
Phosphorus	mg/L	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.1	< 0.1	ND	ND	-	-	< 0.1	0.08	-	-	< 0.100	< 0.100	N/A	< 0.100	< 0.100	< 0.1	
Potassium	mg/L	0.1	-	-	1.1	1	1	1.2	1.3	1.4	1.3	1.4	1.3	1.4	1.5	1.8	1.7	2.8	2.8	2.4	2.5	2	2.5	2.4	2.2	3.9	2	-	-	2.7	1.9	N/A	0.67	1.8	1.9
Reactive Silica (as SiO2)	mg/L	0.5	-	-	7.9	10.5	10.3	7.8	11.5	10	8.5	12	10.9	10.8	11.9	12	11	12	12	12	8.8	11	12	12	12	11.7	-	-	11	11	N/A	12	11	11	
Saturation pH (@ 20C)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.1	7.95	8.35	8.16	8.13	8.13	7.98	8.49	-	-	8.04	8.18	N/A	8.51	8.24	8.25	
Saturation pH (@ 4C)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.5	8.2	8.6	8.42	8.38	8.38	8.23	8.81	-	-	8.29	8.43	N/A	8.76	8.49	8.5	
Sodium	mg/L	0.1	-	-	11.5	9.5	9.2	12.5	12.6	14	17	16.5	14.4	14.5	18.2	12.1	21.4	21.7	15.1	14	14	11	13	12	16	13.4	-	-	15	12	N/A	5.2	10	14	
Sulfate	mg/L	2	-	-	< 2	< 2	4	8	6	10	< 2	5	< 2	8	4	4	10	< 5	4	3.4	4	4	3	3	3	4	-	-	3.7	3.6	N/A	< 2.0	3.6	5.2	
TDS (Calculated)	mg/L	1	-	-	-	-	-	-	-	-	-	-	-	133	172	134.29	182	187	139	149	110	120	123	123	149	121	-	-	150	120	N/A	67	110	120	
Total Organic Carbon (C)	mg/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7	4.6	1.9	1.6	2.1	27	4.8	-	-	2.9	3.2	3.5	6	2.0	8.4		
Turbidity	NTU	0.1	-	(2)	1.66	2.95	1.23	1.4	1.3	1	1.2	2.9	1.5	1.6	7.9	13	5	5.7	3.7	3.4	2.2	1.2	1.6	2	260	9.4	-	-	11	5.2	N/A	1.3	1.7	14	
Aluminum	µg/L	5	5	100 (5)	28	< 5	14	22	27	31	40	< 25	< 50	10	6	20	10	30	< 10	19	27	13	8.4	10.1	15.5	45	52	31	21	19	N/A	64	10	79	
Antimony	µg/L	2	20	-	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	ND	ND	ND	< 2.0	< 2.0	< 2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	
Arsenic	µg/L	2	5	5	3	3	2	2	2	2	2	2	2	3	3.4	2	2	2	2	2.7	ND	ND	ND	2.3	< 2.0	3.9	9	4	< 2	3.1	2.2	N/A	1.4	1.2	1.8
Barium	µg/L	5	1000	-	180	160	3000	120	170	150	224	180	220	390	284	360	370	280	300	160	180	186	188	364	220	160	257	250	160	N/A	25	130	180		
Beryllium	µg/L	2	5.3	-	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 2	< 2	ND	ND	ND	ND	< 2.0	< 2.0	< 2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	
Bismuth	µg/L	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 2	< 2	< 2	ND	ND	ND	ND	< 2.0	< 2.0	< 2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Baron	µg/L	5	1200	1500	13	14	10	24	32	29	33	50	< 50	42	56	< 100	47	46	35	26	20	19	15.5	11.9	19.6	15	9	11	< 50	< 50	N/A	< 50	< 50	< 50	
Cadmium	µg/L	0.017	0.01	(6)	< 0.5	< 0.5	< 0.5	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.5	< 0.5	< 0.1	< 0.017	< 0.3	< 0.3	< 0.3	ND	ND	ND	< 0.017	0.049	< 0.017	0.107	0.165	< 0.017	< 0.010	< 0.010	N/A	< 0.010	< 0.010	0.013	
Chromium	µg/L	1	-	-	8.9	< 2	< 2	< 2	< 2	< 2	< 2	< 5	< 20	< 2	< 2	< 2	< 2	< 2	< 2	ND	ND	ND	< 2.0	< 2.0	< 1.0	< 1	74	< 1	1.9	< 1.0	N/A	<			

TABLE C-27

Surface Water Inorganic Chemistry and Metals - SW-7A
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186

Compound	Units	RDL	Tier 1 EQS Fresh Water	CCME- FAL	Jul-13	Jul-15	Jul-17	Jul-17	Jul-18	Jul-19
Alkalinity (as CaCO3)	mg/L	5	-	-	5	24.1	150	290	140	130
Ammonia (as N)	mg/L	0.05	-	1.83 (3)	0.03	108	17	15	4.4	5.0
Anion Sum	me/L	-	-	-		3.52	3.89	6.76	3.45	3.45
Bicarbonate (as CaCO3)	mg/L	1	-	-	5	3.13	150	290	140	130
Calcium	mg/L	0.1	-	-	0.1	38.1	58	53	32	52
Carbonate (as CaCO3)	mg/L	1	-	-	10	214	<1.0	<1.0	<1.0	<1.0
Cation Sum	me/L	-	-	-		<10	16.1	9.02	3.84	6.18
Chloride	mg/L	1	-	120	1	5.11	29	35	24	27
Color	TCU	5	-	(1)	5	26	<5.0	5.3	6.5	53
Conductivity (RCAp)	µS/cm	1	-	-	1	325	380	650	340	350
Dissolved Organic Carbon	mg/L	-	-	-	0.5	34	-	-	-	-
Hardness (as CaCO3)	mg/L	-	-	-		112	200	180	100	170
Ion Balance	%	-	-	-		3.2	61.1	14.3	5.35	28.4
Langelier Index (@ 20C)	-	-	-	-		-0.73	-0.442	-0.318	-0.506	-0.336
Langelier Index (@ 4C)	-	-	-	-		-1.05	-0.689	-0.566	-0.755	-0.586
Magnesium	mg/L	0.1	-	-	0.1	4.2	15	12	6.1	10
Nitrate	mg/L	0.05	-	13	0.05	0.09	<0.010	<0.050	0.14	0.13
Nitrate + Nitrite (as N)	mg/L	0.05	-	-	0.05	0.09	0.28	<0.050	0.14	0.13
Nitrite	mg/L	0.01	-	0.06	0.05	<0.05	0.28	<0.010	<0.010	<0.010
Orthophosphate	mg/L	0.01	-	-	0.01	<0.01	<0.010	<0.010	<0.010	<0.010
pH	-	-	-	-		7.28	7.10	6.95	7.25	7.25
Phosphorus	mg/L	0.2	-	(4)	0.02	0.23	4.3	0.89	<100	0.27
Potassium	mg/L	0.1	-	-	0.1	5.3	24	21	8000	1.4
Reactive Silica (as SiO2)	mg/L	0.5	-	-	0.5	9.5	12	17	12	14
Saturation pH (@ 20C)	-	-	-	-		8.01	7.54	7.27	7.76	7.58
Saturation pH (@ 4C)	-	-	-	-		8.33	7.79	7.51	8.01	7.83
Sodium	mg/L	0.1	-	-	0.1	28	32	31	17	24
Sulphate	mg/L	2	-	-	2	<2	2.8	<2.0	2.8	5.9
TDS (Calculated)	mg/L	1	-	-	1	108	540	430	210	260
Total Organic Carbon (C)	mg/L	0.5	-	-	0.5	3	76	20 ^a	7.0	6.5
Turbidity	NTU	0.1	-	(2)	0.1	98.3	>1000	330	400	29
Aluminum	µg/L	10	5	100 (5)	5	48	1800	210	5.8	16
Antimony	µg/L	2	20	-	2	<2	<1.0	<1.0	<1.0	<1.0
Arsenic	µg/L	2	5	5	2	41	720	160	17	53
Barium	µg/L	5	1000	-	5	578	3000	1100	480	760
Beryllium	µg/L	2	5.3	-	2	<2	<1.0	<1.0	<1.0	<1.0
Bismuth	µg/L	2	-	-	2	<2	<2.0	<2.0	<2.0	<2.0
Boron	µg/L	5	1200	1500	5	82	250	220	80	150
Cadmium	µg/L	0.3	0.01	(6)	0.017	<0.017	0.10	0.013	<0.010	<0.010
Chromium	µg/L	2	-	8.9	1	<1	9.7	2.5	<1.0	1.6
Cobalt	µg/L	1	10	-	1	2	35	10	2.7	10
Copper	µg/L	2	2	(6)	2	<1	6.4	<2.0	<2.0	1.3
Iron	µg/L	50	300	300	50	31700	250000	68000	14000	27000
Lead	µg/L	0.5	1	(6)	0.5	<0.5	5.4	0.82	<0.50	<0.50
Manganese	µg/L	2	820	(7)	2	3270	5700	3100	2000	2500
Mercury	µg/L	0.013	0.026	0.12	-	0.027	-	-	-	-
Molybdenum	µg/L	2	73	73	2	<2	-	<2.0	<2.0	<2.0
Nickel	µg/L	2	25	(6)	2	<2	25	6	<2.0	7.1
Selenium	µg/L	2	1	1	1	1	<1.0	<1.0	<1.0	<1.0
Silver	µg/L	0.5	0.1	0.25	0.1	<0.1	<0.10	<0.10	<0.10	<0.10
Strontium	µg/L	5	21000	-	5	131	390	310	140	270
Thallium	µg/L	0.1	0.8	0.8	0.1	<0.1	<0.10	<0.10	<0.10	<0.10
Tin	µg/L	2	-	-	2	<2	<2.0	<2.0	<2.0	<2.0
Titanium	µg/L	2	-	-	2	<2	39	4.4	<2.0	<2.0
Uranium	µg/L	0.1	300	15	0.1	0.1	0.29	<0.10	<0.10	<0.10
Vanadium	µg/L	2	6	-	2	<2	20	2.4	<2.0	<2.0
Zinc	µg/L	5	30	(8)	5	<5	19	<5.0	<5.0	<5.0

Notes: See separate notes page

TABLE C-28

Surface Water Inorganic Chemistry and Metals - SWA
Municipality of the County of Kings
Meadowview Landfill, Kentville, NS
Stantec Consulting Ltd. Project No. 121414186

Compound	Units	RDL	Tier 1 EQS Fresh Water	CCME- FAL	Jul-18	Jul-19
Alkalinity (as CaCO ₃)	mg/L	5	-	-	61	58
Ammonia (as N)	mg/L	0.05	-	1.83 (3)	0.055	<0.050
Anion Sum	me/L	-	-	-	2.68	2.54
Bicarbonate (as CaCO ₃)	mg/L	1	-	-	<1.0	58
Calcium	mg/L	0.1	-	-	30	31
Carbonate (as CaCO ₃)	mg/L	1	-	-	<1.0	<1.0
Cation Sum	me/L	-	-	-	2.49	2.53
Chloride	mg/L	1	-	120	34	28
Color	TCU	5	-	(1)	10	17
Conductivity (RCAp)	µS/cm	1	-	-	280	250
Dissolved Organic Carbon	mg/L	-	-	-	-	-
Hardness (as CaCO ₃)	mg/L	-	-	-	89	91
Ion Balance	%	-	-	-	3.68	0.200
Langelier Index (@ 20C)	-	-	-	-	-0.336	-0.377
Langelier Index (@ 4C)	-	-	-	-	-0.586	-0.627
Magnesium	mg/L	0.1	-	-	3.4	3.5
Nitrate	mg/L	0.05	-	13	1.7	2.4
Nitrate + Nitrite (as N)	mg/L	0.05	-	-	1.7	2.5
Nitrite	mg/L	0.01	-	0.06	0.013	0.057
Orthophosphate	mg/L	0.01	-	-	0.037	0.031
pH	-	-	-	-	7.77	7.74
Phosphorus	mg/L	0.2	-	(4)	0.11	0.14
Potassium	mg/L	0.1	-	-	2.1	2.2
Reactive Silica (as SiO ₂)	mg/L	0.5	-	-	4.6	8.1
Saturation pH (@ 20C)	-	-	-	-	8.10	8.12
Saturation pH (@ 4C)	-	-	-	-	8.35	8.37
Sodium	mg/L	0.1	-	-	15.0	14
Sulphate	mg/L	2	-	-	18	20
TDS (Calculated)	mg/L	1	-	-	150	150
Total Organic Carbon (C)	mg/L	0.5	-	-	2.5	3.5
Turbidity	NTU	0.1	-	(2)	3.4	7.9
Aluminum	µg/L	10	5	100 (5)	67	240
Antimony	µg/L	2	20	-	<1.0	<1.0
Arsenic	µg/L	2	5	5	1.3	1.3
Barium	µg/L	5	1000	-	26	32
Beryllium	µg/L	2	5.3	-	<1.0	<1.0
Bismuth	µg/L	2	-	-	<2.0	<2.0
Boron	µg/L	5	1200	1500	<50	<50
Cadmium	µg/L	0.3	0.01	(6)	<0.010	<0.010
Chromium	µg/L	2	-	8.9	<1.0	1.5
Cobalt	µg/L	1	10	-	<0.40	<0.40
Copper	µg/L	2	2	(6)	<2.0	0.73
Iron	µg/L	50	300	300	310	690
Lead	µg/L	0.5	1	(6)	<0.50	<0.50
Manganese	µg/L	2	820	(7)	79	120
Mercury	µg/L	0.013	0.026	0.12	-	-
Molybdenum	µg/L	2	73	73	<2.0	<2.0
Nickel	µg/L	2	25	(6)	<2.0	<2.0
Selenium	µg/L	2	1	1	<1.0	<1.0
Silver	µg/L	0.5	0.1	0.25	<0.10	<0.10
Strontium	µg/L	5	21000	-	110	110
Thallium	µg/L	0.1	0.8	0.8	<0.10	<0.10
Tin	µg/L	2	-	-	<2.0	<2.0
Titanium	µg/L	2	-	-	<2.0	6.6
Uranium	µg/L	0.1	300	15	0.95	0.96
Vanadium	µg/L	2	6	-	<2.0	<2.0
Zinc	µg/L	5	30	(8)	<5.0	<5.0

Notes: See separate notes page

APPENDIX D

Chemistry Trend Analysis Figures

Figure D-1: Area 1 - Ammonia
Meadowview Landfill, Kentville, NS

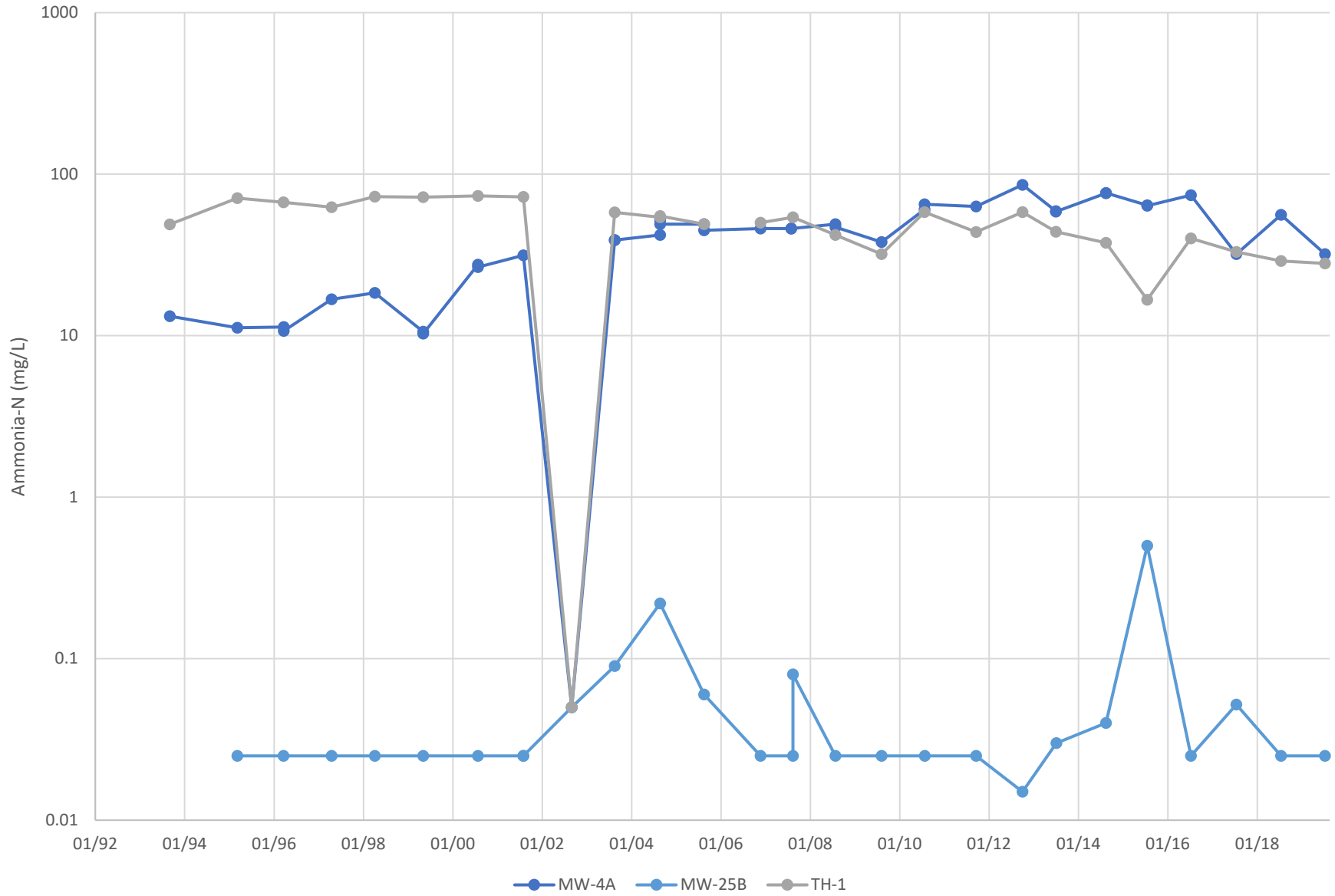


Figure D-2: Area 2 - Ammonia
Meadowview Landfill, Kentville, NS

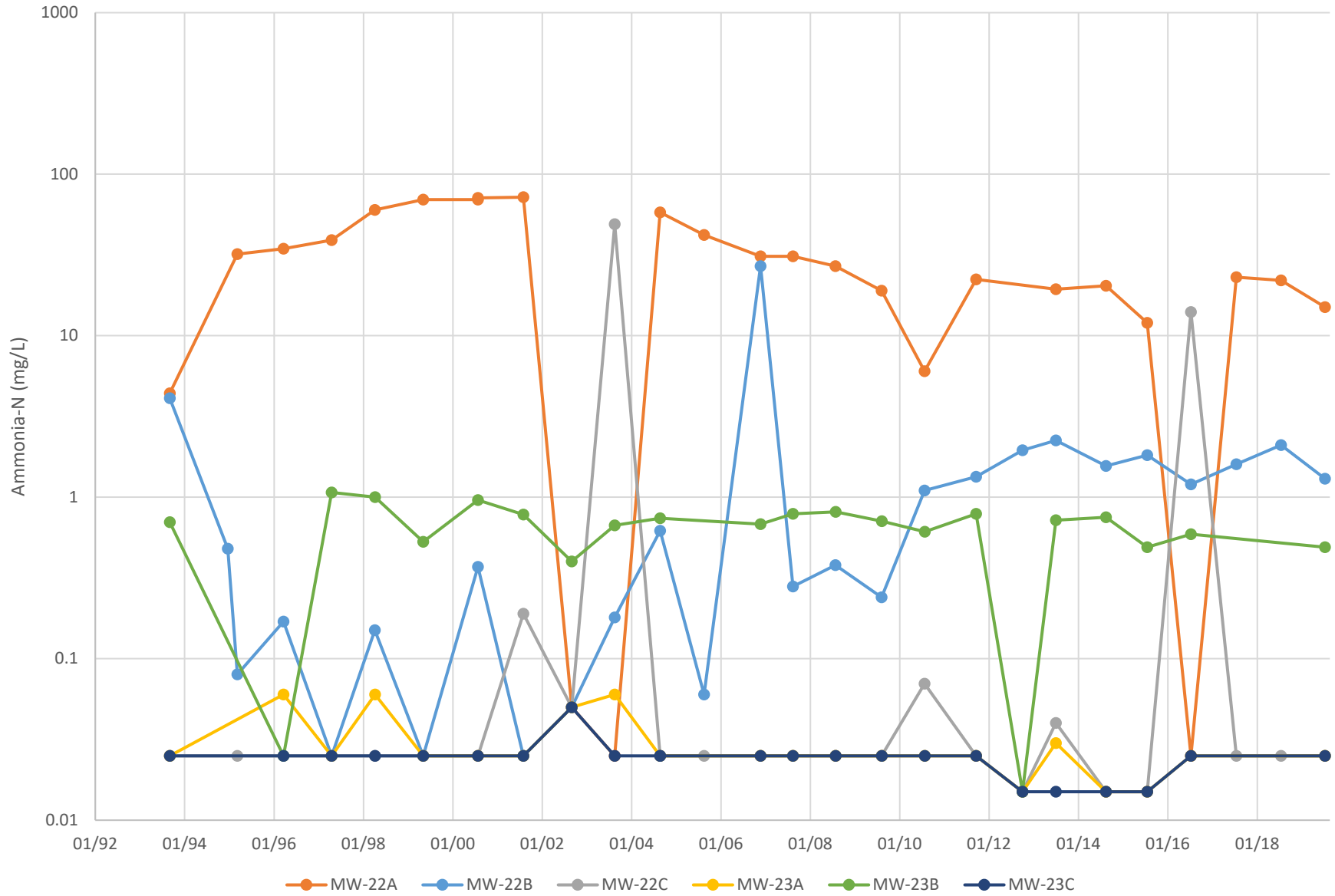


Figure D-3: Area 3 - Ammonia
Meadowview Landfill, Kentville, NS

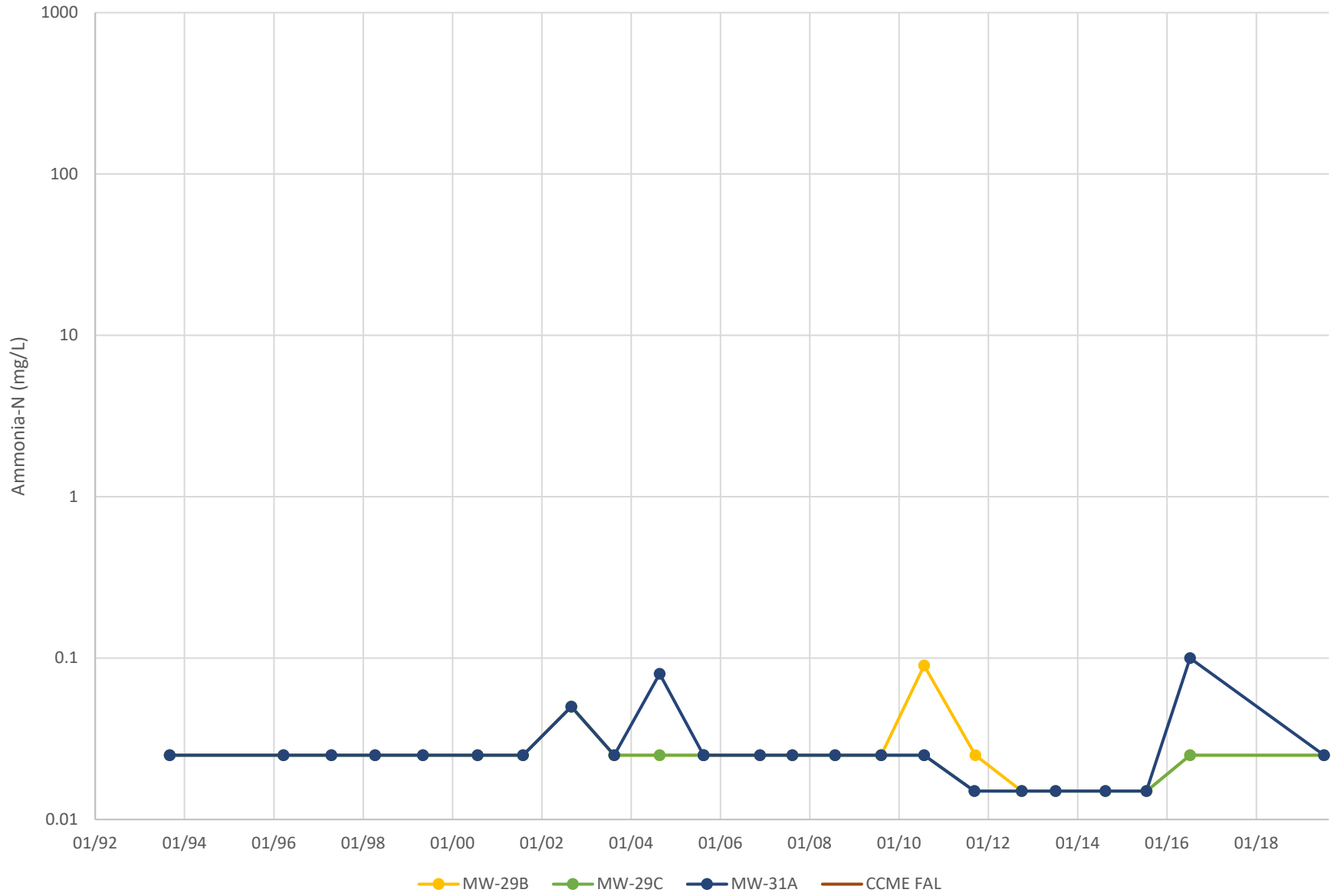


Figure D-4: Area 1 - Chloride
Meadowview Landfill, Kentville, NS

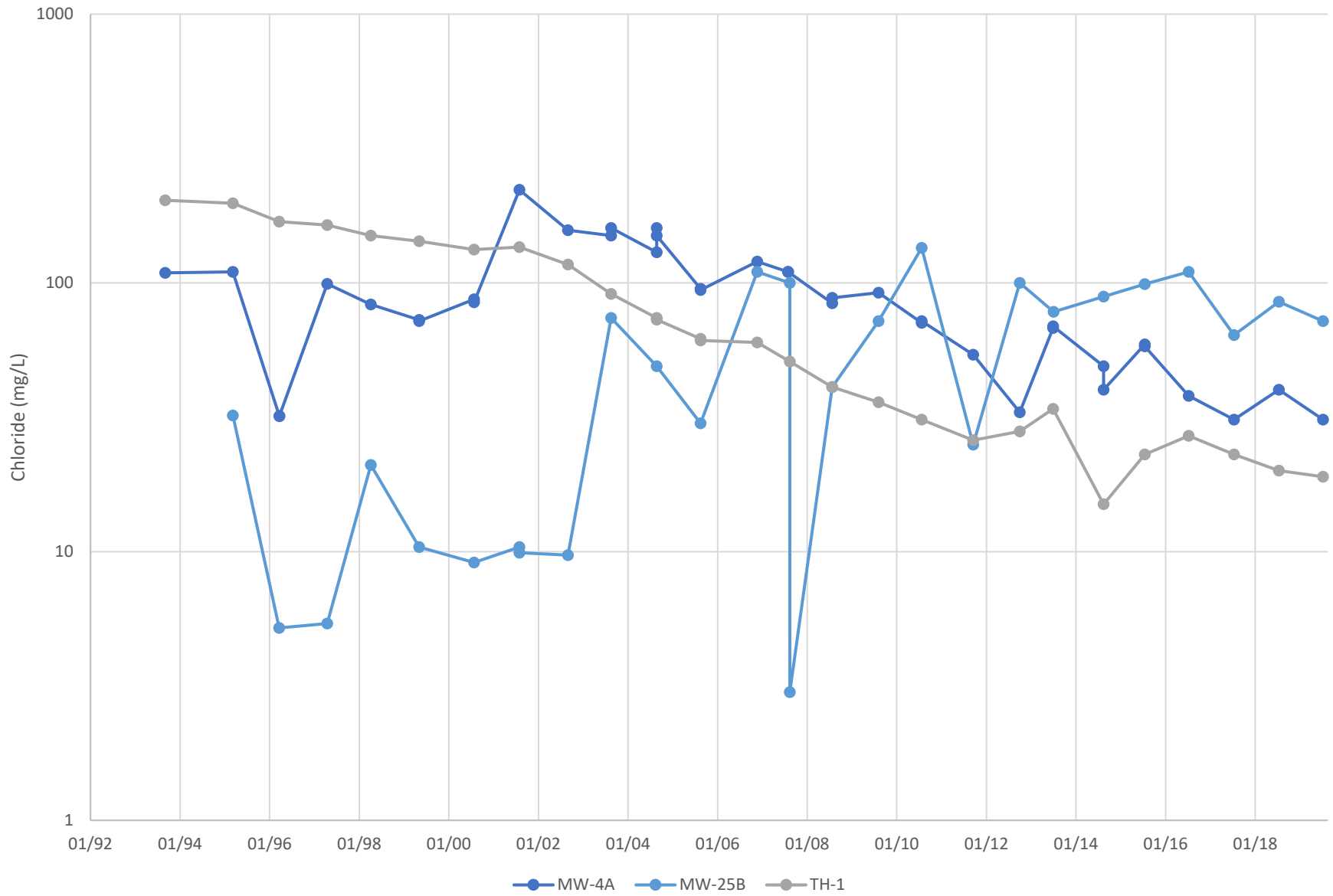


Figure D-5: Area 2 - Chloride
Meadowview Landfill, Kentville, NS

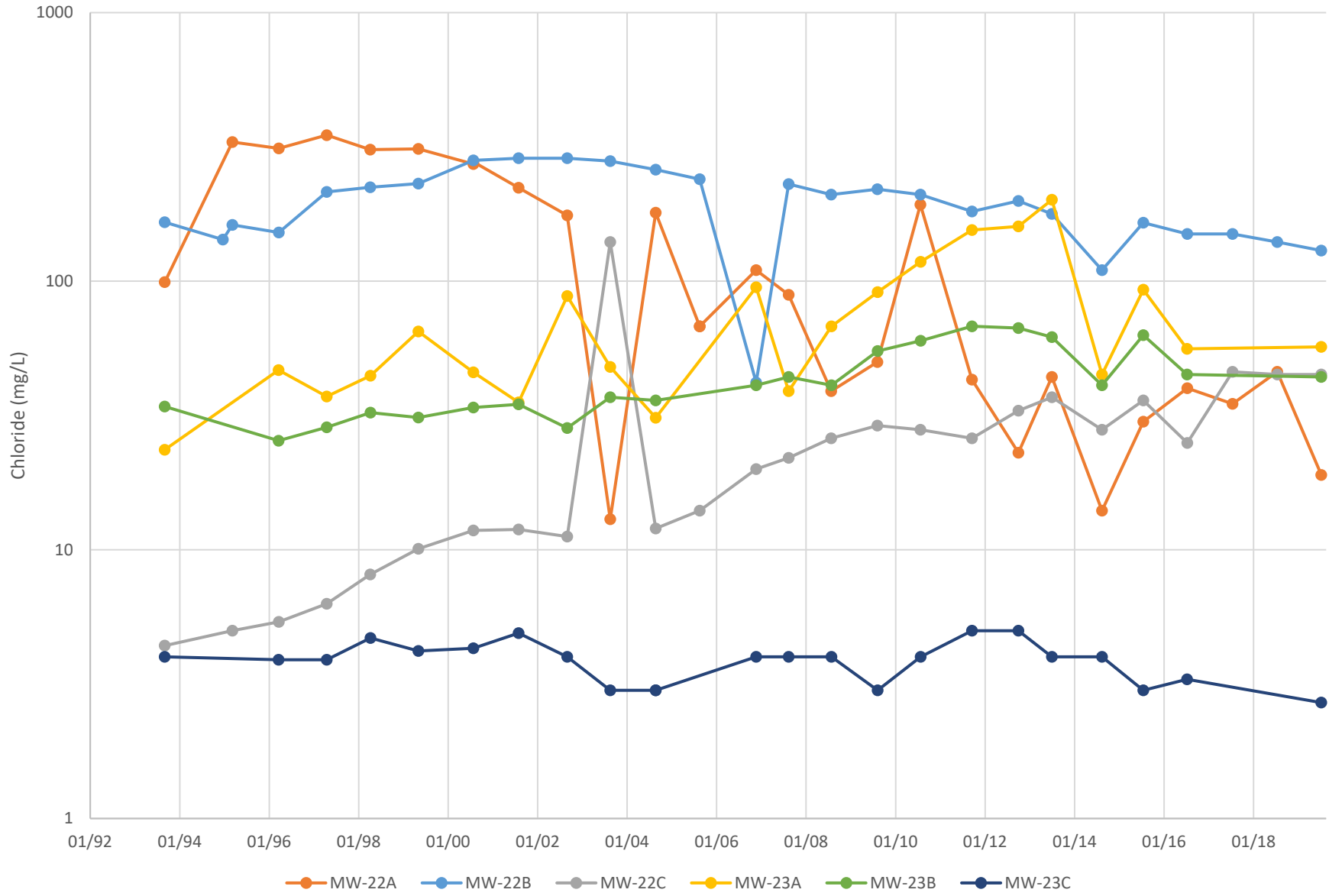


Figure D-6: Area 3 - Chloride
Meadowview Landfill, Kentville, NS

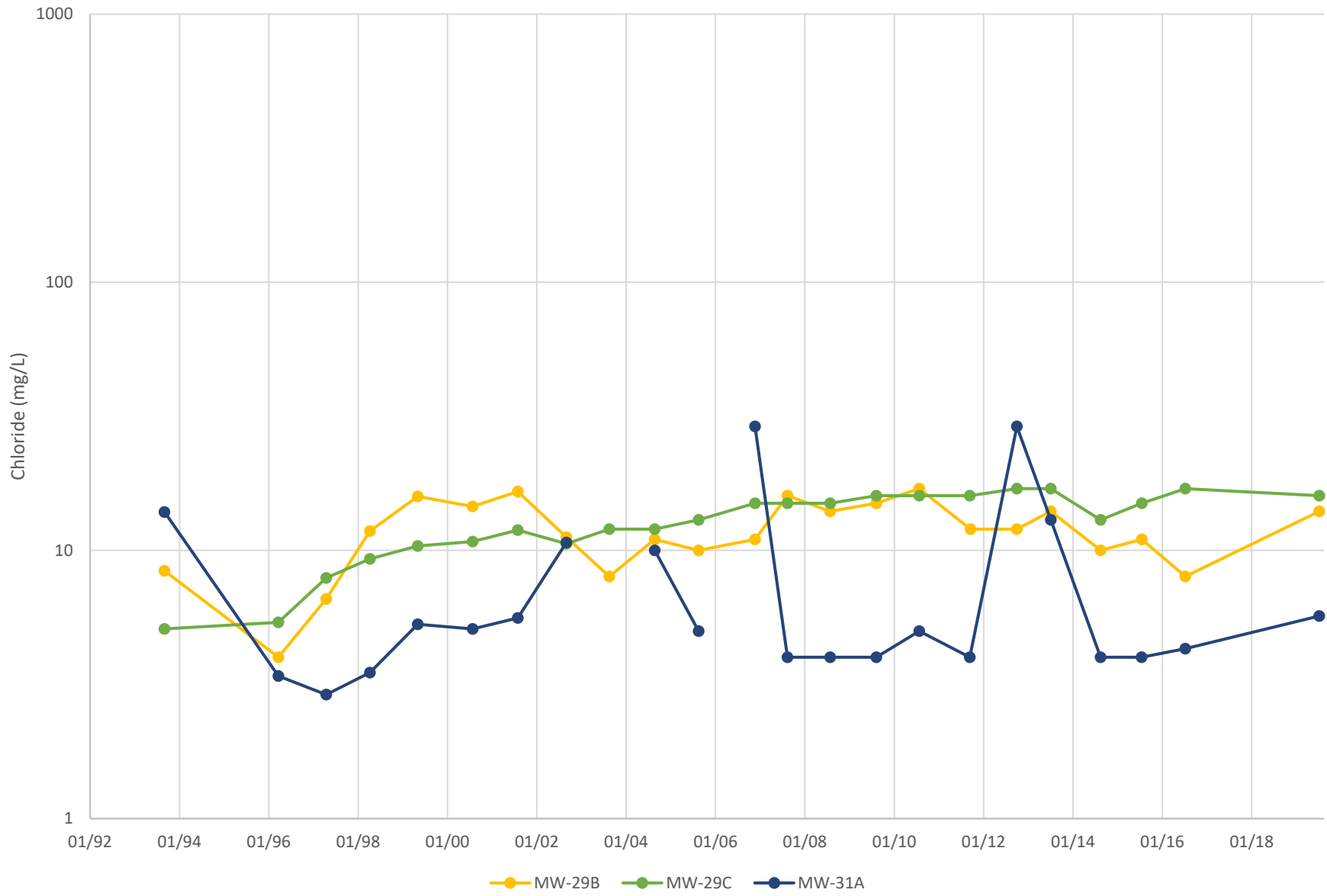


Figure D-7: Area 1 - Conductivity
Meadowview Landfill, Kentville, NS

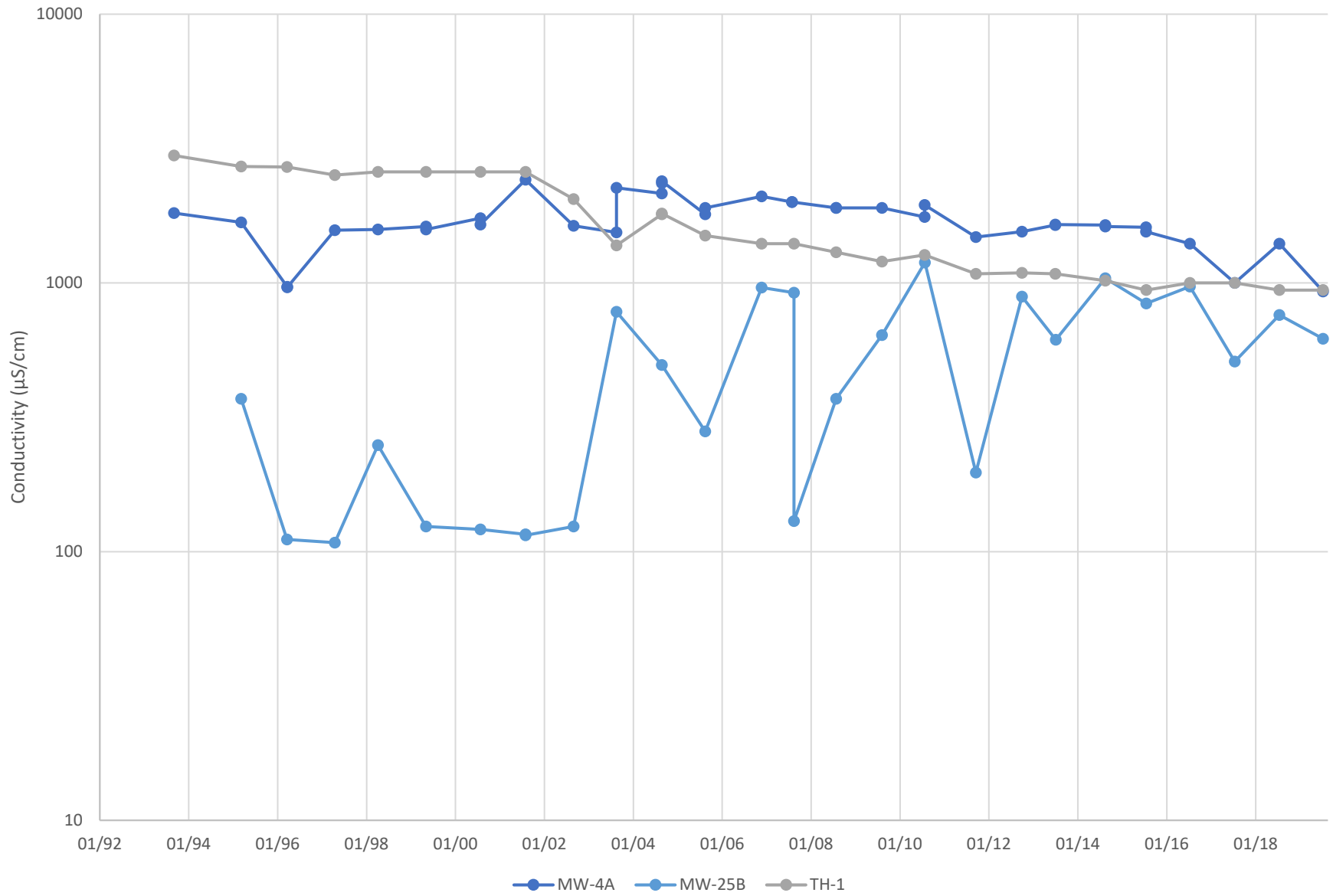


Figure D-8: Area 2 - Conductivity
Meadowview Landfill, Kentville, NS

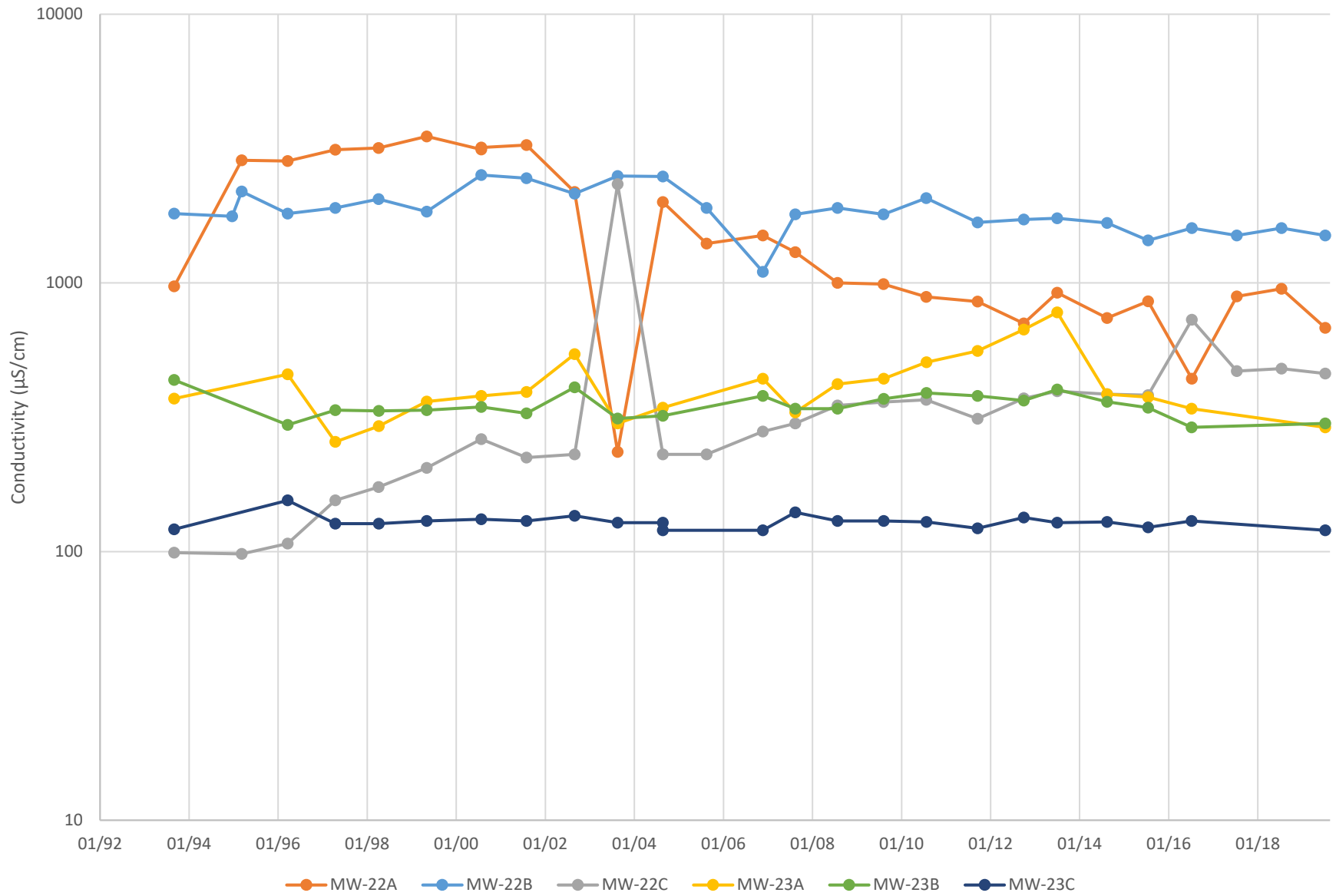


Figure D-9: Area 3 - Conductivity
Meadowview Landfill, Kentville, NS

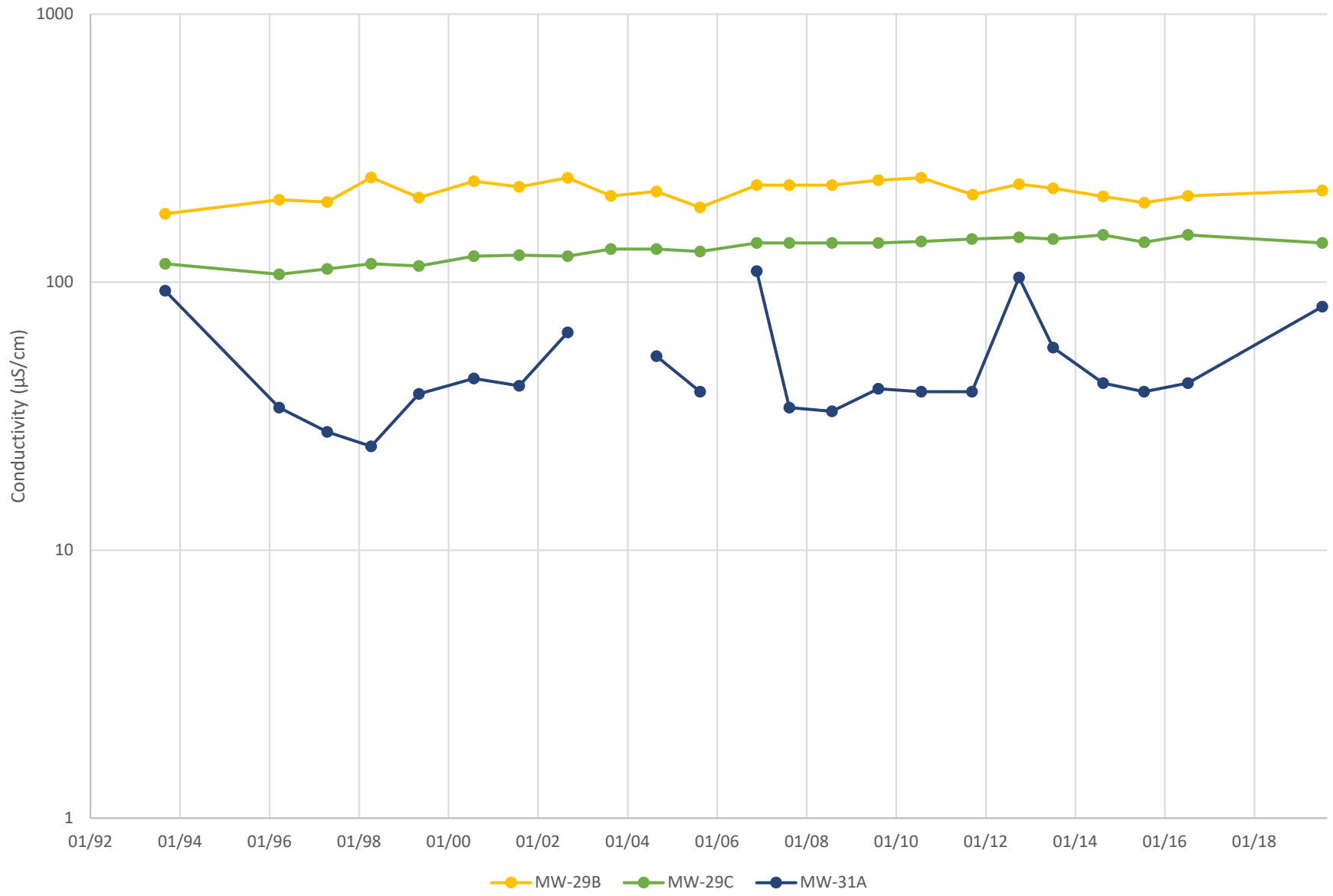


Figure D-10 - Historical Results of Groundwater Elevation in Downgradient Monitoring Wells

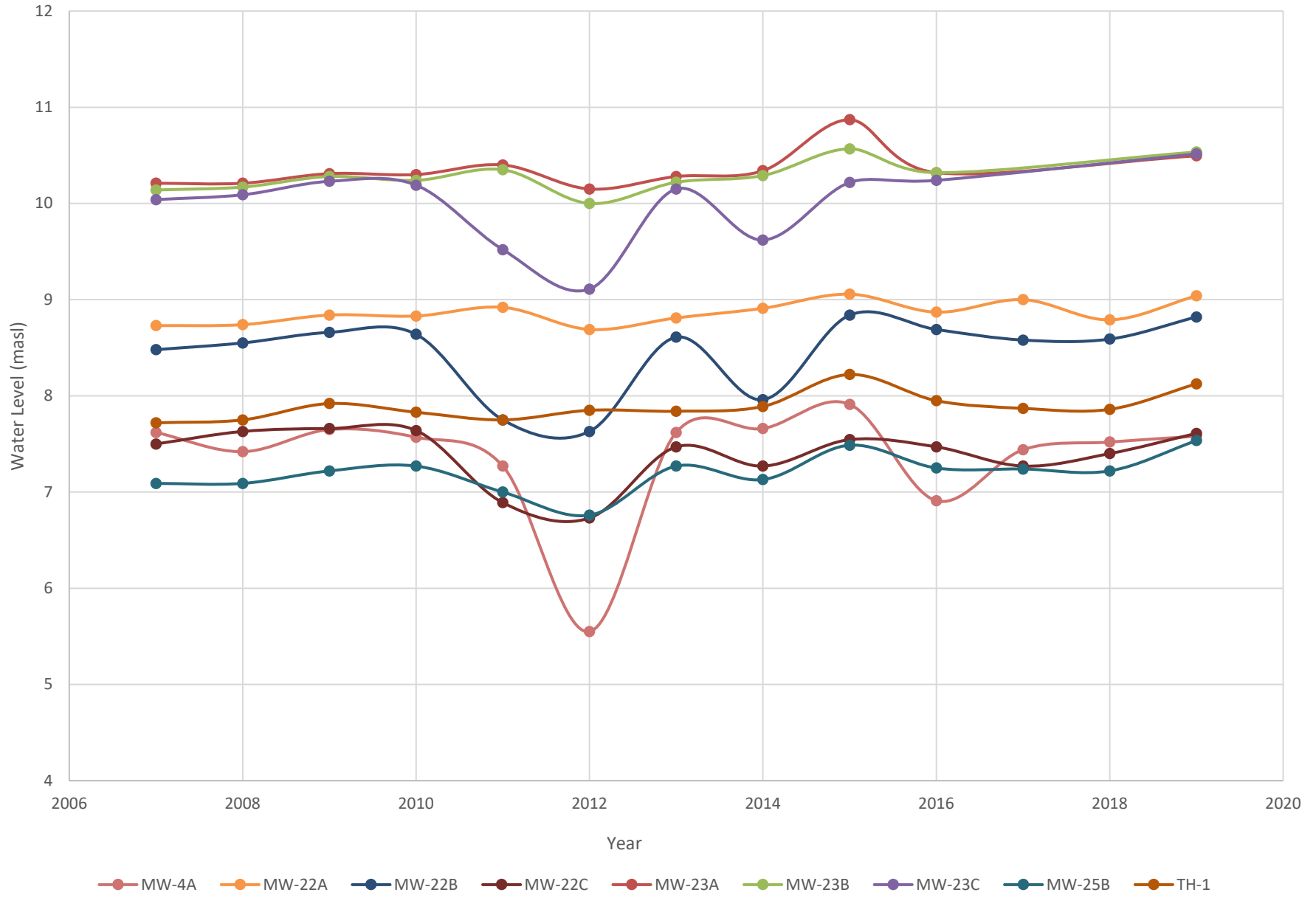


Figure D-11 - Historical Results of Groundwater Elevation in Upgradient Monitoring Wells



Figure D-12 Surface Water - Ammonia
Meadowview Landfill, Kentville, NS

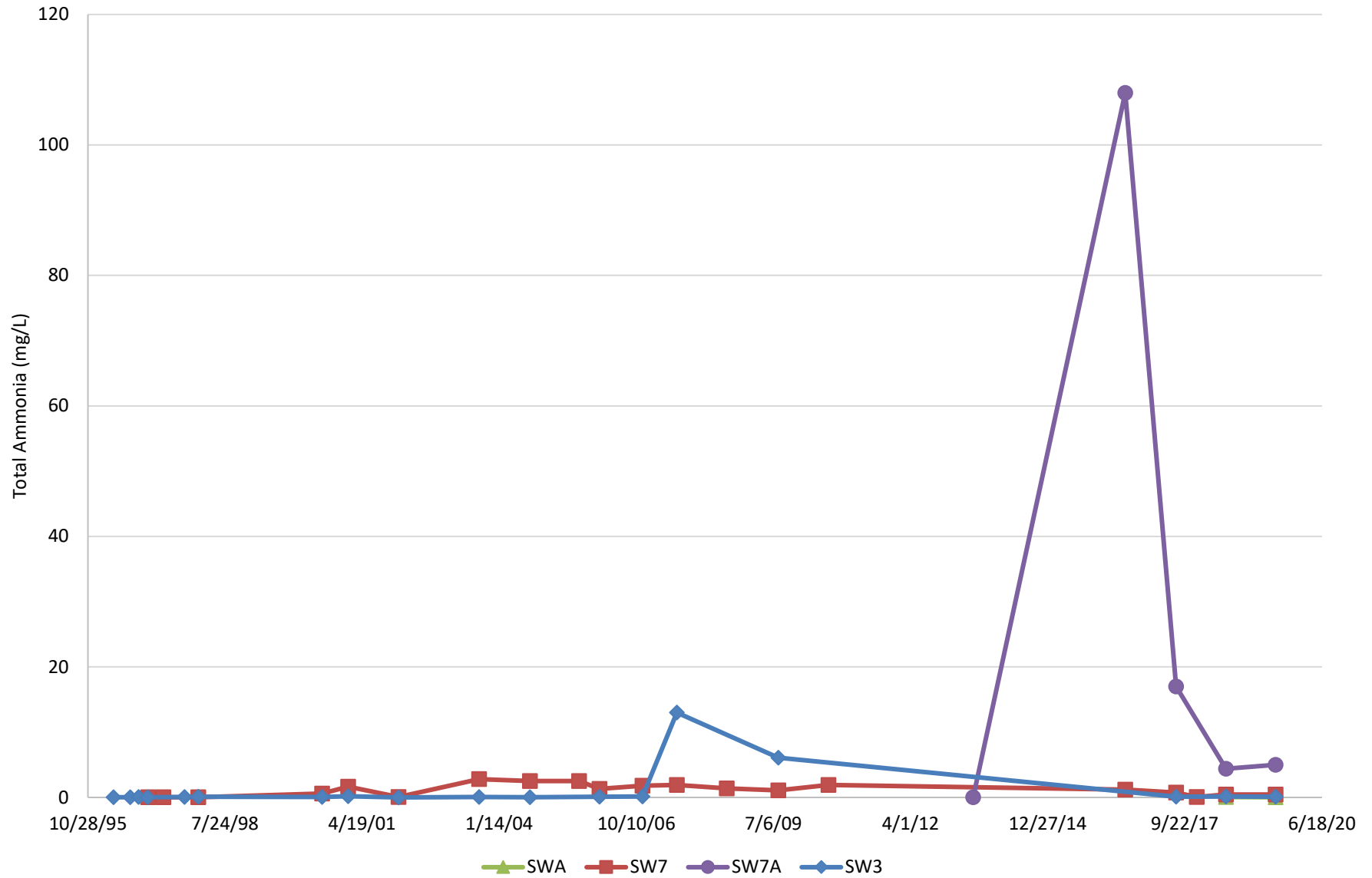


Figure D-13 Surface Water - Chloride
Meadowview Landfill, Kentville, NS

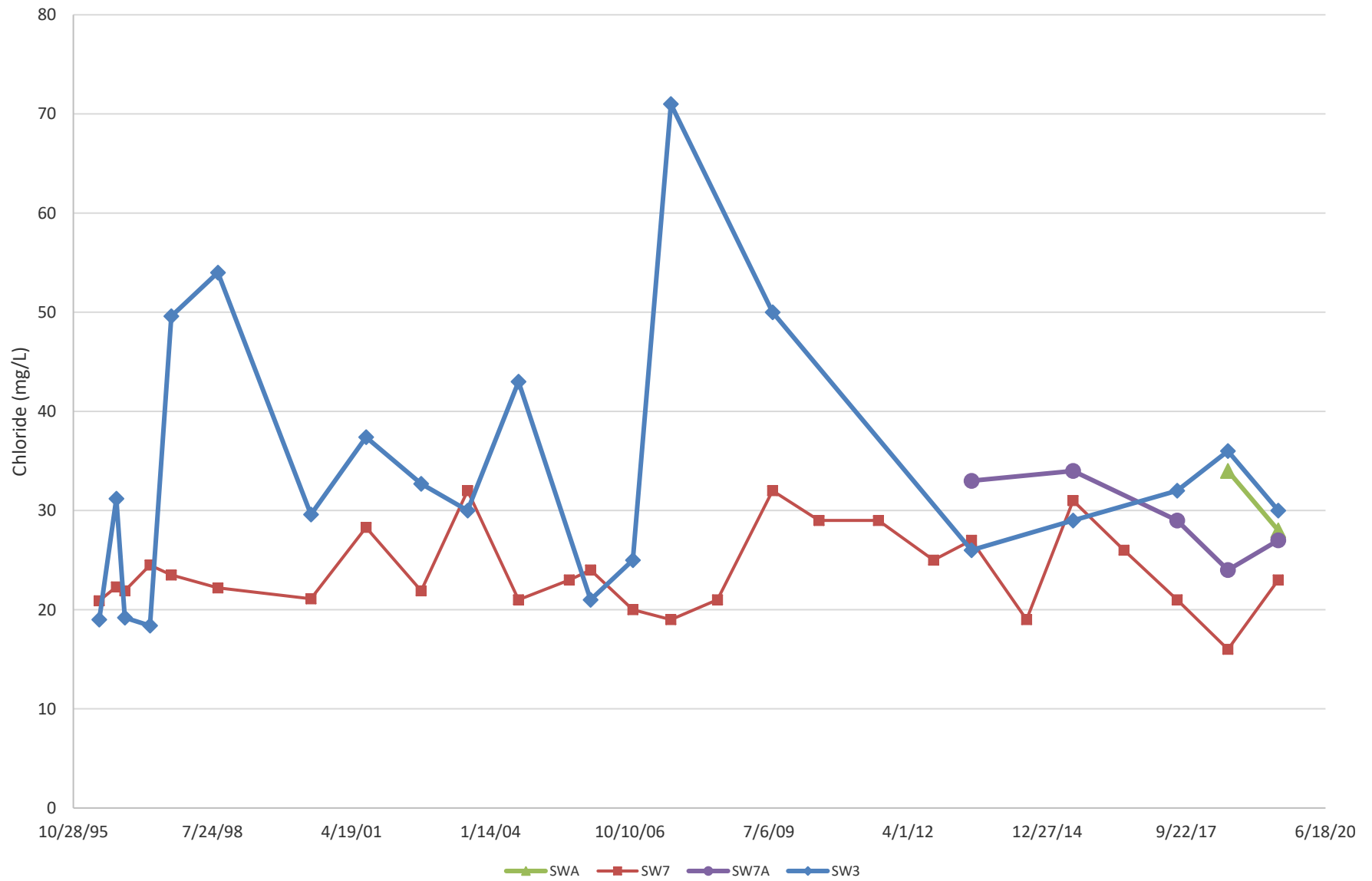
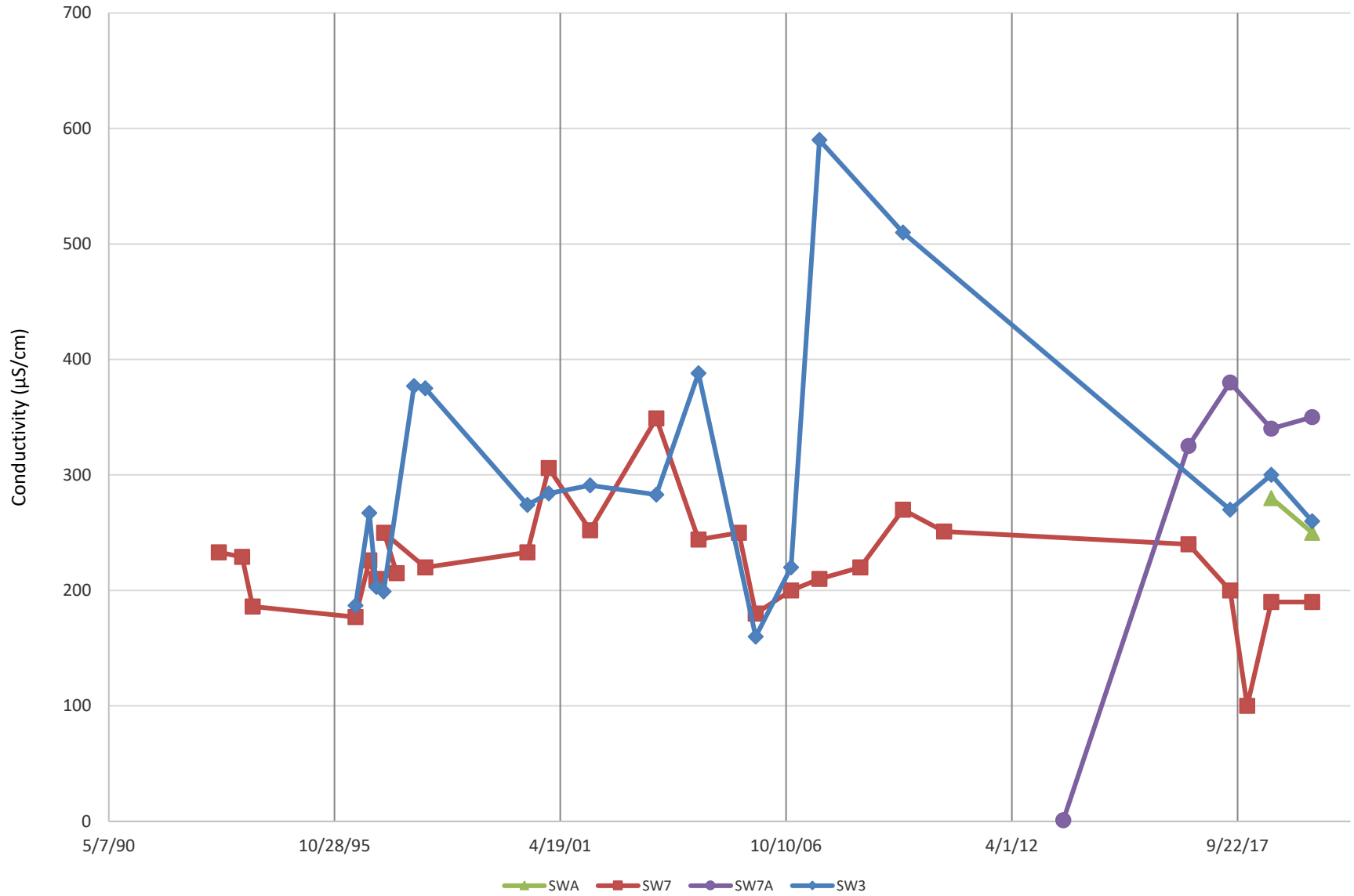


Figure D-14 Surface Water - Conductivity
Meadowview Landfill, Kentville, NS



APPENDIX E

Laboratory Certificates of Analysis



Confirmation of Sample Receipt

BV Labs Job Number: B9J5732
 Job Received: 2019/07/16 09:27
 Final Report Due: 2019/07/23 18:00

Invoice Information

Attn: ACCOUNTS PAYABLE
 Stantec Consulting Ltd
 40 Highfield Park Drive
 Suite 102
 Dartmouth, NS, B3A 0A3

Report Information

Attn: Andrew Sullivan
 Stantec Consulting Ltd
 40 Highfield Park Drive
 Suite 102
 Dartmouth, NS, B3A 0A3
 Email to:
 andrew.sullivan@stantec.com
 jocelyn.arnold@stantec.com
 joanne.whalengayton@stantec.com

Project Information

Quote #: B77460
 PO/AFE#:
 Project #: 121414186
 Site Location:
 Sampled By:
 Line Item: 1214

Analytical Summary

A: Due On 2019/07/23 18:00

Lab ID	Client Sample ID	Sampling Date/Time	Matrix	At: RCAP-MS Dissolved (FieldFit) in W	Atlantic RCAP-MS Total Metals in Water	Set Number
COC# 725293-01-01						
KGZ868	MW-4A	2019/07/15 08:30	W	A		1
KGZ869	MW-22A	2019/07/15 14:43	W	A		1
KGZ870	MW-22B	2019/07/15 14:47	W	A		1
KGZ871	MW-22C	2019/07/15 14:55	W	A		1
KGZ872	MW-25B	2019/07/15 14:00	W	A		1
KGZ873	MW-40D	2019/07/15 12:02	W	A		1
KGZ874	TH-1	2019/07/15 09:32	W	A		1
KGZ875	MW-23A	2019/07/15 17:00	W	A		1
KGZ876	MW-23B	2019/07/15 17:15	W	A		1
KGZ877	MW-23C	2019/07/15 17:15	W	A		1
COC# 725293-02-01						
KGZ878	MW-29B	2019/07/15 13:20	W	A		1
KGZ879	MW-29C	2019/07/15 13:35	W	A		1
KGZ880	MW-31A	2019/07/15 12:05	W	A		1
KGZ881	SW7	2019/07/15 15:20	W		A	2
KGZ882	SW7A	2019/07/15 15:24	W		A	2
KGZ883	SW3	2019/07/15 09:00	W		A	2
KGZ884	SWA	2019/07/15 16:00	W		A	2



Confirmation of Sample Receipt

BV Labs Job Number: B9J5732
 Job Received: 2019/07/16 09:27
 Final Report Due: 2019/07/23 18:00

A: Due On 2019/07/23 18:00

Lab ID	Client Sample ID	Sampling Date/Time	Matrix	At. RCAP-MS Dissolved (FieldFit) in W	Atlantic RCAP-MS Total Metals in Water	Set Number
COC# 725293-02-01						
KGZ885	SW19B	2019/07/15 17:30	W		A	2

Include Criteria on CofA: No

Sample Inspection Observations & Comments

of Samples Received: 18
Details: Sample(s) received in good condition.
Average Temperature: Package 1: 2.0 °C

Additional Notes

- Unless special storage arrangements are made, all samples will be disposed 30 days after receipt. Additional fees may be applied for extended storage.
- Additional fees may be applied for the disposal of hazardous samples.

The contents of this report are subject to change. For up to date information, please refer to the Customer Portal.



Confirmation of Sample Receipt

BV Labs Job Number: B9J5732
 Job Received: 2019/07/16 09:27
 Final Report Due: 2019/07/23 18:00

Sample Set Listing

Set 1 (13 Samples)	Set 2 (5 Samples)
MW-4A	SW7
MW-22A	SW7A
MW-22B	SW3
MW-22C	SWA
MW-25B	SW19B
MW-40D	
TH-1	
MW-23A	
MW-23B	
MW-23C	
MW-29B	
MW-29C	
MW-31A	

Parameter Summary

Package/Test	Parameter	RDL	Unit	Set 1	Set 2
At. RCap-MS Dissolved (FieldFilt) in W	Total Alkalinity (Total as CaCO3)	5	mg/L	X	
	Anion Sum	N/A	me/L	X	
	Cation Sum	N/A	me/L	X	
	Bicarb. Alkalinity (calc. as CaCO3)	1	mg/L	X	
	Carb. Alkalinity (calc. as CaCO3)	1	mg/L	X	
	Dissolved Chloride (Cl-)	1	mg/L	X	
	Colour	5	TCU	X	
	Conductivity	1	uS/cm	X	
	Hardness (CaCO3)	1	mg/L	X	
	Ion Balance (% Difference)	N/A	%	X	
	Dissolved Aluminum (Al)	5	ug/L	X	
	Dissolved Antimony (Sb)	1	ug/L	X	
	Dissolved Arsenic (As)	1	ug/L	X	
	Dissolved Barium (Ba)	1	ug/L	X	
	Dissolved Beryllium (Be)	1	ug/L	X	
	Dissolved Bismuth (Bi)	2	ug/L	X	
	Dissolved Boron (B)	50	ug/L	X	
	Dissolved Cadmium (Cd)	0.01	ug/L	X	
	Dissolved Calcium (Ca)	100	ug/L	X	
	Dissolved Chromium (Cr)	1	ug/L	X	
	Dissolved Cobalt (Co)	0.4	ug/L	X	
	Dissolved Copper (Cu)	0.5	ug/L	X	
	Dissolved Iron (Fe)	50	ug/L	X	
	Dissolved Lead (Pb)	0.5	ug/L	X	
	Dissolved Magnesium (Mg)	100	ug/L	X	
	Dissolved Manganese (Mn)	2	ug/L	X	
Dissolved Molybdenum (Mo)	2	ug/L	X		



Confirmation of Sample Receipt

BV Labs Job Number: B9J5732
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Parameter Summary

Package/Test	Parameter	RDL	Unit	Set 1	Set 2
At. RCap-MS Dissolved (FieldFilt) in W	Dissolved Nickel (Ni)	2	ug/L	X	
	Dissolved Phosphorus (P)	100	ug/L	X	
	Dissolved Potassium (K)	100	ug/L	X	
	Dissolved Selenium (Se)	1	ug/L	X	
	Dissolved Silver (Ag)	0.1	ug/L	X	
	Dissolved Sodium (Na)	100	ug/L	X	
	Dissolved Strontium (Sr)	2	ug/L	X	
	Dissolved Thallium (Tl)	0.1	ug/L	X	
	Dissolved Tin (Sn)	2	ug/L	X	
	Dissolved Titanium (Ti)	2	ug/L	X	
	Dissolved Uranium (U)	0.1	ug/L	X	
	Dissolved Vanadium (V)	2	ug/L	X	
	Dissolved Zinc (Zn)	5	ug/L	X	
	Nitrate (N)	0.05	mg/L	X	
	Nitrate + Nitrite (N)	0.05	mg/L	X	
	Nitrite (N)	0.01	mg/L	X	
	Nitrogen (Ammonia Nitrogen)	0.05	mg/L	X	
	Total Organic Carbon (C)	0.5	mg/L	X	
	pH	N/A	pH	X	
	Orthophosphate (P)	0.01	mg/L	X	
	Reactive Silica (SiO2)	0.5	mg/L	X	
	Langelier Index (@ 20C)	N/A	N/A	X	
	Saturation pH (@ 20C)	N/A	N/A	X	
	Langelier Index (@ 4C)	N/A	N/A	X	
	Saturation pH (@ 4C)	N/A	N/A	X	
	Dissolved Sulphate (SO4)	2	mg/L	X	
	Calculated TDS	1	mg/L	X	
	Turbidity	0.1	NTU	X	
Atlantic RCap-MS Total Metals in Water	Total Alkalinity (Total as CaCO3)	5	mg/L		X
	Anion Sum	N/A	me/L		X
	Cation Sum	N/A	me/L		X
	Bicarb. Alkalinity (calc. as CaCO3)	1	mg/L		X
	Carb. Alkalinity (calc. as CaCO3)	1	mg/L		X
	Dissolved Chloride (Cl-)	1	mg/L		X
	Colour	5	TCU		X
	Conductivity	1	uS/cm		X
	Hardness (CaCO3)	1	mg/L		X
	Ion Balance (% Difference)	N/A	%		X
	Total Aluminum (Al)	5	ug/L		X



Confirmation of Sample Receipt

BV Labs Job Number: B9J5732
 Job Received: 2019/07/16 09:27
 Final Report Due: 2019/07/23 18:00

Parameter Summary

Package/Test	Parameter	RDL	Unit	Set 1	Set 2
Atlantic RCap-MS Total Metals in Water	Total Antimony (Sb)	1	ug/L		X
	Total Arsenic (As)	1	ug/L		X
	Total Barium (Ba)	1	ug/L		X
	Total Beryllium (Be)	1	ug/L		X
	Total Bismuth (Bi)	2	ug/L		X
	Total Boron (B)	50	ug/L		X
	Total Cadmium (Cd)	0.01	ug/L		X
	Total Calcium (Ca)	100	ug/L		X
	Total Chromium (Cr)	1	ug/L		X
	Total Cobalt (Co)	0.4	ug/L		X
	Total Copper (Cu)	0.5	ug/L		X
	Total Iron (Fe)	50	ug/L		X
	Total Lead (Pb)	0.5	ug/L		X
	Total Magnesium (Mg)	100	ug/L		X
	Total Manganese (Mn)	2	ug/L		X
	Total Molybdenum (Mo)	2	ug/L		X
	Total Nickel (Ni)	2	ug/L		X
	Total Phosphorus (P)	100	ug/L		X
	Total Potassium (K)	100	ug/L		X
	Total Selenium (Se)	1	ug/L		X
	Total Silver (Ag)	0.1	ug/L		X
	Total Sodium (Na)	100	ug/L		X
	Total Strontium (Sr)	2	ug/L		X
	Total Thallium (Tl)	0.1	ug/L		X
	Total Tin (Sn)	2	ug/L		X
	Total Titanium (Ti)	2	ug/L		X
	Total Uranium (U)	0.1	ug/L		X
	Total Vanadium (V)	2	ug/L		X
	Total Zinc (Zn)	5	ug/L		X
	Nitrate (N)	0.05	mg/L		X
	Nitrate + Nitrite (N)	0.05	mg/L		X
	Nitrite (N)	0.01	mg/L		X
	Nitrogen (Ammonia Nitrogen)	0.05	mg/L		X
	Total Organic Carbon (C)	0.5	mg/L		X
	pH	N/A	pH		X
	Orthophosphate (P)	0.01	mg/L		X
Reactive Silica (SiO2)	0.5	mg/L		X	
Langelier Index (@ 20C)	N/A	N/A		X	
Saturation pH (@ 20C)	N/A	N/A		X	



Confirmation of Sample Receipt

BV Labs Job Number: B9J5732
Job Received: 2019/07/16 09:27
Final Report Due: 2019/07/23 18:00

Parameter Summary

Package/Test	Parameter	RDL	Unit	Set 1	Set 2
Atlantic RCap-MS Total Metals in Water	Langelier Index (@ 4C)	N/A	N/A		X
	Saturation pH (@ 4C)	N/A	N/A		X
	Dissolved Sulphate (SO4)	2	mg/L		X
	Calculated TDS	1	mg/L		X
	Turbidity	0.1	NTU		X

**RDLs are subject to change based on interferences present at the time of analysis.*



Confirmation of Sample Receipt

BV Labs Job Number: B9J5732
Job Received: 2019/07/16 09:27
Final Report Due: 2019/07/23 18:00

Cost Estimate

#	Description	Matrix	Quote #	Rate	Test Total
13	At. RCap-MS Dissolved (FieldFilt) in W	W	B77460	\$ 90.00	\$ 1,170.00
5	Atlantic RCap-MS Total Metals in Water	W	B77460	\$ 90.00	\$ 450.00
18	Non hazardous disposal/container supply	W	B77460	\$ 5.00	\$ 90.00
Total (excluding applicable taxes):				\$ 1,710.00	



Chain Of Custody Record

INVOICE INFORMATION:		Report Information		Project Information		Laboratory Use Only		
Company Name	#10950 Stantec Consulting Ltd	Company Name		Quotation #	B77460	BV Labs Job #	Bottle Order #:	
Contact Name	Accounts Payable	Contact Name	Andrew Sullivan	P.O. #		8955732		
Address	40 Highfield Park Drive Suite 102 Dartmouth NS B3A 0A3	Address		Project #	121414186	Chain Of Custody Record	725293	
Phone	(902) 468-7777 Fax: (902) 468-9009	Phone		Project Name		Project Manager		
Email	SAPinvoices@Stantec.com	Email	Andrew.Sullivan@stantec.com	Site #			Marie Muise	
				Sampled By		CH725293-01-01		
Regulatory Criteria:	Special Instructions	ANALYSIS REQUESTED (PLEASE BE SPECIFIC)				Turnaround Time (TAT) Required:		
** Specify Matrix: Surface/Ground/Tapwater/Sewage/Effluent/Seawater Potable/Nonpotable/Tissue/Soil/Sludge/Metal		Field Filtration & Preserved	At. RCAP-MS Dissolved (Field/Filt) in			Please provide advance notice for rush projects		
		Lab Filtration Required	W	Atlantic RCAP-MS Total Metals in Water		Regular (Standard) TAT: <input checked="" type="checkbox"/>		
SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS						(will be applied if Rush TAT is not specified): Standard TAT = 5-7 Working days for most tests. Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.		
						Job Specific Rush TAT (if applies to entire submission) Date Required: Time Required: <input type="checkbox"/>		
Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix		# of Bottles	Comments / Hazards / Other Required Analysis	
✓	MW-4A	19/7/15	8:30	GW	X	4		
✓	MW-22A		14:43	GW	X			
✓	MW-22B		14:47	GW	X			
✓	MW-22C		14:55	GW	X			
✓	MW-25B		14:00	GW	X			
✓	MW-40D		12:02	GW	X			
✓	TH-1		9:32	GW	X			
✓	MW-23A		17:00	GW	X			
✓	MW-23B		17:15	GW	X			
✓	MW-23C		17:15	GW	X			
* RELINQUISHED BY: (Signature/Print)		Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)		Date: (YY/MM/DD)	Time	
Duncan NS		19/7/16	9:27	[Signature]				
						# Jars used and not submitted	Lab Use Only	
						Time Sensitive <input type="checkbox"/>	Temperature (°C) on Receipt	
							12.3	
						Custody Seal Intact on Cooler? <input type="checkbox"/> Yes <input type="checkbox"/> No		
* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.							White: BV Labs	Yellow: Client
* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.								



Chain Of Custody Record

INVOICE INFORMATION:		Report Information		Project Information		Laboratory Use Only	
Company Name	#10950 Stantec Consulting Ltd	Company Name	Andrew Sullivan	Quotation #	B77460	BV Labs Job #	Bottle Order #:
Contact Name	Accounts Payable	Contact Name	Andrew Sullivan	P.O. #		B9J5732	
Address	40 Highfield Park Drive Suite 102 Dartmouth NS B3A 0A3	Address		Project #	121414186	725293	
Phone	(902) 468-7777 Fax: (902) 468-9009	Phone		Project Name		Chain Of Custody Record	Project Manager
Email	SAPinvoices@stantec.com	Email	Andrew.Sullivan@stantec.com	Site #			Marie Muise
				Sampled By		Ch725293-02-01	

Regulatory Criteria:	Special Instructions	ANALYSIS REQUESTED (PLEASE BE SPECIFIC)										Turnaround Time (TAT) Required:			
** Specify Matrix: Surface/Ground/Tapwater/Sewage/Effluent/Seawater Potable/Nonpotable/Tissue/Soil/Sludge/Metal		Field Preserved	Lab Filtration Required	Al. RCAP-MS Dissolved (Field/Filter) in W	Atlantic RCAP-MS Total Metals in Water									Regular (Standard) TAT: <input checked="" type="checkbox"/> (will be applied if Rush TAT is not specified): Standard TAT = 5-7 Working days for most tests. Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.	
Job Specific Rush TAT (if applies to entire submission) Date Required: _____ Time Required: _____															

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Preserved	Lab Filtration Required	Al. RCAP-MS Dissolved (Field/Filter) in W	Atlantic RCAP-MS Total Metals in Water							# of Bottles	Comments / Hazards / Other Required Analysis
1 ✓	MW-29B	19/7/15	13:20	GW	X		X								4	
2 ✓	MW-29C	1	13:35	GW	X		X									
3 ✓	MW-31A	1	12:05	GW	X		X									
4 ✓	SW7	15:24	15:20	SW	X			X								
5 ✓	SW7A	15:24	15:24	SW	X			X								
6 ✓	SW3	9:16	9:00	SW	X			X								
7 ✓	SWA	17	16:00	SW	X			X								
8 ✓	SW19A							X								
9 ✓	SW19B	19/7/15	17:30	SW	X			X								
10																

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Lab Use Only
DAVID COX DATE	19/7/16	9:27	QUBWZ				Time Sensitive <input type="checkbox"/> Temperature (°C) on Receipt 12.3 Custody Seal Intact on Cooler? <input type="checkbox"/> Yes <input type="checkbox"/> No

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.
 * IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.



Your Project #: 121414186
 Your C.O.C. #: 725293-02-01, 725293-01-01

Attention: Andrew Sullivan

Stantec Consulting Ltd
 40 Highfield Park Drive
 Suite 102
 Dartmouth, NS
 CANADA B3A 0A3

Report Date: 2019/07/23
 Report #: R5809542
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9J5732

Received: 2019/07/16, 09:27

Sample Matrix: Water
 # Samples Received: 18

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Carbonate, Bicarbonate and Hydroxide	18	N/A	2019/07/22	N/A	SM 23 4500-CO2 D
Alkalinity	16	N/A	2019/07/22	ATL SOP 00013	EPA 310.2 R1974 m
Alkalinity	2	N/A	2019/07/23	ATL SOP 00013	EPA 310.2 R1974 m
Chloride	18	N/A	2019/07/22	ATL SOP 00014	SM 23 4500-Cl- E m
Colour	18	N/A	2019/07/22	ATL SOP 00020	SM 23 2120C m
Conductance - water	18	N/A	2019/07/22	ATL SOP 00004	SM 23 2510B m
Hardness (calculated as CaCO3)	3	N/A	2019/07/19	ATL SOP 00048	Auto Calc
Hardness (calculated as CaCO3)	12	N/A	2019/07/22	ATL SOP 00048	Auto Calc
Hardness (calculated as CaCO3)	3	N/A	2019/07/23	ATL SOP 00048	Auto Calc
Metals Water Diss. MS (as rec'd)	13	N/A	2019/07/19	ATL SOP 00058	EPA 6020B R2 m
Metals Water Total MS	2	2019/07/18	2019/07/19	ATL SOP 00058	EPA 6020B R2 m
Metals Water Total MS	2	2019/07/19	2019/07/22	ATL SOP 00058	EPA 6020B R2 m
Metals Water Total MS	1	2019/07/19	2019/07/23	ATL SOP 00058	EPA 6020B R2 m
Ion Balance (% Difference)	18	N/A	2019/07/23	N/A	Auto Calc.
Anion and Cation Sum	18	N/A	2019/07/23	N/A	Auto Calc.
Nitrogen Ammonia - water	12	N/A	2019/07/22	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen Ammonia - water	6	N/A	2019/07/23	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	18	N/A	2019/07/22	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite	18	N/A	2019/07/22	ATL SOP 00017	SM 23 4500-NO2- B m
Nitrogen - Nitrate (as N)	18	N/A	2019/07/23	ATL SOP 00018	ASTM D3867-16
pH (1)	18	N/A	2019/07/22	ATL SOP 00003	SM 23 4500-H+ B m
Phosphorus - ortho	18	N/A	2019/07/22	ATL SOP 00021	SM 23 4500-P E m
Sat. pH and Langelier Index (@ 20C)	18	N/A	2019/07/23	ATL SOP 00049	Auto Calc.
Sat. pH and Langelier Index (@ 4C)	18	N/A	2019/07/23	ATL SOP 00049	Auto Calc.
Reactive Silica	18	N/A	2019/07/22	ATL SOP 00022	EPA 366.0 m
Sulphate	18	N/A	2019/07/22	ATL SOP 00023	ASTM D516-16 m
Total Dissolved Solids (TDS calc)	18	N/A	2019/07/23	N/A	Auto Calc.
Organic carbon - Total (TOC) (2)	2	N/A	2019/07/19	ATL SOP 00203	SM 23 5310B m
Organic carbon - Total (TOC) (2)	1	N/A	2019/07/20	ATL SOP 00203	SM 23 5310B m
Organic carbon - Total (TOC) (2)	15	N/A	2019/07/22	ATL SOP 00203	SM 23 5310B m
Turbidity	18	N/A	2019/07/22	ATL SOP 00011	EPA 180.1 R2 m



Your Project #: 121414186
Your C.O.C. #: 725293-02-01, 725293-01-01

Attention: Andrew Sullivan

Stantec Consulting Ltd
40 Highfield Park Drive
Suite 102
Dartmouth, NS
CANADA B3A 0A3

Report Date: 2019/07/23
Report #: R5809542
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: B9J5732
Received: 2019/07/16, 09:27

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The APHA Standard Method require pH to be analyzed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the APHA Standard Method holding time.

(2) TOC / DOC present in the sample should be considered as non-purgeable TOC / DOC.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Marie Muise, Key Account Specialist

Email: Marie.MUISE@bvlabs.com

Phone# (902)420-0203 Ext:253

=====

This report has been generated and distributed using a secure automated process.

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



BUREAU
VERITAS

BV Labs Job #: B9J5732
Report Date: 2019/07/23

Stantec Consulting Ltd
Client Project #: 121414186

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

BV Labs ID		KGZ881			KGZ882			KGZ883		
Sampling Date		2019/07/15 15:20			2019/07/15 15:24			2019/07/15 09:00		
COC Number		725293-02-01			725293-02-01			725293-02-01		
	UNITS	SW7	RDL	QC Batch	SW7A	RDL	QC Batch	SW3	RDL	QC Batch

Calculated Parameters

Anion Sum	me/L	2.06	N/A	6231750	3.45	N/A	6231750	2.60	N/A	6231750
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	64	1.0	6231745	130	1.0	6231745	61	1.0	6231745
Calculated TDS	mg/L	120	1.0	6231757	260	1.0	6231757	160	1.0	6231757
Carb. Alkalinity (calc. as CaCO3)	mg/L	<1.0	1.0	6231745	<1.0	1.0	6231745	<1.0	1.0	6231745
Cation Sum	me/L	1.96	N/A	6231750	6.18	N/A	6231750	2.88	N/A	6231750
Hardness (CaCO3)	mg/L	59	1.0	6231746	170	1.0	6231746	97	1.0	6231746
Ion Balance (% Difference)	%	2.49	N/A	6231748	28.4	N/A	6231748	5.11	N/A	6231748
Langelier Index (@ 20C)	N/A	-0.910	N/A	6231754	-0.336	N/A	6231754	-0.616	N/A	6231754
Langelier Index (@ 4C)	N/A	-1.16	N/A	6231755	-0.586	N/A	6231755	-0.868	N/A	6231755
Nitrate (N)	mg/L	0.11	0.050	6231752	0.13	0.050	6231752	2.3	0.25	6231752
Saturation pH (@ 20C)	N/A	8.25	N/A	6231754	7.58	N/A	6231754	8.09	N/A	6231754
Saturation pH (@ 4C)	N/A	8.50	N/A	6231755	7.83	N/A	6231755	8.34	N/A	6231755

Inorganics

Total Alkalinity (Total as CaCO3)	mg/L	64	5.0	6239802	130	25	6239802	61	5.0	6239802
Dissolved Chloride (Cl-)	mg/L	23	1.0	6239813	27	1.0	6239813	30	1.0	6239813
Colour	TCU	87	25	6239817	53	25	6239817	20	5.0	6239817
Nitrate + Nitrite (N)	mg/L	0.11	0.050	6239819	0.13	0.050	6239819	2.4	0.25	6239819
Nitrite (N)	mg/L	<0.010	0.010	6239821	<0.010	0.010	6239821	0.074	0.010	6239821
Nitrogen (Ammonia Nitrogen)	mg/L	0.46	0.050	6237035	5.0	0.25	6236999	0.12	0.050	6236999
Total Organic Carbon (C)	mg/L	8.4	0.50	6239845	6.5	0.50	6239845	7.7 (1)	5.0	6239845
Orthophosphate (P)	mg/L	0.010	0.010	6239818	<0.010	0.010	6239818	0.024	0.010	6239818
pH	pH	7.34	N/A	6237261	7.25	N/A	6237261	7.47	N/A	6237261
Reactive Silica (SiO2)	mg/L	11	0.50	6239816	14	0.50	6239816	7.0	0.50	6239816
Dissolved Sulphate (SO4)	mg/L	5.2	2.0	6239815	5.9	2.0	6239815	18	2.0	6239815
Turbidity	NTU	14	0.10	6239666	29	0.10	6239666	140	1.0	6239666
Conductivity	uS/cm	190	1.0	6237362	350	1.0	6237362	260	1.0	6237362

Metals

Total Aluminum (Al)	ug/L	79	5.0	6234852	16	5.0	6236551	3000	5.0	6234145
Total Antimony (Sb)	ug/L	<1.0	1.0	6234852	<1.0	1.0	6236551	<1.0	1.0	6234145
Total Arsenic (As)	ug/L	1.8	1.0	6234852	53	1.0	6236551	5.0	1.0	6234145
Total Barium (Ba)	ug/L	180	1.0	6234852	760	1.0	6236551	71	1.0	6234145
Total Beryllium (Be)	ug/L	<1.0	1.0	6234852	<1.0	1.0	6236551	<1.0	1.0	6234145
Total Bismuth (Bi)	ug/L	<2.0	2.0	6234852	<2.0	2.0	6236551	<2.0	2.0	6234145
Total Boron (B)	ug/L	<50	50	6234852	150	50	6236551	<50	50	6234145

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Elevated reporting limit due to turbidity.



ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

BV Labs ID		KGZ881			KGZ882			KGZ883		
Sampling Date		2019/07/15 15:20			2019/07/15 15:24			2019/07/15 09:00		
COC Number		725293-02-01			725293-02-01			725293-02-01		
	UNITS	SW7	RDL	QC Batch	SW7A	RDL	QC Batch	SW3	RDL	QC Batch
Total Cadmium (Cd)	ug/L	0.013	0.010	6234852	<0.010	0.010	6236551	0.046	0.010	6234145
Total Calcium (Ca)	ug/L	20000	100	6234852	52000	100	6236551	32000	100	6234145
Total Chromium (Cr)	ug/L	1.1	1.0	6234852	1.6	1.0	6236551	5.6	1.0	6234145
Total Cobalt (Co)	ug/L	0.48	0.40	6234852	10	0.40	6236551	2.2	0.40	6234145
Total Copper (Cu)	ug/L	<0.50	0.50	6234852	1.3	0.50	6236551	3.4	0.50	6234145
Total Iron (Fe)	ug/L	1900	50	6234852	27000	50	6236551	5900	50	6234145
Total Lead (Pb)	ug/L	<0.50	0.50	6234852	<0.50	0.50	6236551	3.1	0.50	6234145
Total Magnesium (Mg)	ug/L	2400	100	6234852	10000	100	6236551	4400	100	6234145
Total Manganese (Mn)	ug/L	1600	2.0	6234852	2500	2.0	6236551	760	2.0	6234145
Total Molybdenum (Mo)	ug/L	<2.0	2.0	6234852	<2.0	2.0	6236551	<2.0	2.0	6234145
Total Nickel (Ni)	ug/L	<2.0	2.0	6234852	7.1	2.0	6236551	4.2	2.0	6234145
Total Phosphorus (P)	ug/L	<100	100	6234852	270	100	6236551	520	100	6234145
Total Potassium (K)	ug/L	1900	100	6234852	14000	100	6236551	2800	100	6234145
Total Selenium (Se)	ug/L	<1.0	1.0	6234852	<1.0	1.0	6236551	<1.0	1.0	6234145
Total Silver (Ag)	ug/L	<0.10	0.10	6234852	<0.10	0.10	6236551	<0.10	0.10	6234145
Total Sodium (Na)	ug/L	14000	100	6234852	24000	100	6236551	15000	100	6234145
Total Strontium (Sr)	ug/L	47	2.0	6234852	270	2.0	6236551	110	2.0	6234145
Total Thallium (Tl)	ug/L	<0.10	0.10	6234852	<0.10	0.10	6236551	<0.10	0.10	6234145
Total Tin (Sn)	ug/L	<2.0	2.0	6234852	<2.0	2.0	6236551	<2.0	2.0	6234145
Total Titanium (Ti)	ug/L	<2.0	2.0	6234852	<2.0	2.0	6236551	70	2.0	6234145
Total Uranium (U)	ug/L	<0.10	0.10	6234852	<0.10	0.10	6236551	1.7	0.10	6234145
Total Vanadium (V)	ug/L	<2.0	2.0	6234852	<2.0	2.0	6236551	7.0	2.0	6234145
Total Zinc (Zn)	ug/L	<5.0	5.0	6234852	<5.0	5.0	6236551	18	5.0	6234145
RDL = Reportable Detection Limit										
QC Batch = Quality Control Batch										

**ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)**

BV Labs ID		KGZ884		KGZ885		
Sampling Date		2019/07/15 16:00		2019/07/15 17:30		
COC Number		725293-02-01		725293-02-01		
	UNITS	SWA	RDL	SW19B	RDL	QC Batch
Calculated Parameters						
Anion Sum	me/L	2.54	N/A	1.88	N/A	6231750
Bicarb. Alkalinity (calc. as CaCO ₃)	mg/L	58	1.0	35	1.0	6231745
Calculated TDS	mg/L	150	1.0	120	1.0	6231757
Carb. Alkalinity (calc. as CaCO ₃)	mg/L	<1.0	1.0	<1.0	1.0	6231745
Cation Sum	me/L	2.53	N/A	2.04	N/A	6231750
Hardness (CaCO ₃)	mg/L	91	1.0	32	1.0	6231746
Ion Balance (% Difference)	%	0.200	N/A	4.08	N/A	6231748
Langelier Index (@ 20C)	N/A	-0.377	N/A	-1.98	N/A	6231754
Langelier Index (@ 4C)	N/A	-0.627	N/A	-2.23	N/A	6231755
Nitrate (N)	mg/L	2.4	0.25	<0.050	0.050	6231752
Saturation pH (@ 20C)	N/A	8.12	N/A	8.85	N/A	6231754
Saturation pH (@ 4C)	N/A	8.37	N/A	9.10	N/A	6231755
Inorganics						
Total Alkalinity (Total as CaCO ₃)	mg/L	58	5.0	35	5.0	6239802
Dissolved Chloride (Cl ⁻)	mg/L	28	1.0	39	1.0	6239813
Colour	TCU	17	5.0	430	100	6239817
Nitrate + Nitrite (N)	mg/L	2.5	0.25	<0.050	0.050	6239819
Nitrite (N)	mg/L	0.057	0.010	<0.010	0.010	6239821
Nitrogen (Ammonia Nitrogen)	mg/L	<0.050	0.050	0.12	0.050	6236999
Total Organic Carbon (C)	mg/L	3.5	0.50	26	0.50	6239845
Orthophosphate (P)	mg/L	0.031	0.010	0.026	0.010	6239818
pH	pH	7.74	N/A	6.88	N/A	6237261
Reactive Silica (SiO ₂)	mg/L	8.1	0.50	7.2	0.50	6239816
Dissolved Sulphate (SO ₄)	mg/L	20	2.0	4.2	2.0	6239815
Turbidity	NTU	7.9	0.10	14	0.10	6239666
Conductivity	uS/cm	250	1.0	190	1.0	6237362
Metals						
Total Aluminum (Al)	ug/L	240	5.0	290	5.0	6236551
Total Antimony (Sb)	ug/L	<1.0	1.0	<1.0	1.0	6236551
Total Arsenic (As)	ug/L	1.3	1.0	<1.0	1.0	6236551
Total Barium (Ba)	ug/L	32	1.0	170	1.0	6236551
Total Beryllium (Be)	ug/L	<1.0	1.0	<1.0	1.0	6236551
Total Bismuth (Bi)	ug/L	<2.0	2.0	<2.0	2.0	6236551
Total Boron (B)	ug/L	<50	50	<50	50	6236551
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable						



BUREAU
VERITAS

BV Labs Job #: B9J5732
Report Date: 2019/07/23

Stantec Consulting Ltd
Client Project #: 121414186

ATLANTIC RCAP-MS TOTAL METALS IN WATER (WATER)

BV Labs ID		KGZ884		KGZ885		
Sampling Date		2019/07/15 16:00		2019/07/15 17:30		
COC Number		725293-02-01		725293-02-01		
	UNITS	SWA	RDL	SW19B	RDL	QC Batch
Total Cadmium (Cd)	ug/L	<0.010	0.010	0.038	0.010	6236551
Total Calcium (Ca)	ug/L	31000	100	9100	100	6236551
Total Chromium (Cr)	ug/L	1.5	1.0	1.2	1.0	6236551
Total Cobalt (Co)	ug/L	<0.40	0.40	1.2	0.40	6236551
Total Copper (Cu)	ug/L	0.73	0.50	1.2	0.50	6236551
Total Iron (Fe)	ug/L	690	50	7300	50	6236551
Total Lead (Pb)	ug/L	<0.50	0.50	0.65	0.50	6236551
Total Magnesium (Mg)	ug/L	3500	100	2100	100	6236551
Total Manganese (Mn)	ug/L	120	2.0	5400	2.0	6236551
Total Molybdenum (Mo)	ug/L	<2.0	2.0	<2.0	2.0	6236551
Total Nickel (Ni)	ug/L	<2.0	2.0	<2.0	2.0	6236551
Total Phosphorus (P)	ug/L	140	100	<100	100	6236551
Total Potassium (K)	ug/L	2200	100	1500	100	6236551
Total Selenium (Se)	ug/L	<1.0	1.0	<1.0	1.0	6236551
Total Silver (Ag)	ug/L	<0.10	0.10	<0.10	0.10	6236551
Total Sodium (Na)	ug/L	14000	100	25000	100	6236551
Total Strontium (Sr)	ug/L	110	2.0	34	2.0	6236551
Total Thallium (Tl)	ug/L	<0.10	0.10	<0.10	0.10	6236551
Total Tin (Sn)	ug/L	<2.0	2.0	<2.0	2.0	6236551
Total Titanium (Ti)	ug/L	6.6	2.0	3.1	2.0	6236551
Total Uranium (U)	ug/L	0.96	0.10	<0.10	0.10	6236551
Total Vanadium (V)	ug/L	<2.0	2.0	<2.0	2.0	6236551
Total Zinc (Zn)	ug/L	<5.0	5.0	7.9	5.0	6236551
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						



AT. RCAP-MS DISSOLVED (FIELDFILT) IN W

BV Labs ID		KGZ868			KGZ869	KGZ869		KGZ870		
Sampling Date		2019/07/15 08:30			2019/07/15 14:43	2019/07/15 14:43		2019/07/15 14:47		
COC Number		725293-01-01			725293-01-01	725293-01-01		725293-01-01		
	UNITS	MW-4A	RDL	QC Batch	MW-22A	MW-22A Lab-Dup	RDL	MW-22B	RDL	QC Batch

Calculated Parameters

Anion Sum	me/L	10.2	N/A	6231750	7.71	N/A	N/A	15.8	N/A	6231750
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	460	1.0	6231745	360	N/A	1.0	600	1.0	6231745
Calculated TDS	mg/L	510	1.0	6231757	440	N/A	1.0	850	1.0	6231757
Carb. Alkalinity (calc. as CaCO3)	mg/L	<1.0	1.0	6231745	<1.0	N/A	1.0	1.4	1.0	6231745
Cation Sum	me/L	8.68	N/A	6231750	8.69	N/A	N/A	16.7	N/A	6231750
Hardness (CaCO3)	mg/L	210	1.0	6231746	220	N/A	1.0	650	1.0	6231746
Ion Balance (% Difference)	%	8.10	N/A	6231748	5.98	N/A	N/A	2.71	N/A	6231748
Langelier Index (@ 20C)	N/A	0.0780	N/A	6231754	-0.486	N/A	N/A	0.988	N/A	6231754
Langelier Index (@ 4C)	N/A	-0.169	N/A	6231755	-0.735	N/A	N/A	0.742	N/A	6231755
Nitrate (N)	mg/L	0.61	0.050	6231752	<0.050	N/A	0.050	0.055	0.050	6231752
Saturation pH (@ 20C)	N/A	7.00	N/A	6231754	7.08	N/A	N/A	6.41	N/A	6231754
Saturation pH (@ 4C)	N/A	7.25	N/A	6231755	7.33	N/A	N/A	6.66	N/A	6231755

Inorganics

Total Alkalinity (Total as CaCO3)	mg/L	460	25	6239781	360	N/A	25	610	50	6239781
Dissolved Chloride (Cl-)	mg/L	31	1.0	6239785	19	N/A	1.0	130	5.0	6239785
Colour	TCU	9.8	5.0	6239790	67	N/A	25	8.3	5.0	6239790
Nitrate + Nitrite (N)	mg/L	0.64	0.050	6239793	<0.050	N/A	0.050	0.055	0.050	6239793
Nitrite (N)	mg/L	0.026	0.010	6239795	<0.010	N/A	0.010	<0.010	0.010	6239795
Nitrogen (Ammonia Nitrogen)	mg/L	32	2.0	6237035	15	15	0.75	1.3	0.050	6237035
Total Organic Carbon (C)	mg/L	<50 (1)	50	6239845	6.5 (1)	N/A	5.0	14 (1)	5.0	6239845
Orthophosphate (P)	mg/L	<0.010	0.010	6239789	<0.010	N/A	0.010	<0.010	0.010	6239789
pH	pH	7.08	N/A	6237261	6.59	N/A	N/A	7.40	N/A	6237261
Reactive Silica (SiO2)	mg/L	23	1.0	6239787	17	N/A	0.50	20	0.50	6239787
Dissolved Sulphate (SO4)	mg/L	<2.0	2.0	6239786	<2.0	N/A	2.0	<2.0	2.0	6239786
Turbidity	NTU	>1000	1.0	6239666	610	N/A	1.0	310	1.0	6239666
Conductivity	uS/cm	930	1.0	6237362	680	N/A	1.0	1500	1.0	6237362

Metals

Dissolved Aluminum (Al)	ug/L	17	5.0	6235248	<5.0	<5.0	5.0	<5.0	5.0	6236798
Dissolved Antimony (Sb)	ug/L	<1.0	1.0	6235248	<1.0	<1.0	1.0	<1.0	1.0	6236798
Dissolved Arsenic (As)	ug/L	28	1.0	6235248	67	66	1.0	9.9	1.0	6236798
Dissolved Barium (Ba)	ug/L	1500	1.0	6235248	880	880	1.0	620	1.0	6236798
Dissolved Beryllium (Be)	ug/L	<1.0	1.0	6235248	<1.0	<1.0	1.0	<1.0	1.0	6236798
Dissolved Bismuth (Bi)	ug/L	<2.0	2.0	6235248	<2.0	<2.0	2.0	<2.0	2.0	6236798

RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch
 Lab-Dup = Laboratory Initiated Duplicate
 N/A = Not Applicable
 (1) Elevated reporting limit due to turbidity.



BUREAU
VERITAS

BV Labs Job #: B9J5732
Report Date: 2019/07/23

Stantec Consulting Ltd
Client Project #: 121414186

AT. RCAP-MS DISSOLVED (FIELDFILT) IN W

BV Labs ID		KGZ868				KGZ869		KGZ869			KGZ870		
Sampling Date		2019/07/15 08:30				2019/07/15 14:43		2019/07/15 14:43			2019/07/15 14:47		
COC Number		725293-01-01				725293-01-01		725293-01-01			725293-01-01		
	UNITS	MW-4A	RDL	QC Batch	MW-22A	MW-22A Lab-Dup	RDL	MW-22B	RDL	QC Batch			
Dissolved Boron (B)	ug/L	240	50	6235248	220	220	50	450	50	6236798			
Dissolved Cadmium (Cd)	ug/L	0.011	0.010	6235248	<0.010	<0.010	0.010	0.16	0.010	6236798			
Dissolved Calcium (Ca)	ug/L	64000	100	6235248	66000	67000	100	220000	100	6236798			
Dissolved Chromium (Cr)	ug/L	2.2	1.0	6235248	1.0	1.0	1.0	1.4	1.0	6236798			
Dissolved Cobalt (Co)	ug/L	7.8	0.40	6235248	18	17	0.40	9.7	0.40	6236798			
Dissolved Copper (Cu)	ug/L	0.68	0.50	6235248	<0.50	<0.50	0.50	<0.50	0.50	6236798			
Dissolved Iron (Fe)	ug/L	9700	50	6235248	47000	47000	50	5200	50	6236798			
Dissolved Lead (Pb)	ug/L	<0.50	0.50	6235248	<0.50	<0.50	0.50	<0.50	0.50	6236798			
Dissolved Magnesium (Mg)	ug/L	13000	100	6235248	13000	13000	100	27000	100	6236798			
Dissolved Manganese (Mn)	ug/L	1200	2.0	6235248	3600	3600	2.0	3500	2.0	6236798			
Dissolved Molybdenum (Mo)	ug/L	<2.0	2.0	6235248	<2.0	<2.0	2.0	<2.0	2.0	6236798			
Dissolved Nickel (Ni)	ug/L	13	2.0	6235248	12	11	2.0	23	2.0	6236798			
Dissolved Phosphorus (P)	ug/L	<100	100	6235248	300	310	100	<100	100	6236798			
Dissolved Potassium (K)	ug/L	24000	100	6235248	16000	16000	100	8300	100	6236798			
Dissolved Selenium (Se)	ug/L	<1.0	1.0	6235248	<1.0	<1.0	1.0	<1.0	1.0	6236798			
Dissolved Silver (Ag)	ug/L	<0.10	0.10	6235248	<0.10	<0.10	0.10	<0.10	0.10	6236798			
Dissolved Sodium (Na)	ug/L	27000	100	6235248	25000	25000	100	71000	100	6236798			
Dissolved Strontium (Sr)	ug/L	410	2.0	6235248	340	340	2.0	2000	2.0	6236798			
Dissolved Thallium (Tl)	ug/L	<0.10	0.10	6235248	<0.10	<0.10	0.10	<0.10	0.10	6236798			
Dissolved Tin (Sn)	ug/L	<2.0	2.0	6235248	<2.0	<2.0	2.0	<2.0	2.0	6236798			
Dissolved Titanium (Ti)	ug/L	<2.0	2.0	6235248	<2.0	<2.0	2.0	<2.0	2.0	6236798			
Dissolved Uranium (U)	ug/L	0.16	0.10	6235248	<0.10	<0.10	0.10	11	0.10	6236798			
Dissolved Vanadium (V)	ug/L	<2.0	2.0	6235248	<2.0	<2.0	2.0	<2.0	2.0	6236798			
Dissolved Zinc (Zn)	ug/L	27	5.0	6235248	5.5	6.9	5.0	7.5	5.0	6236798			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate



BUREAU
VERITAS

BV Labs Job #: B9J5732
Report Date: 2019/07/23

Stantec Consulting Ltd
Client Project #: 121414186

AT. RCAP-MS DISSOLVED (FIELDFILT) IN W

BV Labs ID		KGZ871		KGZ872			KGZ873	KGZ873		
Sampling Date		2019/07/15 14:55		2019/07/15 14:00			2019/07/15 12:02	2019/07/15 12:02		
COC Number		725293-01-01		725293-01-01			725293-01-01	725293-01-01		
	UNITS	MW-22C	QC Batch	MW-25B	RDL	QC Batch	MW-40D	MW-40D Lab-Dup	RDL	QC Batch

Calculated Parameters

Anion Sum	me/L	4.96	6231750	6.38	N/A	6231750	0.590	N/A	N/A	6231750
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	180	6231745	220	1.0	6231745	19	N/A	1.0	6231745
Calculated TDS	mg/L	260	6231757	320	1.0	6231757	42	N/A	1.0	6231757
Carb. Alkalinity (calc. as CaCO3)	mg/L	1.4	6231745	1.0	1.0	6231745	<1.0	N/A	1.0	6231745
Cation Sum	me/L	4.67	6231750	5.50	N/A	6231750	0.710	N/A	N/A	6231750
Hardness (CaCO3)	mg/L	200	6231746	240	1.0	6231746	22	N/A	1.0	6231746
Ion Balance (% Difference)	%	3.01	6231748	7.41	N/A	6231748	9.23	N/A	N/A	6231748
Langelier Index (@ 20C)	N/A	0.566	6231754	0.508	N/A	6231754	-2.79	N/A	N/A	6231754
Langelier Index (@ 4C)	N/A	0.317	6231755	0.259	N/A	6231755	-3.04	N/A	N/A	6231755
Nitrate (N)	mg/L	<0.050	6231752	0.050	0.050	6231752	<0.050	N/A	0.050	6231752
Saturation pH (@ 20C)	N/A	7.34	6231754	7.20	N/A	6231754	9.18	N/A	N/A	6231754
Saturation pH (@ 4C)	N/A	7.59	6231755	7.45	N/A	6231755	9.44	N/A	N/A	6231755

Inorganics

Total Alkalinity (Total as CaCO3)	mg/L	180	6239781	220	25	6239781	19	19	5.0	6239802
Dissolved Chloride (Cl-)	mg/L	45	6239785	72	1.0	6239785	5.6	4.4	1.0	6239813
Colour	TCU	<5.0	6239790	<5.0	5.0	6239790	12	13	5.0	6239817
Nitrate + Nitrite (N)	mg/L	<0.050	6239793	0.050	0.050	6239793	<0.050	<0.050	0.050	6239819
Nitrite (N)	mg/L	<0.010	6239795	<0.010	0.010	6239795	<0.010	<0.010	0.010	6239821
Nitrogen (Ammonia Nitrogen)	mg/L	<0.050	6236999	<0.050	0.050	6237035	<0.050	N/A	0.050	6236999
Total Organic Carbon (C)	mg/L	2.1	6234587	3.8	0.50	6239845	<50 (1)	<50 (1)	50	6239845
Orthophosphate (P)	mg/L	<0.010	6239789	<0.010	0.010	6239789	0.053	0.052	0.010	6239818
pH	pH	7.91	6237261	7.71	N/A	6237261	6.39	N/A	N/A	6237261
Reactive Silica (SiO2)	mg/L	11	6239787	13	0.50	6239787	6.8	6.7	0.50	6239816
Dissolved Sulphate (SO4)	mg/L	<2.0	6239786	<2.0	2.0	6239786	2.3	4.4	2.0	6239815
Turbidity	NTU	1.0	6239666	31	0.10	6239666	>1000	N/A	1.0	6239665
Conductivity	uS/cm	460	6237362	620	1.0	6237362	62	N/A	1.0	6237362

Metals

Dissolved Aluminum (Al)	ug/L	<5.0	6236798	<5.0	5.0	6236798	100	N/A	5.0	6236798
Dissolved Antimony (Sb)	ug/L	<1.0	6236798	<1.0	1.0	6236798	<1.0	N/A	1.0	6236798
Dissolved Arsenic (As)	ug/L	1.4	6236798	2.2	1.0	6236798	<1.0	N/A	1.0	6236798
Dissolved Barium (Ba)	ug/L	8.7	6236798	7.6	1.0	6236798	20	N/A	1.0	6236798
Dissolved Beryllium (Be)	ug/L	<1.0	6236798	<1.0	1.0	6236798	<1.0	N/A	1.0	6236798
Dissolved Bismuth (Bi)	ug/L	<2.0	6236798	<2.0	2.0	6236798	<2.0	N/A	2.0	6236798

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) Elevated reporting limit due to turbidity.



BUREAU
VERITAS

BV Labs Job #: B9J5732
Report Date: 2019/07/23

Stantec Consulting Ltd
Client Project #: 121414186

AT. RCAP-MS DISSOLVED (FIELDFILT) IN W

BV Labs ID		KGZ871		KGZ872			KGZ873	KGZ873		
Sampling Date		2019/07/15 14:55		2019/07/15 14:00			2019/07/15 12:02	2019/07/15 12:02		
COC Number		725293-01-01		725293-01-01			725293-01-01	725293-01-01		
	UNITS	MW-22C	QC Batch	MW-25B	RDL	QC Batch	MW-40D	MW-40D Lab-Dup	RDL	QC Batch
Dissolved Boron (B)	ug/L	<50	6236798	61	50	6236798	<50	N/A	50	6236798
Dissolved Cadmium (Cd)	ug/L	<0.010	6236798	0.023	0.010	6236798	0.029	N/A	0.010	6236798
Dissolved Calcium (Ca)	ug/L	63000	6236798	77000	100	6236798	6900	N/A	100	6236798
Dissolved Chromium (Cr)	ug/L	<1.0	6236798	1.1	1.0	6236798	1.2	N/A	1.0	6236798
Dissolved Cobalt (Co)	ug/L	<0.40	6236798	<0.40	0.40	6236798	0.90	N/A	0.40	6236798
Dissolved Copper (Cu)	ug/L	<0.50	6236798	<0.50	0.50	6236798	1.2	N/A	0.50	6236798
Dissolved Iron (Fe)	ug/L	200	6236798	<50	50	6236798	130	N/A	50	6236798
Dissolved Lead (Pb)	ug/L	<0.50	6236798	<0.50	0.50	6236798	<0.50	N/A	0.50	6236798
Dissolved Magnesium (Mg)	ug/L	9900	6236798	11000	100	6236798	1000	N/A	100	6236798
Dissolved Manganese (Mn)	ug/L	56	6236798	17	2.0	6236798	64	N/A	2.0	6236798
Dissolved Molybdenum (Mo)	ug/L	<2.0	6236798	<2.0	2.0	6236798	<2.0	N/A	2.0	6236798
Dissolved Nickel (Ni)	ug/L	<2.0	6236798	4.8	2.0	6236798	2.6	N/A	2.0	6236798
Dissolved Phosphorus (P)	ug/L	<100	6236798	<100	100	6236798	190	N/A	100	6236798
Dissolved Potassium (K)	ug/L	6600	6236798	6600	100	6236798	3900	N/A	100	6236798
Dissolved Selenium (Se)	ug/L	<1.0	6236798	<1.0	1.0	6236798	<1.0	N/A	1.0	6236798
Dissolved Silver (Ag)	ug/L	<0.10	6236798	<0.10	0.10	6236798	<0.10	N/A	0.10	6236798
Dissolved Sodium (Na)	ug/L	12000	6236798	13000	100	6236798	4000	N/A	100	6236798
Dissolved Strontium (Sr)	ug/L	900	6236798	990	2.0	6236798	31	N/A	2.0	6236798
Dissolved Thallium (Tl)	ug/L	<0.10	6236798	<0.10	0.10	6236798	<0.10	N/A	0.10	6236798
Dissolved Tin (Sn)	ug/L	<2.0	6236798	<2.0	2.0	6236798	<2.0	N/A	2.0	6236798
Dissolved Titanium (Ti)	ug/L	<2.0	6236798	<2.0	2.0	6236798	<2.0	N/A	2.0	6236798
Dissolved Uranium (U)	ug/L	34	6236798	12	0.10	6236798	0.22	N/A	0.10	6236798
Dissolved Vanadium (V)	ug/L	<2.0	6236798	<2.0	2.0	6236798	<2.0	N/A	2.0	6236798
Dissolved Zinc (Zn)	ug/L	<5.0	6236798	<5.0	5.0	6236798	<5.0	N/A	5.0	6236798

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable



BUREAU
VERITAS

BV Labs Job #: B9J5732
Report Date: 2019/07/23

Stantec Consulting Ltd
Client Project #: 121414186

AT. RCAP-MS DISSOLVED (FIELDFILT) IN W

BV Labs ID		KGZ874		KGZ875			KGZ876		
Sampling Date		2019/07/15 09:32		2019/07/15 17:00			2019/07/15 17:15		
COC Number		725293-01-01		725293-01-01			725293-01-01		
	UNITS	TH-1	RDL	MW-23A	RDL	QC Batch	MW-23B	RDL	QC Batch

Calculated Parameters

Anion Sum	me/L	10.2	N/A	2.79	N/A	6231750	2.95	N/A	6231750
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	480	1.0	51	1.0	6231745	73	1.0	6231745
Calculated TDS	mg/L	550	1.0	160	1.0	6231757	180	1.0	6231757
Carb. Alkalinity (calc. as CaCO3)	mg/L	<1.0	1.0	<1.0	1.0	6231745	<1.0	1.0	6231745
Cation Sum	me/L	10.1	N/A	2.52	N/A	6231750	2.81	N/A	6231750
Hardness (CaCO3)	mg/L	250	1.0	45	1.0	6231746	79	1.0	6231746
Ion Balance (% Difference)	%	0.390	N/A	5.08	N/A	6231748	2.43	N/A	6231748
Langelier Index (@ 20C)	N/A	0.406	N/A	-1.54	N/A	6231754	-1.13	N/A	6231754
Langelier Index (@ 4C)	N/A	0.159	N/A	-1.79	N/A	6231755	-1.38	N/A	6231755
Nitrate (N)	mg/L	<0.050	0.050	<0.050	0.050	6231752	<0.050	0.050	6231752
Saturation pH (@ 20C)	N/A	6.90	N/A	8.51	N/A	6231754	8.10	N/A	6231754
Saturation pH (@ 4C)	N/A	7.15	N/A	8.76	N/A	6231755	8.35	N/A	6231755

Inorganics

Total Alkalinity (Total as CaCO3)	mg/L	480	50	51	5.0	6239781	73	5.0	6239781
Dissolved Chloride (Cl-)	mg/L	19	1.0	57	1.0	6239785	44	1.0	6239785
Colour	TCU	6.8	5.0	<5.0	5.0	6239790	15	5.0	6239790
Nitrate + Nitrite (N)	mg/L	0.059	0.050	<0.050	0.050	6239793	0.071	0.050	6239793
Nitrite (N)	mg/L	0.014	0.010	<0.010	0.010	6239795	0.047	0.010	6239795
Nitrogen (Ammonia Nitrogen)	mg/L	28	1.5	<0.050	0.050	6236999	0.49	0.050	6237035
Total Organic Carbon (C)	mg/L	7.8 (1)	5.0	<50 (1)	50	6239845	5.5 (1)	5.0	6234587
Orthophosphate (P)	mg/L	<0.010	0.010	0.046	0.010	6239789	<0.010	0.010	6239789
pH	pH	7.30	N/A	6.98	N/A	6237261	6.97	N/A	6237261
Reactive Silica (SiO2)	mg/L	30	1.0	13	0.50	6239787	13	0.50	6239787
Dissolved Sulphate (SO4)	mg/L	<2.0	2.0	7.9	2.0	6239786	12	2.0	6239786
Turbidity	NTU	320	1.0	860	1.0	6239666	760	1.0	6239666
Conductivity	uS/cm	940	1.0	290	1.0	6237362	300	1.0	6237362

Metals

Dissolved Aluminum (Al)	ug/L	<5.0	5.0	12	5.0	6236798	<5.0	5.0	6236798
Dissolved Antimony (Sb)	ug/L	<1.0	1.0	<1.0	1.0	6236798	<1.0	1.0	6236798
Dissolved Arsenic (As)	ug/L	23	1.0	<1.0	1.0	6236798	6.7	1.0	6236798
Dissolved Barium (Ba)	ug/L	870	1.0	60	1.0	6236798	190	1.0	6236798
Dissolved Beryllium (Be)	ug/L	<1.0	1.0	<1.0	1.0	6236798	<1.0	1.0	6236798
Dissolved Bismuth (Bi)	ug/L	<2.0	2.0	<2.0	2.0	6236798	<2.0	2.0	6236798
Dissolved Boron (B)	ug/L	180	50	<50	50	6236798	<50	50	6236798

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Elevated reporting limit due to turbidity.



AT. RCAP-MS DISSOLVED (FIELDFILT) IN W

BV Labs ID		KGZ874		KGZ875			KGZ876		
Sampling Date		2019/07/15 09:32		2019/07/15 17:00			2019/07/15 17:15		
COC Number		725293-01-01		725293-01-01			725293-01-01		
	UNITS	TH-1	RDL	MW-23A	RDL	QC Batch	MW-23B	RDL	QC Batch
Dissolved Cadmium (Cd)	ug/L	<0.010	0.010	0.059	0.010	6236798	0.072	0.010	6236798
Dissolved Calcium (Ca)	ug/L	79000	100	14000	100	6236798	26000	100	6236798
Dissolved Chromium (Cr)	ug/L	<1.0	1.0	<1.0	1.0	6236798	<1.0	1.0	6236798
Dissolved Cobalt (Co)	ug/L	4.0	0.40	<0.40	0.40	6236798	2.7	0.40	6236798
Dissolved Copper (Cu)	ug/L	<0.50	0.50	<0.50	0.50	6236798	<0.50	0.50	6236798
Dissolved Iron (Fe)	ug/L	12000	50	<50	50	6236798	4300	50	6236798
Dissolved Lead (Pb)	ug/L	<0.50	0.50	<0.50	0.50	6236798	<0.50	0.50	6236798
Dissolved Magnesium (Mg)	ug/L	14000	100	2500	100	6236798	3700	100	6236798
Dissolved Manganese (Mn)	ug/L	1000	2.0	500	2.0	6236798	2900	2.0	6236798
Dissolved Molybdenum (Mo)	ug/L	<2.0	2.0	<2.0	2.0	6236798	<2.0	2.0	6236798
Dissolved Nickel (Ni)	ug/L	4.1	2.0	<2.0	2.0	6236798	2.5	2.0	6236798
Dissolved Phosphorus (P)	ug/L	110	100	<100	100	6236798	<100	100	6236798
Dissolved Potassium (K)	ug/L	28000	100	1200	100	6236798	2500	100	6236798
Dissolved Selenium (Se)	ug/L	<1.0	1.0	<1.0	1.0	6236798	<1.0	1.0	6236798
Dissolved Silver (Ag)	ug/L	<0.10	0.10	<0.10	0.10	6236798	<0.10	0.10	6236798
Dissolved Sodium (Na)	ug/L	43000	100	36000	100	6236798	22000	100	6236798
Dissolved Strontium (Sr)	ug/L	360	2.0	20	2.0	6236798	52	2.0	6236798
Dissolved Thallium (Tl)	ug/L	<0.10	0.10	<0.10	0.10	6236798	<0.10	0.10	6236798
Dissolved Tin (Sn)	ug/L	<2.0	2.0	<2.0	2.0	6236798	<2.0	2.0	6236798
Dissolved Titanium (Ti)	ug/L	<2.0	2.0	<2.0	2.0	6236798	<2.0	2.0	6236798
Dissolved Uranium (U)	ug/L	<0.10	0.10	<0.10	0.10	6236798	<0.10	0.10	6236798
Dissolved Vanadium (V)	ug/L	<2.0	2.0	<2.0	2.0	6236798	<2.0	2.0	6236798
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	<5.0	5.0	6236798	<5.0	5.0	6236798
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									



AT. RCAP-MS DISSOLVED (FIELDFILT) IN W

BV Labs ID		KGZ877			KGZ878			KGZ879		
Sampling Date		2019/07/15 17:15			2019/07/15 13:20			2019/07/15 13:35		
COC Number		725293-01-01			725293-02-01			725293-02-01		
	UNITS	MW-23C	RDL	QC Batch	MW-29B	RDL	QC Batch	MW-29C	RDL	QC Batch

Calculated Parameters										
Anion Sum	me/L	1.38	N/A	6231750	2.42	N/A	6231750	1.51	N/A	6231750
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	59	1.0	6231745	96	1.0	6231745	44	1.0	6231745
Calculated TDS	mg/L	82	1.0	6231757	130	1.0	6231757	88	1.0	6231757
Carb. Alkalinity (calc. as CaCO3)	mg/L	<1.0	1.0	6231745	<1.0	1.0	6231745	<1.0	1.0	6231745
Cation Sum	me/L	1.28	N/A	6231750	2.17	N/A	6231750	1.31	N/A	6231750
Hardness (CaCO3)	mg/L	36	1.0	6231746	89	1.0	6231746	28	1.0	6231746
Ion Balance (% Difference)	%	3.76	N/A	6231748	5.45	N/A	6231748	7.09	N/A	6231748
Langelier Index (@ 20C)	N/A	-0.521	N/A	6231754	0.0520	N/A	6231754	-0.692	N/A	6231754
Langelier Index (@ 4C)	N/A	-0.772	N/A	6231755	-0.198	N/A	6231755	-0.943	N/A	6231755
Nitrate (N)	mg/L	0.24	0.050	6231752	0.061	0.050	6231752	0.24	0.050	6231752
Saturation pH (@ 20C)	N/A	8.47	N/A	6231754	7.90	N/A	6231754	8.72	N/A	6231754
Saturation pH (@ 4C)	N/A	8.72	N/A	6231755	8.15	N/A	6231755	8.97	N/A	6231755

Inorganics										
Total Alkalinity (Total as CaCO3)	mg/L	60	5.0	6239802	97	5.0	6239802	45	5.0	6239802
Dissolved Chloride (Cl-)	mg/L	2.7	1.0	6239813	14	1.0	6239813	16	1.0	6239813
Colour	TCU	<5.0	5.0	6239817	<5.0	5.0	6239817	<5.0	5.0	6239817
Nitrate + Nitrite (N)	mg/L	0.24	0.050	6239819	0.061	0.050	6239819	0.24	0.050	6239819
Nitrite (N)	mg/L	<0.010	0.010	6239821	<0.010	0.010	6239821	<0.010	0.010	6239821
Nitrogen (Ammonia Nitrogen)	mg/L	<0.050	0.050	6237035	<0.050	0.050	6236999	<0.050	0.050	6237035
Total Organic Carbon (C)	mg/L	<0.50	0.50	6234587	<50 (1)	50	6239845	<5.0 (1)	5.0	6239845
Orthophosphate (P)	mg/L	0.023	0.010	6239818	0.027	0.010	6239818	0.013	0.010	6239818
pH	pH	7.95	N/A	6237261	7.96	N/A	6237261	8.03	N/A	6237261
Reactive Silica (SiO2)	mg/L	11	0.50	6239816	9.8	0.50	6239816	7.6	0.50	6239816
Dissolved Sulphate (SO4)	mg/L	4.0	2.0	6239815	4.9	2.0	6239815	7.3	2.0	6239815
Turbidity	NTU	36	0.10	6239666	>1000	1.0	6239666	20	0.10	6239665
Conductivity	uS/cm	120	1.0	6237362	220	1.0	6237362	140	1.0	6237362

Metals										
Dissolved Aluminum (Al)	ug/L	<5.0	5.0	6236798	12	5.0	6236798	10	5.0	6236798
Dissolved Antimony (Sb)	ug/L	<1.0	1.0	6236798	<1.0	1.0	6236798	<1.0	1.0	6236798
Dissolved Arsenic (As)	ug/L	5.5	1.0	6236798	1.4	1.0	6236798	3.8	1.0	6236798
Dissolved Barium (Ba)	ug/L	52	1.0	6236798	13	1.0	6236798	3.3	1.0	6236798
Dissolved Beryllium (Be)	ug/L	<1.0	1.0	6236798	<1.0	1.0	6236798	<1.0	1.0	6236798
Dissolved Bismuth (Bi)	ug/L	<2.0	2.0	6236798	<2.0	2.0	6236798	<2.0	2.0	6236798
Dissolved Boron (B)	ug/L	<50	50	6236798	<50	50	6236798	<50	50	6236798

RDL = Reportable Detection Limit
 QC Batch = Quality Control Batch
 N/A = Not Applicable
 (1) Elevated reporting limit due to turbidity.



AT. RCAP-MS DISSOLVED (FIELDFILT) IN W

BV Labs ID		KGZ877			KGZ878			KGZ879		
Sampling Date		2019/07/15 17:15			2019/07/15 13:20			2019/07/15 13:35		
COC Number		725293-01-01			725293-02-01			725293-02-01		
	UNITS	MW-23C	RDL	QC Batch	MW-29B	RDL	QC Batch	MW-29C	RDL	QC Batch
Dissolved Cadmium (Cd)	ug/L	0.075	0.010	6236798	0.015	0.010	6236798	0.011	0.010	6236798
Dissolved Calcium (Ca)	ug/L	12000	100	6236798	30000	100	6236798	9200	100	6236798
Dissolved Chromium (Cr)	ug/L	2.8	1.0	6236798	1.1	1.0	6236798	<1.0	1.0	6236798
Dissolved Cobalt (Co)	ug/L	<0.40	0.40	6236798	<0.40	0.40	6236798	<0.40	0.40	6236798
Dissolved Copper (Cu)	ug/L	<0.50	0.50	6236798	<0.50	0.50	6236798	<0.50	0.50	6236798
Dissolved Iron (Fe)	ug/L	<50	50	6236798	<50	50	6236798	<50	50	6236798
Dissolved Lead (Pb)	ug/L	<0.50	0.50	6236798	<0.50	0.50	6236798	<0.50	0.50	6236798
Dissolved Magnesium (Mg)	ug/L	1200	100	6236798	3500	100	6236798	1200	100	6236798
Dissolved Manganese (Mn)	ug/L	<2.0	2.0	6236798	2.9	2.0	6236798	2.4	2.0	6236798
Dissolved Molybdenum (Mo)	ug/L	<2.0	2.0	6236798	<2.0	2.0	6236798	<2.0	2.0	6236798
Dissolved Nickel (Ni)	ug/L	<2.0	2.0	6236798	<2.0	2.0	6236798	<2.0	2.0	6236798
Dissolved Phosphorus (P)	ug/L	<100	100	6236798	<100	100	6236798	<100	100	6236798
Dissolved Potassium (K)	ug/L	2400	100	6236798	3300	100	6236798	3300	100	6236798
Dissolved Selenium (Se)	ug/L	<1.0	1.0	6236798	<1.0	1.0	6236798	<1.0	1.0	6236798
Dissolved Silver (Ag)	ug/L	<0.10	0.10	6236798	<0.10	0.10	6236798	<0.10	0.10	6236798
Dissolved Sodium (Na)	ug/L	11000	100	6236798	7100	100	6236798	15000	100	6236798
Dissolved Strontium (Sr)	ug/L	98	2.0	6236798	330	2.0	6236798	120	2.0	6236798
Dissolved Thallium (Tl)	ug/L	<0.10	0.10	6236798	<0.10	0.10	6236798	<0.10	0.10	6236798
Dissolved Tin (Sn)	ug/L	<2.0	2.0	6236798	<2.0	2.0	6236798	<2.0	2.0	6236798
Dissolved Titanium (Ti)	ug/L	<2.0	2.0	6236798	<2.0	2.0	6236798	<2.0	2.0	6236798
Dissolved Uranium (U)	ug/L	3.4	0.10	6236798	2.0	0.10	6236798	0.89	0.10	6236798
Dissolved Vanadium (V)	ug/L	3.6	2.0	6236798	<2.0	2.0	6236798	4.6	2.0	6236798
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	6236798	<5.0	5.0	6236798	<5.0	5.0	6236798
RDL = Reportable Detection Limit										
QC Batch = Quality Control Batch										

**AT. RCAP-MS DISSOLVED (FIELDFILT) IN W**

BV Labs ID		KGZ880	KGZ880		
Sampling Date		2019/07/15 12:05	2019/07/15 12:05		
COC Number		725293-02-01	725293-02-01		
	UNITS	MW-31A	MW-31A Lab-Dup	RDL	QC Batch
Calculated Parameters					
Anion Sum	me/L	0.780	N/A	N/A	6231750
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	25	N/A	1.0	6231745
Calculated TDS	mg/L	51	N/A	1.0	6231757
Carb. Alkalinity (calc. as CaCO3)	mg/L	<1.0	N/A	1.0	6231745
Cation Sum	me/L	0.790	N/A	N/A	6231750
Hardness (CaCO3)	mg/L	24	N/A	1.0	6231746
Ion Balance (% Difference)	%	0.640	N/A	N/A	6231748
Langelier Index (@ 20C)	N/A	-2.49	N/A	N/A	6231754
Langelier Index (@ 4C)	N/A	-2.75	N/A	N/A	6231755
Nitrate (N)	mg/L	<0.050	N/A	0.050	6231752
Saturation pH (@ 20C)	N/A	9.02	N/A	N/A	6231754
Saturation pH (@ 4C)	N/A	9.28	N/A	N/A	6231755
Inorganics					
Total Alkalinity (Total as CaCO3)	mg/L	25	N/A	5.0	6239802
Dissolved Chloride (Cl-)	mg/L	5.7	N/A	1.0	6239813
Colour	TCU	25	N/A	5.0	6239817
Nitrate + Nitrite (N)	mg/L	<0.050	N/A	0.050	6239819
Nitrite (N)	mg/L	<0.010	N/A	0.010	6239821
Nitrogen (Ammonia Nitrogen)	mg/L	<0.050	<0.050	0.050	6237054
Total Organic Carbon (C)	mg/L	<50 (1)	N/A	50	6239845
Orthophosphate (P)	mg/L	0.18	N/A	0.010	6239818
pH	pH	6.53	N/A	N/A	6237261
Reactive Silica (SiO2)	mg/L	6.6	N/A	0.50	6239816
Dissolved Sulphate (SO4)	mg/L	5.5	N/A	2.0	6239815
Turbidity	NTU	>1000	N/A	1.0	6239666
Conductivity	uS/cm	81	N/A	1.0	6237362
Metals					
Dissolved Aluminum (Al)	ug/L	110	N/A	5.0	6236798
Dissolved Antimony (Sb)	ug/L	<1.0	N/A	1.0	6236798
Dissolved Arsenic (As)	ug/L	1.1	N/A	1.0	6236798
Dissolved Barium (Ba)	ug/L	22	N/A	1.0	6236798
Dissolved Beryllium (Be)	ug/L	<1.0	N/A	1.0	6236798
Dissolved Bismuth (Bi)	ug/L	<2.0	N/A	2.0	6236798
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable (1) Elevated reporting limit due to turbidity.					



AT. RCAP-MS DISSOLVED (FIELDFILT) IN W

BV Labs ID		KGZ880	KGZ880		
Sampling Date		2019/07/15 12:05	2019/07/15 12:05		
COC Number		725293-02-01	725293-02-01		
	UNITS	MW-31A	MW-31A Lab-Dup	RDL	QC Batch
Dissolved Boron (B)	ug/L	<50	N/A	50	6236798
Dissolved Cadmium (Cd)	ug/L	0.034	N/A	0.010	6236798
Dissolved Calcium (Ca)	ug/L	7900	N/A	100	6236798
Dissolved Chromium (Cr)	ug/L	1.1	N/A	1.0	6236798
Dissolved Cobalt (Co)	ug/L	1.2	N/A	0.40	6236798
Dissolved Copper (Cu)	ug/L	1.2	N/A	0.50	6236798
Dissolved Iron (Fe)	ug/L	170	N/A	50	6236798
Dissolved Lead (Pb)	ug/L	<0.50	N/A	0.50	6236798
Dissolved Magnesium (Mg)	ug/L	1100	N/A	100	6236798
Dissolved Manganese (Mn)	ug/L	85	N/A	2.0	6236798
Dissolved Molybdenum (Mo)	ug/L	<2.0	N/A	2.0	6236798
Dissolved Nickel (Ni)	ug/L	3.3	N/A	2.0	6236798
Dissolved Phosphorus (P)	ug/L	230	N/A	100	6236798
Dissolved Potassium (K)	ug/L	4600	N/A	100	6236798
Dissolved Selenium (Se)	ug/L	<1.0	N/A	1.0	6236798
Dissolved Silver (Ag)	ug/L	<0.10	N/A	0.10	6236798
Dissolved Sodium (Na)	ug/L	4200	N/A	100	6236798
Dissolved Strontium (Sr)	ug/L	34	N/A	2.0	6236798
Dissolved Thallium (Tl)	ug/L	<0.10	N/A	0.10	6236798
Dissolved Tin (Sn)	ug/L	<2.0	N/A	2.0	6236798
Dissolved Titanium (Ti)	ug/L	<2.0	N/A	2.0	6236798
Dissolved Uranium (U)	ug/L	0.23	N/A	0.10	6236798
Dissolved Vanadium (V)	ug/L	<2.0	N/A	2.0	6236798
Dissolved Zinc (Zn)	ug/L	<5.0	N/A	5.0	6236798
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable					



BUREAU
VERITAS

BV Labs Job #: B9J5732
Report Date: 2019/07/23

Stantec Consulting Ltd
Client Project #: 121414186

TEST SUMMARY

BV Labs ID: KGZ868
Sample ID: MW-4A
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbonate, Bicarbonate and Hydroxide	CALC	6231745	N/A	2019/07/22	Automated Statchk
Alkalinity	KONE	6239781	N/A	2019/07/22	Sarah Mitchell
Chloride	KONE	6239785	N/A	2019/07/22	Sarah Mitchell
Colour	KONE	6239790	N/A	2019/07/22	Sarah Mitchell
Conductance - water	AT	6237362	N/A	2019/07/22	Emily Matheson
Hardness (calculated as CaCO3)		6231746	N/A	2019/07/19	Automated Statchk
Metals Water Diss. MS (as rec'd)	CICP/MS	6235248	N/A	2019/07/19	Bryon Angevine
Ion Balance (% Difference)	CALC	6231748	N/A	2019/07/23	Automated Statchk
Anion and Cation Sum	CALC	6231750	N/A	2019/07/23	Automated Statchk
Nitrogen Ammonia - water	KONE	6237035	N/A	2019/07/23	Mary Clancey
Nitrogen - Nitrate + Nitrite	KONE	6239793	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrite	KONE	6239795	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrate (as N)	CALC	6231752	N/A	2019/07/23	Automated Statchk
pH	AT	6237261	N/A	2019/07/22	Emily Matheson
Phosphorus - ortho	KONE	6239789	N/A	2019/07/22	Sarah Mitchell
Sat. pH and Langelier Index (@ 20C)	CALC	6231754	N/A	2019/07/23	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	6231755	N/A	2019/07/23	Automated Statchk
Reactive Silica	KONE	6239787	N/A	2019/07/22	Sarah Mitchell
Sulphate	KONE	6239786	N/A	2019/07/22	Sarah Mitchell
Total Dissolved Solids (TDS calc)	CALC	6231757	N/A	2019/07/23	Automated Statchk
Organic carbon - Total (TOC)	TOCV/NDIR	6239845	N/A	2019/07/22	Kevin MacDonald
Turbidity	TURB	6239666	N/A	2019/07/22	Emily Matheson

BV Labs ID: KGZ869
Sample ID: MW-22A
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbonate, Bicarbonate and Hydroxide	CALC	6231745	N/A	2019/07/22	Automated Statchk
Alkalinity	KONE	6239781	N/A	2019/07/22	Sarah Mitchell
Chloride	KONE	6239785	N/A	2019/07/22	Sarah Mitchell
Colour	KONE	6239790	N/A	2019/07/22	Sarah Mitchell
Conductance - water	AT	6237362	N/A	2019/07/22	Emily Matheson
Hardness (calculated as CaCO3)		6231746	N/A	2019/07/22	Automated Statchk
Metals Water Diss. MS (as rec'd)	CICP/MS	6236798	N/A	2019/07/19	Mike Leblanc
Ion Balance (% Difference)	CALC	6231748	N/A	2019/07/23	Automated Statchk
Anion and Cation Sum	CALC	6231750	N/A	2019/07/23	Automated Statchk
Nitrogen Ammonia - water	KONE	6237035	N/A	2019/07/23	Mary Clancey
Nitrogen - Nitrate + Nitrite	KONE	6239793	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrite	KONE	6239795	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrate (as N)	CALC	6231752	N/A	2019/07/23	Automated Statchk
pH	AT	6237261	N/A	2019/07/22	Emily Matheson
Phosphorus - ortho	KONE	6239789	N/A	2019/07/22	Sarah Mitchell
Sat. pH and Langelier Index (@ 20C)	CALC	6231754	N/A	2019/07/23	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	6231755	N/A	2019/07/23	Automated Statchk
Reactive Silica	KONE	6239787	N/A	2019/07/22	Sarah Mitchell
Sulphate	KONE	6239786	N/A	2019/07/22	Sarah Mitchell



BUREAU
VERITAS

BV Labs Job #: B9J5732
Report Date: 2019/07/23

Stantec Consulting Ltd
Client Project #: 121414186

TEST SUMMARY

BV Labs ID: KGZ869
Sample ID: MW-22A
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Dissolved Solids (TDS calc)	CALC	6231757	N/A	2019/07/23	Automated Statchk
Organic carbon - Total (TOC)	TOCV/NDIR	6239845	N/A	2019/07/22	Kevin MacDonald
Turbidity	TURB	6239666	N/A	2019/07/22	Emily Matheson

BV Labs ID: KGZ869 Dup
Sample ID: MW-22A
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals Water Diss. MS (as rec'd)	CICP/MS	6236798	N/A	2019/07/19	Mike Leblanc
Nitrogen Ammonia - water	KONE	6237035	N/A	2019/07/23	Mary Clancey

BV Labs ID: KGZ870
Sample ID: MW-22B
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbonate, Bicarbonate and Hydroxide	CALC	6231745	N/A	2019/07/22	Automated Statchk
Alkalinity	KONE	6239781	N/A	2019/07/23	Sarah Mitchell
Chloride	KONE	6239785	N/A	2019/07/22	Sarah Mitchell
Colour	KONE	6239790	N/A	2019/07/22	Sarah Mitchell
Conductance - water	AT	6237362	N/A	2019/07/22	Emily Matheson
Hardness (calculated as CaCO3)		6231746	N/A	2019/07/22	Automated Statchk
Metals Water Diss. MS (as rec'd)	CICP/MS	6236798	N/A	2019/07/19	Mike Leblanc
Ion Balance (% Difference)	CALC	6231748	N/A	2019/07/23	Automated Statchk
Anion and Cation Sum	CALC	6231750	N/A	2019/07/23	Automated Statchk
Nitrogen Ammonia - water	KONE	6237035	N/A	2019/07/23	Mary Clancey
Nitrogen - Nitrate + Nitrite	KONE	6239793	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrite	KONE	6239795	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrate (as N)	CALC	6231752	N/A	2019/07/23	Automated Statchk
pH	AT	6237261	N/A	2019/07/22	Emily Matheson
Phosphorus - ortho	KONE	6239789	N/A	2019/07/22	Sarah Mitchell
Sat. pH and Langelier Index (@ 20C)	CALC	6231754	N/A	2019/07/23	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	6231755	N/A	2019/07/23	Automated Statchk
Reactive Silica	KONE	6239787	N/A	2019/07/22	Sarah Mitchell
Sulphate	KONE	6239786	N/A	2019/07/22	Sarah Mitchell
Total Dissolved Solids (TDS calc)	CALC	6231757	N/A	2019/07/23	Automated Statchk
Organic carbon - Total (TOC)	TOCV/NDIR	6239845	N/A	2019/07/22	Kevin MacDonald
Turbidity	TURB	6239666	N/A	2019/07/22	Emily Matheson

BV Labs ID: KGZ871
Sample ID: MW-22C
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbonate, Bicarbonate and Hydroxide	CALC	6231745	N/A	2019/07/22	Automated Statchk
Alkalinity	KONE	6239781	N/A	2019/07/22	Sarah Mitchell



BUREAU
VERITAS

BV Labs Job #: B9J5732
Report Date: 2019/07/23

Stantec Consulting Ltd
Client Project #: 121414186

TEST SUMMARY

BV Labs ID: KGZ871
Sample ID: MW-22C
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride	KONE	6239785	N/A	2019/07/22	Sarah Mitchell
Colour	KONE	6239790	N/A	2019/07/22	Sarah Mitchell
Conductance - water	AT	6237362	N/A	2019/07/22	Emily Matheson
Hardness (calculated as CaCO3)		6231746	N/A	2019/07/22	Automated Statchk
Metals Water Diss. MS (as rec'd)	CICP/MS	6236798	N/A	2019/07/19	Mike Leblanc
Ion Balance (% Difference)	CALC	6231748	N/A	2019/07/23	Automated Statchk
Anion and Cation Sum	CALC	6231750	N/A	2019/07/23	Automated Statchk
Nitrogen Ammonia - water	KONE	6236999	N/A	2019/07/22	Mary Clancey
Nitrogen - Nitrate + Nitrite	KONE	6239793	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrite	KONE	6239795	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrate (as N)	CALC	6231752	N/A	2019/07/23	Automated Statchk
pH	AT	6237261	N/A	2019/07/22	Emily Matheson
Phosphorus - ortho	KONE	6239789	N/A	2019/07/22	Sarah Mitchell
Sat. pH and Langelier Index (@ 20C)	CALC	6231754	N/A	2019/07/23	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	6231755	N/A	2019/07/23	Automated Statchk
Reactive Silica	KONE	6239787	N/A	2019/07/22	Sarah Mitchell
Sulphate	KONE	6239786	N/A	2019/07/22	Sarah Mitchell
Total Dissolved Solids (TDS calc)	CALC	6231757	N/A	2019/07/23	Automated Statchk
Organic carbon - Total (TOC)	TOCV/NDIR	6234587	N/A	2019/07/20	Steven Smith
Turbidity	TURB	6239666	N/A	2019/07/22	Emily Matheson

BV Labs ID: KGZ872
Sample ID: MW-25B
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbonate, Bicarbonate and Hydroxide	CALC	6231745	N/A	2019/07/22	Automated Statchk
Alkalinity	KONE	6239781	N/A	2019/07/22	Sarah Mitchell
Chloride	KONE	6239785	N/A	2019/07/22	Sarah Mitchell
Colour	KONE	6239790	N/A	2019/07/22	Sarah Mitchell
Conductance - water	AT	6237362	N/A	2019/07/22	Emily Matheson
Hardness (calculated as CaCO3)		6231746	N/A	2019/07/22	Automated Statchk
Metals Water Diss. MS (as rec'd)	CICP/MS	6236798	N/A	2019/07/19	Mike Leblanc
Ion Balance (% Difference)	CALC	6231748	N/A	2019/07/23	Automated Statchk
Anion and Cation Sum	CALC	6231750	N/A	2019/07/23	Automated Statchk
Nitrogen Ammonia - water	KONE	6237035	N/A	2019/07/22	Mary Clancey
Nitrogen - Nitrate + Nitrite	KONE	6239793	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrite	KONE	6239795	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrate (as N)	CALC	6231752	N/A	2019/07/23	Automated Statchk
pH	AT	6237261	N/A	2019/07/22	Emily Matheson
Phosphorus - ortho	KONE	6239789	N/A	2019/07/22	Sarah Mitchell
Sat. pH and Langelier Index (@ 20C)	CALC	6231754	N/A	2019/07/23	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	6231755	N/A	2019/07/23	Automated Statchk
Reactive Silica	KONE	6239787	N/A	2019/07/22	Sarah Mitchell
Sulphate	KONE	6239786	N/A	2019/07/22	Sarah Mitchell
Total Dissolved Solids (TDS calc)	CALC	6231757	N/A	2019/07/23	Automated Statchk
Organic carbon - Total (TOC)	TOCV/NDIR	6239845	N/A	2019/07/22	Kevin MacDonald



BUREAU
VERITAS

BV Labs Job #: B9J5732
Report Date: 2019/07/23

Stantec Consulting Ltd
Client Project #: 121414186

TEST SUMMARY

BV Labs ID: KGZ872
Sample ID: MW-25B
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Turbidity	TURB	6239666	N/A	2019/07/22	Emily Matheson

BV Labs ID: KGZ873
Sample ID: MW-40D
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbonate, Bicarbonate and Hydroxide	CALC	6231745	N/A	2019/07/22	Automated Statchk
Alkalinity	KONE	6239802	N/A	2019/07/22	Sarah Mitchell
Chloride	KONE	6239813	N/A	2019/07/22	Sarah Mitchell
Colour	KONE	6239817	N/A	2019/07/22	Sarah Mitchell
Conductance - water	AT	6237362	N/A	2019/07/22	Emily Matheson
Hardness (calculated as CaCO3)		6231746	N/A	2019/07/22	Automated Statchk
Metals Water Diss. MS (as rec'd)	CICP/MS	6236798	N/A	2019/07/19	Mike Leblanc
Ion Balance (% Difference)	CALC	6231748	N/A	2019/07/23	Automated Statchk
Anion and Cation Sum	CALC	6231750	N/A	2019/07/23	Automated Statchk
Nitrogen Ammonia - water	KONE	6236999	N/A	2019/07/22	Mary Clancey
Nitrogen - Nitrate + Nitrite	KONE	6239819	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrite	KONE	6239821	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrate (as N)	CALC	6231752	N/A	2019/07/23	Automated Statchk
pH	AT	6237261	N/A	2019/07/22	Emily Matheson
Phosphorus - ortho	KONE	6239818	N/A	2019/07/22	Sarah Mitchell
Sat. pH and Langelier Index (@ 20C)	CALC	6231754	N/A	2019/07/23	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	6231755	N/A	2019/07/23	Automated Statchk
Reactive Silica	KONE	6239816	N/A	2019/07/22	Sarah Mitchell
Sulphate	KONE	6239815	N/A	2019/07/22	Sarah Mitchell
Total Dissolved Solids (TDS calc)	CALC	6231757	N/A	2019/07/23	Automated Statchk
Organic carbon - Total (TOC)	TOCV/NDIR	6239845	N/A	2019/07/22	Kevin MacDonald
Turbidity	TURB	6239665	N/A	2019/07/22	Emily Matheson

BV Labs ID: KGZ873 Dup
Sample ID: MW-40D
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	KONE	6239802	N/A	2019/07/22	Sarah Mitchell
Chloride	KONE	6239813	N/A	2019/07/22	Sarah Mitchell
Colour	KONE	6239817	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrate + Nitrite	KONE	6239819	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrite	KONE	6239821	N/A	2019/07/22	Sarah Mitchell
Phosphorus - ortho	KONE	6239818	N/A	2019/07/22	Sarah Mitchell
Reactive Silica	KONE	6239816	N/A	2019/07/22	Sarah Mitchell
Sulphate	KONE	6239815	N/A	2019/07/22	Sarah Mitchell
Organic carbon - Total (TOC)	TOCV/NDIR	6239845	N/A	2019/07/22	Kevin MacDonald



BUREAU
VERITAS

BV Labs Job #: B9J5732
Report Date: 2019/07/23

Stantec Consulting Ltd
Client Project #: 121414186

TEST SUMMARY

BV Labs ID: KGZ874
Sample ID: TH-1
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbonate, Bicarbonate and Hydroxide	CALC	6231745	N/A	2019/07/22	Automated Statchk
Alkalinity	KONE	6239781	N/A	2019/07/23	Sarah Mitchell
Chloride	KONE	6239785	N/A	2019/07/22	Sarah Mitchell
Colour	KONE	6239790	N/A	2019/07/22	Sarah Mitchell
Conductance - water	AT	6237362	N/A	2019/07/22	Emily Matheson
Hardness (calculated as CaCO3)		6231746	N/A	2019/07/22	Automated Statchk
Metals Water Diss. MS (as rec'd)	CICP/MS	6236798	N/A	2019/07/19	Mike Leblanc
Ion Balance (% Difference)	CALC	6231748	N/A	2019/07/23	Automated Statchk
Anion and Cation Sum	CALC	6231750	N/A	2019/07/23	Automated Statchk
Nitrogen Ammonia - water	KONE	6236999	N/A	2019/07/23	Mary Clancey
Nitrogen - Nitrate + Nitrite	KONE	6239793	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrite	KONE	6239795	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrate (as N)	CALC	6231752	N/A	2019/07/23	Automated Statchk
pH	AT	6237261	N/A	2019/07/22	Emily Matheson
Phosphorus - ortho	KONE	6239789	N/A	2019/07/22	Sarah Mitchell
Sat. pH and Langelier Index (@ 20C)	CALC	6231754	N/A	2019/07/23	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	6231755	N/A	2019/07/23	Automated Statchk
Reactive Silica	KONE	6239787	N/A	2019/07/22	Sarah Mitchell
Sulphate	KONE	6239786	N/A	2019/07/22	Sarah Mitchell
Total Dissolved Solids (TDS calc)	CALC	6231757	N/A	2019/07/23	Automated Statchk
Organic carbon - Total (TOC)	TOCV/NDIR	6239845	N/A	2019/07/22	Kevin MacDonald
Turbidity	TURB	6239666	N/A	2019/07/22	Emily Matheson

BV Labs ID: KGZ875
Sample ID: MW-23A
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbonate, Bicarbonate and Hydroxide	CALC	6231745	N/A	2019/07/22	Automated Statchk
Alkalinity	KONE	6239781	N/A	2019/07/22	Sarah Mitchell
Chloride	KONE	6239785	N/A	2019/07/22	Sarah Mitchell
Colour	KONE	6239790	N/A	2019/07/22	Sarah Mitchell
Conductance - water	AT	6237362	N/A	2019/07/22	Emily Matheson
Hardness (calculated as CaCO3)		6231746	N/A	2019/07/22	Automated Statchk
Metals Water Diss. MS (as rec'd)	CICP/MS	6236798	N/A	2019/07/19	Mike Leblanc
Ion Balance (% Difference)	CALC	6231748	N/A	2019/07/23	Automated Statchk
Anion and Cation Sum	CALC	6231750	N/A	2019/07/23	Automated Statchk
Nitrogen Ammonia - water	KONE	6236999	N/A	2019/07/23	Mary Clancey
Nitrogen - Nitrate + Nitrite	KONE	6239793	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrite	KONE	6239795	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrate (as N)	CALC	6231752	N/A	2019/07/23	Automated Statchk
pH	AT	6237261	N/A	2019/07/22	Emily Matheson
Phosphorus - ortho	KONE	6239789	N/A	2019/07/22	Sarah Mitchell
Sat. pH and Langelier Index (@ 20C)	CALC	6231754	N/A	2019/07/23	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	6231755	N/A	2019/07/23	Automated Statchk
Reactive Silica	KONE	6239787	N/A	2019/07/22	Sarah Mitchell
Sulphate	KONE	6239786	N/A	2019/07/22	Sarah Mitchell



BUREAU
VERITAS

BV Labs Job #: B9J5732
Report Date: 2019/07/23

Stantec Consulting Ltd
Client Project #: 121414186

TEST SUMMARY

BV Labs ID: KGZ875
Sample ID: MW-23A
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Dissolved Solids (TDS calc)	CALC	6231757	N/A	2019/07/23	Automated Statchk
Organic carbon - Total (TOC)	TOCV/NDIR	6239845	N/A	2019/07/22	Kevin MacDonald
Turbidity	TURB	6239666	N/A	2019/07/22	Emily Matheson

BV Labs ID: KGZ876
Sample ID: MW-23B
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbonate, Bicarbonate and Hydroxide	CALC	6231745	N/A	2019/07/22	Automated Statchk
Alkalinity	KONE	6239781	N/A	2019/07/22	Sarah Mitchell
Chloride	KONE	6239785	N/A	2019/07/22	Sarah Mitchell
Colour	KONE	6239790	N/A	2019/07/22	Sarah Mitchell
Conductance - water	AT	6237362	N/A	2019/07/22	Emily Matheson
Hardness (calculated as CaCO3)		6231746	N/A	2019/07/22	Automated Statchk
Metals Water Diss. MS (as rec'd)	CICP/MS	6236798	N/A	2019/07/19	Mike Leblanc
Ion Balance (% Difference)	CALC	6231748	N/A	2019/07/23	Automated Statchk
Anion and Cation Sum	CALC	6231750	N/A	2019/07/23	Automated Statchk
Nitrogen Ammonia - water	KONE	6237035	N/A	2019/07/22	Mary Clancey
Nitrogen - Nitrate + Nitrite	KONE	6239793	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrite	KONE	6239795	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrate (as N)	CALC	6231752	N/A	2019/07/23	Automated Statchk
pH	AT	6237261	N/A	2019/07/22	Emily Matheson
Phosphorus - ortho	KONE	6239789	N/A	2019/07/22	Sarah Mitchell
Sat. pH and Langelier Index (@ 20C)	CALC	6231754	N/A	2019/07/23	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	6231755	N/A	2019/07/23	Automated Statchk
Reactive Silica	KONE	6239787	N/A	2019/07/22	Sarah Mitchell
Sulphate	KONE	6239786	N/A	2019/07/22	Sarah Mitchell
Total Dissolved Solids (TDS calc)	CALC	6231757	N/A	2019/07/23	Automated Statchk
Organic carbon - Total (TOC)	TOCV/NDIR	6234587	N/A	2019/07/19	Steven Smith
Turbidity	TURB	6239666	N/A	2019/07/22	Emily Matheson

BV Labs ID: KGZ877
Sample ID: MW-23C
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbonate, Bicarbonate and Hydroxide	CALC	6231745	N/A	2019/07/22	Automated Statchk
Alkalinity	KONE	6239802	N/A	2019/07/22	Sarah Mitchell
Chloride	KONE	6239813	N/A	2019/07/22	Sarah Mitchell
Colour	KONE	6239817	N/A	2019/07/22	Sarah Mitchell
Conductance - water	AT	6237362	N/A	2019/07/22	Emily Matheson
Hardness (calculated as CaCO3)		6231746	N/A	2019/07/22	Automated Statchk
Metals Water Diss. MS (as rec'd)	CICP/MS	6236798	N/A	2019/07/19	Mike Leblanc
Ion Balance (% Difference)	CALC	6231748	N/A	2019/07/23	Automated Statchk
Anion and Cation Sum	CALC	6231750	N/A	2019/07/23	Automated Statchk
Nitrogen Ammonia - water	KONE	6237035	N/A	2019/07/22	Mary Clancey



BUREAU
VERITAS

BV Labs Job #: B9J5732
Report Date: 2019/07/23

Stantec Consulting Ltd
Client Project #: 121414186

TEST SUMMARY

BV Labs ID: KGZ877
Sample ID: MW-23C
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrogen - Nitrate + Nitrite	KONE	6239819	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrite	KONE	6239821	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrate (as N)	CALC	6231752	N/A	2019/07/23	Automated Statchk
pH	AT	6237261	N/A	2019/07/22	Emily Matheson
Phosphorus - ortho	KONE	6239818	N/A	2019/07/22	Sarah Mitchell
Sat. pH and Langelier Index (@ 20C)	CALC	6231754	N/A	2019/07/23	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	6231755	N/A	2019/07/23	Automated Statchk
Reactive Silica	KONE	6239816	N/A	2019/07/22	Sarah Mitchell
Sulphate	KONE	6239815	N/A	2019/07/22	Sarah Mitchell
Total Dissolved Solids (TDS calc)	CALC	6231757	N/A	2019/07/23	Automated Statchk
Organic carbon - Total (TOC)	TOCV/NDIR	6234587	N/A	2019/07/19	Steven Smith
Turbidity	TURB	6239666	N/A	2019/07/22	Emily Matheson

BV Labs ID: KGZ878
Sample ID: MW-29B
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbonate, Bicarbonate and Hydroxide	CALC	6231745	N/A	2019/07/22	Automated Statchk
Alkalinity	KONE	6239802	N/A	2019/07/22	Sarah Mitchell
Chloride	KONE	6239813	N/A	2019/07/22	Sarah Mitchell
Colour	KONE	6239817	N/A	2019/07/22	Sarah Mitchell
Conductance - water	AT	6237362	N/A	2019/07/22	Emily Matheson
Hardness (calculated as CaCO3)		6231746	N/A	2019/07/22	Automated Statchk
Metals Water Diss. MS (as rec'd)	CICP/MS	6236798	N/A	2019/07/19	Mike Leblanc
Ion Balance (% Difference)	CALC	6231748	N/A	2019/07/23	Automated Statchk
Anion and Cation Sum	CALC	6231750	N/A	2019/07/23	Automated Statchk
Nitrogen Ammonia - water	KONE	6236999	N/A	2019/07/22	Mary Clancey
Nitrogen - Nitrate + Nitrite	KONE	6239819	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrite	KONE	6239821	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrate (as N)	CALC	6231752	N/A	2019/07/23	Automated Statchk
pH	AT	6237261	N/A	2019/07/22	Emily Matheson
Phosphorus - ortho	KONE	6239818	N/A	2019/07/22	Sarah Mitchell
Sat. pH and Langelier Index (@ 20C)	CALC	6231754	N/A	2019/07/23	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	6231755	N/A	2019/07/23	Automated Statchk
Reactive Silica	KONE	6239816	N/A	2019/07/22	Sarah Mitchell
Sulphate	KONE	6239815	N/A	2019/07/22	Sarah Mitchell
Total Dissolved Solids (TDS calc)	CALC	6231757	N/A	2019/07/23	Automated Statchk
Organic carbon - Total (TOC)	TOCV/NDIR	6239845	N/A	2019/07/22	Kevin MacDonald
Turbidity	TURB	6239666	N/A	2019/07/22	Emily Matheson

BV Labs ID: KGZ879
Sample ID: MW-29C
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbonate, Bicarbonate and Hydroxide	CALC	6231745	N/A	2019/07/22	Automated Statchk



BUREAU
VERITAS

BV Labs Job #: B9J5732
Report Date: 2019/07/23

Stantec Consulting Ltd
Client Project #: 121414186

TEST SUMMARY

BV Labs ID: KGZ879
Sample ID: MW-29C
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	KONE	6239802	N/A	2019/07/22	Sarah Mitchell
Chloride	KONE	6239813	N/A	2019/07/22	Sarah Mitchell
Colour	KONE	6239817	N/A	2019/07/22	Sarah Mitchell
Conductance - water	AT	6237362	N/A	2019/07/22	Emily Matheson
Hardness (calculated as CaCO3)		6231746	N/A	2019/07/22	Automated Statchk
Metals Water Diss. MS (as rec'd)	CICP/MS	6236798	N/A	2019/07/19	Mike Leblanc
Ion Balance (% Difference)	CALC	6231748	N/A	2019/07/23	Automated Statchk
Anion and Cation Sum	CALC	6231750	N/A	2019/07/23	Automated Statchk
Nitrogen Ammonia - water	KONE	6237035	N/A	2019/07/22	Mary Clancey
Nitrogen - Nitrate + Nitrite	KONE	6239819	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrite	KONE	6239821	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrate (as N)	CALC	6231752	N/A	2019/07/23	Automated Statchk
pH	AT	6237261	N/A	2019/07/22	Emily Matheson
Phosphorus - ortho	KONE	6239818	N/A	2019/07/22	Sarah Mitchell
Sat. pH and Langelier Index (@ 20C)	CALC	6231754	N/A	2019/07/23	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	6231755	N/A	2019/07/23	Automated Statchk
Reactive Silica	KONE	6239816	N/A	2019/07/22	Sarah Mitchell
Sulphate	KONE	6239815	N/A	2019/07/22	Sarah Mitchell
Total Dissolved Solids (TDS calc)	CALC	6231757	N/A	2019/07/23	Automated Statchk
Organic carbon - Total (TOC)	TOCV/NDIR	6239845	N/A	2019/07/22	Kevin MacDonald
Turbidity	TURB	6239665	N/A	2019/07/22	Emily Matheson

BV Labs ID: KGZ880
Sample ID: MW-31A
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbonate, Bicarbonate and Hydroxide	CALC	6231745	N/A	2019/07/22	Automated Statchk
Alkalinity	KONE	6239802	N/A	2019/07/22	Sarah Mitchell
Chloride	KONE	6239813	N/A	2019/07/22	Sarah Mitchell
Colour	KONE	6239817	N/A	2019/07/22	Sarah Mitchell
Conductance - water	AT	6237362	N/A	2019/07/22	Emily Matheson
Hardness (calculated as CaCO3)		6231746	N/A	2019/07/22	Automated Statchk
Metals Water Diss. MS (as rec'd)	CICP/MS	6236798	N/A	2019/07/19	Mike Leblanc
Ion Balance (% Difference)	CALC	6231748	N/A	2019/07/23	Automated Statchk
Anion and Cation Sum	CALC	6231750	N/A	2019/07/23	Automated Statchk
Nitrogen Ammonia - water	KONE	6237054	N/A	2019/07/23	Mary Clancey
Nitrogen - Nitrate + Nitrite	KONE	6239819	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrite	KONE	6239821	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrate (as N)	CALC	6231752	N/A	2019/07/23	Automated Statchk
pH	AT	6237261	N/A	2019/07/22	Emily Matheson
Phosphorus - ortho	KONE	6239818	N/A	2019/07/22	Sarah Mitchell
Sat. pH and Langelier Index (@ 20C)	CALC	6231754	N/A	2019/07/23	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	6231755	N/A	2019/07/23	Automated Statchk
Reactive Silica	KONE	6239816	N/A	2019/07/22	Sarah Mitchell
Sulphate	KONE	6239815	N/A	2019/07/22	Sarah Mitchell
Total Dissolved Solids (TDS calc)	CALC	6231757	N/A	2019/07/23	Automated Statchk



BUREAU
VERITAS

BV Labs Job #: B9J5732
Report Date: 2019/07/23

Stantec Consulting Ltd
Client Project #: 121414186

TEST SUMMARY

BV Labs ID: KGZ880
Sample ID: MW-31A
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Organic carbon - Total (TOC)	TOCV/NDIR	6239845	N/A	2019/07/22	Kevin MacDonald
Turbidity	TURB	6239666	N/A	2019/07/22	Emily Matheson

BV Labs ID: KGZ880 Dup
Sample ID: MW-31A
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrogen Ammonia - water	KONE	6237054	N/A	2019/07/23	Mary Clancey

BV Labs ID: KGZ881
Sample ID: SW7
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbonate, Bicarbonate and Hydroxide	CALC	6231745	N/A	2019/07/22	Automated Statchk
Alkalinity	KONE	6239802	N/A	2019/07/22	Sarah Mitchell
Chloride	KONE	6239813	N/A	2019/07/22	Sarah Mitchell
Colour	KONE	6239817	N/A	2019/07/22	Sarah Mitchell
Conductance - water	AT	6237362	N/A	2019/07/22	Emily Matheson
Hardness (calculated as CaCO3)		6231746	N/A	2019/07/19	Automated Statchk
Metals Water Total MS	CICP/MS	6234852	2019/07/18	2019/07/19	Bryon Angevine
Ion Balance (% Difference)	CALC	6231748	N/A	2019/07/23	Automated Statchk
Anion and Cation Sum	CALC	6231750	N/A	2019/07/23	Automated Statchk
Nitrogen Ammonia - water	KONE	6237035	N/A	2019/07/22	Mary Clancey
Nitrogen - Nitrate + Nitrite	KONE	6239819	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrite	KONE	6239821	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrate (as N)	CALC	6231752	N/A	2019/07/23	Automated Statchk
pH	AT	6237261	N/A	2019/07/22	Emily Matheson
Phosphorus - ortho	KONE	6239818	N/A	2019/07/22	Sarah Mitchell
Sat. pH and Langelier Index (@ 20C)	CALC	6231754	N/A	2019/07/23	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	6231755	N/A	2019/07/23	Automated Statchk
Reactive Silica	KONE	6239816	N/A	2019/07/22	Sarah Mitchell
Sulphate	KONE	6239815	N/A	2019/07/22	Sarah Mitchell
Total Dissolved Solids (TDS calc)	CALC	6231757	N/A	2019/07/23	Automated Statchk
Organic carbon - Total (TOC)	TOCV/NDIR	6239845	N/A	2019/07/22	Kevin MacDonald
Turbidity	TURB	6239666	N/A	2019/07/22	Emily Matheson

BV Labs ID: KGZ882
Sample ID: SW7A
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbonate, Bicarbonate and Hydroxide	CALC	6231745	N/A	2019/07/22	Automated Statchk
Alkalinity	KONE	6239802	N/A	2019/07/22	Sarah Mitchell
Chloride	KONE	6239813	N/A	2019/07/22	Sarah Mitchell
Colour	KONE	6239817	N/A	2019/07/22	Sarah Mitchell



BUREAU
VERITAS

BV Labs Job #: B9J5732
Report Date: 2019/07/23

Stantec Consulting Ltd
Client Project #: 121414186

TEST SUMMARY

BV Labs ID: KGZ882
Sample ID: SW7A
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductance - water	AT	6237362	N/A	2019/07/22	Emily Matheson
Hardness (calculated as CaCO3)		6231746	N/A	2019/07/23	Automated Statchk
Metals Water Total MS	CICP/MS	6236551	2019/07/19	2019/07/23	Bryon Angevine
Ion Balance (% Difference)	CALC	6231748	N/A	2019/07/23	Automated Statchk
Anion and Cation Sum	CALC	6231750	N/A	2019/07/23	Automated Statchk
Nitrogen Ammonia - water	KONE	6236999	N/A	2019/07/22	Mary Clancey
Nitrogen - Nitrate + Nitrite	KONE	6239819	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrite	KONE	6239821	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrate (as N)	CALC	6231752	N/A	2019/07/23	Automated Statchk
pH	AT	6237261	N/A	2019/07/22	Emily Matheson
Phosphorus - ortho	KONE	6239818	N/A	2019/07/22	Sarah Mitchell
Sat. pH and Langelier Index (@ 20C)	CALC	6231754	N/A	2019/07/23	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	6231755	N/A	2019/07/23	Automated Statchk
Reactive Silica	KONE	6239816	N/A	2019/07/22	Sarah Mitchell
Sulphate	KONE	6239815	N/A	2019/07/22	Sarah Mitchell
Total Dissolved Solids (TDS calc)	CALC	6231757	N/A	2019/07/23	Automated Statchk
Organic carbon - Total (TOC)	TOCV/NDIR	6239845	N/A	2019/07/22	Kevin MacDonald
Turbidity	TURB	6239666	N/A	2019/07/22	Emily Matheson

BV Labs ID: KGZ883
Sample ID: SW3
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbonate, Bicarbonate and Hydroxide	CALC	6231745	N/A	2019/07/22	Automated Statchk
Alkalinity	KONE	6239802	N/A	2019/07/22	Sarah Mitchell
Chloride	KONE	6239813	N/A	2019/07/22	Sarah Mitchell
Colour	KONE	6239817	N/A	2019/07/22	Sarah Mitchell
Conductance - water	AT	6237362	N/A	2019/07/22	Emily Matheson
Hardness (calculated as CaCO3)		6231746	N/A	2019/07/19	Automated Statchk
Metals Water Total MS	CICP/MS	6234145	2019/07/18	2019/07/19	Bryon Angevine
Ion Balance (% Difference)	CALC	6231748	N/A	2019/07/23	Automated Statchk
Anion and Cation Sum	CALC	6231750	N/A	2019/07/23	Automated Statchk
Nitrogen Ammonia - water	KONE	6236999	N/A	2019/07/22	Mary Clancey
Nitrogen - Nitrate + Nitrite	KONE	6239819	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrite	KONE	6239821	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrate (as N)	CALC	6231752	N/A	2019/07/23	Automated Statchk
pH	AT	6237261	N/A	2019/07/22	Emily Matheson
Phosphorus - ortho	KONE	6239818	N/A	2019/07/22	Sarah Mitchell
Sat. pH and Langelier Index (@ 20C)	CALC	6231754	N/A	2019/07/23	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	6231755	N/A	2019/07/23	Automated Statchk
Reactive Silica	KONE	6239816	N/A	2019/07/22	Sarah Mitchell
Sulphate	KONE	6239815	N/A	2019/07/22	Sarah Mitchell
Total Dissolved Solids (TDS calc)	CALC	6231757	N/A	2019/07/23	Automated Statchk
Organic carbon - Total (TOC)	TOCV/NDIR	6239845	N/A	2019/07/22	Kevin MacDonald
Turbidity	TURB	6239666	N/A	2019/07/22	Emily Matheson



BUREAU
VERITAS

BV Labs Job #: B9J5732
Report Date: 2019/07/23

Stantec Consulting Ltd
Client Project #: 121414186

TEST SUMMARY

BV Labs ID: KGZ884
Sample ID: SWA
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbonate, Bicarbonate and Hydroxide	CALC	6231745	N/A	2019/07/22	Automated Statchk
Alkalinity	KONE	6239802	N/A	2019/07/22	Sarah Mitchell
Chloride	KONE	6239813	N/A	2019/07/22	Sarah Mitchell
Colour	KONE	6239817	N/A	2019/07/22	Sarah Mitchell
Conductance - water	AT	6237362	N/A	2019/07/22	Emily Matheson
Hardness (calculated as CaCO3)		6231746	N/A	2019/07/23	Automated Statchk
Metals Water Total MS	CICP/MS	6236551	2019/07/19	2019/07/22	Bryon Angevine
Ion Balance (% Difference)	CALC	6231748	N/A	2019/07/23	Automated Statchk
Anion and Cation Sum	CALC	6231750	N/A	2019/07/23	Automated Statchk
Nitrogen Ammonia - water	KONE	6236999	N/A	2019/07/22	Mary Clancey
Nitrogen - Nitrate + Nitrite	KONE	6239819	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrite	KONE	6239821	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrate (as N)	CALC	6231752	N/A	2019/07/23	Automated Statchk
pH	AT	6237261	N/A	2019/07/22	Emily Matheson
Phosphorus - ortho	KONE	6239818	N/A	2019/07/22	Sarah Mitchell
Sat. pH and Langelier Index (@ 20C)	CALC	6231754	N/A	2019/07/23	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	6231755	N/A	2019/07/23	Automated Statchk
Reactive Silica	KONE	6239816	N/A	2019/07/22	Sarah Mitchell
Sulphate	KONE	6239815	N/A	2019/07/22	Sarah Mitchell
Total Dissolved Solids (TDS calc)	CALC	6231757	N/A	2019/07/23	Automated Statchk
Organic carbon - Total (TOC)	TOCV/NDIR	6239845	N/A	2019/07/22	Kevin MacDonald
Turbidity	TURB	6239666	N/A	2019/07/22	Emily Matheson

BV Labs ID: KGZ885
Sample ID: SW19B
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbonate, Bicarbonate and Hydroxide	CALC	6231745	N/A	2019/07/22	Automated Statchk
Alkalinity	KONE	6239802	N/A	2019/07/22	Sarah Mitchell
Chloride	KONE	6239813	N/A	2019/07/22	Sarah Mitchell
Colour	KONE	6239817	N/A	2019/07/22	Sarah Mitchell
Conductance - water	AT	6237362	N/A	2019/07/22	Emily Matheson
Hardness (calculated as CaCO3)		6231746	N/A	2019/07/23	Automated Statchk
Metals Water Total MS	CICP/MS	6236551	2019/07/19	2019/07/22	Bryon Angevine
Ion Balance (% Difference)	CALC	6231748	N/A	2019/07/23	Automated Statchk
Anion and Cation Sum	CALC	6231750	N/A	2019/07/23	Automated Statchk
Nitrogen Ammonia - water	KONE	6236999	N/A	2019/07/22	Mary Clancey
Nitrogen - Nitrate + Nitrite	KONE	6239819	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrite	KONE	6239821	N/A	2019/07/22	Sarah Mitchell
Nitrogen - Nitrate (as N)	CALC	6231752	N/A	2019/07/23	Automated Statchk
pH	AT	6237261	N/A	2019/07/22	Emily Matheson
Phosphorus - ortho	KONE	6239818	N/A	2019/07/22	Sarah Mitchell
Sat. pH and Langelier Index (@ 20C)	CALC	6231754	N/A	2019/07/23	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	6231755	N/A	2019/07/23	Automated Statchk
Reactive Silica	KONE	6239816	N/A	2019/07/22	Sarah Mitchell
Sulphate	KONE	6239815	N/A	2019/07/22	Sarah Mitchell



BUREAU
VERITAS

BV Labs Job #: B9J5732
Report Date: 2019/07/23

Stantec Consulting Ltd
Client Project #: 121414186

TEST SUMMARY

BV Labs ID: KGZ885
Sample ID: SW19B
Matrix: Water

Collected: 2019/07/15
Shipped:
Received: 2019/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Dissolved Solids (TDS calc)	CALC	6231757	N/A	2019/07/23	Automated Statchk
Organic carbon - Total (TOC)	TOCV/NDIR	6239845	N/A	2019/07/22	Kevin MacDonald
Turbidity	TURB	6239666	N/A	2019/07/22	Emily Matheson



GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	2.0°C
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Sample KGZ868 [MW-4A] : Poor RCap Ion Balance due to sample matrix. Cation sum does not include contribution from Mn and Ba.

Sample KGZ869 [MW-22A] : Poor RCap Ion Balance due to sample matrix. Possibly due to fine particulate matter.

Sample KGZ872 [MW-25B] : Poor RCap Ion Balance due to sample matrix. Cation sum does not include contribution from Sr.

Sample KGZ873 [MW-40D] : RCap Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

Sample KGZ875 [MW-23A] : Poor RCap Ion Balance due to sample matrix.

Sample KGZ878 [MW-29B] : Poor RCap Ion Balance due to sample matrix.

Sample KGZ879 [MW-29C] : RCap Ion Balance acceptable. Anion/cation agreement within 0.2 meq/L.

Sample KGZ882 [SW7A] : Poor RCap Ion Balance due to sample matrix. Excess cations due to presence of turbidity.

Sample KGZ883 [SW3] : Poor RCap Ion Balance due to sample matrix. Excess cations due to presence of turbidity.

Results relate only to the items tested.



BUREAU
VERITAS

BV Labs Job #: B9J5732
Report Date: 2019/07/23

QUALITY ASSURANCE REPORT

Stantec Consulting Ltd
Client Project #: 121414186

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6234145	Total Aluminum (Al)	2019/07/19	105	80 - 120	107	80 - 120	<5.0	ug/L	NC	20		
6234145	Total Antimony (Sb)	2019/07/19	104	80 - 120	100	80 - 120	<1.0	ug/L	NC	20		
6234145	Total Arsenic (As)	2019/07/19	98	80 - 120	95	80 - 120	<1.0	ug/L	NC	20		
6234145	Total Barium (Ba)	2019/07/19	99	80 - 120	97	80 - 120	<1.0	ug/L	NC	20		
6234145	Total Beryllium (Be)	2019/07/19	97	80 - 120	93	80 - 120	<1.0	ug/L	NC	20		
6234145	Total Bismuth (Bi)	2019/07/19	100	80 - 120	98	80 - 120	<2.0	ug/L	NC	20		
6234145	Total Boron (B)	2019/07/19	97	80 - 120	92	80 - 120	<50	ug/L	NC	20		
6234145	Total Cadmium (Cd)	2019/07/19	99	80 - 120	97	80 - 120	<0.010	ug/L	NC	20		
6234145	Total Calcium (Ca)	2019/07/19	104	80 - 120	103	80 - 120	<100	ug/L	NC	20		
6234145	Total Chromium (Cr)	2019/07/19	96	80 - 120	95	80 - 120	<1.0	ug/L	NC	20		
6234145	Total Cobalt (Co)	2019/07/19	98	80 - 120	96	80 - 120	<0.40	ug/L	NC	20		
6234145	Total Copper (Cu)	2019/07/19	97	80 - 120	96	80 - 120	<0.50	ug/L	0.28	20		
6234145	Total Iron (Fe)	2019/07/19	103	80 - 120	102	80 - 120	<50	ug/L	NC	20		
6234145	Total Lead (Pb)	2019/07/19	99	80 - 120	98	80 - 120	<0.50	ug/L	NC	20		
6234145	Total Magnesium (Mg)	2019/07/19	105	80 - 120	106	80 - 120	<100	ug/L	NC	20		
6234145	Total Manganese (Mn)	2019/07/19	99	80 - 120	99	80 - 120	<2.0	ug/L	NC	20		
6234145	Total Molybdenum (Mo)	2019/07/19	106	80 - 120	100	80 - 120	<2.0	ug/L	NC	20		
6234145	Total Nickel (Ni)	2019/07/19	99	80 - 120	98	80 - 120	<2.0	ug/L	NC	20		
6234145	Total Phosphorus (P)	2019/07/19	105	80 - 120	104	80 - 120	<100	ug/L	NC	20		
6234145	Total Potassium (K)	2019/07/19	105	80 - 120	104	80 - 120	<100	ug/L	NC	20		
6234145	Total Selenium (Se)	2019/07/19	100	80 - 120	97	80 - 120	<1.0	ug/L	NC	20		
6234145	Total Silver (Ag)	2019/07/19	100	80 - 120	98	80 - 120	<0.10	ug/L	NC	20		
6234145	Total Sodium (Na)	2019/07/19	NC	80 - 120	100	80 - 120	<100	ug/L	1.3	20		
6234145	Total Strontium (Sr)	2019/07/19	103	80 - 120	102	80 - 120	<2.0	ug/L	NC	20		
6234145	Total Thallium (Tl)	2019/07/19	103	80 - 120	100	80 - 120	<0.10	ug/L	NC	20		
6234145	Total Tin (Sn)	2019/07/19	103	80 - 120	100	80 - 120	<2.0	ug/L	NC	20		
6234145	Total Titanium (Ti)	2019/07/19	101	80 - 120	104	80 - 120	<2.0	ug/L	NC	20		
6234145	Total Uranium (U)	2019/07/19	105	80 - 120	103	80 - 120	<0.10	ug/L	NC	20		
6234145	Total Vanadium (V)	2019/07/19	100	80 - 120	99	80 - 120	<2.0	ug/L	NC	20		
6234145	Total Zinc (Zn)	2019/07/19	99	80 - 120	97	80 - 120	<5.0	ug/L	NC	20		
6234587	Total Organic Carbon (C)	2019/07/19	95	85 - 115	96	80 - 120	<0.50	mg/L	NC (1)	15		
6234852	Total Aluminum (Al)	2019/07/19	109	80 - 120	109	80 - 120	<5.0	ug/L	NC	20		
6234852	Total Antimony (Sb)	2019/07/19	106	80 - 120	105	80 - 120	<1.0	ug/L	NC	20		



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			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6234852	Total Arsenic (As)	2019/07/19	101	80 - 120	100	80 - 120	<1.0	ug/L	1.1	20		
6234852	Total Barium (Ba)	2019/07/19	NC	80 - 120	102	80 - 120	<1.0	ug/L	5.9	20		
6234852	Total Beryllium (Be)	2019/07/19	101	80 - 120	101	80 - 120	<1.0	ug/L	NC	20		
6234852	Total Bismuth (Bi)	2019/07/19	101	80 - 120	104	80 - 120	<2.0	ug/L	NC	20		
6234852	Total Boron (B)	2019/07/19	107	80 - 120	109	80 - 120	<50	ug/L	1.4	20		
6234852	Total Cadmium (Cd)	2019/07/19	102	80 - 120	102	80 - 120	<0.010	ug/L	NC	20		
6234852	Total Calcium (Ca)	2019/07/19	NC	80 - 120	108	80 - 120	<100	ug/L	3.9	20		
6234852	Total Chromium (Cr)	2019/07/19	99	80 - 120	100	80 - 120	<1.0	ug/L	6.4	20		
6234852	Total Cobalt (Co)	2019/07/19	99	80 - 120	100	80 - 120	<0.40	ug/L	NC	20		
6234852	Total Copper (Cu)	2019/07/19	99	80 - 120	100	80 - 120	<0.50	ug/L	0.84	20		
6234852	Total Iron (Fe)	2019/07/19	104	80 - 120	107	80 - 120	<50	ug/L	NC	20		
6234852	Total Lead (Pb)	2019/07/19	102	80 - 120	103	80 - 120	<0.50	ug/L	NC	20		
6234852	Total Magnesium (Mg)	2019/07/19	106	80 - 120	108	80 - 120	<100	ug/L	NC	20		
6234852	Total Manganese (Mn)	2019/07/19	102	80 - 120	104	80 - 120	<2.0	ug/L	NC	20		
6234852	Total Molybdenum (Mo)	2019/07/19	111	80 - 120	105	80 - 120	<2.0	ug/L	NC	20		
6234852	Total Nickel (Ni)	2019/07/19	101	80 - 120	103	80 - 120	<2.0	ug/L	NC	20		
6234852	Total Phosphorus (P)	2019/07/19	109	80 - 120	108	80 - 120	<100	ug/L	NC	20		
6234852	Total Potassium (K)	2019/07/19	107	80 - 120	109	80 - 120	<100	ug/L	2.1	20		
6234852	Total Selenium (Se)	2019/07/19	102	80 - 120	100	80 - 120	<1.0	ug/L	NC	20		
6234852	Total Silver (Ag)	2019/07/19	102	80 - 120	103	80 - 120	<0.10	ug/L	NC	20		
6234852	Total Sodium (Na)	2019/07/19	NC	80 - 120	103	80 - 120	<100	ug/L	0.73	20		
6234852	Total Strontium (Sr)	2019/07/19	NC	80 - 120	104	80 - 120	<2.0	ug/L	NC	20		
6234852	Total Thallium (Tl)	2019/07/19	105	80 - 120	106	80 - 120	<0.10	ug/L	NC	20		
6234852	Total Tin (Sn)	2019/07/19	108	80 - 120	107	80 - 120	<2.0	ug/L	NC	20		
6234852	Total Titanium (Ti)	2019/07/19	105	80 - 120	103	80 - 120	<2.0	ug/L	NC	20		
6234852	Total Uranium (U)	2019/07/19	108	80 - 120	107	80 - 120	<0.10	ug/L	0.25	20		
6234852	Total Vanadium (V)	2019/07/19	103	80 - 120	102	80 - 120	<2.0	ug/L	6.3	20		
6234852	Total Zinc (Zn)	2019/07/19	100	80 - 120	103	80 - 120	<5.0	ug/L	NC	20		
6235248	Dissolved Aluminum (Al)	2019/07/19	100	80 - 120	99	80 - 120	<5.0	ug/L	3.5	20		
6235248	Dissolved Antimony (Sb)	2019/07/19	95	80 - 120	93	80 - 120	<1.0	ug/L	NC	20		
6235248	Dissolved Arsenic (As)	2019/07/19	97	80 - 120	97	80 - 120	<1.0	ug/L	1.3	20		
6235248	Dissolved Barium (Ba)	2019/07/19	95	80 - 120	99	80 - 120	<1.0	ug/L	1.1	20		
6235248	Dissolved Beryllium (Be)	2019/07/19	102	80 - 120	100	80 - 120	<1.0	ug/L	NC	20		



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			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6235248	Dissolved Bismuth (Bi)	2019/07/19	94	80 - 120	98	80 - 120	<2.0	ug/L	NC	20		
6235248	Dissolved Boron (B)	2019/07/19	99	80 - 120	99	80 - 120	<50	ug/L	0.51	20		
6235248	Dissolved Cadmium (Cd)	2019/07/19	99	80 - 120	98	80 - 120	<0.010	ug/L	NC	20		
6235248	Dissolved Calcium (Ca)	2019/07/19	NC	80 - 120	102	80 - 120	<100	ug/L	0.15	20		
6235248	Dissolved Chromium (Cr)	2019/07/19	97	80 - 120	97	80 - 120	<1.0	ug/L	1.8	20		
6235248	Dissolved Cobalt (Co)	2019/07/19	98	80 - 120	99	80 - 120	<0.40	ug/L	NC	20		
6235248	Dissolved Copper (Cu)	2019/07/19	94	80 - 120	97	80 - 120	<0.50	ug/L	2.0	20		
6235248	Dissolved Iron (Fe)	2019/07/19	100	80 - 120	101	80 - 120	<50	ug/L	NC	20		
6235248	Dissolved Lead (Pb)	2019/07/19	96	80 - 120	99	80 - 120	<0.50	ug/L	NC	20		
6235248	Dissolved Magnesium (Mg)	2019/07/19	NC	80 - 120	102	80 - 120	<100	ug/L	1.1	20		
6235248	Dissolved Manganese (Mn)	2019/07/19	99	80 - 120	99	80 - 120	<2.0	ug/L	NC	20		
6235248	Dissolved Molybdenum (Mo)	2019/07/19	101	80 - 120	100	80 - 120	<2.0	ug/L	2.8	20		
6235248	Dissolved Nickel (Ni)	2019/07/19	96	80 - 120	99	80 - 120	<2.0	ug/L	NC	20		
6235248	Dissolved Phosphorus (P)	2019/07/19	103	80 - 120	102	80 - 120	<100	ug/L	NC	20		
6235248	Dissolved Potassium (K)	2019/07/19	102	80 - 120	102	80 - 120	<100	ug/L	2.3	20		
6235248	Dissolved Selenium (Se)	2019/07/19	98	80 - 120	98	80 - 120	<1.0	ug/L	2.0	20		
6235248	Dissolved Silver (Ag)	2019/07/19	99	80 - 120	97	80 - 120	<0.10	ug/L	NC	20		
6235248	Dissolved Sodium (Na)	2019/07/19	NC	80 - 120	96	80 - 120	<100	ug/L	0.99	20		
6235248	Dissolved Strontium (Sr)	2019/07/19	NC	80 - 120	100	80 - 120	<2.0	ug/L	0.90	20		
6235248	Dissolved Thallium (Tl)	2019/07/19	98	80 - 120	100	80 - 120	<0.10	ug/L	NC	20		
6235248	Dissolved Tin (Sn)	2019/07/19	102	80 - 120	99	80 - 120	<2.0	ug/L	NC	20		
6235248	Dissolved Titanium (Ti)	2019/07/19	100	80 - 120	97	80 - 120	<2.0	ug/L	NC	20		
6235248	Dissolved Uranium (U)	2019/07/19	100	80 - 120	104	80 - 120	<0.10	ug/L	2.4	20		
6235248	Dissolved Vanadium (V)	2019/07/19	99	80 - 120	99	80 - 120	<2.0	ug/L	NC	20		
6235248	Dissolved Zinc (Zn)	2019/07/19	98	80 - 120	102	80 - 120	<5.0	ug/L	NC	20		
6236551	Total Aluminum (Al)	2019/07/23	103	80 - 120	108	80 - 120	<5.0	ug/L	NC	20		
6236551	Total Antimony (Sb)	2019/07/23	109	80 - 120	102	80 - 120	<1.0	ug/L	NC	20		
6236551	Total Arsenic (As)	2019/07/23	98	80 - 120	101	80 - 120	<1.0	ug/L	4.5	20		
6236551	Total Barium (Ba)	2019/07/23	NC	80 - 120	102	80 - 120	<1.0	ug/L	6.8	20		
6236551	Total Beryllium (Be)	2019/07/23	105	80 - 120	102	80 - 120	<1.0	ug/L	NC	20		
6236551	Total Bismuth (Bi)	2019/07/23	102	80 - 120	103	80 - 120	<2.0	ug/L	NC	20		
6236551	Total Boron (B)	2019/07/23	114	80 - 120	108	80 - 120	<50	ug/L	4.5	20		
6236551	Total Cadmium (Cd)	2019/07/23	100	80 - 120	98	80 - 120	<0.010	ug/L	NC	20		



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			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6236551	Total Calcium (Ca)	2019/07/23	NC	80 - 120	107	80 - 120	<100	ug/L	6.1	20		
6236551	Total Chromium (Cr)	2019/07/23	99	80 - 120	103	80 - 120	<1.0	ug/L	8.7	20		
6236551	Total Cobalt (Co)	2019/07/23	99	80 - 120	106	80 - 120	<0.40	ug/L	NC	20		
6236551	Total Copper (Cu)	2019/07/23	95	80 - 120	103	80 - 120	<0.50	ug/L	6.8	20		
6236551	Total Iron (Fe)	2019/07/23	106	80 - 120	107	80 - 120	<50	ug/L	NC	20		
6236551	Total Lead (Pb)	2019/07/23	102	80 - 120	102	80 - 120	<0.50	ug/L	NC	20		
6236551	Total Magnesium (Mg)	2019/07/23	NC	80 - 120	110	80 - 120	<100	ug/L	5.4	20		
6236551	Total Manganese (Mn)	2019/07/23	103	80 - 120	105	80 - 120	<2.0	ug/L	NC	20		
6236551	Total Molybdenum (Mo)	2019/07/23	109	80 - 120	105	80 - 120	<2.0	ug/L	NC	20		
6236551	Total Nickel (Ni)	2019/07/23	97	80 - 120	104	80 - 120	<2.0	ug/L	NC	20		
6236551	Total Phosphorus (P)	2019/07/23	108	80 - 120	111	80 - 120	<100	ug/L	NC	20		
6236551	Total Potassium (K)	2019/07/23	107	80 - 120	107	80 - 120	<100	ug/L	6.3	20		
6236551	Total Selenium (Se)	2019/07/23	98	80 - 120	103	80 - 120	<1.0	ug/L	NC	20		
6236551	Total Silver (Ag)	2019/07/23	102	80 - 120	101	80 - 120	<0.10	ug/L	NC	20		
6236551	Total Sodium (Na)	2019/07/23	101	80 - 120	106	80 - 120	<100	ug/L	5.2	20		
6236551	Total Strontium (Sr)	2019/07/23	NC	80 - 120	104	80 - 120	<2.0	ug/L	4.4	20		
6236551	Total Thallium (Tl)	2019/07/23	106	80 - 120	105	80 - 120	<0.10	ug/L	NC	20		
6236551	Total Tin (Sn)	2019/07/23	108	80 - 120	105	80 - 120	<2.0	ug/L	NC	20		
6236551	Total Titanium (Ti)	2019/07/23	103	80 - 120	110	80 - 120	<2.0	ug/L	NC	20		
6236551	Total Uranium (U)	2019/07/23	107	80 - 120	107	80 - 120	<0.10	ug/L	4.9	20		
6236551	Total Vanadium (V)	2019/07/23	103	80 - 120	104	80 - 120	<2.0	ug/L	3.7	20		
6236551	Total Zinc (Zn)	2019/07/23	98	80 - 120	102	80 - 120	<5.0	ug/L	NC	20		
6236798	Dissolved Aluminum (Al)	2019/07/19	104	80 - 120	101	80 - 120	<5.0	ug/L	NC	20		
6236798	Dissolved Antimony (Sb)	2019/07/19	98	80 - 120	97	80 - 120	<1.0	ug/L	NC	20		
6236798	Dissolved Arsenic (As)	2019/07/19	99	80 - 120	99	80 - 120	<1.0	ug/L	1.3	20		
6236798	Dissolved Barium (Ba)	2019/07/19	NC	80 - 120	101	80 - 120	<1.0	ug/L	0.60	20		
6236798	Dissolved Beryllium (Be)	2019/07/19	104	80 - 120	101	80 - 120	<1.0	ug/L	NC	20		
6236798	Dissolved Bismuth (Bi)	2019/07/19	96	80 - 120	100	80 - 120	<2.0	ug/L	NC	20		
6236798	Dissolved Boron (B)	2019/07/19	103	80 - 120	101	80 - 120	<50	ug/L	1.8	20		
6236798	Dissolved Cadmium (Cd)	2019/07/19	98	80 - 120	97	80 - 120	<0.010	ug/L	NC	20		
6236798	Dissolved Calcium (Ca)	2019/07/19	NC	80 - 120	101	80 - 120	<100	ug/L	0.16	20		
6236798	Dissolved Chromium (Cr)	2019/07/19	99	80 - 120	98	80 - 120	<1.0	ug/L	0.073	20		
6236798	Dissolved Cobalt (Co)	2019/07/19	100	80 - 120	102	80 - 120	<0.40	ug/L	1.6	20		



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			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6236798	Dissolved Copper (Cu)	2019/07/19	99	80 - 120	100	80 - 120	<0.50	ug/L	NC	20		
6236798	Dissolved Iron (Fe)	2019/07/19	NC	80 - 120	105	80 - 120	<50	ug/L	1.6	20		
6236798	Dissolved Lead (Pb)	2019/07/19	100	80 - 120	101	80 - 120	<0.50	ug/L	NC	20		
6236798	Dissolved Magnesium (Mg)	2019/07/19	NC	80 - 120	108	80 - 120	<100	ug/L	1.7	20		
6236798	Dissolved Manganese (Mn)	2019/07/19	NC	80 - 120	100	80 - 120	<2.0	ug/L	1.7	20		
6236798	Dissolved Molybdenum (Mo)	2019/07/19	105	80 - 120	103	80 - 120	<2.0	ug/L	NC	20		
6236798	Dissolved Nickel (Ni)	2019/07/19	98	80 - 120	100	80 - 120	<2.0	ug/L	4.2	20		
6236798	Dissolved Phosphorus (P)	2019/07/19	110	80 - 120	107	80 - 120	<100	ug/L	4.0	20		
6236798	Dissolved Potassium (K)	2019/07/19	NC	80 - 120	103	80 - 120	<100	ug/L	1.3	20		
6236798	Dissolved Selenium (Se)	2019/07/19	102	80 - 120	99	80 - 120	<1.0	ug/L	NC	20		
6236798	Dissolved Silver (Ag)	2019/07/19	86	80 - 120	96	80 - 120	<0.10	ug/L	NC	20		
6236798	Dissolved Sodium (Na)	2019/07/19	NC	80 - 120	99	80 - 120	<100	ug/L	1.8	20		
6236798	Dissolved Strontium (Sr)	2019/07/19	NC	80 - 120	101	80 - 120	<2.0	ug/L	2.2	20		
6236798	Dissolved Thallium (Tl)	2019/07/19	100	80 - 120	103	80 - 120	<0.10	ug/L	NC	20		
6236798	Dissolved Tin (Sn)	2019/07/19	105	80 - 120	103	80 - 120	<2.0	ug/L	NC	20		
6236798	Dissolved Titanium (Ti)	2019/07/19	102	80 - 120	102	80 - 120	<2.0	ug/L	NC	20		
6236798	Dissolved Uranium (U)	2019/07/19	102	80 - 120	106	80 - 120	<0.10	ug/L	NC	20		
6236798	Dissolved Vanadium (V)	2019/07/19	101	80 - 120	100	80 - 120	<2.0	ug/L	NC	20		
6236798	Dissolved Zinc (Zn)	2019/07/19	101	80 - 120	103	80 - 120	<5.0	ug/L	NC	20		
6236999	Nitrogen (Ammonia Nitrogen)	2019/07/22	94	80 - 120	96	80 - 120	<0.050	mg/L	NC	20		
6237035	Nitrogen (Ammonia Nitrogen)	2019/07/23	NC	80 - 120	97	80 - 120	<0.050	mg/L	2.2	20		
6237054	Nitrogen (Ammonia Nitrogen)	2019/07/23	91	80 - 120	100	80 - 120	<0.050	mg/L	NC	20		
6237261	pH	2019/07/22									101	97 - 103
6237362	Conductivity	2019/07/22			103	80 - 120	<1.0	uS/cm				
6239665	Turbidity	2019/07/22			100	80 - 120	<0.10	NTU	18	20	104	80 - 120
6239666	Turbidity	2019/07/22			101	80 - 120	<0.10	NTU	2.1	20	103	80 - 120
6239781	Total Alkalinity (Total as CaCO3)	2019/07/22	NC	80 - 120	108	80 - 120	<5.0	mg/L	3.9	25		
6239785	Dissolved Chloride (Cl-)	2019/07/22	NC	80 - 120	101	80 - 120	<1.0	mg/L	1.3	25		
6239786	Dissolved Sulphate (SO4)	2019/07/22	NC	80 - 120	99	80 - 120	<2.0	mg/L	3.3	25		
6239787	Reactive Silica (SiO2)	2019/07/22	94	80 - 120	97	80 - 120	<0.50	mg/L	2.1	25		
6239789	Orthophosphate (P)	2019/07/22	95	80 - 120	101	80 - 120	<0.010	mg/L	NC	25		
6239790	Colour	2019/07/22			105	80 - 120	<5.0	TCU	9.4	20		
6239793	Nitrate + Nitrite (N)	2019/07/22	91	80 - 120	91	80 - 120	<0.050	mg/L	0.80	25		



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Stantec Consulting Ltd
Client Project #: 121414186

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6239795	Nitrite (N)	2019/07/22	98	80 - 120	100	80 - 120	<0.010	mg/L	NC	20		
6239802	Total Alkalinity (Total as CaCO3)	2019/07/22	108	80 - 120	107	80 - 120	<5.0	mg/L	1.3	25		
6239813	Dissolved Chloride (Cl-)	2019/07/22	97	80 - 120	100	80 - 120	<1.0	mg/L	24	25		
6239815	Dissolved Sulphate (SO4)	2019/07/22	101	80 - 120	101	80 - 120	<2.0	mg/L	NC	25		
6239816	Reactive Silica (SiO2)	2019/07/22	99	80 - 120	107	80 - 120	<0.50	mg/L	1.4	25		
6239817	Colour	2019/07/22			104	80 - 120	<5.0	TCU	6.7	20		
6239818	Orthophosphate (P)	2019/07/22	107	80 - 120	101	80 - 120	<0.010	mg/L	2.5	25		
6239819	Nitrate + Nitrite (N)	2019/07/22	89	80 - 120	91	80 - 120	<0.050	mg/L	NC	25		
6239821	Nitrite (N)	2019/07/22	95	80 - 120	100	80 - 120	<0.010	mg/L	NC	20		
6239845	Total Organic Carbon (C)	2019/07/22	NC	85 - 115	103	80 - 120	<0.50	mg/L	NC (1)	15		

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Elevated reporting limit due to turbidity.



BUREAU
VERITAS

BV Labs Job #: B9J5732
Report Date: 2019/07/23

Stantec Consulting Ltd
Client Project #: 121414186

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

A handwritten signature in black ink that reads "Mike MacGillivray".

Mike MacGillivray, Scientific Specialist (Inorganics)

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Chain Of Custody Record

INVOICE INFORMATION:		Report Information		Project Information		Laboratory Use Only		
Company Name	#10950 Stantec Consulting Ltd	Company Name		Quotation #	B77460	BV Labs Job #	Bottle Order #:	
Contact Name	Accounts Payable	Contact Name	Andrew Sullivan	P.O. #		8955732		
Address	40 Highfield Park Drive Suite 102 Dartmouth NS B3A 0A3	Address		Project #	121414186	Chain Of Custody Record	725293	
Phone	(902) 468-7777 Fax: (902) 468-9009	Phone		Project Name		Project Manager		
Email	SAPinvoices@Stantec.com	Email	Andrew.Sullivan@stantec.com	Site #			Marie Muise	
				Sampled By		CH725293-01-01		
Regulatory Criteria:	Special Instructions	ANALYSIS REQUESTED (PLEASE BE SPECIFIC)				Turnaround Time (TAT) Required:		
** Specify Matrix: Surface/Ground/Tapwater/Sewage/Effluent/Seawater Potable/Nonpotable/Tissue/Soil/Sludge/Metal		Field Filtered & Preserved	At. RCAP-MS Dissolved (FieldFit) in			Please provide advance notice for rush projects		
		Lab Filtration Required	W	Atlantic RCAP-MS Total Metals in Water		Regular (Standard) TAT: <input checked="" type="checkbox"/>		
SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS						(will be applied if Rush TAT is not specified): Standard TAT = 5-7 Working days for most tests. Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.		
						Job Specific Rush TAT (if applies to entire submission) Date Required: Time Required: <input type="checkbox"/>		
Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix		# of Bottles	Comments / Hazards / Other Required Analysis	
✓	MW-4A	19/7/15	8:30	GW	X	4		
✓	MW-22A		14:43	GW	X			
✓	MW-22B		14:47	GW	X			
✓	MW-22C		14:55	GW	X			
✓	MW-25B		14:00	GW	X			
✓	MW-40D		12:02	GW	X			
✓	TH-1		9:32	GW	X			
✓	MW-23A		17:00	GW	X			
✓	MW-23B		17:15	GW	X			
✓	MW-23C		17:15	GW	X			
* RELINQUISHED BY: (Signature/Print)		Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)		Date: (YY/MM/DD)	Time	
Duncan NS		19/7/16	9:27	[Signature]				
						# Jars used and not submitted	Lab Use Only	
						Time Sensitive <input type="checkbox"/>	Temperature (°C) on Receipt	
							19.3	
						Custody Seal Intact on Cooler? <input type="checkbox"/> Yes <input type="checkbox"/> No		
* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.							White: BV Labs	Yellow: Client
* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.								



Chain Of Custody Record

INVOICE INFORMATION:		Report Information		Project Information		Laboratory Use Only	
Company Name	#10950 Stantec Consulting Ltd	Company Name	Andrew Sullivan	Quotation #	B77460	BV Labs Job #	Bottle Order #:
Contact Name	Accounts Payable	Contact Name	Andrew Sullivan	P.O. #		B9J5732	
Address	40 Highfield Park Drive Suite 102 Dartmouth NS B3A 0A3	Address		Project #	121414186	725293	
Phone	(902) 468-7777 Fax: (902) 468-9009	Phone		Project Name		Chain Of Custody Record	Project Manager
Email	SAPinvoices@stantec.com	Email	Andrew.Sullivan@stantec.com	Site #			Marie Muise
				Sampled By		Ch725293-02-01	

Regulatory Criteria:	Special Instructions	ANALYSIS REQUESTED (PLEASE BE SPECIFIC)						Turnaround Time (TAT) Required:	
** Specify Matrix: Surface/Ground/Tapwater/Sewage/Effluent/Seawater Potable/Nonpotable/Tissue/Soil/Sludge/Metal		Field Preserved	Lab Filtration Required	Al. RCAP-MS Dissolved (Field/Filter) in W	Atlantic RCAP-MS Total Metals in Water				Please provide advance notice for rush projects
									Regular (Standard) TAT: (will be applied if Rush TAT is not specified): Standard TAT = 5-7 Working days for most tests. Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.
									Job Specific Rush TAT (if applies to entire submission) Date Required: Time Required:

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Preserved	Lab Filtration Required	Al. RCAP-MS Dissolved (Field/Filter) in W	Atlantic RCAP-MS Total Metals in Water							# of Bottles	Comments / Hazards / Other Required Analysis
1 ✓	MW-29B	19/7/15	13:20	GW	X		X								4	
2 ✓	MW-29C	1	13:35	GW	X		X									
3 ✓	MW-31A	1	12:05	GW	X		X									
4 ✓	SW7	15:24	15:20	SW	X			X								
5 ✓	SW7A	15:24	15:24	SW	X			X								
6 ✓	SW3	9:16	9:00	SW	X			X								
7 ✓	SWA	17	16:00	SW	X			X								
8 ✓	SW19A							X								
9 ✓	SW19B	19/7/15	17:30	SW	X			X								
10																

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Lab Use Only
DAVID COX DATE	19/7/16	9:27	QUBWZ				Time Sensitive <input type="checkbox"/> Temperature (°C) on Receipt 12.3 Custody Seal Intact on Cooler? <input type="checkbox"/> Yes <input type="checkbox"/> No

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.
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